BINGO INDUSTRIES

EASTERN CREEK RECYCLING ECOLOGY PARK

Recycling Infrastructure Optimisation Project (SSD-11606719)

ENVIRONMENTAL IMPACT STATEMENT

June 2022

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Environmental Assessment prepared by	
Name:	Claire Hodgson
Qualifications:	Bachelor of Arts (Environmental Studies) Master of Environmental Planning
Address:	Level 16, 580 George Street, Sydney
In respect of:	Eastern Creek Recycling Ecology Park
Applicant Name:	Bingo Industries Pty Ltd
Applicant Address:	305 Parramatta Road Auburn, NSW 2144 Australia
Proposed development:	Bingo are proposing to enhance resource recovery outcomes across the Greater Sydney area by increasing throughput at the Eastern Creek REP to capitalise on the underutilised state-of-the-art processing facilities (namely MPC2), and plant and equipment within the Eastern Creek REP. The Proposal would include the upgrade and construction of supporting infrastructure to optimise the current operation at Eastern Creek REP and facilitate the increased throughput proposed to be received at the Proposal Site. It is proposed to develop the Proposal Site in three stages: • Stage 1: Initial throughput: Stage 1 would comprise 500,000 tpa of additional throughput to be received at the Eastern Creek REP to enhance resource recovery outcomes by increasing utilisation of onsite processing capabilities. • Stage 2: Internal site optimisation: Stage 2 would facilitate the remaining throughput increase (an additional 450,000 tpa of the total 950,000 tpa proposed) to be received and processed across the Eastern Creek REP and operation of one of two proposed new exit connections. Stage 2 would include: – the construction and operation of a new exit connection to the Honeycomb Drive extension and installation of two associated outbound weighbridges and a dedicated weighbridge office – the construction and operation of a new exit connection to Kangaroo Avenue in the north east of the Proposal Site and the installation of two associated outbound weighbridges and a dedicated weighbridge office – upgrade of existing internal roads as required – earthworks for Stage 3 site establishment – additional carparking and amenities. • Stage 3: Installation of supporting infrastructure: Stage 3 would comprise the redevelopment of the north-eastern corner of the Proposal Site. This would comprise: – construction and operation of a Site Workshop (relocating this activity from elsewhere within the Proposal Site to a dedicated enclosed facility): – construction and operation of a skip bin Maintenance and Manufacturing Workshop – installation of landscaping, signage, security fencing and finishing works.
Land to be developed:	Lot 1 and Lot 2 DP1145808, Lot 2 DP1247691 and Lot 7 DP1200048

Submission of Environmental Impact Statement **Prepared under Part 4, Division 4.7 (State Significant Development) of the *Environmental Planning and Assessment Act 1979***	
Environmental Impact Statement:	An Environmental Impact Statement (EIS) is attached which addresses all matters in accordance with Part 4 (Division 4.7) of the *Environmental Planning and Assessment Act 1979* and Section 192 of the *Environmental Planning and Assessment Regulation 2021*. I certify that I have prepared the contents of this EIS in accordance with the Secretary's Environmental Assessment Requirements (SEARs) (Ref SSD 11606719) dated 1 October 2021, and that to the best of my knowledge, the information contained within this EIS is not false or misleading.
Signature:	
Name:	Claire Hodgson
Date:	18/05/2022

GLOSSARY OF TERMS

Term	Description
20 Year Waste Strategy	NSW Waste and Sustainable Materials Strategy 2041
µm	Micrometre
µg/m³	Microgram per cubic metre
ABS	Australian Bureau of Statistics
ACHAR	Aboriginal Cultural Heritage Assessment Report
ACM	Asbestos Containing Material
ADG Code	Australian Code for Transportation of Dangerous Goods by Road and Rail
AEP	Annual Exceedance Probability
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
AHMP	Aboriginal Heritage Management Plan
Airports Act	*Airports Act 1996 (Cth)*
ANZECC	Australian and New Zealand Environment and Conservation Council
AOBV	Areas of Outstanding Biodiversity Value
Applying SEPP 33	*Applying SEPP 33: Hazardous and Offensive Development Application Guidelines* (Department of Planning, 2011)
Approved Methods	*Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA, 2017)
AQIA	Air Quality Impact Assessment
AQMP	Air Quality, Odour and GHG Management Plan
AQMS	Air Quality Monitoring Station
ARI	Average Recurrence Interval
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure 1999, as updated 11 April 2013
ASI	Area of Social Influence
ASRIS	Australian Soil Resource Information System
ASS	Acid Sulfate Soils
BAM	Biodiversity Assessment Method
BAMC	Biodiversity Assessment Method Calculator
BAU	Business As Usual
BC Act	*Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
Bingo	Bingo Industries Pty Ltd
BIO Map	Biodiversity Investment Opportunities Map
Biosecurity Act	*Biosecurity Act 2015*
Blacktown DCP	Blacktown Development Control Plan 2015
BLEP 2015	*Blacktown Local Environmental Plan 2015*

Term	Description
BoM	Bureau of Meteorology
BTEX	benzene, toluene, ethylbenzene, and xylene
C&D	Construction and Demolition
C&I	Commercial and Industrial
CBD	Central Business District
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
CES	Consulting Earth Sciences
CH_4	Methane
Chute	The chute comprises a conveyor to the edge of the landfill pit and a short chute that drops waste into the landfill.
CIV	Capital Investment Value
CLM Act	*Contaminated Land Management Act 1997*
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2-e	Carbon Dioxide Equivalent
CoPC	contaminants of potential concern
Council	Blacktown City Council
CSM	Conceptual Site Model
CTMP	Construction Traffic Management Plan
CWG	Community Working Group
DA	Development Application
DADEC	Dial-A-Dump (EC) Pty Ltd
DADI	Dial-A-Dump Industries
DAWE	Department of Agriculture, Water and the Environment
dBA	Decibels, A-weighted
DCP	Development Control Plans
DECC	Department of Environment and Climate Change
DECCW	Department of Environment and Climate Change and Water
DIWA	Directory of Important Wetlands in Australia
DPE	Department of Planning and Environment (previously Department of Planning, Industry and Environment)
DPI	NSW Department of Primary Industries
E&FRP	Emergency and Fire Response Plan
Eastern Creek REP	Eastern Creek Recycling Ecology Park
EEC	Endangered Ecological Community
EES	NSW Environment, Energy and Science
EfW	Energy from Waste
EILs	Ecological Investigation Levels

Term	Description
EIS	Environmental Impact Statement
EMS	Environmental Management Strategy
Engagement Report	Community and Stakeholder Engagement Strategy and Outcomes Report
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2021*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPI	Environmental planning instruments
EPIRMP	Emergency and Pollution Incident Response Management Plan
EPL	Environmental Protection License
ERA	Environmental Risk Analysis
ERSED	Erosion and sediment
ESCP	Erosion and Sedimentation Control Plan
ESD	Ecologically Sustainable Development
ESLs	Ecological Screening Levels (ESLs)
EWMP	Environmental Waste Management Plan
EY	Average number of exceedances per year
FFL	Final floor level
Fire Safety Guidelines	FRNSW *Fire Safety Guideline – Fire Safety in Waste Facilities* (February 2020)
FM Act	*Fisheries Management Act 1994*
FTE	Full Time Equivalent
GDE	Groundwater dependent ecosystems
GHG	Greenhouse gas
GLC	Ground level concentrations
GPS	Global Positioning System
g/m^2/month	Grams per square metre per month
GSC	Greater Sydney Commission
GST	Goods and Services Tax
GSW	General Solid Waste
ha	hectares
Heritage Act	*Heritage Act 1977*
HILs	Health Investigation Levels
HSLs	Heath Screening Levels
IBRA	Sydney Basin Interim Biogeographic Regionalisation for Australia
ICNG	Interim Construction Noise Guideline
IFD	Rainfall intensity frequency duration data (BoM, 2016)
Industry and Employment SEPP	*State Environmental Planning Policy (Industry and Employment) 2021*
IPCC	Intergovernmental Panel on Climate Change

Term	Description
kL	kilolitres
L/s	litres per second
L_{Aeq}	Equivalent continuous sound level
L_{Amax}	Maximum noise level
LEP	Local Environmental Plan
LFG	Landfill gas
LGA	Local Government Area
LGMP	Landfill Gas Management Plan
LOR	Limit of Reporting
LPG	Liquid petroleum gas
LVMP	Landscape and Vegetation Management Plan
m^2	square metres
m^3	cubic metres
mbgl	metres below ground level
MLA	Metropolitan Levy Area
MNES	Matters of National Environmental Significance
MPC	Materials Processing Centre
$MtCO_2$-e	Million tonnes of carbon dioxide equivalent
Mtpa	Million tonnes per annum
N_2O	Nitrous Oxide
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
NCC	National Construction Code
NGER	National Greenhouse and Energy Report
NGER Act	*National Greenhouse and Energy Reporting Act 2007*
NGER Determination	*National Greenhouse and Energy Reporting (Measurement) Determination 2008*
NML	Noise Management Level
NO_2	Nitrogen dioxide
NPI	National Pollution Inventory
NPW Act	*National Parks and Wildlife Act 1974*
NRAR	Natural Resources Access Regulator
NSW	New South Wales
NSW DPI	NSW Department of Primary Industries
NSW EPA	Environmental Protection Authority (NSW)
NVIA	Noise and Vibration Impact Assessment
OCP	organochlorine pesticides
OEH	Office of Environment and Heritage
OHS	Outer Horizontal Surface

Term	Description
OLS	Obstacle Limitation Surface
OPP	Organophosphate Pesticides
OSD	Onsite detention
ou	Odour Units
PAD	Potential Archaeological Deposits
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyls
PCT	Plant Community Type
PHA	Preliminary Hazard Analysis
PIRMP	Pollution Incident Response Management Plan
Planning Systems SEPP	*State Environmental Planning Policy (*Planning Systems*) 2021*
PM	Particulate matter
$PM_{2.5}$	Particulate matter less than 10 micrometres in aerodynamic diameter
PM_{10}	Particulate matter less than 2.5 micrometres in aerodynamic diameter
PMF	Probable maximum flood
PoEO Act	*Protection of the Environment Operations Act 1997*
PoEO (Waste) Regulation	*Protection of the Environment Operations (Waste) Regulation 2014*
PPE	Personal protective equipment
Precinct Plan	*Eastern Creek Precinct: Employment Lands Precinct Plan – Stage 3*
Project Approval	Refers to the existing approval under which the existing Eastern Creek REP currently operates. Approval MP06_139 was approved in 2009 under Part 3A (now repealed) of the EP&A Act.
PV	Photovoltaic
RBL	Rating background levels
RDF	Refuse derived fuel
Roads Act	*Roads Act 1993*
RRF	Resource Recovery Facilities
SA2	Statistical Area 2
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SEPP 55	*State Environmental Planning Policy No. 55 – Remediation of Land*
SEPP 59	*State Environmental Planning Policy No 59-Central Western Sydney Economic and Employment Area*
SEQ	Safety, Environment and Quality
SIDRA	Sidra Intersection
SMA	Segregated Materials Area
SMP	Soil Management Plan
SO_2	Sulphur Dioxide
SOP	Standard Operating Procedures
SPR	source-pathway-receptor

Term	Description
SSD	State Significant Development
STFM	Sydney Strategic Traffic Forecasting Model
SWLMP	Soil, Water and Leachate Management Plan
SWL	Sound Power Level
Sydney MLA	Sydney Metropolitan Levy Area
TBDC	NSW BioNet Threatened Biodiversity Data Collection
tCO_2-e	Tonnes of Carbon Dioxide Equivalent
TEC	Threatened Ecological Community
TfNSW	Transport for New South Wales
TIA	Traffic Impact Assessment
TN	Total Nitrogen
TOC	Total Organic Carbon
TP	Total Phosphorus
tpa	Tonnes per annum
TRH	total recoverable hydrocarbons
TSP	Total Suspended Particulate Matter
TSS	Total Suspended Solids
Transport and Infrastructure SEPP	*State Environmental Planning Policy (Transport and Infrastructure) 2021*
TTPP	Transport Planning Partnership
VIS	NSW Vegetation Information System
VOCs	volatile organic compounds
WARR Act	*Waste Avoidance and Resource Recovery Act 2001*
Waste Classification Guidelines	Waste Classification Guidelines: Part 1 Classifying Waste (NSW EPA, 2014)
Waste Standards, the	Standards for Managing Construction Waste in NSW
WHS Act	*Work Health and Safety Act 2011*
WHS Regulation	*Work Health and Safety Regulation 2017*
WM Act	*Water Management Act 2000*
WMF	Waste Management Facility
WMP	Waste Management Plan
WoNS	Weeds of National Significance
WQO	Water Quality Objectives
WSEA	Western Sydney Employment Area
WSROC	Western Sydney Regional Organisation of Councils
WSUD	Water Sensitive Urban Design
WTS	Waste Transfer Station

EXECUTIVE SUMMARY

Introduction

This Environmental Impact Statement (EIS) has been prepared on behalf of Dial-A-Dump (EC) (DADEC) Pty Ltd, (the Applicant) (as owned by Bingo Industries Pty Ltd (Bingo)) to support a State Significant Development (SSD) application in accordance with Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Division 4.7 of the EP&A Act identifies the Minister for Planning, through the New South Wales (NSW) Department of Planning and Environment (DPE), as the consent authority for development that is identified as SSD.

The existing Eastern Creek Recycling Ecology Park (REP) (formerly known as the Genesis Waste Management Facility) is currently licensed to accept non-putrescible construction and demolition (C&D) and commercial and industrial (C&I) waste for landfilling and operation of two materials processing centres (MPCs) to recover recyclable material from the C&D waste and C&I waste streams. The Applicant is seeking approval to optimise the existing Eastern Creek REP by increasing the throughput from the current two million tonnes per annum (Mtpa) by an additional 950,000 tonnes per annum (tpa), and by optimising internal infrastructure such as roads and stormwater ('the Proposal'). The Eastern Creek REP is located at 1 Kangaroo Avenue, Eastern Creek and comprises Lot 1 DP1145808 and Lot 2 DP1247691 (the operational area), as well as small portion of Lot 2 DP 1145808, where supporting / ancillary infrastructure is located. The area for development, known as the "Proposal Site", comprises the Eastern Creek REP and areas along the western boundary and northeastern boundary to accommodate upgrades to site access (see Figure 0-2), covering an area of approximately 54 ha.

This EIS has been prepared by Arcadis Australia Pacific Pty Limited (Arcadis) on behalf of the Applicant to support an application for the approval of the Proposal. It has been prepared in accordance with the Amended Secretary's Environmental Assessment Requirements (SEARs) issued on 1 October 2021 by the DPE, the EP&A Act, and Section 192 of the *Environmental Planning and Assessment Regulations 2021* (EP&A Regulations).

Proposal site description

The Proposal Site includes the operational area of the Eastern Creek REP and adjacent minor works areas to accommodate upgrades to access for the Eastern Creek REP. The Proposal Site is located in the Blacktown Local Government Area (LGA), approximately 36 kilometres (km) west of the Sydney Central Business District (CBD), 18 km west of Parramatta CBD and 12 km east of Penrith.

The Eastern Creek REP is bounded by industrial developments which border the Western Motorway (M4) to the north, Kangaroo Avenue to the east and Honeycomb Drive to the south. A planned future extension to Archbold Road (to be carried out by Transport for NSW (TfNSW) will run parallel to the western boundary of the Proposal Site (TfNSW, 2019). To the immediate north, east and south of the Eastern Creek REP are a range of industrial and commercial buildings. The closest residential receivers are located in the suburbs of Minchinbury, approximately 400 metres (m) to the north, and Erskine Park, approximately 1.2 km to the west of the Proposal Site.

In 2009 Dial-A-Dump Industries (DADI) acquired the Eastern Creek REP and gained approval for the construction and operation of a resource recovery and non-putrescible landfill facility; the Genesis Xero Waste Management Facility (WMF) (now named the Eastern Creek REP). Operation of the facility commenced in 2012. The original WMF comprised a resource recovery facility (RRF) and non-putrescible landfill with a material handling capacity of 700,000 tpa.

The original WMF was approved under Part 3A of the EP&A Act in 2009 (MP 06_0139). Following the repeal of Part 3A in 2011, the project was subject to the transitional arrangements provided by the *Environmental Planning and Assessment Regulations 2000*. Upon cessation of the transitional arrangements under the *Environmental Planning and Assessment Regulations 2000* the project ultimately transitioned to SSD on 2 October 2020.

The Eastern Creek REP currently holds two Environmental Protection Licences (EPLs); EPL 13426 for landfilling operations and EPL 2021 for resource recovery operations.

An overview of the existing waste management facilities at the Eastern Creek REP is presented in Figure 0-1 and includes:

- The landfill (former quarry void)
- Resource recovery facilities:
  - Materials Processing Centre 1 (MPC1)
  - Materials Processing Centre 2 (MPC2)
- Segregated Materials Area (SMA).

In addition to the waste management infrastructure, the Eastern Creek REP operations are supported by a range of ancillary / supporting features including a maintenance shed, site office, internal road network and water management infrastructure.

Under the existing approvals and EPLs, the Eastern Creek REP is authorised to undertake the following activities:

- Accept up to two Mtpa of C&D and C&I waste and landfilling of the quarry void of up to one Mtpa of non-putrescible waste (including asbestos and other non-recyclable waste), excluding residual chute waste from the materials processing centres
- Operation of MPC1 and MPC2 which recover recyclable material from C&D waste and C&I waste streams, as well as utilisation of a landfill disposal chute and maintenance activities
- Crushing, grinding and separating works to process waste masonry material located in an area earmarked as the SMA
- Stockpile up to 50 tonnes of waste tyres
- Stockpile up to 20,000 tonnes of green waste.

Under current operations, the Eastern Creek REP directly employs approximately 184 people (with up to 120 people on site at one time), which includes up to 20 truck drivers transporting material to and from Eastern Creek REP. Eastern Creek REP also contributes to indirect employment such as maintenance personnel and short-term contractors.

The operation of the Eastern Creek REP is subject to DADECs Approved Environmental Management Strategy (EMS) which provides an overview of potential environmental impacts of the Eastern Creek REP during operation and describes the management and mitigation measures to protect the environment and sensitive receivers, and to minimise potential adverse impacts on the environment. The EMS:

- Outlines the statutory requirements and obligations which need to be fulfilled during operation of the Eastern Creek REP
- Describes the environmental management systems in place and the roles and responsibilities for employees involved in the operation of the Eastern Creek REP
- Details the implementation of managing environmental risk of the different environmental aspects during operation of the Eastern Creek REP
- Details the monitoring of environmental risks through environmental reporting, auditing, and how environmental incidences and non-conformances are managed during the operation of the Eastern Creek REP.

The following environmental management plans have been developed in support of the EMS:

- Landfill Environmental Management Plan (LEMP)
- Soil Water and Leachate Management Plan (SWLMP)
- Air Quality, Odour and Greenhouse Gas Management Plan (AQOGGMP)
- Landscaping and Vegetation Management Plan (LVMP)
- Aboriginal Heritage Management Plan (AHMP)
- Waste Monitoring Program (WMP).

The approved operating hours for the Eastern Creek REP are presented in Table 0- 1.

Table 0-1 Approved operating hours (MP 06_139)

Activity	Day	Time
Construction	Monday – Friday	7:00am to 6:00pm
	Saturday	8:00am to 4:00pm
	Sunday and Public Holidays	Nil
MPC – operation, waste receival, chute use and maintenance	Monday – Friday	24 hours
	Saturday	
	Sunday and Public Holidays	
SMA – crushing and screening	Monday – Friday	6:00am to 6:00pm
	Saturday	8:00am to 4:00pm
	Sunday and Public Holidays	
SMA – receipt of segregated materials	Monday – Friday	24 hours
	Saturday	8:00am to 4:00pm
	Sunday and Public Holidays	
Landfill – truck deliveries	Monday – Friday	5:00am to 9:00pm
	Saturday	
	Sunday and Public Holidays	

Figure 0-1 Existing site infrastructure

The Applicant and Proposal objectives

DADEC, a fully owned subsidiary of Bingo, would be responsible for the development, operations and maintenance of the Proposal and the broader Eastern Creek REP. Bingo has been operating since 2005 and is an industry leader in waste management and resource recovery in the NSW and Victorian markets. Currently, Bingo operates 16 waste management facilities in Australia with a combined network capacity of 4.6 Mtpa.

Bingo manages a significant proportion of the Sydney Basin C&D and C&I waste streams through the operation of a network of critical waste management infrastructure including transfer stations, advanced recycling facilities and landfills. Bingo's network of facilities incorporates advanced waste management technologies to achieve resource recovery rates in excess of 75 per cent, increasing waste diverted from landfill and producing valuable eco products to support property and infrastructure projects and thereby promoting a circular economy hub. Importantly the Eastern Creek REP is currently achieving one of the highest recovery rates (81.5%) in the Australian market. Through investment and innovation in advanced resource recovery technology, Bingo is leading the push for a 'waste free Australia'.

The key objectives for the Proposal are to:

- Enhance the operational efficiency of the Eastern Creek REP through improvements in internal design and development of supporting infrastructure
- Support the ongoing investment in strategic infrastructure by the NSW and Commonwealth Governments through providing recycled products for major transport and social infrastructure projects
- Contribute to the State achieving resource recovery target of 80 per cent by 2030 from all waste streams under the 20-Year NSW Waste and Sustainable Materials Strategy 2041 (NSW (DPE, 2021a) ('20 Year Waste Strategy') through increasing quantities of waste diverted from landfill
- Increase diversion of C&D and C&I waste from non-putrescible landfill in Greater Sydney, which the 20-Year Waste Strategy (DPE, 2021a) estimates will be exhausted in 2028
- Harness the state-of-the-art advanced waste processing capacity of the recently commissioned MPC2 facility to respond to significant C&I processing capacity shortfalls in the Sydney Metropolitan Levy Area (MLA) and in doing so support enhanced resource recovery outcomes
- Promote a circular economy hub and reduce disposal costs for process residuals by diverting material from landfill and keeping products and materials in use by governments and industry in accordance with 20-Year Waste Strategy and the NSW Circular Economy Policy Statement – Too Good to Waste (NSW Environment Protection Authority (NSW EPA), 2019)
- Contribute to the economy in Western Sydney by creating direct and indirect skilled employment opportunities, both during construction and long-term operation
- Manage potential impacts associated with the construction and operation of the Proposal in an environmentally and socially responsible manner.

Proposal description

The Proposal would include the upgrade and construction of supporting infrastructure to optimise the current operations at the Eastern Creek REP and facilitate the increased throughput proposed to be received at the Proposal Site. An overview of the Proposal is shown in Figure 0-2. It is proposed to develop the Proposal in three stages:

- **Stage 1: Initial throughput**: Stage 1 would comprise 500,000 tpa of additional throughput to be received at the Eastern Creek REP to enhance resource recovery outcomes by increasing utilisation of onsite processing capabilities. No infrastructure upgrades are required under Stage 1.
- **Stage 2: Internal site optimisation:** Stage 2 would facilitate the remaining throughput increase (an additional 450,000 tpa of the total 950,000 tpa proposed) to be received and processed across the Eastern Creek REP and operation of one of two proposed new exit connections. Stage 2 would also include:

  - The construction and operation of a new exit road to the Honeycomb Drive extension (to be constructed under the approval for IRM Property No.2 (DA-21-01557) as a separate project) and installation of two associated outbound weighbridges and a dedicated weighbridge office
  - The construction and operation of a new exit connection to Kangaroo Avenue in the northeast of the Proposal Site and the installation of two associated outbound weighbridges and a dedicated weighbridge office
  - Upgrade of existing internal roads as required
  - Earthworks for Stage 3 site establishment
  - Additional carparking and amenities
- **Stage 3: Installation of supporting infrastructure:** Stage 3 would comprise the redevelopment of the northeastern corner of the Proposal Site. This would comprise:
  - Construction and operation of a Site Workshop (relocating this activity from elsewhere within the Proposal Site to a dedicated enclosed facility)
  - Construction and operation of a skip bin Maintenance and Manufacturing Workshop
  - Installation of landscaping, signage, security fencing and finishing works.

The Proposal would provide the Greater Sydney Region with crucial recycling infrastructure to help communities divert more waste from landfill and close the resources loop. The Proposal is estimated to generate 40 jobs during the construction phase and 70 additional jobs once operational for the Western Sydney region.

As noted above each stage of the Proposal would be constructed independently. The key construction components of each stage of the Proposal include:

- **Stage 1: Initial throughput increase**: No construction works are proposed as part of Stage 1
- **Stage 2: Internal site optimisation:** Connection to the Honeycomb Drive extension and Kangaroo Avenue would occur independently but would both comprise:
  - Site establishment including removal of amenity berms as required, including earthworks within northeastern corner of the Proposal Site in preparation for Stage 3 construction
  - Establishment of pavement, road surface and kerbing
  - Other minor internal road works and construction of a carpark to the south of MPC2
  - Construction of the weighbridge control offices
  - Installation of weighbridges and wheel wash facilities
  - Signage, line marking and commissioning
- **Stage 3: Installation of supporting infrastructure:**
  - Site establishment
  - Construction of the Site Workshop
  - Construction of the Maintenance and Manufacturing Workshop
  - Installation of perimeter fencing, landscaping and signage
  - Commissioning.

The key operational components of each stage of the Proposal would include:

- **Stage 1 Initial throughput increase:** 500,000 tpa of additional throughput to be received at the Eastern Creek REP, the majority of which would be received and processed within MPC2
- **Stage 2: Internal site optimisation:** Facilitation of remaining throughput increase of 450,000 tpa (total 950,000 tpa), the majority of the increased throughput would be received and processed within MPC2.

- **Stage 3: Installation of supporting infrastructure:** Operation of the Site Workshop and Maintenance and Manufacturing Workshop.

The key components of Stages 2 and 3 of the Proposal are shown in Figure 0-3 and Figure 0-4.

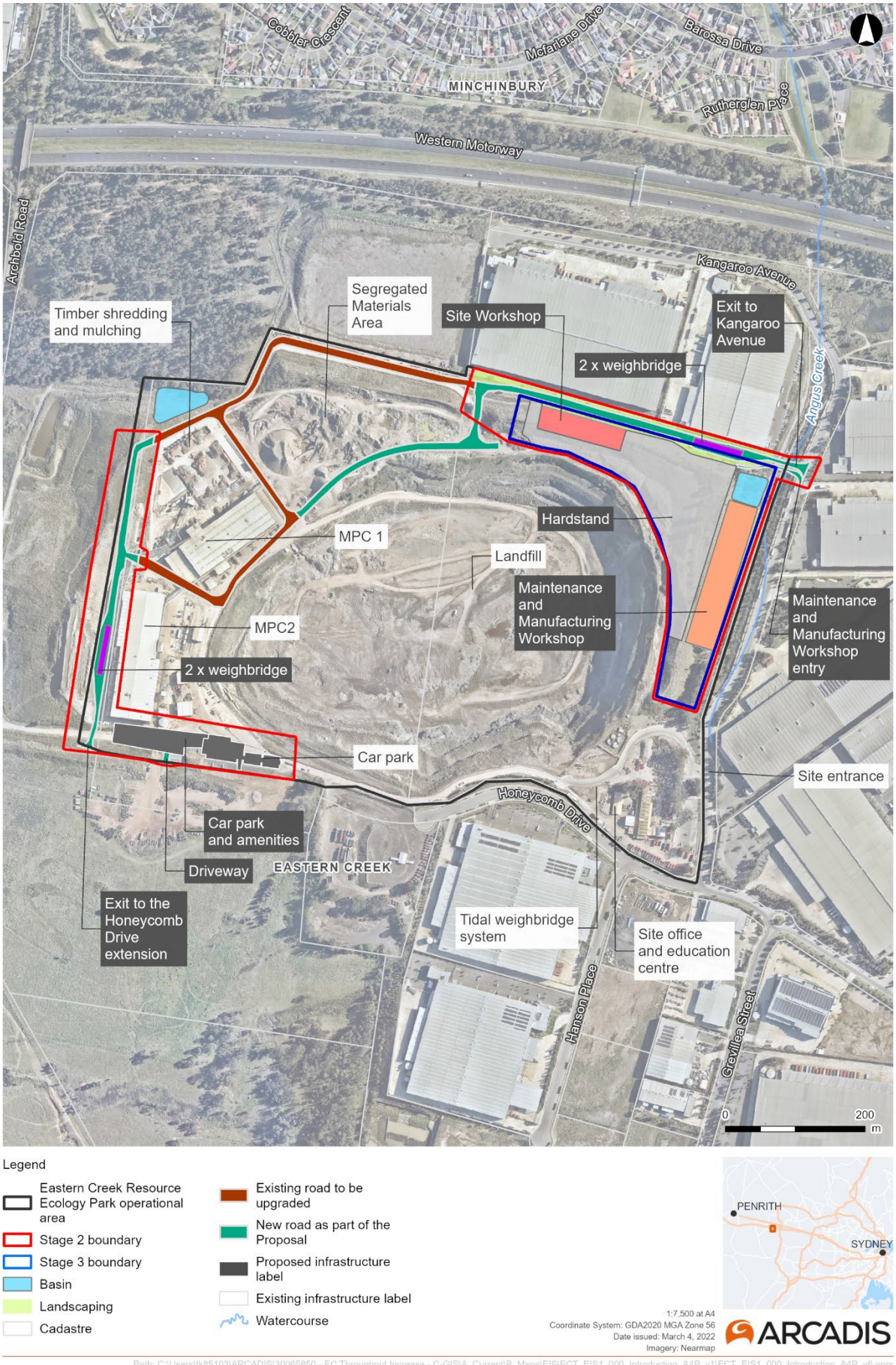


Figure 0-2 The Proposal

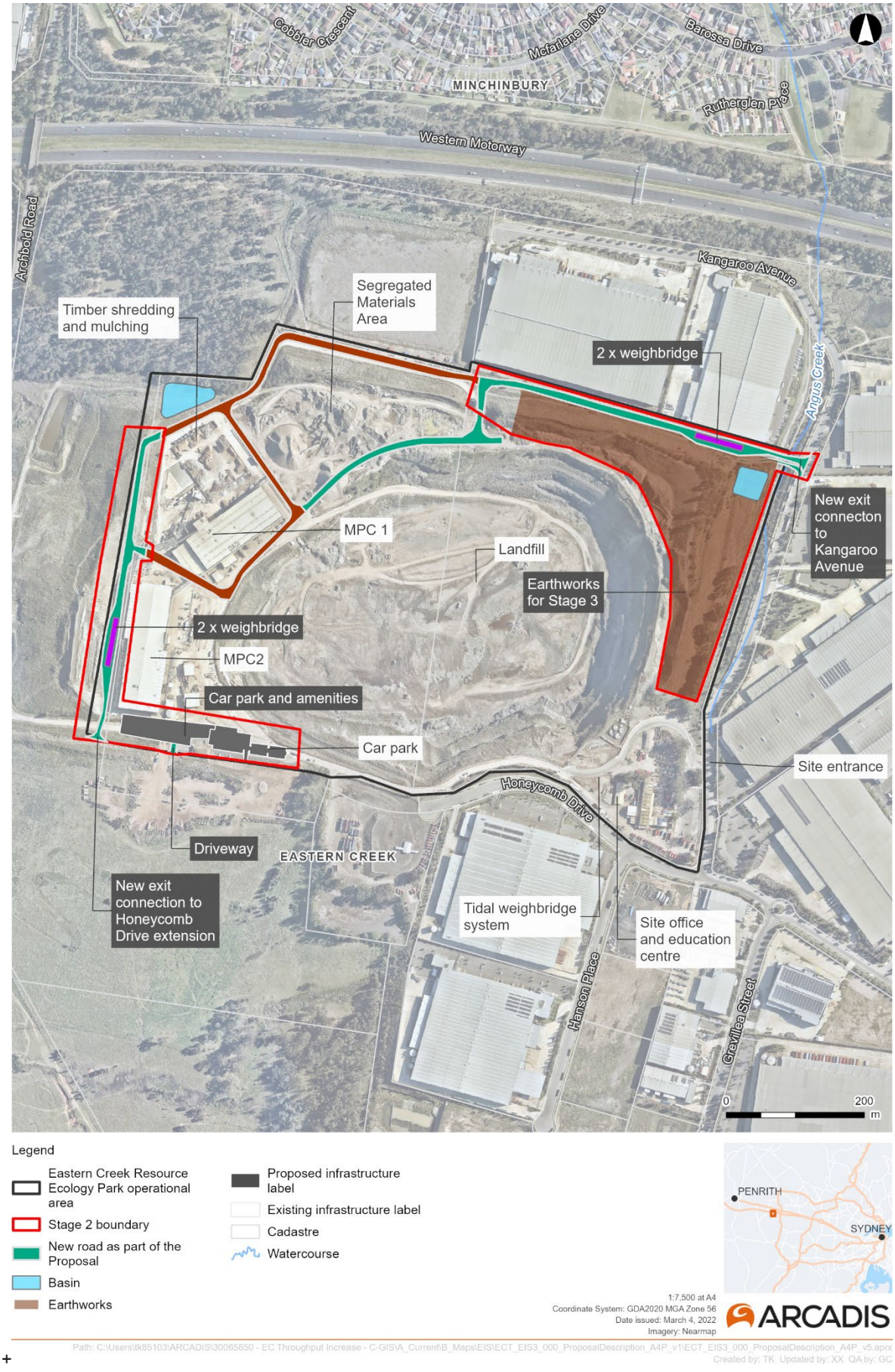


Figure 0-3 Proposed Stage 2 operations

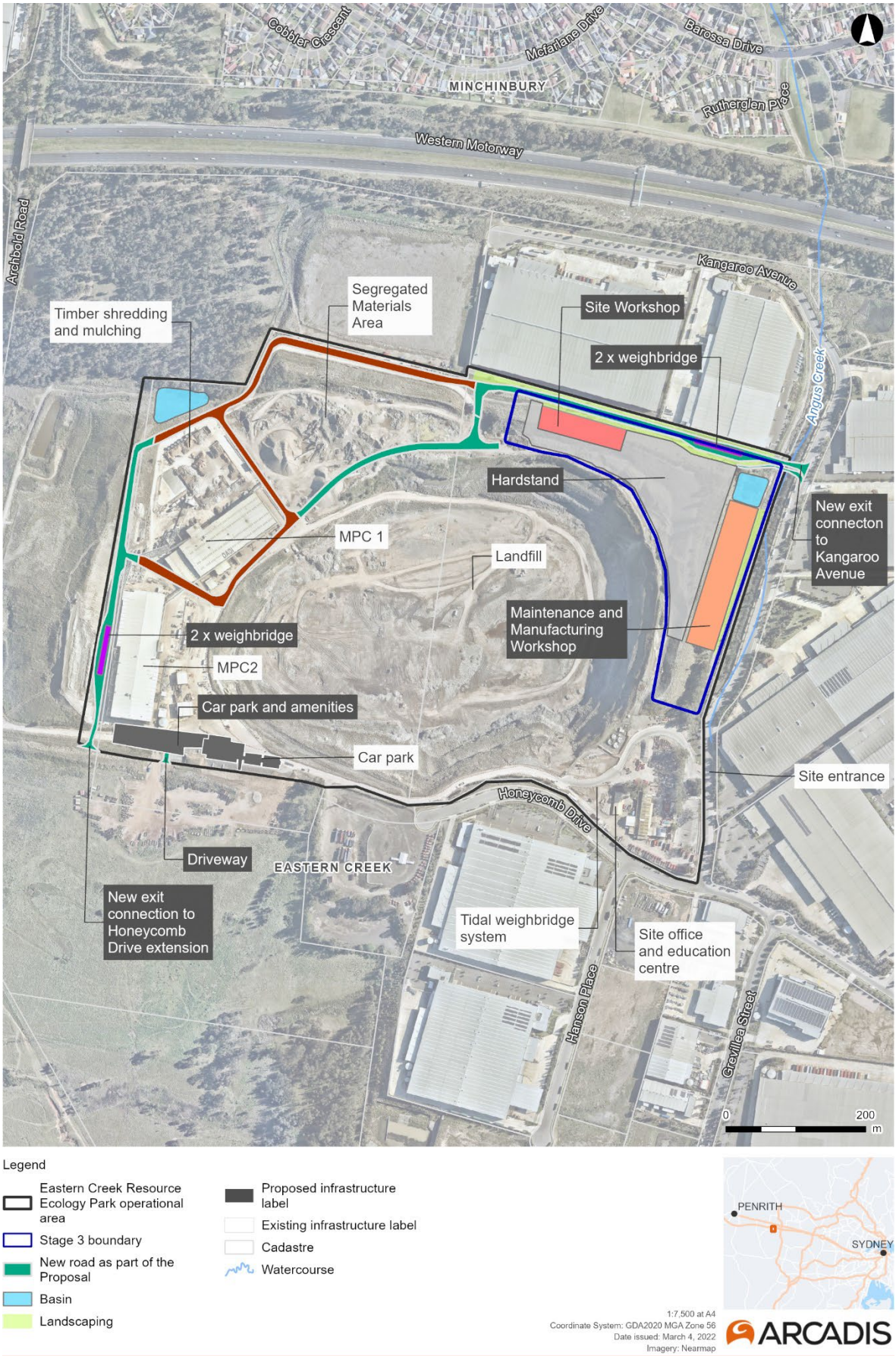


Figure 0-4 Proposed Stage 3 operations

Need for the Proposal

The conventional model of recycling that has been historically adopted across Australia is facing considerable disruption and greater vulnerability. This disruption puts recycling outcomes across Australia, including Greater Sydney, at risk. Global market risks, policy drivers and diminishing recycling capacity are all contributing to the need for the Proposal, namely:

- **Non-putrescible waste processing and disposal options in Sydney and NSW**: Non-putrescible waste generation is estimated to grow by 76 per cent over the next 20 years, exhausting the available landfill airspace by 2028 under business as usual conditions (DPE, 2021a). There are significant challenges to developing new landfills in Greater Sydney necessary to provide the required additional non-putrescible waste capacity required. There is also limited recovery of mixed C&I waste in Greater Sydney. The Proposal would significantly increase the recycling capacity and diversion of waste from landfill in Greater Sydney and make a key contribution to NSW achieving the C&I recovery targets in addition to C&D recovery targets.
- **Planning for future non-putrescible waste management**: The projected increase in population and associated economic growth, as well as numerous current and upcoming large infrastructure projects in Greater Sydney will result in significant increases in non-putrescible waste generation. The proposed increase in throughput of the Eastern Creek REP provides necessary waste infrastructure for both C&D waste generated during construction as well as C&I waste generated by new businesses. Further, the Eastern Creek REP will continuously evolve to increase diversion of waste from non-putrescible landfill using state-of-the-art resource recovery technology.
- **Integrate network efficiency**: Bingo operates an integrated and connected network of resource recovery and waste management facilities across Greater Sydney, including the strategically located Eastern Creek REP. The Proposal would increase throughput and improve operational outcomes at the Eastern Creek REP, which would increase efficiency of the entire Bingo resource and recovery network.
- **Alignment with the NSW circular economy**: The Proposal supports the critical shift in approach to waste management in NSW, from producing low cost, low grade materials to a pull through model that conceives of generating usable and market demanded products using an integrated, closed loop solution.

The Proposal, forming part of the overall Eastern Creek REP, represents critical infrastructure that will be required to increase NSW waste diversion rates, facilitate circular economy flows and build the resilience of the local recycling sector. In addition, the Proposal supports the objectives of a range of strategic planning policies, including:

- *NSW Waste and Sustainable Materials Strategy 2041 – Stage 1: 2021-2027* (DPE, 2021a)
- *National Waste Policy: Less Waste, More Resources* (Australian Government, 2018)
- *NSW Circular Economy Policy Statement – Too Good to Waste* (NSW EPA, 2019)
- *Greater Sydney Region Plan: A Metropolis of Three Cities* (Greater Sydney Commission (GSC), 2018a)
- *Greater Sydney 2056: Central City District Plan* (GSC, 2018b)
- *Western Sydney Waste Avoidance and Resource Recovery Strategy 2017-2021* (WSROC, 2017)
- *Future Transport Strategy 2056* (NSW Government, 2018).

Capital investment value and workforce

The capital investment value for the Proposal, consistent with the definition provided in the EP&A Regulations, is approximately 53 million Australian Dollars (AUD) (excluding goods and services tax (GST)) (refer to the Capital Investment Value (CIV) Report in Appendix G).

The Proposal would generate temporary direct and indirect jobs through the design, planning and construction phases of its delivery. Construction of the Proposal would employ approximately 40 employees for the duration of the construction program.

Operation of the Proposal would employ approximately 70 full time equivalent (FTE) employees, in addition to the current Eastern Creek REP workforce. Employees would generally work in two shifts, with approximately half of all employees operating in each shift (although noting fewer staff may be used during night-time and weekend periods). No changes to the existing, approved operational hours are proposed.

Proposal alternatives

Consideration was given to a number of alternatives as part of the approach and design development of the Proposal. Each of these alternatives were not considered to be viable as they would not adequately address the Proposal's objectives or address the critical need for the Proposal.

The alternatives considered for the Proposal include:

- **A 'Do nothing' scenario**: This scenario was rejected as it would not provide the critically needed increase in waste management capacity within the Greater Sydney region. This would be inconsistent with the objectives and goals mandated in these strategic planning frameworks. Similarly, a 'do nothing' scenario' would mean that waste generated in the local community would be required to be transported in greater distances to alternative facilities in the Greater Sydney region
- **Alternative site**: Several alternative sites in the Sydney Metropolitan area were assessed. This scenario was rejected as there is no available land large enough to accommodate such a facility while being a sufficient distance from potentially sensitive land uses. The location of the Proposal is well placed geographically to service the Greater Sydney region and would utilise the significant benefits that come from co-location with an existing waste management facility
- **Alternative site configuration and layout**: Design changes have been made to the Proposal in response to advice and consultation with government authorities, service providers and the community, as well as additional data from more detailed environmental and social investigations. Where a refinement was likely to have wider implications, or where a range of constraints and alternatives was considered, design refinements were identified in the context of environmental considerations
- **Alternative throughput and staging:** It was identified that the Eastern Creek REP could accommodate a higher throughput than proposed as part of the Proposal and consideration was given to alternate options for staging of the Proposal to meet market needs and demands. Different staging options or alternative throughput options were discarded as the proposed optimisation and staging of the Eastern Creek REP were found to be the optimal solution for providing immediate relief across the Sydney MLA to increase resource recovery targets.

Statutory planning approvals process

As noted above, the Eastern Creek REP was originally approved (MP 06_0139) under Part 3A of the EP&A Act. The Proposal is not considered to be 'substantially the same development' or of 'minimal environmental impact' and cannot be considered a modification to the original Eastern Creek REP Project Approval. A separate development consent is therefore required.

The Proposal is considered SSD under Clause 23 (waste and resource management facilities) of Schedule 1 of the *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP), which refers to:

> *(3) Development for the purpose of resource recovery or recycling activities that handle more than 100,000 tonnes per year of waste*

The relevant local planning instrument is the *Blacktown Local Environment Plan 2015 (*BLEP 2015). The Proposal Site is zoned IN1 General Industrial, which under Division 23 of *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP) is a prescribed zone in which a waste or resource management facility is permissible with consent.

Consultation

A Community and Stakeholder Engagement Strategy and Outcomes Report (Engagement Report) has been prepared by Elton/WSP on behalf of Bingo to outline the approach to consultation during the delivery of the Proposal. The Engagement Report is provided in Appendix H this EIS and contains a number of consultation objectives which reflect Bingo's commitment to listening and engaging with the community and key stakeholders of the Proposal to identify and address concerns.

Several government agencies have been actively consulted with throughout the preparation of the EIS, including:

- Blacktown City Council (Council and executives)
- EPA
- DPE, specifically:
  - Environment, Energy and Science Group (EES)
  - Water Group and Natural Resources Access Regulator (NRAR)
- NSW Fire and Rescue
- Sydney Water
- Transport for NSW (including former Roads and Maritime Services).
- Endeavour Energy
- Penrith City Council.

These agencies have been consulted via face-to-face meetings, virtual meetings, email and telephone correspondence, letter correspondence, site visits and provision of draft report content for review. Aspects raised by government agencies included landscaping, biodiversity, water and soil, air quality, water quality and hydrology, noise and vibration and waste management. Each aspect has been addressed within this EIS. Where appropriate design refinements have been made to the Proposal in response to stakeholder feedback.

The Proposal Site is within an industrial area of Eastern Creek within the Blacktown LGA. The key community stakeholders were identified as being residents and property and business owners within the surrounding suburbs of Minchinbury and Erskine Park. Consultation activities included a community newsletter dropped to surrounding residential and industrial properties (over 9,000 newsletters were delivered over two campaigns), five community webinar sessions, one-on-one meetings with residents and surrounding landholders, site tours with members of parliament, website updates and provision of detailed frequently asked questions (FAQs) regarding the Eastern Creek REP. Efforts were also made to establish a Community Working Group (CWG) as a platform for more

structured and ongoing engagement with surrounding stakeholders. Key community concerns identified were:

- Noise impacts (addressed in Chapter 9 of the EIS)
- Air quality impacts, including odour (addressed in Chapter 10 of the EIS)
- Traffic impacts from additional truck movements (addressed in Chapter 8 of the EIS)
- Emergency access arrangements (addressed in Chapter 6 of the EIS)
- Uncertainty about what the Proposal includes (for example concerns that it includes the operation of an energy from waste facility and an increase in landfilling (addressed in Chapter 6 of the EIS).

Key Environmental issues

Traffic and transport

A Traffic Impact Assessment was prepared by The Transport Planning Partnership (TTPP) to assess the potential impacts of the Proposal on traffic and transport during construction and operation (see Appendix I of the EIS). Potential traffic impacts were assessed for the surrounding local road network which connects the Eastern Creek REP to the state/arterial road network. The assessment considered a full build operational scenario, with modelling being carried out for both the average operational day and the peak operation day (approximately 30 per cent higher than average day traffic volumes). Modelling for the operational phase was undertaken for the year of opening of Stage 3 operations (2025) and for 10 years after opening of Stage 3 of the Proposal.

A review of the traffic volumes generated during construction determined that they would be the same or less than operational traffic and would therefore result in the same or lesser impact. As such, the construction traffic impacts on the surrounding road network were assessed qualitatively.

The qualitative assessment of construction impacts found that there would be no substantial change to the existing roadway capacity or intersection performance during construction phases. Any impact due to construction vehicles during the road network peak periods is expected to be minimal and would have no noticeable impact on the local road network.

Traffic modelling demonstrated that with the operation of the Proposal at the year of opening (2025) and 10 years after opening of the Proposal (2035), all modelled intersections would operate at the same level of service (LoS - a measure of intersection capacity) as the existing scenario during the AM and PM peaks, with the exception of one intersection. The Wallgrove Road / Wonderland Drive intersection and the Wonderland Drive / Honeycomb Drive intersection was found to have a reduced LoS in the AM peak (reducing from a LoS B to an acceptable LoS C by 2025), however the modelling showed that this was a result of growth in background traffic and would occur even without the Proposal. All other intersections would maintain the same LoS as existing conditions during the opening and 10 years after opening.

The Proposal includes provision of 54 additional car parking spaces, subject to detailed design, to bring the total number of parking spaces to 216 car parking spaces across the Eastern Creek REP, which would provide adequate parking for all operational needs. The traffic study also found that the area provided on site for queuing vehicles was adequate under both normal and worst case operating scenarios and would not result in queuing from the Proposal Site onto the road network.

Mitigation measures that will be implemented during construction and operation of the Proposal to minimise any potential traffic and transport-related impacts include; use of signage, speed limits, pedestrian routes, site-specific traffic control plans and regular inspection of traffic controls as set out development and implementation of a Construction Traffic Management Plan. Updates will also be made to the Approved EMS to incorporate, as a minimum, the new operational traffic flows and new internal pedestrian routes. The complete environmental management measures are present in Chapter 8 of this EIS.

Noise and vibration

A Noise and Vibration Impact Assessment (NVIA) has been prepared by RWDI to assess noise and vibration impacts from the Proposal (see Appendix J of the EIS). As part of the assessment, construction Noise Management Levels (NMLs), operational noise trigger levels and operational and construction road traffic noise criteria were identified to assess the potential impact levels of the Proposal. The assessment modelled noise impacts for each of the construction and operational phases of the Proposal individually to confirm their respective noise levels and identify any potential exceedances of the relevant criteria for a number of identified nearby sensitive receiver locations. Where a construction and operational phase would overlap, a 'cumulative' scenario considering the two concurrent activities was also been considered. For each operational Stage of the Proposal, noise modelling was undertaken to account for the proposed vehicle hourly average movements and the peak hourly vehicle movements for the Proposal.

An assessment of construction noise impacts determined the predicted noise levels generated by each stage of construction of the Proposal would not exceed the NMLs at the nearby sensitive receivers identified under either calm or noise enhancing meteorological conditions. An assessment of the potential for vibration impacts during construction identified that that there would be no construction activities within the prescribed safe working distances hence vibration impacts due to construction activities are not predicted

The assessment of operational noise impacts determined the predicted noise levels generated by each stage of the Proposal for both hourly average movements and the peak hourly vehicle movement scenarios would not exceed the noise trigger levels in either calm or noise enhancing meteorological conditions.

An assessment of concurrent construction and operation stages of the Proposal showed no exceedances of the NMLs under calm conditions or noise enhancing conditions for both an average and peak day (traffic movements).

Mitigation measures will be implemented to further reduce potential noise and vibration impacts associated with construction and operation of the Proposal as prescribed in Chapter 9 of this EIS. These will include monitoring to confirm compliance with the NMLs during construction and in accordance with the existing EMS for the Eastern Creek REP.

Air quality

An Air Quality Impact Assessment (AQIA) was prepared by EMM Consulting to assess the potential odour, dust, and emissions impacts from both construction and operation activities across the three Stages of the Proposal (see Appendix K of the EIS). Air quality impacts have been assessed on a staged basis to take account of the potential impacts from each Stage of the Proposal, with the following scenarios assessed:

- Approved operations (existing environment)
- Stage 1 operations + Stage 2 construction
- Stage 2 operations and a peak operations scenario (based on an approximate 30 per cent increase in emissions from MPC2).

Stage 3 construction and operation were qualitatively assessed given construction involves activities with a low potential for dust emissions and there would be no associated increase in throughput or emissions relating to relating to the proposed supporting infrastructure in the northeast corner of the Proposal Site.

The key emissions to air identified as potentially arising from the Proposal were combustion gases (nitrogen dioxide (NO_2), sulphur dioxide (SO_2), carbon monoxide (CO), volatile organic compounds (VOCs), and particulates ($PM_{2.5}$, PM_{10} and total suspended particles (TSP)), dust and odour. These pollutants are anticipated to be generated during the following activities:

- Wheel generated dust from transport of incoming and outgoing waste along the sealed road to and from the material recycling facilities

- Dust due to screening, shredding, crushing and other material transfers within the material recycling facilities
- Emissions of exhaust pollutants including NO_2, SO_2, CO and particulates from vehicle movements on-site and mobile equipment.

Background particulate matter less than 10 micrometres (PM_{10}) and 5 µm ($PM_{2.5}$) concentrations were determined using DPE Air Quality Monitoring System (AQMS) at Prospect (6-8 km away from the Proposal Site). The 2016 dataset from the Prospect AQMS was used as recent years' results have been affected by significant bushfire events or drought.

Impacts were assessed quantitatively for both the construction and operation phases of the Proposal, with modelling completed in accordance with the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (NSW EPA, 2017). Modelling results were for residential and commercial receptors. Adjacent commercial receptors are less sensitive to air pollution than residential receptors. The reasons for this are two-fold; firstly, for the key pollutants (PM_{10} and $PM_{2.5}$), the assessment criteria are expressed as 24-hour and annual averages and exposure does not occur at commercial receptors over these averaging periods. Secondly, exposure to air pollution for sensitive population groups (children, elderly) is less likely to occur at commercial receptors.

For Stage 1 operation combined with Stage 2 construction activities, there are no additional days above the 24-hour average impact assessment criterion for PM_{10} and no exceedances of the annual average impact assessment criterion for PM_{10} at residential assessment locations. There is one additional day above the 24-hour average impact assessment criterion for $PM_{2.5}$ for Stage 1 operations at residential assessment locations, however this additional day coincides with a high background concentration and is not considered material.

The assessment identified exceedances of the 24-hour average PM_{10} impact assessment criterion at a commercial assessment location for Stage 1 operations + Stage 2 construction. It is noted that this is a short-term scenario as it includes the construction activities for Stage 2, and would only occur for the Stage 2 construction period. There are three commercial assessment locations above the annual average PM_{10} impact assessment criterion for Stage 1 operations + Stage 2 construction. It is noted that one commercial receiver located to the south of the Proposal Site would incur the majority of PM_{10} exceedances. This commercial receiver location is to the south of the Proposal Site and was newly constructed (after current operations at the Eastern Creek REP were approved and commenced). Exposure to air pollution for sensitive population groups (children, elderly) is unlikely to occur at commercial receptors.

Although Stage 2 operations involve an increase in throughput from Stage 1, modelling results at adjacent commercial assessment locations are reduced compared to Stage 1, as the Stage 2 construction emissions are assumed to occur concurrently with Stage 1 operations only. The peak 24-hour average modelling results at some of the adjacent commercial assessment locations are also reduced compared to approved operations, even though the throughput increases. This is due to the reconfiguration / optimisation of the Eastern Creek REP, which acts to re-distribute dust emissions, particularly from trucks, by re-directing truck exit points to the Honeycomb Drive extension and Kangaroo Avenue in the northeast of the Proposal Site.

As such, Stage 2 operations represent a reduced air quality impact to surrounding receivers when compared to the combined Stage 1 operation and Stage 2 construction phase.

No exceedances of the annual average impact assessment criterion for total suspended particulates (TSP) and dust deposition, at either residential or commercial assessment locations were predicted for any of the scenarios modelled.

Whilst not a requirement of the SEARs, to provide a robust analysis of the outcomes of the AQIA and further investigate the potential impacts of the Proposal (in particular the temporary exceedances during Stage 1 operations and Stage 2 construction) a Human Health Risk Assessment (HHRA) was prepared by Environmental Risk Sciences (Appendix L). The HHRA reviewed the AQIA to estimate the potential for health impacts at relevant receptor locations due to the predicted changes in particulate matter concentrations from the Proposal. For residential receivers the HHRA identified that there are no impacts of concern in the residential areas that require further assessment in relation to risks to human health. For industrial receivers the assessment calculated individual risks at the

maximum impacted premises related to changes in $PM_{2.5}$ and PM_{10}, and did not identified health impacts that would be considered to be significant.

A cumulative odour emissions scenario for the Eastern Creek REP was prepared following the collection of site specific odour emissions monitoring at the Proposal Site, accounting for existing odour sources as well as emissions from the approved Modification 10 (permanent landfill gas flares) and proposed Modification 9 (relocation of the timber yard and green waste storage area). The odour emissions inventory developed is considered highly conservative as approved future improvements in landfill gas extraction are not accounted for in the fugitive odour emission rates applied. The results of the odour dispersion modelling indicate that the applicable odour goal would be met at all surrounding residential and commercial locations. The expected future improvements in landfill gas generation and extraction associated with the approved Modification 10 mean that the odour results derived are an upper estimate of likely future odour from the Eastern Creek REP. It is noted that the Proposal would result in a small increase in chute waste to the landfill. It is also noted that chute waste would not be high in organic matter and therefore unlikely to contribute to an increase in landfill gas (LFG) generation. This has been confirmed through odour modelling prepared for the Proposal.

A Best Management Practice (BMP) Determination has demonstrated that dust control methods in place at the Proposal Site are consistent with documented best practice dust control measures for the resource recovery and waste industry. Activities during construction (material handling and hauling) are consistent with existing site operations and therefore the existing dust controls implemented for site operations are equally relevant to the construction phase. Similarly, the EMS and the Air Quality, Odour and Greenhouse Gas Management Plan (AQOGGMP) for the Eastern Creek REP outlines the roles, responsibilities and the tasks to be performed to ensure environmental impacts are minimised. The EMS and AQOGGMP will be reviewed and updated to be implemented for the Proposal in accordance with the mitigation measures presented in Chapter 10 of this EIS.

Soils and contamination

A desktop review of previous geotechnical investigations and contamination reporting for the Eastern Creek REP has been undertaken to assess key risks associated with soil and contamination issues identified for the Proposal (Chapter 11 of this EIS). Impacts to soils and from contamination were assessed on a Staged basis for construction and operation

The geology of the Proposal Site has been identified as the Bringelly Shale comprising carbonaceous, claystone, laminate, occasional interbedded units of fine- to medium-grained lithic sandstone and rare coal and tuff. These soils are characterised as moderately reactively highly plastic subsoil, low fertility and poor soil drainage. Due to these characteristics, the erodibility of these soils is considered high. No known occurrences of acid sulphate soils have been identified on the Proposal Site to date.

Previous contamination assessments undertaken in 2018, 2019 and 2020 have indicated that elevated concentrations of contaminants were present in soil, groundwater and surface gas across the Eastern Creek REP, however the exceedances were either reflective of background concentrations for the local area or were found to be of no risk to ecological receptors.

Previous investigations have indicated that areas of potential contamination are restricted to the current workshop / waste processing area on the western boundary of the Proposal Site and the existing landfill. As disturbance to these areas would not occur as part of Proposal it is considered unlikely that construction activities would pose a risk of contamination exposure. Other contamination risks associated with Stage 2 of the Proposal include spills from fuels and chemicals required for construction. Potential contamination risks for the construction of Stage 3 relate to the potential for imported materials to contain contaminations.

The risk of contamination associated with operation of each Stage of the Proposal includes the potential for contamination of soils from substances stored at the Proposal Site for the maintenance and operation of vehicles, plant and machinery. These risks would be mitigated through use of bunding and the provision of spill kits, as prescribed in the mitigation measures set out in Chapter 11 of this EIS.

A number of mitigation measures will be implemented during construction and operation of the Proposal to minimise any potential soil and contamination impacts. These include the implementation of erosion and sediment control measures that will include a contingency plan in the event of

disturbance of unexpected, contaminated and the preparation of a Construction Environmental Management Plan (CEMP) that will include measures to manage the spoil generated on site.

Water and hydrology

A Surface Water Impact Assessment (SWIA) was prepared by AT&L which includes an assessment of potential water and hydrological impacts associated with the Proposal (see Appendix N of the EIS) The water and hydrology assessment identified the potential impact associated with the Proposal as it relates to three key aspects:

- Water quality
- Water quantity (stormwater)
- Water use.

As water impacts are largely related to physical changes on site and the introduction of new built form the assessment of water related impacts was carried out on a 'footprint' basis, rather than in relation to the operational staging. The assessment was undertaken in accordance with the relevant Commonwealth, State and local stormwater engineering and modelling guidelines. These guidelines were used to inform the targets and objectives implemented for each of the above aspects and assess whether the Proposal would meet the relevant requirements.

Existing water and hydrology infrastructure on the Eastern Creek REP includes two on-site detention basins, located in the northern and southern portions of the Eastern Creek REP.

The assessment identified that during construction and without mitigation, disturbance to soils could result in sediment laden or potentially contaminated surface water runoff entering downstream waterways. Measures to mitigate these potential risks include the establishment of onsite detention basins (OSD) and diversion swales and development of erosion and sediment control plans (ESCPs) for the construction phase.

During operation there is a risk of an increase to pollutant loads in surface water runoff. To mitigate these impacts the Proposal would utilise existing and proposed stormwater infrastructure, including gross pollutant traps, OSDs and bio-retention systems. Modelling was undertaken to demonstrate the effectiveness of the proposed stormwater treatment train which concluded that the treatment measures would achieve a percentage reduction greater than the reduction targets set for all parameters. Updates to the existing Emergency Pollution Incident Response Management Plan (EPIRMP) for the Eastern Creek REP will be made to include operation of the Proposal.

Modelling undertaken for the Proposal demonstrated that the OSD included in the Proposal would mitigate impacts on stormwater quantity and changes to peak flows generated as a result of an increase in impervious surfaces (roads, hardstands and buildings).

The Proposal would cater for the increase in non-potable water demand through the provision of an additional rainwater storage capacity of 112.5 kilolitres (kL). This was demonstrated to satisfy the water reuse objectives for the Proposal and satisfy the requirements for water reuse prescribed in the Blacktown Development Control Plan 2015 (Blacktown DCP) in maximising water reuse and minimising the volume of potable water required to meet non-potable water demand across the Proposal Site.

The Proposal would not have an adverse impact on water or hydrology, with all aspects found to be compliant with their respective objectives and targets. Mitigation measures set out in Chapter 12 of this EIS will be implemented to reduce the risks to water quality and quantity during construction and operation of the Proposal.

Hazards and risks

A hazard and risk screening analysis has been undertaken to identify potential hazards and risks during construction and operation of the Proposal (Chapter 13 of this EIS). Hazards were identified for each stage of the Proposal. The risk screening determined that, while chemicals and potentially dangerous goods would be stored within the Proposal Site, quantities would not be substantial enough to trigger the requirement for a preliminary hazard analysis (PHA).

A risk assessment was undertaken to identify potential hazards to the environment and / or public health through construction and operation of the Proposal. Hazards and risks identified include the potential for spills, fire and explosion, vehicle movements and machinery use, receipt of non-conforming waste that may contain hazardous materials, and hazardous airborne emissions.

The risk assessment identified the measures that would be implemented to minimise hazards and risks during construction and operation, including engineering and administrative controls. The key mitigation measures that would be implemented include the preparation of a CEMP incorporating the standards of the *Work Health and Safety Act 2011* (WHS Act), and update of the existing EMS including the existing EPIRMP which would outline emergency response and incident management strategies, safety equipment to be maintained and provided, and operational protocols.

Other issues

Biodiversity

A Biodiversity Development Assessment Report (BDAR) has been prepared by Arcadis (Appendix P of this EIS) in accordance with the requirements of the *Biodiversity Conservation Act 2016* (BC Act) and considered the project on a footprint basis.

The Proposal Site has been extensively disturbed by human activity including vegetation removal of native vegetation from 99 per cent of the Proposal Site and areas of exotic vegetation and weeds. One Threatened Ecological Community (TEC) - *Cumberland Plain Woodland in the Sydney Basin Bioregion* (Cumberland Plain Woodland) - was identified as occurring within the Proposal Site. The TEC is listed under the BC Act as critically endangered however does not meet the condition thresholds as the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest TEC.

The Proposal Site does not contain any existing wetlands and Angus Creek, which flows along the eastern boundary of the Proposal Site, is not mapped as Key Fish Habitat.

The Proposal would require the clearing of approximately 0.28 ha of Cumberland Plain Woodland. It was assessed that the area of the Cumberland Plain Woodland impacted by the Proposal is of low habitat value and would not contribute significantly to dispersal of associated flora and fauna associated with the TEC. However, it has been calculated that loss of the Cumberland Plain Woodland from the Proposal Site would require the provision of six ecosystem credits under the BC Act, which will be met through a contribution to the Biodiversity Conservation Fund.

It was assessed that during construction and operation of the Proposal, there is the possibility for other low level indirect impacts to biodiversity including:

- Inadvertent impacts on adjacent habitat or vegetation
- Reduced viability of adjacent habitat due to edge effects
- Reduced viability of adjacent habitat due to noise, dust or light spill
- Transport of weeds and pathogens from the Proposal Site to adjacent vegetation
- Injury and mortality of fauna.

Through the implementation of the mitigation measures prescribed in Chapter 14 of this EIS the likelihood of these impacts is significantly reduced.

As there are no TECs listed under the EPBC Act within the Proposal boundary, no offsets under the EPBC Act are required for this Proposal.

Heritage

An Aboriginal heritage due diligence assessment has been prepared by Artefact to determine the likelihood of impact to Aboriginal heritage items or values at the Proposal Site (Appendix Q of this EIS). Arcadis conducted a desktop assessment of impacts to non-Aboriginal heritage items or sites associated with the Proposal has been undertaken (Chapter 15 of this EIS). Both assessments considered the Proposal Site on a footprint / full build basis.

The Proposal would occur within an area which has been heavily disturbed by historical quarrying and earthmoving activities and is classified as having nil to low archaeological potential or Aboriginal significance. There would be no disturbance to the area of high archaeological sensitivity to the north-west of the Proposal Site, therefore impact to significant intact Aboriginal heritage sites or values are unlikely to be impacted by construction activities. Additionally, it is considered extremely unlikely that items of Aboriginal heritage significance would be disturbed during operation. Mitigation measures will be implemented to minimise impacts to unexpected non-Aboriginal heritage items finds are presented, identified in Chapter 15 of this EIS.

The desktop heritage assessment did not identify any items of non-Aboriginal heritage significance at or adjacent to the Proposal Site. The nearest identified non-Aboriginal heritage item (Minchinbury Winery (former)) is over 600 m from the Eastern Creek REP boundary and would not be impacted by construction of the Proposal. No direct operational impacts would occur as a result of the Proposal. Possible indirect impacts related to visual impacts and traffic and access are considered unlikely. The Proposal would have a negligible impact on noise levels experienced by those visiting the non-Aboriginal heritage items during operation.

Mitigation measures set out in Chapter 15 of this EIS will be implemented to reduce the risks to heritage during construction and operation of the Proposal.

Socio-economic

An assessment of the social impacts associated with the Proposal has been undertaken (Chapter 16 of this EIS), the assessment considered the Proposal Site on a footprint / full build basis. The Proposal Site is situated within the suburb of Eastern Creek in the Blacktown LGA within the Western Sydney Employment Area. Due to the Proposal's location in relation the Western Motorway (M4) and M7, it is strategically placed to provide employment opportunities for residents within the broader region of Western Sydney area.

During construction the Proposal would temporarily employ approximately 40 full time equivalent workers, providing a socio-economic benefit within the local area. Construction would also benefit local businesses such as building material suppliers. Short-term inconveniences associated with temporary disruption and change and amenity impacts would be managed in accordance with the mitigation measures identified in Chapter 16 of this EIS and would be outweighed by the overall benefits of the proposed development.

Beneficial socio-economic impacts related to the operation of the Proposal include the direct employment of up to 70 full-time personnel for the Proposal, attracting other businesses to the precinct, increased local and regional economic development, increased environmental sustainability through an increased resource recovery rate and the improvement of local waste services. Operation of the Proposal is not anticipated to have negative socio-economic impacts to the community.

Mitigation measures set out in Chapter 16 of this EIS will be implemented to reduce the socio-economic impacts during construction and operation of the Proposal.

Landscape and visual amenity

A desktop assessment was undertaken by Arcadis to identify the potential visual impact of the Proposal during construction and operation (Chapter 17 of this EIS) in accordance with *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute, 2013). Impacts were considered for each stage of the Proposal. Five viewpoints were identified to represent areas that would potentially be subject to visual impacts. The visual impact of the Proposal at the five identified viewpoints was assessed against three criteria: visual sensitivity, magnitude and visual impact.

The Proposal Site is set within the established Eastern Creek industrial precinct / M7 business hub and is surrounded by a large range of industrial developments. The Proposal Site is bounded by several key roads including Western Motorway (M4) to the north, Kangaroo Avenue to the east and Honeycomb Drive to the south and is enclosed by commercial and industrial buildings to the north, east and south. The closest residential receivers are located approximately 400 m to the north in the suburb of Minchinbury and approximately 1.2 km west in the suburb of Erskine Park.

Stage 1 would not result in any changes to the built form of the Eastern Creek REP. Therefore, there would be no impacts to the landscape and visual amenity as a result of Stage 1.

During construction of Stage 2, there is potential for some construction equipment to be visible from one viewpoint, east of the Proposal Site along Kangaroo Avenue. Due to the temporary nature of the construction works and the surrounding industrial land uses it is unlikely that construction would result in visual impacts at any other viewpoints. At commencement of Stage 2 operations the Eastern Creek REP would potentially be visible from the viewpoint along Kangaroo Avenue due to the earthworks carried out as part of Stage 2 construction. Vegetation would be planted as part of Stage 3 to provide visual screening.

During Stage 3 there is potential for some construction equipment and works to be visible from all five viewpoints. Due to the temporary nature of the construction works and the surrounding industrial land uses it is unlikely that construction would result in visual impacts at nearby viewpoints. During Stage 3 operations, there is potential for the site elements to be visible from two viewpoints. However, given the industrial character of the area the introduction of the Site Workshop and the Maintenance and Manufacturing Workshop at the northeast corner of the Proposal Site would be consistent with the surrounding industrial landscape and would not result in a material change to the visual amenity in this area. The material and finishes used on the structures of the Proposal have been selected to ensure that the Proposal would blend into the surrounding landscape. Additionally, screening vegetation would be planted along Kangaroo Avenue providing a visual buffer.

The Proposal was assessed as having a ‘negligible impact’ at all viewpoints. Mitigation measures set out in Chapter 17 of this EIS will be implemented to reduce the risks visual impacts during construction and operation of the Proposal.

Waste management

A desktop assessment was undertaken by Arcadis to identify the quantity and potential impact of the waste generated by the Proposal during construction and operation (Chapter 18 of this EIS). Impacts were assessed on a full build basis.

Construction of the Proposal would generate waste in the form of green waste, excess excavated soil and fill material, surplus building and packaging materials, surplus concrete and asphalt waste and waste from construction personnel’s amenities and lunchrooms.

During operation, waste would be generated in offices, amenities, lunchrooms and during the maintenance of plant and equipment, which would generate waste in the form of cardboard, plastics, fuels / oils, tools and other equipment consumables.

The waste impacts of the construction and operation of the Proposal were found to be minor and any impacts would be readily managed and reduced through the implementation of mitigation measures identified in Chapter 18 of this EIS. Measures to mitigate the effect of the construction waste streams will be incorporated into the Proposal’s CEMP and existing EMS and will include best practice waste avoidance and waste management where practicable.

Greenhouse gas emissions

A greenhouse gas (GHG) assessment was undertaken by Arcadis to assess the GHG impacts associated with the Proposal (Chapter 19 of this EIS). An assessment was conducted for each stage of the Proposal. In accordance with the *National Greenhouse and Energy Reporting Act 2007* Bingo's reportable emissions relate to Scope 1 and Scope 2 emissions only. Subsequently, GHG emissions that would be generated by the Proposal have been assessed as either Scope 1 (direct) or Scope 2 (indirect) emissions and quantified in relation to carbon dioxide (CO_2) and other non-CO_2 GHG emissions (reported together as carbon dioxide equivalents (CO_2-e)).

Emissions associated with construction of Stages 2 and 3 would be associated with vegetation clearing and diesel fuel from construction machinery, and would equate to approximately 2,914 tCO_2-e and 914 tCO_2-e respectively.

The operation of Stage 1 of the Proposal would generate emissions from waste transport, application of waste to land and energy use of existing on site infrastructure, and would generate approximately 7,824 tCO_2-e per annum (pa). Operation of Stage 2 would generate emissions from similar sources to Stage 1 and would generate approximately 7,681 tCO_2-e/pa. Operation of Stage 3 of the Proposal would generate emissions from diesel and electricity use and equate to approximately 3,148 tCO_2-e/pa. The annual operation of the Proposal would generate approximately 0.018 million (M) tCO_2 -e/pa, with almost half of these emissions attributed to landfill decomposition. In total, the Proposal would contribute approximately 0.014 per cent to NSW's annual emissions inventory. This does not represent a substantial impact on a State or National scale.

While the Proposal would result in an increase in direct GHG emissions generated, the recycling of materials would also result in avoided emissions as the recycled products would offset the need for new raw materials to be won. Further, high level mitigation measures will be employed to minimise the emission of GHG where feasible in accordance with the mitigation measures prescribed in Chapter 19.

Cumulative impacts

The Proposal has been assessed in the context of existing, approved and proposed developments in the surrounding area that may result in cumulative environmental impacts.

A desktop review of available government planning databases revealed five developments in the surrounding area that have the potential to interact with the construction and operation of the Proposal. These developments comprised:

- Eastern Creek Energy from Waste (SSD 8477614 and SSD 6236)
- Eastern Creek REP Mod 9 – Western Operational Area (MP06_0139-Mod-9)
- Eastern Creek REP Mod 10 – Landfill Gas Capture and Treatment Project (MP06-0139-Mod-10)
- Eastern Creek Warehouse and Distribution Facility SPP-21-00007
- Raffles Glade Eastern Creek Waste Processing Facility SPP-20-00005.

There is no linkage between the Eastern Creek Energy from Waste (EfW) (SSD 8477614) facility and the Proposal. It is noted that the EfW project is unlikely to proceed, based on the recent NSW Government announcement of the NSW Energy from Waste Infrastructure Plan. However, it has been considered by the Proposal to be conservative.

The cumulative impacts of the Proposal and the surrounding developments have been considered in relation to each of the key environmental issues identified in Chapters 8 to Chapter 19 of this EIS.

Due to the nature of the other development proposed in the area no substantial additional impacts or exceedances of criteria have been identified, particularly during operation, minimising the potential for cumulative impacts to arise. The mitigation measures identified for the Proposal and included in the Proposal design would mitigate potential cumulative construction and operational impacts to traffic and transport, noise and vibration, air quality, soils and contamination, water and hydrology and landscape and visual amenity.

Ecologically Sustainable Development

An assessment of the Proposals' consistency with the principles of Ecologically Sustainable Development (ESD) has been undertaken and has demonstrated that the four principles of ESD: the precautionary principle; inter-generational equity; conservation of biological diversity and ecological integrity; and improved valuation, pricing and incentive mechanism, have been appropriately considered and incorporated into the design, construction and operation of the Proposal (Chapter 23 of this EIS). A summary of how the Proposal addresses these principles is provided below.

- **The Precautionary Principle** - The Proposal design and all associated technical studies have been developed in accordance with a precautionary approach to minimise uncertainty and to avoid, minimise, or mitigate potential environmental and social impacts. The EIS identifies mitigation measures and environmental management procedures that would be implemented to minimise and monitor impacts which may occur as a result of uncertainties in the impact assessment. Where a level of uncertainty was identified in the data used for the assessments, a conservative worst-case scenario analysis was undertaken. Subject to the implementation of mitigation measures, the specialist studies did not identify any issues that may cause serious and irreversible environmental damage as a result of the Proposal (refer to Chapter 8 to Chapter 20 and Chapter 22 of this EIS).
- **Inter-generational equity** – The Proposal has been designed to benefit both existing and future generations through the provision of a state-of-the-art waste recovery facility, which will mitigate significant capacity constraints currently impacting the Greater Sydney region and provide advanced recycling processes to build resilience within the current network of recycling facilities. Further, the Proposal would support the diversion of waste from landfill as well as support the NSW Government's policy statement on the Circular Economy.
- **Conservation of biological diversity and ecological integrity** – The design and assessment of the Proposal has been undertaken with the aim of identifying, avoiding, minimising and mitigating impacts on biodiversity. An assessment of the potential impacts to biodiversity and associated proposed mitigation measures has been undertaken (refer to Chapter 14). The Proposal would not have a direct impact on any biodiversity values.
- **Improved valuation, pricing and incentive mechanisms** – While it is often difficult to place a reliable monetary value on the residual, environmental and social impacts of the Proposal, the value placed on avoiding and minimising the environmental impacts of the Proposal is demonstrated in the design features incorporated into the Proposal and the extent of environmental investigations that have been undertaken to inform this EIS. The approach taken for the Proposal has been to manage environmental impacts by identifying appropriate safeguards to mitigate adverse environmental effects and take up environmental enhancement opportunities. The cost of implementing these safeguards has been included in the total Proposal cost, thereby appropriately reflecting the value of environmental resources. The Proposal would facilitate the transformation of waste into products aligned to meet the requirements of a range of end markets keeping materials in use for as long as possible to maximise their value to society. Further, the Proposal addresses the Council of Australian Governments (COAG) reform package for processing waste in Australia as opposed to processing waste offshore.

Justification and conclusion

The potential environmental, social and economic impacts, both direct and cumulative, have been identified and thoroughly assessed as part of this EIS. The key environmental issues which were assessed for the Proposal, as identified in the SEARs, include: traffic and transport; noise and vibration, air quality (including odour), soils and contamination; water and hydrology; and hazards and risks.

Following examination of the key environmental issues of the Proposal it is considered that any potential impacts associated with the Proposal can be satisfactorily mitigated through a range of measures that have been identified within the EIS. In addition, the Proposal has been assessed against – and has been found to be consistent with – the priorities and targets adopted in relevant and draft State plans as well as Government policies and strategies.

The Proposal has been found to be consistent with its objectives and a strong need for the Proposal is evident in the Sydney Market. The Eastern Creek REP site is considered suitable for the development of the Proposal. The Proposal has also been compared against possible alternatives to further demonstrate the need, suitability and benefits of the Proposal to the local and wider community.

The Proposal would promote the principles of a circular economy and contribute to achieving resource recovery targeted in accordance with 20 Year Waste Strategy and the NSW Circular Economy Policy Statement – Too Good to Waste (NSW EPA, 2019). The Proposal would deliver substantial benefits in terms of providing a sustainable resource recovery facility for residents of Sydney's west, and by creating choice and competition within Sydney for resource recovery. Overall, the EIS concludes that the development proposed is in the public interest and approval is recommended.

PART A

INTRODUCTION, BACKGROUND AND PROPOSAL DESCRIPTION

1 INTRODUCTION

This EIS has been prepared on behalf of Dial-A-Dump (EC) (DADEC) Pty Ltd, (the Applicant) (as owned by Bingo Industries Pty Ltd (Bingo)) to support a State Significant Development (SSD) application in accordance with Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). DADEC are seeking approval to increase the throughput of the existing Eastern Creek Recycling Ecology Park (REP) (formerly known as the Genesis Waste Management Facility) from the current two million tonnes per annum (Mtpa) throughput by an additional 950,000 tonnes per annum (tpa) to a total of 2.95 Mtpa ('the Proposal'). The Proposal would include upgrades to internal site infrastructure such as roads and stormwater, optimising the operation of the Eastern Creek REP by improving operational efficiency and environmental outcomes.

1.1 Proposal Site and background

The Eastern Creek REP site is located at 1 Kangaroo Avenue, Eastern Creek and comprises the following lots:

- Lot 1 and part Lot 2 DP1145808
- Lot 2 DP1247691.

The Eastern Creek REP is located within the Blacktown Local Government Area (LGA) however is not zoned under the BLEP 2015 as it falls within the boundary of the *State Environmental Planning Policy (Industry and Employment) 2021* (Industry and Employment SEPP).

Bingo acquired the Eastern Creek REP site from DADI in early 2019. Bingo is currently in the process of constructing and commissioning a second materials processing centre (known as MPC2), which at 9,000 m^2 will significantly increase recycling capacity and diversion of waste from landfill across its network of recycling facilities located in the Sydney MLA.

The "Proposal Site" includes the operational area of the Eastern Creek REP and an area where minor works for the Proposal are proposed to occur within an adjacent land parcel to the Eastern Creek REP (the road reserve for Kangaroo Avenue – Lot 7 DP1200048) to accommodate upgrades to access for the Eastern Creek REP.

The Proposal Site operational area is around 54 hectares (ha). The Eastern Creek REP currently operates under approval MP06_139 (the Project Approval). MP06_139 was approved in 2009 under Part 3A (now repealed) of the EP&A Act and granted the construction and operation of a resource recovery and non-putrescible landfill facility at the former Pioneer Quarry site. The Proposal Site is currently authorised for the following activities:

- Accept up to two Mtpa of C&D (construction and demolition) and C&I (commercial and industrial) waste and landfilling of the quarry void of up to one Mtpa of non-putrescible waste (including asbestos and other non-recyclable waste), excluding residual chute waste from the material processing centre
- Operation of two advanced materials processing centres (MPC1 and MPC2) which recover recyclable material from C&D and C&I waste streams as well as utilisation of a landfill disposal chute and maintenance activities
- Crushing, grinding and separating works to process waste masonry material located in an area earmarked as the Segregated Materials Area (SMA)
- Stockpile up to 50 tonnes of waste tyres
- Stockpile up to 20,000 tonnes of green waste.

A detailed description of the existing Eastern Creek REP and approved operations is provided on Figure 1-1 and in Chapter 2.

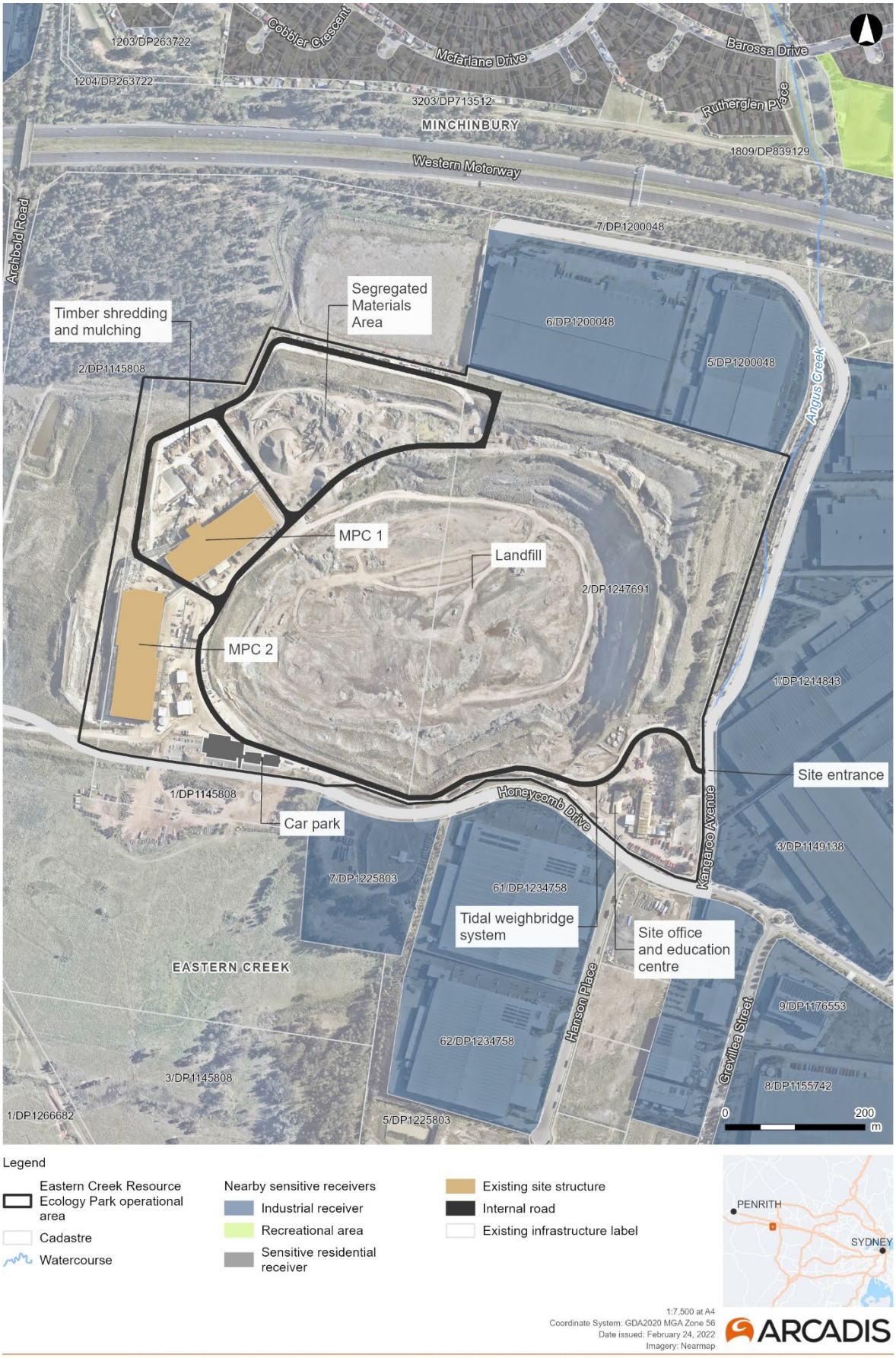


Figure 1-1: Proposal Site

1.2 Proposal overview

The Eastern Creek REP, located at 1 Kangaroo Avenue, Eastern Creek (formerly known as the Genesis Waste Management Facility) is operated by DADEC, a fully owned subsidiary of Bingo. The Eastern Creek REP currently operates under approval MP06_139. MP06_139 was approved in 2009 under Part 3A (now repealed) of the EP&A Act and granted the construction and operation of a resource recovery and non-putrescible landfill facility at the former Pioneer Quarry site. Since approval in 2009, several modifications to the Project Approval have been made (refer to Section 5.5) Most recently, Modification 10 which pertains to the installation of a landfill gas collection system and permanent landfill gas flares to support the operations of the Eastern Creek REP.

One modification to MP06_139 is also currently being prepared. Modification 9 seeks to expand the operational area of the Eastern Creek REP into part Lot 2 DP1145808.

The current approval allows for a total throughput of two Mtpa, of which up to one Mtpa may be landfilled (excluding residual chute waste). The Eastern Creek REP comprises of a number of resource recovery facilities and activities including:

- Two materials processing centres (known as MPC1 and MPC2) which predominantly process dry C&D and C&I waste
- A SMA which is principally used for the receipt, processing dispatch and stockpiling of inert construction and demolition materials, such as sand, dirt, concrete, bricks and asphalt.

Eastern Creek REP is approaching its current two Mtpa throughput limit, with this limit to be reached within the next few years. The Proposal aims to unlock the further recycling potential of the strategically significant Eastern Creek REP, which benefits from scale and its optimal location within the Sydney transport network to respond to market demand and the policies of both the NSW and Commonwealth governments for expanded and enhanced resource recovery infrastructure. The Proposal would process dry C&D and C&I waste, consistent with existing waste streams received at the Eastern Creek REP.

The Proposal would include the upgrade and construction of supporting infrastructure to optimise the current operations at the Eastern Creek REP and facilitate the increased throughput. An overview of the Proposal is provided in Figure 1-2. It is proposed to develop the Proposal in three stages:

- **Stage 1: Initial throughput increase:** Stage 1 would comprise 500,000 tpa of additional throughput to be received at the Eastern Creek REP to enhance resource recovery outcomes by increasing utilisation of on site processing capabilities
- **Stage 2: Internal site optimisation:** Stage 2 would facilitate the remaining throughput increase (an additional 450,000 tpa of the total 950,000 tpa proposed) to be received and processed across the Eastern Creek REP and operation of one of two proposed new exit connections[1]. Stage 2 would include:
  - The construction and operation of a new exit connection to the Honeycomb Drive extension and installation of two associated outbound weighbridges and a dedicated weighbridge office
  - The construction and operation of a new exit connection to Kangaroo Avenue in the northeast of the Proposal Site and the installation of two associated outbound weighbridges and a dedicated weighbridge office
  - Upgrade of existing internal roads as required
  - Earthworks for Stage 3 site establishment
  - Additional carparking and amenities.

[1] Only one of the two proposed exit connections would be required to be operational to secure the additional 450,000 tpa associated with this stage.

- **Stage 3: Installation of supporting infrastructure:** Stage 3 would comprise the redevelopment of the northeastern corner of the Proposal Site. This would comprise:
  - Construction and operation of a Site Workshop (relocating this activity from elsewhere within the Proposal Site to a dedicated enclosed facility)
  - Construction and operation of a skip bin Maintenance and Manufacturing Workshop
  - Installation of landscaping, signage, security fencing and finishing works.

The Proposal would provide the Greater Sydney Region with crucial recycling infrastructure to help communities divert more waste from landfill and close the resources loop. The Proposal is estimated to generate 40 FTE jobs during the construction phase and an additional 70 FTE jobs once operational for the Western Sydney region, providing employment opportunities for residents of Western Sydney where there are currently 220,000 more workers than jobs available.

The Proposal is considered SSD under Clause 23 (waste and resource management facilities) of Schedule 1 of the Planning Systems SEPP which refers to:

> *(3) Development for the purpose of resource recovery or recycling activities that handle more than 100,000 tonnes per year of waste*

As a result, this EIS is seeking approval, under Part 4, Division 4.7 of the EP&A Act for the construction and operation of the Proposal.

A Scoping Report for the Proposal was submitted to the DPE in November 2020, which sought an increase in throughput of 1.5 Mtpa. SEARs for the Proposal with the 1.5Mtpa throughput increase were issued in December 2020. The SEARs were reissued twice due to administrative changes, in April 2021 and September 2021. A throughput increase of 1.5Mtpa had originally been sought based on the latent capacity available at the Eastern Creek REP. In June 2021, DPE released the 20 Year Waste Strategy which outlines the future needs of Sydney and NSW over the coming years. In response to the Strategy and internal reviews of Bingo's network, Bingo is carrying out long term planning to further identify opportunities to maximise Sydney's resource recovery. While this may include future throughput and / or facilities within Eastern Creek REP, a lower throughput increase, of 950,000 tpa, has been adopted at this point in time. The SEARs were updated and reissued to reflect the change in throughput in October 2021. This EIS has been prepared in accordance with the SEARs issued on 1 October 2021.

A detailed description of the Proposal is provided in Chapter 3

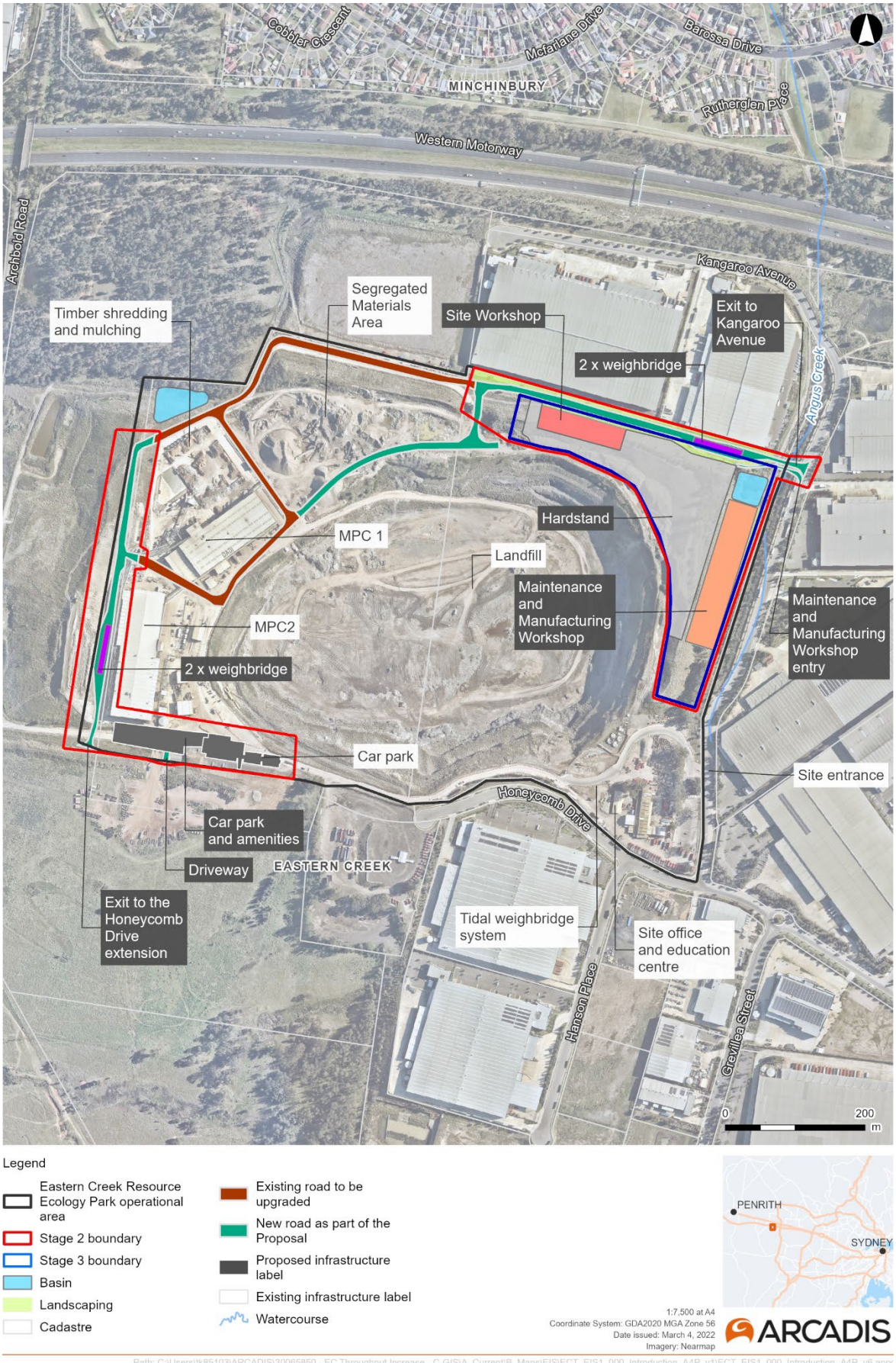


Figure 1-2: The Proposal

1.3 Proposal objectives

The objectives of the Proposal are to:

- Enhance the operational efficiency of the Eastern Creek REP through improvements in internal design and development of supporting infrastructure
- Support the ongoing investment in strategic infrastructure by the NSW and Commonwealth Governments through providing recycled products for major transport and social infrastructure projects
- Contribute to the State achieving resource recovery target of 80% by 2030 from all waste streams under the 20-Year Waste Strategy (DPE, 2021a) through increasing quantities of waste diverted from landfill
- Increase diversion of C&D and C&I waste from non-putrescible landfill in Greater Sydney, which the 20 Year Waste Strategy (DPE, 2021a) estimates will exhaust in 2028
- Harness the state-of-the-art advanced waste processing capacity of the MPC2 facility (to be operational quarter two or 2022) to respond to significant C&I processing capacity shortfalls in the Sydney MLA and in doing so supporting enhanced resource recovery outcomes
- Promote a circular economy hub and reduce disposal costs for process residuals by diverting material from landfill and keeping products and materials in use by governments and industry in accordance with the 20 Year Waste Strategy and the NSW Circular Economy Policy Statement – Too Good to Waste (NSW EPA, 2019)
- Contribute to the economy in Western Sydney by creating direct and indirect skilled employment opportunities, both during construction and long-term
- Manage potential impacts associated with the construction and operation of the Proposal in an environmentally and socially responsible manner.

1.4 The Applicant

The Applicant for the Proposal is DADEC, a fully owned subsidiary of Bingo. DADEC (as owned by Bingo) currently owns and operates the Eastern Creek REP and would be responsible for operation of the Proposal.

Bingo has been operating since 2005 and is an industry leader in waste management and resource recovery in the NSW and Victorian markets. Through investment in recycling and resource management infrastructure, Bingo assists customers, governments and communities to move towards a truly circular economy by closing the resources loop.

Bingo currently operates 16 waste management facilities in Australia with a combined network capacity of 4.6 Mtpa. In NSW, Bingo manages a significant proportion of the Sydney basin C&I and C&D waste streams through the operation of a network of critical waste management infrastructure including transfer stations, advanced recycling facilities and landfills located at Patons Lane and Eastern Creek. Bingo's network of facilities in NSW and Victoria incorporates advanced waste management technologies to achieve resource recovery rates in excess of 75 per cent and increased waste diversion from landfill.

Bingo also leverages its extensive network of waste facilities with a fleet of more than 240 collection vehicles across NSW, providing a fully integrated waste management network, from source to processing and advanced resource recovery and recycling. Bingo is leading the push for a 'waste free Australia' through a recycling-led solution, investment in advanced resource recovery technology and continuous innovation to enhance sustainable outcomes for the closed loop management of waste in NSW.

1.5 Structure of this EIS

The structure of this EIS is as follows:

PART A: Introduction, background and Proposal description

- **Executive summary:** Provides a brief overview of the Proposal, key environmental assessment results and an outline of the proposed environmental and social mitigation measures
- **Chapter 1 – Introduction:** Provides an introduction of the Proposal and the EIS, including Proposal objectives, site history, and previous approvals.
- **Chapter 2 – Site context:** Provides a summary of the existing Proposal Site, its location in a regional and local context and existing operations of the Proposal Site
- **Chapter 3 – Proposal description:** Includes a description of the Proposal including built form, construction methodology and operational procedures
- **Chapter 4 – Proposal need, alternatives and justification:** Provides a discussion on the need for the Proposal having regard to strategic justification, relevant legislation, plans and policy and also provides alternatives to the design and location of the Proposal
- **Chapter 5 – Statutory planning and approvals:** Provides a summary and assessment of the Proposal having regard to relevant statutory legislation and plans at a Commonwealth, State and Local Government level
- **Chapter 6 – Consultation:** Provides a summary of the consultation (public, stakeholder and government agencies) which has been undertaken to date for the Proposal

PART B & PART C: Assessment of key issues and other issues

- **Chapter 7 – Environmental scoping:** Provides an assessment of the potential environmental impacts of the Proposal and identifies issues for further assessment
- **Chapters 8 to 20 – Environmental assessment chapters:** Provides a discussion on the existing environment conditions and an assessment of the potential environmental issues (identified in the SEARs) for the Proposal including traffic and transport, noise and vibration, air quality, soils and contamination, water and hydrology, hazards and risks, biodiversity, Aboriginal heritage, non-Aboriginal heritage, greenhouse gas emissions, waste management, landscape and visual impacts, social and economic and cumulative impacts.

PART D: Risk assessment, mitigation measures and conclusion

- **Chapter 21 – Environmental risk analysis:** Provides an analysis of the likely environmental risks and assigns a rating before and after the implementation of mitigation measures
- **Chapter 22– Summary of mitigation measures:** Includes a summary of the mitigation measures identified in Chapters 8 to 20 to minimise any adverse impact of the Proposal on the surrounding environment
- **Chapter 23 – Ecological Sustainable Development:** Includes a summary of how the Proposal aligns with the principles of Ecological Sustainable Development (ESD)
- **Chapter 24 – Justification and conclusion:** Provides a justification and conclusion of the Proposal
- **Chapter 24.1 – References**

The following appendices are included in the EIS:

Appendix	
A	SEARs checklist
B	EP&A[2] Regulation checklist
C	Owner's consent
D	Authorised waste types
E	Concept design drawings
F	Architectural drawings
G	CIV report
H	Community and Stakeholder Engagement Strategy and Outcomes Report
I	Traffic Impact Assessment
J	Noise and Vibration Impact Assessment
K	Air Quality Impact Assessment
L	Human Health Risk Assessment
M	Historic Aerial Imagery
N	Surface Water Impact Assessment
O	Fire Safety Strategy Report
P	Biodiversity Development Assessment Report
Q	Aboriginal Heritage Due Diligence Assessment
R	Landscape Plan
S	Project Approval

[2] *Environmental Planning and Assessment Regulation 2000*

2 SITE DESCRIPTION

2.1 Introduction

The Eastern Creek REP key operational area comprises two parcels of land totalling around 54 ha at 1 Kangaroo Avenue, Eastern Creek (Lot 1 DP1145808 and Lot 2 DP1247691). The Eastern Creek REP also extends into part of Lot 2 DP1145808, for supporting / ancillary stormwater infrastructure. In addition, a standalone modification (Modification 9) to MP 06_0139 (the Project Approval) is currently in preparation for relocation and enclosure of existing approved activities to this area. The Eastern Creek REP is shown on Figure 2-1. Minor works for the Proposal are proposed to occur within an adjacent land parcel to the Eastern Creek REP (the road reserve for Kangaroo Avenue – Lot 7 DP1200048). The Proposal Site includes the Eastern Creek REP operational area (including a portion of Lot 2 DP1145808) and an area where minor works for the Proposal are proposed to occur within an adjacent land parcel to the Eastern Creek REP (the road reserve for Kangaroo Avenue – Lot 7 DP1200048) to accommodate upgrades to access for the Eastern Creek REP.

The Eastern Creek REP is located within the Blacktown LGA however is not zoned under the *Blacktown Local Environmental Plan 2015* (BLEP 2015) as it falls within the boundary of the Industry and Employment SEPP.

This section provides a description of the Eastern Creek REP and its history and addresses the SEARs presented in Table 2-1.

Table 2-1 SEARs (site suitability)

SEARs	Where addressed
General	
The EIS must include a: • Detailed description of the development, including: – an accurate history of the site, including existing or approved operations and development consents	Section 2.3 (Eastern Creek REP site history) Section 2.7 (existing / approved Eastern Creek REP site features) Section 2.7 (existing / approved Eastern Creek REP operations) Section 5.5 (current development consents)
Suitability of the site	
• A detailed description of the history of the site, including the relationship between the proposed development, the existing facility and all development consents and approved plans previously and/or currently applicable to the site	Section 2.3 (Eastern Creek REP site history) Section 2.7 (existing / approved Eastern Creek REP site features) Section 2.7 (existing / approved Eastern Creek REP operations) Section 5.5 (current development contents) Section 3.3.1 and Section 3.5.1 (interaction between Proposal and the existing Eastern Creek REP)

Figure 2-1 Eastern Creek Recycling Ecology Park (existing)

2.2 Eastern Creek REP site history

During the 1800s, the Eastern Creek REP site was used for both agricultural and breccia quarrying purposes. The quarrying activities had expanded by the 1930s and were then operated by the Ray Fitzpatrick Quarriers in the 1950s. Quarrying activities continued until September 2006, with the final quarry void estimated to be 12 million cubic metres (m^3).

In November 2009, DADI acquired the Eastern Creek REP site and gained approval for the construction and operation of the Genesis Xero WMF (now named the Eastern Creek REP) (MP 06_0139), comprising a resource recovery facility and non-putrescible landfill with a material handling capacity of 700,000 tpa. The WMF commenced operations in 2012.

Bingo acquired DADI in March 2019, including all its NSW waste and recycling assets. Bingo took over the operation of the Eastern Creek REP following completion of the acquisition process.

The Eastern Creek REP was originally approved (MP 06_0139) under Part 3A (now repealed) of the EP&A Act in 2009 (Project Approval). Following the repeal of Part 3A of the EP&A Act on 1 October 2011, the Project Approval was subject to the transitional arrangements provided by the *Environmental Planning and Assessment Regulations 2000*. The transitional arrangements provided by EP&A Regs have now ceased, and the Project Approval was transitioned to an SSD approval on 2 October 2020.

Since the approval of MP 06_0139 in 2009, nine modification applications have been submitted, eight of which were approved (most recently in March 2022) and one was withdrawn. One further modifications is currently being sought comprising a modification to expand the operational area of the Eastern Creek REP into part Lot 2 DP1145808 (Mod 9 MP 06-0139) and relocation of existing approved activities. Modification 9 forms part of a separate project with its own assessment and approval process. A scoping report for this modification was lodged with DPE in September 2021, and the SEARs for the environmental assessment were issued to BINGO on 21

The Proposal would constitute a standalone SSD application as it is not considered to be ‘substantially the same development’ or of ‘minimal environmental impact’ and cannot be considered a modification to the original Eastern Creek REP Project Approval.

2.3 Regional context

The Eastern Creek REP is located within the central western suburbs of Sydney within the Blacktown LGA and is approximately 36 km west of the Sydney CBD, 18 km west of Parramatta and 12 km east of Penrith. Access to the Sydney orbital road network and the National Road Network via the M4 Western Motorway and Westlink M7 is provided via interchanges approximately two kms to the east of the Proposal Site.

The Eastern Creek REP’s strategic location, central to Greater Sydney and in close proximity to surrounding urban motorway connections, provides efficient connectivity to Bingo’s broader resource recovery network.

The Eastern Creek REP is located in western Sydney within an area being developed for commercial and industrial uses under the Industry and Employment SEPP . The Eastern Creek REP falls under the requirements of the *Eastern Creek Precinct – Employment Lands Precinct Plan* (Precinct Plan) prepared under the repealed *State Environmental Planning Policy No 59-Central Western Sydney Economic and Employment Area* (SEPP 59).

2.4 Local context and surrounding land uses

The Eastern Creek REP is located within the Eastern Creek industrial precinct / M7 business hub and is surrounded by a large range of industrial developments, primarily to the east. These industrial developments include Techtronic Industries, H&M distribution warehouse, Kuehne + Nagel (Australia) Pty Ltd warehouse, Kmart distribution centre, Bunnings distribution centre and DB Schenker warehouse. To the west of the Eastern Creek REP is the Fulton Hogan asphalt batching plant and a vacant area of undeveloped land.

The Eastern Creek REP is bounded by industrial developments which border the Western Motorway (M4) to the north, Kangaroo Avenue to the east and Honeycomb Drive to the south. A planned future Archbold Road extension will run parallel to the western boundary of the Eastern Creek REP (TfNSW, 2019). The Eastern Creek REP is enclosed by commercial and industrial buildings to the immediate north, east and south. The closest residential receivers are located across the M4 Motorway approximately 400 m to the north in the suburb of Minchinbury and approximately 1.2 km west in the suburb of Erskine Park. Nearby sensitive receivers are shown on Figure 2-1.

Existing access to the Eastern Creek REP is from Kangaroo Avenue which connects to Honeycomb Drive and then Wonderland Drive and Wallgrove Road to the south and provides access to the broader arterial road network including the M4 and M7 motorways.

The surrounding area has generally low relief with no major hills or ridgelines, other than amenity berms adjacent to the landfill that were created from quarry overburden. Angus Creek, a small ephemeral drainage line, is located immediately east of the Eastern Creek REP (between the landfill area and Kangaroo Avenue) which drains to the north into Eastern Creek. There are several other ephemeral drainage lines west of the Eastern Creek REP which drain towards Ropes Creek, which is approximately 700 m west of the Eastern Creek REP.

The majority of the Eastern Creek REP is cleared with little vegetation remaining. Remaining vegetation is concentrated along the eastern boundary of the Eastern Creek REP with another small pocket at the southern boundary of the Eastern Creek REP. A conservation area is located to the northwest and outside of the Eastern Creek REP boundary, consisting of an 11 ha remnant patch of Shale Plains Woodland, a sub-community of Cumberland Plain Woodland. Cumberland Plain Woodland is an endangered ecological community (EEC) under the BC Act and the Commonwealth EPBC Act. The conservation area would not be impacted by the Proposal (refer to Chapter 14).

2.5 Legal description, ownership and consent

The Project Approval for Eastern Creek REP (MP 06_0139) specifies that the land to which the consent applies comprises ‘Lot 1 and Lot 2 DP1145808, and Lot 2 DP1247691, Eastern Creek in the Blacktown local government area’. The landfilling and resource recovery activities carried out across the Eastern Creek REP are contained to Lot 1 DP1145808 and Lot 2 DP1247691 (the operational area), with ancillary infrastructure (being stormwater detention basins and amenity berms) located within Lot 2 DP1145808. Subdivision of Lot 2 DP1145808 into multiple lots is currently being pursued. Following approval of the subdivision application, the Eastern Creek REP would be contained to Lot 1 DP1145808, Lot 2 DP1145808 (as subdivided) and Lot 2 DP1247691. The subdivision of this land would be supported by the proposed extension to Honeycomb Drive from its western extent (currently a cul-de-sac located to approximately 420 m to the west of the intersection with Kangaroo Avenue).

The Proposal (as described in Chapter 3) would impact a number of lots, including two lots not owned by Bingo. A summary of potential lots affected by the Proposal is provided in Table 2-2 and Table 2-3. Landowners consent is provided in Appendix C.

Table 2-2: Lots potentially impacted by the Proposal

Lot	DP	Current land use	Ownership	Potential to be directly impacted by the Proposal
2	1247691	Forms part of the operational area of the Eastern Creek REP	Bingo Industries Pty Ltd	Y
7	DP1200048	Kangaroo Avenue and Anzac Creek	Australand C&I Land Holdings Pty Limited and Thaquarry Pty Ltd	Y
1	1145808	Forms part of the operational area of the Eastern Creek REP	Bingo Industries Pty Ltd	Y
2	1145808	Largely vacant land and a Conservation area of Cumberland Plain Woodland	IRM Property Group No 2 Pty Ltd	Y
Proposed to be subdivided as outlined in Table 2-3 below.				

Table 2-3: Proposed subdivision of DP1145808 (as per DA-21-01557)

Lot	DP	Current land use	Ownership	Potential to be directly impacted by the Proposal
11	1145808	Forms part of the operational area of the Eastern Creek REP	Bingo Industries Pty Ltd	Y
12	1145808	Conservation area of Cumberland Plain Woodland Vacant area subject to development application (SPP-21-0007) for the construction of a warehouse	IRM Property Group No 2 Pty Ltd.	N
2	1145808	Ancillary/supporting infrastructure for the Eastern Creek REP	IRM Property Group No 2 Pty Ltd.	Y
18	1145808	Vacant land earmarked for development of the Honeycomb Drive extension	IRM Property Group No 2 Pty Ltd.	Y
13	1145808	Predominantly vacant land	IRM Property Group No 2 Pty Ltd.	N
14	1145808	Fulton Hogan batching plant	Hanson Australia Pty Ltd	N

2.6 Eastern Creek REP site features and built form

This section provides a description of the physical elements and built form of the Eastern Creek REP. Section 2.7 provides a description of the operational details of the Eastern Creek REP. An overview of existing infrastructure at the Eastern Creek REP site is presented in Figure 2-2.

The key features of the Eastern Creek REP are:

- The landfill (former quarry void)
- Resource recovery facilities:
  - Materials Processing Centre 1 (MPC1)
  - Materials Processing Centre 2 (MPC2)
- Segregated Materials Area (SMA).

In addition to the waste management infrastructure across the Eastern Creek REP, operations are supported by a range of ancillary / supporting features including other buildings such as a maintenance shed, internal road network and water management infrastructure.

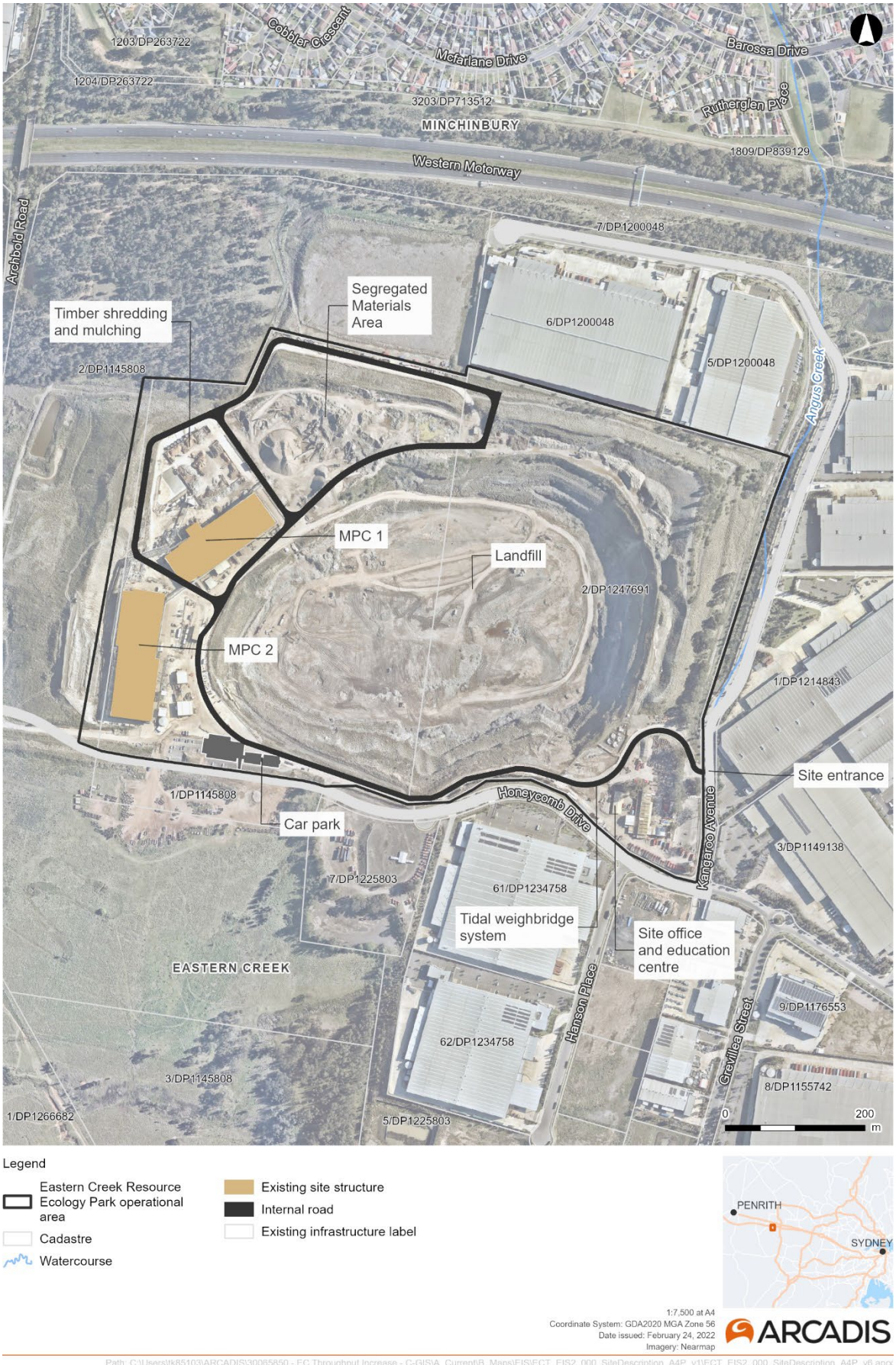


Figure 2-2 Existing site infrastructure

2.6.1 Landfill

The central portion of the Eastern Creek REP comprises the landfill (the former quarry void). The landfill has a total void area of more than 12 million m^3 with around half of this void space estimated to be remaining. The Project Approval (MP 06_0139) permits the disposal of up to 1 Mtpa of non-putrescible waste excluding any residual waste from the Materials Processing Centres or Pre-Sort Enclosure (including asbestos and other non-recyclable waste) within the landfill (refer Section 2.7). Key elements of the landfill include:

- The former quarry void progressively being filled with waste
- A conveyor directing residual waste from the resource recovery facilities directly into the landfill
- Stockpiled daily cover material
- An access road and internal road network allowing direct access of waste drop-off vehicles to the active tip face
- A wheel wash for all exiting vehicles (located at the top of the access / egress road)
- A landfill gas management system
- Leachate management infrastructure and water management system,

2.6.2 Resource recovery facilities

The Eastern Creek REP contains two key resource recovery facilities; namely MPC1 and, the newly constructed, MPC2. MPC1 and MPC2 are located on the western side of the landfill, in the south-western corner of the Eastern Creek REP. The key built form elements of the two facilities are described in this section.

Materials Processing Centre 1 (MPC1)

MPC1 comprises a large single span warehouse style structure with a footprint of approximately 8,500 m^2. Directly west of the MPC1 building is the Eco Products processing area. Including the Eco Product processing area, the MPC1 resource recovery area comprises a total area of around 1.4 ha.

The MPC1 building is a large, corrugated steel building set on a concrete slab, and is typical of surrounding industrial buildings within the Eastern Creek industrial precinct / M7 business hub. Access to MPC1 is via roller shutter doors on the southeastern and southwestern sides of the shed, which provide access to the tipping floor. The northwestern side of MPC1 contains fixed processing plant and equipment used to separate and process waste into separate commodity products. From the processing plant conveyors transfer product outside the building where they are stockpiled for transfer and further processing in the SMA and Eco Products processing areas. Residual waste is transferred directly by conveyor to the landfill.

Vehicles carrying segregated waste loads tip directly at the respective stockpiles in the Eco Products processing area which is accessible via the internal road network abuts the area. Recoverable timber waste is stored in segregated stockpiles prior to being chipped and stockpiled in windrows for blending and or testing for resale.

Materials Processing Centre 2 (MPC2)

Construction of MPC2 was undertaken in 2021. MPC2 is a large warehouse style structure, approximately 9,000 m^2 in area. The building is split into two main areas, comprising a tip floor area and a processing area. The northern portion of the facility comprises the tip floor. Holding pits are provided on the northern and southern ends of the tip floor. A series of roller shutter doors provide access from the north for vehicles (walking-floor trailers) to reverse and unload directly into the northern tip pit. A further series of roller shutter doors along the northeastern wall of MPC2 provide access for other vehicles to enter the main area of the tip floor to deposit waste (refer Section 2.7.3).

The southern half of the MPC2 building contains fixed advanced recycling plant and equipment. Waste is fed into hoppers adjacent to the holding pits and then transferred via conveyor to the southern end of the building where it is fed into the processing plant and equipment. Recycled product outputs from MPC2 are transferred by conveyors to either the timber yard, SMA, the storage bays on the eastern boundary of MPC2 or (in the case of residual waste) to the landfill via the landfill chute.

The facility is supported by ancillary infrastructure, including:

- Fire suppression infrastructure, including an external 680 kilolitre (kL) sprinkler tank and sprinkler pump room
- Dust suppression system, including bag filters, misting sprays and foam units.
- Connection to services and utilities
- An external concrete hardstand area for access and manoeuvring
- Internal and external conveyors and awnings
- Amenities and office areas.

Picture 2-1 MPC2

2.6.3 Segregated Materials Area

The SMA is located in the northwestern corner of the Eastern Creek REP and covers an area of approximately five ha. The SMA has minimal built form, and the area largely comprises stockpiles of recovered product, such as sand, dirt, concrete, brick, tiles and asphalt. Fixed and mobile equipment (e.g., crushing, sorting and mixing equipment) are also located within the SMA. All stockpile heights are governed by the Project Approval (MP 06_0139) and are maintained in accordance with all current legislative and regulatory requirements.

Picture 2-2 Example of finished stockpiled product within the SMA

2.6.4 Ancillary infrastructure and features

In addition to the resource recovery buildings (MPC1 and MPC2), a number of other ancillary and supporting features are present across the Eastern Creek REP, including:

- A site office and education centre located in the southeastern corner of the Eastern Creek REP to the left of Eastern Creek REP site entrance
- A site office, small maintenance shed and workshop shed located to the east of MPC2
- An open span weighbridge structure
- A hardstand bin storage area located to the south of the Eastern Creek REP site entrance
- Amenity berms along portions of the northern, western and eastern perimeters
- Fencing and signage
- Refuelling station
- Electrical substations
- Landfill gas collection infrastructure and permanent flare (the permanent flare was approved as part of Modification 10 MP 06_0139)
- Site security system
- Leachate treatment plant
- Car parking

2.6.5 Site access, weighbridges and internal road network

The Eastern Creek REP is accessed via a private access road off Kangaroo Avenue (known as DADI Drive), approximately 150 m north of the intersection of Kangaroo Avenue and Honeycomb Drive.

Approximately 185 m from the Eastern Creek REP entrance, the access road widens and six tidal weighbridges[3] (i.e., they can be designated as weigh-in or weigh-out bridges pending operational needs) provide access into the broader operational area. An access-controlled passing lane is provided around the weighbridges to allow light vehicles and vehicles passing through the Eastern Creek REP to bypass the weighbridges (predominantly comprising vehicles accessing the Fulton Hogan asphalt batching plant located to the west of the Eastern Creek REP).

The main site access road from the weighbridges circumvents the southern edge of the landfill and provides direct access to MPC1 and MPC2. Currently an entry road is provided into the landfill area to the north of MPC1. As landfilling is a progressive activity the landfill access road may be periodically shifted in response to landfilling requirements. A new landfill access point is planned for the southwestern portion of the landfill void from DADI Drive to enable continued landfill access as landfilling progresses. Depending on progress in implementation of the approved landfill filling plan this may occur prior to construction of the Proposal. Internal roads provide access in and around the SMA, MPC1, MPC2 and Eco Products processing area.

Picture 2-3 Eastern Creek REP access point off Kangaroo Avenue

2.6.6 Car parking

Car parking for the Proposal Site is primarily provided for in the main site carpark to the southeast of MPC2 (approved through Mod 8 MP06-019). Access to this carpark is currently provided off DADI drive. Additional car parking for light vehicles is provided in a smaller carpark to the south of the Eastern Creek REP entrance which can accommodate around 60 light vehicles.

2.6.7 Water management infrastructure

The main surface water management strategy is to separate clean surface water from ‘dirty’ surface water and leachate, thus preventing cross contamination and allowing clean water to be used on site or discharged to the environment. This strategy helps prevent surface water infiltration into the landfill, reducing the quantity of leachate generated and requiring treatment. On site water infrastructure includes:

[3] Currently being constructed as part of the recently approved Modification 8 works.

- Two detention (OSD) basins with capacity to store surface water flows from both the pit and operational areas and to contain runoff for the 1 in 100 year rainfall event
- A gross pollutant trap (GPT) located south of the existing MPC2 building. This GPT provides primary treatment of surface water runoff from the MPC2 building, car park and adjacent hardstand areas prior to discharge towards the existing southern OSD basin. A second GPT is provided to the west of MPC1
- A sump, bunding and site grading which allows runoff within the landfill pit to be separated into stormwater and leachate. This system minimises clean surface water flows into the active landfill area therefore reducing overall creation of leachate
- Sediment control measures around the stormwater discharge point including a check dam and double layer of geotextile-wrapped filter bales
- Separately allocated and bunded refuelling location to minimise risk of pollutants from spills associated with refuelling
- Established groundwater quality monitoring points (boreholes) under EPL 13426 to continually monitor and test water quality.

An overview of existing stormwater management infrastructure is provided in Figure 2-3.

Potable water for the Eastern Creek REP is supplied via a connection to Minchinbury's reticulated water supply. Recycled / reclaimed water is used for dust suppression, irrigation, wheel wash and toilet flushing (estimated to be 64,970 kL/annum). This water is supplied from captured roof water and from stormwater captured and treated on site.

Details regarding landfill leachate management is provided in Section 2.7.12.

Figure 2-3 Existing stormwater management infrastructure

2.6.8 Fire management infrastructure

Fire systems within the Eastern Creek REP comprise of the following:

- A 680 KL sprinkler tank
- Fire hydrants and sprinkler boosters
- External fire hydrants
- External fire hose reels
- Thermo imaging to provided early detection for hotspots
- Fire appliance hardstand and manoeuvring area
- Emergency exit points.

MPC2

Fire management infrastructure for MPC2 has been designed in consultation with Fire and Rescue NSW (FRNSW) in accordance with the *NSW Fire & Rescue Fire Safety Guideline – Fire Safety in Waste Facilities* (February 2020).

MPC2 comprises two sections, the tip floor and waste processing area. An automatic sprinkler system has been installed within MPC2 including an external 680 KL sprinkler tank and sprinkler pump room facility. A remote operated water monitor system capable of providing up to 4,000 Lpm at each pit is also provided within the tipping floor area. Thermal camera systems provided within the tipping floor area detect hotspots within the stockpile and activate the water monitor system. The sprinkler system in the building is connected to an alarm system to provide notification of a fire.

To mitigate the risk associated with fire spread on the external conveyors, the underside of the conveyors are sprinkler protected along the extent of conveyors which attach to MPC2. Deluge protection is also provided to mitigate against spread along the conveyors to MPC1.

Attack hydrants are located around the perimeter of the building as well as fall back hydrants located within 70 m of the attack hydrants that are located under the external conveyors.

Two 6 m deep holding pits are located to the north and south of the tipping floor surrounded by 2 m high walls. The majority of waste stored within MPC2 is located in two 6 m deep holding pits which are located to the north and south of the tipping floor surrounded by 2 m high walls. These are located approximately 50 m apart minimising the likelihood of fire spread and providing separation which allows for firefighting intervention.

2.7 Eastern Creek REP existing operations

2.7.1 Overview

The construction and operation of a RRF and General Solid Waste (GSW) non-putrescible landfill at Eastern Creek REP were approved under the original Project Approval (MP 06_0139) in 2009. Following subsequent modifications up to and including Modification 8 (approved March 2021), the Eastern Creek REP is now authorised for the following activities:

- Accept up to two Mtpa of C&D and C&I waste and landfilling of the quarry void of up to 1 Mtpa of non-putrescible waste (including asbestos and other non-recyclable waste), excluding residual chute waste from the materials processing centres
- Operation of MPC1 and MPC2 which recover recyclable material from C&D waste and C&I waste streams as well as utilisation of a landfill disposal chute and maintenance activities
- Crushing, grinding and separating works to process waste material located in an area earmarked as the SMA
- Stockpile up to 50 tonnes of waste tyres
- Stockpile up to 20,000 tonnes of green waste.

At the time of writing there is one additional modifications was being prepared for the Eastern Creek REP (refer to Section 2.2). Modification 10 for the installation of a permanent landfill gas flare to provide a permanent solution to managing landfill gas at Eastern Creek REP has been recently approved in March 2022.

2.7.2 Waste types and volumes

As noted in Section 2.7.1, the Eastern Creek REP is currently approved to process up to two Mtpa of non-putrescible (C&D and C&I) waste, including landfilling up to one Mtpa (excluding residual chute waste). Section 2.6.1 to 2.6.3 describe the key waste infrastructure areas in operation within the Eastern Creek REP. The nature and volume of waste processed within each area is dependent on market conditions at any given time and can fluctuate due to external factors (for example the 2019/2020 bushfires led to a spike in waste volumes being diverted to the landfill).

Indicative waste types and volumes received at the existing Eastern Creek REP are described in Table 2-4. In some cases, waste will pass through more than one piece of waste management infrastructure within the Eastern Creek REP (e.g., waste received at MPC1 may end up as residual waste deposited within the landfill). As such the cumulative total of waste processed through the different areas amounts to more than two Mtpa. However, no more than the approved limit is received through the Eastern Creek REP gate. Importantly, where less than one Mtpa is received at the landfill surplus capacity within the total limit would be available for apportionment to recycling / resource recovery facilities (i.e., MPC1, MPC2 and the SMA). A flowchart outlining at a conceptual level the existing waste management process for arriving waste at the Eastern Creek REP is provided in Figure 2-4.

A detailed list of the authorised waste types approved for receival and processing at the Eastern Creek REP and provided at Appendix D.

Table 2-4 Waste volumes and types (existing)

Waste management infrastructure	Typical waste types	Typical waste source	Indicative waste volume (p/a)
Landfill	• Residual mixed waste	• MPC1 and MPC2	150,000 – 250,000 tpa
	• Residual waste (C&D and General Solid Waste (non-putrescible)	• Third party direct deliveries	Up to 1 Mtpa*

Waste management infrastructure	Typical waste types	Typical waste source	Indicative waste volume (p/a)
	• Contaminated soil (including asbestos)	• Bingo fleet direct deliveries • Transfer stations and Resource Recovery Centres (RRCs) (residuals)	
MPC1	Mixed or co-mingled C&D and C&I waste consisting of metals, brick, concrete, plasterboard, soil, aggregates, plastics and a range of building and demolition wastes.	• Third party direct deliveries • Bingo fleet direct deliveries • Transfer stations and RRCs	300,000 – 400,000 tpa
MPC2	Co-mingled C&I waste, and light C&D waste consisting of plastics, ferrous and non-ferrous metals, glass, soils and brick and concrete, and natural timbers.	• Third party direct deliveries • Bingo fleet direct deliveries • Transfer stations and RRCs	300,000 – 400,000 tpa[+]
SMA	C&D waste including: • Bricks • Concrete • Asphalt • Aggregate • Soil • Timber (timber storage yard) • Tyres (tyre stockpile area)^	• MPC1 and MPC2 • Third party direct deliveries • Bingo fleet direct deliveries • Transfer stations and RRCs	200,000 – 350,000 tpa

**excluding residual chute waste*
[+]at time of writing MPC2 was not yet fully operational
^Approved activity under MP06_0139 but not currently being undertaken

Recovered product outputs

A number of product streams are derived from resource recovery activities within MPC1, MPC2 and the SMA. These include but are not limited to:

- Aggregates
- Brick
- Concrete
- Plasterboard
- Mulch
- Shredded timber
- Soils
- Ferrous and non-ferrous metals
- Paper and cardboard
- Plastics

Product streams are on-sold to third parties for use off site or further resource recovery.

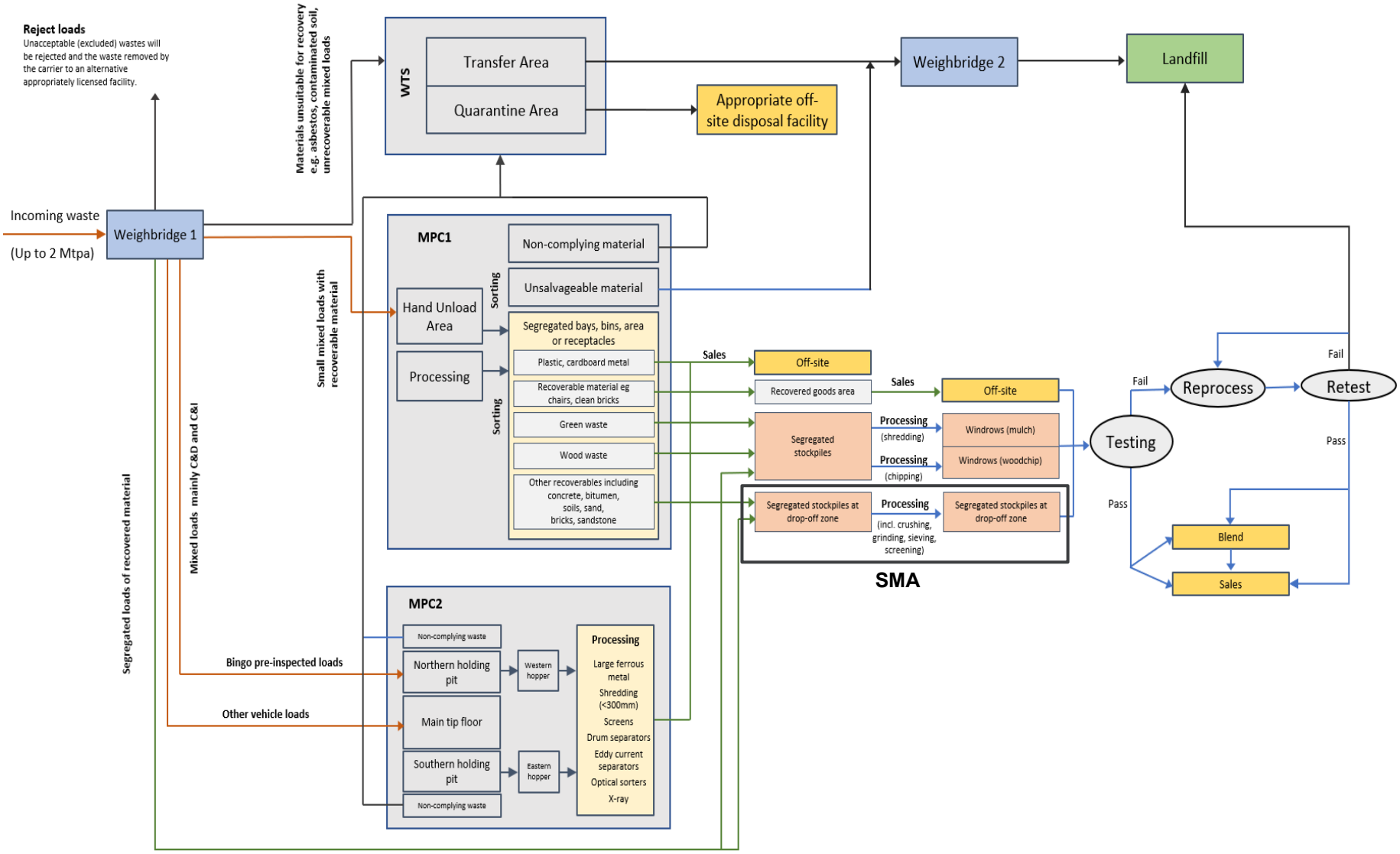


Figure 2-4 Existing waste management flowchart

2.7.3 Waste disposal, processing and resource recovery

Waste received at the Eastern Creek REP is directed to one of four destinations for either processing (recycling / reuse) or disposal (landfill). Initially, the load is received by truck at the weighbridges upon entering the Eastern Creek REP where it is weighed, inspected and assigned an internal destination. Waste suitable for recycling is directed to either the MPCs (if comingled) or SMA for crushing and screening. Waste that is unsuitable for recovery is directed to the landfill.

A flowchart outlining at a conceptual level the existing waste management process for arriving waste at the Eastern Creek REP is provided in Figure 2-4. Details regarding the process at each of the waste management infrastructure areas at the Eastern Creek REP is provided in the sections below.

Landfill

Arriving waste directed to the landfill is only allowed for approved third parties or Bingo's own collection fleet and is categorised as either:

- GSW (non-putrescible),
- Asbestos waste, which could be wrapped asbestos (sheeting), asbestos soil and C&D waste containing asbestos.

Residual waste from the MPCs or SMA that cannot be recycled or reprocessed is also sent to landfill. Residual, non-recyclable waste from the MPCs is transferred to the landfill through the landfill disposal chute, via enclosed conveyors.

Waste material for landfilling is deposited at the base of the landfill and pushed into place prior to being compacted by a steel wheeled landfill compactor

The waste is covered progressively. Therefore, only a minimal area of waste is exposed at any time, reducing the potential for leachate generation during rain and minimising surface emissions of landfill gas.

Asbestos waste is accepted in the landfill and a dedicated tip face at the base of the main tip face. Asbestos is covered as soon as the tipping vehicle has left the tip face.

Materials Processing Centre 1

MPC1 opened in June 2012 and operates in accordance with the requirements of EPL 20121. Mixed or co-mingled C&D and C&I waste is transported by truck to the facility where it is unloaded within the MPC1 building. Incoming wastes accepted at MPC1 include:

- Black iron
- Baled mill rejects
- Clean heavies
- Gyprock
- Heavy gauge steel
- Mixed metals
- Non ferrous metals
- Timber

Waste is tipped onto the tipping floor at the centre of MPC1 where a visual inspection is undertaken. Unacceptable wastes which may have eluded identification at the weighbridge are identified at this point and rejected for disposal to landfill.

Co-mingled loads tipped at the tip floor are mechanically and hand sorted. Where practicable, mixed loads delivered to MPC1 are first sorted to remove some materials such as metals to designated bays and bins. Bulky materials such as large concrete are removed and places in designated storage or

processing areas. Timber is directed to the timber yard, while bricks and concrete are sent to the crushing and screening area and metals are stockpiled prior to being on-sold to metal recyclers. The remaining material is moved to the plant feed stockpile where it is then sorted and processed using fixed plant and equipment which screens the material to 450 mm or less. As the material passes through the plant, it is sorted using magnets, screens, blowers and picking stations to extract recyclable materials. Sorted material which cannot be recycled is disposed to the landfill via a conveyor.

Recyclable sorted material comprises timber, crushing and screening feed, and metals. Timber is shredded and timber that complies with the resource recovery exemption is sold as mulch. Material that is not mulched (and is not treated) is sold as particle board feed or boiler fuel. Metals are on-sold to metal recyclers. Materials such as plasterboard, plastics and cardboard are transferred to alternative recycling facilities.

Screening actions of the plant within MPC1 separate lighter materials from heavier materials. Heavier materials, such as aggregates of various sizes, are deposited through openings in the western wall of the MPC1 onto the concrete hardstand and against the building wall. These materials include bricks, concrete, ceramics and aggregates, and are then consolidated with stockpiles of the same product located in the SMA.

Long objects (usually timber) and ferrous metals are removed at an early stage and are deposited in a bay within the building.

Materials Processing Centre 2

MPC2 operates in accordance with Modification 5 and Modification 8 approvals received for MP 06_139. Under the current approval limit for Eastern Creek REP, MPC2 will receive approximately 300,000 – 400,000 tpa of primarily C&I and light C&D waste not processed at MPC1, however at time of writing MPC2 was in the final stages of commissioning. Incoming wastes proposed to be accepted at MPC2 include C&I and light C&D.

MPC2 once commissioned will operate 24 hours per day, seven days per week. Mixed waste is delivered by incoming vehicles into MPC2 at one of two locations:

- **The northern holding pit –** Vehicles depositing waste at this location are pre-inspected Bingo vehicles from Bingo's broader network of facilities and consist of walking floor trailers only. Vehicles reverse up to the northern building entrance and tip waste directly into the northern holding pit. Up to eight vehicles are able to tip simultaneously. This waste originates from transfer stations within Bingo's network and has been inspected at the facility of origin in accordance with the Standards for Managing Construction Waste in NSW (NSW EPA, 2019) (the Waste Standards).
- **The main tip floor –** Vehicles depositing waste at the main tip floor enter the building by reversing through the eastern entrance. Waste is tipped onto the main tip floor for inspection in accordance with the Waste Standards. If there is non-compliant waste found, the load is separated or rejected and reloaded for removal from site and disposal at an authorised facility. All loads contaminated with asbestos are rejected. If waste is deemed to be compliant, it is loaded into either the southern or northern waste holding pit by a front-end loader.

A separated area for non-conforming waste (including unexpected finds and dangerous goods) is demarcated at each end of the holding pits.

Once the waste is in the holding pits, an overhead gantry crane with a ten cubic metre capacity grab lifts the mixed waste into a feed hopper. Waste from the northern holding pit is loaded into the western hopper while waste from the southern holding pit is loaded into the eastern hopper. The feed hopper regulates the flow of the waste stream onto the recycling plant. The cranes are automatically programmed to carry out a regular pattern of loading the feed hoppers but can also be manually operated to remove specific items.

As the waste passes through the plant, ferrous metals are removed by magnets. Remaining waste is then shredded to less than 300 mm in size before passing through a series of screens, drum separators, eddy current separators, optical sorters and x-ray sorters which separate the waste into various recyclable streams which include:

- Soils and aggregates
- Natural timbers
- Engineered timbers
- Ferrous metals
- Non-ferrous metals.

Recycled outputs from the advanced recycling plant are transferred via enclosed conveyors to external storage and processing areas within the broader Eastern Creek REP (SMA) and timber yard or for residual waste directly to the landfill via the landfill conveyor.

Segregated materials area

The SMA is principally used for the receipt, processing, dispatch and stockpiling of inert C&D materials, such as sand, dirt, concrete, bricks and asphalt. Specific waste accepted at the SMA include:

- Brick and concrete
- Oversize concrete
- Rock
- Asphalt (various sizes)
- Sand
- Road base
- Soils (GSW)
- Green waste
- Aggregate
- Wood waste
- Mulch
- Steel.

Materials received within the SMA come from both pre-sorted loads, transferred from either MPC1 or MPC2, or from direct loads of material deposited within the area. Once delivered to the SMA, materials are sorted into relevant categories for reprocessing into a variety of products for sale.

All stockpile heights are governed by the Project Approval and are maintained in accordance with all current legislative and regulatory requirements.

The product is processed by a variety of machinery used as required within the area and generally consists of two mobile crushers plus auxiliary equipment (such as screens, stockpilers and re-claimers). Mobile equipment (such as loaders and excavators) used to relocate materials and products are also used within the area on an ‘as required’ basis.

2.7.4 Plant and equipment

Various fixed and mobile plant and equipment is used across the Eastern Creek REP. Specific plant and equipment types may change pending operational needs and due to maintenance and upgrade requirements (e.g., upgrading aging equipment). Some mobile equipment may be shared across the different areas within the Eastern Creek REP. However, the majority of plant and equipment is specific to an individual area / facility, as described below.

Landfill

Current fixed and mobile equipment within the landfill includes:

- Covered residual waste chute
- Bulldozers and excavators
- Dump trucks
- Water trucks
- Landfill compactor
- Landfill gas flares
- Leachate riser
- Rollers (as required).

Materials Processing Centre 1

MPC1 utilises the following equipment for the processing of incoming waste:

- Front end loaders
- Compactors
- Mobile screens
- Fixed and mobile crushers
- Magnetic sorter
- Conveyers.

Other plant and equipment may be used upon occasion as needed.

Materials Processing Centre 2

MPC2 utilises the following equipment for the processing of incoming waste:

- Fixed plant, including feed hoppers, shredders, screens, drum separators, eddy current separators, optical sorters and conveyors
- Front end loaders
- Excavators
- Gantry cranes.

Other plant and equipment may be used upon occasion as needed.

SMA

Recyclable sorted material from the MPCs is transferred to the SMA; primarily via conveyer. The product is processed by a variety of machinery used as required within the area and generally consists of two mobile crushers plus auxiliary equipment (such as screens, pug mill, stockpilers and re-claimers). Mobile equipment (such as loaders and excavators) used to relocate materials and products are also used within the area on an ‘as required’ basis.

Ancillary activities

In addition to the plant and equipment used within waste management infrastructure across the Eastern Creek REP, other plant and equipment may be used upon occasion across the broader Eastern Creek REP, including:

- Machinery maintenance equipment, including handheld tools, hydraulic lifts, high pressure hoses etc
- Water carts and street sweeper/s
- Forklifts, excavators and frontend loaders.

2.7.5 Waste storage

Waste and product storage at the Eastern Creek REP is managed in accordance with the conditions of EPL 13426 and EPL 20121 which specifies height, dimensions and volume limits for waste / product storage within the Proposal Site. The maximum volume of waste / product stored on site at any one time is currently dictated by the one time storage limit of 667,000 tpa. However, Bingo is seeking to increase the stockpile authorised amounts as part of an application to the NSW EPA to vary EPL 20121 to a one time storage limit of 950,000 tpa. Final stockpile volumes would be confirmed and approved as part of that process.

Design of the stockpile locations at the Eastern Creek REP has been undertaken with consideration to the requirements of the *Fire Safety Guideline – Fire Safety in Waste Facilities* and the Fire Safety Strategy prepared for the Proposal provided in Appendix O. Fire management infrastructure in place to manage risks associated with stockpiles is outlined in Section 2.6.8 and Section 13.3.2.

Waste storage at the Proposal Site assuming a 950,00 tpa one time storage limit is detailed on the Stockpile Management Plan shown in Table 2-5. The larger stockpiles on site comprise concrete medium density, brick, non-crushed brick and non-crushed concrete (BC). Other stockpiles located onsite comprise mixed waste, aggregate (AGG), soil and ferrous metal (FE).

Table 2-5 Eastern Creek REP product stockpiles

Stockpile ID	Location	Material type	Combustible/non-combustible	Weight (tonnes)
1	SMA	BC	Non-combustible	406,000
1A	SMA	BC	Non-combustible	43,820
2	SMA	BC	Non-combustible	337,350
3	SMA	BC	Non-combustible	70,870
4	SMA	BC	Non-combustible	49,562
5	SMA	BC	Non-combustible	18,354
6	MPC1 (Eco Products area)	WOOD	Combustible	600
7	MPC1 (Eco Products area)	WOOD	Combustible	440
7A	MPC1 (Eco Products area)	WOOD	Combustible	240
8	MPC1 (Eco Products area)	WOOD	Combustible	560
10	MPC1 (Eco Products area)	WOOD	Combustible	600
10A	MPC1 (Eco Products area)	WOOD	Combustible	600
11	MPC1 (Eco Products area)	WOOD	Combustible	600
12	MPC2	MIX	Combustible	522
13	MPC2	MIX	Combustible	3,053
14	MPC2	MIX	Combustible	522
15	MPC2	FE	Non-combustible	160
16A	MPC1	MIX	Combustible	600
16B	MPC1	MIX	Combustible	600
16C	MPC1	MIX	Combustible	600
17A	MPC1	MIX	Combustible	600
17B	MPC1	MIX	Combustible	600
17C	MPC1	MIX	Combustible	360
17D	MPC1	MIX	Combustible	360
18	MPC1	FE	Non-combustible	248
19	MPC1	AGG	Non-combustible	157
20	MPC1	BC	Non-combustible	600
21	MPC1	AGG	Non-combustible	48
22	MPC1	AGG	Non-combustible	61
23	MPC1	SOIL	Non-combustible	595
24	MPC1	AGG	Non-combustible	80
25	MPC1	MIX	Combustible	600
Total				**939,962**

2.7.6 Non-conforming waste

Any material not included within the defined accepted waste streams described in Section 2.7.2 – approved under MP 06_0139 and EPL 20121 – is considered to be 'non-conforming' waste. Examples of non-conforming waste include:

- Hazardous materials
- Gas bottles
- Asbestos (where not delivered directly to landfill).

Procedures are currently in place across Eastern Creek REP to manage non-conforming waste are outlined in the existing Waste Monitoring Program and the site's EMS. Separate areas for storage of non-conforming waste, including unexpected finds and dangerous goods are demarcated within the holding pits of both MPC1 and MPC2.

Key procedures for managing non-conforming waste include:

- Checking of incoming waste loads at weighbridges and rejection of non-conforming deliveries
- Checking and inspection of incoming waste prior to its stockpiling or processing to minimise the risk of non-conforming material in processed and recovered waste materials. If identified at the tip floor, loads are reloaded into the same vehicle
- Disposal at an appropriately licenced facility
- Recording details of non-complying waste generators
- Review of the waste processing systems in-line with EPA requirements
- Increasing the level of appropriate and safe recycling of waste in a sustainable and environmentally sound manner.

2.7.7 Waste tracking

Waste tracking is undertaken in accordance with the approved waste monitoring program in place for Eastern Creek REP. Part 3 of the *Protection of the Environment and Operations (Waste) Regulation 2014 (PoEO (Waste) Regulation)* requires the tracking of incoming and outgoing waste material in accordance with the Waste Levy Guidelines. Records are kept and maintained in accordance with the Bingo waste information system and Waste Monitoring Program and would include:

- Volume, type and stream of incoming and outgoing waste material
- Volume and description of any other incoming and outgoing material
- Date and times of incoming and outgoing waste material
- Name and address of origin and destination facilities
- Transport vehicle registrations and weights.

This data is captured by electronic data capture systems at the automated weighbridges operating at the entry and exit points across the Eastern Creek REP. In the event that these automated systems are out of operation, data is manually recorded and entered into the electronic data capture system as soon as possible. Electronic records are backed up on a weekly basis and stored in a secure location.

These records are kept and maintained for a period of at least six years and support the submission of monthly waste and resource contribution reports to the NSW EPA.

2.7.8 Delivery of waste and product collection

Internal traffic flows

Waste disposal and product collection vehicles originate from various locations across Greater Sydney. Vehicles enter / exit the Eastern Creek REP via the existing access point off Kangaroo Avenue (refer Section 2.7.5). All heavy vehicles access Kangaroo Avenue form Honeycomb Drive, Wonderland Drive, Wallgrove Road then the M7 or M4 (refer Figure 2-7).

The driveway entering the Eastern Creek REP is around 185 m from Kangaroo Avenue to the six-tidal weighbridge system and passing lane. All waste disposal and product collection vehicles entering the Eastern Creek REP enter via Kangaroo Avenue and weigh in over the weighbridge system where they are visually inspected and directed to the appropriate location within the Eastern Creek REP.

Once vehicles have passed the in-bound weighbridge they proceed along DADI Drive in a westerly direction for around 730 m before veering to the north and heading to their respective destination as described below.

Waste disposal vehicles would be directed as follows (refer Figure 2-5):

- Disposal to landfill:
  - Vehicles disposing of waste to the landfill are directed to the landfill access road and traverse down into the landfill pit itself
  - Vehicles may be required to queue within the landfill area until space is available at the tip face
  - Multiple vehicles can tip simultaneously at the active face of the landfill
  - Once vehicles have tipped, they exit via the landfill access road and traverse the wheel wash located at the exit of the landfill egress road
  - Vehicles then travel the southern extent of DADI Drive in an easterly direction before weighing out at the tidal weighbridge system and exiting via a right-hand movement onto Kangaroo Avenue.
- Waste drop-off at MPC1
  - Vehicles dropping off waste into MPC1 are directed to the eastern entrance of MPC1 where they enter and unload onto the tip floor
  - Once vehicles have tipped, they exit and travel the southern extent of DADI Drive in an easterly direction before weighing out at the tidal weighbridge system and exiting, via a right-hand movement onto Kangaroo Avenue.
- Waste drop-off at MPC2
  - Vehicles dropping off waste into MPC2 are directed either to the northern entrance doors (for walking-floor trailers coming from a transfer station or resource recovery facility) or through the eastern doors into the main tip floor. Vehicles reverse and tip either into the northern pit (for vehicles access from the north) or onto the main tip floor
  - Once vehicles have tipped, they exit and travel the southern extent of DADI Drive in an easterly direction before weighing out at the tidal weighbridge system and exiting, via a right-hand movement onto Kangaroo Avenue.
- Waste drop-off at the SMA
  - Vehicles dropping off waste at the SMA are directed through the internal access roads between MPC1 and MPC2 around the western side of MPC1. Vehicles enter and drop off waste into the SMA before continuing in a single direction and joining DADI Drive at the exit point of the landfill
  - Vehicles then travel the southern extent of DADI Drive in an easterly direction before weighing out at the tidal weighbridge system and exiting via a right-hand movement onto Kangaroo Avenue.

Product collection vehicles would follow similar internal traffic flows to waste drop off vehicles, as follows (refer Figure 2-6):

- Product collection from MPC1:
  - The majority of product generated by MPC1 is directed via conveyor either to the timber storage yard or the SMA. Residual waste would be directed straight into the landfill pit via the chute
  - Some product is collected from within MPC1. Collection vehicles follow the same route as waste drop off vehicles to access MPC1 and are loaded from within the shed
  - Vehicles then travel the southern extent of DADI Drive in an easterly direction before weighing out at the tidal weighbridge system and exiting via a right-hand movement onto Kangaroo Avenue.
- Product collection from MPC2:
  - Some of product generated by MPC2 is directed via conveyor either to the timber storage yard or the SMA. Residual waste is directed straight into the landfill pit via the chute
  - Some products such as non-ferrous metals are directed via conveyor to the bays on the eastern side of MPC2 where they are collected via third party collection vehicles
  - Vehicles then travel from the SMA and the bays adjacent to MPC2, to the southern extent of DADI Drive in an easterly direction before weighing out at the tidal weighbridge system and exiting via a right-hand movement onto Kangaroo Avenue.
- Product collection from SMA
  - Product collection vehicles collecting from the SMA follow the same path as waste drop off vehicles to this area (both on the way in and the way out of the Eastern Creek REP).

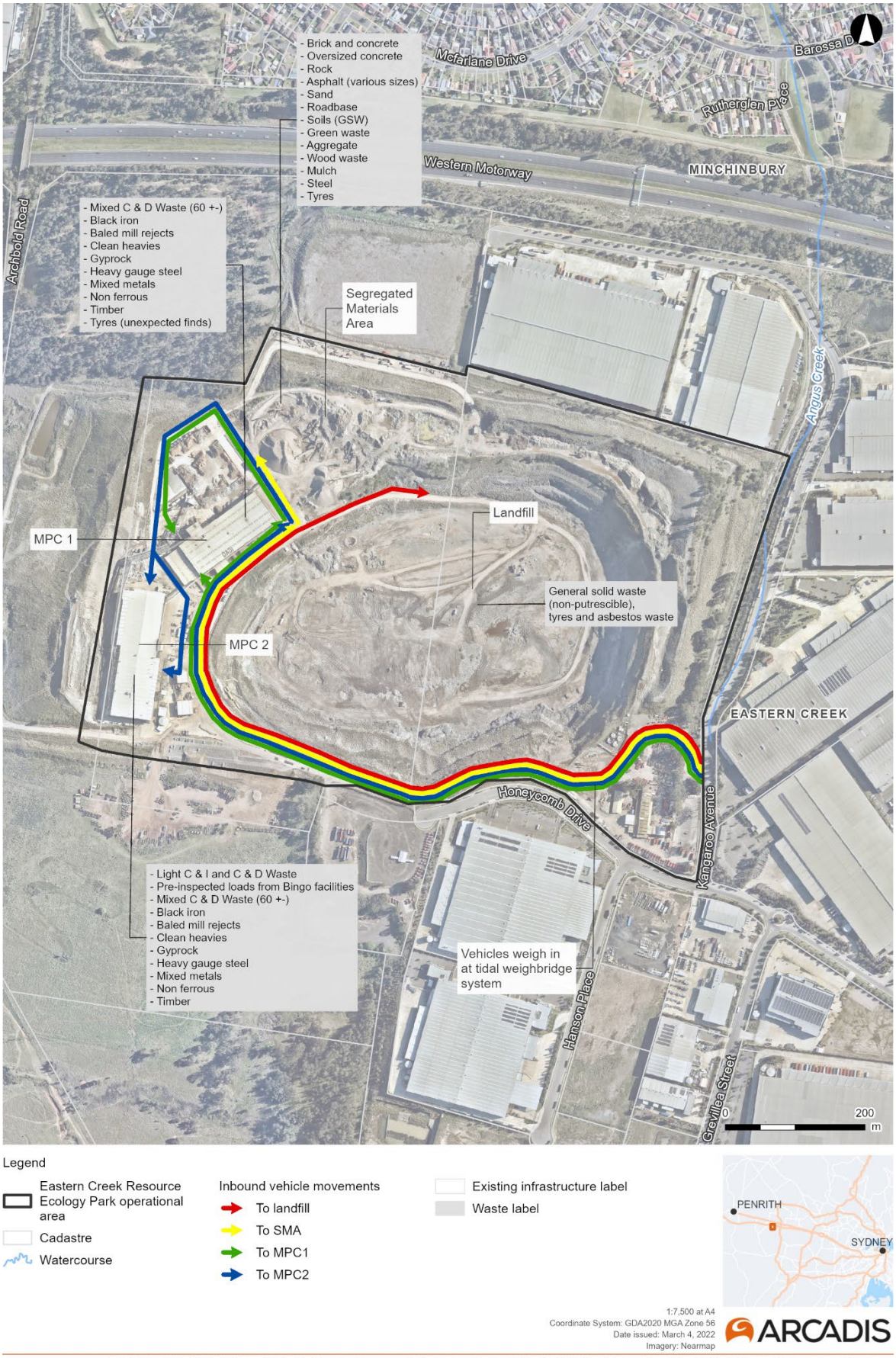


Figure 2-5 Inbound vehicle movements

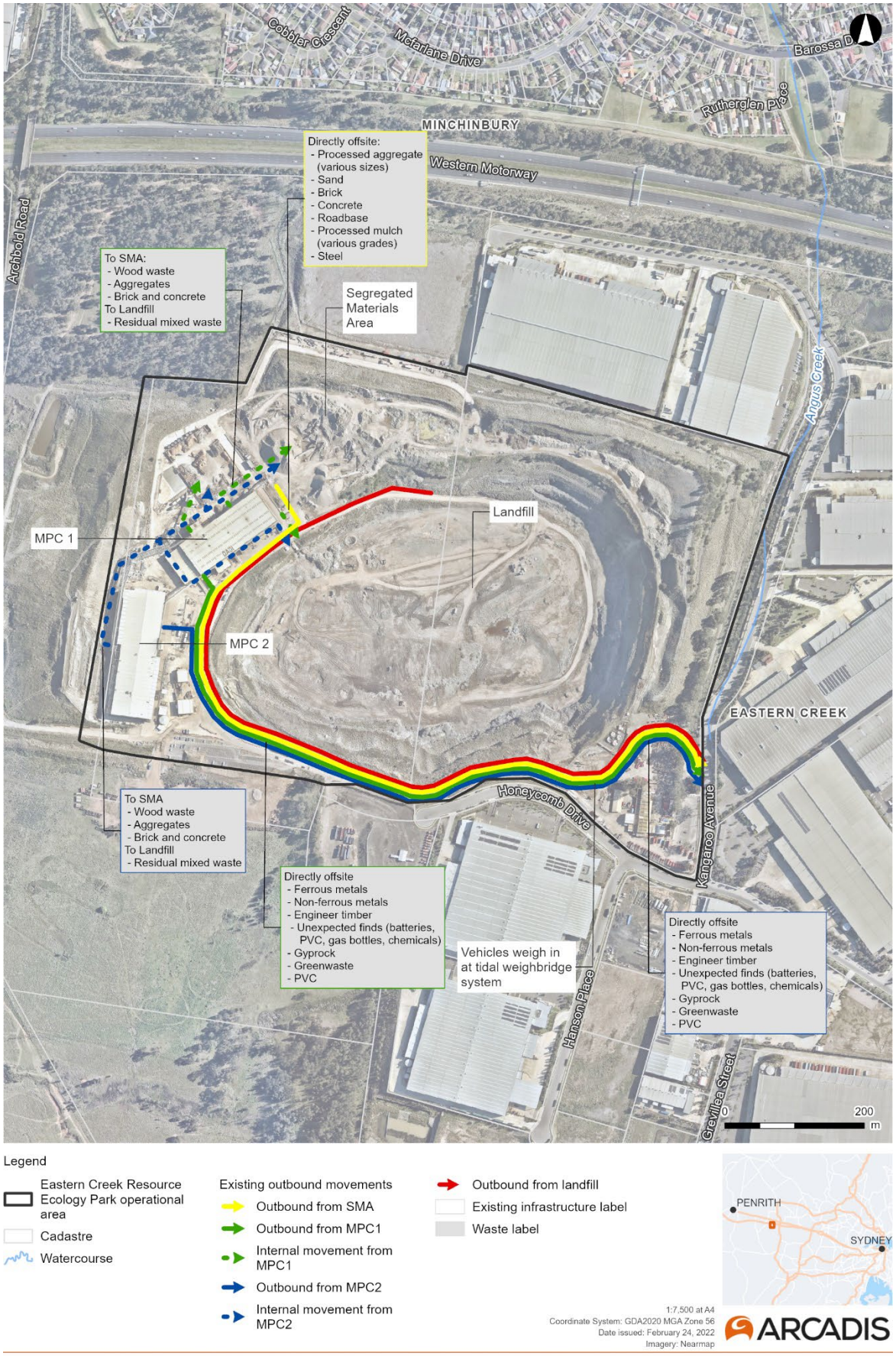
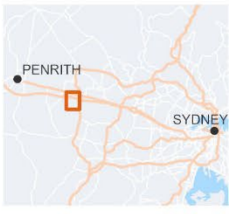


Figure 2-6 Existing outbound movements

Legend

- Eastern Creek Resource Ecology Park operational area
- Heavy vehicle egress/entry route
- Watercourse



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Date issued: May 17, 2022
Imagery: ESRI

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Created by: TK Updated by: XX QA by: GC

Figure 2-7 Heavy vehicle access / egress route

Vehicle types

A number of vehicle types currently access the Eastern Creek REP. Table 2-6 provides an overview of existing vehicle types and typical loads delivered to Eastern Creek REP (based on historical weighbridge data).

Table 2-6 Existing vehicle types

Vehicle type	Typical vehicle	Average load (t)	GVM
Light vehicles (cars/utes, with trailers)		1.6	-
Small rigid vehicles (up to 6.4m in length) (2 axle-rigid trucks)	Generally, 2 axles 	3.0	15 tonnes
Medium rigid vehicles (up to 8.8m in length) (3 axle-rigid trucks)	Generally, 3 axles 	5.8	22.5 tonnes
Heavy rigid vehicles (up to 12.5m in length) (4 axle-rigid trucks)	Generally, 4 axles 	8.3	26.5 tonnes
Articulated – 19m semi-trailer (6-axle semi-trailer)	6 axles 	10.9	42.5 tonnes
Articulated – 19m truck and dog	6 axles 	28.5	42.5 tonnes
Articulated – 25m B-double (9-axle B-double)		29.1	62.5 tonnes

Vehicle movements

The existing composition of waste drop off vehicles for the Eastern Creek REP is outlined in Table 2-7. At present, approximately 52 per cent of incoming vehicles to the Eastern Creek REP access MPC1 with 38 per cent of vehicles accessing the landfill, and only 10 per cent of incoming vehicles accessing the SMA. Once MPC2 is operational vehicles currently travelling to MPC1 would be split between MPC1 and MPC2.

A review of existing weighbridge data for the Eastern Creek REP identified the 95th percentile daily operational throughput (i.e., only 5 per cent of days would receive this throughput). The review found that on the peak day, throughput was approximately 30 per cent higher than an average day.

Table 2-7 Indicative existing composition of waste drop off vehicles

Type of truck	Proportion of all waste delivery vehicles
Bin truck	36%
Dump truck	2%
Front lift	4%
Light vehicle	8%
Quin and quad dog	12%
Semi-trailer	3%

Type of truck	Proportion of all waste delivery vehicles
Tandem	11%
Truck and dog	5%
Walking floor	15%
Others (including B-double, flat bed, hook lift, medium marrell)	4%

Outbound product collection vehicles consist primarily of heavy vehicles. Product collection vehicles consist of the following composition of heavy vehicles (refer to Table 2-8). At present the vast majority of outbound vehicles originate from the SMA (72 per cent), with product collection from MPC1 accounting for a smaller proportion at around 20 per cent. The majority of outbound product collection vehicles currently consist of quad and quin dogs (27 per cent), tandem tipper trucks (21 per cent) and truck and dogs (19 per cent).

Table 2-8 Indicative existing composition of product collection vehicles

Type of truck	Proportion of all product collection vehicles
Quad and Quin dog	27%
Tandem	21%
Truck and dog	19%
Dump truck	9%
Walking floor	9%
Semi-trailer	9%
Others	6%

Based on the above, the daily movements currently received at the Eastern Creek REP are summarised in Table 2-9.

Table 2-9 Indicative current average daily vehicle movements at the Eastern Creek REP

Truck type	Average inbound daily movements	Average outbound daily movements
Bin truck	130	2
Dump truck	8	8
Front lift	15	<1
Light vehicle	29	1
Quin and quad dog	42	24
Tandem	40	19
Semi-trailer	9	7
Truck and dog	19	17
Walking floor	55	8
Others (including B-double, compact, flat bed, hook lift, medium marrell)	16	2

Light vehicles

In addition to vehicles dropping of waste and collecting product, light vehicles also access the Eastern Creek REP due to staff and on site personnel movements. As noted in Section 2.7.11 around 120 personnel are on the Eastern Creek REP at one time. Employees would generally access the Eastern Creek REP across two shifts, generally between 5am and 3pm and 3pm to 1am. Additional employees may occasionally be used to cover absences or leave. It is assumed that staff (light vehicles) would enter and exit the Proposal Site before and after the start and end of a work shift / hours of construction which occur outside of the surrounding road network peak periods.

2.7.9 Operating hours

The approved operating hours for the Eastern Creek REP are presented in Table 2-10.

Table 2-10 Approved operating hours (MP 06_139)

Activity	Day	Time
Construction	Monday – Friday	7:00am to 6:00pm
	Saturday	8:00am to 4:00pm
	Sunday and Public Holidays	Nil
MPC – operation, waste receival, chute use and maintenance	Monday – Friday	24 hours
	Saturday	
	Sunday and Public Holidays	
SMA – crushing and screening	Monday – Friday	6:00am to 6:00pm
	Saturday	8:00am to 4:00pm
	Sunday and Public Holidays	
SMA – receipt of segregated materials	Monday – Friday	24 hours
	Saturday	8:00am to 4:00pm
	Sunday and Public Holidays	
Landfill – truck deliveries	Monday – Friday	5:00am to 9:00pm
	Saturday	
	Sunday and Public Holidays	

2.7.10 Operational capacity

The Eastern Creek REP represents a substantial waste management facility servicing the wider Sydney region. The capacity of the Eastern Creek REP is determined by the following key factors (identified as either Eastern Creek REP site-wide constraints or constraints for each individual piece of waste management infrastructure):

- The approved throughput limit
- Operational hours
- The speed of processing plant and equipment
- The turnover of vehicles depositing waste and collecting product
- Available queueing space
- Time taken for vehicles to weigh in and weigh out.

Table 2-11 presents the capacity considerations for the existing infrastructure at Eastern Creek REP.

At present Eastern Creek REP receives most of its annual throughput limit of 2 Mtpa, with the current limiting factor impacting operational capacity being the throughput limit dictating recycling as prescribed within the Project Approval (MP 06_0139). The scale, nature and operating hours of the waste management infrastructure comprising the Eastern Creek REP enable it to process and recover products from one Mtpa of C&D and C&I waste. The recent construction of MPC2 (due to be commissioned in the second quarter of 2022) based on processing capacity of the plant and equipment as well as the size of the facility, considerably increases the resource recovery capacity of the Eastern Creek REP.

Table 2-11 Operational capacity constraint conditions

Capacity constraints considerations	Landfill	MPC1 and MPC2	SMA	Eastern Creek REP site-wide
The approved throughput limit	✓	✓	✓	✓
Operational hours	✓		✓	
The speed of processing plant and equipment		✓	✓	
The turnover of vehicles depositing waste and collecting product (i.e., the turnaround time required to deposit or pick up product and the number of vehicles that can simultaneously tip)	✓	✓	✓	
Queueing space available for waste disposal or product collection vehicles	✓			✓
Time taken for vehicles to weigh in and weigh out				✓

2.7.11 Workforce

Eastern Creek REP directly employs approximately 184 people (with up to 120 people on site at one time), which includes up to 20 truck drivers transporting material to and from Eastern Creek REP. Eastern Creek REP also contributes to indirect employment such as maintenance personnel and short-term contractors.

Employees would generally access Eastern Creek REP across two shifts, generally between 5am and 3pm and 3pm to 1am. Additional employees may occasionally be used to cover absences or leave.

Existing operational workforce at Eastern Creek REP includes the following workforce outlined in Table 2-12.

Table 2-12 Eastern Creek REP workforce (existing)

Component	Staff (FTE)	
	Day	Night
MPC1 and MPC2	67	56
Landfill	12	2
Crushing and SMA	16	0
Site management	6	0
Site office	25	0
Total	**126**	**58**

2.7.12 Water, landfill gas and leachate management

Stormwater management

Surface stormwater runoff generated on site is categorised as ‘clean’ or ‘dirty’.

- Clean stormwater runoff will be generated from building roofs, roads, car parks and other hardstand areas; materials stockpile areas / working floor / drop off zone; and pit walls, haul road and capped areas within the landfill, and is addressed in this section
- ‘Dirty’ runoff comprises stormwater that has come into contact with mixed wastes, green and timber wastes and uncovered landfill wastes. Dirty runoff is collected separately from clean stormwater and is treated as leachate.

The Eastern Creek REP operational area has been split into two catchments, northern and southern, based on the topography of site.

- The northern catchment, which largely drains the MPC1 building and the segregated stockpile area, drains to the northern OSD basin for flood control and reuse purposes.
- The southern catchment, drains to the southern on site detention basin for storage purposes. The southern OSD basin is connected by a gravity pipe to the northern on site detention basin. Both basins overflow during extended rainfall periods through natural drainage to Ropes Creek.

Stored water from the northern OSD basin (and from the southern OSD basin via a transfer pipe to the northern OSD basin) is transferred via a pump station to four aboveground reuse water tanks with a total combined capacity of 112.5 kL. These tanks are used to provide water to the Eastern Creek REP’s water carting facility (used to fill water carts and for truck wet-down).

Leachate management

Leachate is managed in accordance with EPL 13426 and EPL 20121, the Leachate Collection, Conveyance and Management Plan (DADI 2017a) and the Soil, Water and Leachate Management Plan (DADI 2021).

Infiltration of water through the landfill cover is minimal as evapotranspiration exceeds rainfall for 80 per cent of the year in the area. Additionally, the steep slope batters of the covered waste results in high water runoff, which is directed to the water management system. Therefore, most leachate generation results from water entrained in the deposited waste or from heavy rainfall which inundates the waste prior to covering.

The active tipping area is covered daily with a minimum of 15 cm of virgin excavated natural material or another approved alternative daily cover, as required by Condition O5.4 of EPL 13426.

An aggregate drainage layer comprising a permeable granular blanket of geosynthetic and granular materials on the floor of the pit was installed prior to the commencement of filling. Perforated polyethylene pipes and the aggregate drainage layer collect any leachate and drain via gravity, to a concrete lined sump at the lowest elevation of the landfill, from which it is pumped to leachate storage tanks.

Leachate is pumped to the treatment plant which contains sequential batch reactors, which are processing tanks used for the treatment of wastewater. There are four 110 kL tanks at the facility which have a decanting capacity of around six kL per hour. The system can treat up to 600 kL every 24 hours.

The treated leachate is discharged into a Sydney Water sewer on Lot 8 DP1200048 as permitted by Trade Waste Agreement 35580, which allows the discharge of up to 650 kL a day of pre-treated wastewater into Sydney Water infrastructure and is tested every eight days.

Leachate volumes and quality are monitored as follows and reported in the annual return to the NSW EPA:

- The leachate level in the sump is monitored weekly

- The quality of untreated leachate is monitored quarterly
- Leachate generation rates are monitored to calibrate the leachate model.

Groundwater is sampled quarterly or yearly (depending on pollutant) and analysed in accordance with Condition M2.2 of the EPL 13426 to determine if landfill operations are impacting water quality. If analysis of the samples indicates that environmental trigger levels for groundwater are exceeded, an action plan or remediation plan is implemented to inform the NSW EPA of the exceedance, re-sample to establish a trend, determine and remediate the source if there is a trend, and remediate the impacted area.

Landfill water management

Surface water at the facility is managed in accordance with the Proposal Site's Landfill Plan and Soil, Water and Leachate Management Plan (SWLMP).

Water that falls on the landfill is managed as leachate, with such water falling on Eastern Creek REP managed as described above.

Surface drainage in the landfill is promoted by filling to minimum two per cent grade to facilitate the drainage without promoting significant runoff in smaller rainfall events. Temporary sediment and erosion controls and landfill cover maintenance is undertaken to minimise erosion.

Surface flows are directed away from active areas to avoid contact with uncovered waste. Significant surface flows are directed to depressed areas adjacent to the main leachate sump. These areas are sized for contingency storage of runoff from a 1 in 5 year ARI 24hr event from the landfill surface. A bund is provided to support the leachate sump and provide access for maintenance.

The bunding also provides contingency storage for larger events, sediment collection and allows control of intercepted surface flows. Collected surface runoff is introduced to the leachate sump backfill (below the local sealing layer provided for LFG control) via a control valve or directly pumped to the leachate treatment plant. Surface water may also be used as a supplementary source for dust suppression or construction purposes within the landfill except where it is unsuitable for this purpose due to contamination with leachate.

Surface water volumes will marginally decrease over time as the floor of the landfill raises towards to the top of the void, as the raising of the floor decreases the surface area of the void walls.

Landfill gas

Landfill gas is managed in accordance with the Air Quality, Odour and Greenhouse Gas Management Plan (DADI, 2020) (AQMP) and the Landfill Gas Management Plan (DADI, 2021) (LGMP) for the Eastern Creek REP.

The LGMP has been prepared to provide a basis for the management, control and monitoring of any landfill gas at the Eastern Creek REP to minimise the migration of emissions of landfill gas. In summary, the following landfill gas monitoring is undertaken:

- Subsurface landfill gas is currently monitored in wells located around Eastern Creek REP. Recorded results of subsurface gas monitoring are included in the annual environmental report.
- Surface gas monitoring is performed by an independent consultant completing a walkover survey of the landfill each quarter using a calibrated landfill gas monitor (capable of reading methane concentrations). Results of surface gas monitoring and reporting of corrective actions form part of the annual environmental report.
- Landfill gas accumulation in buildings must be monitored to prevent risk of explosion and is performed at the Proposal Site on a quarterly frequency with a calibrated landfill gas monitor.

Installation of a permanent landfill gas flare and associated collection system is currently subject to approval as part of Mod-10 MP 06-0139. A permanent landfill gas flare will allow for a more sustainable solution for the long-term treatment of landfill gas at Eastern Creek REP. The permanent

landfill gas flares will replace the existing temporary flares and temporary gas collection system that were installed on the landfill in April 2021.

2.7.13 Environmental management and monitoring

The operation of Eastern Creek REP is subject to DADECs Environmental Management System (EMS) which provides an overview of potential environmental impacts of the facility during operation and describes the management and mitigation measures to protect the environment and sensitive receivers and to minimise potential adverse impacts on the environment. The EMS:

- Outlines the statutory requirements and obligations which need to be fulfilled during operation of the Facility
- Describes the environmental management systems in place and the roles and responsibilities for employees involved in the operation of the facility
- Details the implementation of managing environmental risk of the different environmental aspects during operation of the facility, including management of traffic flows
- Details the monitoring of environmental risks through environmental reporting, auditing, and how environmental incidences and non-conformance are managed during the operation of the facility, including noise monitoring and reporting requirements.

The following environmental management plans have been developed in support this EMS and are provided as appendices to the EMS:

- Landfill Envronmental Management Plan (LEMP)
- Soil Water and Leachate Management Plan (SWLMP)
- Air Quality, Odour and Greenhouse Gas Management Plan (AQMP)
- Landscaping and Vegetation Management Plan (LVMP)
- Aboriginal Heritage Management Plan (AHMP)
- Traffic and Transport Code of Conduct.

A Waste Monitoring Program and the Emergency and Pollution Incident Response Management Plan (EPIRMP) along with other management plans and programs also support the operation of Eastern Creek REP.

3 PROPOSAL DESCRIPTION

3.1 Introduction

This section provides an indicative and conceptual description of the Proposal. Appendix E shows the conceptual design and Appendix F shows the architectural design for key features of the Proposal. Visualisations of the indicative final form of the Proposal are included in Appendix T. The SEARs relating to the Proposal description, and a summary of where they have been addressed, is presented in Table 3-1.

Table 3-1 SEARs (Proposal description)

SEARs	Where addressed
General requirements	
The EIS must include a: • Detailed description of the development, including:	Chapter 2 (existing site) Chapter 3 (proposal description)
– an accurate history of the site, including existing or approved operations and development consents –	Section 2.2 (Eastern Creek REP site history) Section 2.7 (existing / approved Eastern Creek REP site features and operations) Section 5.5.1 (current development consents)
– justification for the proposed development – likely staging of the development	Chapter 4 (justification) Section 3.2 (staging)
– likely interactions between the development and existing, approved and proposed operations in the vicinity of the site	Section 3.3.1 and Section 3.5.1 (interaction between Proposal and the existing Eastern Creek REP)
– plans of any proposed building works	Section 3.3 (proposed building works) Appendix E
– contributions required to offset the proposal	Section 3.3.11 (contributions)
– infrastructure upgrades or items required to facilitate the development, including measures to ensure these upgrades are appropriately maintained	Section 3.3.10 (infrastructure upgrades)
Site suitability	
• a detailed description of the history of the site, including the relationship between the proposed development, the existing facility and all development consents and approved plans previously and/or currently applicable to the site; and	Section 2.3 (Eastern Creek REP site history) Section 2.7 (existing / approved Eastern Creek REP site features and operations) Section 5.5.1 (current development contents) Section 3.3.1 and Section 3.5.1 (interaction between Proposal and the existing Eastern Creek REP)
• a detailed justification that the site can accommodate the increased throughput capacity at the recycling ecology park, having regard to the scope of the operations of the existing facility and its environmental impacts and relevant mitigation measures	Section 2.7.10 (current operational capacity) Section 3.5.12 (operational capacity with Proposal)
Waste management	
• a description of each of the waste streams that would be accepted at the resource recovery operation and the landfill, including maximum daily,	Section 2.7.2 (existing waste types and volumes) Section 3.5.2 (proposed waste types and volumes) Section 2.7.5 (existing storage)

SEARs	Where addressed
weekly and annual throughputs and the maximum size for stockpiles	Section 3.5.7 (proposed waste storage)
• details of the source of the waste streams to strongly justify the need for the proposed increase in waste receival and processing capacity	Chapter 4 Section 2.7.2 (existing waste types and volumes) Section 3.5.2 (proposed waste types and volumes)
• a description of waste processing operation, including flow diagrams for each waste stream. The description should include information regarding the technology to be used, resource outputs, the quality control measures that would be implemented and the interactions between the resource recovery operations and the landfill operations	Section 2.7.2 (existing waste processing operation) Section 3.5.2 (proposed waste processing operation) Section 2.7.4 and Section 3.5.6 (existing processing equipment and technology Section 2.7.6 (existing quality control measures for non-conforming waste) Section 3.5.8 (proposed quality control measures for non-conforming waste)
• details of how and where waste would be stored (including the maximum daily storage capacity of the site) and handled on site, and transported to and from the site including details of how the receipt of non -conforming waste would be dealt with	Section 2.7.5 (existing storage) Section 3.5.7 (proposed waste storage) Section 2.7.6 (existing quality control measures for non-conforming waste) Section 3.5.8 (proposed quality control measures for non-conforming waste)
• details of the development's waste tracking system for incoming and outgoing waste	Section 2.7.7 and Section 3.5.9 (waste tracking)
• details of the quality of waste produced and final dispatch locations	Section 2.7.2 (existing waste types and volumes) Section 3.5.2 (proposed waste volumes)
• details of the waste management strategy for construction and ongoing operational waste generated	Chapter 18
• the measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy 2014-2021	Chapter 4
• details of consistency with the EPA's Standards for Managing Construction Waste in NSW (April 2019)	Section 2.7.3 (existing waste processing operation) Section 3.5.3 (proposed waste processing operation)
Infrastructure requirements	
• A detailed written and/or graphical description of infrastructure required on the site, including any upgrades required.	Section 3.3.10 (ancillary and other infrastructure)
• Identification of any infrastructure upgrades required off-site to facilitate the development, including road pavement, and a description of any arrangements to ensure that the upgrades will be implemented in a timely manner and maintained.	Section 3.3.10 (ancillary and other infrastructure)
• An infrastructure delivery and staging plan, including a description of how infrastructure on- and off-site will be co-ordinated and funded to ensure it is in place prior to the commencement of construction.	Section 3.3.10 (ancillary and other infrastructure)

SEARs	Where addressed
• An assessment of the impacts of the development on existing utility infrastructure and service provider assets surrounding the site.	Section 3.3.10 (ancillary and other infrastructure)

3.2 Proposal overview

Bingo are proposing to enhance resource recovery outcomes across the Greater Sydney area by optimising their Eastern Creek REP to capitalise on the underutilised state-of-the-art processing facilities (namely MPC2), and plant and equipment within the Eastern Creek REP. The Applicant is therefore proposed to increase the total throughput of the Eastern Creek REP by 950,000 tpa and carry out infrastructure upgrade works across the Proposal Site (the Proposal). An overview of the Proposal is provided in Figure 3-1. The Proposal would be developed in three stages:

- **Stage 1: Initial throughput increase –** Stage 1 would comprise 500,000 tpa of additional throughput to be received at the Eastern Creek REP to enhance resource recovery outcomes by increasing utilisation of on site processing capabilities
- **Stage 2: Internal site optimisation –** Stage 2 would facilitate the remaining throughput increase (an additional 450,000 tpa of the total 950,000 tpa proposed) to be received and processed across the Eastern Creek REP and operation of one of the two proposed new exit connections. Stage 2 would include:
  - The construction and operation of a new exit connection to the Honeycomb Drive extension and installation of two associated outbound weighbridges and a dedicated weighbridge office
  - The construction and operation of a new exit connection to Kangaroo Avenue in the northeast of the Proposal Site and the installation of two associated outbound weighbridges and a dedicated weighbridge office
  - Upgrade of existing internal roads as required
  - Earthworks for Stage 3 site establishment
  - Additional carparking and amenities.
- **Stage 3: Installation of supporting infrastructure –** Stage 3 would comprise the redevelopment of the northeastern corner of the Proposal Site. This would comprise:
  - Construction and operation of a Site Workshop (relocating this activity from elsewhere within the Proposal Site to a dedicated enclosed facility)
  - Construction and operation of a skip bin Maintenance and Manufacturing Workshop
  - Installation of landscaping, signage, security fencing and finishing works.

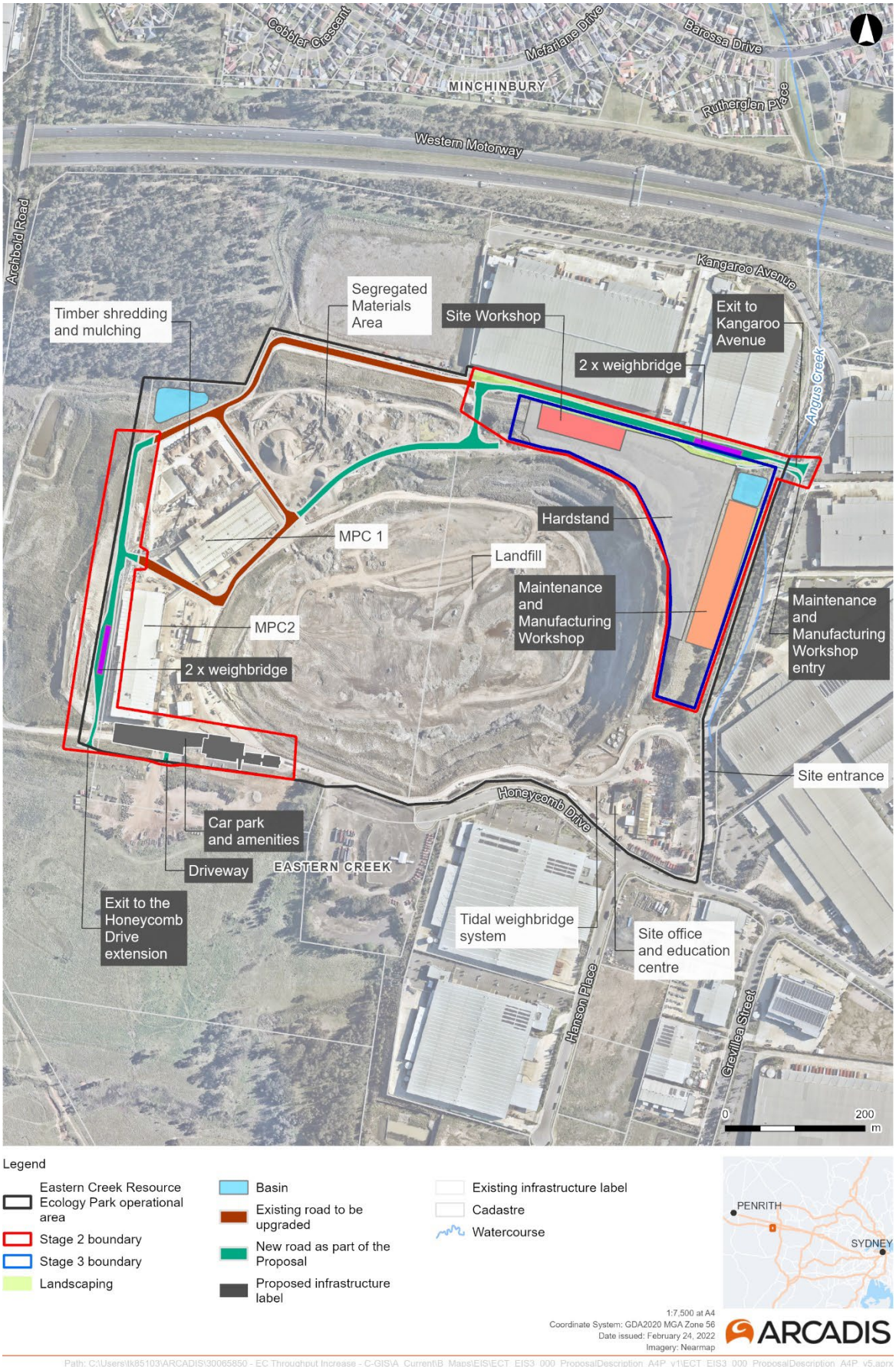


Figure 3-1 Proposal

3.3 Built form

This section provides a description of the built form of the key elements of the Proposal. As described in Section 3.2 the Proposal comprises three stages. Table 3-2 denotes which Stage of the Proposal each built element would be associated with (Section 3.4.1 provides a description of the construction phasing of these built elements for each Stage). Figure 3-2 provides a visualisation of the indicative final form of the Proposal. The existing Eastern Creek REP built elements would be utilised for all three stages of the Proposal. Note that there are no new built elements proposed for Stage 1.

Table 3-2 Key built elements of the Proposal

Built elements	Stage 1	Stage 2	Stage 3
Connection to Honeycomb Drive		✓	
Outbound weighbridges to the west of MPC2 (including wheel wash facilities) and weighbridge control office		✓	
Connection to Kangaroo Avenue		✓	
Outbound weighbridges (including wheel wash facilities) and weighbridge control office in the northeastern corner		✓	
Upgrades to existing roads		✓	
Site Workshop			✓
Maintenance and Manufacturing Workshop			✓
Additional carparking adjacent to MPC2		✓	
Urban design and landscaping (including perimeter fencing)		✓	✓
Water management infrastructure		✓	✓

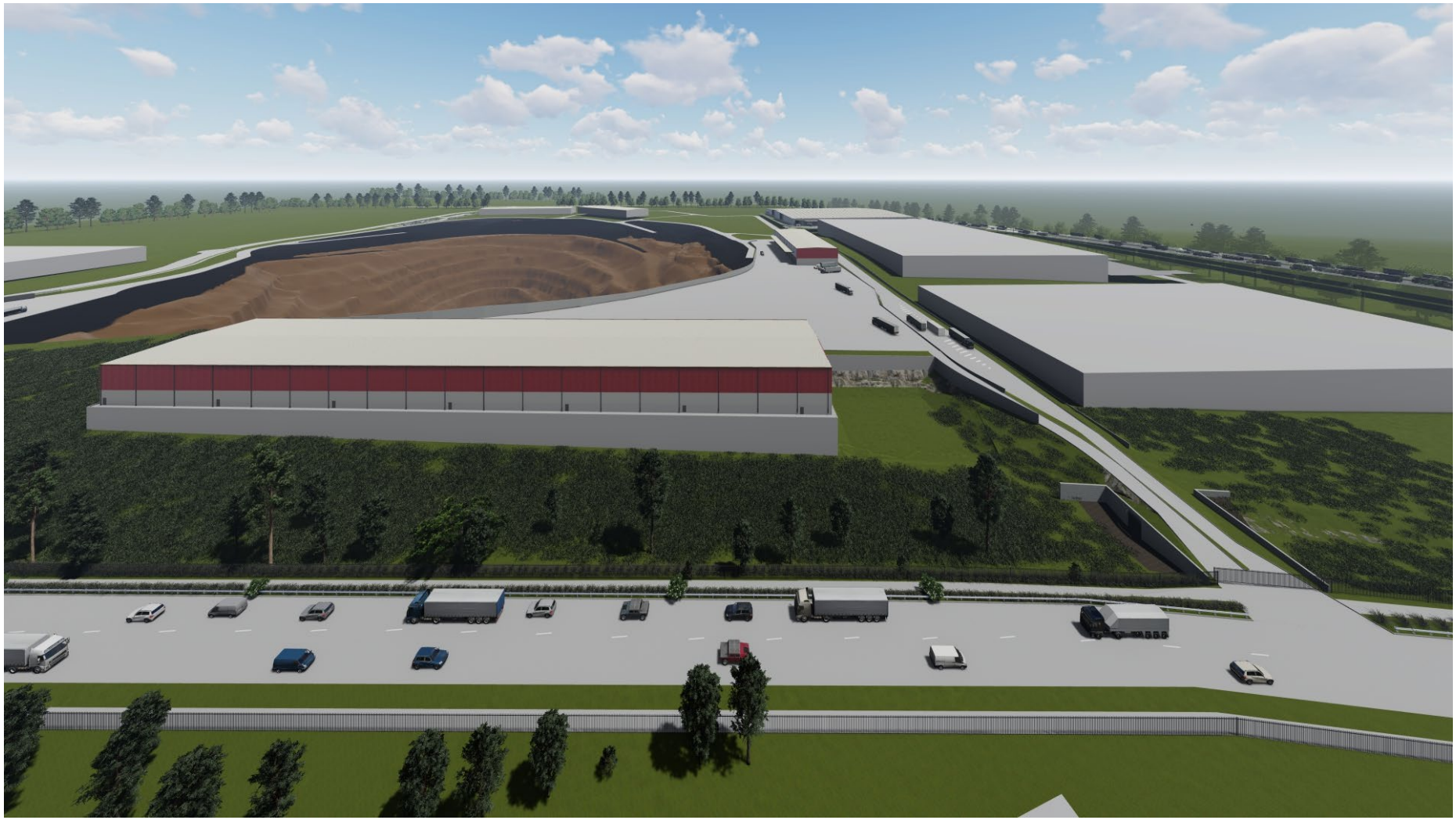


Figure 3-2 Visualisation of the indicative final form of the Proposal

3.3.1 Interaction with existing Eastern Creek REP

The Proposal would predominantly utilise existing built elements across the Eastern Creek REP. The key built elements that would be utilised by the Proposal are detailed in Section 2.6 and would comprise:

- Waste management infrastructure:
  - The landfill
  - Resource recovery facilities (MPC1 and MPC2)
  - SMA
- Ancillary infrastructure and features such as site access, weighbridges and the internal road network
- Car parking and amenity areas
- Water management infrastructure.

In addition to use of existing built elements across the Eastern Creek REP, new built form elements forming the Proposal are described in Sections 3.3.2 to 3.3.10.

3.3.2 Connection to the Honeycomb Drive extension

To accommodate future land releases and development within the Eastern Creek area, an extension to Honeycomb Drive from its current western most extent (approximately 430 m to the west of Kangaroo Avenue) to connect to Archbold Road to the southwest of the Eastern Creek REP is proposed as part of the development application lodged by IRM Property No.2 (DA-21-01557).

Stage 2 of the Proposal would comprise an egress connection to the extended Honeycomb Drive, accommodating semi-trailer vehicles up to 19 m. The connection would provide an alternate exit for vehicles exiting the Eastern Creek REP (refer Section 2.6.5). As described in Section 2.7.8 the current access and egress point for the Eastern Creek REP is via the main site access off Kangaroo Avenue. This new connection would comprise a single lane (5 m wide) exit to the west of MPC2 connecting to the Honeycomb Drive extension (once constructed), approximately 900 m west of the Honeycomb Drive / Kangaroo Avenue intersection. The exit would connect from the internal road network between MPC1 and MPC2 and would extend approximately 230 m to the south to connect to the Honeycomb Drive extension and would require partial removal of the amenity berm in this location. The exit would provide for single directional traffic flow (north to south) and would facilitate a left out turn only for vehicles exiting onto the Honeycomb Drive extension prior to completion of construction of the Archbold Road extension (refer to Figure 1-3 of Appendix I). The exit onto the Honeycomb Drive extension may be altered in the future subject to detailed design to allow a right turn movement once the Archbold Road extension has been constructed. Two exit weighbridges (typically 28 m in length) would be installed prior to the exit onto the Honeycomb Drive extension, north of the weighbridges the road is dual lane (10 m wide). All exiting vehicles would weigh out via one of these two weighbridges utilising the connection. A detailed description of internal movements and flow paths is provided in Section 3.5.10.

In summary, subject to detailed design the connection to Honeycomb Drive would comprise:

- Removal of part of the amenity berms on the western side of MPC2
- Approximately 230 m of dual lane single direction, graded and paved road, merging to single lane south of the weighbridges
- Two 28 m exit weighbridges
- Wheel wash facilities with rumble grid or equivalent track out management device
- A left turn out exit point prior to the operation of the Archbold Road extension

- A passing lane circumventing the weighbridges to provide an access / egress point for emergency vehicles
- Stormwater diversion swales.

3.3.3 Connection to Kangaroo Avenue

As part of Stage 2 of the Proposal, an egress connection would be established from the northeastern corner of the Proposal Site onto Kangaroo Avenue, accommodating semi-trailer vehicles up to 19 m. The connection would facilitate an alternate exit only option for vehicles leaving the Eastern Creek REP (in addition to the exit to the Honeycomb Drive Extension, which would also be constructed as part of Stage 2 of the Proposal). The connection would include upgrade / extension of internal roads to formalise the connection from existing internal roads to the new exit (refer Figure 3-1). The exit onto Kangaroo Avenue would form the northern extent of the Eastern Creek REP and would require partial removal of the amenity berm in this location.

The exit would provide for single directional traffic flow (west to east) and would facilitate a right out turn for vehicles exiting onto Kangaroo Avenue. A single lane (5 m wide) would exit on to Kangaroo Avenue with a dual lane (10 m wide) being provided until the weighbridges. Two exit weighbridges (28 m in length) would be installed prior to the exit onto Kangaroo Avenue. All vehicles using this exit would weigh out via one of these two weighbridges. A detailed description of internal movements and flow paths is provided in Section 3.5.10.

The connection to Kangaroo Avenue would also include a single lane (5 m wide) entrance located directly adjacent the proposed exit lane to provide access to the Maintenance and Manufacturing Workshop, accommodating vehicles up to 12 m. This entrance lane would traverse the area north of the proposed OSD basin (Basin B), maintaining a width of 5 m before connecting to the proposed hardstand area located adjacent the Maintenance and Manufacturing Workshop. The proposed hardstand area would facilitate vehicle access to the broader Eastern Creek REP internal road network.

The proposed driveways off Kangaroo Avenue, would incorporate a crossing of Angus Creek. The width of the Angus Creek corridor between the eastern boundary of the Proposal Site and the western footpath of Kangaroo Avenue is approximately 23 m. It is proposed that a series of box culverts be installed to provide vehicular access across Angus Creek. The crossing will be designed and constructed in accordance with the following documents:

- *Guidelines for watercourse crossings on waterfront land* (NSW Office of Water, July 2012).
- *Guidelines for instream works on waterfront land* (NSW Office of Water, July 2012) – for scour protection upstream and downstream of the proposed culverts.

Subject to detail design the connection to Kangaroo Avenue would comprise:

- Removal of the amenity berms in the northeastern corner, along the northern boundary of the Eastern Creek REP and part of the amenity berm along Kangaroo Avenue
- An exit lane (5 m wide) to Kangaroo Avenue and entrance lane (5 m wide) providing access to the Maintenance and Manufacturing Workshop
- An approximately 25 m culvert over Angus Creek
- Connection to the internal road network adjacent to the northern and southern side of the SMA
- Two 28 m exit weighbridges
- Wheel wash facilities with rumble grid or equivalent track out management device
- A passing lane circumventing the weighbridges to provide an access / egress point for emergency vehicles
- Stormwater diversion swales.

3.3.4 Weighbridge control office

As noted in Section 3.3.2 and Section 3.3.3, two outbound weighbridges would be installed as part of the new connection to Kangaroo Avenue and as part of the new connection to the Honeycomb Drive extension. To provide visual and acoustic screening for neighbouring land uses to the north, and to administer use of the outbound weighbridges, a weighbridge control building would be constructed at both new exit connections over the outbound weighbridges. The weighbridge control building would be approximately 4 m in width, and 10 m in length (totalling 40 m^2).

3.3.5 Internal road upgrades

Upgrades to the internal road network would be completed for internal roads located within close proximity to MPC1 and MPC2 and surrounding the SMA. These upgrades would include:

- Minor upgrading and widening of internal roads
- Resurfacing of internal roads where previous damage had occurred
- Maintenance of kerbing, guttering and drainage lines where needed.

Roads would be designed in accordance with safe operational speed limits and a two-way road corridor width of 10 m (including traffic lanes, drainage and vehicle barriers where required). All internal road pavements will be rigid (concrete). Pavements will be designed to satisfy the requirements of *Austroads Pavement Design Guide – A Guide to the Structural Design of Road Pavements* and recommendations provided as part of a geotechnical investigation undertaken for the Proposal Site.

3.3.6 Site Workshop

Stage 3 of the Proposal would include the construction of a shed for the purpose of providing an enclosed Site Workshop to service the entire Eastern Creek REP. The Site Workshop would be located in the northeastern corner of the Proposal Site adjacent to the connection to Kangaroo Avenue. The Site Workshop would have a total footprint of approximately 3,950 m^2 and would have a height of approximately 14 m. The Site Workshop would provide a visual and acoustic buffer between neighbouring land uses to the north and the landfilling activities within the centre of the Eastern Creek REP.

The Site Workshop would comprise a steel shed with corrugated steel frame and cladding, approximately 14 m in wall height, with a corrugated steel sheeting roof pitched to a maximum height of approximately 14 m. There would be an awning and roller shutter doors along the southern side of the Site Workshop.

The Site Workshop would include a wash bay for trucks used in the operation of Eastern Creek REP, an internal site office and warehouse amenities. Water from the wash bay would be captured in a blind sump for pump out and disposal (at an appropriately licenced facility) as required. The proposed hardstand area adjacent the southern side of the building would facilitate access to the broader Eastern Creek REP internal road network.

The Site Workshop would also include a 10 kL rainwater tank and fire services infrastructure.

3.3.7 Maintenance and Manufacturing Workshop

The Proposal would include the construction of a Maintenance and Manufacturing Workshop for the purpose of maintaining and manufacturing skip bins for use within the Eastern Creek REP and broader Bingo network. The Maintenance and Manufacturing Workshop would be located in the northeastern corner of the Proposal Site adjacent to the Eastern Creek REP boundary along Kangaroo Avenue. The Maintenance and Manufacturing Workshop would have a total footprint of approximately 8,500 m^2 and would have a maximum height of 14 m. The Maintenance and Manufacturing Workshop would provide a visual and acoustic buffer between neighbouring land uses

to the east and the landfilling activities within the centre of the Eastern Creek REP in lieu of the partially removed amenity berm.

The Maintenance and Manufacturing Workshop would comprise a shed with corrugated steel frame and cladding, approximately 14 m in wall height, with a corrugated steel sheeting roof pitched to a maximum height of approximately 14 m.

The proposed Maintenance and Manufacturing Workshop is a single storey building which would include an internal site office, warehouse amenities and a wash bay for trucks. The western perimeter of the building would consist of a series of roller shutter doors and an awning which would extend over the roller shutter doors to allow vehicles to load/unload under cover. A hardstand area located to the west of the building would connect to the proposed Kangaroo Avenue egress. This hardstand area may be used for truck parking and bin storage.

The Maintenance and Manufacturing Workshop would also include a 10 kL rainwater tank and fire services infrastructure.

3.3.8 Urban design and landscaping

A landscape plan has been prepared for the Proposal and is provided in Appendix R. The landscape and urban design plan has been prepared for all elements of the Proposal and therefore applies to Stages 1, 2 and 3 (the 'Ultimate Build').

The building and structures included in the Proposal would be of a high design quality. Building colours and finishes would be compatible, and blend with, the surrounding land uses, including non-reflective colours. The Site Workshop and the Maintenance and Manufacturing Workshop would comprise precast and steel sheet (Colorbond) style facades.

Landscaping would be carried out across the Proposal Site. Landscaping would include a mix of native mature trees, groundcover and grasses.

In particular, screen planting and perimeter fencing would be used along the eastern perimeter of the Proposal Site, between the Maintenance and Manufacturing Workshop and Kangaroo Avenue to provide a natural visual barrier. Further, landscaping would also be used along the proposed connection to Kangaroo Avenue to provide a visual barrier and soften proposed built elements. Landscaping would also be provided within the carpark to the south of MPC2.

Appendix R identifies the key landscaping locations proposed. These areas would be predominantly planted with native and local indigenous species. The existing EMS and LVMP will be updated to manage newly landscaped areas and the operation of the Proposal as required.

3.3.9 Water management infrastructure

The Proposal would utilise the existing onsite water management infrastructure described in Section 2.7.12. To support the additional built form elements included with the Proposal, additional water management infrastructure would be installed to complement the existing infrastructure, including:

- A rainwater harvesting system comprising two rainwater tanks located within/adjacent to the Site Workshop and Maintenance and Manufacturing Workshop
- Diversion swales adjacent to the new internal roads diverting stormwater flow towards both existing (Figure 2-3) and proposed stormwater detention basins
- A stormwater basin (Basin B) of 2,150 m^3 located in the northeastern portion of the Proposal Site
- A stormwater basin (Basin K) of 3,920 m^3 located in the northwestern portion of the Proposal Site
- A 400 m^2 bio-retention system within Basin B
- A new GPT incorporating capacity for removal of hydrocarbons will be installed along the proposed section of internal access road adjacent to the MPC2 building

- Additional storage tanks providing a total of 112.5 kL of storage tanks to supplement the four existing aboveground tanks
- Upgrades to the internal recycled water system, including capacity to transfer stored water from the existing northern and southern OSD basins and additional water storages commensurate with the increase in throughput capacity
- New mains supply infrastructure connecting to the Site Workshop and Maintenance and Manufacturing Workshop
- Provision of a new wastewater connection from the proposed Site Workshop and Maintenance and Manufacturing Workshop to Sydney Water's wastewater network.

3.3.10 Other and ancillary infrastructure

Additional carparking and amenities

The Proposal would include an additional carpark for light vehicles to the south of MPC2 and would accommodate up to 54 light vehicles, subject to detail design. The existing entrance to the car park would be shifted from the current approved location under Modification 8 (approved March 2021) to the west. Co-located with the new carpark would be a small amenities structure of 500 m^2.

Fire management infrastructure

The Proposal would utilise the existing fire management infrastructure described in Section 2.6.8. Additionally, a Fire Safety Strategy Report has been prepared for the Proposal by Innova Services and provided in Appendix O. The findings and recommendations of the report will be considered during the detailed design phase of the Proposal.

Solar panels

Solar panels would be installed on the roof of buildings within the Proposal Site to provide electricity for site operations. Buildings which may be subject to the installation of solar panels includes MPC1, MPC2, the Site Workshop and the Maintenance and Manufacturing Workshop. Based on preliminary calculations solar panels would provide up to 1 MW of electricity.

Utility management

The Proposal has been designed to minimise the impacts on communication and utilities services identified at the Eastern Creek REP. Table 3-3 provides a summary of the existing utility services and the likely upgrades that will be required to service the Proposal.

Table 3-3: Existing utility services and upgrades required to service the Proposal

Utility Service	Existing assets	Required Upgrades
Potable Water	• DN375 ductile iron pipes main to the western end of Honeycomb Drive (terminates within the Proposal Site approx.. 400m east of the MPC2 building). • DN300 ductile iron pipes main on the eastern side of Kangaroo Avenue.	Provision of a news mains connection for water supply to the proposed Site Workshop and Maintenance and Manufacturing Workshop.
Sewerage	• DN90 polyethylene pipe main on the southern side of Honeycomb Drive • DN225 polypropylene pipes main on the eastern side of Kangaroo Avenue	Provision of a new wastewater connection for the proposed Site Workshop and Maintenance and Manufacturing Workshop.

Utility Service	Existing assets	Required Upgrades
Recycled Water	• No reticulated recycled water in the vicinity of the Proposal Site. • Stored water from the northern and southern OSD basins is transferred via a pump station to four above ground water reuse tanks (total capacity 112.5kL), where it is reused in water carts and for truck wet-down.	Upgrades to the internal recycled water system, including capacity to transfer stored water from the existing northern and southern OSD basins and additional water storages commensurate with the increase in throughput capacity.
Electrical and Lighting	Underground electrical on the northern side of Honeycomb Drive and the eastern side of Kangaroo Avenue.	New connection to mains network to provide additional power and lighting to the proposed workshops.
Gas	No reticulated gas assets in the vicinity of the Eastern Creek REP site	No requirements for gas servicing as part of the Proposal.

3.3.11 Contributions

Bingo is currently in discussions with Blacktown City Council and TfNSW about the Proposal and will confirm the value and timing of any contributions payable on approval of the Proposal.

3.4 Construction

This section provides a description of the key construction activities associated with each Stage of the Proposal. Each Stage of the Proposal would be constructed independently from one another. Notwithstanding this, subject to final construction timing, construction Stages may overlap.

3.4.1 Timing and construction phases

As noted above each Stage of the Proposal would be constructed independently. The timing of each Stage would be contingent on a number of factors but are described indicatively below.

Stage 1: Initial throughput increase

No construction works are proposed as part of Stage 1.

Stage 2: Internal site optimisation

As shown in Table 3-2 the key built form element proposed as part of Stage 2 would comprise the connection to the Honeycomb Drive extension and the connection to be established from the northeastern corner of the Proposal Site onto Kangaroo Avenue as well as earthworks for Stage 3.

Honeycomb Drive is currently proposed to be extended from its western extent (currently a cul-de-sac located to approximately 420 m to the west of the intersection with Kangaroo Avenue) to a future arterial road being developed to the west of the Eastern Creek REP. The proposed Honeycomb Drive extension would be constructed between Honeycomb Drive in the east and the future Archbold Road extension to the west. Until the Archbold Road extension is completed by TfNSW, which will connect the Great Western Highway in the north and to Lenore Drive in the south, the extension will terminate at a cul-de-sac. Construction of the connection at the Honeycomb Drive extension would therefore be contingent upon the completion of the construction of the Honeycomb Drive extension, scheduled for completion in 2022.

A Development Application (DA) DA-21-01557 for the subdivision of land and associated civil works at 1 Kangaroo Avenue, Eastern Creek has been prepared and submitted to Blacktown City Council by IRM Property Group Pty Ltd and is in its final stages of assessment / determination with draft conditions of consent having been issued. In addition to subdivision of lots, the DA seeks approval

construction and operation a new 560m precinct road (Honeycomb Drive extension) between Honeycomb Drive in the east to the future Archbold Road extension in the west – the Honeycomb Drive extension. The subdivision DA (DA-21-01557) is expected to be determined by late May - June 2022. The construction program is expected to take approximately 12 months. Work has already commenced on procurement for a contractor to lead these works. As such the Honeycomb Drive extension will likely be operational prior to approval of the Proposal.

In the event that the Honeycomb Drive extension is not operational when approval of this Proposal is granted, to ensure minimal disruption to the Honeycomb Drive extension and minimise construction work, Bingo would liaise with by IRM Property No.2 during construction of the Honeycomb Drive extension to establish the exit intersection concurrently. Therefore, construction of the connection to the Honeycomb Drive extension would occur concurrently with the by IRM Property No.2 construction of the Honeycomb Drive extension, such that commissioning of the egress route would coincide with the opening of the Honeycomb Drive extension.

Construction of the connection to be established from the northeastern corner of the Proposal Site onto Kangaroo Avenue would occur independently to the construction of the connection to the Honeycomb Drive extension, however it is possible the two may be constructed concurrently. Subsequently, there may be some overlap of construction works with the construction to the connection to the Honeycomb Drive extension.

Stage 2 construction would be anticipated to take approximately 18 months, assuming that earthworks for both new exit connections are carried out sequentially, to complete for each connection, however construction may occur concurrently.

Construction of Stage 2 would comprise:

- Phase 2a: Site establishment including earthworks and removal of amenity berms as required
- Phase 2b: Establishment of pavement, road surface and kerbing
- Phase 2c: Other minor internal road works and construction of a carpark and amenities to the south of MPC2
- Phase 2d: Construction of the weighbridge control offices
- Phase 2e: Installation of weighbridges and wheel wash facilities
- Phase 2f: Signage, line marking and commissioning

Table 3-4 Stage 2 construction timing and phasing (indicative)

Month >	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Phase 2a																		
Phase 2b																		
Phase 2c																		
Phase 2d																		
Phase 2e																		
Phase 2f																		

Stage 3: Installation of supporting infrastructure

As shown in Table 3-2 the key built form element proposed as part of Stage 3 would comprise the Site Workshop and the Maintenance and Manufacturing Workshop. Stage 3 construction would be anticipated to take approximately 14 months to complete and would comprise:

- Phase 3a: Site establishment
- Phase 3b: Construction of the Site Workshop
- Phase 3c: Construction of the Maintenance and Manufacturing Workshop
- Phase 3d: Installation of perimeter fencing, landscaping and signage
- Phase 3e: Commissioning.

The individual timing of the above Phases would be subject to on site operational demands and may occur concurrently or as individual activities. Table 3-5 provides a highly indicative breakdown of construction tasks associated with Stage 3.

Table 3-5 Stage 3 construction timing and phasing (indicative)

Month >	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Phase 3a														
Phase 3b														
Phase 3c														
Phase 3d														
Phase 3e														

3.4.2 Construction Activities

Stage 2: Internal site optimisation

Key activities associated with the construction of the connection to the Honeycomb Drive extension and connection to Kangaroo Avenue forming Stage 2 of the Proposal would comprise the following activities:

- Phase 2a: Site establishment:
  - Establishment of works boundary, construction compound and stockpiling area
  - Vegetation clearing, mulching and grubbing. Mulched vegetation would be stockpiled and used on site for landscaping where possible
  - Earthworks, levelling and partial removal of amenity berms. Earthworks would require approximately 746,900 m^3 of material to be removed from across the Proposal Site including from the amenity berm to the west of MPC2, the amenity berm in the northeastern corner of the Proposal Site for the connection to Kangaroo Avenue and the levelling of the northeastern corner of the Proposal Site for Stage 3 works. Approximately 162,250 m^3 material removed from the amenity berms would be evaluated to determine its appropriateness for reuse elsewhere within the Eastern Creek REP (e.g., as landfilling capping material) and approximately 100,000 m^3 would be reused for construction. The remaining material would be taken off site for reuse or disposal
  - Establishment of road base.
- Phase 2b: Establishment of pavement, road surface and kerbing:

  - Establishment of diversion drainage systems adjacent to internal road, directing stormwater flows towards one of two new OSD basins
  - Construction of culvert crossing Angus Creek (associated with the connection to Kangaroo Avenue construction only
  - Intersection works
  - Establishment of pavement, road surface and kerbing
  - Pavement resurfacing of sealed roads.
- Phase 2c: Other minor internal road works and construction of amenities and carpark to the south of MPC2:
  - Regrading, repaving and general maintenance of the existing road network
  - Regrading and establishment of pavement for a carpark to the south of MPC2
  - Construction of amenities building to the south of MPC2
- Phase 2d: Installation of weighbridges and wheel washing facilities with rumble grid or equivalent track out management device.
- Phase 2e: Construction of the weighbridge control office
  - Erection of the weighbridge control offices
  - Internal fit-out.
- Phase 2f: Signage, line marking and commissioning
  - Installation of signage (comprising a give way sign providing right of way for drivers on the Honeycomb Drive extension or Kangaroo Avenue as appropriate)
  - Line marking
  - Demobilisation
  - Commissioning. Note that access from the internal Eastern Creek REP to Honeycomb Drive Extension would be prevented (via mobile bollards) until opening of the road.

Stage 3: Installation of supporting infrastructure

Key activities associated with the construction of the built form elements comprising Stage 3 of the Proposal would comprise the following activities:

- Phase 3a: Site establishment:
  - Establishment of works boundary, construction compound and stockpiling area
  - Establishment of levelled earthwork pads under the Site Workshop and Maintenance and Manufacturing Workshop areas.
- Phase 3b: Construction of the Site Workshop:
  - Laying of site services infrastructure
  - Establishment of base slab and foundations
  - Establishment of driveway access
  - Erection of the Site Workshop structure
  - Building fit-out
  - Connection to key services.
- Phase 3c: Construction of the Maintenance and Manufacturing Workshop:
  - Laying of site services infrastructure
  - Establishment of base slab and foundations

  - Establishment of driveway access
  - Erection of the Maintenance and Manufacturing Workshop structure
  - Installation of plant and equipment (i.e., Welding bays, wash bay, storage racking, spray booth, internal amenities)
  - Connection to key services.
- Phase 3d: Installation of perimeter fencing, landscaping and signage:
  - Installation of perimeter fencing
  - Installation of landscaping and signage
  - Installation of solar panels.
- Phase 3e: Commissioning:
  - Demobilisation
  - Commissioning.

3.4.3 Construction workforce and hours

For each Stage, works would be undertaken during standard construction hours:

- 7 am to 6 pm Monday to Friday
- 8 am to 1 pm Saturday
- No works on Sundays or Public Holidays.

The number of construction personnel would be determined by the stage and the construction activities occurring (described in Section 3.4.2). The construction workforce would likely peak where multiple construction phases and activities occur concurrently (which would be contingent on internal operational needs and final construction details). Indicative peak construction phases for each Stage, and their associated workforce, are presented in Table 3-6.

Table 3-6 Peak construction phases and workforce

Stage	Peak construction phase/s	Anticipated peak workforce
Stage 2	Overlapping construction of: • Phase 2a • Phase 2b • Phase 2c • Phase 2d	40
Stage 3	Overlapping construction of: • Phase 3b • Phase 3c	12

Construction personnel would utilise existing car parking available across the Eastern Creek REP and within established working compounds (for Stage 3 in particular).

3.4.4 Plant and equipment

Various types of plant and equipment would be required for the construction of the Proposal. A summary of the plant and equipment that are likely to be used during the construction of the Proposal is provided in Table 3-7.

Table 3-7 Indicative construction plant and equipment for the Proposal

Equipment	Construction stage	
	Stage 2	Stage 3
Excavators and backhoes	✓	✓
Forklifts		✓
Cherry pickers and mobile cranes		✓
Water trucks	✓	✓
Handheld tools	✓	✓
Concrete agitators, pumps and saws	✓	✓
Mulcher	✓	✓
Roller (vibratory and static)	✓	✓
Scraper	✓	✓

3.4.5 Construction traffic movements

Vehicles associated with the construction works would include light vehicles (workers travelling to and from the Proposal Site at the start and finish of shift, during lunch breaks and to conduct errands), and heavy vehicles delivering construction plant and equipment, materials and removing waste from construction activities.

The volume of construction traffic would be determined by the stage and the construction activities occurring (described in Section 3.4.2). Construction traffic would likely peak where multiple construction phases and activities occur concurrently (which would be contingent on internal operational needs and final construction details). The majority of vehicles associated with construction would be generated by the removal of excess spoil from the Proposal Site during Stage 2. Indicative peak construction phases for each stage, and their associated construction traffic volumes, are presented in Table 3-8.

Table 3-8 Peak construction phases and construction vehicle movements

Stage	Peak construction phase/s	Peak daily construction traffic movements (two-way)
Stage 2	Overlapping construction of: • Phase 2a • Phase 2b • Phase 2c • Phase 2d	• 40 light vehicle movements • 72 medium and/or heavy vehicle movements
Stage 3	Overlapping construction of: • Phase 3b • Phase 3c	• 12 light vehicle movements • 24 medium and/or heavy vehicle movements

3.4.6 Construction ancillary facilities

Two construction ancillary facilities would be required for construction of Stage 2 of the Proposal and one construction ancillary facility for Stage 3. The construction ancillary facilities including compound, temporary site office and stockpiling areas would be established for construction and would be located within the Eastern Creek REP boundary adjacent to the location of the construction works taking place.

3.4.7 Construction Environmental Management Plan

A CEMP would be prepared for the construction of the Proposal and would cover construction of Stage 2 and Stage 3 of the Proposal. This CEMP would be prepared based on the mitigation and management measures in this EIS (refer to Chapter 22) and the conditions of approval provided by DPE. The CEMP would provide the framework for the management of all potential environmental impacts resulting from construction activities.

3.5 Operation

The Proposal predominantly relies on continued operation of the existing Eastern Creek REP (as described in Section 2.7) with additional annual throughput and the operation of ancillary infrastructure. The operation of the Proposal would align with the three proposed stages:

- **Stage 1 Initial throughput increase:** Stage 1 would comprise 500,000 tpa of additional throughput to be received at the Eastern Creek REP to enhance resource recovery outcomes by increasing utilisation of on site processing capabilities. The majority of the increased throughput would be received and processed within MPC2. However, some throughput may be diverted to other waste management infrastructure within the Eastern Creek REP to meet market requirements.
- **Stage 2 Internal site optimisation:** Stage 2 would facilitate the remaining throughput increase (an additional 450,000 tpa of the total 950,000 tpa proposed) to be received and processed across the Eastern Creek REP. As per Stage 1, the majority of the increased throughput would be received and processed within MPC2. However, some throughput may be diverted to other waste management infrastructure within the Eastern Creek REP to meet market requirements. Stage 2 would also result in operational changes to internal traffic movements, with vehicles exiting via either the current exit or the proposed exits to either Kangaroo Avenue or the Honeycomb Drive extension (refer to Figure 3-3).
- **Stage 3 Installation of supporting infrastructure:** Stage 3 would comprise the operation of the Site Workshop and the Maintenance and Manufacturing Workshop (refer to Figure 3-4).

This section provides a detailed description of the operational changes forming the Proposal.

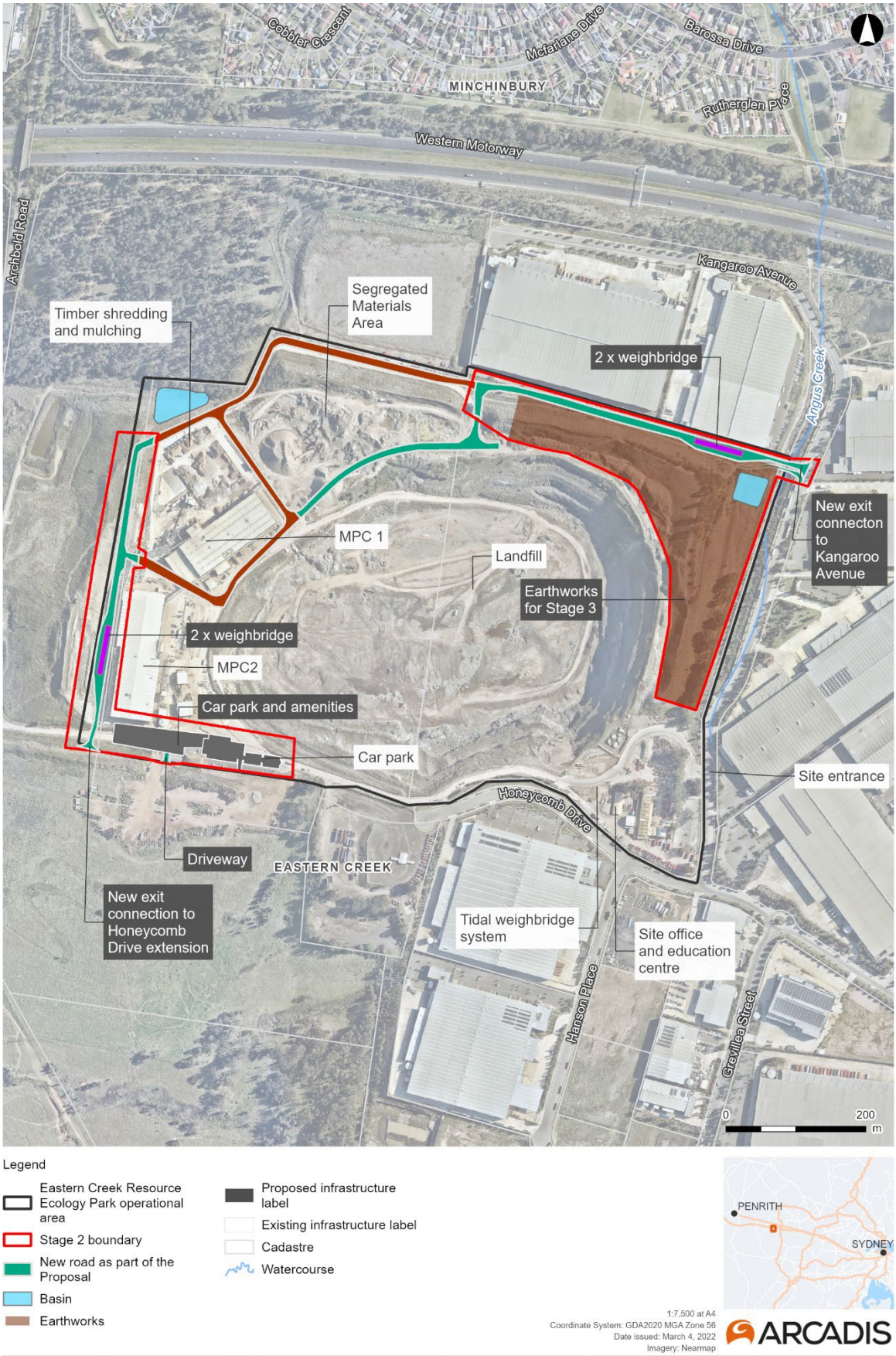


Figure 3-3 Proposed Stage 2 operations

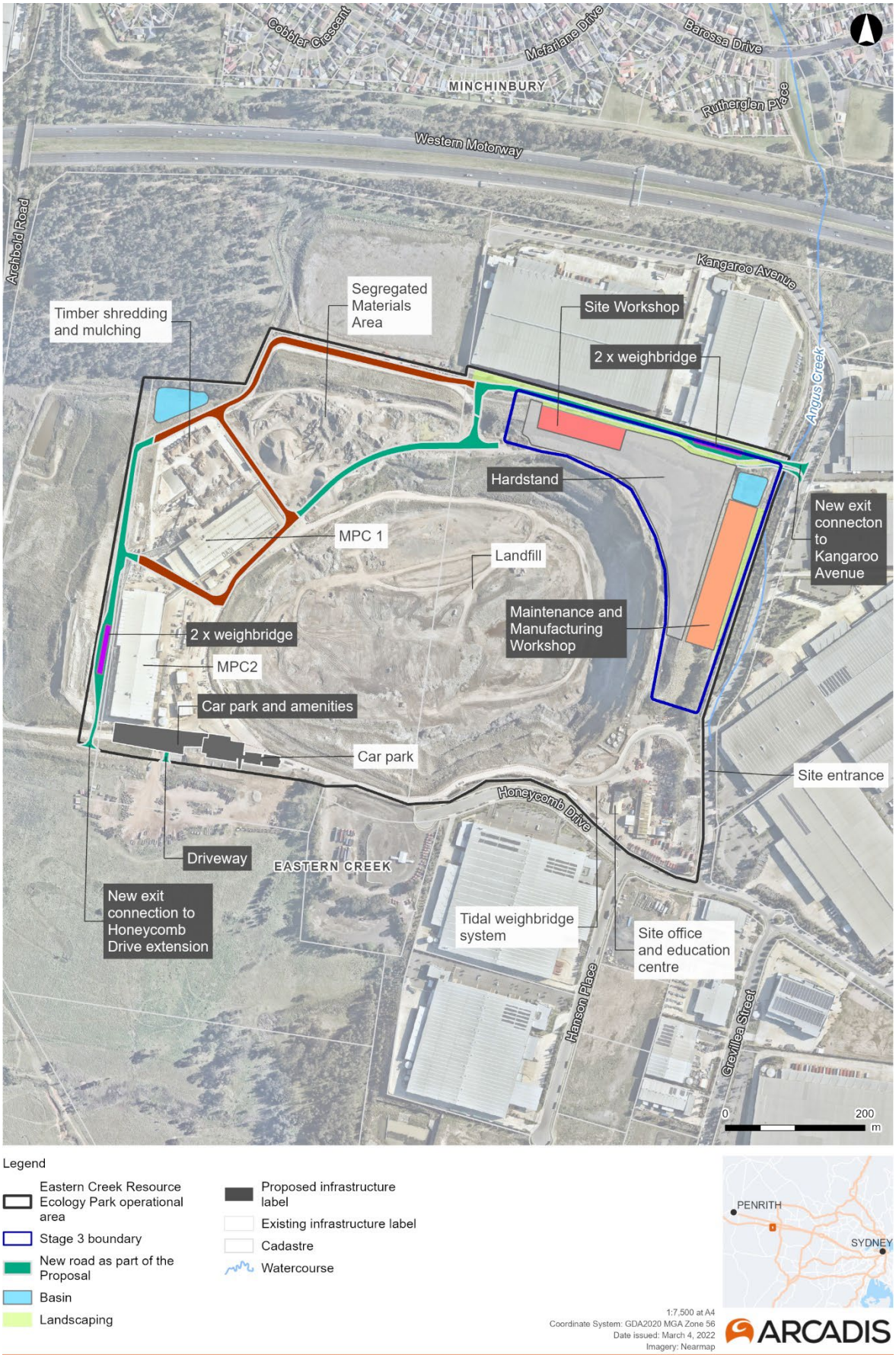


Figure 3-4 Proposed Stage 3 operations

3.5.1 Interaction with existing REP

Section 2.7 provides a detailed description of the current operations of the Eastern Creek REP. The Proposal would result in the continued operation of the Eastern Creek REP largely consistent with its current operations. The primary changes to the current operations would comprise:

- Increased waste throughput, and processing, within MPC2
- Marginal increase of waste received at other waste management infrastructure within the Eastern Creek REP
- Changes to internal traffic flows
- Operation of the Site Workshop and Maintenance and Manufacturing Workshop.

Section 2.7.1 describes the current operations being undertaken in accordance with the Project Approval (MP 06_0139). Once approved and at Full Build, the operation of the Eastern REP including the Proposal would comprise (changes from existing shown in ***bold***):

- ***Accept up to 2.95 Mtpa*** of C&D and C&I waste and landfilling of the quarry void of up to 1 Mtpa of non-putrescible waste (including asbestos and other non-recyclable waste), excluding residual chute waste from the materials processing centres
- The operation of MPC1 and MPC2 to recover recyclable material from C&D and C&I waste streams as well as utilisation of the chute and maintenance activities
- Crushing, grinding and separating works to process waste masonry material located in an area earmarked as the Segregated Materials Area (SMA)
- Receipt of segregated materials and truck delivery for landfilling activities
- Use of fixed and mobile plant to process (sort, screen, sieve, crush, grind, shred, chip and compost) waste to produce products for application to land (road base, aggregate, landscaping soil, bedding sand, mulch, wood chip, compost and asphalt derived products)
- Quarantine and transfer of unsuitable wastes to off-site licensed waste facilities for disposal
- ***Operation of associated infrastructure, plant and equipment; including upgrading of internal roads and reshaping of earthen amenity berms***
- ***Operation of a Site Workshop and Maintenance and Manufacturing Workshop***
- Stockpiles of 50 t of tyres and 20,000 t of green waste (stockpiles for all other material cannot exceed the height of the berms ***and/or 12 m***, impervious barriers or visual screens).

Sections 3.5.2 to 3.5.15 describe the key operational elements of the Proposal. Given the consistency of the Proposal with the existing operations at the Eastern Creek REP, this section should be read in conjunction with Section 2.7. Material aspects of the existing Eastern Creek REP that would be utilised to support the Proposal have been reiterated for ease of reading where applicable.

3.5.2 Waste types and volumes

Section 2.7.2 describes the existing waste types and volumes received at the Eastern Creek REP. The Proposal would not alter the waste types received at the Proposal Site, and would not seek to amend the current landfilling limit of one Mtpa of non-putrescible waste.

In 2021, Bingo undertook the bulk of construction for MPC2; a state-of-the art large scale processing facility capable of significant resource recovery. MPC2 has been designed to recover product from mixed C&I and light C&D waste streams, complementing the operation of MPC1. Section 4.1 highlights the substantial shortfalls across the greater Sydney area in achieving resource recovery targets for C&I waste streams (just 53 per cent against a target of 80 per cent recovery rate from all waste streams by 2030 as per the 20 Year Waste Strategy. Due to the scale and sophistication of the plant and equipment within MCP2, the facility would have the ability to contribute substantially to improving these recovery rates for the entire Greater Sydney region. The facility has a theoretical

processing capacity of up to 7,000 t of brick, concrete, timber, metal, soils, plastics, paper, cardboard and other recyclable materials a day and has manoeuvring space for 13 vehicles to tip simultaneously.

Given Eastern Creek REP's current throughput limit of 2 Mtpa and without an increased throughput limit, MPC2 can only process waste by diverting it from another resource recovery facility (MPC1 or SMA) within Eastern Creek REP and reducing overall recovery maximisation. The Proposal would increase the waste throughput across Stage 1 and Stage 2 by 950,000 tpa. It is intended that the majority (if not all) of this throughput increase would be directed to MPC2, to capitalise on the underutilised potential of this infrastructure and enhance resource recovery in a meaningful way for the Greater Sydney region.

Table 3-9 describes the waste types and volumes with the Proposal (changes from existing shown in ***bold***). As noted in Section 2.7.2, the nature and volume of waste processed within each area is dependent on market conditions at any given time and can fluctuate due to external factors. In some cases, waste would pass through more than one piece of waste management infrastructure within the Eastern Creek REP (e.g., waste received at MPC1 may end up as residual waste deposited within the landfill).

A detailed list of the authorised waste types approved for receival and processing at the Eastern Creek REP and provided at Appendix D.

Table 3-9 Waste types and volumes with Proposal

Waste management infrastructure	Typical waste types	Typical waste source	Indicative waste volume
Landfill	• Residual mixed waste	• MPC1 and MPC2	150,000 – 250,000 tpa
	• Residual waste (C&D and General Solid Waste (non-putrescible)) • Contaminated soil (including asbestos)	• Third party direct deliveries • Bingo fleet direct deliveries • Transfer stations and RRCs (residuals)	Up to 1 Mtpa
MPC1	Mixed or co-mingled C&D and C&I waste consisting of metals, brick, concrete, plasterboard, soil, aggregates, plastics and a range of building and demolition wastes.	• Third party direct deliveries • Bingo fleet direct deliveries • Transfer stations and RRCs	300,000 – 400,000 tpa ***(Once Stage 1 is operational)***
MPC2	Co-mingled C&I waste, and light C&D waste consisting of plastics, paper and cardboard, ferrous and non-ferrous metals, glass, soils and brick and concrete, and natural timbers.	• Third party direct deliveries • Bingo fleet direct deliveries • Transfer stations and RRCs	***Once Stage 1 is operational:*** ***700,000-800,000 tpa*** ***Once Stage 2 is operational:*** ***1.1M – 1.5Mpta***
SMA	C&D waste including: • Bricks • Concrete • Asphalt • Aggregate • Soil • Timber (timber storage yard) • Tyres (tyre stockpile area)	• MPC1 and MPC2 • Third party direct deliveries • Bingo fleet direct deliveries • Transfer stations and RRCs	200,000-350,000 tpa

Recovered product output

As noted in Section 2.7.2, a number of product streams are derived from resource recovery activities within MPC1, MPC2 and the SMA. These product streams are on-sold to third parties for use offsite generally for infrastructure and major projects, or further resource recovery. The product streams from the Proposal would be consistent with the current operations (Section 2.7.2).

3.5.3 Waste disposal, processing and resource recovery

Section 2.7.3 describes how waste is disposed of, processed and recovered within the Eastern Creek REP. The waste management infrastructure at the Eastern Creek REP would operate consistently with the current operations, with minimal change, described below.

Landfill

Minimal changes are proposed to the waste disposal practices within the landfill. Small additional quantities of residual waste may enter the landfill via the chute (as residual from MPC2 due to its proposed increased throughput and processing). However, operations of the landfill would be consistent with current operations and continue to operate within existing Project Approval limits.

Materials Processing Centre 1

With the commissioning and increased throughput within MPC2, discussed below, waste directed for processing within MPC1 would become more homogenous, focusing on larger C&D waste and optimising resource recovery outcomes. The general operational practices of MPC1 would be unchanged as a result of the Proposal.

Materials Processing Centre 2

The Proposal would predominantly alter the operations of MPC2 in the form of increased throughput. Notwithstanding the increased throughput, the operational nature of MPC2 would be unaltered from the description provided in Section 2.7.3.

Segregated Materials Area

Minimal changes are proposed to waste drop-off or product collection within the SMA. Small additional quantities of material may be directly received in this area as a result of the increased throughput, however operations of the area would operate consistent with current operations.

3.5.4 Site Workshop

The Site Workshop would provide an enclosed shed to carry out maintenance activities that are already occurring on site for plant and equipment utilised within the Eastern Creek REP, as well as heavy vehicles accessing Eastern Creek REP when required. The Site Workshop would also provide secure storage and maintenance area for:

- Handheld tools
- Vehicles, mobile plant and equipment (forklifts etc) not stored within specific waste management infrastructure on site
- Spare parts for plant and equipment
- Caged and bunded cleaning products and chemicals required to support operations).

Washdown facilities would also be provided for mobile plant and vehicles on site within the Site Workshop.

3.5.5 Maintenance and Manufacturing Workshop

The Maintenance and Manufacturing Workshop would primarily be used for the manufacturing and maintenance of skip bins including those used within the Eastern Creek REP and broader Bingo network. This facility would not be used for handling or processing waste materials.

Key activities would include:

- Manufacture of new bins for use within the Eastern Creek REP and broader Bingo network including cutting of steel, welding, fabrication and painting
- Dedicated painting and assembly booths with internal hydraulic sub-grade lifts
- Bin washing and cleaning within a dedicated washdown area
- Bin repair and maintenance of bins brought into the Eastern Creek REP
- Caged and bunded cleaning products and chemicals required to support operations
- Operation of mobile plant and equipment such as forklifts and gantry cranes.

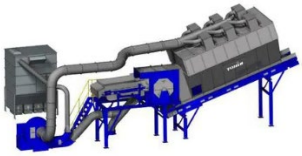
Based on similar facilities and the anticipated market demand, the facility would produce in the order of 5,000 new bins per annum across a range of sizes and refurbish / repair around 5,000 bins per annum. However, this is subject to market conditions and Bingo's requirements.

3.5.6 Plant and equipment

The Proposal would utilise existing fixed and mobile equipment within the waste management infrastructure across the Eastern Creek REP, as described in Section 2.7.4. The majority of the proposed throughput increase would be processed through MPC2. Processing equipment currently within MPC2 (as approved by MP 06_0139-Mod-8), would continue to be used and has sufficient capability to cater for the proposed increased throughput. Due to the reliant nature of the Proposal on the plant and equipment within MPC2, a detailed description of the key equipment types (approved) has been provided in Table 3-10 below.

Table 3-10 Description of processing equipment

Plant/equipment	Example	Description
Feed hoppers (x2)		The feed hoppers regulate the flow of the waste stream onto the recycling plant.
Mechanical shredders		Reduces the size of the waste materials to a size of 400-450 mm. The waste is then transferred onto a transfer conveyor and passes under a magnet to remove any large ferrous metals. The waste is then transferred to the waste screens.
Waste screens		The waste is transferred to the Waste Screen Feeder Conveyor and fed into a Waste Screen and screened into two fractions. The waste screen uses an unbalanced motor to cause the screen to vibrate, which in turn, causes the material to "cascade" across the screen. There are lifting bars fitted over the screens to ensure that the larger material does not block or cover the potential screening area and allows the fines to pass through the screen.

Plant/equipment	Example	Description
Flip flops		Consists of a number of frames, moving relative to each other, flexibly mounted within a static support structure. Transverse mesh support beams are alternatively attached to the inner and outer frames. The materials are screened into different size fractions before being conveyed to the next stage in the process.
Single and double drum separators		Following being screened and being passed through the flip flop screens, the materials are then passed through Single Drum Separators (SDS) or Double Drum Separators (DDS) where it separates light from heavy fractions. The lights from the SDS are discharged onto SDS Lights Collection Conveyor then onto the waste transfer conveyors. The fractions from the SDS are then combined, passed through Overband Magnets to remove any remaining ferrous metals from the material. The ferrous fraction is collected onto the Ferrous Discharge conveyor. The remaining material will then be conveyed to the Eddy Current Separator.
Eddy current separators		The material will be discharged onto a vibrating feeder, in order to maximise the spread of material. This will also liberate any material from the non-ferrous. The Eddy Current removes the non-ferrous metals by means of inducing “Eddy Currents” into the non-ferrous items through a high-speed rotor. Here, once separated, the Ferrous and non-Ferrous material will be collected by the relevant conveyors and stockpiled in a bay underneath. The remaining timber fraction continues towards the volumetric splitter. This splitter separates the material into two lines which passes the timber fractions into Optical separators.
Optical sorters		These optical sorters use Near Infra-Red (NIR) technology to detect different types of material. Once the selected material has been detected, the optical separator uses jets of compressed air to eject the selected products at high speed. These optical separators are single valve NIR optical separator’s which means they can positively eject one product while leaving the residual product to pass on.
X-ray sorters		These machines use x-ray technology to sort waste according to its atomic density. The machines are fitted with a high variable power X-ray generator combined with a new generation dual energy detector with an increased resolution and detection capacity. Once the selected material has been detected, the X-ray machine uses jets of compressed air to eject the selected products at high speed.

Plant/equipment	Example	Description
Conveyers and cranes		A series of conveyors and cranes infeed and transfer waste between the various processing equipment within MPC2.
Mobile plant		Various items of mobile plant (up to 6) for movement and handling of waste (CAT 972 or similar).

In addition to the use of plant and equipment within waste management infrastructure across the Eastern Creek REP, the Site Workshop and Maintenance and Manufacturing Workshop would utilise additional plant and equipment including:

- Site Workshop:
  - Handheld tools
  - Hydraulic lifts (e.g., for raising machinery for underneath maintenance)
  - Forklifts
  - Gantry cranes.
- Maintenance and Manufacturing Workshop
  - Gantry cranes
  - Forklifts
  - Handheld tools.

3.5.7 Waste storage

Section 2.7.5 outlines the current waste storage limits and arrangements across the Eastern Creek REP. The maximum volume of waste / product stored on site at any one time is currently dictated by the one time storage limit of 667,000 tpa under the EPL. However, Bingo is seeking to increase the stockpile authorised amounts as part of an application to the NSW EPA to vary EPL 20121 to a one time storage limit of 950,000 tpa. Final stockpile volumes would be confirmed and approved as part of that PL amendment process.

No changes are proposed to the current waste storage limits or arrangements as part of the Proposal, as prescribed on the Stockpile Management Plan shown in Table 2-5.

3.5.8 Non-conforming waste

Section 2.7.6 describes the current operational practices to manage non-conforming waste. Any material not included within the defined accepted waste streams described in Section 3.5.2, approved under MP 06_0139 and EPL 20121, is considered to be ‘non-conforming’ waste.

The Proposal would not involve the acceptance of hazardous waste (with the exception of asbestos already accepted in the landfill) or non-confirming wastes. However, on occasion, items may be discovered in incoming waste streams that contain hazardous substances or non-conforming waste.

These materials would be handled in accordance with the existing EMS and appropriately stored for efficient disposal.

The majority of the increased volume of waste proposed to be received as a result of the Proposal would be processed within MPC2. Procedures for managing non-conforming waste are outlined in Section 2.7.6.

Given that a large portion of the incoming product would be sourced from transfer stations, there is a high degree of quality control undertaken prior to the waste being received at the Proposal Site. Incoming waste from transfer stations would be inspected and pre-sorted at the transfer station to the acceptable standard required for the Proposal and would consist of complying waste streams.

3.5.9 Waste tracking

Section 2.7.7 describes the current operational practices for waste tracking carried out at the Eastern Creek REP. The additional throughput that would be received as part of the Proposal would be subject to the same waste tracking requirements.

3.5.10 Delivery of waste and product collection

Internal traffic flows

Section 2.7.8 describes the current internal traffic flows for the Eastern Creek REP. The Proposal would result in minor changes to the internal traffic flows as follows:

Stage 1: Initial throughput increase

Stage 1 would not result in any changes to the internal traffic flows as described in Section 2.7.8 and summarised as follows:

- All vehicles would enter the Eastern Creek REP via the entrance on Kangaroo Avenue and weigh-in over the tidal weighbridge system
- Vehicles would travel along the main access road on southern boundary of the Proposal Site
- Once vehicles reach the intersection adjacent to MPC2 they would be directed to one of the four waste management infrastructure areas within the Eastern Creek REP (landfill, MPC1, MPC2 or the SMA)
- Vehicles manoeuvre within the respective resource recovery areas to tip or collect product
- Vehicles would then exit the Eastern Creek REP by traversing DADI Drive towards the Kangaroo Avenue exit, weighing back out over the tidal weighbridge system and making a right-turn exit movement.

Stage 2: Internal site optimisation

Stage 2 of the Proposal would include the construction and operation of a connection to the Honeycomb Drive extension and a connection to Kangaroo Avenue. Both connections would provide an alternate exit to vehicles leaving the Eastern Creek REP. The construction and operation of either connection would support the additional throughput increase.

The connection to the Honeycomb Drive extension would provide an alternative exit in particular for vehicles accessing MPC1 and MPC2, which would exit the facility by heading west after tipping and along the western edge of MPC2. They would weigh out over one of the two outbound weighbridges and turn onto the Honeycomb Drive extension. All other internal movements would remain the same.

The connection to Kangaroo Avenue would provide a secondary alternate exit to vehicles leaving the Eastern Creek REP (refer Figure 3-5). In particular, vehicles accessing the SMA and landfill which would exit by turning to the north and heading east around the northern perimeter of the Eastern Creek REP. They would weigh out over one of the two outbound weighbridges and make a right hand turn onto Kangaroo Avenue.

As landfilling is a progressive activity the landfill access road may be periodically shifted in response to landfilling requirements. A new landfill access point is planned for the southwestern portion of the landfill void from DADI Drive to enable continued landfill access as landfilling progresses. Depending on progress in implementation of the approved landfill filling plan this may occur prior to construction of the Proposal.

Stage 3: Installation of supporting infrastructure

As per Stage 1, Stage 3 would not result in any changes to the internal traffic flows as described in Section 2.7.8. However, once Stage 2 is complete, vehicles exiting the Proposal Site could use any one of the three exit points pending operational needs. Vehicles would be directed to the most appropriate exit by on site traffic controllers. Vehicles visiting the Maintenance and Manufacturing Workshop would enter and exit the Proposal Site via the new connection to Kangaroo Avenue. All other internal movements would remain the same.

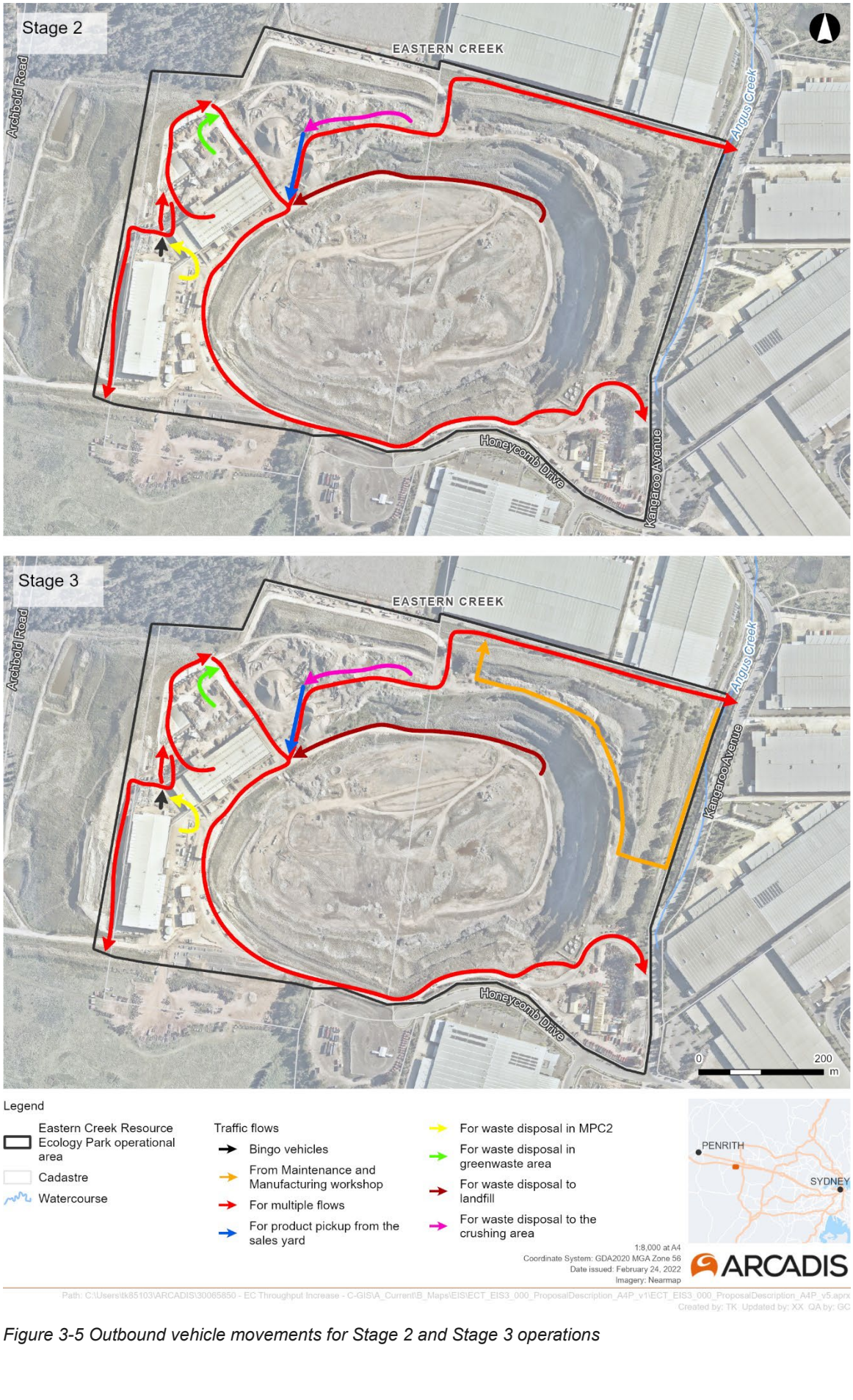


Figure 3-5 Outbound vehicle movements for Stage 2 and Stage 3 operations

Vehicle types

Section 2.7.8 provides a description of the vehicle types currently accessing Eastern Creek REP. The same vehicle types would continue to access Eastern Creek REP once the Proposal is operational.

The rationalisation of Bingo's network has resulted in the size of delivery trucks to Eastern Creek REP generally increasing over recent years. The Proposal would result in an increase in overall trucks accessing the Proposal Site, in particular, MPC2. Vehicles accessing MPC2 would primarily comprise; walking floor trailers, truck & dog trailers and medium sized vehicles (as well as other vehicles as needed).

Vehicle movements

The Proposal would result in an increase in the daily movements at the Eastern Creek REP. The anticipated composition of waste drop off vehicles is outlined in Table 3-11. It is noted that there may be fluctuations in daily movements by truck type and the below is indicative only.

Table 3-11 Indicative inbound vehicle breakdown with the Proposal

Vehicle type	Average capacity (t)	Indicative daily movements (two-way)
Stage 1		
Walking floor	20	35
Heavy (e.g. Truck and dogs)	32	15
Medium	4	53
Total		**103**
Stage 2		
Walking floor	20	32
Heavy (e.g. Truck and dogs)	32	14
Medium	4	47
Total		**93**
Stage 1 + Stage 2		
Walking floor	20	67
Heavy (e.g. Truck and dogs)	32	29
Medium	4	100
Total		**196**

The increase of processing within MPC2 would result in an increase in product collection vehicle entering the Eastern Creek REP (refer Table 3-12).

Table 3-12 Indicative outbound vehicle breakdown with the Proposal

Vehicle type	Average capacity (t)	Indicative daily movements (two-way)
Stage 1		
Walking floor	20	24
Heavy (e.g. Truck and dogs)	32	22
Medium	-	-
Total		**46**
Stage 2		
Walking floor	20	21
Heavy (e.g. Truck and dogs)	32	20
Medium	-	-
Total		**41**
Stage 1 + Stage 2		
Walking floor	20	45
Heavy (e.g. Truck and dogs)	32	42
Medium	-	-
Total		**87**

Light vehicles

The Proposal would increase the number of on site personnel working at Eastern Creek REP. As noted in Section 3.5.11 an additional 70 FTE would be employed at Eastern Creek REP as a result of the Proposal. The allocation of operational staff across the various resource recovery facilities, Site Workshop and Maintenance and Manufacturing Workshop due to the Proposal is presented in Table 3-13.

Table 3-13 Operational staff with the Proposal

Facility/ Activity	No. of Employees					
	Stage 1		Stage 2		Stage 3	
	Day Shift	Night Shift	Day Shift	Night Shift	Day Shift	Night Shift
MPC1 and MPC2	72	61	77	66	77	66
Landfill	12	2	12	2	12	2
Crushing and SMA	16	0	16	0	16	0
Site Management	6	0	6	0	6	0

Facility/ Activity	No. of Employees					
	Stage 1		Stage 2		Stage 3	
	Day Shift	Night Shift	Day Shift	Night Shift	Day Shift	Night Shift
Site Office	25	0	25	0	25	0
Workshop & Maintenance	0	0	0	0	25	25
Sub-total	**131**	**63**	**136**	**68**	**161**	**93**
Total	**194**		**204**		**254**	

3.5.11 Operating hours

Section 2.7.10 describes the operational hours for the Eastern Creek REP. No changes are proposed to operational hours as a result of the Proposal (provided again in Table 3-14 for reference). The proposed Site Workshop and Maintenance and Manufacturing Workshop would operate 12 hours per day between 6am and 6pm, consistent within existing approved hours of operation for the Eastern Creek REP.

Table 3-14 Operating hours

Activity	Day	Time
Construction	Monday – Friday	7:00am to 6:00pm
	Saturday	8:00am to 4:00pm
	Sunday and Public Holidays	Nil
MPC – operation, waste receival, chute use and maintenance	Monday – Friday	24 hours
	Saturday	
	Sunday and Public Holidays	
SMA – crushing and screening	Monday – Friday	6:00am to 6:00pm
	Saturday	8:00am to 4:00pm
	Sunday and Public Holidays	
SMA – receipt of segregated materials	Monday – Friday	24 hours
	Saturday	8:00am to 4:00pm
	Sunday and Public Holidays	
Landfill – truck deliveries	Monday – Friday	5:00am to 9:00pm
	Saturday	
	Sunday and Public Holidays	
Site Workshop	Monday – Friday	6:00am to 6:00pm
	Saturday	
	Sunday and Public Holidays	
Maintenance and Manufacturing Workshop	Monday – Friday	6:00am to 6:00pm
	Saturday	
	Sunday and Public Holidays	

3.5.12 Operational capacity

Section 2.7.10 describes the theoretical maximum operational capacity of the Eastern Creek REP. The Proposal would utilise spare operational capacity currently latent within the Eastern Creek REP. Calculations for the theoretical capacity of the Eastern Creek REP are based on the current operational area (i.e. Lot 1 and part Lot 2 DP1145808 and Lot 2 DP1247691). If approved, Modification 9 would expand the operational area of the Eastern Creek REP further increasing the latent capacity and providing additional space for the proposed throughput. In addition, changes to internal road network and supporting infrastructure would increase the Eastern Creek REP site-wide capacity. Changes to the operational capacity of each of the individual components of Eastern Creek REP as a result of the Proposal include:

- A small increase in residual waste to landfill is expected however, no changes to the operational capacity of the landfill are envisaged as the one Mtpa landfill limit excludes residual waste entering the landfill via the chute
- Minimal changes are anticipated to the operation of MPC1 as a result of the Proposal and no changes to the operational capacity of MPC1 are therefore envisaged
- The Proposal would increase the throughput of waste being processed by MPC2. It is envisaged that the majority of the throughput from both Stage 1 and Stage 2 (950,000 tpa) would be directed to MPC2, and as such the waste throughput within MCP2 would equate to approximately 1.1 M – 1.5 Mtpa (assuming some waste currently directed to MPC1 may also be processed within MPC2). MPC2 has a theoretical processing capacity of up to up to 7,000 t a day
- Minimal changes are anticipated to the operation of the SMA as a result of the Proposal and no changes to the operational capacity of SMA are therefore envisaged.

Each of the individual components of Eastern Creek REP has a theoretical operational capacity in excess of current approved throughput, indicating there is substantial additional capacity within the Eastern Creek REP.

3.5.13 Workforce

It is anticipated that the increase in throughput associated with the Proposal would require up to an additional 20 FTE employees within the MPC1 and MPC2 facilities and 50 FTE employees for the Maintenance and Manufacturing Workshop taking the total number of employees across the Eastern Creek REP to 254 (with up to 160 people on site at one time). The majority of the Eastern Creek REP workforce would access the site via standalone light vehicle access from Honeycomb Drive, separate from heavy vehicle traffic accessing the site via Kangaroo Avenue.

Employees would generally access Eastern Creek REP via two shifts, generally between 5am and 3pm and 3pm to 1am which may alter from time to time and based on operational and market conditions. Additional employees may occasionally be used to cover absences or leave.

The operational workforce at the Eastern Creek REP, including the Proposal, is outlined in Table 3-15.

Table 3-15 Proposed workforce

Component	Staff (FTE)	
	Day	Night
MPC1 and MPC2	77	66
Landfill	12	2
Crushing and SMA	16	0
Maintenance and Manufacturing Workshop	25	25
Site management	6	0
Site office	25	0
Total	**161**	**93**

3.5.14 Water, landfill gas and leachate management

Section 2.7.12 describes operational management of water, landfill gas and leachate management associated with the Eastern Creek REP. Management of landfill gas and leachate would be unchanged by the Proposal.

Section 3.3.9 describes the additional water management infrastructure that would be installed as part of the Proposal.

Stormwater runoff within the Proposal Site is proposed to be collected via a network of stormwater drainage infrastructure, including pits, pipes and table drains. This infrastructure would discharge to either an existing or a proposed on-site stormwater detention (OSD) basin prior to discharge from the Proposal Site.

A portion of the Proposal Site, including extents of the proposed work under the Proposal, discharges towards the northern and southern OSD basins. The remainder of the proposed extent of work would discharge towards one of two new basins:

- Basin B – to be located near the northeastern corner of the Proposal Site, adjacent to the Upper Angus Creek corridor that runs parallel to Kangaroo Avenue. Basin B will also include a bio-retention system, which will be positioned adjacent to the OSD component of the basin such that there would either be no OSD or a shallow OSD depth over the bio-retention system.
- Basin K – to be located near the northwestern corner of the Proposal Site, adjacent to the natural low point along the site boundary.

Basin B would include a 400 m^2 bio-retention system is proposed which would be positioned adjacent to the OSD component of the basin such that there would either be no OSD or a shallow OSD depth over the bio-retention system. The objective of bio-retention systems is to provide a filtering effect when stormwater runoff flows through a vegetation layer and sand and/or gravel filer media to remove pollutants from the runoff. Bio-retention systems generally consist of an open space containing landscaping of native grasses, shrubs, and trees with an underlying filter media. The exact configuration of the bio-retention system within the proposed OSD basin is subject to confirmation at detailed design.

A new GPT incorporating capacity for removal of hydrocarbons would be installed along the proposed section of internal access road adjacent to the MPC2 building. This GPT would capture and treat surface water runoff from the proposed section of access road adjacent to the MPC2 building, prior to discharge into the existing catch drain that then discharges to the existing southern OSD basin. Details of the GPT, including configuration and sizing, would be confirmed during detailed design.

Two new rainwater tanks, one each for the proposed Site Workshop and the proposed Maintenance and Manufacturing Workshop would be installed as part of retain a significant proportion of stormwater that falls on roof areas. Considering tanks would be fitted with first flush devices, it is likely that they would have minimal water quality benefit as the first flush off roof areas generally contain the highest concentration of pollutants. However, rainwater tanks would be required to maximise water reuse opportunities within the Proposal Site.

Additionally, in order to cater for the anticipated increase in external non-potable water demand, it is proposed that additional storage tanks would be provided to supplement the four existing tanks. An additional 112.5 kL of storage tanks would be provided, effectively doubling the volume of storage available for external water reuse within the Proposal Site. This additional storage volume would maximise water reuse opportunities and minimise the volume of potable water required for non-potable use.

The Proposal would not result in any changes to landfill gas and leachate management.

3.5.15 Environmental management and monitoring

Section 2.7.13 describes the environmental management and monitoring carried out across the Eastern Creek REP. Current monitoring and management would continue and waste received as part of the Proposal would be subject to the existing management plans and practice. In addition, Chapter 22 identifies a range of additional environmental management measures that would be implemented for the Proposal.

4 PROPOSAL NEED, ALTERNATIVES AND JUSTIFICATION

This chapter describes the strategic need and justification for the Proposal. It also describes the alternatives that were considered and assessed during the Proposal development process.

The SEARs relating to the strategic need for the Proposal, and a summary of where they are addressed, is presented in Table 4-1.

Table 4-1: SEARs (Justification)

SEARs	Where addressed
General requirements	
The environmental impact statement (EIS) for the development must meet the form and content requirements in clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (the Regulation). In addition, the EIS must include:	Section 4.1 (need for the proposed development)
• A detailed description of the development, including: – The need for the proposed development	
– Justification for the proposed development	Section 4.1 (justification) and Section 4.2 (strategic planning policies)
• Statutory and strategic context – including: – Detailed justification for the proposal and the suitability of the site	Section 4.1 (justification) and Section 4.2 (strategic planning policies) Section 2.7.10 and Section 3.5.10 (site capacity)
• Demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, adopted precinct plans, draft district plan(s) and adopted management plans and justification for any inconsistencies. This includes, but is not limited to: – *State Environmental Planning Policy (Infrastructure) 2007;* – *State Environmental Planning Policy (Western Sydney Employment Area) 2009;* – *State Environmental Planning Policy (State and Regional Development) 2011;* – *State Environmental Planning Policy No 33 – Hazardous and Offensive Development;* – *State Environmental Planning Policy No 55 – Remediation of Land;* – *Draft State Environmental Planning Policy (Remediation);* – *Greater Sydney Region Plan: A Metropolis of Three Cities;* – *Our Greater Sydney 2056: Central City District Plan; and*	Section 4.2 (strategic planning policies) Chapter 5 (SEPPs[4] and other legislation) The EIS addresses the updated State Environmental Planning Policies which have been consolidated by the NSW Government and correspond to those reflected within the SEARs, as identified below: • *State Environmental Planning Policy (Infrastructure) 2007;* now *State Environmental Planning Policy (Transport and Infrastructure) 2021* • *State Environmental Planning Policy (Western Sydney Employment Area) 2009;* now *State Environmental Planning Policy (Employment and Industry) 2021* • *State Environmental Planning Policy (State and Regional Development) 2011;* now *State Environmental Planning Policy (Planning Systems) 2021* • *State Environmental Planning Policy No 33 – Hazardous and Offensive Development* and *State Environmental*

[4] State Environmental Planning Policy

SEARs	Where addressed
– *Future Transport Strategy 2056*	*Planning Policy No 55 – Remediation of Land* are now part of *State Environmental Planning Policy (Resilience and Hazards) 2021*

4.1 Proposal need and strategic justification

Optimising operations, and increasing the throughput, of the Eastern Creek REP by 950,000 tpa increases the capacity for Greater Sydney to manage its own waste, without expanding the footprint of waste infrastructure in the region. Upgrades to the internal site infrastructure further unlock the potential of the strategically significant Eastern Creek REP, facilitating the optimisation of site operations. With benefits of scale and optimal location within the Sydney transport network and the growth markets of Western Sydney, the Proposal would allow for the much-needed increase in Sydney's resource recovery capacity while maintaining and improving operational efficiency and environmental outcomes. A key objective of circular economy is to keep products, materials, equipment and infrastructure in use for as long as possible to maximise their value to society. Facilities like Eastern Creek REP play a critical role in upholding and implementing circular economy processes through recovering greater quantities of materials and resources from landfill, manufacturing and giving value to the materials, and facilitating their recirculation back into the economy.

The optimisation of the Eastern Creek REP is required to:

- Enhance the operational efficiency of the Eastern Creek REP through improvements in internal design and development of supporting infrastructure
- Support the ongoing investment in strategic infrastructure by the NSW and Commonwealth Governments through providing recycled products for major transport and social infrastructure projects
- Contribute to the State achieving resource recovery target of 80% by 2030 from all waste streams under the 20 Year Waste Strategy (DPE, 2021a) through diverting quantities of waste from landfill
- Strong diversion of C&D and C&I waste from non-putrescible landfills in Greater Sydney, which the 20 Year Waste Strategy (DPE, 2021a) estimates will exhaust in 2028
- Harness the state-of-the-art advanced waste processing capacity of the MPC2 facility (due to be commissioned in the second quarter of 2022) to respond to significant C&I processing capacity shortfalls in the Sydney MLA and in doing so by supporting enhanced resource recovery outcomes
- Promote a circular economy hub and reduce disposal costs for processing residuals by diverting material from landfill and keeping products and materials in use by governments and the industry in accordance with the 20 Year Waste Strategy and the NSW Circular Economy Policy Statement – Too Good to Waste (NSW EPA, 2019)
- Contribute to the economy in Western Sydney by creating direct and indirect skilled employment opportunities, both during construction and long-term
- Manage potential impacts associated with the construction and operation of the Proposal in an environmentally and socially responsible manner.

Bingo continually analyse the strategic utilisation of all infrastructure within their network to identify opportunities to improve efficiency, environmental performance and resource recovery outcomes. The Eastern Creek REP represents essential waste infrastructure to meet the demand for processing and recovery of the anticipated C&D and C&I waste volumes in Greater Sydney in the next decade.

A focus on diversion addresses the critical constraints on non-putrescible landfill within the region, while significant expansion of the recycling and reprocessing network is critical to meeting State and Commonwealth waste targets and responding to fundamental challenges to the circular economy business model.

4.1.1 Non-putrescible waste processing and disposal options in Sydney and NSW (current)

The *National Waste Report 2020* (Blue Environment, 2020) stated that in 2018-19 NSW generated approximately 11,410,000 tonnes of C&I waste and a further 9,737,000 tonnes of C&D waste. Approximately 6,491,000 tonnes of C&I waste was recycled (57 per cent) along with 7,752,000 tonnes of C&D waste (80 per cent), with the remainder disposed to landfill.

Projections for the 20 Year Waste Strategy estimate total waste generation in NSW (all streams) will grow by 76 per cent over the next 20 years, from 21 Mtpa to 37 Mtpa. The linkage of waste generation with economic and population growth indicates the majority of that increase will occur in Greater Sydney.

Growth in waste generation will increase consumption of landfill airspace, with just seven years of remaining life in non-putrescible landfill in Greater Sydney, which is forecast to exhaust by 2028 under business as usual conditions ('BAU') (Figure 4-1).

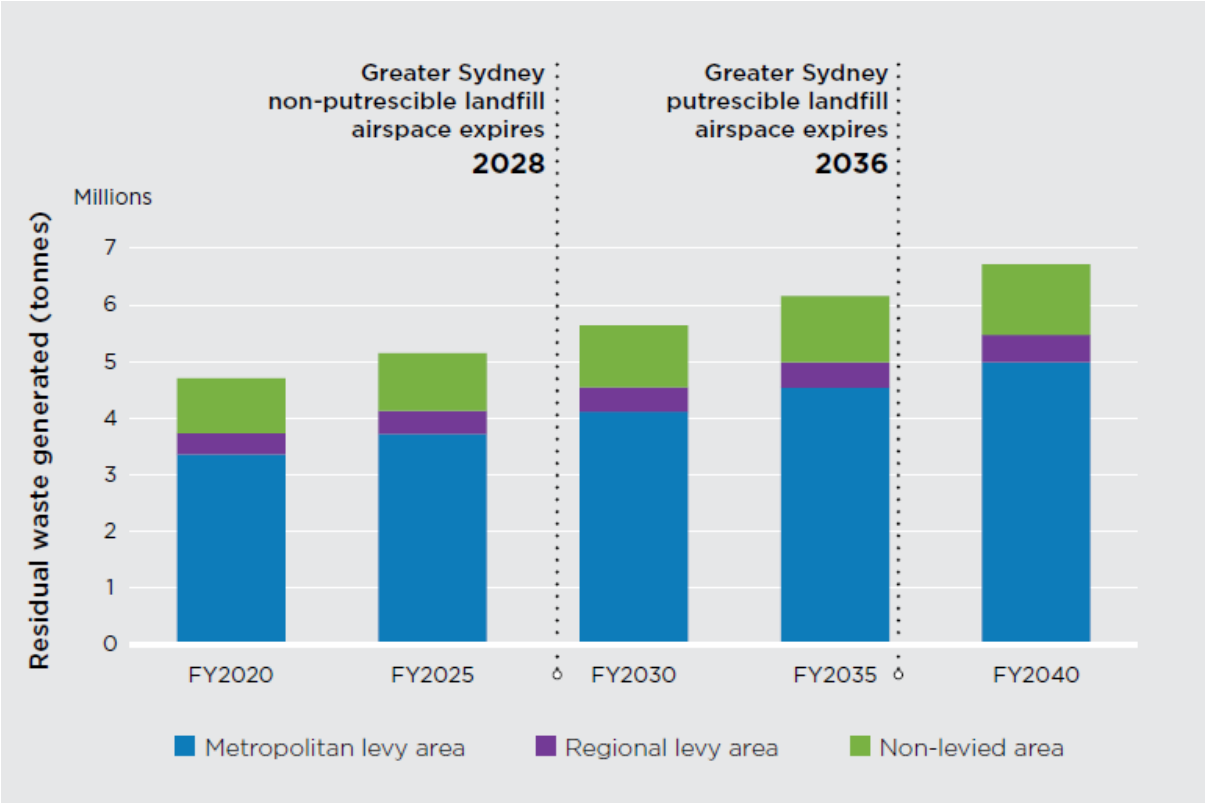


Figure 4-1: NSW waste forecast and Greater Sydney landfill expiry (NSW Waste and Sustainable Materials Strategy 2041, DPE 2021)

The 20 Year Waste Strategy (DPE, 2021a) estimates that under BAU, Greater Sydney needs more than three Mtpa of additional non-putrescible waste capacity by 2030, and a further 1.2 Mtpa of putrescible waste capacity by 2040. The significant challenge to develop new landfills in Greater Sydney supports the development of advanced processing technology as a preferred alternative to landfill, such as MPC2 at the Eastern Creek REP.

In addition to DADI's Eastern Creek landfill, the key non-putrescible waste facilities in Greater Sydney are:

- Kemps Creek Resource Recovery Park which includes the capacity to landfill approximately 950,000 tpa of general solid and restricted non-putrescible waste
- Breen Resources landfill at Kurnell, which accepts non-putrescible C&D waste (no licenced limit)

- Kimbriki Resource Recovery Centre at Terrey Hills, which is approved to receive approximately 232,000 tpa of non-putrescible general solid waste for landfilling and resource recovery
- Bingo Industries Patons Lane facility at Orchard Hills, which includes the capacity to landfill 205,000 tpa of general solid non-putrescible waste (soils).

The other key non-putrescible waste landfills are at or close to capacity, including Veolia Horsley Park, Blacktown Waste Services and Glenfield Waste.

There is very limited recovery of mixed C&I waste in Greater Sydney, with only three existing processing facilities offering a collective approved annual capacity of 280,000 tpa. The Cleanaway ResourceCo facility at Wetherill Park is the only significant facility with an approved capacity of 250,000 tpa, together with small facilities operated by Doyle Brothers and Waste Free. These facilities all produce a single-use refuse derived fuel (RDF), which is a lower order recovery pathway in the waste hierarchy.

According to the *National Waste Report 2020* (Blue Environment, 2020) (see Table 4-2), NSW is significantly below its targets for delivery of the *NSW Waste Avoidance and Resource Recovery Strategy 2014–21* targets. The recycling rate for C&I waste was only 53 per cent in 2017-18 against a target of 70 per cent. The marginal progress on landfill diversion has relied primarily on the C&D waste sector.

*Table 4-2 Relevant C&I targets and progress**

Key Result Area	C&I Target*	Progress Report update
Increase recycling	Increase recycling rates for C&I to 70%	• Recycling rate for C&I in 2017-18 was 53%. • The C&I recycling rate increased by four percentage points from 49% in 2016-17.
Diverting an industry-leading percentage of waste from landfill	Maintain and progress our industry leading diversion rate	• The diversion rate in 2017-18 was 65%. • No increase in landfill diversion has been achieved since 2016.

* Performance against *NSW Waste Avoidance and Resource Recovery Strategy 2014–21* targets

The data indicates the C&I waste sector is significantly under-performing in both recycling and recovery. Recycling in the C&I sector is highly focused on source separated materials such as paper / cardboard and metals, with limited uptake of commingled recycling services due to the cost and space requirements of additional bins. Further work is required to address the complex mix of commercial drivers that influence waste generators, and to develop new C&I recycling solutions. Until then, significant volumes of C&I materials will continue to be disposed of to landfill. The operation of MPC2 has the ability to process co-mingled C&I waste, using state-of-the-art processing equipment to achieve recovery rates of up to 90 per cent. At 9,000 m^2, MPC2 will significantly increase recycling capacity and diversion of waste from landfill across its network of recycling facilities located in the Sydney MLA.

4.1.2 Planning for future non-putrescible waste management

With the projected increase in population and associated economic growth of Sydney, and in particular Western Sydney, it is anticipated that there will be a significant increase in the baseline volume of non-putrescible waste requiring management.

In addition, numerous large infrastructure projects in Sydney are proposed with planned construction to commence in the near future or currently under construction, which will result in a further increase in non-putrescible waste generation. These projects include the Western Sydney Airport, West Metro, M12 Motorway, Western Harbour Tunnel and Beaches Link. Waste from these infrastructure projects would typically consist of general construction waste, asbestos contaminated waste and soil material

and is consistent with waste currently disposed of at Eastern Creek REP. Infrastructure projects will also likely require recycled products provided by Eastern Creek REP.

Eastern Creek REP is located within the Western Sydney Employment Area's Eastern Creek Precinct. The Western Sydney Employment Area provides businesses in the region with land for industry and employment while also providing access to major transportation corridors and utility services and is close to the (under construction) Western Sydney Airport. As stated in the *Greater Sydney Region Plan* (GSC, 2018a) in order to reduce waste transport requirements, retaining industrial land locally for waste management and recycling is critical. The Eastern Creek REP promotes a circular economy and reduces disposal costs for process residuals by diverting material from landfill and keeping products and materials in use by governments and industry.

The optimisation of Eastern Creek REP would provide the Western Sydney Employment Area and surrounding Western Sydney Growth Area with waste infrastructure for both C&D waste generated during construction (including from activities such as Western Sydney Airport, M12 Motorway and various urban release areas and utility upgrades), as well as C&I waste generated by new and existing businesses. The proximity of the Eastern Creek REP to the arterial motorway network provides a positive outcome for both developers and the community through reduced transport requirements and associated community and monetary costs. Eastern Creek REP is continuously evolving to increase diversion of C&D and C&I waste from non-putrescible landfill in Greater Sydney and harness the state-of-the-art advanced waste processing capacity. Contributing to the economy in Western Sydney through its continuous evolution by creating direct and indirect skilled employment opportunities.

4.1.3 Latent capacity at the Eastern Creek REP

In a metropolitan region with severe space constraints, significant competition for land and high community sensitivity, optimising under-utilised facilities is a low-friction approach to enhancing the capacity and resilience of the overall system.

Rather than expand the footprint of waste infrastructure in Greater Sydney, the Proposal aims to further unlock the potential of the strategically significant Eastern Creek REP. Upgrades to the internal site infrastructure would facilitate the optimisation of site operations. With benefits of scale and optimal location within the Sydney transport network and the growth markets of Western Sydney, the Proposal would allow for the much-needed increase in Sydney's resource recovery capacity, while also maintaining and improving operational efficiency and environmental outcomes

Additionally, the Proposal Site is in close proximity to development within the surrounding Western Sydney Growth Area allowing for the convenient provision of recycled products.

Further, the throughput increase supports recent construction of the state-of-the-art MPC2 (due to be commissioned in the second quarter of 2022), which was developed in response to market demand and the policies of both the NSW and Commonwealth governments for expanded and enhanced resource recovery infrastructure.

The Eastern Creek REP represents a significant resource recovery facility servicing the Greater Sydney region. The scale, nature and operating hours of the waste management infrastructure comprising the Eastern Creek REP enable it to process and recover products from a substantial volume of waste (currently up to 1 Mtpa). The recent construction of MPC2 (due to be fully operational in the second quarter of 2022 calendar year) significantly increases the resource recovery capacity of the Eastern Creek REP; notably for the recovery of C&I waste which currently only achieves a 53 per cent diversion rate against the 80 per cent target recovery rate from all waste streams by 2030 as per the 20 Year Waste Strategy. However, with the Eastern Creek REP being expected to reach its currently approved operational throughput of two Mtpa (in 2021 calendar year), the substantial capacity of the facility to enhance resource recovery outcomes is being unrealised.

Section 2.7.2 describes the current waste types and volumes received and processed at the Eastern Creek REP, and Section 2.7.10 describes the operational capacity of the Eastern Creek REP. The recent construction of MPC2 (due to be fully operational in the second quarter of 2022 calendar year) – based on processing capacity of the plant and equipment as well as the size of the facility – considerably increases the resource recovery capacity of the Eastern Creek REP. MPC2 has a theoretical processing capacity of up to 7,000 t a day. Table 4-3 shows the current throughput of each

piece of waste management infrastructure within the Eastern Creek REP (refer Section 2.7.2) as well as the indicative throughput with the Proposal (refer Section 3.5.2). Without the increased throughput from the Proposal, the resource recovery facilities (namely MPC1 and MPC2) within Eastern Creek REP are processing considerably less material than their capacity would allow for (processing between 600,000-800,000 tpa compared to a theoretical capacity of up to 2.5 Mtpa for MPC2 alone (7,000 t a day)). Given limited alternatives for recovery of, in particular, C&I waste within the Sydney MLA, this under-utilisation of the Eastern Creek REP state-of-the art resource recovery technology is contributing to Sydney's and NSW's failure to meet current resource recovery targets.

Table 4-3 Current waste volumes

Area / facility	Typical waste types	Current indicative throughput (without Proposal)	Indicative throughput with Proposal
Landfill	Residual mixed waste	150,000 – 250,000 tpa	150,000-250,000 tpa
	• Residual waste (C&D and General Solid Waste (non-putrescible)) • Contaminated soil (including asbestos)	Up to 1 Mtpa	Up to 1 Mtpa*
MPC1	Mixed or co-mingled C&D and C&I waste consisting of metals, brick, concrete, plasterboard, soil, aggregates, plastics and a range of building and demolition wastes.	650,000-800,000 tpa Will reduce to 300,000-400,000 tpa once MPC2 becomes operational	Once Stage 1 is operational 300,000-400,000 tpa
MPC2	Co-mingled C&I waste, and light C&D waste consisting of plastics, ferrous and non-ferrous metals, glass, soils and brick and concrete, and natural timbers.	Will be operational by (Q2 2022) and would process 300,000-400,000 tpa	Once Stage 1 is operational: 700,000-800,000 tpa Once Stage 2 is operational: 1.1 Mtpa – 1.5 Mtpa
SMA	C&D waste including; bricks, concrete, asphalt, aggregate, soil, timber (timber storage yard), and tyres (tyre stockpile area)	200,000-350,000 tpa	200,000-350,000 tpa
Site wide infrastructure capacity	As above	Up to 2 Mtpa	Up to 2.95 Mtpa

**excluding residual chute waste*

4.1.4 Network efficiency

Bingo operates an integrated and connected network of resource recovery and waste management facilities across the Greater Sydney network (Figure 4-2). Bingo's network provides accessible locations for the collection and drop-off of non-putrescible waste across the Sydney MLA, allowing Bingo to efficiently sort, process and transport waste. MPC2, at the Eastern Creek REP, has been designed to competently process, in particular, C&I waste that cannot easily be processed or recovered in smaller facilities (due to the complexity and high capital investment in the necessary plant and equipment required to recover waste of this type). MPC2 allows up to eight walking floor trailers to tip simultaneously at the northern pit, depositing pre-sorted / consolidated waste received at other RRFs and waste transfer stations (WTSs). Figure 4-3 shows the flows across Bingo's network of transfer stations and RRFs. It is noted that many of Bingo's facilities currently have 24-hour operations, allowing for efficient optimisation of deliveries across the network to MPC2.

Increasing the throughput processing limit at Eastern Creek REP, and the volume of waste that can be processed within MPC2, would increase the efficiency of the entire Bingo resource recovery network by improving sorting and consolidation of waste within their network of RRFs/WTSs. Further, the strategic location of the Eastern Creek REP, which is central to Greater Sydney and in close proximity to surrounding urban motorway connections, provides efficient connectivity to Bingo's broader resource recovery network. The design and capacity of MPC2 allows for larger vehicles (walking floor trailers) to drop off waste, higher loads to be transported per vehicle and reduced overall vehicle numbers across the Greater Sydney road network. This allows for improved operational outcomes at the load out location (e.g., it is more efficient to load one large truck than several smaller trucks).

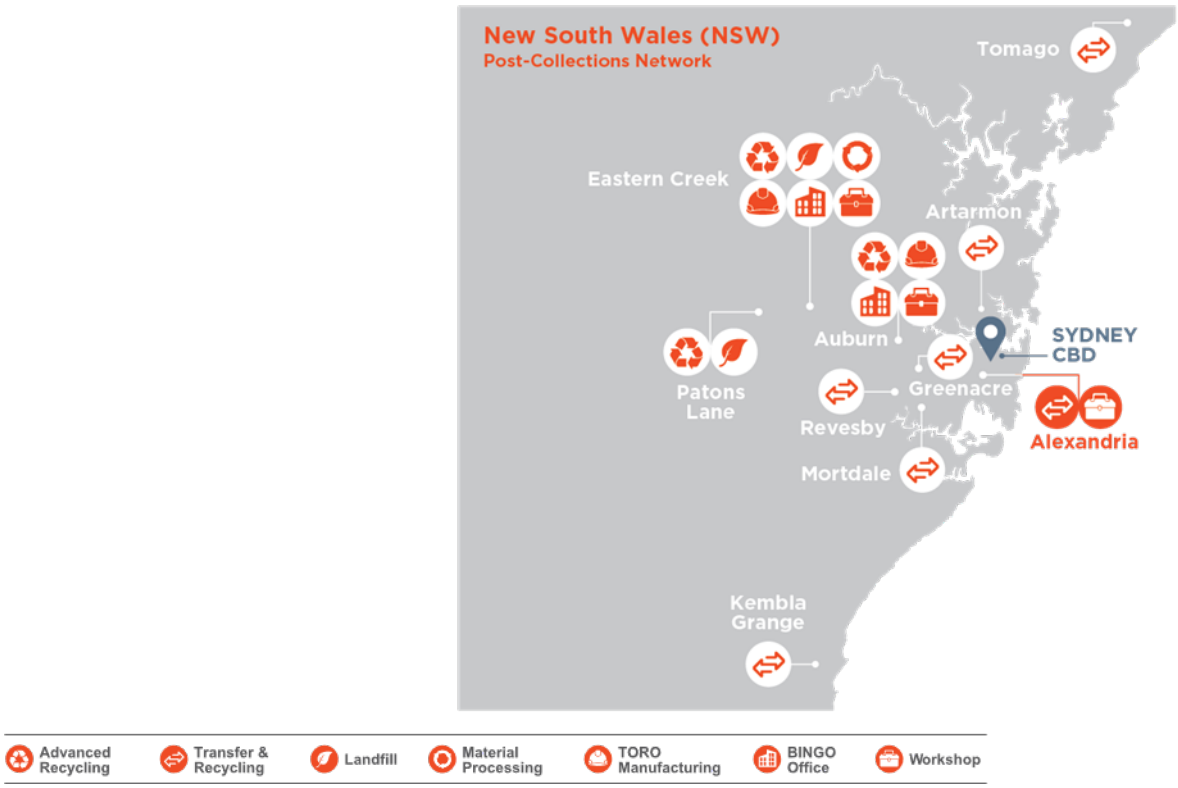


Figure 4-2: Bingo facilities network

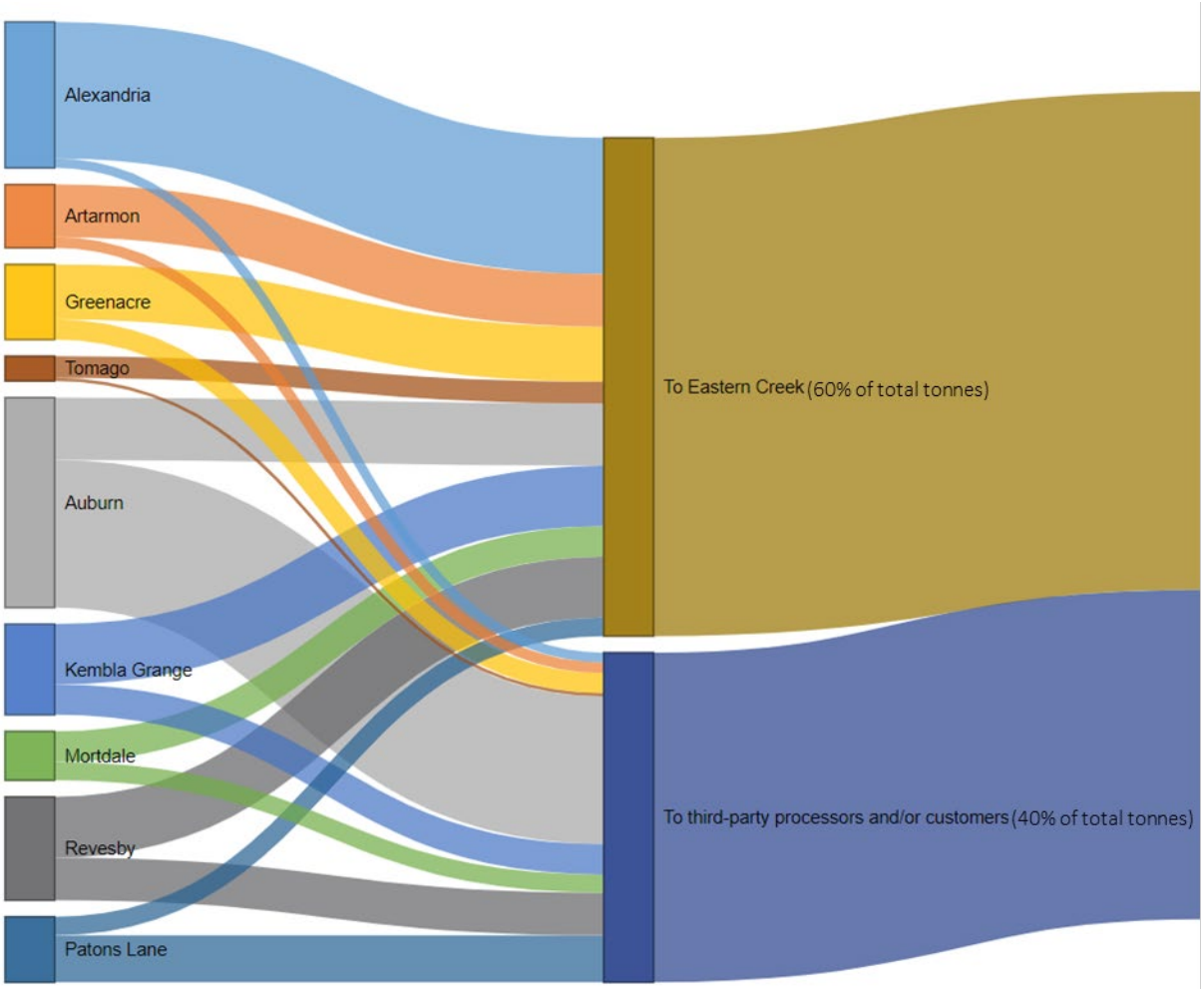


Figure 4-3: Bingo network waste flows

4.1.5 Circular economy outcomes

The Proposal supports the implementation of a circular economy in NSW as it directly relates to an increase in throughput of waste undergoing resource recovery and reducing the quantity of waste going to landfill. Bingo's investment in recycling and resource management infrastructure is aimed at closing the resource loop by generating usable and market demanded products from recycled material. The Proposal therefore represents a critical resource recovery opportunity that will be required to facilitate the NSW Government's desire to pursue a holistic approach to resource management.

The 20 Year Waste Strategy (DPE, 2021a) and the NSW Circular Economy Policy Statement – *Too Good to Waste* (NSW EPA, 2019) describe the State's objectives to achieving circular economy outcomes. Bingo's operations, and the Proposal, are key to helping the State achieve the outcomes as soon as feasible.

Figure 4-4 shows DPE's (2021) conceptual schematic for creating a circular economy, with Bingo's sphere of influence overlaid. As shown in Figure 4-4, Bingo's operations influence a considerable portion of the circular economy. The Proposal would enhance Bingo's ability to successful achieve this influence and optimise recovery and circular outcomes for NSW.

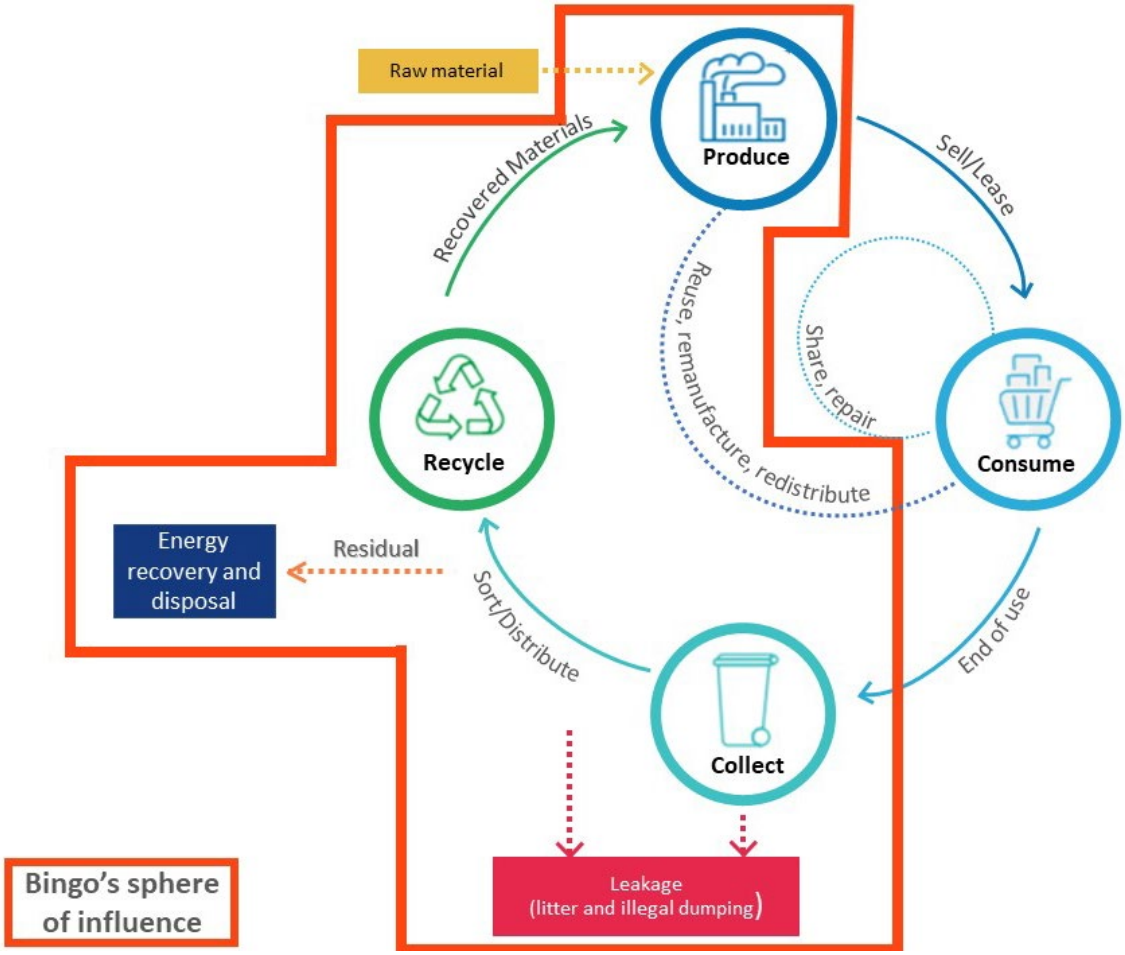


Figure 4-4: Bingo's impact on circular economy outcomes (utilising (DPE, 2021a))

4.1.6 Other benefits

The Proposal would result in a number of additional other benefits during construction and operation, namely:

- Reducing the potential for impacts to the natural environment (e.g., land clearing) compared to a greenfield site by utilising an existing brownfield industrial site for development
- Direct and indirect economic and social benefits both locally and regionally through:
  - Providing employment for up to 40 FTE positions during the construction period
  - Creating up to 70 FTE positions during the operation of the Proposal
  - Capital investment in Western Sydney of up to $53 million, creating the potential for procurement from local providers, suppliers and subcontractors (a Capital Interment Value (CIV) report is provided in Appendix G).

4.2 Consistency with strategic planning policies

4.2.1 NSW Waste and Sustainable Materials Strategy 2041 – Stage 1: 2021-2027

The 20 Year Waste Strategy (DPE, 2021a) was released in June 2021 and supersedes the previous Waste Avoidance and Resource Recovery (WARR) Strategy 2014-21 (NSW EPA, 2014). The Strategy sets out the long-term vision for managing waste, planning for infrastructure, reducing carbon emissions, creating jobs and refocusing the way NSW produces, consumes and recycles products and materials.

The Strategy outlines a vision for transitioning to a circular economy over the next 20 years and gives the actions to be taken over the next six years to deliver on long-term objectives.

The Strategy sets out 10-year targets (under Stage 1), with the following high relevance targets:

- Reduce total waste generated by 10 per cent per person by 2030
- Have an 80 per cent average recovery rate from all waste streams by 2030
- Significantly increase the use of recycled content by governments and industry.

These goals are critical to increasing the longevity of landfills, with Greater Sydney under the most acute landfill airspace pressure in NSW (with the Northern Rivers region).

Bingo fully supports the objectives of the Strategy, including empowering individuals, Councils and commercial customers around waste avoidance and minimisation through dedicated education programs.

The Proposal contributes to the achievement of the 80 per cent NSW recovery target through the increase in resource recovery activities, utilising existing waste management infrastructure at the Eastern Creek REP. In particular, the utilisation of latent capacity within MPC2 has potential to considerably improve recovery of the C&I waste stream where recovery rates are currently low (refer Section 4.1.1). In addition, the Proposal would support the ongoing production of recycled materials and products for use by government and industry for major transport and social infrastructure projects.

Energy from Waste Infrastructure Plan 2041

The *Energy from Waste Infrastructure Plan 2041* (EfW Infrastructure Plan) (NSW EPA, 2021a) supports the Strategy with the intent to guide strategic planning for future thermal EfW facilities to ensure that infrastructure is located in areas that best address the state's waste management needs.

To manage human health risk in high density and growing populations, the EfW Infrastructure Plan identifies four Priority Infrastructure Areas within which EfW facilities may be located, none of which are located within the Greater Sydney region. With EfW an unlikely pathway in the Sydney region, increasing the recovery of C&I waste is crucial to decreasing waste sent to landfill and managing the increasing waste generated by a growing population. Furthermore, the EfW Infrastructure Plan states that while the NSW Government supports energy recovery where it makes sense to do so and where it is used to manage genuine residual waste, it should not be considered an alternative to waste reduction or recycling. As such, the Proposal aligns with the states strategic vision to utilise resource recovery to increase diversion from landfill.

4.2.2 National Waste Policy: Less Waste More Resources

The *National Waste Policy: Less Waste, More Resources* (Australian Government, 2018) (*National Waste Policy*) outlines the federal government's direction for waste management in Australia through to 2030. The *National Waste Policy* provides a national framework for collective action by public and private sectors, particularly resource recovery industries, to improve the management of waste resources and promote sustainable and innovative solutions to growing challenges facing waste management in Australia. This Policy also supports national engagement in the United Nations Sustainable Development Goal 12: Responsible Consumption and Production.

The outcomes intended to be achieved under the Policy include the following:

- Australia manages waste, including hazardous waste, in an environmentally safe, scientific and sound manner, and has reduced the amount per capita of waste disposed
- Waste streams are routinely managed as a resource to achieve better environmental, social and economic outcomes
- Australia has increased the number of products, goods and materials that can be readily and safely used for other purposes at end of life.

The Proposal would assist the implementation of the outcomes of the *National Waste Policy* by providing best practice waste processing and recycling utilising existing infrastructure in an environmentally safe, scientific and sound method. Specifically, the Proposal would assist in the implementation of Strategy 7: Increasing industry capacity by increasing the throughput of C&I and C&D waste processing, utilising existing waste management infrastructure. This would increase waste diversion from landfill and increase the quantity of recycled content available for reuse as high-quality products.

The Proposal is therefore consistent with the aims and objectives of the *National Waste Policy* and encourages better waste management which has direct benefits for human health, the environment and the Australian and NSW economies.

4.2.3 NSW Circular Economy Policy Statement – Too Good to Waste

NSW Circular Economy Policy Statement – Too Good to Waste (NSW EPA, 2019) (the Policy Statement) is the NSW Government's discussion paper on the approach to implementing the principles of a circular economy in NSW. This Policy Statement presents an overview of the application of a circular economy to resource management including strategies for developing a Circular Economy Policy.

The Policy Statement outlines eight focus areas to support the transition to a circular economy. This includes supporting innovation through investment into material processing solutions and technologies and assisting the development of facilities that produce high quality recycled materials.

The Proposal supports the implementation of a circular economy in NSW, as detailed in Section 4.1.5, as it directly relates to an increase in throughput of waste undergoing resource recovery and reducing the quantity of waste going to landfill. Bingo's investment in recycling and resource management infrastructure is aimed at closing the resource loop, by generating usable and market demanded products from recycled material. The Proposal therefore represents critical infrastructure involving the continued and expanded use of existing state-of-the-art waste processing infrastructure (MPC2) that will be required to facilitate the NSW Government's desire to pursue a holistic approach to resource management.

4.2.4 Greater Sydney Region Plan – A Metropolis of Three Cities

The *Greater Sydney Region Plan: A Metropolis of Three Cities* (Greater Sydney Commission (GSC), 2018a) is a regional planning framework that establishes the vision for the Greater Sydney region over the next 40 years. The Plan recognises the challenges the region faces with a growing population and aims to transform Greater Sydney into a metropolis of three cities – one of which being the Central River City where the Eastern Creek REP is located – with a focus on liveability, productivity and sustainability. The Plan outlines 10 directions and 40 objectives which identify areas to target in order to guide the implementation at a regional, district and local level.

Objective 35 of the plan is 'More waste is re-used and recycled to support the development of a circular economy'. This objective highlights the need for additional waste management and recycling infrastructure, including landfill and liquid waste processing capacity, noting the need for additional recycling infrastructure capacity for municipal (local council), commercial and industrial, and household hazardous waste. The objective also highlights the need to protect waste management infrastructure from encroachment of residential development.

The Proposal supports this objective as it would increase the resource recovery capacity of the Greater Sydney region and increase the throughput and efficiency of critical resource recovery infrastructure to being capable to process up to 2.95 Mtpa of C&D and C&I waste. In addition, the Proposal would utilise existing infrastructure at an existing waste management facility through the continued and expanded use of existing state-of-the-art waste processing infrastructure (MPC2) generating increased resource recovery rates. Retaining this industrial land for ongoing waste management will also ensure the delivery of efficient and resilient waste management systems for Greater Sydney.

Central City District Plan

The *Central City District Plan*, prepared by the Greater Sydney Commission (GSC, 2018b) (the Plan), is a strategy that provides a clear vision for the growth and development of the Central City District of Metropolitan Sydney for the next 20 years. The Plan informs the implementation of the *Greater Sydney Region Plan: A Metropolis of Three Cities* (GSC, 2018a) at a regional level.

The Plan establishes key goals for the growth and development of the Central City District including 22 planning priorities and 85 actions which align with the directions and objectives outlined in the Greater Sydney Region Plan. The following are applicable to the Proposal:

- Planning Priority C19 – Reducing carbon emissions and managing energy, water and waste efficiency
- Action 77 – Protect existing and identify new locations for waste recycling and management
- Action 78 – Support innovative solutions to reduce the volume of waste and reduce waste transport requirements.

While the Proposal would result in an increase in direct GHG emissions generated (refer to Chapter 19), the recycling of materials would also result in avoided emissions from offsetting the need for new raw materials to create virgin materials to be used within construction. For example, if the equivalent quantity of ferrous and non-ferrous metals that would be recovered as a result of the Proposal were to be sourced entirely from virgin material, the embodied energy content would be over 800,000 tCO_2-e/pa.

While the recycling process from end to end would also generate emissions not captured above, and this is not a representation of total saving, it indicates that if a full life cycle assessment were conducted for the Proposal it would likely demonstrate a (potentially substantial) overall emission reduction. Furthermore, the Proposal would include the installation of solar on the buildings at Eastern Creek REP with an estimated 1 MW in size, capable of producing over 1.3 Mkwh of electricity per annum, the equivalent of powering over 190 average Australian homes. As such, the Proposal is consistent with Planning Priority C19, contributing to a reduction in carbon emissions, thereby fulfilling the reduction in carbon emissions requirement.

Planning Priority C19 also identifies the need to improve the efficiency and capacity of waste infrastructure within the Central City District due to the significant growth and development planned for the district over the next 20 years. The provision of waste infrastructure within the region is essential for ensuring availability and cost efficiency of waste services for the community.

The Proposal would involve the increase in throughput of a critical piece of waste management infrastructure within the Central City District and would increase resource recovery rates. This would assist in creating a sustainable Central City District by reducing the amount of waste that goes to landfill. The Proposal would receive waste from locally generated sources (i.e., Greater Sydney) which would reduce the cost to the community of waste management as waste would not be transported outside the region to be processed.

The Proposal would also fulfil the requirements of Action 77 and Action 78 as the Proposal would be carried out on an existing waste management site and involve the continued and expanded use of existing state-of-the-art waste processing infrastructure (MPC2) that would promote the principles of a circular economy through the implementation of a pull through model that consists of the sorting, reprocessing and specified end uses of processed materials as an integrated, closed loop solution.

4.2.5 Western Sydney Waste Avoidance and Resource Recovery Strategy 2017-2021

The *Western Sydney Waste Avoidance and Resource Recovery Strategy 2017-2021* (WSROC, 2017) outlines regional priorities and actions for councils aimed at diverting more waste from landfill and capitalising on the need to sustainably manage waste in the region. The strategy includes seven themes to support regional actions to avoid and reduce waste generation, increase recycling, divert more waste from landfill, manage problem wastes better, reduce litter and illegal dumping, and encourage regional cooperation.

Themes 2 & 3: Increase Recycling and Divert More Waste from Landfill includes the action to work with waste processing contractors to improve resource recovery at facilities. Consistent with the 20 Year Waste Strategy, themes 2 & 3 target increasing domestic resource recovery rates in the region to 70 per cent by 2025.

The Proposal directly supports this target through enhancing resource recovery rates (with recovery of in excess of 80 per cent) and improving operational efficiencies at the existing Eastern Creek REP.

4.2.6 Future Transport Strategy 2056

The Future Transport Strategy 2056 (NSW Government, 2018) sets the 40-year vision, strategic directions and outcomes for customer mobility in NSW. Future Transport Strategy 2056 identifies the transport challenges that will need to be addressed to support NSW's economic and social performance over the next 20 years and establishes a number of short, medium and long-term actions to address those challenges.

While waste is not specifically referenced in the Future Transport Strategy 2056, the Proposal would support the vision for transport presented in the strategy through increasing waste management capabilities of an existing facility, located in an industrial area, that is well connected to the arterial motorway network. Optimising the existing Eastern Creek REP would prevent the requirement for the construction of an additional facility elsewhere in Greater Sydney which would have the potential to result in waste transport vehicles having a greater impact on transport customers.

Increasing the processing limit at Eastern Creek REP, and the volume of waste that can be processed within MPC2, would also increase the efficiency of the entire Bingo resource recovery network by improving sorting and consolidation of waste within RRFs / WTSs. The design and capacity of MPC2 allows for larger vehicles (walking floor trailers) to drop off waste, allowing for higher loads to be transported per vehicle and reducing overall vehicle numbers across the Sydney road network.

4.3 Alternatives considered

Consideration was given to alternative approaches as part of the design development process for the Proposal. The feasible alternatives considered to address the Proposal objectives (refer Section 1.3) for the Eastern Creek REP included:

- A 'Do nothing' scenario
- Construction of a new facility at an alternate site
- Alternate site layout and configuration
- Alternate throughput and staging
- Throughput increase and infrastructure upgrades at the existing Eastern Creek REP (the Proposal).

Each of these alternatives were reviewed against the Proposal objectives and are discussed below.

4.3.1 Do nothing scenario

Section 4.1 clearly identifies the strategic need for the provision of additional waste processing capacity within the Greater Sydney area. The strategic planning policies outlined in Section 4.2 highlight the growing concern of governments at the national, State, and local level to enhance the capacity and improve the efficiency of waste management systems, reduce pressure on the limited capacity of landfills in NSW and encourage circular economy outcomes.

A 'do nothing' option would not provide the critically needed increase in waste management capacity within the Greater Sydney region. This would be inconsistent with the objectives and goals mandated in these strategic planning frameworks.

Similarly, a 'do nothing' scenario would mean that latent capacity within the Eastern Creek REP would remain unutilised, and waste generated in the local community would be required to be transported in greater distances to alternative facilities in the Greater Sydney region. This would not only place an increased cost burden on the surrounding community for waste management, it would also increase the pressure on the capacity of existing resource recovery facilities elsewhere.

As such, the 'do nothing' option is not considered to be a feasible alternative to the Proposal.

4.3.2 Alternative site

The Eastern Creek REP currently has approval for resource recovery activities to be carried out within the MPC1, MPC2 and the SMA and for disposal to occur within the Landfill. The Eastern Creek REP is also situated in close proximity to both the M4 and M7 Motorways, which form part of Sydney's Motorway Network, making the Eastern Creek REP highly accessible to Greater Sydney. The Proposal would involve the continued use of existing infrastructure at the Eastern Creek REP with supporting infrastructure proposed to provide improved operational efficiency to support the increase in throughput.

Bingo has investigated the availability of other suitable sites in the Sydney Metropolitan area for processing large quantities of C&D and C&I waste. There is a shortage of land within the Sydney Metropolitan area which is large enough to accommodate such a facility while being a sufficient distance from potentially sensitive land uses.

Whilst the landfilling limit would not change as part of the Proposal, there are significant benefits that come from co-location with resource recovery activities (e.g., a reduction in trips on the road network). Given the shortage of existing landfill space within the Greater Sydney area and limited opportunities for new landfills, an alternative site is unlikely to include opportunities to co-locate these activities and the associated benefits.

The location of the Proposal is best placed geographically to service Greater Sydney and would best utilise an existing waste management facility. The Proposal would increase resource recovery through existing infrastructure keeping products and materials in use by governments and industry.

Based on the above factors, construction and operation of the Proposal at the existing Eastern Creek REP is considered the most suitable option.

4.3.3 Alternative site configuration and layout

Bingo have commissioned a comprehensive design process to optimise the layout of the Eastern Creek REP into the future. The design of the Proposal has considered a broad range of factors to ensure that the configuration and layout has been optimised. The proposed composition and layout of supporting infrastructure has been amended throughout the design process. Proposal layout options that were considered but not incorporated are described in Table 4-4.

Table 4-4: Site configuration and layout alternatives

Alternative configuration	Description
Use of proposed northern exit road for site access	This alternative design would allow for separate entrances for vehicles accessing the landfill and those accessing resource recovery facilities and proposed Maintenance and Manufacturing workshop within the northeastern corner of the Proposal Site. This would separate conflicting movements within Eastern Creek REP and distribute vehicles movements throughout the site.
A proposed southern exit road to the east of MPC2	This alternative design included provision of an exit road on the eastern side of MPC2. The exit road would be required to cut through the car park on the southern boundary of the Eastern Creek REP (as approved under Mod 8 of MP 06_0139). This would reduce the number of parking spaces provided and result in potential movement conflicts between light and heavy vehicles. As such this alternative configuration has not progressed.
Formalisation of a ring road for light vehicles around the existing landfill pit.	The ring road around the existing landfill pit (to the east of the pit), was initially proposed as a light vehicle and emergency vehicle access route. During design development it was identified that due to proximity to the amenity berm and landfill pit wall, this option would present engineering challenges and not be viable. Given alternative light vehicle and emergency vehicles access is available on other suitable roads within the site network, this alternative was not considered further.

The final layout of the Proposal would allow greater utilisation of existing infrastructure whilst supporting potential future layout changes. Future layout changes (subject to a separate approval) would be implemented in consultation with government authorities as well as additional data from more detailed environmental investigations for aspects such as noise and traffic.

4.3.4 Alternate throughput and staging

During the design development, considerable attention was given to the operational capacity of the Eastern Creek REP as well as market needs and demands. Alternate throughput increases and staging options considered throughout design development are described in Table 4-5.

Table 4-5 Throughput and staging alternatives

Option considered	Description
No staging	This option considered delivering the Proposal as a single staged Proposal. As outlined in Section 4.1 there is a current need within the Sydney MLA to increase resource recovery, in particular for C&I waste. The Eastern Creek REP has considerably latent capacity meaning that much of this need can be met immediately upon approval of the Proposal. As such Stage 1 of the Proposal was introduced to provide immediate relief for the Greater Sydney region. Further, a review of the capacity at Eastern Creek REP found that no infrastructure upgrades are required to the 500,00 tpa additional throughput. Stages 2 and 3 are envisaged to be developed progressively over time to allow optimisation of Eastern Creek REP and facilitating further throughput increase.
Higher throughput	Bingo originally sought to increase the operational throughput of Eastern Creek REP by 1.5 Mtpa. This throughput was proposed based on the latent capacity available at Eastern Creek REP (refer Section 4.1) and the considerable market need for increased recovery of waste (in particular, C&I waste). In June 2021, DPE released the 20 Year Waste Strategy which outlines the future needs of Sydney and NSW over the coming years. In response to the Strategy and internal reviews of Bingo's network, Bingo is carrying out long term planning to further identify opportunities to maximise Sydney's resource recovery. While this may include future throughput and / or facilities within Eastern Creek REP, a lower throughput increase, of 950,000 tpa, has been adopted at this point in time. This throughput increase is considered substantial enough to help alleviate the capacity contained across the Sydney MLA, while allowing Bingo further time to consider future strategic decisions in line with the new Strategy.

4.3.5 Throughput increase and site optimisation (preferred option)

An increase to the throughput of the existing Eastern Creek REP is the preferred option. This option considered the current and projected annual waste processing rates. To accommodate the additional waste volumes a need to increase the currently approved throughput of two Mtpa by an additional 950,000 tpa over two stages to a total of 2.95 Mtpa was identified.

While the existing facilities and supporting infrastructure on the Proposal Site have the capacity to accommodate an additional 950,000 tpa without the proposed site upgrades, it was determined that the proposed new heavy vehicle exit points, exit weighbridges and upgrades to the internal road network would optimise and enhance operational and environmental outcomes of Eastern Creek REP.

This alternative was selected as the preferred option as it would meet the proposal objectives outlined in Section 1.3 while also being consistent with the objectives and goals outlined in local, State and national strategic planning frameworks (discussed in Section 4.2). Other alternatives have been discarded as they would not adequately address the objectives and the critical need for the expansion of operations at Eastern Creek REP.

5 STATUTORY PLANNING AND APPROVALS

5.1 Introduction

The following section provides an overview of the key legislation and planning instruments applicable to the Proposal. It also includes a description of the planning approval pathway for the Proposal. The SEARs relating to the statutory planning approvals for the Proposal, and a summary of where they are addressed, is presented in Table 5-1.

Table 5-1: SEARs (Statutory planning and approvals)

SEARs	Where addressed
General	
The environmental impact statement (EIS) for the development must meet the form and content requirements in clauses 6 and 7 of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* (the Regulation). In addition, the EIS must include: • Consideration of all relevant environmental planning instruments, including identification and justification of any inconsistencies with these instruments.	Section 5.2 to 5.7 (relevant environmental planning instruments)
• A detailed assessment of the key issues specified below, and any other significant issues identified in this risk assessment, which includes: – An assessment of the potential impacts of all stages of the development, including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes	Section 5.2 to 5.7 (relevant guidelines, policies, plans and statutes) Chapters 8 to 20 (potential impacts)
Statutory and strategic context	
• Detailed justification that the proposed land use is permissible with consent	Section 5.2 and Section 5.3 (permissibility, planning approval pathway and consent authority)
• Demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, adopted precinct plans, draft district plan(s) and adopted management plans and justification for any inconsistencies. This includes, but is not limited to: – State Environmental Planning Policy (Infrastructure) 2007; – State Environmental Planning Policy (Western Sydney Employment Area) 2009; – State Environmental Planning Policy (State and Regional Development) 2011; – State Environmental Planning Policy No 33 – Hazardous and Offensive Development; – State Environmental Planning Policy No 55 – Remediation of Land; – Draft State Environmental Planning Policy (Remediation);	Section 5.6 (relevant planning strategies, instruments and plans) Chapter 4 (strategic justification) The EIS addresses the updated State Environmental Planning Policies which have been consolidated by the NSW Government and correspond to those reflected within the SEARs, as identified below: • *State Environmental Planning Policy (Infrastructure) 2007;* now *State Environmental Planning Policy (Transport and Infrastructure) 2021* • *State Environmental Planning Policy (Western Sydney Employment Area) 2009;* now *State Environmental Planning Policy (Employment and Industry) 2021* • *State Environmental Planning Policy (State and Regional Development) 2011;* now *State*

SEARs	Where addressed
– Greater Sydney Region Plan: A Metropolis of Three Cities; – Our Greater Sydney 2056: Central City District Plan; and – Future Transport Strategy 2056.	*Environmental Planning Policy (Planning Systems) 2021* • *State Environmental Planning Policy No 33 – Hazardous and Offensive Development* and *State Environmental Planning Policy No 55 – Remediation of Land* are now part of *State Environmental Planning Policy (Resilience and Hazards) 2021*

5.2 Permissibility

The Proposal is located on land zoned as 'IN1 General Industrial' under the Industry and Employment SEPP.

Division 23 Section 2.152 (1) of the Transport and Infrastructure SEPP sets out that:

1) *Development for the purpose of waste or resource management facilities, other than development referred to in subsection (2), may be carried out by any person with consent on land in a prescribed zone.*

The IN1 zone is specified as a *prescribed zone* within the Transport and Infrastructure SEPP , and the Proposal is therefore permissible with consent.

5.3 Planning approval pathway and consent authority

Eastern Creek REP was originally approved under Part 3A of the EP&A Act (MP 06_0139) in November 2009. As the Proposal is not considered to be 'substantially the same development' or of 'minimal environmental impact' it cannot be considered a modification to the original Project Approval and a separate development consent is therefore required. The Proposal is considered as a new SSD under clause 23 (Waste and resource management facilities) of Schedule 1 of the Planning Systems SEPP which refers to:

2) *Development for the purpose of resource recovery or recycling facilities that handle more than 100,000 tonnes per year of waste.*

The Proposal also includes the construction of a number of ancillary uses including the construction of a Site Workshop and Maintenance and Manufacturing Workshop. These activities are permissible with consent under the Industry and Employment SEPP (refer to Section 5.6.3).

Division 4.7 of the EP&A Act also identifies provisions of other environmental and planning legislation that do not apply to SSD and approvals required under other legislation that must be applied consistently with any approval granted for SSD under the EP&A Act.

5.4 Commonwealth legislation

The Commonwealth EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places defined in the EPBC Act as Matters of National Environmental Significance (MNES). The MNES that are protected under the EPBC Act are:

- World heritage properties
- National heritage places
- Wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed)
- Nationally threatened species and ecological communities

- Migratory species
- Commonwealth marine areas
- The Great Barrier Reef Marine Park
- Nuclear actions (including uranium mining)
- A water resource, in relation to coal seam gas development and large coal mining development.

In accordance with Sections 67 and 67A of the EPBC Act, any works that have the potential to result in an impact on any MNES or on Commonwealth land are considered 'controlled actions' and require a referral to the Commonwealth Minister for the Environment for approval.

A search of the EPBC Act Protected Matters Search Tool was carried out on 19 October 2021 for the Proposal Site with a one km buffer. The search identified a number of threatened species (40), listed migratory species (15) and threatened ecological communities (6) as potentially occurring within 1 km of the Proposal Site.

Eastern Creek REP has a long history of agricultural, resource extraction and waste management activities. The Eastern Creek REP has historically been cleared and with the exception of the conservation area in the northwest (around 300 m north of MPC2 – outside the Eastern Creek REP operational area) is predominately cleared with very little vegetation and only 0.02 ha of remnant vegetation located along the southern boundary.

A biodiversity assessment has been conducted for the Proposal to determine the potential for impact to threatened species, ecological communities, migratory species or other MNES as listed under the EPBC Act (refer Chapter 14 (Biodiversity) and Appendix P (BDAR)). Given the very low ecological value within the Proposal Site and the relatively minor physical works associated with the Proposal, it would not result in impacts to matters of MNES and therefore referral to the Commonwealth Minister for the Environment is not considered warranted.

5.5 State legislation

5.5.1 Environmental Planning and Assessment Act 1979

The NSW environmental planning and assessment framework is established by the EP&A Act and the EP&A Regulation. The EP&A Act sets out approval requirements and provides for the making of environmental planning instruments (EPI) which in turn determine the relevant planning approval pathway for development in NSW.

Part 3 of the EP&A Act provides for the formation of EPIs, which can take the form of Local Environmental Plans (LEP) or State Environmental Planning Policies (SEPP). EPIs contain provisions that control the permissibility of development and identify when development approval is required.

Under the EP&A Act, development is assessed in the following relevant main categories:

- Part 4 Division 4.1 Section 4.1 – Development that does not require development consent, as specified by an EPI
- Part 4 Division 4.1 Section 4.2 – Development that requires development consent, as specified by an EPI
- Part 4 Division 4.7 Section 4.36 – Development that requires development consent, and is considered SSD, as specified by an EPI.

The Eastern Creek REP was originally approved under Part 3A of the EP&A Act (MP 06_0139) in November 2009. Following repeal of Part 3A of the EP&A Act on 1 October 2011, the Eastern Creek REP was subject to the transitional provisions of the *Environmental Planning and Assessment Regulations 2000*. Since the commencement of operations in 2012, the original Project Approval has been modified six times under Section 75W (now repealed) of the EP&A Act. As the transitional arrangements for Part 3A have now ceased (September 2018), the original Project Approval was declared to be SSD by the Minister on 2 October 2020 and all future modifications to the original

approval will be subject to the planning provisions under Part 4 of the EP&A Act. A subsequent modification (Modification 7) relating to site access and layout was withdrawn and a further modification (Modification 8) relating to amendments to MPC2 was approved on 3 March 2021. Modification 10 for the installation of a permanent landfill gas flare to provide a permanent solution to managing landfill gas at Eastern Creek REP was recently approved in March 2022.

One further modification to MP 06_139 is also currently being sought. Modification 9 seeks to expand the operational area of the Eastern Creek REP into part Lot 2 DP1145808.

An overview of existing approvals and proposed modifications at the Eastern Creek REP is provided in Table 5-2.

Table 5-2: Existing approvals at Eastern Creek REP

Approval	Details
MP06_139	Allows for construction and operation of a resource recovery facility and non-putrescible landfill facility. The approval allows for: • A waste recovery facility including a Materials Processing Centre (MPC) and green waste area • Rehabilitation of the quarry void via a Class 2 (non-putrescible) landfill • A total throughput of up to 2 million tonnes of materials at Eastern Creek REP per calendar year • Landfilling of up to 700,000 tonnes of non-putrescible waste (including asbestos) • Stockpiling of up to 50 tonnes of tyres on site at any one time • Stockpiling of up to 20,000 tonnes of green waste on site at any one time.
MP06_139 Modification 1 (30 September 2010)	Included changes to site infrastructure such as electrically powered conveyors and the landfill disposal chute, provision for two-way traffic on Fourth Avenue, concrete bay walls within the green waste processing area and relocation of the wheel wash. Also allowed for postponed commencement of construction.
MP06_139 Modification 2 (9 November 2010)	To correct minor details, specifically to update reference to the land being Lots 1, 2, 3 and 4 in DP 1145808.
MP06_139 Modification 3 (5 December 2011)	Allowed for changes and additions to site infrastructure and operations including: • Changes to final landform levels • Changes to operational landform levels and site stormwater design • Provision of an internal office and external amenities for the weighbridge • New amenities building • New amenities building associated with the spotter stations • New administrative/office building • New amenities at the tarp stand area • Approval for the use and relocation of the vehicle turning bay. Modification 3 also included the preparation of a voluntary planning agreement.
MP06_139 Modification 4 (14 December 2013)	Included amendments to the approved MPC operational hours extending hours to 6am to 10pm Monday to Friday, and 6am to 4pm Weekends and Public Holidays.

Approval	Details
MP06_139 Modification 5 (17 March 2016)	Allowed for the construction and operation of an additional pre-sort enclosure (now known as MPC2) adjoining the existing MPC to improve the efficiency of on site operations.
MP06_139 Modification 6 (29 April 2020)	Allowed for administrative changes including: • An increase in the proportion of the annual waste receival limit that can be landfilled from 700,000 to 1,000,000 tpa excluding any residual waste from the MPCs • Extension to operational hours for certain activities • Increase in the noise limits set out in MP 06_0139.
MP06_139 Modification 7 (Withdrawn)	Withdrawn modification relating to the reconfiguration of existing facilities and roads within the Eastern Creek REP to improve the efficiency of operations and enhance the amenity of the facility.
MP06_139 Modification 8 (3 March 2021)	Amendments to the MPC2 (previously known as the Pre-Sort Enclosure), including changes to the building footprint, tip floor operations and machinery. Also includes the relocation of weighbridges and car parking spaces.
MP06_139 Modification 9 (In preparation)	A modification report is currently being prepared to allow for: • Expansion of the Eastern Creek REP's operational footprint to incorporate additional land within the Project Approval boundary to the west of the current operational footprint (the Western Operational Area) • An enclosed wood and timber waste processing facility • Establishment of new internal roads within the Western Operational Area • Establishment of ancillary features.
MP06_139 Modification 10 (11 March 2022)	This modification seeks to provide a more permanent solution to reduce the environmental impact of gases that would be otherwise discharged to the atmosphere from the landfill. The modification includes: • Installation of two 1,500 m^3 /hr high temperature, fully enclosed landfill gas (LFG) ground flares and supporting infrastructure • Construction of a 19 m x 34 m engineered hardstand area for supporting the landfill gas flare flares • Construction of a stainless-steel condensate knockout pot • Erection of a 1.8 m high palisade security fence around the flare units and surrounding area • Construction of a 450 mm main header line to connect the permanent flare • Decommissioning of the temporary flares that have been installed to address odours issues.
Transition to State Significant Development (2nd October 2020)	Following the repeal of Part 3A of the EP&A Act on 1 October 2011, the project was subject to the transitional arrangements provided by the *Environmental Planning and Assessment Regulations 2000*. The transitional arrangements provided by *Environmental Planning and Assessment Regulations 2000* have now ceased, and the project was transitioned to SSD on 2 October 2020.

Section 4.15 of the EP&A Act identifies the matters for consideration that must be taken into account by a consent authority when determining a development application. An assessment of the compliance of this EIS with Section 4.15 of the EP&A Act is presented in Table 5-3.

Table 5-3: Assessment of compliance of this EIS with the matters for consideration in Section 4.15 of the EP&A Act

Matters for consideration	Where addressed in EIS
(1) In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application: (a) the provisions of: (i) any environmental planning instrument	Section 5.6 (State and regional planning policies) Section 5.7 (Local planning controls)
(ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved)	Where relevant throughout Chapter 5.
(iii) any development control plan	Section 5.7 (Blacktown Development Control Plan)
(iii) any planning agreement that has been entered into under Section 7.4, or any draft planning agreement that a developer has offered to enter into under Section 7.4	N/A
(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph)	Where relevant throughout Chapter 5
(v) (Repealed)	N/A
(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality	Chapters 8 to 20 (environmental assessment)
(c) the suitability of the site for the development	Chapters 2 to 4 (Site description, the Proposal and justification)
(e) the public interest	Chapter 24 (justification and conclusion)

5.5.2 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (PoEO Act) is the principal NSW environmental protection legislation and is administered by the NSW Environment Protection Authority (NSW EPA). The objectives of the PoEO Act are to:

- Protect, restore and enhance the quality of the environment, while having regard to the principles of ESD
- Provide increased opportunities for public involvement and participation in environment protection
- Reduce risks to human health and prevent the degradation of the environment
- Assist in the achievement of the objectives of the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act).

Under the PoEO Act, activities that will or are likely to cause pollution are identified as scheduled activities and require an EPL which are issued and administered by the NSW EPA. These activities are set out in Schedule 1 of the PoEO Act. The existing Eastern Creek REP holds two EPLs issued by the NSW EPA:

- EPL 13426 - relates to the landfilling component of the operation and permits the facility to undertake landfilling and waste storage activities up to a total of 1,000,000 tonnes in a calendar year excluding any residual waste received from the MPCs
- EPL 20121 - relates to the recycling and resource recovery component of the operation and permits the facility to undertake composting, resource recovery and waste storage activities of up to 667,000 tonnes at any one time. Bingo is seeking to increase the authorised stockpile amounts as part of an application to the NSW EPA to vary EPL 20121 to a one time storage limit of 950,000 tpa. Final stockpile volumes would be confirmed and approved as part of that process.

These EPL's would be amended following approval of the Proposal (as required) to reflect changes associated with the Proposal.

Section 88 of the PoEO Act requires licenced waste facilities in the regulated area of NSW to pay a contribution to the NSW EPA for each tonne of waste received at the facility, referred to as the 'waste levy'. The purpose of the waste levy is to reduce the amount of waste being disposed of and to promote recycling and resource recovery. The waste levy liability for EPA-licensed waste processing, recovery and storage facilities applies on all waste received at the facilities as follows:

- A liability is activated when waste is received
- The liability is extinguished once the waste is sent off site for lawful recycling, reuse or disposal
- The liability becomes payable when:
  - Waste is stockpiled at the facility for more than 12 months, unless it has been processed at the facility to a standard required by a resource recovery order
  - Waste is stockpiled above lawful limits
  - Waste transported from the facility is unlawfully disposed of.

All waste entering eligible sites (including Eastern Creek REP) became liable for the waste levy as of 1 August 2015. Records must be kept in order to accurately determine how much waste moves through a facility. Liable facilities are required to report to the NSW EPA on a monthly basis.

All delivery vehicles entering or exiting Eastern Creek REP pass over existing weighbridges for recording of waste volumes. Upon entering Eastern Creek REP, all vehicles are weighed. Once waste has been deposited, or material collected at either of the MPCs or SMA, vehicles pass through outbound weighbridges where they are weighed before existing the site. The tare weight is subtracted from the gross weight of heavy vehicles to determine the mass of waste being transferred to and from Eastern Creek REP. Further detail regarding waste tracking is provided in Section 2.7.7 and Section 3.5.9.

The PoEO Act also establishes a range of pollution offences and penalties that are applicable to all activities carried out on a site. Specific pollution offences are created for actions associated with:

- Water pollution
- Air pollution
- Noise pollution
- Land pollution
- Littering and waste.

The PoEO Act also establishes a number of regulations that provide further details on the management of pollution.

Construction and operation of the Proposal would be undertaken in a manner that achieves compliance with the requirements of the PoEO Act and its regulations. Procedures to prevent pollution associated with the Proposal would be documented through updates to the existing environmental management plans and documentation, including the Emergency and Pollution Incident Response Management Plan (EPIRMP) (Bingo Industries, 2020).

Clause 49 of Schedule 1 of the *Protection of Environment Operations Act 1997* (POEO Act) defines the following classes of waste:

- Special waste
- Liquid waste
- Hazardous waste
- Restricted solid waste (RSW)
- General solid waste (GSW) – putrescible
- General solid waste (GSW) – non-putrescible.

The NSW EPA *Waste Classification Guidelines, Part 1: Classifying Waste 2014* (NSW EPA, 2014) (Waste Classification Guidelines) and *NSW EPA Waste Classification Guidelines: Addendum 2016* (NSW EPA 2016) detail the requirements for waste soil classification for appropriate off-site disposal in NSW, setting maximum concentration limits for common chemical contaminants to provide hazard classification / risk ratings of General, Restricted and Hazardous solid waste.

The NSW EPA 2014 guideline provides a six-step assessment process to determine the classification of the waste. Once a waste's classification has been established at a particular step, there is no need to proceed to the following step, except when special waste is mixed with or incorporates other restricted solid waste or hazardous waste. The NSW EPA 2014 guidance provides a six-step classification process for wastes, as follows:

- Step 1: Is the waste special waste?
- Step 2: Is the waste liquid waste?
- Step 3: Is the waste pre-classified?
- Step 4: Does the waste possess hazardous characteristics?
- Step 5: Determining a waste's classification using chemical assessment
- Step 6: Is the waste putrescible or non-putrescible

All excess fill material generated by the construction of the Proposal would be characterised and assessed against the Waste Classification Guidelines in order to determine appropriate reuse, processing or disposal options.

5.5.3 Protection of the Environment Operations (Waste) Regulation 2014

The PoEO (Waste) Regulation requires tracking of certain waste within NSW and between participating States. Each party must be authorised to store, transport, or receive the specific type of waste. Schedule 1 of the PoEO (Waste) Regulation identifies the types of waste which apply. In addition, the PoEO (Waste) Regulation has specific reporting and record-keeping requirements. It is an offence under the PoEO Act to wilfully or negligently dispose of waste in a manner that harms or is likely to harm the environment.

The PoEO (Waste) Regulation also prescribes the requirements for recording information relating to:

- The delivery of waste or other material at scheduled waste facilities
- Loads of waste or other material transported from the facility for use, recovery, recycling, processing or disposal at another place
- Other vehicles entering the facility for a purpose related to the operation of the facility.

The Proposal would meet the requirements of record-keeping and reporting under the PoEO (Waste) Regulation.

Clause 15 of the regulation requires scheduled premises that receive more than 10,000 tpa of waste to install a weighbridge to ensure that the quantity of waste being transported to and from the site is correctly recorded. As the Proposal would involve a throughput increase of the existing Eastern Creek REP of up to 950,000 tpa, a weighbridge would be required. While the Proposal would include the

construction of supporting infrastructure including additional weighbridges, the Proposal would also utilise the existing infrastructure at the Eastern Creek REP including the existing weighbridges which would continue to be utilised for delivery vehicles entering the Eastern Creek REP. Weighbridges at the Eastern Creek REP would continue be operated and maintained in accordance with the requirements of the PoEO (Waste) Regulation to accurately record waste transported to and from the Eastern Creek REP. Further information on the management of waste at the Proposal Site is provided in Chapter 4.

5.5.4 Protection of the Environment Operations (Clean Air) Regulation 2021

The *Protection of the Environment Operations (Clean Air) Regulation 2010* prescribes emission concentration limits which apply to industries. Under the regulation, the Proposal would fall under the ambit of the 'Group 6 emission concentration limits', which are the most stringent limits under the regulation.

Air Quality would be managed in accordance with the Eastern Creek REP's existing AQMP (DADI, 2020). Potential air quality impacts have been assessed in Chapter 10. The assessment found that when the potential for additional cumulative PM_{10} concentrations above the NSW EPA impact assessment criteria is combined with the likely frequency of occurrence for peak day operations in a 12-month period (indicative 18 days per year based off 95th percentile for weighbridge data), the likelihood of cumulative criteria exceedance is very low across the three presented scenarios.

Furthermore, it was concluded that the proposed connections to the Honeycomb Drive extension and Kangaroo Avenue would play a pivotal role in ultimately improving the air quality outcomes for the worst affected receivers. This is due to the reconfiguration / optimisation of the Eastern Creek REP, which acts to re-distribute dust emissions.

5.5.5 Waste Avoidance and Resource Recovery Act 2001

The importance of responsible resource management, including maximisation of the utility of resources and associated minimisation of disposal to landfill is highlighted in the WARR Act. The WARR Act is the principal piece of legislation governing waste and resource management in NSW, and objectives of the Act include:

- Encouraging the most efficient use of resources
- Reducing environmental harm
- Ensuring that resources are managed against the waste hierarchy of avoidance, resource recovery, and then disposal
- Diversion of waste from landfill
- Ensuring industry takes part in reducing and dealing with waste
- Achieving integrated, State-wide waste and resource management planning and service delivery.

As discussed in Chapter 4, the Proposal is consistent with current waste management and recovery principles specified in local, regional and State strategies. The Proposal would support the ongoing efficient use of a key piece of waste infrastructure for enabling Sydney to achieve and promote the objectives of the WARR Act.

Eastern Creek REP operates in accordance with the WARR Act and would continue to do so under the Proposal. Eastern Creek REP implements resource recovery principles (via the MPCs and SMA) and otherwise disposes of waste via landfilling, including special waste such as asbestos, for which no other disposal methods are available.

5.5.6 Contaminated Land Management Act 1997

The general intention of the *Contaminated Land Management Act 1997* (CLM Act) is to establish a process for investigating and (where appropriate) remediating the land that the NSW EPA considers to be contaminated significantly enough to require regulation.

Section 5 of the CLM Act defines the contamination of land as:

> *'The presence in, on or under the land of a substance at a concentration above the concentration at which the substance is normally present in, on or under (respectively) land in the same locality, being a presence that presents a risk of harm to human health or any other aspect of the environment'.*

A search of the contaminated land record of notices and list of notified sites (as of 9 December 2021) was carried out on 14 December 2021 which identified that the Proposal Site is not listed as contaminated land. Previous environmental assessment documents have identified elevated levels of some analytes at Eastern Creek REP site (e.g., nickel is found to be naturally occurring at the site), however have not identified significant contamination. The search did however identify the following notified sites within the wider area as shown in Table 5-4.

Table 5-4: Notified sites within 5 km of Eastern Creek REP

Notified site	Location	Approximate distance to the Proposal
Caltex Service Station	M4 (Eastbound) Motorway, Eastern Creek	4.8 km to the east
Caltex Service Station	M4 (Westbound) Motorway, Eastern Creek	5.0 km to the east
Former Fulton Hogan Industries (formerly Pioneer Road Services)	Honeycomb Drive, Eastern Creek	Adjacent to Eastern Creek REP
Western Sydney Service Centre	22-55 Templar Road, Erskine Park	3.5 km to the southwest
Coles Express (former Ampol) Service Station	86-88 Great Western Highway, Colyton	3.9 km to the northwest
7-Eleven (former Mobil) Service Station	815 Great Western Highway, Minchinbury	1.8 km to the northeast
BP Service Station	1055 Great Western Highway, Minchinbury	1.3 km to the north
7-Eleven (former Mobil) Service Station	106 Rooty Hill Road South, Rooty Hill	2.5 km to the northeast
7-Eleven (former Mobil) Service Station	1042 Great Western Highway, Rooty Hill	1.3 km to the north
Infrabuild NSW Pty Ltd (formerly OneSteel NSW Pty Ltd)	22 Kellogg Road, Rooty Hill	3.8 km to the northeast
7-Eleven (former Mobil) Service Station	4 Endeavour Avenue, St Clair	3.4 km to the west

It is not anticipated that the Proposal would impact upon any of the identified notified contaminated sites. Existing environmental controls at Eastern Creek REP would continue to be implemented to ensure that there are negligible offsite impacts relating to contamination, including surface water and groundwater contamination.

Chapter 11 provides further detail on contamination and identifies measures that should be implemented should areas of potential environmental concern be disturbed.

5.5.7 Roads Act 1993

The *Roads Act 1993* (Roads Act) governs activities in, on, under or over a public road. This Act is governed by Transport for New South Wales Services (TfNSW), the local council or the NSW Land and Property Management Authority depending on the road classification. TfNSW has authority over major roads, and the local council (Blacktown City Council) over local roads.

The Proposal includes works to connect to both Kangaroo Avenue (Section 3.3.3) and the proposed Honeycomb Drive extension (Section 3.3.2), minor upgrades to both roads may be required to facilitate truck turning movements. The Proposal includes works to connect to both Kangaroo Avenue (Section 3.3.3) and the proposed Honeycomb Drive extension (Section 3.3.2), minor upgrades to both roads may be required to facilitate truck turning movements. As such, approval under the Roads Act is required to be sought prior to the commencement of construction activities. Secondary approvals required for the Proposal are further discussed in Section 5.8.

Consultation has been undertaken with both TfNSW and Blacktown City Council (Council) during the preparation of this EIS. Further detail regarding consultation is provided in Chapter 6

5.5.8 Water Management Act 2000

The objective of the *Water Management Act 2000* (WM Act) is to provide for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations. The WM Act provides for the preparation of water sharing plans that set extraction limits and rules for water access, available water determinations, account management and trading in order to protect water sources and their dependent ecosystems, whilst recognising the social and economic benefits of the sustainable and efficient use of water (NSW DPI, 2012).

Section 91 of the WM Act requires approval to carry out specified controlled activity on or under waterfront land. ‘Waterfront land’ means the bed of any river, lake or estuary, and the land within 40 m of the riverbanks, lake shore or estuary mean high water mark. The Proposal would constitute a controlled activity as defined under the WM Act. However, as the Proposal is SSD, proposed activities to be undertaken adjacent Angus Creek will not trigger Section 91 of the WM Act.

Licences under the WM Act are required for interception of any aquifer underlying the Proposal Site and for groundwater extraction. Extraction or interception with waterways or groundwater is not anticipated as part of the Proposal.

Further information about potential impacts to surface and groundwater from the Proposal is provided in Chapter 12.

5.5.9 Biodiversity Conservation Act 2016

The BC Act identifies threatened species and ecological communities, areas of outstanding biodiversity value and key threatening processes. The BC Act establishes a framework to avoid, minimise and offset the impacts of proposed development and land use change on biodiversity.

Under the BC Act, a development application for SSD must be accompanied by BDAR unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values. While the majority of the development would be undertaken within the existing cleared footprint of the Eastern Creek REP, the Proposal would require some minor vegetation clearing in the northeast of the Proposal Site. On this basis the Proposal would require the preparation of a BDAR (refer to Chapter 14 (Biodiversity) and Appendix P (BDAR)).

5.5.10 Biosecurity Act 2015

The primary objective of the *Biosecurity Act 2015* (Biosecurity Act) is to provide a framework for the prevention, elimination and minimisation of biosecurity risks posed by biosecurity matter, dealing with biosecurity matter, carriers and potential carriers, and other activities that involve biosecurity matter, carriers, or potential carriers. Division 2 of the Biosecurity Act defines local control authorities for weeds. Schedule 1 of the Biosecurity Act outlines special provisions relating to weeds, including the duty of land occupiers to control and manage weeds.

The Proposal Site contains at least 22 weed species, five of which are priority weeds under the Biosecurity Act. Transport of weeds and pathogens from the Proposal Site to adjacent vegetation has been identified as potential impact of the Proposal. This is a risk during construction as contaminated material may be inadvertently taken offsite, in vehicles, boots or topsoil. Areas at risk are most likely to be areas of native vegetation off site, or native vegetation adjacent to the Proposal Site.

Chapter 14 provides further detail on weeds and identifies measures that should be implemented should areas of potential environmental concern be disturbed.

5.5.11 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) and for 'Aboriginal Places' (areas of cultural significance to the Aboriginal community).

The Proposal would be approved under Part 4, Division 4.7 of the EP&A Act as SSD. As a result, an Aboriginal Heritage Impact Permit (AHIP) is not required for impacts to Aboriginal objects.

Part 6 of the NPW Act provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. Harm is defined to mean destroying, defacing or damaging an Aboriginal object or declared Aboriginal place, or moving an object from the land.

The NPW Act requires proponents to exercise 'due diligence' to determine whether a proposed activity could harm Aboriginal objects or declared Aboriginal places. Anyone proposing to carry out an activity that may harm an Aboriginal object or a declared Aboriginal place must investigate, assess and report on the harm that may be caused by the activity they propose.

Appendix Q provides a due diligence assessment prepared in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (Department of Environment, Climate Change and Water (DECCW), 2010). This assessment concluded that no further assessment was required as the Proposal Site was determined as having nil to low Aboriginal archaeological potential.

5.5.12 Heritage Act 1977

The *Heritage Act 1977* (Heritage Act) provides the legislative framework for the management and protection of the State's heritage. When an interim heritage order or listing on the State Heritage Register applies to a place, building, work, relic, moveable object, precinct, or land, approval must be sought prior to carrying out activities listed in Section 57(1) of the Heritage Act.

In accordance with Section 4.41 of the EP&A Act, an approval under Part 4, or an excavation permit under Section 139, of the Heritage Act is not required for SSD. Therefore, the Proposal does not require approval under the Heritage Act. An assessment of the Proposal's impact to non-Aboriginal heritage is provided in Chapter 15.

5.6 State and regional environmental planning policies

5.6.1 State Environmental Planning Policy (Planning Systems) 2021

Planning Systems SEPP identifies classes of development and determines whether a development is classified as SSD under Section 4 of the EP&A Act. The Planning Systems SEPP identifies the thresholds for waste and resource management facilities, along with other development types, to be classified as SSD.

The aims of the Planning Systems SEPP are:

- To identify development that is SSD
- To identify development that is State Significant Infrastructure and critical State Significant infrastructure
- To confer functions on joint regional planning panels to determine development applications.

Under Clause 23, Schedule 1 of the Planning Systems SEPP the Proposal is considered to be:

> 3) *Development for the purpose of resource recovery or recycling facilities that handle more than 100,000 tonnes per year of waste.*

The development is therefore classified as SSD and is assessable under Division 4.7 of the EP&A Act.

Under Section 2.10 of the Planning Systems SEPP, development control plans (DCP), developed under LEPs, are not applicable to SSD.

5.6.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

The Transport and Infrastructure SEPP aims to facilitate the effective delivery of infrastructure across the State through increased regulatory certainty and improved efficiency and flexibility in the location of infrastructure service facilities, while also providing for adequate stakeholder consultation.

Section 2.156 of Transport and Infrastructure SEPP outlines the matters a consent authority must take into consideration when determining a development for the purpose of the construction, operation or maintenance of a landfill for the disposal of waste. Table 5-5 addresses these matters.

Table 5-5: Transport and Infrastructure SEPP Section 2.156 matters for consideration

Matter for consideration	Response
a) whether there is a suitable level of recovery of waste, such as by using alternative waste treatment or the composting of food and garden waste, so that the amount of waste is minimised before it is placed in the landfill	The Proposal would not result in a change in wastes accepted by the landfill which includes non-putrescible (C&D and C&I) general solid waste and restricted solid waste. Through providing for increased throughput at Eastern Creek REP, the Proposal would support meeting resource recovery targets outlined in the 20 Year Waste Strategy (DPE, 2021a)
b) whether the development: i. adopts best practice landfill design and operation	The Proposal would not require any changes to landfill design and operation. The design of the landfill would continue to adopt best practice for landfill design and operation and be consistent with the *Environmental Guidelines, Solid Waste Landfills* (NSW EPA, 2016). The landfill would continue to operate under the existing environmental management framework and in accordance with EPL 13426.

Matter for consideration	Response
ii. reduces the long term impacts of the disposal of waste, such as greenhouse gas emissions or the off site impact of odours, by maximising landfill gas capture and energy recovery	The existing landfill accepts only dry non-putrescible wastes. Given that the Proposal would not change the type of waste accepted at the landfill, ongoing odour impacts are not considered likely. Landfill gas collection and treatment infrastructure has been installed on site for the management of odour derived from landfill gas. Additionally, LGMP and an AQMP are in place to manage potential impacts as required by EPL 13426 and MP06_0139 respectively.
c) if the development relates to a new or expanded landfill: i. whether the land on which the development is located is degraded land such as a disused mine site	The Proposal would not require any changes to landfill design and operation. The Proposal would be conducted on disturbed land within the existing Eastern Creek REP and is therefore considered to be on degraded land.
ii. whether the development is located so as to avoid land use conflicts, including whether it is consistent with any regional planning strategies or locational principles included in the publication *EIS Guideline: Landfilling* (Department of Planning, 1996), as in force from time to time	The Proposal would occur within the existing waste management facility. The Proposal would result in an increase or extension to some impacts, although the Proposal would not result in the development becoming incompatible with existing surrounding land uses. The Proposal increases the capacity for Greater Sydney to manage its own waste, without expanding the footprint of waste infrastructure in the region. It also further unlocks the potential of the strategically significant Eastern Creek site, with benefits of scale and optimal location within the Sydney transport network and the growth markets of Western Sydney. Strategic need and justification is further discussed in Chapter 4
d) whether transport links to the landfill are optimised to reduce the environmental and social impacts associated with transporting waste to the landfill.	The Proposal would not alter transport links to the Proposal Site. Potential traffic and transport impacts are outlined in Chapter 8 (Traffic and transport).

Section 2.121 of Transport and Infrastructure SEPP identifies requirements for development that is considered to be Traffic Generating Development. As per Schedule 3 of the SEPP, waste or resource management facilities of any size or capacity is considered to be a Traffic Generating Development. In accordance with Section 2.121, the consent authority must take into consideration:

- The accessibility of the site
- Any potential traffic safety, road congestion or parking implications of the development.

Specific consultation with TfNSW and consideration of TfNSW submissions is also required. Consultation with TfNSW has been undertaken during the preparation of this EIS and is detailed in Chapter 6. Details regarding the potential accessibility and traffic impacts and how issues raised by TfNSW in response to the SEARs application have been addressed are outlined in Chapter 8.

5.6.3 State Environmental Planning Policy (Industry and Employment) 2021

Chapter 2 of the Industry and Employment SEPP aims to protect and enhance the land in the Western Sydney Employment Area for employment purposes. The specific aims of Chapter 2 of the SEPP are as follows:

- To promote economic development and the creation of employment in the Western Sydney Employment Area by providing for development including major warehousing, distribution, freight transport, industrial, high technology and research facilities
- To provide for the co-ordinated planning and development of land in the Western Sydney Employment Area
- To rezone land for employment or environmental conservation purposes
- To improve certainty and regulatory efficiency by providing a consistent planning regime for future development and infrastructure provision in the Western Sydney Employment Area
- To ensure that development occurs in a logical, environmentally sensitive and cost-effective manner and only after a development control plan (including specific development controls) has been prepared for the land concerned
- To conserve and rehabilitate areas that have a high biodiversity or heritage or cultural value, in particular areas of remnant vegetation.

The Proposal Site is located within the Eastern Creek Precinct of the Western Sydney Employment area and is zoned IN1 General Industrial, with the conservation area to the northwest of the site (but outside the Proposal Site boundary) zoned C2 Environmental Conservation. The Industry and Employment SEPP outlines that within the IN1 zone, industries (other than offensive or hazardous industries) are permitted with consent. As the Proposal would be undertaken wholly within the area zoned as IN1 General Industrial, and consists of activities not considered to be offensive or hazardous, it would be considered permissible with consent under Section 2.10 of the Industry and Employment SEPP .

Under Section 2.18 (2) of the Industry and Employment SEPP , determining a development application that relates to any land to which an existing precinct plan applies, the consent authority is to take the existing precinct plan into consideration. The Proposal Site falls within the scope of the Eastern Creek Precinct Plan (Blacktown LGA), approved March 2004 (stages 1 and 2) and December 2005 (stage 3). Consistency with the Eastern Creek Precinct Plan is provided in Section 5.7.1 below.

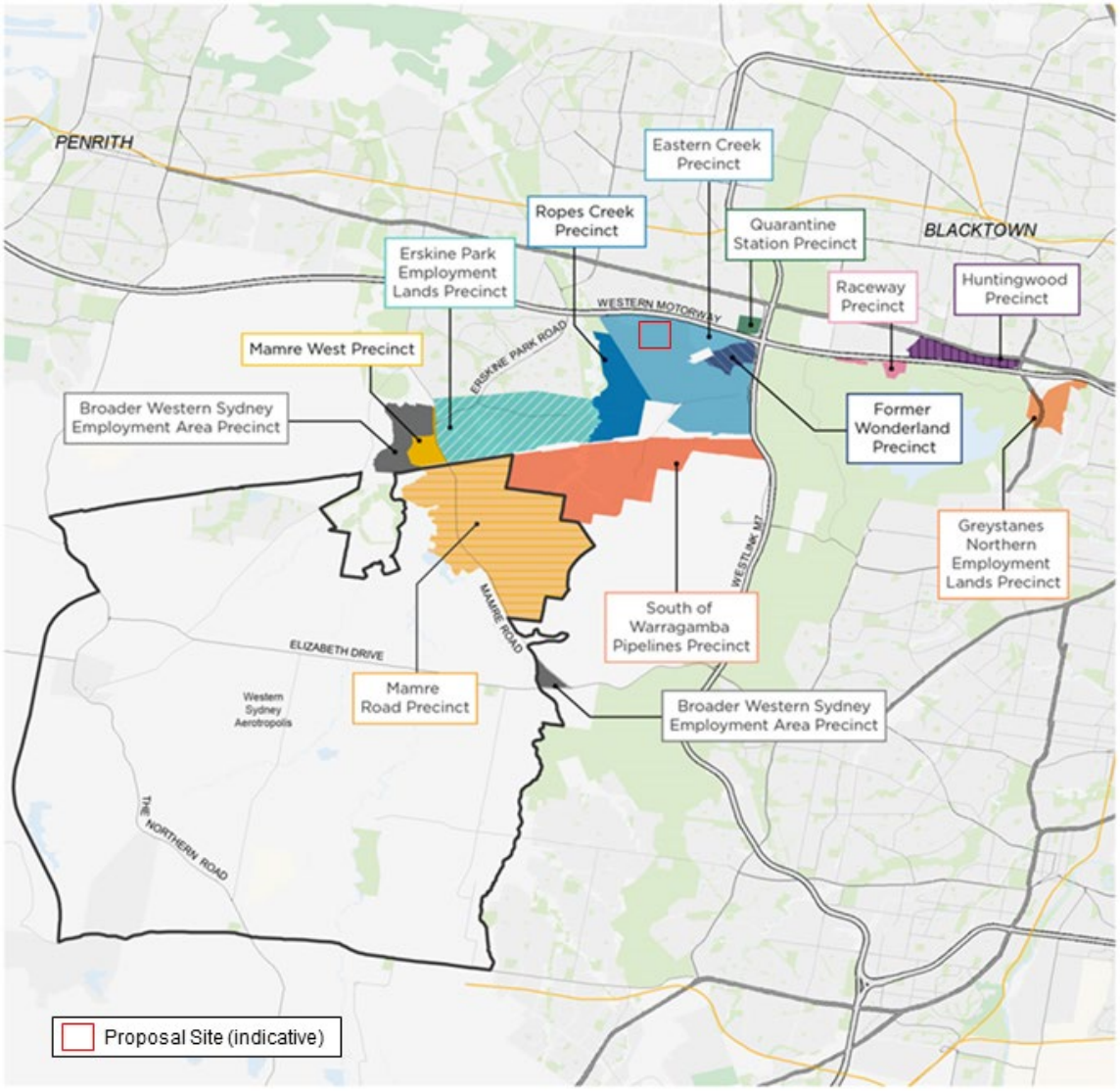


Figure 5-1: Western Sydney Employment Area Precinct Plan (DPE, 2021)

Section 3.6 of *the* Industry and Employment SEPP requires the approval of a consent authority to display signage. The consent authority must be satisfied that the assessment criteria specified in Schedule 5 of the SEPP have been satisfied before granting consent.

The Proposal would include signage that would be visible from the public domain and would be considered business identification and building / site identification signage in accordance with the definition as prescribed by the SEPP. Signage would not contain advertising of a third-party business or activity unrelated to the proposed development.

The majority of the Proposal Site currently operates under MP06_139 to which VPA 2012-5089 applies. The exception to this is a small area in the northeast of the Proposal Site (less than 0.01ha) where a new exit driveway will be constructed to Kangaroo Avenue. This area would be impacted by physical works for the Proposal and would be utilised for a driveway connection to Kangaroo Avenue only and ownership would remain with a third party. A Satisfactory Arrangement Certification (SAC) is currently being prepared in consultation with DPE's Place Design and Public Spaces team and will be finalised prior to determination of the Proposal in accordance with Chapter 2, Part 2.5, Section 2.28 of *State Environmental Planning Policy (Industry and Employment) 2021*.

5.6.4 State Environmental Planning Policy (Resilience and Hazards)

State Environmental Planning Policy (Resilience and Hazards) 2021 ensures that in assessing an application to carry out potentially hazardous or offensive development, the consent authority has sufficient information to assess whether the development is hazardous or offensive and to impose conditions to reduce or minimise potential impacts.

Under Chapter 3 of *State Environmental Planning Policy (Resilience and Hazards) 2021*, a potentially hazardous industry is defined as a development for any industry, that without appropriate measures, presents a significant risk to human health, life or property, or to the biophysical environment. If shown to be potentially hazardous, developments have a PHA prepared to determine the risk to people, property and the biophysical environment at the proposed location and in the presence of controls.

A potentially offensive development means a development for an industry, that without appropriate measures, would emit a polluting discharge in a manner that may have a significant adverse impact. Developments which are required to obtain an EPL under the PoEO Act are considered to be potentially offensive. However, the level of offense is generally not deemed to be significant if the relevant EPLs can be obtained. Two EPLs apply to Eastern Creek REP, only one of which relates to landfilling activities (EPL 13426) (the other relates to the recycling and resource recovery component of the operation (EPL 20121)). The Proposal is considered to be a 'potentially offensive' development however the existing EPLs would adequately cover the Proposal without resulting in an increase in offence to the surrounding environment.

Furthermore, a preliminary risk screening of the Proposal has been undertaken against *Applying SEPP 33: Hazardous and Offensive Development Application Guidelines* (Applying SEPP 33) (Department of Planning (DoP), 2011) in Chapter 13. The assessment concluded that the volume of dangerous goods proposed to be stored at the Proposal Site are below the screening thresholds for their quantities that would trigger the requirement for a PHA. As such the Proposal would not be considered 'offensive'. On this basis no specific assessment is required under the SEPP.

Under Chapter 4 of *State Environmental Planning Policy (Resilience and Hazards) 2021*are to provide a State-wide planning approach to the remediation of contaminated land and to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment.

*State Environmental Planning Policy (Resilience and Hazards) 2021*restricts consent authorities from issuing development consent on land that may be contaminated, unless the consent authority is satisfied that the land in question is suitable for the development proposed to be carried out or would be suitable if appropriate remediation is undertaken.

Eastern Creek REP currently operates as a waste management facility, and has since 2012. On this basis the Proposal Site is deemed to be suitable for the Proposal.

Once landfilling is complete, capping of all disturbed areas in line with NSW EPA (Closure Plan) requirements would provide a robust barrier to prevent future exposure of buried waste. Revegetation of the final cap with groundcover (mainly grasses) would stabilise the surface and result in minimal ongoing risk to the public.

The potential for the Proposal to disturb contaminated land has been assessed in Chapter 11 (Soils and Contamination).

5.6.5 Draft State Environmental Planning Policy (Remediation of Land)

DPE is reviewing all SEPPs to ensure they remain effective and relevant. The repealed *State Environmental Planning Policy No.55 – Remediation of Land* (SEPP 55) has been reviewed as part of that program and is proposed to be replaced by a new State Environmental Planning Policy (Remediation of Land) (currently in draft). The new SEPP will retain elements of SEPP 55, and add new provisions to establish a modern approach to the management of contaminated land.

The key operational framework of SEPP 55 will be maintained in the new SEPP, which will:

- Require consent authorities to consider whether the site is, or is likely to be, contaminated
- Permit a consent authority to require additional information to satisfy itself as to whether the land is contaminated
- Retain two categories of remediation work, being work that requires consent and work that can be carried out without consent.

New provisions will be added in the new SEPP to:

- Require all remediation work that is to be carried out without development consent, to be reviewed and certified by a certified contaminated land consultant
- Categorise remediation work based on the scale, risk and complexity of the work
- Require environmental management plans relating to post-remediation management of sites or ongoing operation, maintenance and management of on-site remediation measures (such as a containment cell) to be provided to council.

Potential contamination risks and remediation requirements have been assessed Chapter 11 (Soils and Contamination) with consideration to the provisions outlined in the draft SEPP.

5.6.6 State Environmental Planning Policy (Precincts – Western Parkland City) 2021

The *State Environmental Planning Policy (Precincts – Western Parkland City) 2021* came into force in March 2022. One of the aims of Chapter 4 of the *State Environmental Planning Policy (Precincts – Western Parkland City)* is to promote sustainable, orderly and transformational development in the Western Sydney Aerotropolis in accordance with the *Western Sydney Aerotropolis Plan* and ensure development is compatible with the long-term growth and development of the Western Sydney Airport.

The Proposal Site is located outside of the Land Application Map; however, the Proposal Site is located within the 13 km wildlife buffer zone as prescribed under Section 4.19 (2), which stipulates that development consent must not be granted to 'relevant development' on land in the 13 km wildlife buffer zone unless the consent authority has:

- Consulted the relevant Commonwealth body
- Considered a written assessment of the wildlife that is likely to be present on the land and the risk of the wildlife to the operation of the Airport provided by the applicant
- Satisfied that the development will mitigate the risk of wildlife to the operation of the Airport.

The Proposal meets the criteria for 'relevant development' under Section 4.19(4) as a waste or resource management facility that consists of outdoor processing, storage or handling of organic or putrescible waste.

While Eastern Creek REP does not accept or process putrescible waste as defined under the Waste Classification Guidelines, wood waste is considered organic waste. The Proposal would include the storage of wood in external stockpiles; however, the wood stored would consist of oversized or treated timber and would be unlikely to attract wildlife. The biodiversity impacts of the Proposal have been assessed in Chapter 14 and Appendix P (BDAR) and concluded that the Proposal Site currently provides minimal fauna habitat and the Proposal would not result in an increase in wildlife attracted to the site.

Section 4.22 applies to development on land shown on the Obstacle Limitation Surface (OLS) Map that is a controlled activity within the meaning of Part 12, Division 4 of the *Airports Act 1996 (Cth)* (Airports Act). The Proposal Site is situated within the Outer Horizontal Surface (OHS) of the OLS (also referred to as the prescribed airspace). The OLS elevation for the OHS, as stipulated within the SEPP, is 230.5 m Australian Height Datum (AHD).

Under Part 12 (4) of the Airports Act, controlled activities in relation to a prescribed airspace include:

- Constructing a building, or other structure, that intrudes into the prescribed airspace

- Any other activity that causes a thing attached to, or in physical contact with, the ground to intrude into the prescribed airspace
- An activity that results in the emission of smoke, dust or other particulate matter, where:
  - The emission exceeds the level ascertained in accordance with the regulations[5]; and
  - The smoke, dust or particulate matter is capable of affecting the ability of aircraft to operate in the prescribed airspace in accordance with Visual Flight Rules.

The Proposal would include the construction of four structures and would not result in physical intrusions into the prescribed airspace, as shown in Table 5-6 below.

Table 5-6: Maximum building height for proposed structures

Proposed structure	Height
Weighbridge control office (Honeycomb Drive extension)	Final floor level (FFL): 71.8 m AHD Maximum building height: 5 m Total building height: 76.8 m AHD
Weighbridge control office (Kangaroo Avenue)	FFL: 74.6 m AHD Maximum building height: 5 m Total building height: 79.6 m AHD
Site Workshop	FFL: 75 m AHD Maximum building height: 14 m Total building height: 89 m AHD
Maintenance and Manufacturing Workshop	FFL: 75 m AHD Maximum building height: 14 m Total building height: 89 m AHD

Given that the OLS height relative to the FFL is over 140 m it is highly unlikely that any construction plant would intrude into the prescribed airspace.

Air quality impacts associated with operation of the Proposal are predicted to result in a reduction in dust emission (particulate matter), when compared to the approved operations. Chapter 10 of this EIS provides further detail on the predicted air quality impacts of the Proposal. Additionally, as outlined within Section 10.4.2, construction activities have the potential to result in dust and particulate matter emissions from wind passing across exposed soils and from vehicles accessing the Proposal Site and using unsealed roads. Construction would be unlikely to occur while the Western Sydney Airport is operational. Given the OLS height relative to the FFL and the potential improvement of the Proposal's full build operation on air quality and in particular dust emissions (Section 10.4.3), the Proposal does not constitute a controlled activity in accordance with the Airport Act.

5.7 Local environmental planning and development control plans

5.7.1 Eastern Creek Precinct: Employment Lands Precinct Plan – Stage 3

The Eastern Creek Precinct Plan was prepared in accordance with the now repealed SEPP 59 and provides guidelines for planning and development in the Eastern Creek Precinct. The Eastern Creek REP is identified in the Stage 3 Release Area. The objectives of the Precinct Plan are outlined below:

- Promote economic growth and employment opportunities within Central Western Sydney
- Ensure the orderly provision of infrastructure and services

[5] At the time of writing, there does not appear to be a prescribed limit set out in the Regulations.

- Provide a safe and efficient stormwater management system that minimises stormwater impacts on the environment
- Ensure ecologically sustainable development that takes an active approach to anticipating and preventing damage to the environment
- Minimise the impact of development on areas of high biodiversity, archaeological significance, and heritage
- Ensure the traffic and public transport needs for the Precinct are achieved
- Ensure the best possible urban design outcomes are achieved
- Ensure the community service needs of the working population are met
- Allow for the provision of adequate open space for the use and enjoyment of the working population
- Ensure the provision of high-quality landscaping throughout the Precinct.

The Proposal would support the objectives of the Precinct Plan through continuing to provide waste management infrastructure that supports economic growth while considering the surrounding environmental and social constraints.

The various assessments presented in this EIS have considered the relevant sections of the Precinct Plan in determining existing conditions and constraints and ensuring impacts are minimised where feasible and reasonable.

Compliance with the relevant provisions of the Precinct Plan is provided in Table 5-7.

Table 5-7: Eastern Creek Precinct Plan (Stage 3) - Compliance table

Precinct Plan	Proposal
3.0 Economic Development and Employment	The operation of the Proposal would create up to 70 full-time equivalent jobs to support the increased throughput. Although the unemployment rate in the Proposal's locality was below the NSW and Greater Sydney average, the level of employment in the key sectors of construction, manufacturing and retail trade experienced instability as a result of public health directives during Covid. Therefore, the local community would derive moderate benefit from the job opportunities provided by the Proposal. Due to the Proposal's location in relation to the M4 and M7, it is strategically placed to provide employment opportunities for residents within the broader region of Western Sydney. The resource recovery of C&D and C&I waste streams would generate products for use within the construction and wider industries.
5.0 Stormwater Management	The Proposal would utilise both existing and proposed stormwater management infrastructure. Consideration has been given to appropriate measures to mitigate the effects of urban development listed in Section 5.4 of the Precinct Plan in the design of the proposed water management infrastructure. Water quality modelling has been undertaken in accordance with the NSW MUSIC Modelling Guidelines (BMT WBM, August 2015) and Blacktown City Council's guideline *WSUD Developer Handbook: MUSIC Modelling and Design Guide 2020*. The summary of results demonstrates that the existing and proposed OSD basins would attenuate post-development stormwater flow to less than pre-

Precinct Plan	Proposal
	development flow rates for a range of design storms up to the 1% AEP event.
7.1 Ecologically Sustainable Development	An assessment of the Proposal against the four principles of ESD as defined in clause 193(1) of the EP&A Regulation is provide in Chapter 23. With just seven years of remaining life in non-putrescible landfill in Greater Sydney, developing alternatives to landfill are crucial. Greater Sydney's rapidly growing population and waste production means that urban services land particularly for the purpose of waste management needs to be utilised as efficiently as possible. The Proposal is driven by the need to improve outcomes for intergenerational equity, meeting the needs of a rapidly growing Greater Sydney without increasing the footprint of urban services land in the region, thereby reducing impacts to biodiversity values and ecological integrity. Furthermore, the proposed upgrades to stormwater management infrastructure and the installation of solar panels would improve the sites resource efficiency and sustainability outcomes.
7.4 Air Quality a. Development Applications should provide an assessment, and identify necessary mitigation measures, to minimise the potential environmental impacts from air pollutants generated by the proposed development. b. Development Applications must comply with relevant Council, and government authority guidelines, to ensure no adverse environmentalimpacts occur both during and after development of the Precinct.	An assessment of the Proposal's impact on air quality has been provided in Chapter 10 (Air Quality) and Appendix K (AQIA). Mitigation measures provided in Section 10.5 have been informed by the outcomes of the assessment. The peak 24-hour average modelling results for full build operation (Section 10.4.3) at some of the adjacent commercial assessment locations are reduced compared to approved operations, even though the throughput increases. This is due to the reconfiguration / optimisation of the Eastern Creek REP, which acts to re-distribute dust emissions, particularly from truck, by re-directing truck exit points to the Honeycomb Drive extension and Kangaroo Avenue in the northeast of the Proposal Site.
7.6 Contamination c. Applicants are required to submit a site specific contamination report and/or remedial action plan prepared by a suitably qualified person to confirm that the site does not pose arisk to human health or the environment. d. Development should be designed and managed to minimise the potential for pollutingdischarges, fugitive emissions and controlled spillages by appropriate site management techniques. e. All development must comply with the requirements of Council's Site Contamination Policy, and relevant government guidelines.	Contamination has been assessed in Chapter 11 (Soils and Contamination). The assessment was informed by a number of historical assessments undertaken within the Proposal Site listed in Section 11.2.2. The contamination present on the Proposal Site is not considered a risk during construction or operation of the Proposal Mitigation measures outlined in Section 11.5 would be implemented during construction to minimisethe potential for the potential for pollution incidents.
7.8 Noise and Vibration f. Development Applications should provide anassessment, and identify necessary	A NVIA (Appendix J) has been prepared in accordance relevant guidelines and policies and includes:

Precinct Plan	Proposal
mitigation measures, to minimise the potential environmental impacts from noise and vibration generated by the proposed development. g. Development Applications must comply with relevant Council, and government authority guidelines, to ensure no adverse environmental impacts occur both during and after development of the Precinct.	• A construction noise impact assessment in accordance with the *Interim Construction Noise Guideline* (ICNG) (Department of Environment and Climate Change (DECC), 2009) • A construction vibration impact assessment, in accordance with *Assessing Vibration: A Technical Guide* (DEC, 2006) • An operational noise impact assessment in accordance with the *Noise Policy for Industry* (NPfI) (NSW EPA, 2017) • A road traffic noise assessment in accordance with the NSW *Road Noise Policy* (RNP) (DECCW, 2011). The NVIA concluded that the listed construction activities would typically comply with the noise-affected and highly noise-affected Noise Management Levels (NML) at the nearest receivers. It also found that the Proposal is compliant with the NPfI guidelines and is unlikely to cause disturbance to sleep at the assessed residential receivers.
8.3 Biodiversity h. Applications for development of an allotment of land containing an identified conservation area or riparian corridor shall demonstrate that satisfactory arrangements have been made for the ongoing protection, enhancement, and management of biodiversity on that land. i. Development Applications relating to an area directly adjacent to an identified conservation area or riparian corridor are to have regard to the following: – whether the area has high biological diversity, and – whether the land has connective importance as part of the corridor of bushland that allows for the potential passage of species of flora or fauna between two or more areas of bushland.	A BDAR has been prepared in accordance with requirements of the *Biodiversity Assessment Method* (BAM) (DPE, 2020) and summarised in Chapter 14. The assessment was based on desktop research and field surveys with mapping of ground verified vegetation and species provided. Consideration has been given to ecological communities within and adjacent to the Proposal Site throughout the design phase to ensure ecosystem diversity is maintained. Angus Creek would be modified as part of the Proposal through the inclusion of a culvert to facilitation the new connection to Kangaroo Avenue. Risks to aquatic biodiversity are considered to be minimal as the creek has been assessed as providing minimal habitat due to the highly modified nature of the waterway. Standard mitigation and management measures, especially erosion and sedimentation minimisation will be employed to reduce the risks of indirect impacts to any surrounding waterways, mainly in reducing run off from the Proposal Site. While limited connectivity exists for flying species, such as birds and bats, the Proposal Site has little direct connectivity with vegetated corridors, therefore connectivity is limited.
10.3 Public Transport j. Applicants will need to demonstrate that satisfactory arrangements have been entered into with the relevant State government authorities for the provision of public transportservices to the Precinct. k. Bus stops are to be provided at appropriate intervals and locations to ensure a maximum 400m walking distance from at least 90% of employment generating development.	There are two bus stops that are located just outside the Proposal Site. The closest is 400 m walk to the southeast. Bus routes servicing these stops include the 723 – Mt Druitt to Blacktown and 738 – Mt Druitt Station to Rooty Hill.
10.6 Parking	In accordance with the Precinct Plan, the Proposal generates a need for 503 car parking spaces. In

Precinct Plan	Proposal
Buildings 7,500sqm or less – 1 space per 100sqm GFA. Building greater than 7,500sqm GFA – 1 space per 200sqm GFA only for the area in excess of 7,500sqm where there is a specific end user which would not demand a higher rate and where employee parking is adequately catered for. Commercial / office: 1 space per 40sqm GFA Developments of more than 50 car parking spaces must provide at least 2% or part thereof of those spaces for disabled drivers, clearly marked and signposted for this purpose.	comparison to the number of staff to be employed at the Eastern Creek REP, which is up to 219 staff in Stage 3, the provision of 503 car parking spaces would be excessive for the Proposal Site. The greatest number of employees onsite at any one time would occur at the shift change-over which would occur at around 3pm, as night workers arrive to the site to commence their shift and day workers conclude their shift. Assuming an overlap of 75% of day shift workers (121) and 75% of night shift workers (70) onsite at the same time, there would be up to 191 staff. In such case, an additional 54 car parking spaces are proposed onsite taking the total available car parking spaces to 276 on site which would accommodate the associated parking demand.
11.0 Urban Design Buildings should be of an appropriate scale relative to the site area and adequate provision made for parking, landscaping and manoeuvring. Development should identify areas of high visibility and consider options such as vegetation screens or landmark buildings of outstanding design. Detailed consideration will need to be given to the appearance of the development from both within and outside the site from Wallgrove Road, the M4 Motorway and the Westlink M7.	A Landscape and Visual Impact Assessment (LVIA) is provided in Chapter 17. The Proposal has been determined to have a moderate-low to negligible impact on visual amenity within the locality. The Site Workshop and the Maintenance and Manufacturing Workshop constructed in the northeast corner of the Eastern Creek REP would be operational. These structures would be consistent with the surrounding industrial landscape and would provide a visual buffer between neighbouring land uses to the east and the landfilling activities within the centre of the Eastern Creek REP. Additionally, a landscape plan has been prepared for the Proposal and is provided in Appendix R. Landscaping would be carried out across the Proposal Site. Landscaping would include a mix of mature trees, groundcover and grasses. In particular, screen planting and perimeter fencing would be used along the eastern perimeter of the Proposal Site, between the Maintenance and Manufacturing Workshop and Kangaroo Avenue to provide a natural visual barrier.
14.0 Landscaping l. Landscape issues, objectives, and requirements are to be incorporated into early site infrastructure and individual allotment design to maximise the quality and effectiveness of landscape outcomes. m. A landscape plan is to be prepared and submitted with development applications for each allotment. n. Site planning is to consider the minimisation of extensive runs of façade providing appropriate functional landscaped breaks and tree planting to provide visual relief. o. Plant species should respond primarily to the locally endemic plant community of Cumberland Plain Woodland vegetation for tree and understorey species. Where these species are not applicable for a specific landscape design intent the rationale for	Landscaping has considered the relevant requirements of the Precinct Plan. A landscape plan containing the required elements has been prepared (Appendix R) outlining the location and species selection for site landscaping. Landscaping would include a mix of mature trees, groundcover and grasses consistent with the Cumberland Plain Woodland plant community.

Precinct Plan	Proposal
species selection should be outlined on the Landscape Plan. In these cases Australian native species are preferable where design intent can be realised.	

5.7.2 Blacktown Local Environmental Plan 2015

While the Proposal falls within the Blacktown LGA which is subject to the BLEP 2015, as outlined above it also falls within the area covered by the Industry and Employment SEPP , the land zoning of the Proposal Site in the BLEP 2015 is therefore deferred.

Under the Industry and Employment SEPP , the Eastern Creek REP site is zoned as predominantly IN1 General Industrial with the conservation area to the northwest zoned as C2 Environmental Conservation.

5.8 Related approvals

Secondary approvals would be required in order to begin the construction and / or operation of the Proposal. Secondary approvals required are outlined below in Table 5-8.

Table 5-8: Secondary approvals required

Act	Requirement	Reference
Protection of the Environment Operations Act 1997	Do not carry out or allow an activity listed in Schedule 1, or carry out work to enable such an activity, unless the premises are licensed by the EPA. In accordance with Schedule 1 of the PoEO Act, resource recovery and waste storage are considered to be scheduled activities. As mentioned in Section 5.5.2, the existing Eastern Creek REP holds two EPLs. As per Section 58 of the PoEO Act, a license may be varied on application by the holder of the license. EPL 20121 would be amended following approval of the Proposal to allow for the proposed throughput increase.	S48 S58 Schedule 1
Roads Act 1993	In accordance with Section 138 of the Roads Act, consent from the appropriate roads authority must be granted in order to dig up or disturb the surface of a public road. The council of a local government area is the roads authority for all public roads within the area other than any freeway or Crown road, and any public road for which some other public authority is declared by the regulations to be the roads authority. Both Kangaroo Avenue and Honeycomb Drive are local roads. As such, works to connect to these roads will require approval from Blacktown City Council.	S7 S138

6 CONSULTATION

6.1 Introduction

This chapter documents the consultation carried out to date for the Proposal, as well as the proposed consultation to be undertaken during and following the public exhibition period.

A Community and Stakeholder Engagement Strategy and Outcomes Report (Engagement Report) has been prepared by Elton/WSP to outline the approach to consultation during the delivery of the Proposal and to address the SEARs issued by DPE. The Engagement Report is provided in Appendix H of this EIS. The approach to consultation has been guided by a Community and Stakeholder Engagement Strategy developed in consultation with DPE. Table 6-1 provides a summary of the relevant SEARs which relate to consultation, and where these have been addressed in this EIS.

Table 6-1 SEARs (consultation)

SEARs	Where Addressed
Community and Stakeholder Engagement	
A community and stakeholder participation strategy identifying key community members and other stakeholders	Chapter 6 (consultation) Appendix H (Engagement Report)
Details and justification for the proposed consultation approach(s)	Section 6.2 (consultation strategy and objectives) Appendix H (Engagement Report)
Clear evidence of how each stakeholder identified in the community and stakeholder participation strategy has been consulted	Section 6.3 and Section 6.4 (consultation outcomes) Appendix H (Engagement Report)
Details of issues raised by the community and surrounding landowners and occupiers	Section 6.3.3 (consultation outcomes) Appendix H (Engagement Report)
Clear details of how issues raised during consultation have been addressed and whether they have resulted in changes to the development	Section 6.4.3 (agency consultation outcomes) Section 6.3.3 (community consultation outcomes) Section 6.5 (design refinements) Appendix H (Engagement Report)
Details of the proposed approach to future community and stakeholder engagement based on the results of the consultation.	Section 6.5 and Section 6.6 (future consulation) Appendix H (Engagement Report)
Consultation	
During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners.	Section 6.4.3 (government agency consultation) Section 6.3.3 (community consultation) Appendix H (Engagement Report)
In particular you must consult with: • Blacktown City Council • Environment Protection Authority • Department of Planning, Industry and Environment, specifically the: – Environment, Energy and Science Group	Section 6.4 (Government and agency consultation) Appendix H (Engagement Report)

SEARs	Where Addressed
– Water Group and NRAR. • NSW Fire and Rescue • Sydney Water • Transport for NSW (including the former Roads and Maritime Services) • Surrounding local landowners and stakeholders • Any other relevant public transport, utilities or community service providers.	
The EIS must describe the consultation process and the issues raised and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.	Section 6.2 (consultation strategy) Section 6.4.3 (agency consultation outcomes) Section 6.3.3 (community consultation outcomes) Section 6.5 (design refinements) Appendix H (Engagement Report)

6.2 Consultation strategy and objectives

A Community and Stakeholder Participation Strategy was prepared by Elton/WSP in July 2021 to support and guide consultation for three projects that are currently being progressed by DADEC (a fully owned subsidiary of Bingo) at the Eastern Creek REP including the Recycling Infrastructure Optimisation Project. The objectives of the stakeholder and community consultation strategy for the Proposal are to:

- Fulfil the SEARs for the Proposal, specifically to undertake community and stakeholder engagement prior to lodgement
- Provide accurate and accessible information about the Proposal
- Enable Bingo to identify and respond to relevant issues of community concern before lodging the EIS
- Commence the process of building more structured and effective channels of communications with the community and neighbouring landowners.

The following steps have been followed to develop the consultation strategy and actively undertake consultation:

1. Identify key stakeholders with a potential interest in the Proposal
2. Identify appropriate consultation mediums tailored to those stakeholders which took into account the unpredictable COVID-19 environment and public health orders which impacted the nature engagement activities that could be effectively carried out
3. Engagement with DPE to confirm adequacy of the proposed engagement approach and consultation activities
4. Generate consultation collateral to effectively portray information about Bingo and the Proposal
5. Undertake the identified consultation activities and seek feedback from key stakeholders on the Proposal
6. Address queries and concerns raised during consultation activities where possible and provide regular communication updates to ensure additional information provided by Bingo is accessible by all stakeholders on Bingo's dedicated Eastern Creek Community Engagement webpage
7. Identify next steps and future consultation activities.

The first step (stakeholder identification) broadly categorised key stakeholders into groups, namely government agencies and community stakeholders.

Section 6.3 and Section 6.3 describe the consultation activities and outcomes based on the steps above for each group respectively.

6.3 Community consultation

6.3.1 Stakeholder identification

Eastern Creek is in the southwestern corner of the Blacktown LGA. Unlike some of its neighbouring suburbs which contain a large volume of residential properties, Eastern Creek is predominantly comprised of industrial and manufacturing properties and open space. The closest residential receivers are located across the M4 Motorway approximately 400 m to the north in the suburb of Minchinbury and approximately 1.2 km west in the suburb of Erskine Park.

Community stakeholders that were identified included:

- Adjacent landowners and operators
- Nearby receivers such as residents and schools residing within Erskine Park and Minchinbury
- Community groups that have previously engaged with Bingo regarding operations at the Eastern Creek REP
- Community groups that represent the interests of businesses and residents in Eastern Creek and neighbouring suburbs.

6.3.2 Consultation activities

The following community consultation activities were undertaken:

- **Community Working Group (CWG):** Invitations to participate in a CWG were sent to select local residents, representatives of adjacent landowners, operators, local schools and community organisations / groups by Bingo on 30 September 2021. Initial invitations were followed up by emails and phone contact from Bingo's Executive Management to encourage participation in the group. Given the low response rate and inability to form a workable quorum, Bingo did not pursue the CWG process but remains open to revisiting this forum in the future, subject to stakeholder and community group interest.
- **Community newsletter:** A community newsletter to notify nearby residents and businesses of the Proposal and consultation program was distributed by Flyers Direct to the newsletter distribution area. The newsletter distribution area captured dwellings and businesses within Eastern Creek, Minchinbury and Erskine Park. This went to over 4,000 premises within the surrounding area between 24 and 28 October 2021. Following feedback received by residents and Mr Edmond Atalla MP (state member for Blacktown), a second distribution of the community newsletter was carried out on 5 November 2021 by Bingo's employees to 1,000 properties. An updated newsletter announcing the additional December community webinars and consultation program was delivered on 30 November and 1 December 2021 to over 4,000 premises (including residences and businesses) within the surrounding area. The newsletters contained links to the project email and website and a QR code linked to the community webinars.
- **Project email:** An email address was established to receive feedback and field questions about the consultation program and upcoming projects at the Eastern Creek REP, including the Proposal. By 20 December 2021, 23 community submissions had been received via email.
- **Project website updates:** The Eastern Creek REP Community Engagement website launched on 26 October 2021 and Bingo has been providing regular updates. Up to 20 December 2021, the website received 641 unique visitors, 1,627 page views with an average dwell time per visit of 1 minute 15 seconds

- **Community webinars:** Five facilitated community webinars were carried out by Bingo on 4 November, 9 November, 11 November, 11 December 13 December of 2021. This allowed direct engagement between members of the community and key representatives from Bingo and the technical project team.
- **One on one meetings:** Meetings occurred with seven adjacent landowners during November 2021.
- **Online information:** Information including newsletters, webinar presentations and responses to Frequently Asked Questions (FAQs) were progressively posted onto the Eastern Creek REP Community Engagement website and Bingo's Facebook page across the consultation period, from October to December 2021. Consultation material remains available on the Bingo webpage.
- **Responses to queries and questions on notice:** Bingo engaged directly with six community members who sought additional information on the projects and operations at the Eastern Creek REP.

6.3.3 Consultation outcomes

This section summarises the feedback received from the community webinars, submissions sent to the project email and discussions with adjacent landowners, agencies, and authorities. During consultation, feedback was provided on all three proposals being prepared by Bingo for the Eastern Creek REP (including the Proposal). This section summarises the feedback provided for the Recycling Infrastructure Optimisation Project only.

Table 6-2: Key consultation aspects for consideration and responses – community stakeholders

Aspect for consideration	Response	Reference
No expansion of landfill activities in a facility close to residential areas.	• The Proposal does not include the expansion of landfill activities. The Proposal would result in a small increase to chute waste being sent to the landfill due to the increase in recycling activities being carried out at the Proposal Site. The use of residual chute waste for this purpose is aligned with the current Project Approval. • The Proposal aims to increase the amount of waste being diverted from landfill.	Chapter 3 (Project description)
Given the type of waste Bingo accepts at Eastern Creek, nothing should be burnt, converted to energy or co-processed. All materials should be recycled.	• The combustion of waste does not form part of the Proposal. The Proposal does not propose any changes to the processing activities already occurring onsite. • There is no linkage to the Next Generation Energy from Waste (EFW) facility. • Bingo continuously looks for circular opportunities for their residual waste stream which is currently landfilled. Bingo plans to undertake a waste audit of these materials to understand the specifications of the material and exact composition of plastics / textiles etc. to inform further investment in recycling technology to enhance the diversion rates from landfill over time.	Chapter 3 (Project description) Chapter 4 (Project justification and alternatives)
Will plastic be sorted from the incoming waste stream and recycled?	• Plastic is currently sorted from the incoming waste stream and where nonrecyclable is included within the residual waste stream. • As noted above, their residual waste stream is currently landfilled. As part of Bingo's innovation hub and commissioning of MPC2 at the Eastern Creek REP, Bingo plans to undertake a waste audit of these materials to understand the specifications of the material and exact composition of plastics / textiles etc.	Chapter 18 (Waste management)

Aspect for consideration	Response	Reference
	to inform further investment in recycling technology to enhance the diversion rates over time.	
Noise Management • Will the facility operate 24/7? • Solutions for night-time noise from reversing alarms on trucks and machinery? • Will MPC2 be quieter than MPC1?	• The Proposal Site has an existing approval to operate some aspects of its operation 24 hours, 7 days per week including MPC1 and MPC2 (operation, waste receival, chute use and maintenance). The SMA can also receive segregated materials 24 hours a day, Monday to Friday. The operation of other activities at the Proposal Site are restricted to certain hours. The Proposal would operate in accordance with the Project Approval and would not seek to change the current operating hours of Eastern Creek REP. • Noise at the Proposal Site is managed through the approved Environmental Management Strategy. Biannual monitoring will continue to be undertaken as a licence requirement to ensure compliance with the limits established in the Environmental Protection Licence. • A detailed NVIA has been prepared by RWDI for the Proposal which includes an assessment of the operational noise impacts from the operation of MPC1 and MPC2. The assessment shows that the Proposal will be compliant with the established noise limits within EPL 13426.	Chapter 8 (Noise and vibration) Appendix J (NVIA)
Dust and particulates management to address increased levels of materials handling, stockpiles and truck movements.	• The majority of the increase in throughput associated with the Proposal would be processed through MPC2. MPC2 is a state-of-the-art facility that has been designed to include a range of measures to manage dust and particulate matter including: – Processing of waste within the enclosed facility – Dust extraction systems on processing equipment – Dust suppression systems such as misters and hosing down dusty materials – Enclosed conveyors. • In addition to this, the Proposal also includes upgrades to existing internal roads as well as rumble grids and wheel washes at the next exits. These measures would assist in minimising potential air quality impacts from the Eastern Creek REP during operation. • Modelling indicates that Stage 2 operations would result in a maximum number of one additional exceedance day above the impact assessment criterion for $PM_{2.5}$ at nine (out of 65) residential receivers and two additional exceedance days at commercial locations. It should be noted however that where exceedances occur, these assessment locations already have background concentration nearing or already exceeding the impact assessment criterion. • An assessment of full build peak operation (based on an approximate 30% increase in emissions from MPC2) has been undertaken. While an increase is predicted for Stage 1 (plus Stage 2 Construction), the improvements at the Proposal Site for Stage 2 operations leads to a reduction in the likelihood of additional exceedance days (above PM_{10} exceedance criterion) when compared with Approved operations, indicating that the Proposal will have a positive influence on air quality	Chapter 2 (Site Description) Chapter 3 (Proposal Description) Chapter 10 (Air quality) Appendix K (AQIA)

Aspect for consideration	Response	Reference
	impacts from the Proposal Site at surrounding receptors. This is especially the case for the worst affected commercial receptors surrounding the Proposal Site. The proposed connections to the Honeycomb Drive extension and Kangaroo Avenue would ultimately improving the air quality outcomes for the worst affected receivers. This is due to the reconfiguration / optimisation of the Eastern Creek REP, which acts to re-distribute dust emissions, particularly from trucks, by re-directing truck exit points to the Honeycomb Drive extension and Kangaroo Avenue in the northeast of the Proposal Site. • Further detail on potential air quality impacts is provided in Chapter 10 (Air quality) and Appendix K (AQIA).	
Is the extension of Archbold Road proposed as part of these works?	• The Archbold Road extension has been proposed by and is the responsibility of TfNSW. As such, it doesn't form part of this Proposal.	Chapter 3 (Proposal Description)
Impacts of additional trucks in surrounding suburbs and on busy roads.	• The Eastern Creek REP is strategically located adjacent to the arterial road network including key roads such as the M4 Western Motorway and the Westlink M7 Motorway. • All vehicles would access the Proposal Site via Honeycomb Drive and Wonderland Drive as they are the only primary access roads within the broader industrial precinct. The Proposal would result in an increase in the number of vehicles accessing the Proposal Site. However, these vehicles would continue to access the Proposal Site to and from key arterial roads and would not use local roads in surrounding suburbs. • The Traffic Impact Assessment (TIA) prepared for the Proposal (Appendix I) demonstrates that the surrounding road network would continue to operate at an acceptable level of service with spare capacity when considering traffic generated by the Proposal.	Chapter 8 (Traffic and Transport) Appendix I (TIA)
Emergency access arrangements	• During construction and operation of the Proposal, emergency access would be maintained at all times.	Appendix I (TIA)
Impacts on stockpiling arrangements	• Stockpiling will continue to occur in accordance with the Eastern Creek REP's EPL 20121. Further detail on stockpiling for the Proposal is included in Section 2.7.5 and Section 3.5.7 as well as the relevant specialist assessments such as the Air Quality Impact Assessment (AQIA) (Appendix K).	Section 2.7.5 Section 3.5.7 Appendix K (AQIA)

6.4 Government and agency consultation

6.4.1 Stakeholder identification

Several government agencies were identified as having a likely interest in the Proposal. These agencies included those identified through the SEARs issued by DPE as well as other agencies that may have an interest in specific aspects of the Proposal or particular environmental considerations. The agencies identified for consultation were:

- Blacktown City Council
- Penrith City Council

- Local and State government representatives (Edmond Atalla MP State Member for Mount Druitt, Stephen Bali MP Member for Blacktown and Penny Sharpe MLC, Shadow Minister for the Environment)
- The NSW Environment Protection Authority
- Department of Planning and Environment, specifically:
  - Environment, Energy and Science Group (EES)
  - Water Group and Natural Resources Access Regulator (NRAR)
- NSW Fire and Rescue
- Sydney Water
- Transport for NSW (including former Roads and Maritime Services)
- Endeavour Energy.

6.4.2 Consultation activities

The consultation mediums adopted differed depending on the agency engaged with and the nature and level of their interest in the Proposal. Consultation mediums included:

- Virtual meetings
- Telephone conversations
- Email correspondence
- Letter correspondence
- Site visits
- Stakeholder engagement sessions (Blacktown and Penrith City Councils and local MP Edmond Atalla were invited to attend the community engagement sessions).

Due to the nature of the consultation activities carried out with Government agencies, consultation collateral was prepared on a bespoke basis and largely comprised of presentation material and preparation of bespoke letters and background information.

6.4.3 Consultation outcomes

A summary of the government and agency stakeholder consultation activities carried out, the key aspects discussed, and how they have been considered within this EIS and the development of the Proposal, is provided for each stakeholder below.

Department of Planning and Environment and NSW Environmental Protection Authority

DPE have been consulted with throughout the preparation of this EIS, regarding various elements of the Proposal. Consultation with DPE and the NSW EPA has comprised the following activities:

- A virtual meeting was held between Bingo, DPE and Elton/WSP on 9 September 2021 to outline the proposed consultation activities and key stakeholders to be engaged
- A virtual meeting was held between Bingo, DPE and the NSW EPA on 17 November 2021 to provide further detail regarding the Proposal
- A virtual meeting was held between Bingo and DPE on 24 November 2021
- Telephone conversations, as well as letter and email correspondences have occurred throughout the development of the EIS.

Following a meeting with DPE on 24 November 2021, Bingo extended the consultation period and scheduled two more community webinars. The key aspects raised by DPE and NSW EPA during the

meeting held on 17 November 2021, and how these items have been addressed, is presented in Table 6-3.

Table 6-3 Key consultation aspects and responses – DPE and NSW EPA

Aspect for consideration	Response	Reference
DPE and the EPA noted they had received correspondence regarding 'missed streets' in notifying the community of community consultation sessions.	At the first community webinar on 4 November 2021, Mr Edmond Atalla MP provided Bingo with a list of streets that were reported as having not received the distributed community newsletter. As a result, a second distribution of the community newsletter was carried out on 5 November 2021 by Bingo's employees to 1,000 properties. Considering the feedback regarding the community newsletter distribution, on 6 November 2021, Bingo announced a third community webinar for 11 November 2021. The Eastern Creek REP Community Engagement website and Bingo's Facebook page were also updated to advise of the third community webinar. Bingo also paid for Facebook advertising which was geolocated to Minchinbury, Erskine Park and Eastern Creek linking to the newsletter and the additional community webinar date. Additional Facebook advertising was scheduled by Bingo until 17 November 2021 for the communities of Minchinbury, Erskine Park and Eastern Creek to direct people to the community webinar presentation and FAQs document which had been uploaded to the Eastern Creek REP Community Engagement website and feedback was encouraged. An updated newsletter announcing two additional December community webinars and consultation program was delivered on 30 November and 1 December 2021 to over 4,000 premises (including residences and businesses) within the surrounding area, following discussion with DPE on 24 November 2021. Advertisements announcing the additional community webinars were placed through Newscorp's Telegraph Digital Syndicate for Minchinbury, Erskine Park and Eastern Creek from 3 December, and a print version was placed in Blacktown News newspaper on 7 December.	Appendix H
Would the Proposal affect any changes in current stockpiling arrangements?	An EPL variation application is currently in its final stages of preparation to increase the authorised amount storage limit from 667,000 tpa to 950,000 tpa. At the time of writing this was yet to be lodged.	Chapter 2 (Site description)

Aspect for consideration	Response	Reference
Modelling for air quality should not only consider additional traffic but additional material to be processed at MPC2 and associated requirements for stockpiling in the Segregated Materials Area. It was observed that any increase in stockpiles would require consideration of potential impacts on air quality triggered by potential dust emissions.	In order to ensure a robust assessment of the Proposal's potential air quality impacts, air quality modelling considered fugitive dust for all operational activities that would occur onsite including: • Trucks unloading waste at the MPC1, MPC2 and SMA • Waste sorting, handling and conveying at the MPC1 and MPC2 • Processing (crushing, screening, shredding) and handling at the SMA • Loading product trucks at the SMA • Wind erosion from exposed ground (landfill and SMA). As the entirety of the 950,000 tpa throughput increase is to be implemented during Stage 2 operation, modelling predictions for Stage 2 operations are considered representative of the longer-term operational conditions and are therefore relevant for full build operations. Modelling indicates that Stage 2 operations would result in a maximum number of one additional exceedance day above the impact assessment criterion for $PM_{2.5}$ at nine (out of 65) residential receivers and two additional exceedance days at commercial locations. It should be noted however that where exceedances occur, these assessment locations already have background concentration nearing or already exceeding the impact assessment criterion. Additionally, an assessment of full build peak operation (based on an approximate 30% increase in emissions from MPC2) has been undertaken. While an increase is predicted for Stage 1 (plus Stage 2 Construction), the improvements at the Proposal Site for Stage 2 operations leads to a reduction in the likelihood of additional exceedance days (above PM_{10} exceedance criterion) when compared with Approved operations, indicating that the Proposal will have a positive influence on air quality impacts from the Proposal Site at surrounding receptors. All material receipt associated with the Proposal, handling and sorting occurs within enclosed buildings (predominantly MPC2). Both MPC1 and MPC2 are enclosed on all sides and operate fine misting sprays on each opening to control fugitive dust. MPC2, the newer facility and where the majority of the Proposed throughput would be handled, also has an air handling system with extraction to a dust collector. The only material handling and processing to occur outside is at the SMA, including loading product stockpiles, loading trucks, material crushing, screening and shredding. All processing, although located outside, is controlled using water sprays. The Proposal would not substantially increase the volume of material directly deposited at the SMA. Further detail on potential air quality impacts is provided in Chapter 10 (Air quality) and Appendix K (AQIA).	Chapter 10 (Air quality) Appendix K (AQIA).

Fire and Rescue NSW

A letter was sent to FRNSW on 10 November 2021 providing them with background information regarding the Proposal and inviting them to engage in a meeting with Bingo.

FRNSW declined the invitation noting that feedback would be provided during the Proposal exhibition period as required.

Blacktown City Council

Council has been consulted throughout the preparation of this EIS regarding various aspects of the Proposal. Consultation has comprised of the following activities:

- An invitation to participate in a Community Working Group (CWG) was sent to representatives of Council on 30 September 2021. The initial invitation was followed up by emails and phone contact from Bingo's Executive Management to encourage participation in the group. Council declined the invitation.
- A virtual meeting was held between BINGO and various members of Council's planning assessment team on 17 November 2021.
- Email and telephone correspondence occurred periodically during preparation of the EIS on an as required basis.

The key aspects raised by Council and how these items have been addressed, in presented in Table 6-4.

Table 6-4 Key consultation aspects and responses – Blacktown City Council

Aspect for consideration	Response	Reference
• The need for a Traffic Impact Assessment including: – consideration of an increase in truck movements to and from the Proposal Site – confirmation that no upgrade to surrounding intersections is required due to the Proposal – provision of slip lanes where needed and of an appropriate length to accommodate trucks • The emergency access arrangements would be an important consideration and that road access would need to be factored in perpetuity. • Would there be a left only out on to Honeycomb Drive or would there also be a right turn? • Sufficient land should be set aside to allow slip lanes etc. when this is built.	The TIA prepared for the Proposal (Appendix I) demonstrates that the surrounding road network would continue to operate at an acceptable level of service with spare capacity when considering traffic generated by the Proposal. On this basis, the TIA concluded that traffic generated by the Proposal is not expected to compromise the safety or function of the surrounding road network. As such, road upgrades, infrastructure works, or new roads would not be required for the development. No special provisions for emergency service vehicles are required as part of the construction works. Notwithstanding, emergency vehicle access shall be maintained at all times. Additionally, the two proposed road connection would include a passing lane circumventing the weighbridges to provide an access / egress point for emergency vehicles. Initially, a left turn only would be proposed out of the Proposal Site onto Honeycomb Drive. The design has allowed consideration for the future addition of a right out turn once the Honeycomb Drive extension and upgrade to Archbold Road are complete. The Honeycomb Drive extension will not be constructed as part of the Proposal. IRM Property No.2 lodged a development application to Council (DA-21-01557) in August 2021 for the Honeycomb Drive extension and would be responsible for the road design.	Chapter 8 (Traffic and Transport) Appendix I (TIA)

Aspect for consideration	Response	Reference
Concerns regarding background creep for noise and air.	Noise at the Proposal Site is managed through the approved EMS. Biannual monitoring will continue to be undertaken as a licence requirement to ensure compliance with the limits established in the EPL A detailed NVIA has been prepared by RWDI for the Proposal which includes an assessment of the operational noise impacts from the operation of MPC1 and MPC2. The assessment shows that the Proposal would be compliant with the established noise limits under EPL 20121. The majority of the increase in throughput associated with the Proposal would be processed through MPC2. MPC2 is a state-of-the-art facility that has been designed to include a range of measures to manage dust and particulate matter In addition to this, the Proposal also includes upgrades to existing internal roads as well as rumble grids and wheel washes at the next exits. These measures would assist in minimising potential air quality impacts from the Eastern Creek REP during operation. Although the Proposal increases the throughput of Eastern Creek REP, modelling results of concentrations for key air emissions at some of the adjacent commercial assessment locations are reduced compared to approved operations. This is due to the reconfiguration/optimisation of the Eastern Creek REP, which acts to re-distribute dust emissions, particularly from truck, by re-directing truck exit points to the Honeycomb Drive extension and Kangaroo Avenue in the northeast of the Proposal Site. Further detail on potential air quality impacts is provided in Chapter 10 (Air quality) and Appendix K (AQIA).	Chapter 8 (Noise and vibration) Appendix J (NVIA) Chapter 10 (Air quality) Appendix K (AQIA)
• Council noted it would be beneficial to have contact details for Bingo to pass on any complaints received from the community. • Council would appreciate notice via a phone call or email if there are any issues on site that may cause complaints from the community.	Bingo and Council have maintained contact since the meeting as required.	N/A

Penrith City Council

Penrith were invited to participate in the Community Working Group (CWG) (further details are provided in Section 6.3.2) and they formally declined in writing on 13 October 2021, citing they are unable to participate in the Eastern Creek REP CWG due to existing commitments and the local government elections. Additionally, Penrith City Council was invited to a separate meeting to provide further information on the Proposal and to provide feedback on the Proposal prior to the exhibition of the EIS. As of the date of this EIS the meeting invitation has not been accepted by Council.

Transport for NSW

The TIA was issued to TfNSW to provide feedback on 18 February 2022. A response was received from TfNSW on 11 April 2022. Although TfNSW did provide some feedback on the Proposal they indicated their intention to undertake a detailed review of the Proposal during exhibition and provide a response accordingly at this time. Subsequently, the queries raised by TfNSW will be addressed as part of the Response to Submissions process.

Sydney Water

A letter was prepared and issued to Sydney Water on 10 November 2021 providing background information regarding the Proposal and inviting Sydney Water to provide feedback prior to the exhibition of the EIS.

Sydney Water responded by reiterating the issues raised in their response to the SEARs letter issued on 17 December 2020 and requested that the issues be addressed within the submission. The requirements referred to and how they have been addressed are outlined below in Table 6-5.

Table 6-5 Key consultation aspects and responses – Sydney Water

Aspect for consideration	Response	Reference
Provision of ultimate and annual demand (in jobs or volume) for drinking water, wastewater and recycled or alternative water options where appropriate	A water balance for the Proposal has been carried out as part of the Surface Water Impact Assessment (SWIA) and summarised in Chapter 12 (Water and hydrology).	Chapter 12 (Water and hydrology) Appendix N (Surface Water Impact Assessment)
Where there are concerns that existing assets (including stormwater assets) may be impacted by any new proposals we would require these to be protected via the BPA or S73 process. However, where you believe there may be a significant or complex issue (size of deviation/age of existing asset requiring protection/no of properties potentially affected etc), we would request that you start this process as early as possible by lodging a feasibility with Sydney Water to start this review.	Utilities that may be impacted by the Proposal are outlined within Chapter 3 (Proposal Description). Bingo would carry out consultation with Sydney Water regarding any impacts to Sydney Water assets and any licenses or agreements required as a result of the Proposal.	Chapter 3 (Proposal Description)
Should a trade waste agreement be required, if this is complex it is beneficial to start this process as soon as possible with Sydney Water	Treated leachate from the Eastern Creek REP is currently discharged into a Sydney Water sewer on Lot 8 DP1200048 as permitted by Trade Waste Agreement 35580, which allows the discharge of up to 650 kL a day. No amendment to the current Trade Waste Agreement will be required as a result of the Proposal	Section 2.7.12 (Leachate management) Appendix N (Surface Water Impact Assessment)
Finally we ask that the referral considers and documents the options for minimising water use especially where applications do not require potable demand, or where water conservation can be adopted. The same for wastewater /end use management	Measures to minimise water use have been considered as part of the Proposal and are outlined as appropriate in the SWIA and summarised in Chapter 12 (Water and hydrology) and Chapter 3 (Proposal description)	Chapter 3 (Proposal description) Chapter 12 (Water and hydrology) Appendix N (Surface Water Impact Assessment)

Endeavour Energy

A letter was prepared and issued to Endeavour Energy along with a general enquiry through their website on 10 November 2021 providing further information on the Proposal and inviting Endeavour Energy to provide feedback on the Proposal prior to the exhibition of the EIS.

Endeavour Energy responded by email, referring to their response to DPE's request for input into the SEARs for the Eastern Creek REP Mod 9 – Western Operational Area. The requirements referred to and how they have been addressed are outlined below in Table 6-6.

Table 6-6 Key consultation aspects and responses – Endeavour Energy

Aspect for consideration	Response	Reference
Existing capacity of the site to service the proposed development and any extension or augmentation, property tenure or staging requirements for the provision of utilities, including arrangements for electrical network requirements, drinking water, waste water and recycled water and how the upgrades will be co-ordinated, funded and delivered on time and be maintained to facilitate the development	Utilities that may be impacted by the Proposal are outlined within the Chapter 3 (Proposal Description). Bingo would carry out consultation with the relevant agencies as required.	Chapter 3 (Proposal Description)
Existing infrastructure on the site or within the network which may be impacted by the construction and operation of the proposal and the measures to be implemented to address any impacts on this infrastructure.	Utilities that may be impacted by the Proposal are outlined within the Chapter 3 (Proposal Description). The Proposal is not expected to impact any Endeavour Energy assets, this would be confirm during detailed design. Bingo would carry out consultation with Endeavour Energy regarding any impacts to their assets as a result of the Proposal.	Chapter 3 (Proposal Description)

6.5 Consultation during the EIS exhibition

The EIS would be exhibited for a minimum of 30 calendar days and will be available to be viewed at the following locations:

- Proposal webpage (electronic version)
- NSW Department of Planning and Environment, 12 Darcy St, Parramatta NSW 2150, Sydney. Open Monday to Friday 9am to 5pm.

During the exhibition period, DPE will invite written submissions on the Proposal from the community, government and non-government agencies, stakeholders and other interested parties. During this exhibition period, the community and key stakeholders will have an opportunity to review the full supporting documentation.

Bingo will also undertake a number of consultation activities during the exhibition period including:

- Responses to media requests
- Updating and monitoring the dedicated Proposal webpage on the Bingo's website announcing the EIS public exhibition, encouraging feedback on the EIS
- Emailing the mailing list of those community members who registered interest.

After the exhibition of the EIS, DPE will provide copies of any submissions received to Bingo. Bingo will be required to prepare a response to submissions report and potentially amend the Proposal to address issues raised in submissions. The finalised application will then be assessed by DPE and a determination made.

6.6 Ongoing consultation

Bingo will continue to carry out consultation after the completion of the planning phase of the Proposal, into the construction and operational phases. Ongoing consultation will include:

- Maintaining the Bingo website to provide the wider community with access to the facility's monitoring results, details of current activities, policies, environmental management plans and strategy, complaints register and any other information in relation to the site operation that may be considered of interest to the community.
- Where a particular planned activity has potential to have a direct effect on immediate or near neighbours, advice will be provided to affected community members and stakeholders via mail, letterbox or email notification.
- Phone and email contact details are provided on the website for enquiries and complaints. On receipt of an email, the email will be logged and handled in accordance with site procedures. Complaints are noted in the Complaints Register which is updated monthly on the Bingo website. All complaints are investigated and followed up with the complainant when contact details are provided.
- Subject to level of interest, Bingo will look to reconvene the CWG process in 2022 as an ongoing forum for liaison with local community organisations and key stakeholders.

PART B

ASSESSMENT OF KEY ISSUES

7 ENVIRONMENTAL SCOPING AND ASSESSMENT APPOROACH

7.1 Introduction

The following section provides an overview of the environmental scoping undertaken with regard to the Proposal. The SEARs relating to the environmental risk scoping, and a summary of where they are addressed, is presented in Table 7-1. This section also provides a description of the assessment approaches adopted throughout this EIS to assess potential impacts.

Table 7-1: SEARs (Environmental risk scoping)

SEARs	Where addressed
General requirements	
The environmental impact statement (EIS) for the development must meet the form and content requirements in clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (the Regulation). In addition, the EIS must include: • A risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment.	Section 7.4 (Identification of key issues) Chapter 21 (Environmental risk assessment)

7.2 Environmental scoping for the Proposal

This EIS documents a range of environmental assessments. These assessments identify environmental impacts that may result from the Proposal and identify measures to manage or mitigate as appropriate.

The identification of potential impacts, and confirmation of appropriate assessment methodologies, is determined through a scoping process and outlined in the *Eastern Creek Recycling Ecology Park: SSD Scoping Report* (Arcadis, 2020). The scoping process for this EIS was based upon:

- Review of available information and documents relating to the existing environment
- Preliminary technical assessments
- Consultation with government agencies, community groups and other stakeholders (refer Chapter 6)
- A review of relevant legislation and planning policy (refer Chapter 5)
- Identifying the sensitivities of the local environment and characteristics of the Proposal
- Identification of other projects or actions that may cumulatively add to the residual impacts from the Proposal, including those currently present at the Proposal Site.

The scoping assessment considered the *Scoping an Environmental Impact Statement - Draft Environmental Impact Assessment Guidelines* (DPE, 2017) which provides guidance on key considerations for determining areas likely to have an impact, including:

- Extent (geographic) of the impact
- Duration of the impact
- Severity of the impact
- Sensitivity of the receiving environment
- Potential for cumulative impact.

The scoping process aimed to prioritise the environmental issues for assessment and did not take into consideration the application of any mitigation measures to manage the potential impacts. Appropriate mitigation measures and safeguards have been developed as required and are outlined in the relevant assessment chapters of this EIS and compiled in Chapter 22 (Compilation of Environmental Management Measures). These measures would minimise the potential impacts the Proposal would have on the environment. A revised environmental risk assessment is provided in Chapter 21 which outlines the residual risk of environmental and social impacts following the implementation of environmental management measures.

7.3 Summary of potential issues identified

Following the scoping process, potential impacts were considered for the environmental issues below, as relevant to the Proposal:

- Traffic and transport
- Noise and vibration
- Air quality
- Soils and contamination
- Water quality and hydrology
- Hazards and risk
- Biodiversity
- Heritage
- Socio-economic
- Landscape and visual amenity
- Waste management
- Greenhouse gas emissions
- Cumulative impacts.

7.4 Prioritisation of potential issues

The potential environmental issues and impacts associated with the Proposal were considered at the request for SEARs stage. The breadth of environmental aspects to be considered has been based on previous projects of a similar nature, previous environmental studies undertaken at the Proposal Site, consultation with Bingo, Arcadis's professional judgement, site-specific influences and the SEARs issued by DPE. Relevant environmental aspects for further investigation are prioritised in Table 7-2.

Table 7-2: Prioritisation of environmental issues

Key issues	Other issues
• Traffic and transport (Chapter 8) • Noise and vibration (Chapter 8) • Air quality (Chapter 10) • Soils and contamination (Chapter 11) • Water quality and hydrology (Chapter 12) • Hazards and risks (Chapter 13)	• Biodiversity (Chapter 14) • Aboriginal and Non-Aboriginal Heritage (Chapter 15) • Socio-economic (Chapter 16) • Landscape and visual amenity (Chapter 17) • Waste management (Chapter 0) • Greenhouse gas emissions (Chapter 19) • Cumulative impacts (Chapter 20)

7.5 Environmental assessment scenarios

As described in Chapter 3, the Proposal would be built over three stages; Stage 1 operations, Stage 2 construction and operations and Stage 3 construction and operations. The staging and its sequencing are shown in Figure 7-1.

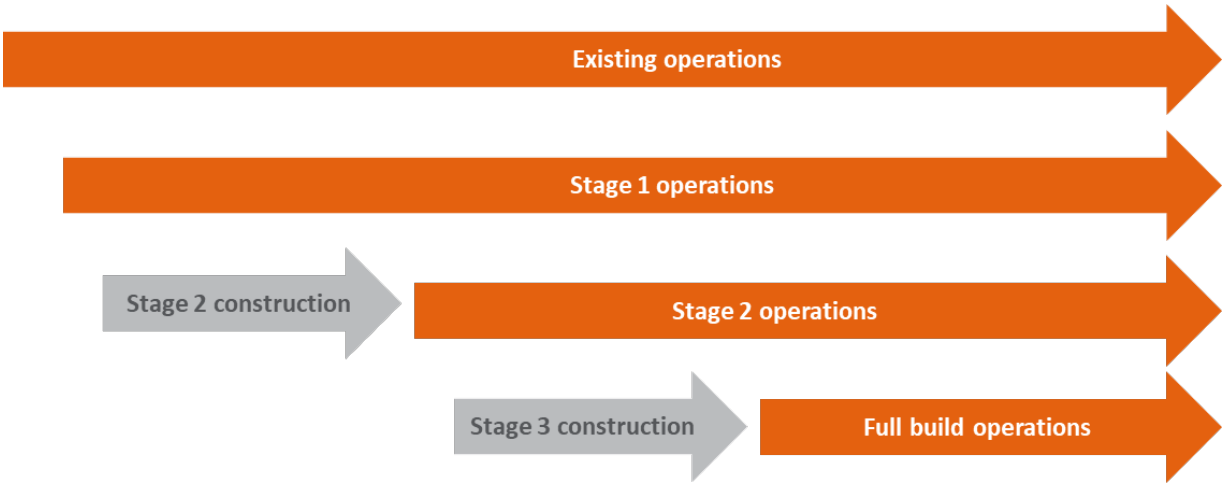


Figure 7-1 Proposal stages and sequencing

Environmental impacts would differ throughout the Proposal staging / sequencing depending on:

- Location, nature and duration of activities
- Overlap (geographically and sequentially) of activities.

The nature of impacts would also differ depending on the environmental aspect being considered. Some environmental aspects are most likely to be impacted by physical changes that arise as part of the Proposal. For example, biodiversity impacts would be most substantial during construction when vegetation clearing would occur and are based on the Proposal's footprint. Other aspects, such as air quality, would be influenced by the types of activities being carried out during construction and/or operation. The impacts associated with these environmental aspects would change depending on where in the staging / sequence of activities the Proposal is at, at any given time (as shown in Figure 7-1). Environmental aspects assessed as part of this EIS have therefore been assessed either:

- On a footprint / full build basis OR
- On staged basis.

7.5.1 Footprint / full build assessments

For environmental aspects that are largely dependent on the footprint of works being carried out (e.g., biodiversity and heritage) or where impacts are largely dependent on whether activities are construction or operations based (i.e., are not materially affected by the individual staging) they have been assessed on a footprint / full build scenario. For these environmental aspects, impacts have been determined assuming all construction works would occur at one time (i.e., full footprint and construction activities collectively) and operational works combined (i.e., the full build operational impacts) as shown in Figure 7-2 (assessment scenarios are shown along the bottom).

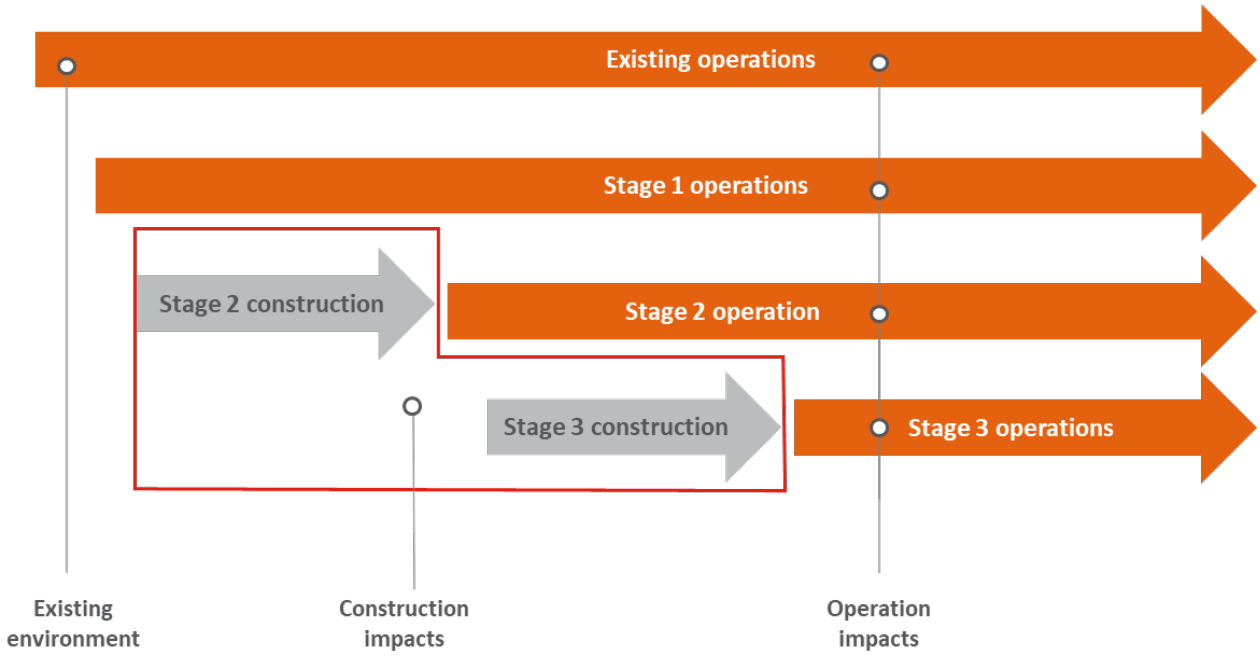


Figure 7-2 Footprint / full build assessment

The footprint / full build assessment methodology has been applied to the following environmental aspects:

- Traffic and transport
- Water and hydrology
- Biodiversity
- Aboriginal and non-Aboriginal heritage
- Social and economic
- Waste management
- Cumulative impacts.

7.5.2 Staged assessments

Other environmental aspects are more substantially influenced by the specific nature of activities being carried out during construction and/or operation and have been assessed based on the Proposal stage and sequencing. For example, GHG emissions can be directly attributed to the specific activities carried out for each stage of construction and operation and therefore has been assessed for each stage individually (refer Figure 7-3).

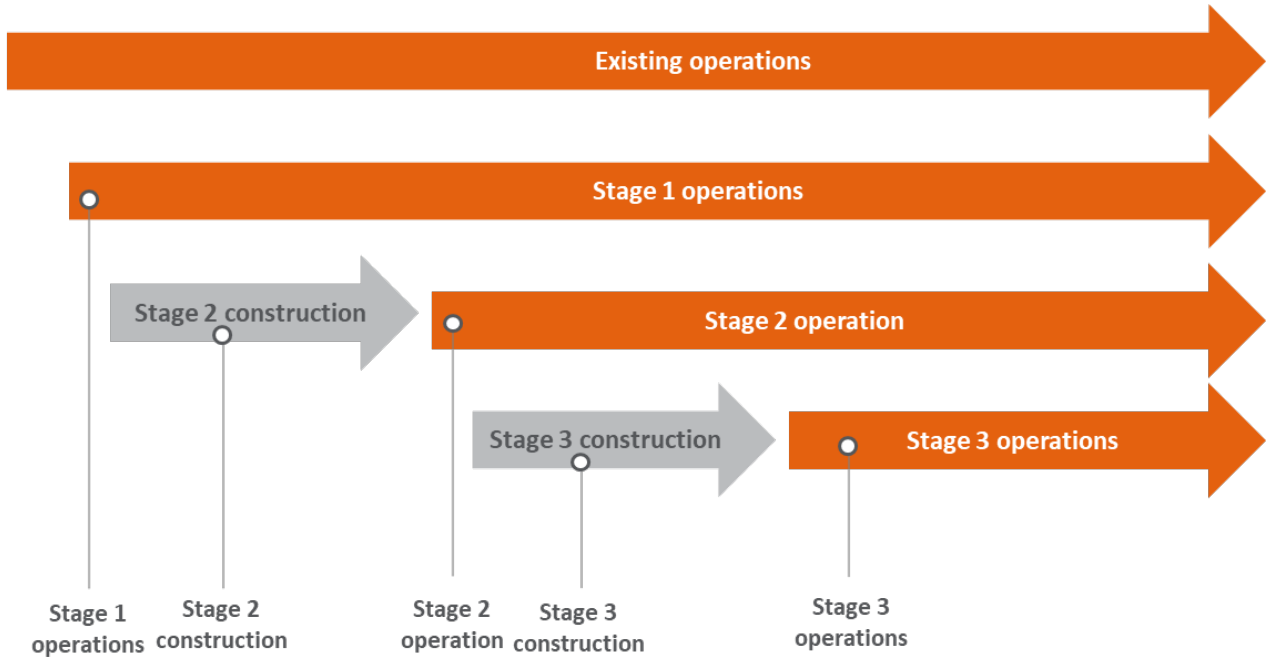


Figure 7-3 Example of assessment scenarios for a 'individual stage assessment' assessment

For other aspects, while the impacts can be attributed to the individual stage and activities (construction and operation), there may be a cumulative impact from construction and operation being undertaken concurrently. For example, to understand the potential air quality impacts from the Proposal during Stage 2 construction activities the total impacts from all other concurrent activities (existing and Stage 1 operations) need to also be considered (refer Figure 7-4).

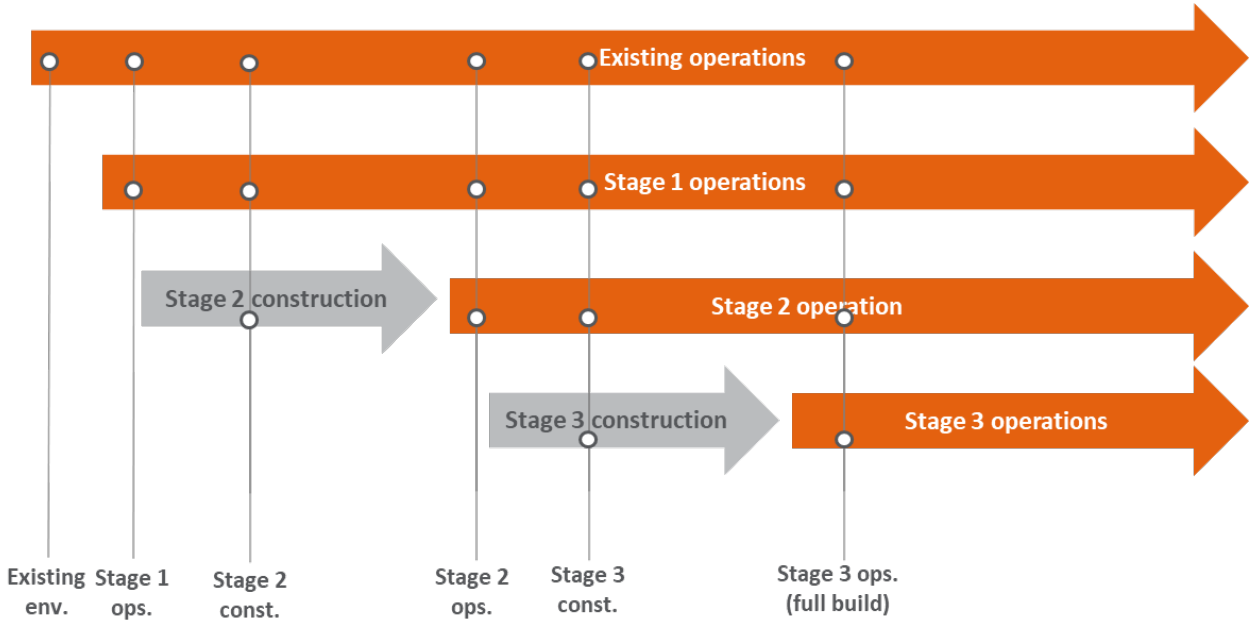


Figure 7-4 Example of assessment scenarios for concurrent staging assessment

A staged assessment methodology has been applied to the following environmental aspects:

- Individual stage assessments:
  - Hazards and risks
  - Soil and contamination
  - Landscape and visual amenity

  - Greenhouse gas
- Concurrent staging assessments:
  - Noise and vibration
  - Air quality.

7.5.3 Peak operations assessment

The volume of material received at, and dispatched from, the Eastern Creek REP can vary from time to time. A number of factors can influence the volume of material received, including:

- Market conditions and demand (e.g., number of construction projects across Sydney will influence C&D volumes)
- External factors (e.g., the 2019 / 2020 bushfires generated additional waste volumes requiring disposal to landfill, and COVID led to reduced construction activities)
- Seasonal factors (e.g., Christmas period can lead to reduced construction activities but increased C&I waste volumes)
- Customer and product demand fluctuations.

The total annual throughout to be received at the Eastern Creek REP (including the Proposal) would not exceed 2.95 Mtpa. In general, the environmental assessments presented within this EIS have considered either the annual total operational throughput (e.g., for greenhouse gas emissions), or an average daily throughput amount (e.g., for noise and air quality). However, there may be occasions where daily throughput fluctuates above or below the daily average.

A peak day was conservatively estimated as, throughput being approximately 30 per cent higher than an average day. A peak operational scenario has therefore been defined based on 130 per cent of average throughput. The following aspects have considered a peak assessment scenario:

- Traffic and transport
- Noise and vibration
- Air quality.

It is noted that this scenario would occur on only five per cent of operational days and increased utilisation of MPC2 would attract a greater proportion of larger vehicles originating from elsewhere within Bingo's network. Bingo would therefore have a high degree of operational control around the arrival of throughput, smoothing out peaks and fluctuations. Consequently, the adoption of a peak scenario is considered highly conservative.

7.6 Format of environmental assessment chapters

Where possible, a common format has been adopted for each of the assessment chapters of the EIS. This format is outlined below.

Introduction

This section provides an overview of the environmental aspect under consideration. It also provides cross-reference to other technical assessments or relevant appendices that have been used to inform the assessment chapter.

The introduction outlines the relevant SEARs for the particular environmental aspect and outlines where within the chapter (or elsewhere) they are addressed. In certain cases, a particular requirement may be excluded. If so, this is indicated and a justification provided.

Where relevant, legislation, policies and plans relevant to the specific environmental aspect may also be included in this section. A review of legislation and policy relevant to the Proposal as a whole is provided in Chapter 5.

Methodology of assessment

This section summarises the methodology for:

- Determining the existing environment as relevant to the particular environmental aspect
- Determining criteria or thresholds for the assessment of the significance of impacts
- Conducting an assessment of the potential impacts of the proposed expansion in relation to the relevant environmental aspect
- Determining and justifying whether these impacts are significant
- Providing a suite of measures to avoid, minimise and/or manage these impacts.

For each environmental aspect, an explanation is provided outlining the approach to identifying impacts and assessing whether a potential impact is likely to be significant. Assessments can be either quantitative (relying on calculation, modelling, criteria, standards and thresholds) or qualitative (using certain scientific material, but ultimately making decisions based on professional judgement).

The methodology section also outlines the assessment approach adopted for that environmental aspect as per Section 7.5.

Existing environment

This section describes the key components, characteristics and status of the existing environment relevant to the environmental aspect. This includes detail on historic and ongoing operations at the Site, as relevant to the issue under consideration.

Impact assessment

This section identifies potential impacts of the Proposal during both construction and operation on relevant receptors for particular environmental aspects assessed following the assessment approach adopted for that environmental aspect. It includes aspect-specific methodologies for evaluating the significance of the impact in accordance with the criteria detailed in the methodology of assessment.

In general, impacts may be referred to as either prior to (potential impact) or following mitigation (residual impact). For this section of each chapter, all impacts are potential impacts.

Impacts can be considered as:

- Direct or indirect
- Adverse or beneficial, or
- Significant, non-significant or neutral.

Where existing criteria, guidance, environmental standards or assessment methodologies exist, the significance of an impact is based on that information. Where possible and/or necessary, quantitative assessments about the significance of an impact are made using this information. Where no explicit guidance or site-specific quantitative information exists, a qualitative assessment of the significance of an impact are made. Where qualitative judgements are required, some or all of the following characteristics are considered to understand the potential magnitude of impact:

- Extent - the area potentially affected by the impact
- Magnitude - the size or amount of the impact
- Duration - how long the impact is likely to last
- Frequency - whether the impact is continuous, brief or intermittent
- Timing - if the impact occurs at a particularly sensitive time, and
- Permanence - whether the impact is permanent or temporary.

Consideration of whether an impact is significant will depend on the importance or sensitivity of the receptor (e.g., as defined by legislation, policy, standards, guidance or professional judgement) and the magnitude of the impact (as determined by quantitative or qualitative means). For the purposes of the 'Impact assessment' section of each technical assessment chapter, all impacts are considered 'alone' and not cumulatively.

Environmental management measures

This section describes the environmental management measures that have been identified to avoid, reduce and compensate for the potential impacts on the environment arising from the Proposal.

Wherever possible, impacts have firstly been avoided, then either reduced at the source or at the receptor where avoidance cannot be achieved and finally either compensated or offset where avoidance or reduction is not possible or would not achieve practicable or acceptable levels of mitigation.

If environmental management measures are to be implemented through particular environmental management plans, these are also discussed in this section.

The mitigation and management measures from all technical assessment chapters are collated into a single table within Chapter 22.

8 TRAFFIC AND TRANSPORT

8.1 Introduction

The Transport Planning Partnership (TTPP) have undertaken an assessment of the potential traffic, transport and access impacts associated with the Proposal to address the SEARs issued by DPE. The Traffic Impact Assessment (TIA) for the Proposal is provided in Appendix I of this EIS. Table 8-1 provides a summary of the relevant SEARs, which relate to traffic and access, and where these have been addressed in this EIS.

Table 8-1 SEARs (traffic and transport)

SEARs	Where addressed
Traffic and transport	
Details of all traffic types and volumes likely to be generated during construction and operation, including details of the maximum numbers of each vehicle type per day and per annum	Section 3.4.5 and Section 8.4.1 (construction traffic types and volumes) Section 3.3.10 and Section 8.4.20 (operation traffic types and volumes) Appendix I (TIA)
A description of key access / haul routes and traffic distribution over these	Section 8.4.2 (traffic distribution)
An assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections using SIDRA or similar traffic model	Section 8.4.2 (road safety) Section 8.4.2 (capacity of the road network and traffic impacts at key intersections) Chapter 20 (cumulative impacts) Appendix I (TIA)
Details and plans of any proposed the internal road network, loading and unloading areas, on-site parking provisions, and sufficient pedestrian and cyclist facilities, in accordance with the relevant Australian Standards	Section 3.2 and Section 3.5.10 (internal road network) Section 8.4.2 (parking provisions) Appendix E Concept Design Drawing Appendix F Architectural Drawings
Details of the largest vehicle anticipated to access and move within the site, including swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site	Appendix I (TIA) Swept path diagrams are provided in Appendix B of Appendix I (TIA).
Details of road upgrades, infrastructure works or new roads or access points required for the development, including how these interact with the existing or proposed road system.	Section 3.3.2 and Section 3.3.3 (Honeycomb Drive extension (subject to a separate approval) and Kangaroo Avenue)

In addition to the above, TfNSW and Council require further details on specific requirements relating to their authority. These requirements are discussed throughout this EIS and are provided in Table 8-2 below.

Table 8-2 Other agency requirements and relevant report sections (traffic and access)

Requirement	Where addressed
TfNSW	
Traffic Impact Assessment (TIA): A TIA is required to examine any potential transport/traffic related implications of the development. As a guide Table 2.1 of the RTA's Guide to Traffic Generating Developments outlines the key issues that should be considered in preparing a TIA. The TIA also needs to include, but not be limited to, the following:	Appendix I (TIA)
a) Details on the types of vehicles that will access the development site (both heavy and light vehicles) during its operation. For heavy/service vehicles details are required on their size, their associated carrying capacity, etc. for both the receipt of required raw materials and the despatch of product. This should also include details on the maximum number of vehicles per day and per annum that the proposed development will generate including a breakdown into vehicle types and how these numbers correlate to the daily and annual limits for which approval is being sought. Details on how maximum vehicle numbers will be monitored to ensure ongoing compliance should also be provided;	Section 3.5.10 (types of vehicles, their size and carrying capacity) Section 8.4.20 and Appendix I (traffic generation)
b) Road transport routes that are to be used to provide access to and from the site (for both heavy and light vehicles) including details on the distribution of the traffic generated;	Section 8.4.20 and Appendix I (traffic distribution)
c) An assessment of the forecast impacts on traffic volume generated on road safety and capacity of road network including consideration of cumulative traffic impacts at key intersections including consideration of the impacts to the state road network and identification of appropriate measures to mitigate the impact (i.e. intersections to be used by the development that connect with the classified road network). The assessment of impacts on key intersections, depending on traffic volumes generated by the development, may require SIDRA modelling to be provided (including the electronic files). Any SIDRA modelling undertaken must ensure the base model has been calibrated with on-site observations (i.e. queue lengths, delays, etc.), must be provided for AM and PM peak periods as well as a 10-year growth scenario and provide details on any SIDRA default model parameters changed along with supporting justification. Please note the above relates only to potential impacts on the classified road network. Discussions should be had with Blacktown Council in relation to the information they may require to be included in the TIA concerning local road impacts.	Section 8.4.20 and Appendix I (impact assessment) Chapter 6 (consultation with Blacktown Council))

Requirement	Where addressed
Access: Swept path diagrams to demonstrate the largest vehicles that will be using the classified road network where it connects with the local road network can undertake all required manoeuvres to enable access to and from the development site, as well as vehicles entering, exiting and manoeuvring throughout the site.	Swept path diagrams are presented in Appendix B of Appendix I (TIA).
Strategic/Concept Design: Should it be identified as part of preparing the Environmental Impact Statement or during the assessment of the application that mitigation measures are required that will impact a classified road, then a concept design for the proposed works will need to be prepared and submitted. This is needed to clarify the scope of works, demonstrate the works can be constructed within the road reserve and allow the consent authority to consider any environmental impacts of the works as part of their assessment. The concept design submitted must include, but not be limited to, legal property boundaries (including the existing road reserve boundaries based on a survey), existing and proposed lane configurations and lane widths at a number of locations along the length of the proposed works, etc. The design provided, should be based on a design speed which is 10km/h over the posted speed limit and should demonstrate compliance with the applicable requirements in Austroads Guide to Road Design and the relevant TfNSW supplements. The detailed traffic impact assessment should address the relevant planning provisions, goals and strategic planning objectives in the following: a) Future Transport 2056 and supporting documents; b) NSW Freight and Ports Plans 2018-2023; c) Guide to Traffic Generating Developments 2002(RTA); d) TDT 2013/04a Guide to Traffic Generating Developments; and e) Austroads Guide to Traffic Management Part 12: Traffic Impacts of Development.	Section 4.2.6 (Future Transport Strategy 2056) Section 2.8 of Appendix I (referenced documents) Sections 3.3.2 and 3.3.3 (exit connection design description)
Blacktown City Council	
A Traffic Impact Assessment is to be prepared for additional traffic movements an additional 1.5Mtpa of waste	Appendix I (TIA) Blacktown Council responded to the SEARs dated 22 December 2020 that stated the development would include a throughput increase of 1.5 Mtpa. The Proposal has since been amended to comprise a throughput increase of 950,000 tpa as is reflected in the amended SEARs dated 1 October 2021.
All improvements to the road network are to be identified, costed and paid for by the developer	No upgrades have been required for the road network

8.2 Method of assessment

The assessment of potential traffic and transport impacts associated with the Proposal comprised the following key steps:

1. A review of the policy setting for the Proposal, and key guidelines relevant to traffic and transport to ensure the traffic and transport impact assessment addresses all requirements
2. Identifying the existing environment of the Proposal as it relates to traffic and transport , including review of weighbridge data, completion of a site inspection to determine on-site traffic context for AM and PM periods and a traffic count survey
3. An assessment of the potential impacts of the Proposal on the existing traffic and transport environment during peak construction, based on the construction methodology. The assessment included qualitative consideration of the traffic and transport impacts of the Proposal on road network performance, as well as an assessment of the potential impacts of the Proposal on parking and access during construction
4. An assessment of the potential impacts of the Proposal during operation on traffic and transport at the year of opening, and 10 years after opening of the Proposal. The operational assessment included traffic modelling to determine the impacts of the Proposal on road network performance, as well as consideration of the potential impacts of the operation of the Proposal on parking and access.
5. Where any potential impacts from the Proposal are identified propose feasible and reasonable mitigation measures to avoid or reduce potential impacts where possible.

8.2.1 Assessment scenarios and approach

Chapter 7 outlines the different assessment approaches adopted within this EIS to assess the potential impacts form the Proposal. A review of the traffic volumes generated during construction determined that they would be the same or less than operational traffic and would therefore result in the same or lesser impact. As such, the construction traffic impacts on the surrounding road network have been assessed qualitatively and traffic impacts have been assessed on a full build basis as shown in Figure 8-1.

Operational traffic modelling has been undertaken for two operational scenarios at full build:

- An average operational day at full build, during the morning and afternoon peak periods (as identified in Section 8.2.1).
- The peak operational day, where the site-generated traffic is approximately 30% higher than the average operational day. The peak operational day was determined by analysing existing weighbridge data and determining the percentage increase between an average day and the average of the top five per cent of the busiest of days.

Traffic modelling was undertaken for these two scenarios during the morning and afternoon peak periods (7:00am to 8:00am and 4:00pm to 5:00pm respectively as defined by the traffic count surveys) in 2025 and ten years later in 2035 to account for background traffic growth.

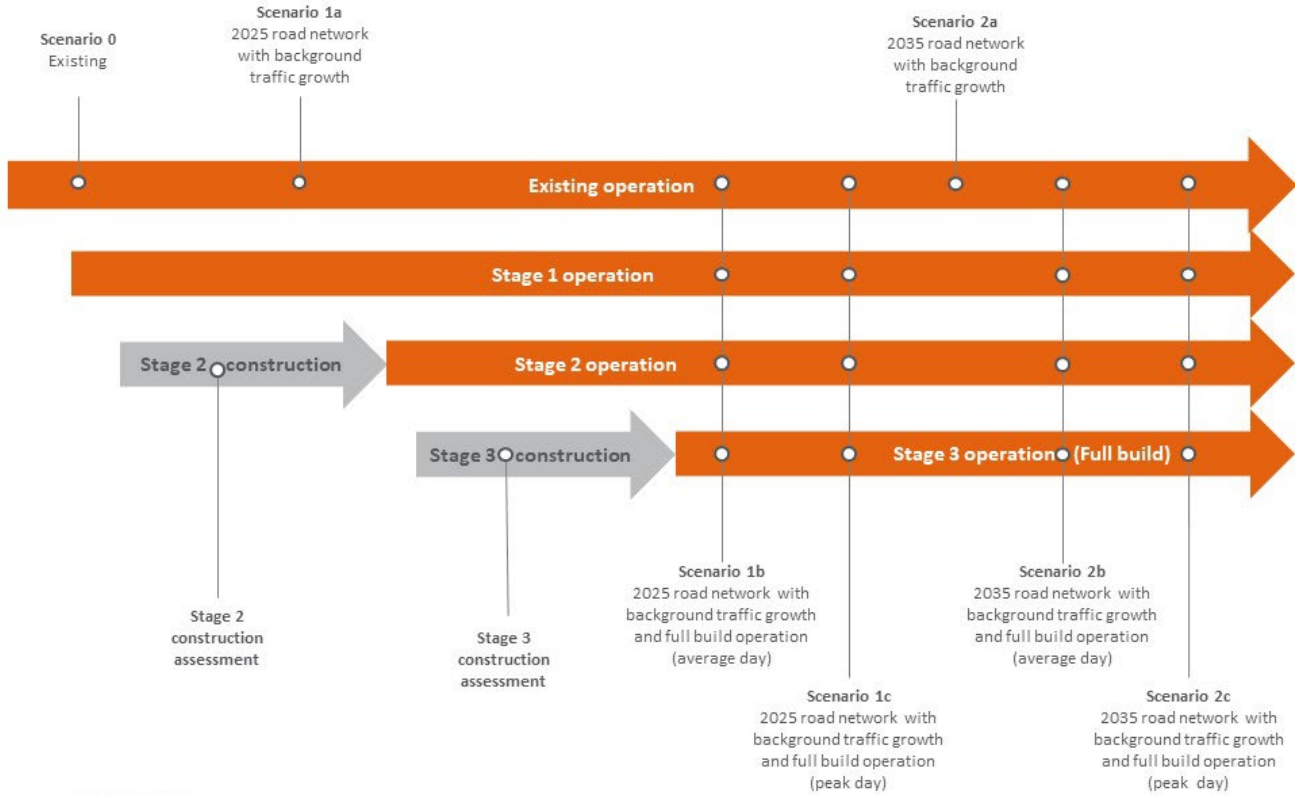


Figure 8-1 Traffic modelling scenarios

8.2.2 Policy setting

Under the Transport and Infrastructure SEPP , the Proposal is considered a 'traffic-generating development'. Hence, it is a requirement to assess the impact of traffic associated with the future operation of the Proposal.

The *RTA Guide to Traffic Generating Developments* (2002) (the Guide) is used as a tool in determining the future traffic generation rates for different development types and land uses. The Guide states that "*…peak traffic generation period for industrial land use is generally determined by three key factors: employee density, travel mode and peak period travel distribution*." The Guide also recognises that peak period traffic generation of industrial land uses differs depending on the specific industrial development type.

The Guide contains traffic generation rates for three industrial development types, namely, factories, warehouses and business parks. Of these development types, factories and warehouses are most similar to that of the Proposal. Consideration has been given to the traffic generation rates prescribed within the Guide, however traffic generation for the Proposal has primarily been established based on existing weighbridge data and anticipated changes in vehicle numbers associated with the proposed throughout increase (i.e., a 'first principles' approach has been adopted).

The Proposal Site falls within the boundary of the Industry and Employment SEPP and as such, falls under the requirements of the Precinct Plan prepared under the repealed SEPP 59. The Precinct Plan stipulates parking rates for industrial land uses of which are most similar to that of the Proposal. Parking provision for the Proposal has been estimated using a 'first principles' approach. This method of calculation considers parking demand based on the number of employees at the Proposal Site rather than floor area of the facility. The first principles approach generates a more realistic and practical off-street parking provision for staff and visitors associated with the Proposal given the Proposal, a resource recovery facility, does not categorically fit the class of an industrial development as stipulated in the Blacktown DCP, Part E.

8.2.3 Traffic count surveys

Classified traffic turning movement surveys were undertaken on Thursday 25 March 2021 (a typical day of operation) at the following key intersections near the Proposal

- Wallgrove Road / Wonderland Drive (signals)
- Wonderland Drive / Interchange Drive (roundabout)
- Wonderland Drive / Honeycomb Drive(roundabout)
- Honeycomb Drive / Grevillea Street (roundabout)
- Honeycomb Drive / Kangaroo Avenue (roundabout).

The location of these intersections relative to the Proposal are shown in Figure 8-2.

From the traffic survey data, the road network peak periods have been identified as follows:

- AM peak period: 7:00am – 8:00am
- PM peak period: 4:00pm – 5:00pm.

8.2.4 Assessment on intersection performance and level of service

The performance of a road network is largely dependent on the operational performance of intersections. Intersection performance is measured using the level of service criteria outlined in Table 8-3 and defined in the *Transport for NSW's (2002) Guide to Traffic Generating Developments*.

Traffic modelling using SIDRA 9.0 modelling software has been used to determine intersection performance of the existing road network, and to assess the potential impacts associated with traffic generated by the Proposal across a number of existing and future traffic scenarios.

Modelling of intersection performance under existing conditions was completed using data from the traffic count surveys. Background traffic growth has been calculated for future modelling scenarios using the Sydney Strategic Traffic Forecasting Model (STFM) growth plots obtained from TfNSW.

Table 8-3 Level of Service (LoS) criteria for intersection operation

LoS	Average delay (seconds per vehicle)	Traffic, signals, roundabout	Give way and stop signs
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29-42	Satisfactory	Satisfactory, but accident study required
D	43-56	Operating near capacity	Near capacity and accident study required
E	57-70	At capacity, at signals, incidents will cause excessive delays, roundabouts require other control mode.	At capacity, requires other control mode
F	Greater than 71	Unsatisfactory with excessive queuing	Unsatisfactory with excessive queuing: requires other control mode

Source: Roads and Maritime Service Guide to Traffic Generating Developments, 2002

Figure 8-2 Local road network and survey locations

8.2.5 Analysis of onsite parking provision

An assessment of the parking demand generated by the Proposal during operation has been undertaken in accordance with the direction of the Planning Systems SEPP, SEPP 59 and the Blacktown DCP. The parking assessment for current, and proposed, operations has considered:

- Existing car parking spaces provided within the Eastern Creek REP, including an additional minimum of 122 car parking space approved under Mod 8 of Project Approval MP06_0139 (under construction)
- Proposed car parking to be established as part of the Proposal, comprising a minimum 54 spaces.

As described in Section 8.2.2 parking provision for the Proposal has been estimated using a 'first principles' approach. The first principles method of calculation considers parking demand based on the number of employees at the Proposal Site rather than floor area of the facility.

8.2.6 Vehicle access and onsite movements

Analysis of the Proposal Site access and circulation route on-site for delivery and collection vehicles has been undertaken to determine whether vehicles proposed to access the Proposal Site can adequately manoeuvre, to carry out material unloading and loading activities during operation. Furthermore, a review of on site vehicle storage (referred to as stacking capacity) has been undertaken to determine whether the Proposal Site can sufficiently accommodate delivery and collection vehicles within the site during peak operation.

8.3 Existing environment

8.3.1 Vehicle access and on site circulation

Internal traffic flows for existing operations at the Eastern Creek REP are provided in Section 2.7.8.

Vehicle access to the Proposal Site is provided via a private access road off Kangaroo Avenue (known as DADI Drive), approximately 150 m north of the intersection of Kangaroo Avenue and Honeycomb Drive. The site access road then widens after approximately 185 m from the Proposal Site entrance and six tidal weighbridges provide access into the broader operational area (see Figure 8-3). The tidal weighbridges can be designated as weigh-in or weigh-out bridges depending on operational needs.

A passing lane is provided around the weighbridges to allow light vehicles and vehicles passing through the Eastern Creek REP to bypass the weighbridges (predominantly comprising vehicles accessing the Fulton Hogan asphalt batching plant located to the west of the Eastern Creek REP). Following approval of a current subdivision application which includes construction of the Honeycomb Drive extension ((to be constructed under the approval for IRM Property No.2 (DA-21-01557) as a separate project) Fulton Hogan would establish direct access to their facility and no longer traverse the Eastern Creek REP. The passing lane would be maintained for light vehicles access only.

The existing internal traffic flows are as follows:

- All vehicles enter the Eastern Creek REP via the entrance on Kangaroo Avenue and weigh-in over the weighbridge system
- Vehicles travel along the main internal road along the southern boundary of the Proposal Site
- Once vehicles reach the intersection adjacent to MPC2 they proceed to one of the four waste management infrastructure areas within the Eastern Creek REP (landfill, MPC1, MPC2 or the SMA) through the use of on-site signage, traffic controllers and the weighbridge operator
- Vehicles would manoeuvre within the respective resource recovery areas to tip or collect product
- Vehicles would then exit the Eastern Creek REP by traversing DADI Drive towards the Kangaroo Avenue exit, weighing back out over the tidal weighbridge system and making a right turn exit movement back onto Kangaroo Avenue.

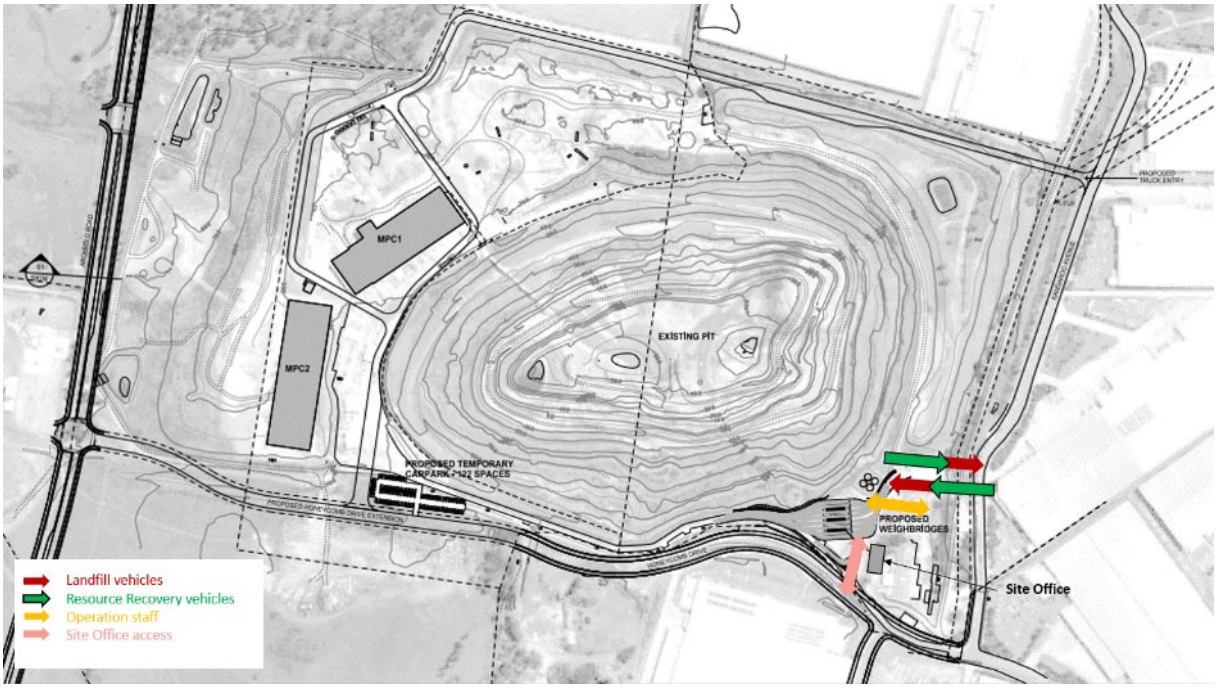


Figure 8-3 Existing vehicle access to the Proposal site

8.3.2 Car parking

Car parking is provided adjacent to the site office and in a smaller carpark to the south of the Eastern Creek REP weighbridges which is due to be constructed as part of Modification 8 to MP 06_1039. The car park south of the entrance is currently being designed and would accommodate around 60 light vehicles.

An additional 122 light vehicle spaces are provided southeast of MPC2. The carpark is currently accessed via the main internal access road however, would be accessible via Honeycomb Drive upon the completion of the Honeycomb Drive extension (subject to a separate approval).

8.3.3 Surrounding road network

The key surrounding local and state road networks providing links to and from the Proposal Site, including direct access are described below and shown in Figure 8-2:

- **Kangaroo Avenue:** A two-way local road generally aligned in a north-south and east-west direction. The road, located directly east of the Proposal Site, connects to Honeycomb Drive to the south and terminates with a cul-de-sac at the other end of the road. It supports a carriageway of approximately 13 m with a combination of restricted and unrestricted parking permitted in both kerbside lanes. There is no sign-posted speed limit along Kangaroo Avenue. A default speed limit of 50 km/h applies
- **Honeycomb Drive:** A two-way local road, generally aligned in north-west to south-east direction. Both ends of the road terminate with a cul-de-sac. It supports a carriageway of approximately 15 m with unrestricted parking permitted in both kerbside lanes. There is no sign-posted speed limit of along Honeycomb Road. A default speed limit of 50 km/h applies
- **Wonderland Drive:** Wonderland Drive is an industrial collector road which generally runs east-west between Honeycomb Drive and Wallgrove Road. Wonderland Drive generally provides one traffic lane in each direction within a sealed carriageway. Unrestricted on-street parking is provided on both sides of Wonderland Drive between Honeycomb Drive and Interchange Drive. Wonderland Drive has a nominal speed limit of 50 km/h
- **Wallgrove Road:** A two-way State road, with two through lanes in both directions in the vicinity of the site. The road is aligned in the north-south direction between Great Western Highway and Elizabeth Drive and runs parallel to the M7 Motorway. It has a sign posted speed limit of 70 km/h

- **M4 Western Motorway:** A two-way State road ranging between 3-4 travel lanes in each direction. It is a key east-west route within the wider Sydney transport network, spanning between Concord in the east (where the motorway links to Parramatta Road) and Glenbrook in the west (where the motorway links to Great Western Highway). Variable speed limits apply along the M4 Western Motorway, however, generally the signposted speed limit ranges between 90 km/h and 100 km/h
- **M7 Motorway:** A two-lane two-way State road which is generally aligned in the north-south direction. The M7 Motorway forms part of the wider Sydney Orbital Network and is a key route connecting three major Sydney motorways, namely, M5 South-West Motorway, M4 Western Motorway and M2 Hills Motorway. The M7 cycleway runs parallel to the M7 Motorway. Variable speed limits apply along the M7 Motorway, however, generally the signposted speed limit is 100 km/h.

8.3.4 Traffic volumes and intersection performance

Table 8-4 provides a summary of the existing average daily heavy and light vehicles that access the Eastern Creek REP, based on a review of available weighbridge data.

Table 8-4 Existing daily vehicle generation

Eastern Creek REP component	Daily heavy vehicle numbers (average)	Daily light vehicle (staff) numbers
Landfill	282	14
MPC1 & MPC2	515	123
SMA	104	16
Site office and site management		31
Total	**901**	**184**

Existing intersection performance has been determined based on traffic turning movement counts as described in Section 8.2.1. The existing intersection performance for the 'Base case' (Scenario 0), defined as the existing conditions is provided in Table 8-5.

All intersections analysed for the Proposal during the daily peak periods operate at an acceptable LoS of C or better indicating that they are operating with spare capacity.

Table 8-5 Existing intersection operation

Intersection	AM Peak		PM Peak	
	Average delay (seconds)	LoS	Average delay (seconds)	LoS
Wallgrove Road / Wonderland Drive	24	B	32	C
Interchange Drive / Wonderland Drive	11	A	13	A
Wonderland Drive / Honeycomb Drive	14	A	10	A
Honeycomb Drive / Grevillea Street	12	A	9	A
Honeycomb Drive / Kangaroo Avenue	10	B	9	A

8.3.5 Public transport

The closest bus stops are located on Honeycomb Drive, approximately a 400 m walking distance from the Proposal Site. These bus stops service the bus route 723 Mount Druitt to Blacktown via Eastern Creek. There are six services during each of the weekday AM peak and PM peak periods. This service only operates on weekdays.

A bus stop is located on Wonderland Drive, near Alspec Place and is 1.9 km walking distance from the Proposal Site. This bus stop is served by bus route 738 Mount Druitt to Eastern Creek via Rooty Hill (Loop Service). There are three services in the weekday AM peak period and four services in the weekday PM peak period. The service only operates on weekdays.

Bus routes in the vicinity of the Proposal Site, including the 738 bus route are shown Figure 8-4 below.

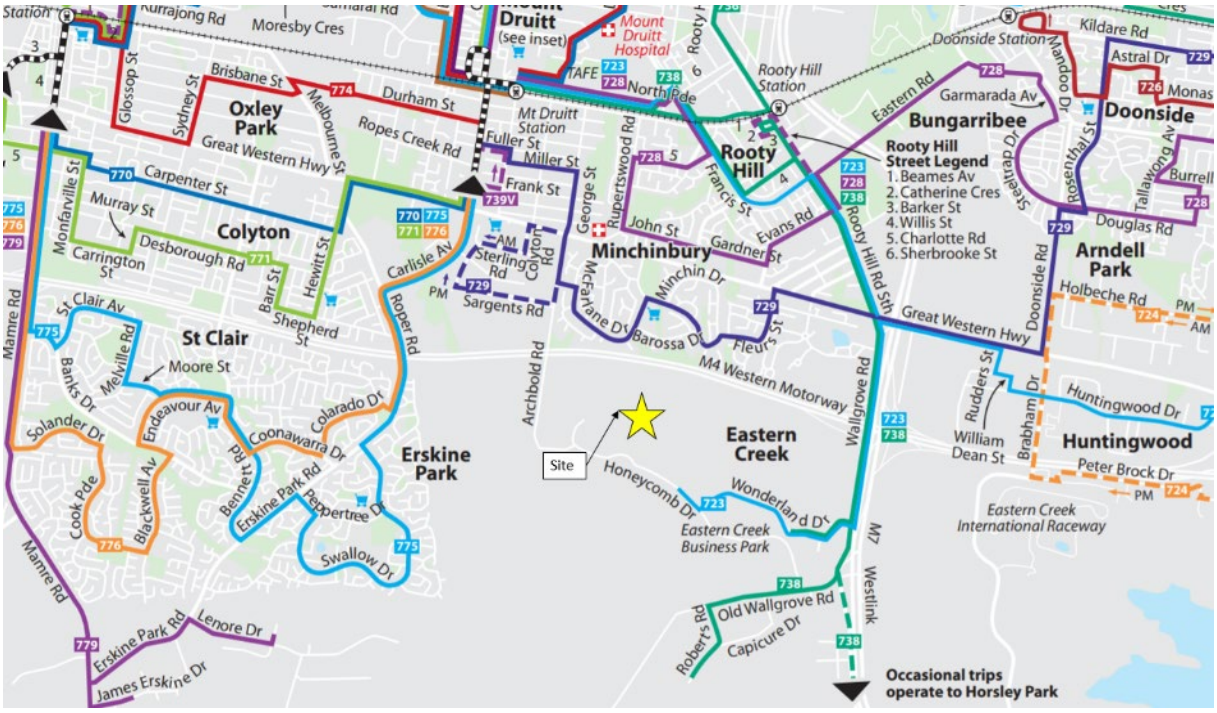


Figure 8-4 Nearby bus routes in the vicinity of the Proposal Site

8.3.6 Pedestrian and cyclist facilities

Sealed pedestrian footpaths are provided alongside Kangaroo Avenue and Honeycomb Drive surrounding the Proposal Site. There is an off-road shared path on the north side of Honeycomb Drive and west side of Kangaroo Avenue, which may be used by cyclists and pedestrians.

The shared path continues along the north side of Wonderland Drive. Although for the majority of its length the shared path is not line marked and/or signposted. As such, there is a marked bicycle crossing and signal lantern across the Wallgrove Road – Wonderland Drive north approach. This provides a connection between the Eastern Creek industrial park and cycle route along the M7 Motorway.

8.4 Impact assessment

8.4.1 Construction impacts

Section 3.4.1 of this EIS describes the construction activities proposed under Stage 2 and Stage 3 of the Proposal. Construction vehicles would comprise of light vehicles (construction personnel accessing the site) and heavy vehicles (e.g. for the delivery of materials, fill material and equipment and for the removal of excavated fill). Construction of Stages 2 and 3 would comprise multiple sub phases for the various construction activities. Heavy vehicles movements generated during construction would be dependent on the nature of construction activity being carried out (for example earthwork activities would generate a

higher volume of vehicle movements due to the transport of fill material), and the number activities being carried out at the same time. A review of the construction phases under Stage 2 and Stage 3 has identified the peak traffic generating phases (based on the nature of activities and overlap of activities), which are presented in Table 8-6. Note that only the phases that are anticipated to generate the greatest number of vehicle movements (peak) are included in the table. volumes

Vehicles would comprise a mixture of light and medium and/or heavy rigid vehicles.

Table 8-6 Construction staging and traffic generation

Construction sage	Peak traffic generating phase/s within construction stage	Peak daily construction traffic movements (two-way)
Stage 2	Concurrent construction of: • Phase 2a • Phase 2b • Phase 2c • Phase 2d	• 72 heavy vehicles • 100 light vehicles
Stage 3	Concurrent construction of: • Phase 3b • Phase 3c	• 24 heavy vehicles • 12 light vehicles

In the road network morning and afternoon peak periods, the hourly construction traffic generation is estimated as follows:

- In Stage 2, six (6) vehicles per hour i.e. 12 two-way vehicle movements per hour
- In Stage 3, two (2) vehicles per hour i.e. 4 two-way vehicle movements per hour.

The type of vehicles accessing the Proposal Site during construction would be largely consistent with existing operational traffic (e.g. truck-and-dogs, semi-trailers etc).

As noted, about in the busiest period of construction (when overlapping phases are being carried out during Stage 2), there would be in the order of six heavy vehicle generated per hour. These vehicles would generate 12 trips which would equate to an average of one vehicle trip every five minutes during the morning and afternoon peak periods. This volume is considered negligible in the context of the broader operations at the Eastern Creek REP and capacity of the wider road network. Further, this would represent a short period of time (with the construction phases only overlapping for a period of one month). No quantitative assessment of construction traffic has therefore been carried out.

Although a quantitative assessment has not been undertaken for construction traffic, based on traffic modelling undertaken for the Proposal's operation (Section 8.4.20), the traffic impacts for construction, even when considering a concurrent operational stage (e.g. Stage 1 operation and Stage 2 construction or Stage 2 operation and Stage 3 construction) would not be greater than those assessed for full build (Stage 3 operation – assessed in Section 8.4.2). This is shown in Table 8-7 in Section 8.4.20. Traffic modelling for 2025 and 2035 future operational scenarios show the local network to operate at LoS C or better in peak periods as demonstrated in Section 8.4.20. As such, it is anticipated that during all stages of construction, the local network would operate at LoS C or better in peak periods and no further detailed quantitative traffic modelling of construction movements is required.

Construction staff (light vehicles) would enter and exit the Proposal Site approximately 30-60 minutes before and after the start and end times (respectively). With construction hours commencing at 7 am and ending by 6 pm, construction staff would be arriving and departing outside of the road network peak periods. Construction personnel would utilise existing car parking available across the Eastern Creek REP and within construction compounds established for the Proposal.

Pedestrian and cyclist access would be maintained at all times during construction of the Proposal and would not be impeded by the proposed construction works.

The proposed construction activities would not adversely impact existing nearby bus services which operate along Wonderland Drive, given there would be no reduction in speed limits along the road network to accommodate construction of the Proposal, the road network would continue to operate at an acceptable LoS during construction, and there would be no impacts to existing public transport infrastructure.

The Proposal would not disrupt existing provisions for emergency service vehicles throughout construction and emergency vehicle access would be maintained at all times.

Construction of the Proposal would be undertaken concurrently with the existing operations within the Proposal Site. A Construction Traffic Management Plan would be prepared to manage potential impacts of construction of the Proposal, including measures to ensure that ongoing operational movements are not affected by the construction of the Proposal.

8.4.2 Operation impacts

Traffic generation

Resource Recovery Activities

Waste material received at the Proposal Site would consist of predominantly dry C&D and C&I waste which is consistent with existing waste streams received at the Eastern Creek REP. The resource recovery rate (rate of waste material diverted away from landfill) at the Eastern Creek REP is currently around 81.5 per cent; the remaining 18.5 per cent of material which cannot be recovered is sent to the landfill located on site. MPC2 has been designed to achieve resource recovery rates up to 90 per cent. However, for the purposes of this assessment a recovery rate of 85 per cent has been used. Section 3.5 provides a detailed description of the waste disposal and product collection vehicles that would access the Proposal Site during operation.

As described in Section 3.5.10 the types of vehicles that may access the Proposal Site would mostly comprise:

- A mix of rigid vehicles including:
  - 6.4 m small rigid
  - 8.8 m medium rigid
  - 12.5 m heavy rigid
- Walking-floor trailers
- Truck and dog combinations.

The vehicle mix (including the types and proportions of each) used to estimate operational traffic generation for the Proposal Site has been determined using data from the existing weighbridge on the Proposal Site, and adjusted to take into account the altered capacity at full build of the Proposal. Vehicle generation has been estimated using the proposed throughput of the Proposal at full build, divided by the capacity of various truck types and density of material being delivered or collected. This information is presented in more detail in Section 5.2 of Appendix I.

Employees at the Eastern Creek REP would carry out work on-site across two shift times, 5am - 3pm (day shift) and 3pm - 1am (night shift). There will be skeleton staff (around 15 staff) outside these times to allow ongoing receipt of waste and processing in the MPCs. Separately, the Maintenance and Manufacturing Workshop would employ 50 staff on a daily basis between the hours of 6am and 6pm.

Operational traffic generation on an average day for each stage of the Proposal is shown in Table 8-7.

Table 8-7 Vehicle generation per Stage

Stage	Additional Material Throughput (tpa)	No. of Daily Heavy Vehicles	Average No. of Hourly Heavy Vehicles	No. of light vehicles per day
Existing	2,000,000	901	37	184
Stage 1	500,000	149	7	10
Stage 2	450,000	134	6	10
Stage 3	N/A	15	1	50
Total	**2,950,000**	**1,199**	**14**	**254**

Consideration has also been given to cumulative scenarios whereby operation and construction stages overlap; shown in Table 8-8.

Table 8-8 Cumulative daily vehicle numbers for concurrent construction and operational stages

Stage	Heavy vehicles	Light vehicles	Total daily (average) vehicles
Existing	901	184	1,085
Stage 1 Op.	1,050	194	1,244
Stage 1 Op. + Stage 2 Cons.	1,122	234	1,356
Stage 2 Op	1,184	204	1,388
Stage 2 Op. + Stage 3 Cons.	1,208	216	1,424
Full build	**1,199**	**254**	**1,453**

As shown in Table 8-7 and Table 8-8, the full build scenario (including the existing operations, Stage 1 and Stage 2 operations) would generate the greatest number of operational vehicles. It would involve operation of the Site Workshop and Maintenance and Manufacturing Workshop along with the resource recovery facility operations (including an increase in throughput of 950,000 tpa).

Traffic generation estimates for the full build operation phase are presented in more detail in Table 8-9. This scenario has been modelled using SIDRA Intersection traffic modelling software. Additionally, a peak day which generates approximately 30 per cent greater traffic volumes than the average day has also been modelled as a ‘worst case’ scenario.

Table 8-9 Full build operation expected traffic generation

Facility/ Activity	Stage 3 – Operation Phase		
	Daily Vehicles	Average Hourly Vehicles during the network peak hour	
		In	Out
Landfill	282	12	12
MPC1	515	21	21
SMA	104	4	4
MPC2	283	13	13
Material Processing Operational Staff[1]	204	-	-
Workshop Customers	5	Assume 1[2]	Assume 1
Workshop Material Deliveries	10	1	1
Workshop Staff[1]	50	-	-
Total	**1,453**	**52**	**52**

[1]Staff (light vehicles) would enter and exit the site before and after the start and end of a work shift/ hours of construction which occur outside of the surrounding road network peak periods.
[2]Realistically, there would be less than 1 trip per hour since there is only 5 trips per day. However, 1 trip per hour has been considered.

Traffic distribution

The M4 Motorway, which provides an east-west link across Sydney's road network, is located north of the Proposal Site and the M7 Motorway, which provides a north-south link across Sydney's road network, is located south of the Proposal Site. On this basis, it is estimated there would be an even split of vehicles travel to/from the site from the north direction and south direction on Wallgrove Road.

Operational traffic assessment

Traffic generated from operation of the Proposal has been modelled using SIDRA 9.0 modelling software to assess the potential impacts associated with traffic generated by the Proposal across a number of existing and future traffic scenarios. Table 8-10 and Table 8-11 below provides a summary of the road network performance during AM and PM road network peak periods, respectively.

By comparing future scenarios of background traffic growth along with site-generated traffic, it is demonstrated that operation of the Proposal would result in an additional 0-1 second delay only at each of intersections modelled as part of this assessment. The SIDRA results indicate that even under a peak scenario (Scenario 1c and Scenario 2c) all intersections would operate at an acceptable LoS.

With the operation of the Proposal at the year of opening (2025) and 10 years after opening of the Proposal (2035), all modelled intersections would operate at the same LoS as the existing scenario during the AM and PM peaks, with the exception of the Wallgrove Road / Wonderland Drive intersection and the Wonderland Drive / Honeycomb Drive intersection.

During the AM peak, the performance of the Wallgrove Road / Wonderland Drive intersection would reduce from a LoS B under existing traffic conditions, to an acceptable LoS C at the year of opening (2025) without the Proposal as a result of background traffic growth. The introduction of additional traffic onto the road network as a result of operation of the Proposal at the year of opening, and 10 years after the year of opening would not result in any reductions in the LoS under both the average day and peak day scenarios.

During the AM peak, the Wonderland Drive / Honeycomb Drive intersection would operate at a LoS A without the Proposal under existing conditions, and without the Proposal at the year of opening (2025). The

introduction of Proposal operational traffic at the year of opening would increase the average delay at this intersection by one second, which would result in the LoS being reduced from a LoS A to a LoS B. The performance of this intersection would continue to operate at an acceptable LoS B for all other scenarios modelled at the year of opening and 10 years after opening under an average day and peak day scenario.

Overall, the traffic assessment identifies that the Proposal would have a negligible impact on the performance of the surrounding road network. Ttraffic generated by the Proposal is not expected to compromise the safety or function of the surrounding road network. On this basis, road upgrades, infrastructure works, or new roads would not be required for the development.

Table 8-10 Results for Proposal traffic modelling scenarios – AM Peak

Intersection	Existing		Year of opening (2025)						10 years after opening (2035)					
	Scenario 0: Existing road network (without Proposal)		Scenario 1a: Road network with background traffic growth 2025 (without Proposal)		Scenario 1b: Road network with background traffic growth 2025 (Stage 1, 2 and 3 operation – average day)		Scenario 1c: Road network with background traffic growth 2025 (Stage 1, 2 and 3 operation – peak day)		Scenario 2a: Road network with background traffic growth 2035 (without Proposal)		Scenario 2b: Road network with background traffic growth 2035 (Stage 1, 2 and 3 operation – average day)		Scenario 2c: Road network with background traffic growth 2035 (Stage 1, 2 and 3 operation – peak day)	
	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS
Wallgrove Road-Wonderland Drive	24	B	32	C	32	C	32	C	33	C	33	C	34	C
Interchange Drive - Wonderland Drive	11	A	11	A	11	A	11	A	11	A	12	A	12	A
Wonderland Drive - Honeycomb Drive	14	A	14	A	15	B	15	B	15	B	15	B	15	B
Honeycomb Drive -Grevillea Street	12	A	12	A	12	A	12	A	12	A	12	A	12	A
Honeycomb Drive -Kangaroo Avenue	10	A	10	A	10	A	11	A	10	A	11	A	11	A

Table 8-11 Results for Proposal traffic modelling scenarios – PM peak

Intersection	Existing		Year of opening (2025)						10 years after opening (2035)					
	Scenario 0: Existing road network (without Proposal)		Scenario 1a: Road network with background traffic growth 2025 (without Proposal)		Scenario 1b: Road network with background traffic growth 2025 (Stage 1, 2 and 3 operation – average day)		Scenario 1c: Road network with background traffic growth 2025 (Stage 1, 2 and 3 operation – peak day)		Scenario 2a: Road network with background traffic growth 2035 (without Proposal)		Scenario 2b: Road network with background traffic growth 2035 (Stage 1, 2 and 3 operation – average day)		Scenario 2c: Road network with background traffic growth 2035 (Stage 1, 2 and 3 operation – peak day)	
	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS
Wallgrove Road-Wonderland Drive	32	C	32	C	33	C	33	C	35	C	35	C	35	C
Interchange Drive - Wonderland Drive	13	A	13	A	13	A	13	A	13	A	14	A	14	A
Wonderland Drive - Honeycomb Drive	10	A	10	A	10	A	10	A	10	A	10	A	10	A
Honeycomb Drive -Grevillea Street	9	A	9	A	10	A	10	A	9	A	10	A	10	A
Honeycomb Drive -Kangaroo Avenue	9	A	9	A	10	A	10	A	9	A	10	A	11	A

Parking assessment and access

Car parking

All employees would utilise staff car parking provided at the Eastern Creek REP. Based on the proposed shift times of 5am to 3pm (day shift) and 3pm to 1am (night shift), staffing numbers for each facility are summarised in Table 8-12.

Table 8-12 Staff numbers for the Proposal

Facility / Activity	Number of employees					
	Stage 1		Stage 2		Stage 3	
	Day shift	Night shift	Day shift	Night shift	Day shift	Night shift
MPC1 and MPC2	72	61	77	66	77	66
Landfill	12	2	12	2	12	2
Crushing and SMA	16	0	16	0	16	0
Site Management	6	0	6	0	6	0
Site Office	25	0	25	0	25, until 6 pm	0
Maintenance & Manufacturing	0	0	0	0	25	25
Sub-total	**131**	**63**	**136**	**68**	**161**	**93**
Total	**194**		**204**		**254**	

By applying the car parking rates discussed in Section 8.2.5 , the Proposal generates a need for 503 parking spaces in accordance with the Eastern Creek Precinct Plan Stage 3. In comparison to the number of staff to be employed at the Eastern Creek REP, which is up to a total of 254 staff in Stage 3, the provision of between 503 car parking spaces would be excessive for the Proposal Site.

A more appropriate method of estimating parking demand to be generated by the Proposal would be by using a 'first principles' approach as this is based on the number of employees and shift times rather than floor area. Based on the estimated number of staff for the Proposal (see Table 8-12), the number of car parking spaces has been estimated based on the maximum number of people on-site at any given time.

The greatest number of employees on site at any one time would occur at the shift change-over which would occur at around 3pm, as night workers arrive to the site to commence their shift and day workers conclude their shift. Assuming an overlap of 75 per cent of day shift workers (121) and 75 per cent of night shift workers (70) on-site at the same time, there would be up to 191 staff. No changes to operational hours are proposed as part of the Proposal.

The Proposal includes construction of an additional car park to the south of MPC2. Subject to detail design once combined with existing onsite car parking (including 122 spaces approved under Mod 8 MP06_139) a total of 276 parking spaces would be provided across the Eastern Creek REP (refer Section 3.3.10). Therefore, the Proposal satisfactorily meets the parking requirement based on the first principles' approach.

Car parking for the Proposal would be designed in accordance with the Australian Standard for off-street car parking (AS2890.1:2004).

Vehicle access and circulation

During Stage 1, all vehicles would access the Proposal Site via the existing access points as shown in Figure 8-5. There would be no change to internal traffic flows.

During Stages 2 and 3, resource recovery vehicles would exit the Proposal Site via the two new exit points (i.e., Kangaroo Avenue north of the Proposal Site and Honeycomb Drive extension southwest of the Proposal Site). Operational staff would continue to enter and exit the Proposal Site via the existing site access off Kangaroo Avenue or access the car park south of MPC2 from Honeycomb Drive. The site office would be accessed via the driveway off Honeycomb Drive. Other internal traffic flows would remain the same for both Stages 2 and 3. Vehicle access to the Proposal Site during Stage 2 and Stage 3 operation is shown in Figure 8-6.

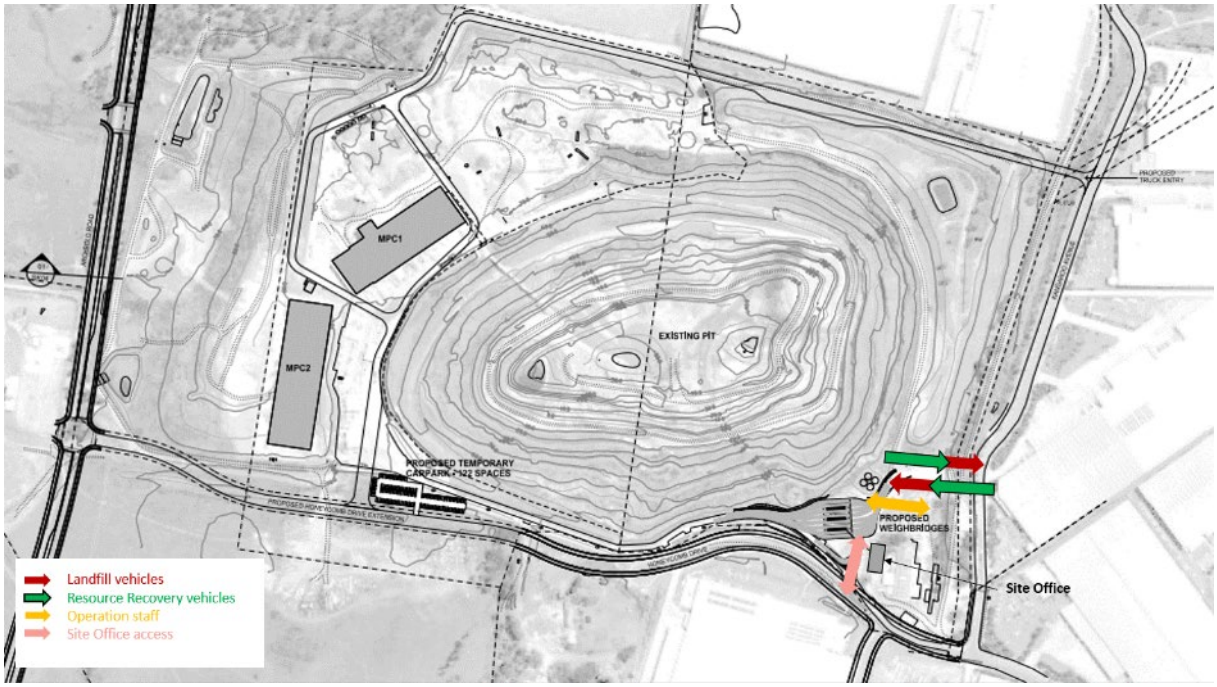


Figure 8-5 Stage 1 operational vehicle access

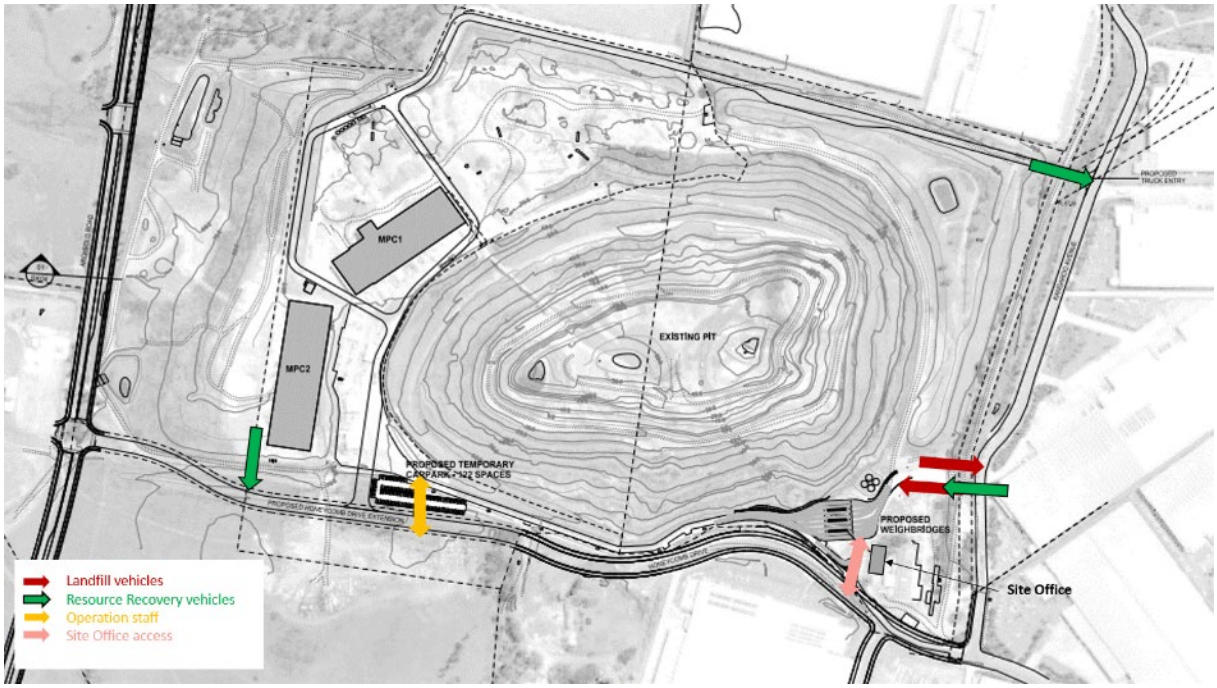


Figure 8-6 Stage 2 and Stage 3 operational vehicle access

Onsite vehicle stacking

On-site vehicle storage (referred to as stacking capacity) has been assessed to identify whether the vehicles anticipated to arrive during operation of the Proposal can be accommodated without queuing on to the local road network. The number of vehicles that can 'stack' in a given area depend on the length of the vehicle. The number of stacking spaces at the inbound weighbridges has been designated as follows based on the expected incoming vehicle mix at the Proposal Site:

- Approximately 62 per cent 19 m Articulated Vehicles (AV) = 18 spaces
- Approximately 32 per cent 12.5 m Heavy Rigid Vehicles (HRV) = 9 spaces
- Approximately 3 per cent 8.8 m Medium Rigid vehicles (MRV) = 1 space
- Approximately 3 per cent 6.4 m Small Rigid Vehicles (SRV) = 1 space.

Two critical locations on site have been assessed for stacking capacity: the main site entrance where there would be the six tidal inbound weighbridges; and the MPC2 area where the majority of the increased throughput would be received and processed.

Available stacking space at inbound weighbridges (off Kangaroo Avenue)

The length of the internal entrance road from Kangaroo Avenue to the six tidal weighbridge is approximately 220 m. During the operational peak hour, up to five out of the six tidal weighbridges could operate as 'inbound' while one weighbridge operates as 'outbound'. Within this length, a total of 29 vehicles could physically stack along the internal road which includes the weighbridges themselves as the widest point, before tapering to single lane at Kangaroo Avenue.

It is estimated that the weigh-in process takes an average of 2-10 minutes per vehicle, with a highly conservative rate of 15 minutes per vehicle, each stacking space could accommodate four vehicles in one hour (60 minutes / 15 minutes). Therefore, in one hour the 29 stacking spaces would be able to turnover a total of 116 vehicles (4 vehicles x 29 spaces).

Having consideration for the peak operational day, the number of waste transportation vehicles arriving in a peak hour would in the order of 66 vehicles (50 vehicles (average day) x 1.3). In this worst case scenario, the number of vehicles (66) would still be less than the stacking threshold (116).

On this basis, the available 29 spaces are able to accommodate the peak demand on site which would occur in Stage 3.

Available stacking space within MPC2

There are a total of 13 bays proposed to service MPC2. It is expected that on site activities within MPC2 would take approximately 15 minutes per vehicle. Based on this, theoretically each bay is able to accommodate four vehicles (60 minutes / 15 minutes) in an hour. Therefore, in one hour, MPC2 could accommodate 52 vehicles (4 vehicles X 13 bays). It is expected that only 13 waste vehicles are expected to visit MPC2 per hour on average. Therefore, the available 52 stacking spaces would adequately accommodate the average demand at MPC2.

Having consideration for the peak operational day, which is up to approximately 30 per cent greater traffic volumes than the average day, the number of MPC2 vehicles would in the order of 17 vehicles (13 vehicles x 1.3). In this worst case scenario, the number of vehicles (17) would still be substantially less than the stacking threshold (52). Therefore, the available 13 bays would adequately accommodate the peak demand at MPC2.

8.5 Mitigation measures

Traffic generated by the Proposal is not expected to compromise the safety or function of the surrounding road network during construction or operation. Table 8-13 outlines the mitigation measures that will be implemented by Bingo to manage construction and operational traffic movements to, from and within the Proposal Site to ensure the construction and operation of the Proposal results in minimal impacts to the surrounding road network and functioning of the Proposal Site.

Table 8-13: Mitigation measures (traffic and transport)

ID	Mitigation measures	Timing
TT1	A Construction Traffic Management Plan (CTMP) will be prepared to mitigate potential construction traffic impacts and will comprise a sub-plan to the CEMP. The CTMP will address the specific traffic control requirements during the construction phase(s) of the Proposal. The plan will assess the provision of traffic control measures, including: • Site signage and road signage • Site traffic rules and traffic management requirements • Any road closures and associated traffic detour routes. The CTMP will include: • Measures to enforce speed limits for construction traffic on site • Provision of safe access and thoroughfare for pedestrians and cyclists • Management of the Proposal Site such that all trucks would enter and leave the site in a forward direction, where feasible and reasonable • Preparation of site-specific traffic control plans (TCPs) in accordance with the principles and guidance set out in the Traffic control at work sites Technical Manual (TfNSW, 2020), to outline how construction vehicle manoeuvres could be accommodated in and out of the work site • Requirements for regular inspection of traffic controls and review of TCPs to identify potential safety hazards and enable implementation of corrective solutions • Any workers required to undertake works or traffic control within the public domain shall be suitably trained and will be covered by adequate and appropriate insurances. All traffic control personnel will be required to hold Transport for NSW accreditation. • Provision of tool box talks or alternative communication to inform workers of any changes to site traffic management.	Construction
TT2	The currently approved EMS will be reviewed and updated to include, as a minimum, the new operational traffic flows and new internal pedestrian routes.	Operation

9 NOISE AND VIBRATION

9.1 Introduction

This section provides an assessment of the potential noise and vibration impacts associated with the Proposal. RWDI has undertaken an assessment of the potential noise and vibration impacts associated with the Project to address the SEARs issued by DPE. The Noise and Vibration Impact Assessment (NVIA) for the Proposal is provided in Appendix J of this EIS.

Table 9-1 provides a summary of the relevant SEARs, which relate to noise and vibration, and where these have been addressed in this EIS.

Table 9-1: Noise and vibration SEARs

SEARs	Where addressed
Noise and vibration	
A quantitative noise and vibration impact assessment undertaken by a suitably qualified acoustic consultant in accordance with the relevant Environment Protection Authority guidelines which includes: • The identification of impacts associated with site emission and traffic generation at noise affected sensitive receivers	Appendix J (NVIA)
• Details of noise monitoring surveys, background noise levels and noise emission levels of proposed activities	Section 9.2.3 (noise monitoring) Section 9.3.2 (background noise levels) Section 9.4 (noise impact assessment) Appendix J (NVIA)
• Consideration of annoying characteristics of noise and prevailing meteorological conditions in the study area	Section 9.4 (noise impact assessment) Appendix J (NVIA)
• A cumulative impact assessment inclusive of impacts from other developments	Section 20.4 (cumulative impact assessment)
• Details and analysis of the effectiveness of proposed management and mitigation measures to adequately manage identified impacts, including a clear identification of residual noise and vibration following application of mitigation these measures and details of any proposed compliance monitoring programs.	Section 9.5 (mitigation measures) Appendix J (NVIA)

Further to the above, the NSW EPA stated the following requirements as indicated in Table 9-2.

Table 9-2: NSW EPA requirements

Requirement	Where addressed
The impact of noise and vibration must be managed to protect the amenity and wellbeing of the community. Potential impacts should be minimised through the implementation of all feasible and reasonable mitigation measures. The scoping report commits to '[a] detailed noise and vibration assessment … undertaken as part of the EIS to determine the potential impacts of the Proposal on the surrounding sensitive receivers, for both construction and operation.'	Section 9.5 (mitigation measures)

9.2 Method of assessment

The NVIA has been prepared in accordance with the following relevant guidelines and policies:

- *Assessing Vibration: A Technical Guide* (DEC, 2006)
- *Noise Policy for Industry* (NSW EPA, 2017)
- *Interim Construction Noise Guideline* (DECC, 2009)
- *Construction Noise and Vibration Strategy* (TfNSW, 2018)
- *NSW Road Noise Policy* (DECCW, 2011).

9.2.1 Assessment scenarios and approach

Chapter 7 outlines the different assessment approaches adopted within this EIS to assess the potential impacts from the Proposal. Potential noise impacts have been modelled for each of the construction and operational phases of the Proposal individually to confirm their respective noise levels and identify any potential exceedances of the relevant criteria. Where a construction and operational phase overlaps, a 'cumulative' scenario considering the two concurrent activities has also been considered. The following scenarios have been assessed (refer to Figure 9-1):

- Stage 1 operation
- Stage 2 construction
- Stage 1 operation + Stage 2 construction
- Stage 2 operation
- Stage 3 construction
- Stage 2 operation + Stage 3 construction
- Stage 3 operation
- Full build peak operations

The highest levels of construction noise would occur where multiple construction phases and activities (within a stage) occur concurrently (which would be contingent on internal operational needs and final construction details). This is considered to be the 'worst case' construction scenario for each construction stage.

For each operational Stage of the Proposal, noise modelling was undertaken to account for the proposed vehicle hourly average movements and the peak hourly vehicle movements for the Proposed stages. On a peak operational day, site-generated traffic is approximately 30% higher than the average operational day (refer to Section 8.2.1).

The daytime noise levels were predicted at all assessment locations for both average and peak level vehicle movements. Construction activities would only occur during the daytime, as such an assessment of potential construction impacts for the night-time period was not required.

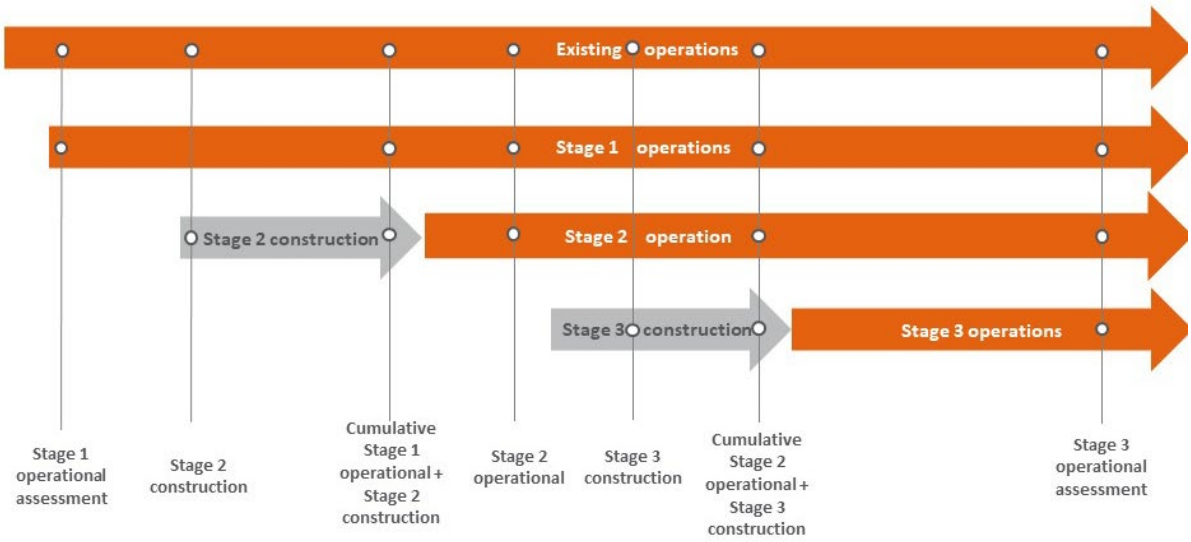


Figure 9-1 Modelling scenarios

9.2.2 Study Area

The Eastern Creek REP is bounded by industrial developments which border the Western Motorway (M4) to the north, Kangaroo Avenue to the east and Honeycomb Drive to the south. The Eastern Creek REP is bounded by commercial and industrial buildings to the immediate north, east and south. The closest residential receivers are located across the M4 Motorway approximately 400 m to the north in the suburb of Minchinbury and approximately 1.2 km west in the suburb of Erskine Park.

Assessment locations were determined by the nearest representative noise sensitive residential and industrial receivers to the Proposal Site and are presented in Figure 9-2 below.

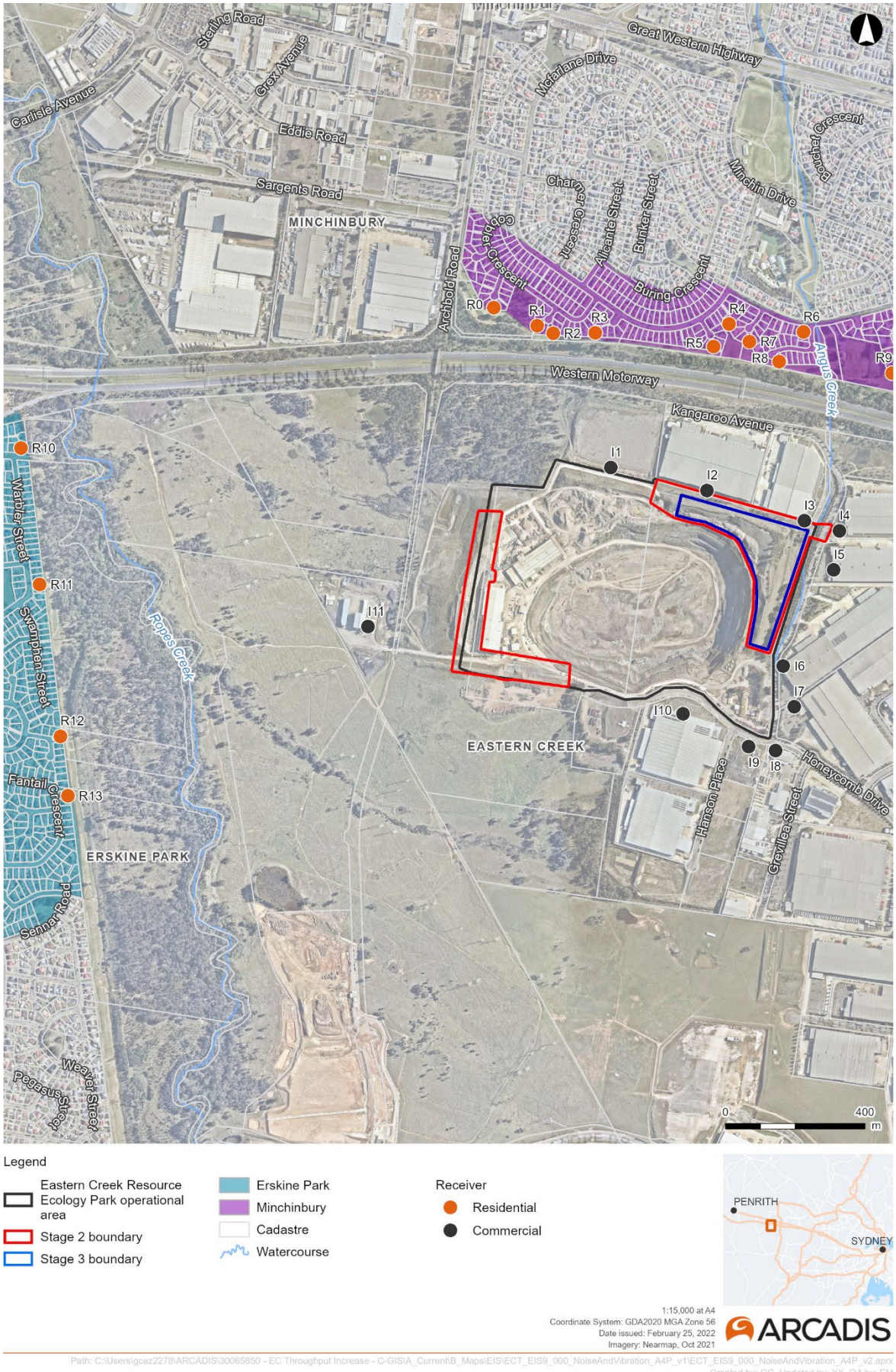


Figure 9-2 Assessment locations

9.2.3 Noise monitoring

Rating background levels (RBL) for nearby residential receivers were determined based on previous noise monitoring undertaken for other developments within the area. Background noise levels for the residential areas to the north (Minchinbury) and west (Erskine Park) of the Proposal Site have previously been measured to support other development assessments including:

- Unattended noise monitoring was carried out in March and April 2014 to support the Energy from Waste Facility, Eastern Creek (SSD6236) – Noise Impact assessment prepared by Pacific Environment (October 2016) (refer to Figure 2-2 of Appendix J).
- Noise monitoring, requested by the DPE and the NSW EPA, was conducted to support the Modification 6 noise assessment for the Project Approval (MP06_0139). The noise monitoring was conducted in August and September of 2019.

The unattended noise monitoring informed the sound power levels at the Eastern Creek REP for key generating noise components such as MPC2 and traffic noise.

9.2.4 Assessment Criteria

Construction noise and vibration

Construction Noise Management Levels

It is expected that all construction activities would be conducted within standard construction hours.

The ICNG recommends NMLs to reduce the likelihood of noise impacts arising from construction activities. NMLs for residential receivers are determined based on the RBL established at potential receiver locations. The ICNG NML for residential receivers are shown in Table 3-2 of Appendix J. The ICNG recommends an NML of 75 dBA for industrial land uses.

The construction NMLs for residential and industrial receivers for the Proposal are presented in Table 9-3. These NMLs have been derived using the results of unattended noise monitoring (refer Section 9.2.3).

Table 9-3: Project specific NML, $L_{Aeq,\ 15min}$

Receiver	Noise-affected Level Standard Hours	Noise-affected Level Outside Standard Hours	Highly Noise-affected Level
Minchinbury	53	45	75
Erskine Park	47	40	75
Industrial Receivers (I1-I11)	75	-	-

Construction vibration

When assessing vibration there are two components that require consideration:

- Human exposure to vibration
- The potential for building damage from vibration.

There are currently no Australian Standards or guidelines to provide guidance on assessing the potential for building damage from vibration. It is common practice to derive goal levels from international standards such as *British Standard BS7385:1993 Evaluation and measurement for vibration in buildings - Guide to damage levels from groundborne vibration* (BS 7385). The *DEC's Assessing Vibration - a technical guideline* (2006) provides guidance for assessing human exposure to vibration.

The recommended safe working distances for vibration intensive plant suggested in the *Transport for New South Wales Construction Noise Strategy* have been adopted in this assessment to evaluate the potential for vibration impacts from the proposed works.

The safe working distances are quoted for both "cosmetic" damage (refer BS 7385) and human comfort (refer DEC's *Assessing Vibration - a technical guideline*). The safe working distances are the typical distances that are required from plant/ equipment to meet the vibration criteria in BS 7385 and DEC's *Assessing Vibration - a technical guide*.

The *Transport for New South Wales Construction Noise Strategy* indicates that the safe working distances for building damage and human comfort applicable to the largest vibratory roller are 25 m and 100 m, respectively and 5 m and 20 m for smaller vibratory rollers.

Operational noise

The *Noise Policy for Industry* (NPfI) (NSW EPA, 2017) provides a framework for assessing environmental noise impacts from industrial premises and industrial development proposals in NSW.

The project noise trigger level is the lower value of the project intrusiveness noise level and the project amenity noise level. The project intrusiveness noise level assesses the likelihood of noise being intrusive above the ambient noise level and is applied to residential receivers only. Intrusiveness noise levels for the Proposal are calculated from the RBLs. Further detail is provided in Section 2.4.2.1 of Appendix J.

Amenity noise levels for the Proposal aim to set a limit on continuing increases in noise levels from all industrial noise sources affecting a variety of receiver types. The amenity noise level aims to limit continuing increases in noise levels which may occur if the intrusiveness level alone is applied to successive development within an area, this is further outlined in Section 2.4.2.2 of Appendix J.

Table 9-4 shows the noise trigger levels for sensitive receivers for the Proposal, with the Proposal noise trigger levels highlighted.

Table 9-4: Project noise trigger levels

Receiver	Time of Day*	Project Intrusiveness Noise Levels ($L_{Aeq\ 15min}$)	Project Amenity Noise Levels ($L_{Aeq\ period}$)
Minchinbury	Day	**48**	58
	Evening	**46**	48
	Night	46	**43**
Erskine Park	Day	**42**	53
	Evening	**42**	43
	Night	40	**38**

** Day: 7am – 6pm, Evening: 6pm – 10pm, Night: 10pm – 7am*

The noise trigger levels utilised within this assessment do not exceed the noise limits established for the existing Eastern Creek REP under Modification 6 of MP06_0139.

Modifying factor adjustments

A low-frequency noise assessment was conducted to ascertain whether any of the identified receivers should be subject to a modifying factor correction due to dominant low-frequency content (described in further detail in Section 2.4.2.4 of Appendix J). This assessment concludes no modifying factor correction for low-frequency noise is warranted for the Proposal.

Maximum noise trigger levels – Sleep disturbance

Noises at night occurring over a short duration have the potential to cause sleep disturbance despite complying with project noise trigger levels. Approval is sought for the Proposal to operate on a 24-hour basis as required. Therefore, maximum noise level events need to be considered for potential sleep disturbance.

The NPfI recommends that, where the night-time L_{Amax} receiver noise levels from a development exceeds 52 dBA or the RBL plus 15 dBA, whichever is the greater, then a more detailed assessment of potential sleep disturbance impacts is warranted. Table 9-5 presents the maximum noise trigger levels for the receivers identified in this assessment.

Table 9-5: Maximum noise trigger levels

Receiver	RBL	RBL + 15 dBA	Maximum Noise Trigger Level
Minchinbury	40	55	55
Erskine Park	35	50	52

Operational and construction road traffic noise

The *NSW Road Noise Policy* (RNP) (DECCW, 2011) sets out criteria for assessment of noise from traffic on public roads. The RNP sets out noise assessment criteria for “freeways”, “arterial”, “sub-arterial” and “local roads”.

The RNP impact assessment criteria for residential land uses impacted by additional traffic on freeways, arterial and sub-arterial roads are presented in Table 9-6.

Table 9-6: RNP Impact Assessment Criteria

Category	Impact Assessment Criteria (dBA)	
	Day [a]	Night [a]
Freeways, arterial, sub- arterial	$L_{Aeq,15hour}$ 60	$L_{Aeq,9\ hour}$ 55

*Day = 7.00am – 10.00pm; Night = 10.00pm – 7.00am

9.2.5 Noise modelling

Construction and operational noise emissions associated with the Proposal were modelled using the CadnaA acoustic noise prediction software and the CONCAWE noise prediction algorithm. Factors addressed in the noise modelling are:

- Equipment noise level emissions and locations
- Shielding from structures
- Noise attenuation due to geometric spreading
- Meteorological conditions
- Ground absorption
- Atmospheric absorption.

Predicted noise levels associated with both standard meteorological conditions (“calm”) and Noise Enhancing (“NE”) meteorological conditions are presented in this assessment.

Modelling has considered earthworks to remove amenity berms at the Proposal Site, in a staged manner. Modelling for Stage 1 Operations considers the amenity berms as they currently exist. Scenarios for both Stage 2 and Stage 3 Operations are considered with the relevant sections of amenity berms removed with the partial removal of amenity berms being considered as part of the Stage 2 Construction modelling scenario.

9.3 Existing environment

9.3.1 Sensitive Receivers

The Proposal Site is located within an established industrial and commercial precinct. The nearest and most potentially affected sensitive residential receivers are located to the north of the Proposal Site in Minchinbury and to the west in Erskine Park. Industrial receivers are located immediately north, east and south of the Proposal Site.

Nearest representative noise sensitive residential and industrial receivers to the Proposal Site have been identified and are provided in Table 9-7. These receivers are herein referred to as assessment locations. The assessment locations are shown in Figure 9-2.

Table 9-7: Residential and industrial sensitive receivers

ID	Type	Description
R1	Residential	1-7 Tod Place, Minchinbury
R2	Residential	3-21 Cobbler Crescent, Minchinbury
R3	Residential	1-6 Eber Place, Minchinbury
R4	Residential	3-11 Rookin Place, Minchinbury
R5	Residential	1-10 Bergin Place, Minchinbury
R6	Residential	2-22 Barossa Drive, Minchinbury
R7	Residential	3-11 Rookin Place, Minchinbury
R8	Residential	1-20 Rutherglen Place, Minchinbury
R9	Residential	6-16 Ann Minchin Way, Minchinbury
R10	Residential	13 Miner Glen, Erskine Park
R11	Residential	40-46 Warbler Street, Erskine Park
R12	Residential	Blackbird Glen, Erskine Park
R13	Residential	43-53 Fantail Crescent, Erskine Park
R14	Residential	Minchinbury
I1	Industrial	Proposed Warehouse, Kangaroo Avenue Eastern Creek
I2	Industrial	Techtronics Industries, 21 Kangaroo Avenue Eastern Creek
I3	Industrial	Fisher & Paykel, 17 Kangaroo Avenue Eastern Creek
I4	Industrial	16 Kangaroo Avenue, Eastern Creek
I5	Industrial	12 Kangaroo Avenue, Eastern Creek
I6	Industrial	4 Kangaroo Avenue, Eastern Creek
I7	Industrial	1 Eucalyptus Place, Eastern Creek

ID	Type	Description
I8	Industrial	2 Grevillea Street, Eastern Creek
I9	Industrial	1 Hansen Place, Eastern Creek
I10	Industrial	2 Hansen Place, Eastern Creek
I11	Industrial	Fulton Hogan Facility, Eastern Creek

9.3.2 Background Noise Levels

Background noise levels for the residential areas to the north (Minchinbury) and west (Erskine Park) of the Proposal Site have been identified based on noise monitoring as described in Section 9.2.3. The RBL established from the 2014 and 2019 monitoring data are presented in Table 9-8. As identified in Table 9-8, no significant acoustical changes have occurred in the area that have impacted on the ambient noise environment between 2014 and 2019. To be conservative, for this assessment the lowest measured level (shown in bold in Table 9-8) is used for developing noise criteria for the Proposal.

Table 9-8: Rating Background Levels

Monitoring Location	RBL (dBA)[6]		
	Day (7am-6pm)	Evening (6pm-10pm)	Night (10pm-7am)
Measured in 2014			
BG1 – Minchinbury	**43**	48	41
BG2 – Erskine Park	**37**	**44**	**35**
Measured in 2019			
BG1 – Minchinbury	46	**44**	**40**
BG2 – Erskine Park	37	37	37

Source: RWDI (2021)

9.3.3 Existing operations

Noise sources

Noise sources at the Eastern Creek REP including light and heavy vehicles, as well as plant and equipment used within the recycling facilities, landfill and SMA. A detailed list of the existing operational noise sources for plant and equipment onsite and associated sound power levels are identified and summarised in Section 4.3 of Appendix J. MPC2 (front of the building including conveyors and shredders) and the crusher/screen used within the SMA were found to have the highest individual sound power levels (of 115 and 112 LAeq respectively).

[6] Genesis Waste Management Facility (06_0139 MOD 6) | Modification Assessment Report

9.3.4 Approvals on the Proposal Site and noise limits

Modification 6 of MP06_0139 (approved March 2021) modified the noise limits from the Eastern Creek REP site based on contemporaneous background noise levels. The existing noise limits for the Eastern Creek REP are presented in Table 9-9.

Table 9-9: Noise limits

Location	Noise Limits dBA						
	Day	Evening	Night			Morning Shoulder	
	$L_{Aeq,}$ (15minutes)	$L_{Aeq,}$ (15minutes)	$L_{Aeq,}$ (15minutes)	$L_{Aeq,}$ (period)	$L_{Aeq,}$ (1minutes)	$L_{Aeq,}$ (15minutes)	$L_{Aeq,}$ (15minutes)
1-6 Eber Place, Minchinbury	48	47	44	41	53	47	53
2-44 Warbler Street, Erskine Park	42	42	39	N/A	44	39	44

The noise limits for activities undertaken under the Project Approval are based on the predicted noise levels set out in the Modification 6 noise impact assessment and the criteria developed using the EPA's NPfI. The recommended noise limits took the highest predicted noise levels within Minchinbury and Erskine Park. Where applicable, these limits were amended to ensure the daytime limit was set no lower than the evening level, and the evening limit was set no lower than the night-time level.

The noise limits for activities undertaken under the existing Approval are reflected in the Eastern Creek REP's EPL 13426

9.3.5 Noise monitoring and compliance reporting

Noise monitoring was carried out to validate the noise predictions of the noise impact assessment submitted to support Modification 6 of Project Approval MP06 0139. Noise from the Eastern Creek REP was inaudible during the entire monitoring period at all identified residential receivers.

The measured noise contribution at all receivers complied with the identified noise limits during all time periods for the noise monitoring carried out to validate the noise predictions of the noise impact assessment.

Additionally, compliance noise monitoring has been conducted consistent with the Eastern Creek REP EMS on a six-monthly basis by Consulting Earth Scientists since 2016. Noise monitoring for all activities currently authorised on the Eastern Creek REP, including activities approved under Modification 8, demonstrate compliance with noise limits. A review of the compliance noise monitoring by RWDI indicates that noise from the Eastern Creek REP is continually inaudible at the two nearest residential receiver locations at Minchinbury and Erskine Park.

As such, the compliance noise monitoring is consistent with the noise monitoring carried out to validate the noise predictions of the noise impact assessment prepared to support Modification 6 to MP06_0139.

9.4 Impact Assessment

9.4.1 Stage 1

Operation

Stage 1 would comprise the initial throughput increase of 500,000 tpa. The additional throughput would be processed by the existing plant and equipment at the Eastern Creek REP outlined in Section 9.3.3. Predicted hourly vehicle movements (heavy vehicles) for both average and peak scenarios associated with Stage 1 operations are outlined in Section 8.4.2. Modelling considers the amenity berms as they currently exist.

Table 9-10 presents the results for the representative worst affected receivers (within each receiver category). Results are presented for the day, evening and night time periods under calm conditions and noise enhancing (NE) conditions for both an average and peak day (traffic movements). As shown in Table 9-10 no exceedance of the relevant noise trigger levels have been recorded for any receiver under any conditions.

Table 9-10: Predicted Stage 1 operational noise levels during ($L_{Aeq,15min}$ dBA)

Receiver	Day				Evening				Night			
	Average day		Peak day		Average day		Peak day		Average day		Peak day	
	Calm	NE	Calm	NE	Calm	NE	Calm	NE	Calm	NE	Calm	NE
Nosie trigger level R0-R9	**48**				**46**				**43**			
R0	33	39	35	40	29	34	29	34	34	39	35	40
R1	33	38	34	39	28	33	28	34	33	38	34	39
R2	33	39	35	40	29	34	29	34	33	39	35	40
R4	33	39	34	40	27	32	27	33	33	39	34	40
Nosie trigger level R10-R13	**42**				**42**				**38**			
R11	24	29	25	30	24	29	24	29	24	29	25	30
Nosie trigger level I1-I11	**68**				**68**				**68**			
I6	56	58	58	59	56	58	58	59	56	58	58	59

Orange cells depict maximum results

9.4.2 Stage 2

Construction

Stage 2 construction would involve several construction activities (as described in Section 3.4):

- Site establishment (including the removal of the amenity berms as required)
- Establishment of pavement, road surfacing and kerbing
- Other minor internal road works and construction of carpark and amenities to the south of MPC2
- Installation of weighbridges and wheel washing facilities
- Construction of the weighbridge control office
- Signage, line marking and commissioning.

Each construction activity would require the operation of plant and equipment. The activity sound power was considered for each construction activity and represents the typical worst-case level in a given 15-minute period. It is important to note that this Sound Power Level (SWL) is unlikely to be sustained at such a level for the duration of the activity. As a result, construction noise emissions during many 15-minute periods will be at lower levels.

Vehicles associated with Stage 2 construction works would include light vehicles (workers travelling to and from the Proposal Site at the start and finish of shift, during lunch breaks and to conduct errands), and heavy vehicles delivering construction plant and equipment, materials and removing waste from construction activities. Construction traffic would likely peak during periods where multiple construction activities occur concurrently (which would be contingent on internal operational needs and final construction details).

Noise levels associated with the proposed Stage 2 construction works have been predicted taking into consideration concurrent construction phases. Table 9-11 and Table 9-12 presents the results for the representative worst affected receivers (within each receiver category). Results are presented for the calm conditions and (NE) conditions respectively. The results indicate that noise impacts from the listed construction activities (when considered as standalone) would comply with the noise trigger levels at the nearest receivers.

Table 9-11: Predicted construction noise levels during standard construction hours ($L_{Aeq,15min}$ dBA) – calm meteorological conditions

Receiver ID	Stage 2							
	a	b	c	d	e	f	Concurrent construction (a+b+c+d)	NML
R4	35	38	23	25	21	24	40	53
R7	35	29	22	22	18	20	36	53
R13	26	10	23	7	3	7	28	47
I1	53	66	24	51	47	52	66	75
I2	47	67	23	51	47	61	67	75
I3	46	66	36	63	59	62	68	75
I6	50	50	64	49	45	49	64	75

Orange cells depict maximum results

Table 9-12: Predicted construction noise levels during standard construction hours ($L_{Aeq,15min}$ dBA) – noise enhancing meteorological condition

Receiver ID	Stage 2							
	a	b	c	d	e	f	Concurrent construction (a+b+c+d)	NML
R0	35	43	27	26	22	28	44	53
R4	40	43	28	30	26	29	45	53
R7	40	34	27	26	22	25	41	53
R13	31	15	29	12	8	12	33	47
I1	54	67	29	52	48	54	67	75
I2	49	68	27	52	48	62	68	75
I3	48	66	41	63	59	62	68	75
I6	51	51	65	50	46	50	65	75

Orange cells depict maximum results

Vibration intensive plant would be used during Stage 2 construction. The closest location where vibratory rollers may be used on the Proposal Site during the construction is at the northern side of the Proposal Site during the construction of the new exit onto Kangaroo Avenue. It would be unlikely that vibratory rollers would operate within the safe working distances (25 m) of off-site industrial buildings when the northern exit is constructed. However, it may be possible that vibratory rollers would be operated within 100 m from the off site industrial buildings. As such, it is unlikely that any vibration impacts would occur such as cosmetic damage, notwithstanding the potential for low levels of vibration being felt in the off site industrial buildings.

Construction works during the day in Stage 2 would coincide with Stage 1 operations. These cumulative noise generation periods represent the highest level of noise from the Proposal Site and have been assessed against daytime trigger levels. A cumulative noise assessment has been undertaken for calm and noise enhancing meteorological conditions during average and peak vehicle movement scenarios to assess Stage 1 operations occurring concurrently with Stage 2 construction, based on the peak of concurrent construction activities as shown in Table 9-13. The highest levels of noise form the Proposal Site would occur during the daytime when operations and construction occur concurrently.

Table 9-13 presents the results for the representative worst affected receivers (within each receiver category). Section 7 of Appendix J presents the predicted $L_{Aeq,15min}$ noise levels at all sensitive receivers. Results are presented for the day period under calm conditions and noise enhancing conditions for both an average and peak day (traffic movements). As shown in Table 9-13, no exceedance of the relevant noise trigger levels have been recorded for any receiver under any conditions.

Table 9-13: Stage 1 operations + Stage 2 construction daytime noise levels

Receiver	Day			
	Average day		Peak day	
	Calm	NE	Calm	NE
Nosie trigger level R0-R9		**48**		
R4	41	46	41	46
Nosie trigger level R10-R13		**42**		
R11	29	35	30	35
Nosie trigger level I1-I11		**68**		
I3	68	68	68	68

Orange cells depict maximum results

Operation

Stage 2 operation would comprise of the remaining 450,000 tpa throughput increase. The additional throughput would be processed by the existing plant and equipment at the Eastern Creek REP outlined in Section 9.3.3. Furthermore, with the completion of the connections to Kangaroo Avenue and the Honeycomb Drive extension, and the upgrades to the internal road infrastructure, vehicle movements would be redistributed across the Proposal Site. As outlined in Section 9.2, modelling was undertaken to assess the impacts of both average and peak day vehicle movements to account for a worst case operational scenario. In assessing the operation of the proposed connections, modelling has considered the removal of relevant sections of the amenity berms.

Table 9-14 presents the results for the representative worst affected receivers (within each receiver category). Section 6.1 of Appendix J presents the predicted $L_{Aeq,15min}$ noise levels at all sensitive receivers. Results are presented for the day, evening and night time periods under calm conditions and noise enhancing conditions for both an average and peak day (traffic movements). As shown in Table 9-14 no exceedance of the relevant noise trigger levels have been recorded for any receiver under any conditions.

Table 9-14: Predicted Stage 2 operational noise levels ($L_{Aeq,15min}$ dBA)

Receiver	Day				Evening				Night			
	Average day		Peak day		Average day		Peak day		Average day		Peak day	
	Calm	NE	Calm	NE	Calm	NE	Calm	NE	Calm	NE	Calm	NE
Nosie trigger level R0-R9	**48**				**46**				**43**			
R0	34	40	35	40	31	36	31	37	34	40	35	40
R4	35	40	35	41	31	36	32	37	35	40	35	41
Nosie trigger level R10-R13	**42**				**42**				**38**			
R11	24	30	25	30	24	29	24	29	24	30	25	30
Nosie trigger level I1-I11	**68**				**68**				**68**			
I2	58	60	60	61	58	59	60	61	58	60	60	61

Orange cells depict maximum results

9.4.3 Stage 3

Construction

Stage 3 construction would involve several construction activities (as described in Section 3.4):

- Site establishment
- Construction of the Site Workshop
- Construction of the Maintenance and Manufacturing Workshop
- Installation of landscaping and signage
- Commissioning.

Similarly, to Stage 2 various types of plant and equipment would be required for each of the construction activities undertaken during Stage 3 of the Proposal. The activity sound power was considered for each construction activity and represents the typical worst-case level in a given 15-minute period. It is important to note that this sound power level is unlikely to be sustained at such a level for the duration of the activity. As a result, construction noise emissions during many 15-minute periods would be at lower levels.

Noise levels associated with the proposed Stage 3 construction works have been predicted taking into consideration concurrent construction phases. The results indicate that noise impacts from the listed construction activities would be below the noise-affected NML at the nearest receivers. Table 9-15 and Table 9-16 presents the results for the representative worst affected receivers (within each receiver category). Results are presented for the calm conditions and noise enhancing conditions respectively. The results indicate that noise impacts from the listed construction activities (when considered as standalone) would comply with the noise trigger levels at the nearest receivers.

Table 9-15: Predicted Construction Noise Levels during Standard Construction Hours ($LAeq_{,15min}$ dBA) – Calm Meteorological Conditions

Receiver ID	Stage 3						
	a	b	c	d	e	Concurrent construction (b+c)	NML
R7	27	21	13	12	15	22	53
R9	23	15	13	25	12	17	53
I2	56	53	45	45	48	54	75
I5	44	34	47	55	45	47	75
I6	50	42	45	61	42	47	75

Orange cells depict maximum results

Table 9-16: Predicted Construction Noise Levels during Standard Construction Hours (LAeq,15min dBA) – Noise Enhancing Meteorological Condition

Receiver ID	Stage 3						
	a	b	c	d	e	Concurrent construction (b+c)	NML
R4	31	25	18	17	19	26	53
R5	30	24	18	15	18	25	53
R7	32	26	18	17	20	27	53
I2	58	55	46	46	49	56	75
I5	48	36	49	57	48	49	75
I6	53	43	48	62	44	49	75

Orange cells depict maximum results

Vibration intensive plant would be utilised during Stage 3 construction, however as the proximity of the plant would be greater than the safe working distances (refer Section 9.2.4) for cosmetic damage or human comfort, vibration impacts are not anticipated.

Construction works during the day in Stage 3 would coincide with Stage 2 operations. These cumulative noise generation periods represent the highest level of noise from the Proposal Site and have been assessed against daytime trigger levels. A cumulative noise assessment has been undertaken for both calm and noise enhancing meteorological conditions under average and peak vehicle movement scenarios.

The highest levels of noise form the Proposal Site would occur during the daytime when operations and construction occur concurrently. Table 9-17 shows the results of the Stage 2 operations with Stage 3 construction at a representative worst affected receiver (within each receiver category). As shown in Table 9-17 no exceedances of the noise trigger levels would occur under calm or noise enhancing conditions under either an average or peak day (traffic movements).

Table 9-17: Stage 2 operations + Stage 3 construction daytime noise levels

Receiver	Day			
	Average day		Peak day	
	Calm	NE	Calm	NE
Nosie trigger level R0-R9	**48**			
R4	35	40	35	41
Nosie trigger level R10-R13	**42**			
R11	24	30	25	30
Nosie trigger level I1-I11	**68**			
I2	59	61	61	62

Orange cells depict maximum results
Grey cells depict exceedance of criteria

Operation

Stage 3 operation would include the operation of the proposed Maintenance and Manufacturing Workshop and Site Workshop. As outlined in Section 9.2, modelling was undertaken to assess the impacts of both average and peak day vehicle movements to account for a worst case operational scenario. In assessing the full build operations of the Proposal modelling has considered the removal of the relevant sections of the amenity berms.

Table 9-18 presents the results for the representative worst affected receivers (within each receiver category). Section 6.1 of Appendix J presents the predicted $L_{Aeq,15min}$ noise levels at all sensitive receivers. Results are presented for the day, evening and night time periods under calm conditions and noise enhancing conditions for both an average and peak day (traffic movements). As shown in Table 9-18 no exceedance of the relevant noise trigger levels have been recorded for any receiver under any conditions.

Table 9-18: Predicted Stage 3 operational noise levels ($L_{Aeq,15min}$ dBA)

Receiver	Day				Evening				Night			
	Average day		Peak day		Average day		Peak day		Average day		Peak day	
	Calm	NE	Calm	NE	Calm	NE	Calm	NE	Calm	NE	Calm	NE
Nosie trigger level R0-R9			**48**				**46**				**43**	
R4	36	41	36	41	33	38	34	39	36	41	36	41
Nosie trigger level R10-R13			**42**				**42**				**38**	
R11	24	30	25	30	24	29	24	29	24	30	25	30
Nosie trigger level I1-I11			**68**				**68**				**68**	
I2	59	60	60	61	58	59	60	61	59	60	60	61

Orange cells depict maximum results

Sleep disturbance assessment

The predicted L_{Amax} noise levels from the Proposal at the nearest residential assessment locations were calculated for each Stage of operation. The most likely potential source of maximum noise levels during site operation was observed and measured to be:

- Trucks dumping (115-125 dBA L_{Amax})
- Excavator/FEL scraping concrete (120-124 dBA L_{Amax})
- Metal dropping (<120 dBA L_{Amax})
- Truck passbys (<115 dBA L_{Amax}).

Conservatively, the upper level has been used for noise predictions for sleep disturbance for the Stage 3 operation to represent a worst-case scenario.

The L_{Amax} values were modelled at the building openings of MPC1, MPC2, Site Workshop and Maintenance and Manufacturing Workshop. The results indicate that full build Stage 3 operations would not result in any exceedances of the maximum noise trigger level at the nearest residential assessment locations. Table 9-19 provides results for a representative worst affected receiver for both the Minchinbury and Erskine Park areas.

Table 9-19: Predicted L_{Amax} Noise Levels – Stage 3

Receiver	Predicted Noise Level, L_{Amax}		Maximum Noise Trigger Level
	Calm	NE	
R1	42	47	55
R10	29	34	52

Orange cells depict maximum results

9.5 Mitigation measures

No exceedances of noise trigger levels have been identified for the construction and operation of the Proposal. Cumulative noise impacts from concurrent construction stages and site operation are not predicted to exceed the daytime trigger levels at any of the noise assessment locations. Table 9-20 outlines the mitigation measures that will be implemented by to minimise any impacts to noise and vibration.

Table 9-20: Mitigation measures (noise and vibration)

ID	Mitigation measures	Timing
NV1	The CEMP (or equivalent) will include the following measures to minimise noise impacts, including: • Identification of nearby residences and other sensitive land uses • Description and identification of construction activities, including work areas, equipment and duration • Description of what work practices (generic and specific) will be applied to minimise noise and vibration • Consider the selection of plant and processes with reduced noise emissions • A complaint handling process • Induction and training will be provided to relevant staff and sub-contractors outlining their responsibilities with regard to noise.	Construction

ID	Mitigation measures	Timing
NV2	The CEMP will include measures to minimise vibration impacts, such as consideration of use of the smallest vibratory roller where feasible and reasonable.	Construction
NV3	Noise compliance monitoring will continue to be conducted in accordance with the existing EMS for the Eastern Creek REP. The EMS will be reviewed and updated as required prior to commencement of operation of the Proposal.	Operation

10 AIR QUALITY

10.1 Introduction

EMM have undertaken an assessment of the potential air quality related impacts associated with the Proposal to address the SEARs issued by DPE. The AQIA for the Proposal is provided in Appendix K of this EIS. Table 10-1 provides a summary of the relevant SEARs, which relate to air quality, and where these have been addressed in this EIS.

Table 10-1: Air quality SEARs

SEARs	Where addressed
Air quality and odour	
A quantitative assessment of the potential air quality, dust and odour impacts of the development in accordance with relevant Environment Protection Authority guidelines. This is to include identification of existing and potential future sensitive receivers and consideration of cumulative local and regional impacts	Chapter 10 (Air quality impacts) Appendix K (AQIA)
The details of buildings and air handling systems and strong justification (including quantitative evidence) for any material handling, processing or stockpiling external to buildings	Section 10.4 Appendix K (AQIA) All material receipt associated with the Proposal, handling and sorting occurs within enclosed buildings (predominantly MPC2). Both MPC1 and MPC2 are enclosed on all sides and operate fine misting sprays on each opening to control fugitive dust. MPC2, the newer facility and where the majority of the Proposed throughput would be handled, also has an air handling system with extraction to a dust collector.
Details of proposed mitigation, management and monitoring measures during both the construction and operation stages of the development. This is to include strong justification for continued implementation of existing measures and any additional measures proposed as part of the development.	Section 10.5 (mitigation measures) Appendix K (AQIA)

Further to the above, the NSW EPA and Council require further details on specific requirements relating to their authority. These requirements are discussed throughout this EIS and are provided in Table 10-2 below.

Table 10-2: Other agency requirements

Aspect	Where addressed
EPA	
The EIS should include a detailed Air Quality Impact Assessment (AQIA) for construction and operation of the project in accordance with the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW. The AQIA should: • demonstrate how the development will comply with the relevant regulatory framework specifically, the POEO Act and the POEO (Clean Air) Regulation (2010) • include a cumulative local and regional air quality impact assessment, including odour.	Section 10.4 (impact assessment) Chapter 5 (consistency with legislation) Appendix K (AQIA)
The EIS should also include how risks of air pollution will be managed and monitored during the operations and construction stages to meet best practice performance expectations and avoid offsite impacts. • Technical standards and guidelines related to air are linked as follows: • Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA, 2017) • Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (DEC, 2007) • Technical Framework – Assessment and Management of Odour from Stationary Sources in NSW (DEC, 2006) • Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System for Inclusion into the 'Approved Methods for the Modelling and Assessments of Air Pollutants in NSW, Australia (OEH, 2011) • Ground-level ozone impact assessment framework (EPA, 2015)	Section 10.5 (mitigation measures) Appendix K (AQIA) The Ground-level ozone impact assessment framework it is applicable to large stationary sources of NOx and is subsequently not relevant to the Proposal.
Council	
Submission of a detailed air quality report for both the construction and operational phases.	Appendix K (AQIA)

10.2 Method of assessment

A quantitative assessment of potential air quality impacts for both the construction and operation phases of the Proposal has been undertaken in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA, 2017) (Approved Methods). The assessment follows a Level 2 assessment approach, including the following tasks:

- Potential emission types that may be generated by the Proposal are identified
- Emissions are estimated for all activities using best practice emission estimation techniques
- Dispersion modelling, using a regulatory dispersion model, is used to predict ground level concentrations for key pollutants at assessment locations

- Cumulative impacts are considered by taking into account the combined effect of existing baseline air quality, other local sources of emissions, reasonably foreseeable future emissions and any indirect or induced effects
- Air quality impacts are evaluated by comparing against impact assessment criteria presented in the Approved Methods.

The methodology for air quality assessment, including the modelling inputs and the establishment of assessment criteria is described in the Sections below and detailed in Appendix K.

10.2.1 Assessment scenarios and approach

Chapter 7 outlines the different assessment approaches adopted within this EIS to assess the potential impacts from the Proposal. Air quality impacts have been assessed on a staged basis to take account of the potential impacts from each Stage of the Proposal. The following scenarios have been assessed (refer Figure 10-1):

- Approved operations (existing environment)
- Stage 1 operation + Stage 2 construction
- Stage 2 operations
- Full build peak operations (based on an approximate 30% increase in emissions from MPC2).

Stage 3 operation of the Proposal relates to the proposed supporting infrastructure in the northeast corner of the Proposal Site and has no associated increase in throughput or emissions. Therefore, no additional operational scenario is required for Stage 3 (i.e., no change from Stage 2 in terms of operational emissions). Stage 3 construction involves activities with a low potential for dust emissions (constructing workshops, maintenance sheds, signage, fencing etc) and therefore is not assessed as an additional scenario

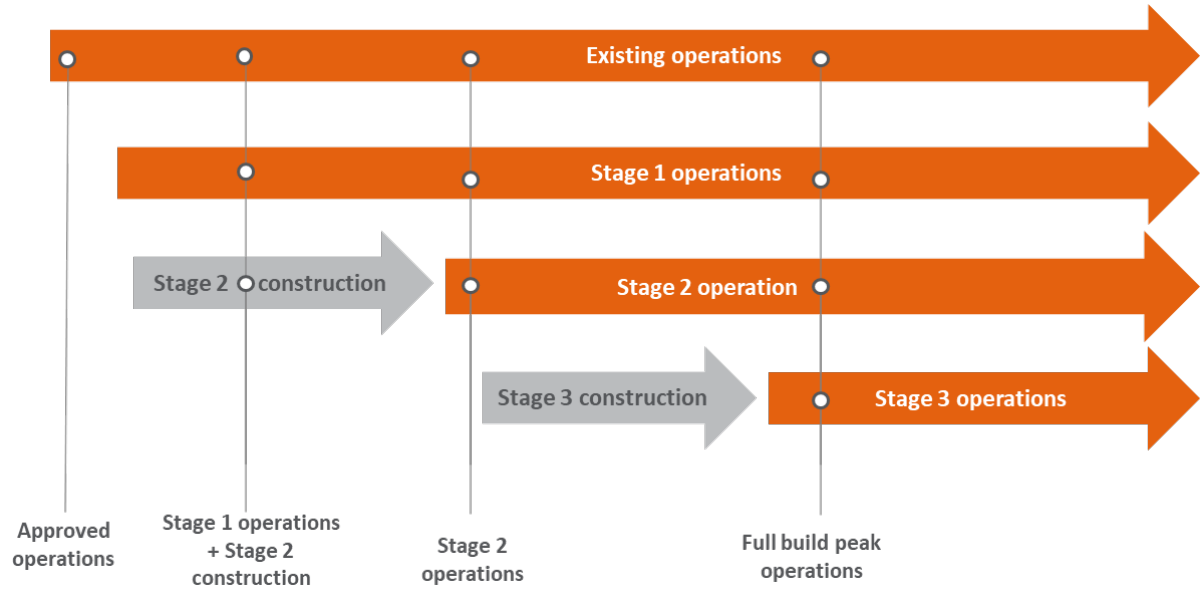


Figure 10-1 Air quality assessment scenarios

10.2.2 Emissions from the Proposal

The key emissions sources and pollutants applicable to the construction and operation of the Proposal include:

- Fugitive dust from waste and products handling and processing, movement of plant and equipment and wind erosion of exposed surfaces, comprising:
  - Total suspended particulate matter (TSP)

  - Particulate matter less than 10 micrometres (µm) in aerodynamic diameter (PM_{10})
  - Particulate matter less than 2.5 µm in aerodynamic diameter ($PM_{2.5}$)
- Odour generation, primarily from residual waste deposited within the landfill. Note that no odour would be generated from the recycling of inert waste.
- Diesel exhaust emissions from construction equipment, considering:
  - $PM_{2.5}$
  - Oxides of nitrogen (NO_x), including nitrogen dioxide (NO_2)
  - Sulphur dioxide (SO_2)
  - Carbon monoxide (CO)
  - Volatile organic compounds (VOCs).

Gaseous air pollutant emissions generated by plant and equipment do not generally result in significant offsite concentrations relative to ambient air quality goals. Accordingly, with the exception of $PM_{2.5}$, diesel combustion emissions have not been quantitatively assessed.

10.2.3 Assessment criteria

Particulate matter

The Approved Methods require that air quality assessments address the potential for air quality impacts associated with a range of air pollutants and provides assessment criteria for each. The pollutants that require assessment and the relevant assessment criteria are provided in Table 10-3.

Table 10-3: Impact assessment criteria

Pollutants	Averaging period	Impact assessment criteria	Implications
TSP	Annual	90 micrograms per cubic metre (µg/m^3)	TSP, which relates to airborne particles less than around 50 µm in diameter, is used as a metric for assessing amenity impacts (e.g., reduction in visibility, dust deposition and soiling of buildings and surfaces) rather than health impacts (NSW EPA, 2013)
PM_{10}	24-hour	50 µg/m^3	PM_{10} and $PM_{2.5}$ are a subset of TSP and are fine enough to enter the human respiratory system and can therefore lead to adverse human health impacts. The NSW EPA impact assessment criteria for PM_{10} and $PM_{2.5}$ are therefore used to assess the potential impacts of airborne particulate matter on human health.
	Annual	25 µg/m^3	
$PM_{2.5}$	24-hour	25 µg/m^3	
	Annual	8 µg/m^3	
Dust deposition	Annual	2 grams per square metre per month (g/m^2/month) (project increment only)	Dust deposition impacts are derived from TSP emission rates and particle deposition calculations in the dispersion model.

The following has been reported for the pollutants in Table 10-3 in accordance with the Approved Methods:

- The incremental impact (i.e., the predicted impact due to the project alone)
- The total impact (i.e., the incremental impact plus the existing background concentration).

Odour

Odour goals are expressed as odour units (ou). The Technical Framework for Assessment and Management of Odour from Stationary Sources in NSW (DECC, 2006) recommends that, as a design criterion, no individual should be exposed to ambient odour levels of greater than seven ou. The Approved Methods prescribes odour goals which take into account the population density for a particular area. The most stringent odour goal of two ou is acceptable for the whole population and therefore appropriate for built-up areas, such as the residential areas surrounding the Proposal. Consistent with the AQIA completed for Modification 6 of the Eastern Creek REP (Ramboll 2018), an odour goal of 7 ou is applied at commercial/industrial receptors neighbouring the Proposal Site.

10.2.4 Assessment locations

The assessment criteria were applied at the nearest existing or likely future sensitive receptor. The Approved Method defines a sensitive receptor as:

> *"a location where people are likely to work or reside; this may include a dwelling, school, hospital, office or public recreational area".*

The closest residential receivers to the Proposal Site are located across the M4 Motorway approximately 400 m to the north in the suburb of Minchinbury and approximately 1.2 km west in the suburb of Erskine Park.

Assessment locations identified as representative of these locations are presented in Figure 10-2 and include sensitive receptors such as dwellings, and other assessment locations such as nearby commercial premises. Predicted project increment and cumulative ground level concentrations (GLCs) were tabulated for each assessment location and are provided in Appendix K.

Modelling results are presented separately for residential and commercial receptors, as the adjacent commercial receptors are less sensitive to air pollution than residential receptors. There are two reasons for this, firstly, for the key pollutants (PM_{10} and $PM_{2.5}$), the assessment criteria are expressed as 24-hour and annual averages and exposure does not occur at commercial receptors over these averaging periods. Secondly, exposure to air pollution for sensitive population groups (children, elderly) is less likely to occur at commercial receptors.

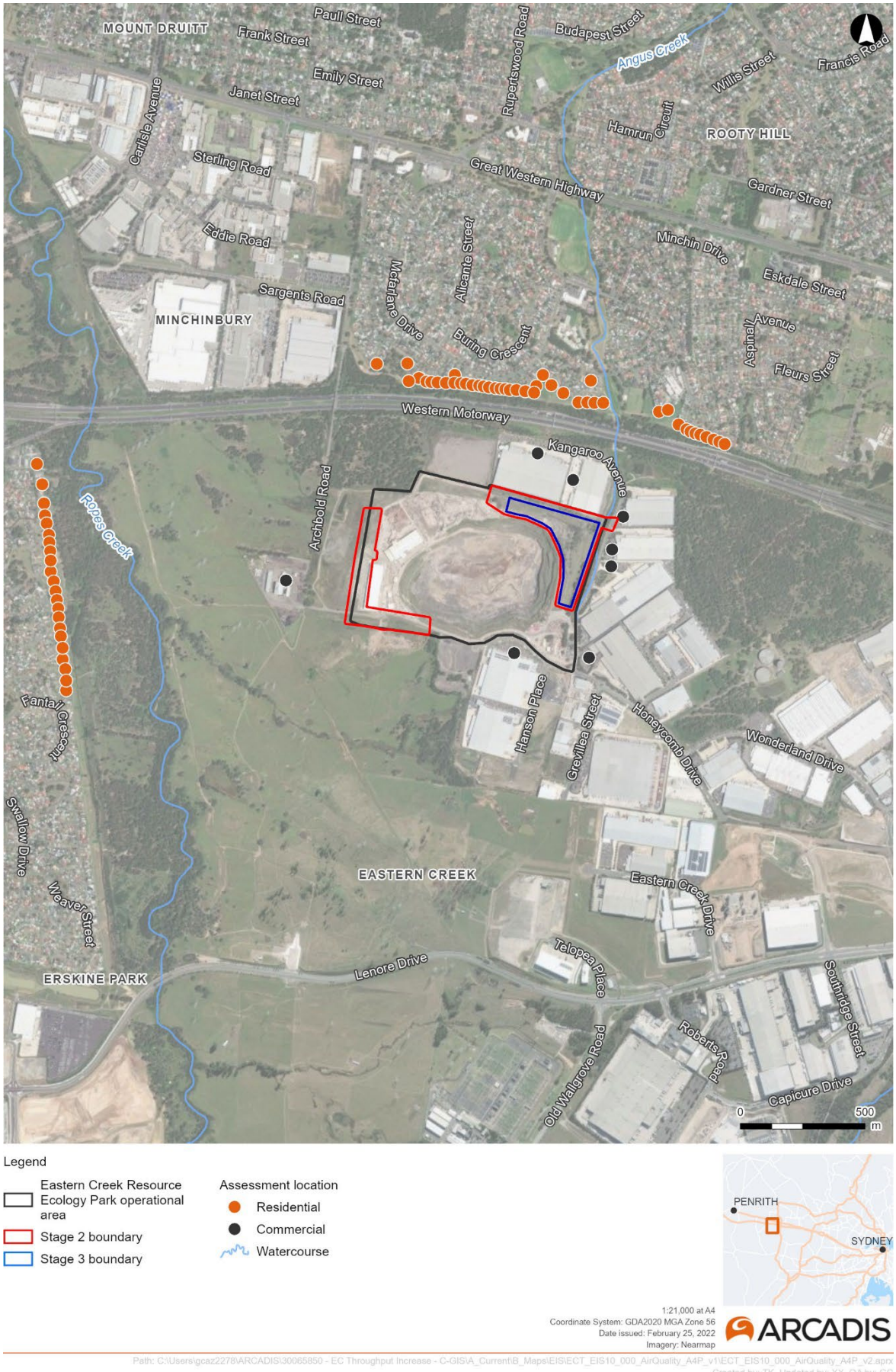


Figure 10-2 Assessment locations

10.2.5 Dispersion meteorology

Meteorological mechanisms govern the generation, dispersion, transformation, and eventual removal of pollutants from the atmosphere. These are important for an assessment of potential air quality impacts as they dictate the direction pollutants may travel, the magnitude of pollutant concentrations, and where higher concentrations are likely to occur. Baseline meteorological conditions were developed for the Proposal Site using the CALMET meteorological model.

The CALMET meteorological model was originally configured and run for Modification 6 of MP 06_0139. The CALMET modelling was described and evaluated in the Mod 6 air quality impact assessment (Ramboll, 2018) and accepted by the EPA as adequate following the Mod 6 response to submission (US EPA, 1995) report (EMM, 2019).

To determine if the existing CALMET model was representative of current site conditions, data from the nearest DPE and Bureau of Meteorology (BoM) monitoring sites (located at St Marys, Prospect and Horsley Park) was used.

10.2.6 Dispersion Modelling

Dispersion modelling has been utilised to assess the potential impacts of the Proposal on the surrounding environment in conjunction with:

- Existing sources of air emissions in the regions
- Ambient background concentrations of particulate matter
- Dust deposition rates.

In accordance with the Approved Methods, dispersion modelling was conducted using the CALPUFF model. The dispersion modelling accounts for emissions representative of a typical or average day scenario and are equivalent to an average daily waste receival rate for Approved operations, Stage 1 and Stage 2 and 3 (based on 365 days of operation) (refer to Section 3.5). A full 12-month data record from the Eastern Creek REP's weather station was not available at the time of assessment.

10.2.7 Emission inventory

Dust generating activities and sources

Construction dust emissions were estimated for the excavation, handling and transport of material from the existing amenity berms in the northeast and southwest corners of the Proposal Site. For emission estimation, approximately 160,000 tonnes of material would be re-used as fill material for construction with the remaining either used as daily cover (approximately 260,000 tonnes) or removed offsite (refer to Section 3.4.2).

Fugitive dust emission inventories were developed for the following operational activities:

- Wheel generated dust from trucks travelling on paved internal roads (waste and product trucks)
- Trucks unloading waste at the MPC1, MPC2 and SMA
- Waste sorting, handling and conveying at the MPC1 and MPC2
- Processing (crushing, screening, shredding) and handling at the SMA
- Wheel generated dust from trucks travelling into the landfill on unpaved internal roads (waste trucks)
- Unloading waste at the landfill and handling, spreading and compacting
- Loading product trucks at the SMA
- Wind erosion from exposed ground (landfill and SMA)
- Diesel emissions from onsite plant and equipment.

Fugitive dust emissions were quantified using US EPA AP-42 emission factor equations (US EPA, 1995). A description of the AP-42 emission factor equations, assumptions and inputs used for the development of the emissions inventory are provided in Appendix B of the AQIA.

Dust controls

Dust mitigation measures have been incorporated into the emission inventory based on emission reduction factors reported by the US EPA AP-42, the National Pollution Inventory (NPI, 2011) (NPI) and Katestone (2011). The existing and proposed dust controls include:

- Internal travel routes are paved, and regular road sweeping, and cleaning is carried out
- The unpaved haulage road into the landfill is subject to watering, a reduced travel speed and wind sheltering
- Activities within the landfill are managed via a water cannon and wind sheltering
- Materials handled within MPC1 and MPC2 occurs within fully enclosed sheds with misting systems operational at openings
- Watering is applied within the SMA.

Testing of the silt loading for internal roads was completed as part of this study and was used to inform modelling. For emission estimation, various sections of the paved roads were given a weighted average silt loading based on the various measurements. The measurements of silt loading were taken before any road sweeping or cleaning was applied. It is noted that as part of the ongoing improvements at the Proposal Site, all damaged paved surfaces are to be re-paved and upgraded.

Odour emissions

The Proposal does not seek to increase the gate tonnage of waste that is transported direct to landfill and the type of waste received would not change from the current approval. There would, however, be a small increase in chute waste associated with the proposed increase in throughput.

The Eastern Creek REP is not licenced to accept putrescible waste and, as such, the risk of odour emissions has historically been low, with few odour complaints attributed to Eastern Creek REP on an annual basis. However, during March to June 2021, the EPA received an increase in odour complaints from residential suburbs surrounding the Eastern Creek REP, prompting EPA to issue a clean-up notice (in April 2021) and EPL variation (in May 2021) to resolve odour issues.

The sudden increase in odour complaints was attributed to atypical rainfall events which resulted in significant volumes of rainwater infiltrating the landfill, increasing the potential to produce LFG and generation of fugitive odour.

In response to the clean-up notice and licence variation, Bingo installed a temporary LFG extraction and treatment system and lodged a modification application (Modification 10 to the Project Approval (MP 06_0139)) to install and operate two permanent enclosed LFG flares. The air quality assessment prepared in support of Modification 10 (Northstar, 2021) reported that the temporary LFG extraction and treatment system has been successful in managing off-site odour impacts. Hydrogen sulphide monitoring at seven locations surrounding the Eastern Creek REP has demonstrated a low frequency of concentrations above the odour detection threshold, coupled with a significant drop in odour complaints. Modification 10 was approved by DPE in March 2022.

Odour emissions sampling was carried out at the Eastern Creek REP in June 2022. Samples were collected for the leachate dam, landfill surface (active waste tipping face, daily covered material and intermediate waste cover), LFG extraction system pipe and the existing green waste stockpiles. Odour emissions ranged from 0.0388 ou.m^3/m^2/sec from green waste to 0.8267 ou.m^3/m^2/sec at the active waste tipping face. It is noted that green waste is proposed (as per Modification 9) to be enclosed which would like reduce odour generation potential. The results from the odour monitoring were used to prepare a future cumulative odour emissions scenario for the Eastern Creek REP, accounting for emissions from the approved Modification 10 and proposed Modification 9. The odour emissions inventory is considered highly conservative for the following reasons:

- The collection of odour samples in June 2022 was completed ahead of the installation of the approved permanent flares and associated increase in LFG extraction. As the approved LFG extraction system will be significantly more efficient at extracting LFG from the landfill, emission samples are considered to be an overestimate of fugitive odour emissions from the landfill surface
- The entire landfill floor area, less the assumed areas for active tipping, daily cover and leachate riser, is assumed to have an odour emission rate equivalent to intermediate (four week old) cover material. This assumption gives no consideration to areas where the landfill capping has been in place for longer periods and more established/thicker cover/capping
- While details of Modification 9 are yet to be finalised, it is expected that all green waste material would be stored within a shed fitted with roller doors, with minimal potential for any odour emission beyond the shed structure. Nevertheless, for conservative purposes an emission source for Modification 9 has been accounted for with a nominal 90% reduction factor applied for enclosure. For odour emission calculation purposes, it is assumed that a green waste stockpile of 3,200 m^2 is present at all times within the proposed enclosure.
- It is assumed that all four leachate storage tanks located to the south of the Eastern Creek REP are full, active and emitting for all hours of the year.

Future flare emissions have been quantified through the combination of the LFG extraction system pipe odour sample, a LFG extraction rate of 3,000 m^3/hour equally proportioned between the two flares and a flare destruction efficiency of 99 per cent. Emission source inputs presented in Northstar (2021) for the permanent flares (eg velocity, diameter, height) have been applied in this modelling.

Regarding emissions from the active tipping face area, the emission source is set to the expected future tipping area of 3,900 m^2 split between two separate tipping faces, being mixed waste and contaminated soil material, consistent with the approved Filling Plan.

It is noted that the Proposal would result in a small increase in chute waste to the landfill. It is also noted that chute waste would not be high in organic matter and therefore unlikely to contribute to an increase in LFG generation.

10.3 Existing Environment

10.3.1 Background air quality

PM_{10} and $PM_{2.5}$

The ambient air quality concentrations of PM_{10} and $PM_{2.5}$ recorded at the Bingo operated PM_{10} monitor at Minchinbury and the closest DPE Air Quality Monitoring Station (AQMS) at St Marys and Prospect for the period 2016 – 2021 are shown in Table 10-4.

The calendar years 2019 and 2020 recorded elevated levels of PM_{10} and $PM_{2.5}$, compared to all other years, due to the unprecedented bushfire events between November 2019 and February 2020. PM_{10} and $PM_{2.5}$ concentrations for 2018 are also elevated, primarily due to intensifying drought conditions. The calendar year 2021 sees a return to more typical background levels observed in 2016 and 2017. The modelled year (2016) is therefore considered suitable as representative of longer-term conditions. Of the three monitoring location the Prospect Data has been selected due to having the highest readings (therefore presenting the worst case and therefore most conservative, background levels).

There are four days in the Prospect 2016 background dataset above the impact assessment criterion for PM_{10}. The highest 24-hour average PM_{10} concentration that is not above the impact assessment criterion is 41.2 µg/m³. There are five days in the Prospect 2016 background dataset above the impact assessment criterion for $PM_{2.5}$ and the highest 24-hour average $PM_{2.5}$ concentration not above the impact assessment criterion is 24.4 µg/m³.

For annual average PM_{10} and $PM_{2.5}$ concentrations, the Prospect 2016 background concentrations are 18.9 µg/m³ and 8.6 µg/m³. The annual average background for $PM_{2.5}$ is already above the impact assessment criterion of 8 µg/m³.

Table 10-4: Summary statistics for background PM_{10} and $PM_{2.5}$

Metric	Year	Minchinbury			Prospect			St Marys		
		Annual mean	24-hour max	Days > above IAC	Annual mean	24-hour max	Days > above IAC	Annual mean	24-hour max	Days > above IAC
$PM_{2.5}$	2016	15.3	125.0	2	18.9	110.1	4	16.1	100.2	3
	2017	16.4	45.0	0	18.9	61.1	1	16.2	49.8	0
	2018	18.0	98.0	3	21.9	113.3	8	19.4	100.5	2
	2019	24.6	162.0	25	26.0	182.8	25	24.7	159.8	26
	2020	17.6	175.0	7	20.2	245.8	10	18.9	260.3	11
	2021	15.0	43.0	0	17.3	44.6	0	16.5	54.9	1
PM_{10}	2016				8.7	84.9	6	7.9	93.2	7
	2017				7.7	30.1	3	7.0	38.2	3
	2018				8.5	47.5	4	7.8	80.5	3
	2019				11.9	134.1	25	9.8	88.3	21
	2020				8.6	70.8	13	7.6	82.5	9
	2021				7.2	37.3	2	6.1	40.3	1

Note: Impact assessment criterion (IAC)

A timeseries plot of the 24-hour average concentrations shows the periods when the 24-hour average PM_{10} concentration exceeds 50 µg/m³ and when the 24-hour average $PM_{2.5}$ concentration exceeds 25 µg/m³ (Figure 10-3 and Figure 10-4). Exceedances of the 24-hour average criteria in Sydney are typically associated with periods of bushfire, hazard reduction and/or dust storms.

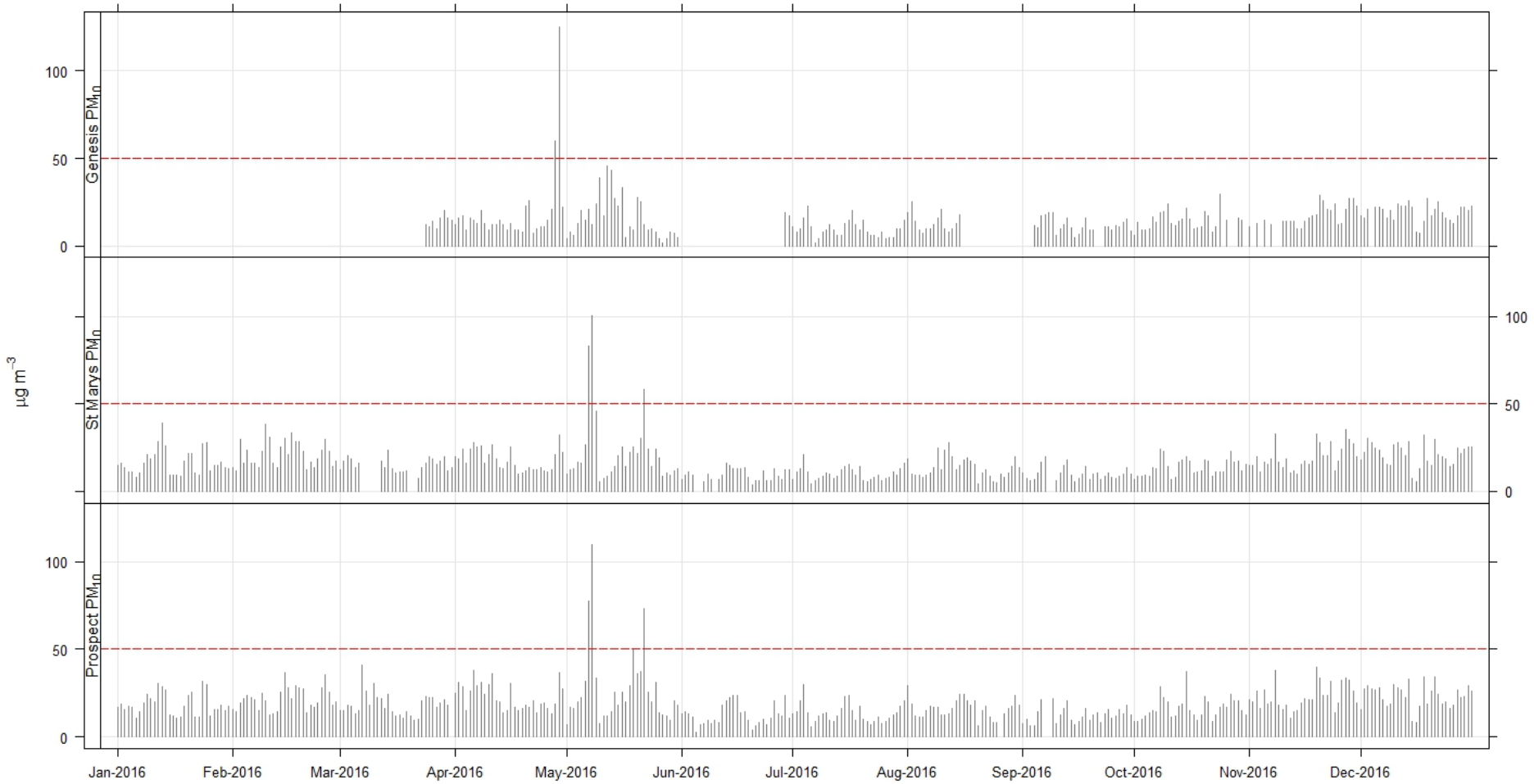


Figure 10-3 24-hour average PM_{10} concentrations

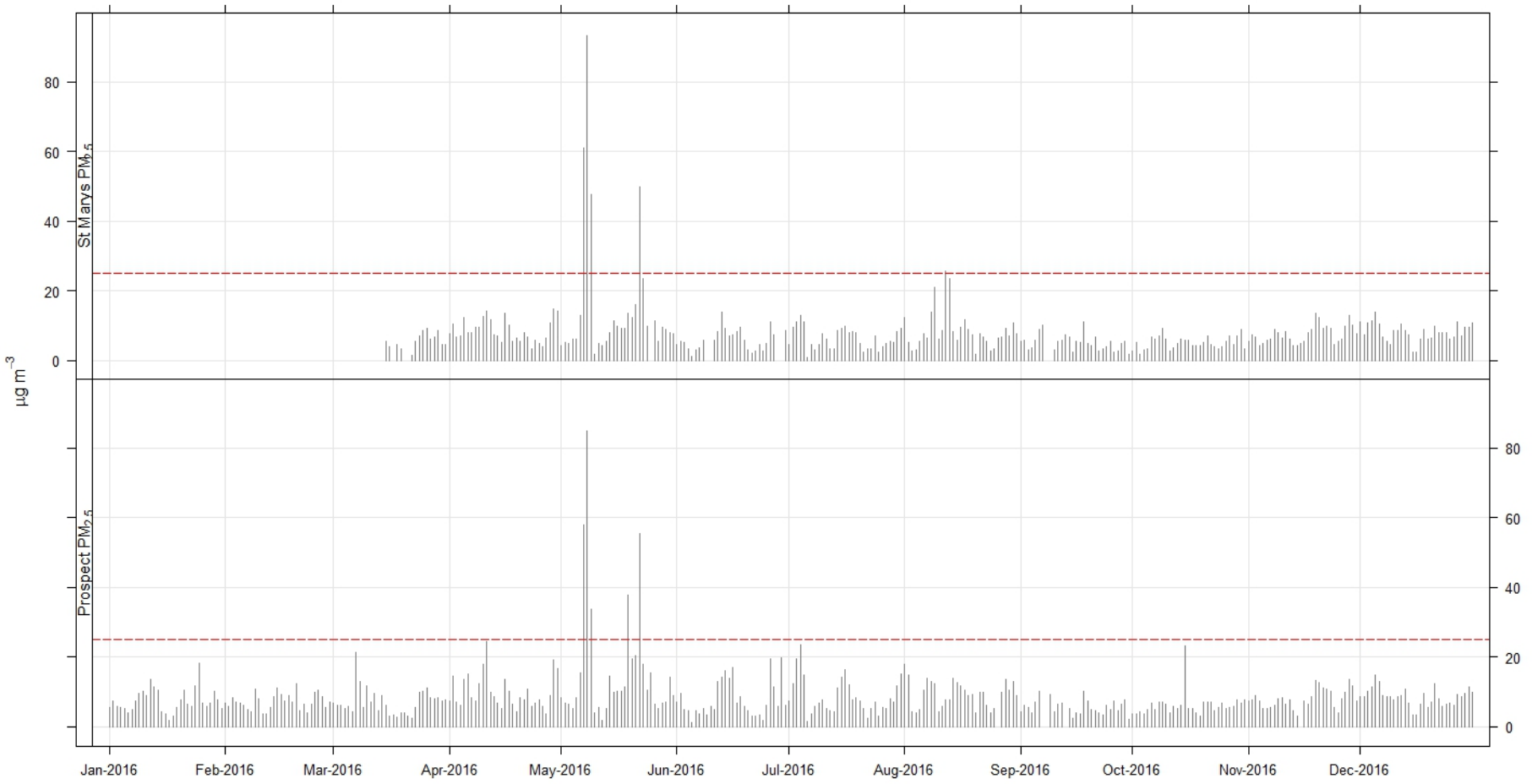


Figure 10-4 24-hour average $PM_{2.5}$ concentrations

TSP

TSP concentrations are not measured in the vicinity of the Proposal Site, however historical measurements of TSP and PM_{10} in Sydney indicate that PM_{10}/TSP ratios in urban areas typically range from 0.4 to 0.5. These ratios can be applied to the PM_{10} concentration data to derive an annual average TSP concentration.

Dust deposition

Dust deposition has been measured at four dust deposition gauge (DDG) locations within the Proposal Site. Results for the previous eight years are presented in Figure 10-5. The average dust deposition across all four sites and years is 2.1 g/m^2/month. Typically, well below the goal rating, 4 g/m^2/month (cumulative), impact assessment criteria (refer to Section 2.2.2 of Appendix K)

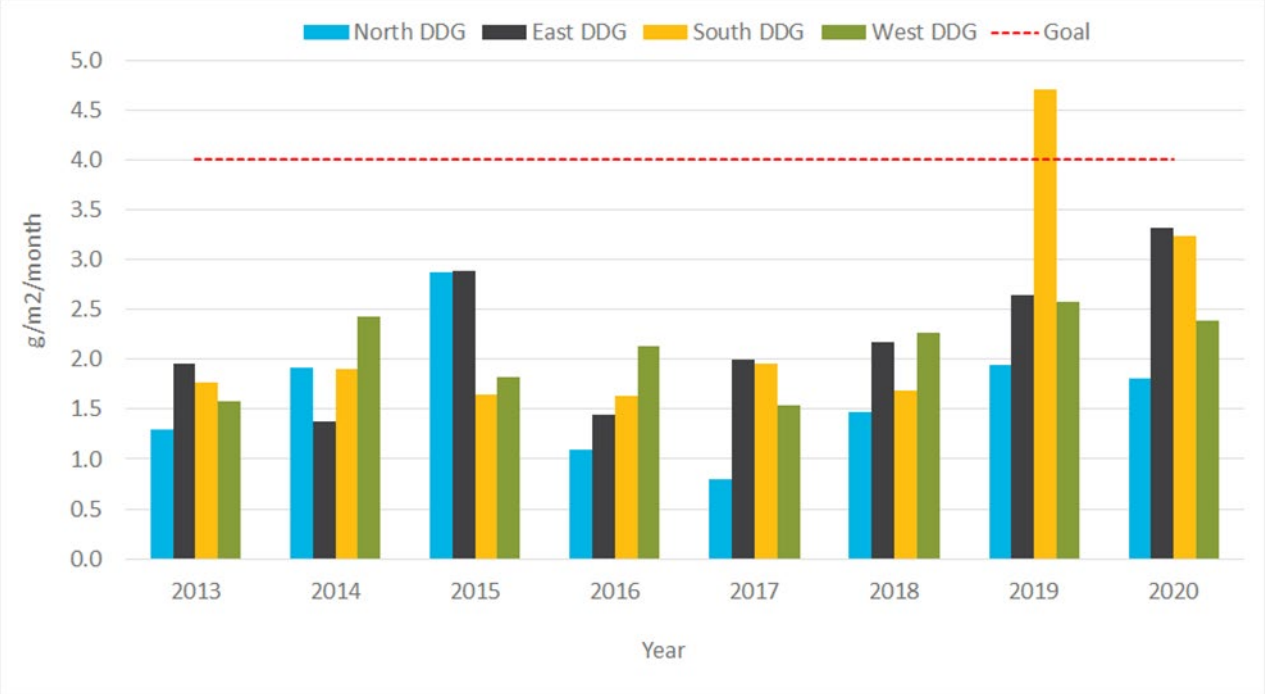


Figure 10-5 Annual average dust deposition

10.3.2 Approved operations

$PM_{2.5}$, PM_{10} TSP and dust deposition

The construction and operation of a RRF and GSW landfill at the (then) existing quarry and surrounding land at the Eastern Creek REP were approved under the original Project Approval (MP 06_0139) in 2009. Sections 2.6 and 2.7 provide a summary of the current approved activities, including operation of the landfill, MPC1 and MPC2, the SMA and other ancillary infrastructure.

The emissions sources described for the Proposal in Section 10.2.7 largely also apply to the existing operations (such as wheel generated dust from trucks, and dust generated during processing). The calculated annual emissions for approved operations are shown in Table 10-5

Table 10-5: Calculated annual TSP, PM_{10} and $PM2_{.5}$ emissions – existing operations

Emission source	Calculated annual emissions (kg/annum)		
	TSP	PM_{10}	$PM_{2.5}$
Approved operations	48,776	13,278	1,915

The modelled incremental and cumulative ground level concentrations of $PM_{2.5}$, PM_{10}, TSP and dust deposition for the existing Eastern Creek REP are presented below. As noted in Section 10.2.4, air quality impacts have been modelled for a total of 65 residential receivers and 8 commercial receivers. Results have been provided below for the worst affected of each receiver type (residential receivers - in Table 10-6 and commercial receivers in Table 10-7), as well as for any receivers where days are recorded where air quality concentrations exceed the criteria outline in Section 10.2.3. Detailed results for each receiver can be found in Section 4.4 of Appendix K.

As shown in Table 10-6 no exceedances are currently recorded for $PM_{2.5}$, PM_{10}, TSP or dust deposition at any residential receivers. Cumulative 24-hour $PM_{2.5}$ at the worst affected receiver is currently only marginally below the criteria. Seven out of the eight assessed commercial receivers currently experience exceedances of the cumulative 24-hour $PM_{2.5}$ on at least one day per year. Exceedances were also recorded for Cumulative 24-hour PM_{10} and cumulative annual PM_{10} at three and one commercial receivers respectively.

Table 10-6 Predicted ground level concentrations for $PM_{2.5}$, PM_{10}, TSP and dust deposition at residential assessment locations – Existing operations

Receptor Id	$PM_{2.5}$					PM_{10}					TSP		Dust deposition	
	24-hour			Annual		24-hour			Annual		Annual average		Annual average	
	Incr.	Cumul.	No. of days above criteria	Incr.	Cumul.	Incr.	Cumul.	No. of days above criteria	Incr.	Cumul.	Incr.	Cumul.	Incr.	Cumul.
Criteria	**25 µg/m³**			**8 µg/m³**		**50 µg/m³**			**25 µg/m³**		**90 µg/m³**		**2 g/m²/month**	**4 g/m²/month**
R_31	1.8	24.5	0	0.2	8.8	16.8	41.2	0	1.4	20.3	3.6	50.8	0.1	2.1
R_41	1.3	24.9	0	0.1	**8.8**	8.5	43.3	0	1	19.9	2.5	49.7	0.1	2.1

Orange cells depict maximum results
Grey cells show exceedance

Table 10-7 Predicted ground level concentrations for PM2.5, PM10, TSP and dust deposition at commercial assessment locations - Existing operations

Receptor Id	$PM_{2.5}$					PM_{10}					TSP		Dust deposition	
	24-hour			Annual		24-hour			Annual		Annual average		Annual average	
	Incr.	Cumul.	No. of days above criteria	Incr.	Cumul.	Incr.	Cumul.	No. of days above criteria	Incr.	Cumul.	Incr.	Cumul.	Incr.	Cumul.
Criteria	**25 µg/m³**			**8 µg/m³**		**50 µg/m³**			**25 µg/m³**		**90 µg/m³**		**2 g/m²/month**	**4 g/m²/month**
CI_12	2.2	**25.1**	**1**	0.4	**9.0**	17.6	47.5	0	2.8	21.6	7.6	54.9	0.2	2.2
CI_13	2.3	**25.4**	**1**	0.4	**9.1**	15.2	46.8	0	3.0	21.9	8.5	55.7	0.2	2.2
CI_14	2.2	**25.6**	**2**	0.4	**9.0**	14.3	47.5	0	2.5	21.4	7.0	54.2	0.2	2.2

Receptor Id	$PM_{2.5}$					PM_{10}					TSP		Dust deposition	
	24-hour			Annual		24-hour			Annual		Annual average		Annual average	
	Incr.	Cumul.	No. of days above criteria	Incr.	Cumul.	Incr.	Cumul.	No. of days above criteria	Incr.	Cumul.	Incr.	Cumul.	Incr.	Cumul.
CI_15	3.4	**26.5**	**2**	0.5	**9.2**	22.3	49.2	0	3.6	22.5	10.8	58.0	0.2	2.2
CI_16	4.2	**27.0**	**2**	0.6	**9.2**	26.7	**52.1**	**1**	3.9	22.8	12.0	59.3	0.3	2.3
CI_17	4.1	**25.8**	**1**	0.6	**9.2**	26.9	**56.1**	**1**	3.7	22.6	12.8	60.1	0.3	2.3
CI_18	6.8	**27.1**	**2**	1.3	**10.0**	42.9	**62.0**	**15**	8.4	**27.3**	31.4	78.6	0.6	2.6

Orange cells depict maximum results
Grey cells show exceedance

Odour

Refer to Section 10.3.1.

10.4 Impact assessment

A quantitative air quality assessment has been undertaken for three scenarios as discussed in Section 10.2.6. The impact assessment provided below has been informed by the results of the modelling scenarios for Stages 1 and 2.

10.4.1 Stage 1

Construction

Stage 1 would consist solely of a throughput increase of 500,000 tpa. There would be no changes to the built form of the Eastern Creek REP during Stage 1 therefore, no construction would be required.

Operation

$PM_{2.5}$, PM_{10}, TSP and dust deposition

In order to account for a worst case operating scenario, modelling results for Stage 1 operations include the dust emission contribution from Stage 2 construction, which is scheduled to occur at the same time as the proposed throughput increase for Stage 1. Operational impacts to air quality as a result of Stage 1 operations have been considered with regard to $PM_{2.5}$, PM_{10}, TSP and dust deposition. The operational activities anticipated to generate the air pollutants are described in Section 10.2.4 (such as wheel generated dust from trucks, and dust generated during processing). The total calculated annual emissions from Stage 1 operations and Stage 2 construction activities are presented in Table 10-8.

Table 10-8: Calculated annual TSP, PM_{10} and $PM2_{.5}$ emissions – Stage 1 operations and Stage 2 construction

Emission source	Calculated annual emissions (kg/annum)		
	TSP	PM_{10}	$PM_{2.5}$
Stage 1 operations	64,469	19,716	5,717
Stage 2 construction	27,746	7,720	936

The ground level concentrations of $PM_{2.5}$, PM_{10}, TSP and dust deposition were predicted using dispersion modelling for a typical or average day operations scenario and combined with adopted background levels to determine cumulative air quality impacts of the Proposal. As noted in Section 10.2.4, air quality impacts have been modelled for a total of 65 residential receivers and 8 commercial receivers. Results have been provided below for a representative worst affected of each receiver type (residential receivers - in Table 10-9 and commercial receivers in Table 10-10), as well as for any receivers where days are recorded where air quality concentrations exceed the criteria outlined in Section 10.2.3. Detailed results for each receiver can be found in Section 5.2 of Appendix K.

For Stage 1 operations, there are no additional days above the 24-hour average impact assessment criterion for PM_{10} and no exceedances of the annual average impact assessment criterion for PM_{10} at residential assessment locations. There is one additional day above the 24-hour average impact assessment criterion for $PM_{2.5}$ for Stage 1 operations (and Stage 2 construction) at 9 (out of 65) residential assessment locations, however it is noted that the background concentrations at these locations was only marginally below the criteria under existing conditions (recording at least 24.4 $\mu g/m^3$ against the criteria of 25 $\mu g/m^3$).

The maximum number of additional days above the 24-hour average PM_{10} impact assessment criterion at a commercial assessment location is 28 for Stage 1 operations. This commercial assessment location is to the south of the Proposal Site and newly constructed after current operations at Eastern Creek REP were approved. There are three commercial assessment locations above the annual average impact assessment criterion for Stage 1 operations. The maximum number of additional days above the 24-hour average $PM_{2.5}$ impact assessment criterion at a commercial assessment location is three for Stage 1 operations, however the existing background for annual average $PM_{2.5}$ is already above the impact assessment criterion at these receivers. Additionally, it should be noted that adjacent commercial receptors are considered less sensitive to air pollution than residential receptors. The predicted exceedances of the impact assessment criteria for PM_{10} and $PM_{2.5}$ are therefore considered low risk, from both an exposure duration and human health risk point of view.

Modelling results for Stage 1 operations include the dust emission contribution from Stage 2 construction, which is scheduled to occur at the same time as the proposed throughput increase for Stage 1. As such, it is anticipated that air quality impacts arising from Stage 1 operations will be substantially less than what has been modelled.

There are no exceedances of the annual average impact assessment criterion for TSP and dust deposition, at either residential or commercial assessment locations.

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Table 10-9 Predicted ground level concentrations for $PM_{2.5}$, PM_{10}, TSP and dust deposition at residential assessment locations - Stage 1 (plus Stage 2 construction)

Receptor Id	$PM_{2.5}$					PM_{10}					TSP		Dust deposition	
	24-hour			Annual		24-hour			Annual		Annual average		Annual average	
	Incr.	Cumul.	No. of days above criteria	Incr.	Cumul.	Incr.	Cumul.	No. of days above criteria	Incr.	Cumul.	Incr.	Cumul.	Incr.	Cumul.
Criteria	**25 µg/m³**			**8 µg/m³**		**50 µg/m³**			**25 µg/m³**		**90 µg/m³**		**2 g/m²/month**	**4 g/m²/month**
R_31	3.1	24.7	0	0.3	**9.0**	27.6	42.7	0	2.2	21.1	6.0	53.2	0.2	2.2
R_32	2.8	24.8	0	0.3	**8.9**	22.4	44.8	0	2.0	20.9	5.5	52.7	0.2	2.2
R_38	2.5	**25.0**	**1**	0.2	**8.9**	17.2	44.0	0	1.5	20.4	4.0	51.2	0.1	2.1
R_39	2.4	**25.1**	**1**	0.2	**8.9**	16.6	44.4	0	1.6	20.4	4.1	51.3	0.1	2.1
R_40	2.3	**25.1**	**1**	0.2	**8.9**	16.0	44.5	0	1.6	20.4	4.1	51.3	0.1	2.1
R_41	2.2	**25.1**	**1**	0.2	**8.9**	15.3	44.6	0	1.5	20.4	4.0	51.2	0.1	2.1
R_42	2.1	**25.1**	**1**	0.2	**8.9**	14.3	44.6	0	1.5	20.4	3.9	51.1	0.1	2.1
R_43	2.0	**25.1**	**1**	0.2	**8.9**	13.1	44.5	0	1.5	20.4	3.9	51.1	0.1	2.1
R_44	1.8	**25.1**	**1**	0.2	**8.9**	12.2	44.5	0	1.5	20.3	3.8	51.0	0.1	2.1
R_45	1.8	**25.1**	**1**	0.2	**8.9**	11.9	44.3	0	1.4	20.3	3.7	50.9	0.1	2.1
R_46	1.8	**25.1**	**1**	0.2	**8.9**	11.7	44.1	0	1.4	20.3	3.6	50.8	0.1	2.1

Orange cells depict maximum results
Grey cells show exceedance

Table 10-10 Predicted ground level concentrations for $PM_{2.5}$, PM_{10}, TSP and dust deposition at commercial assessment locations - Stage 1 (plus Stage 2 construction)

Receptor Id	$PM_{2.5}$					PM_{10}					TSP		Dust deposition	
	24-hour			Annual		24-hour			Annual		Annual average		Annual average	
	Incr.	Cumul.	No. of days above criteria	Incr.	Cumul.	Incr.	Cumul.	No. of days above criteria	Incr.	Cumul.	Incr.	Cumul.	Incr.	Cumul.
Criteria	**25 µg/m³**			**8 µg/m³**		**50 µg/m³**			**25 µg/m³**		**90 µg/m³**		**2 g/m²/month**	**4 g/m²/month**
CI_12	4.2	**25.5**	**2**	0.6	**9.3**	34.7	**52.7**	**4**	4.6	23.5	13.4	60.7	0.3	2.3
CI_13	4.1	**26.1**	**2**	0.7	**9.4**	30.6	**51.6**	**3**	5.4	24.3	16.4	63.6	0.4	2.4
CI_14	3.7	**26.5**	**2**	0.6	**9.3**	27.9	**51.9**	**3**	4.4	23.3	13.2	60.4	0.3	2.3
CI_15	5.8	**27.8**	**2**	1.0	**9.6**	41.8	**64.1**	**6**	6.8	**25.7**	20.9	68.1	0.5	2.5
CI_16	6.4	**28.2**	**2**	1.0	**9.6**	43.9	**66.2**	**5**	6.7	**25.6**	21.3	68.5	0.5	2.5
CI_17	6.1	**26.5**	**2**	0.8	**9.5**	38.0	**66.8**	**3**	5.2	24.0	18.2	65.4	0.4	2.4
CI_18	9.8	**28.7**	**3**	1.8	**10.5**	61.3	**78.5**	**28**	11.1	**29.9**	42.3	89.5	0.8	2.8

Orange cells depict maximum results
Grey cells show exceedance

Odour

There would be a small increase in residual waste to landfill associated with Stage 1 operations. All residual waste would be captured within the Eastern Creek REPs current approval limits, the Proposal would not require an increase to the landfill limits to accommodate this residual waste.

Odour dispersion modelling has been considered for the entire proposed throughput increase. Odour contours for the predicted ground level concentrations (odour units) for the 99th percentile 1-second (nose response) odour are presented in Figure 10-6. The results indicate that the applicable odour goal would be met at all surrounding residential and commercial locations and are further outlined in Section 10.4.2.

10.4.2 Stage 2

Construction

Stage 2 construction impacts are assessed with Stage 1 operations, as the emissions would occur concurrently with this stage of operations. The combined cumulative modelling results for Stage 2 construction are presented in Section 10.4.1.

Air quality impacts arising from Stage 2 construction would be largely attributable to the bulk earthworks required for the construction of the connections to both the Honeycomb Drive extension and Kangaroo Avenue and the establishment of levelled pad site in preparation for the workshops to be constructed in Stage 3. Earthworks for Stage 2 would include the partial removal of existing amenity berms located in the northeast and southwest areas of the Proposal Site.

It is noted that the duration of the Stage 2 construction is approximately 18 months, therefore the modelling predictions for Stage 1 operations plus Stage 2 construction would only occur in the short-term. Furthermore, it is anticipated that the majority of earthworks to be undertaken during Stage 2 construction would be completed within 12 months. Due to the transient nature of the Stage 2 construction works, with the implementation of mitigation measures to manage dust emissions, impacts to nearby residential and commercial receivers is expected to be minimal.

Operation

Stage 2 operation would comprise a throughput increase of 450,000 tpa. Stage 2 operational activities anticipated to generate air pollutants are consistent with those listed in the Section 10.2.7.

The total calculated emissions from Stage 2 operational activities are presented in Table 10-11.

Table 10-11: Calculated annual TSP, PM_{10} and $PM_{2.5}$ emissions – Stage 2 operations

Emission source	Calculated annual emissions (kg/annum)		
	TSP	PM_{10}	$PM_{2.5}$
Stage 2 operation	65,293	20,437	5,675

As for the Stage 1 assessment the ground level concentrations of $PM_{2.5}$, PM_{10}, TSP and dust deposition were predicted using dispersion modelling for a typical or average day operations scenario and combined with adopted background levels to determine cumulative air quality impacts of the Proposal. Table 10-12 shows the worst affected residential receivers, and any that experience exceedance of criteria. Table 10-13 shows the representative worst affected commercial receivers, and any that experience exceedance of criteria. Detailed results for each receiver can be found in Section 6.2 of Appendix K.

For Stage 2 operations, there are no additional days above the 24-hour average impact assessment criterion for PM_{10} and no exceedances of the annual average impact assessment criterion for PM_{10} at residential assessment locations.

There is one additional day above the 24-hour average impact assessment criterion for $PM_{2.5}$ for Stage 2 operations at 9 (out of 65) residential assessment locations, however it is noted that the background concentrations at these locations was already above the impact assessment criteria under existing conditions (recording at least 25.1 $\mu g/m^3$ against the criteria of 25 $\mu g/m^3$).

The maximum number of additional days above the 24-hour average PM_{10} impact assessment criterion at a commercial assessment location is five for Stage 2 operations (reduced form 15 under existing conditions and 28 under Stage 1) and there is one commercial assessment location above the annual average impact assessment criterion for Stage 2 operations. This commercial assessment location (CI_18) is to the south of the Proposal Site and newly constructed after current operations at Eastern Creek REP were approved. Furthermore, as stated previously, adjacent commercial receptors are considered less sensitive to air pollution than residential receptors. The predicted exceedances of the impact assessment criteria for PM_{10} and $PM_{2.5}$ are therefore considered low risk, from both an exposure duration and human health risk point of view.

The maximum number of additional days above the 24-hour average $PM_{2.5}$ impact assessment criterion at a commercial assessment location is two for Stage 2 operations however it is noted that the existing background for annual average $PM_{2.5}$ is already above the impact assessment criterion.

Although Stage 2 operations involve an increase in throughput from Stage 1, modelling results at adjacent commercial assessment locations indicate a reduction in dust emissions. The peak 24-hour average modelling results (Section 10.4.3) at some of the adjacent commercial assessment locations are also reduced compared to approved operations, even though the throughput increases. This is due to the reconfiguration/optimisation of the Eastern Creek REP, which acts to re-distribute dust emissions, particularly from truck, by re-directing truck exit points to the Honeycomb Drive extension and Kangaroo Avenue in the northeast of the Proposal Site.

There are no exceedances of the annual average impact assessment criterion for TSP and dust deposition, at either residential or commercial assessment locations.

Table 10-12: Predicted ground level concentrations for $PM_{2.5}$, PM_{10}, TSP and dust deposition at residential assessment locations - Stage 2 operation

Receptor Id	$PM_{2.5}$					PM_{10}					TSP		Dust deposition	
	24-hour			Annual		24-hour			Annual		Annual average		Annual average	
	Incr.	Cumul.	No. of days above criteria	Incr.	Cumul.	Incr.	Cumul.	No. of days above criteria	Incr.	Cumul.	Incr.	Cumul.	Incr.	Cumul.
Criteria	**25 µg/m³**			**8 µg/m³**		**50 µg/m³**			**25 µg/m³**		**90 µg/m³**		**2 g/m²/month**	**4 g/m²/month**
R_31	2.9	24.7	0	0.3	**8.9**	27.2	44.2	0	2.0	20.9	5.5	52.7	0.2	2.2
R_32	2.2	24.8	0	0.3	**8.9**	17.4	45.5	0	1.7	20.6	4.6	51.8	0.1	2.1
R_38	1.3	**25.1**	**1**	0.2	**8.8**	8.7	41.6	0	1.2	20.0	3.1	50.3	0.1	2.1
R_39	1.3	**25.1**	**1**	0.2	**8.8**	8.9	41.7	0	1.2	20.1	3.1	50.3	0.1	2.1
R_40	1.4	**25.1**	**1**	0.2	**8.8**	9.0	41.7	0	1.2	20.1	3.1	50.3	0.1	2.1
R_41	1.4	**25.1**	**1**	0.2	**8.8**	9.0	41.7	0	1.2	20.1	3.1	50.3	0.1	2.1
R_42	1.3	**25.1**	**1**	0.2	**8.8**	8.9	41.6	0	1.2	20.0	3.0	50.2	0.1	2.1
R_43	1.3	**25.1**	**1**	0.2	**8.8**	8.8	41.5	0	1.1	20.0	2.9	50.2	0.1	2.1
R_44	1.3	**25.1**	**1**	0.2	**8.8**	8.7	41.4	0	1.1	20.0	2.9	50.1	0.1	2.1
R_45	1.3	**25.1**	**1**	0.2	**8.8**	8.5	41.3	0	1.1	20.0	2.8	50.0	0.1	2.1
R_46	1.2	**25.1**	**1**	0.2	**8.8**	8.4	41.2	0	1.1	19.9	2.7	49.9	0.1	2.1

Orange cells depict maximum results
Grey cells show exceedance

Table 10-13: Predicted ground level concentrations for $PM_{2.5}$, PM_{10}, TSP and dust deposition at commercial assessment locations – Stage 2 operation

Receptor Id	$PM_{2.5}$					PM_{10}					TSP		Dust deposition	
	24-hour			Annual		24-hour			Annual		Annual average		Annual average	
	Incr.	Cumul.	No. of Additional exceedance days	Incr.	Cumul.	Incr.	Cumul.	No. of Additional exceedance days	Incr.	Cumul.	Incr.	Cumul.	Incr.	Cumul.
Criteria	**25 µg/m³**			**8 µg/m³**		**50 µg/m³**			**25 µg/m³**		**90 µg/m³**		**2 g/m²/month**	**4 g/m²/month**
CI_12	3.1	**25.8**	**2**	0.6	**9.2**	24.1	52.3	3	3.9	22.7	11.8	59.0	0.3	2.3
CI_13	2.8	**26.1**	**2**	0.7	**9.3**	19.5	48.7	0	3.8	22.7	12.4	59.6	0.3	2.3
CI_14	2.6	**25.8**	**2**	0.5	**9.1**	16.8	43.8	0	2.7	21.6	8.9	56.1	0.2	2.2
CI_15	3.2	**26.1**	**2**	0.6	**9.2**	19.2	44.7	0	3.2	22.1	10.2	57.5	0.3	2.3
CI_16	3.2	**26.2**	**2**	0.6	**9.2**	18.7	46.1	0	3.3	22.2	10.4	57.6	0.2	2.2
CI_17	3.8	**25.6**	**1**	0.5	**9.2**	26.1	**55.4**	**1**	3.2	22.1	11.1	58.3	0.3	2.3
CI_18	5.7	**26.9**	**2**	1.1	**9.8**	36.6	**61.6**	**5**	7.0	**25.9**	25.8	73.1	0.5	2.5

Orange cells depict maximum results
Grey cells show exceedance

Odour

As per the Stage 1 operational assessment there would be a small increase in residual waste to landfill associated with Stage 2 operations. The cumulative modelling assessment of odour emissions for the Proposal in combination with sources from the approved Modification 10 and proposed Modification 9 is based on a number of highly conservative assumptions and a set of odour sampling results that are expected to be an overestimate of future odour emission generation from the Eastern Creek REP. Consistent with historical AQIA completed for the Eastern Creek REP (eg Modification 6, Ramboll 2018), the applicable odour goals are 2 ou at residential locations and 7 ou at neighbouring commercial/industrial receptors. Odour contours for the predicted ground level concentrations (odour units) for the 99th percentile 1-second (nose response) odour are presented in Figure 10-6. The results of the odour dispersion modelling scenario indicate that the applicable odour goal would be met at all surrounding residential and commercial locations. Additionally, the expected future improvements in LFG generation and extraction associated with the approved Modification 10 mean that the results are considered to be an upper estimate of likely future odour from the Eastern Creek REP.

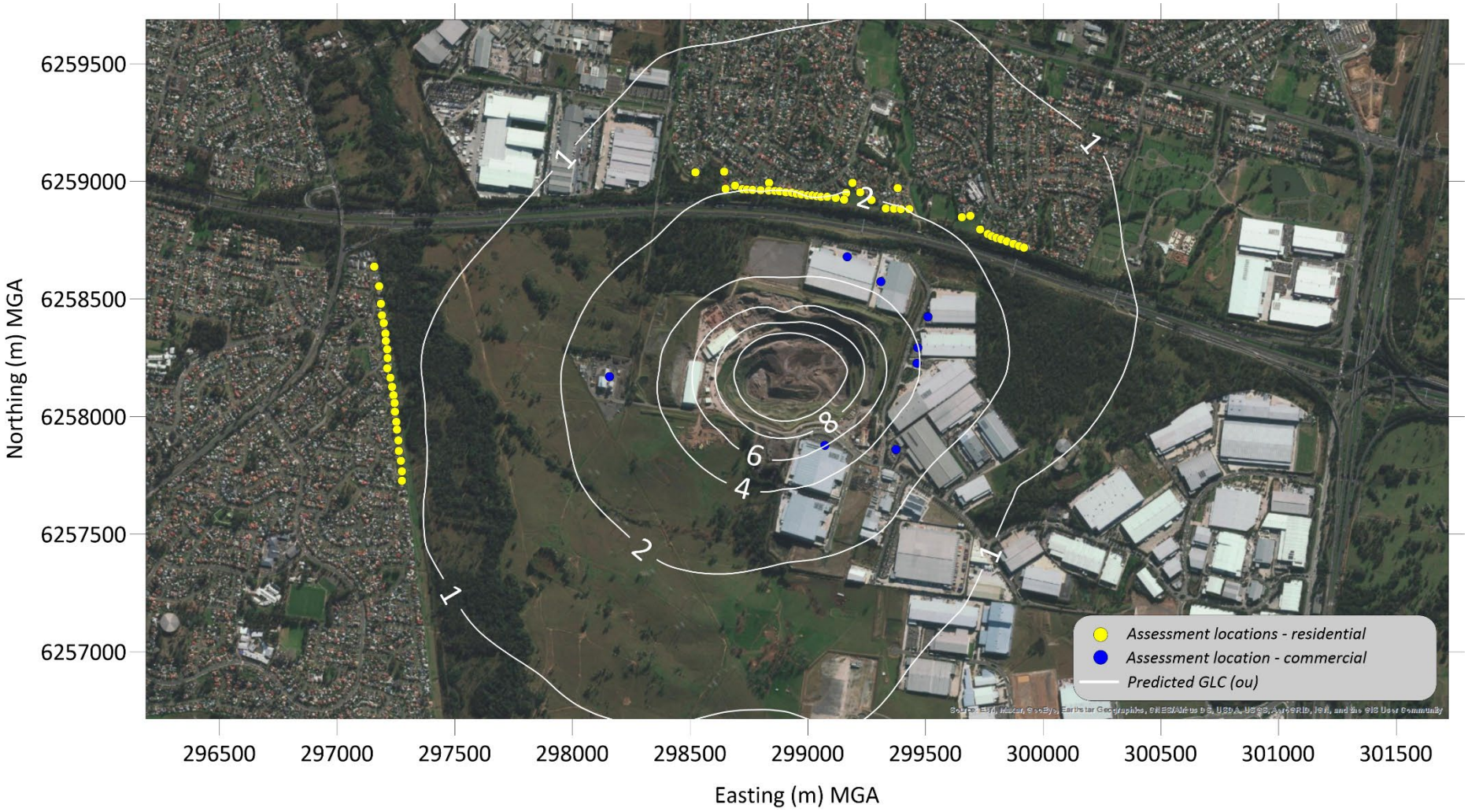

Figure 10-6 Predicted ground level concentrations (ou) for 99th percentile 1-second (nose response) odour – future operations

10.4.3 Stage 3

Construction

Stage 3 construction involves activities with a low potential for dust emissions, including the construction of the Site Workshop and Maintenance and Manufacturing Workshop, installing signage and fencing and landscaping. As result of the short construction timeframe and limited nature of potential impacts, no specific modelling was undertaken for Stage 3 construction.

Operation

Stage 3 operation would comprise the operation of the Site Workshop and Maintenance and Manufacturing Workshop. As dust emissions from the Eastern Creek REP are largely attributable to vehicular movement, it is unlikely that Stage 3 operation would result in any significant air quality impacts. As the entirety of the 950,000 tpa throughput increase is to be implemented during Stage 2 operation, modelling predictions for Stage 2 operations are considered representative of the longer-term operational conditions and are therefore relevant for Stage 3 operations. Stage 3 operations would not result in any increase in residual waste to landfill and would therefore be no change to the odour impact assessment presented for Stage 1 and Stage 2.

Theoretical peak day analysis

The dispersion modelling results presented in the preceding sections are considered to be a conservative representation of approved and expected operations at the Proposal Site. However, emissions are based on annual throughputs distributed over the entire 12-month modelling period, with no accounting for day to day variability in truck movements and material handling rates.

In order to derive results for a theoretical peak day operational scenario, a multiplicative factor of 1.3 corresponding to 95th percentile traffic rates (based on existing site observations) has been applied to the daily varying PM_{10} concentrations predicted by the dispersion modelling completed for Approved, Stage 1 (plus Stage 2 Construction) and Stage 2 operations.

Based on the results presented in the preceding sections, 24-hour average PM_{10} concentrations is the key pollutant and averaging period for compliance. For the analysis of theoretical peak day impacts, focus is therefore given to cumulative 24-hour average PM_{10} concentrations.

Predicted 24-hour average PM_{10} concentrations have been extracted at the residential and commercial assessment locations with the highest predicted incremental concentrations from the Proposal, specifically R31 and C18. Focus on these two assessment locations therefore provides a conservative representation of the frequency of additional cumulative exceedance days at any assessment location presented in this report.

All background concentrations recorded between 2016 and 2021 from the Bingo Minchinbury air quality monitor were collated into a single dataset (1,791 data points). From this analysis, the PM_{10} monitoring data indicates that the local area typically experiences seven exceedances of the NSW EPA 24-hour PM_{10} criteria of 50 µg/m³ per year. Further details on background PM_{10} concentrations are presented in Section 10.3.1.

These background exceedance days are in general associated with regional scale events (dust storms, hazard reduction burns or bushfires). The collated background datasets have been used to undertake a cumulative concentration frequency analysis.

To understand the implications of the theoretical peak day operations for Approved, Stage 1 (plus Stage 2 Construction) and Stage 2 operations, a cumulative frequency analysis has been undertaken at the two selected assessment locations.

This analysis was completed by pairing all predicted 24-hour PM_{10} concentrations at either assessment location (366 predictions for 2016 modelling year) with all recorded background concentrations (as stated 1,791 total data points for PM_{10}). Therefore, at each assessment location, there are 655,506 combinations of background and model predicted impacts for 24-hour PM_{10}.

This process was repeated for the concentrations derived for each of the three modelling scenarios (i.e. Approved, Stage 1 (plus Stage 2 Construction) and Stage 2 operations).

The coincident occurrence of a peak day operations rate with a potential criteria exceedance has been derived by the following:

> *Likelihood of occurrence = (indicative days per year of peak day rate/365) x (number of additional days above cumulative criteria/365)*

For each assessment location and scenario, the likelihood of additional PM_{10} exceedance day relative to existing background was calculated. The results of the calculations are presented in Figure 10-7.

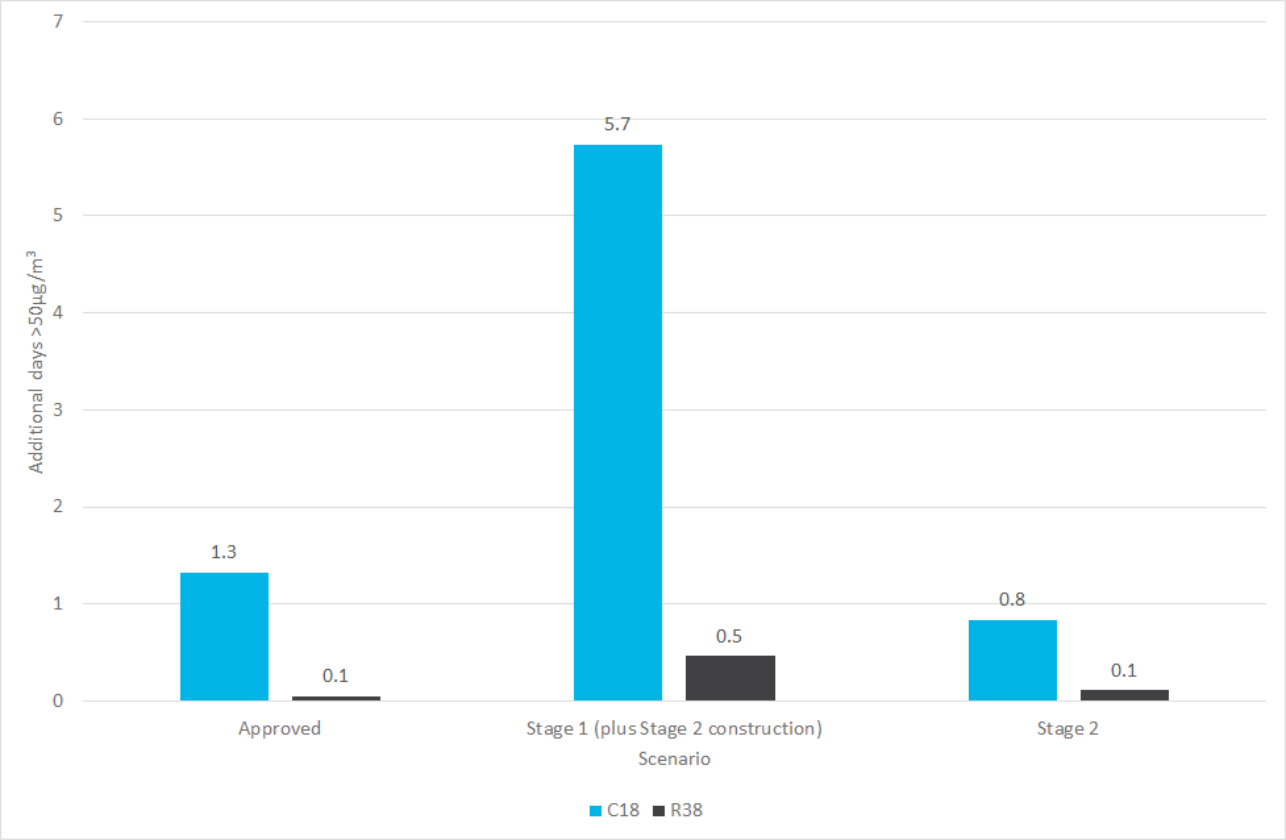

Figure 10-7 Change in days greater than 50µg/m³ relative to background – C18 and R38 – adjusted for frequency of occurrence (95th percentile activity rates)

These figures show that when the potential for additional cumulative concentrations above the NSW EPA impact assessment criteria is combined with the likely frequency of occurrence for peak day operations in a 12-month period (indicative 18 days per year based off 95th percentile for weighbridge data), the likelihood of cumulative criteria exceedance is very low across the three presented scenarios.

While an increase is predicted for Stage 1 (plus Stage 2 Construction), the improvements at the Proposal Site for Stage 2 operations leads to a reduction in the likelihood of additional exceedance days when compared with Approved operations, indicating that the Proposal will have a positive influence on air quality impacts from the Proposal Site at surrounding receptors. This is especially the case for the worst affected commercial receptors surrounding the Proposal Site. The proposed connections to the Honeycomb Drive extension and Kangaroo Avenue would play a pivotal role in ultimately improving the air quality outcomes for the worst affected receivers. This is due to the reconfiguration / optimisation of the Eastern Creek REP, which acts to re-distribute dust emissions, particularly from trucks, by re-directing truck exit points to the Honeycomb Drive extension and Kangaroo Avenue in the northeast of the Proposal Site.

As stated, assessment locations R38 and C18 represent the worst case locations for residential and commercial assessment locations respectively, while 24-hour average PM_{10} is the key pollutant and

averaging period for compliance. Therefore, the likelihood of additional exceedance at other assessment locations or for other pollutants (e.g. 24-hour average $PM_{2.5}$) would be lower relative to the results presented in Figure 10-7.

10.4.4 Analysis of potential impacts

As identified in the preceding sections, the Proposal has the potential to result in a temporary increase in the number of days where established assessment criteria are exceeded at commercial receiver locations. Whilst commercial receptors are generally considered to be less sensitive to air pollution than residential receptors, to provide a robust analysis of the outcomes of the AQIA and further investigate the potential impacts of the Proposal (in particular the temporary exceedances during Stage 1 operations and Stage 2 construction), a HHRA was prepared by Environmental Risk Sciences (Appendix L).

The assessment of human health risks is not a requirement of the SEARs and has specifically been prepared to supplement the AQIA. As such, the assessment is limited to an assessment of potential human health risks from the pollutants identified in the AQIA only.

The assessment of cumulative exposures to $PM_{2.5}$ and PM_{10} was based on a comparison of the predicted cumulative concentrations to the current air quality standards and goals presented in the National Environment Protection (Ambient Air Quality) Measure (NEPC 2021).

As identified, the Proposal has the potential to result in a temporary increase in the number of days where established assessment criteria are exceeded at commercial receiver locations. Whilst there are two exceedances of 24 hour average guidelines at residential locations, these only occur where background is already elevated and incremental impact is negligible (~4% of guideline). The HHRA concluded that there are no impacts of concern in the residential areas that require further assessment in relation to risks to human health.

As noted, commercial receptors are generally considered to be less sensitive to air pollution than residential receptors. The reasons for this are two-fold; firstly, for the key pollutants (PM10 and PM2.5), the assessment criteria are expressed as 24-hour and annual averages and exposure does not occur at commercial receptors over these averaging periods. Secondly, exposure to air pollution for sensitive population groups (children, elderly) is less likely to occur at commercial receptors. In consideration of this, the HHRA found that there are no health risk issues of concern in relation to exposures to dust impacts at commercial receivers as:

- Where community health impacts are considered, there are no significance changes to regional air quality, relevant to overall community health and hence the variability in exposure that occurs throughout a region (where there are a range of sources) would not be expected to result in adverse community health outcomes, including for workers located adjacent to the Proposal
- Where community health guidelines established for PM_{10} derived from crustal dust sources for interim exposure periods (less than 5 years), the predicted impacts throughout the off-site areas would comply with these guidelines.
- Calculated incremental individual risks at the maximum impacted industrial premises related to changes in $PM_{2.5}$ and PM_{10}, using conservative assumptions, has not identified health impacts that would be considered to be significant.
- Where workplace exposure guidelines are considered for exposures to nuisance dust in premises located adjacent to the Proposal, all concentrations remain well below the relevant guidelines.

10.5 Mitigation measures

A best management practice determination has been carried out for the Proposal as is presented in Section 9.2.1 of Appendix K. The determination found that, wherever applicable, the dust-control methods in place at Eastern Creek REP are consistent with documented best practice dust control measures for the resource recovery and waste industry.

The proposed site optimisation would include would improve dust management within the Eastern Creek REP. The Proposal would include upgrades such as resurfacing of the internal road network to facilitate better dust management. Furthermore, the proposed connections to the Honeycomb Drive extension and Kangaroo Avenue would play a pivotal role in ultimately improving the air quality outcomes for the worst affected receivers. This is due to the reconfiguration/optimisation of the Eastern Creek REP, which acts to re-distribute dust emissions, particularly from trucks, by re-directing truck exit points to the Honeycomb Drive extension and Kangaroo Avenue in the northeast of the Proposal Site.

Table 10-14 outlines the mitigation measures that will be implemented by Bingo to further minimise any air quality impacts. Air quality impacts will be managed through the implementation of a site-specific CEMP and the existing EMS and AQOGGMP which will be reviewed and updated as required.

Table 10-14: Mitigation measures (Air Quality)

ID	Mitigation measure	Timing
AQ1	A CEMP will be prepared prior to construction and implemented to manage air quality impacts during construction, including measures to managed dust generation, stabilisation of exposed areas, handling of materials and the management of exceptional incidents of dust and/or air emissions.	Construction
AQ2	Appropriate communication will be maintained with potentially impacted residences in accordance with the existing EMS. This will include: • Maintaining a complaints register in accordance with the EMS. • If a dust complaint is received, the details of the response actions to the complaint will be detailed in the register.	Construction and operation
AQ3	The existing AQOGGMP which includes mitigation measures, will be reviewed and updated upon receiving approval, including changes to the air quality monitoring program as required.	Operation
AQ4	The existing boundary dust deposition monitoring sites will be reviewed and relocated as required to account for the revised site layout.	Operation

11 SOILS AND CONTAMINATION

11.1 Introduction

This section provides an assessment of the potential impacts of construction and operation of the Proposal on soils, assesses the suitability of the Proposal Site for the Proposal having regard to any potential contamination, and identifies mitigation measures to minimise these impacts. Table 11-1 provides a summary of the relevant SEARs which relate to soils and contamination, and where these have been addressed in this EIS.

Table 11-1: Soil and contamination SEARs

SEARs	Where addressed
An assessment of potential surface and groundwater impacts associated with the development (both quantity and quality), including impacts associated with the new access points. This is to include potential impacts on watercourses, riparian areas, groundwater, and groundwater-dependent communities nearby	Chapter 12 (Groundwater impacts) Chapter 14 (Groundwater-dependent communities) Section 11.4 (impacts on watercourses)
Description of the proposed erosion and sediment controls during construction	Section 11.4 (erosion and sediment controls) Chapter 12 (erosion and sediment controls)
Characterisation of water quality at the point of discharge to surface and/or groundwater against the relevant water quality criteria. This is to include details of the contaminants of concern that may leach from waste into the wastewater and proposed mitigation measures to manage any impacts to receiving waters and monitoring activities and methodologies	Section 11.4 (contaminants of concern) Chapter 12 (water quality)
Details of proposed surface and groundwater monitoring	Chapter 12 (surface and groundwater monitoring)
Characterisation of the nature and extent of any contamination on the site and surrounding area.	Section 11.3 (existing contamination)

11.2 Method of assessment

The following steps have been followed to identify potential soil and contamination impacts associated with the Proposal:

- Desktop review of publicly available information to determine the existing environmental conditions of the Proposal Site as they relate to soils and contamination
- Review of previous investigations carried out at the Proposal Site to identify any known contamination onsite
- Review of assessment guidelines to identify site investigations levels for known or potential contaminants
- Preparation of a preliminary Conceptual Site Model (CSM) to identify potential sources of contamination, pathways and receptors at the Proposal Site and the connections between these
- Identification of potential soil and contamination impacts and any mitigation measures required to minimise impacts.

11.2.1 Assessment scenarios and approach

Chapter 7 outlines the different assessment approaches adopted within this EIS to assess the potential impacts from the Proposal. Soil and contamination impacts have been assessed on a staged basis as shown in Figure 11-1.

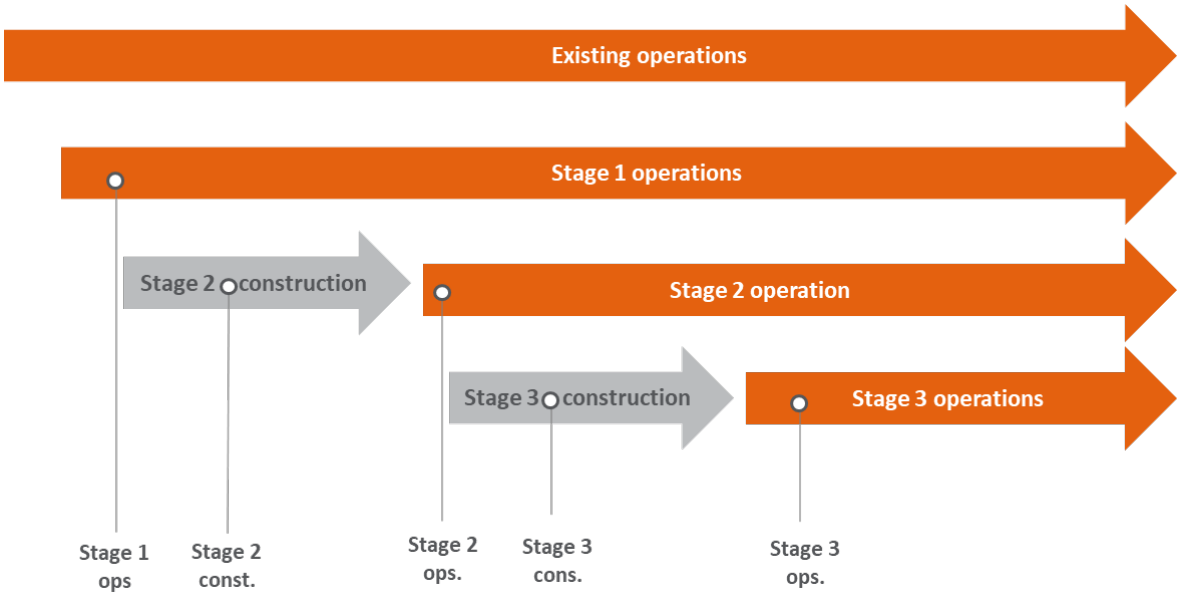

Figure 11-1 Soils and contamination assessment scenarios

11.2.2 Review of background information

Soils

A desktop review of publicly available information was undertaken to determine the existing environmental conditions of the Proposal Site as they relate to soils. Information was collated from the following sources:

- The *Penrith 1:100,000 Geological Series Sheet 9030* (Clarke & Jones, 1991) was reviewed to determine the geological setting of the Proposal Site
- The *Soil Landscapes of Sydney 1:100,000 Sheet* (Chapman and Murphy, 1989) was reviewed to determine the soil landscape surrounding the Proposal Site
- A review of potential acid sulfate soils (ASS) was conducted by referring to the NSW DPE Acid Sulphate Soil Risk Maps (DPE, 2021c).

This information was then used to undertake an assessment of the potential impacts from construction and operation of the Proposal to soils, limited to issues relating to erosion and sedimentation. Potential contamination of soils has been considered as part of the contamination assessment.

Contamination

A desktop contamination assessment was conducted to understand the potential for contamination associated with the Proposal. The assessment consisted of desktop database searches and review of historical assessments completed within the Proposal Site.

The review was undertaken to investigate the potential for contamination within the Proposal Site and informed the preparation of the following:

- A description of the existing soil and groundwater characteristics relating to potential contamination present onsite

- An assessment of erosion potential at the Proposal Site and subsequent potential for the mobilisation of contamination and a description of the proposed erosion and sediment controls to be implemented during construction
- An assessment of potential site contamination, salinity, and acid sulphate soils, including confirmation that, the Proposal Site would be suitable for the proposal development.

The databases and information sources consulted included:

- The NSW EPA's Contaminated Land record (NSW EPA, 2021b)
- The NSW EPAs list of notified sites (NSW EPA, 2021c).

The searches were conducted on 14 October 2021 and provide information by suburb. Additionally, a Lotsearch EnviroPro Report was conducted on 7 December 2021 for the Proposal (provided in Appendix M). In addition, EPL compliance environmental monitoring reports were reviewed to assess the ongoing management of contaminants in compliance with the NSW EPA regulations.

Historical assessments and documentation were also reviewed, including:

- Arcadis, 2018. *Baseline Contamination Assessment – Honeycomb Drive, Eastern Creek, NSW 2766: Waste Recovery/Landfill Facility and Business Expansion Area*. 10023988. (Arcadis, 2018)
- Consulting Earth Sciences (CES), 2019. *Landfill Gas Monitoring Report – Genesis Landfill and Recycling Facility, Honeycomb Drive, Eastern Creek*. CES160610-ECS-10. (CES, 2019)
- Genesis, 2020. Quarterly Groundwater and Leachate Monitoring Tables - *Genesis Landfill and Recycling Facility, Honeycomb Drive, Eastern Creek*. (Genesis, 2020)
- CES, 2021a. *Quarterly Groundwater Monitoring Report – September 2021, Eastern Creek Recycling Ecology Park (& Landfill), Honeycomb Drive, Eastern Creek NSW*. CES160610-ECS-BP. (CES, 2021a).
- CES, 2021b. *Addendum letter to Assess the Suitability of the existing Preliminary Site Investigation for Lot 2 DP 1145808*, prepared for IRM Property Group. (CES, 2021b)

As listed above, a baseline environmental investigation was undertaken for the Eastern Creek REP in 2018 to determine the nature and presence of contamination in key areas of environmental concern. The investigation included a review of site setting, soil assessment and limited groundwater investigation. Figure 11-2 shows the sampling locations considered as part of the baseline investigation for soil water sampling. As shown in Figure 11-2, limited groundwater wells were sampled, however groundwater results have been considered as indicative for the broader Eastern Creek REP.

Consideration has also been given to the potential for subsurface gas (natural or landfill gas) to be present across the Eastern Creek REP. Figure 11-3 shows the location of gas monitoring locations, including subsurface monitoring wells. Landfill gas (excluding subsurface gas) has been assessed more broadly in Chapter 10.

Figure 11-2 Sample Locations for the 2018 Baseline Investigation (Arcadis, 2018)

Figure 11-3 Gas Monitoring Locations (CES, 2019).

11.2.3 Assessment Guidelines and Site Investigation Levels

National Environment Protection (Assessment of Site Contamination) Measure (NEPM)

The National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM), as updated 11 April 2013 is made under the Commonwealth *National Environment Protection Council Act 1994* and is given effect in NSW under Section 105 of the CLM Act. The purpose of the ASC NEPM is to establish a nationally consistent approach to the assessment of site contamination and to provide adequate protection of human health and the environment. Based on the characteristics of the Proposal and Proposal Site, a commercial / industrial land use scenario was adopted.

The ASC NEPM establishes health and environmental investigation and screening levels for contaminants in different media, including those contaminants identified as contaminants of potential concern (CoPC) at the Proposal Site. These guideline values (as described in Table 11-2). and investigation levels have been considered in the context of any known (or potential) contamination at the Proposal Site

Table 11-2: ASC NEPM guidelines

Guideline	Description
Health Investigation Levels (HILs)	Developed for a broad range of metals and organic substances, including pesticides. The HILs are to be used in the first stage (Tier 1) of assessing human health risk via all relevant pathways of exposure, such as direct ingestion and dermal contact. As the Proposal would use the land for industrial purposes, the HIL guideline values that are generally applicable are the HIL D – Commercial / Industrial.
Heath Screening Levels (HSLs)	Developed for petroleum hydrocarbons dependent on soil physicochemical properties, as these affect vapour movement. HSLs have been developed for different soil types, land uses and depths below ground level. Under the current Proposal, the HSL guideline values that are applicable are HSL D – Commercial / Industrial, Clay.
Health Screening Levels for Asbestos in Soil	Adopted within the ASC NEPM for bonded asbestos containing material (ACM), friable asbestos and all forms of asbestos. The HSLs for asbestos are prescribed for industrial and commercial sites, based on a percentage weight of asbestos material in the soil.
Ecological Investigation Levels (EILs)	Calculated for certain contaminants based on specific soil physicochemical properties (such as % clay, cation exchange capacity, and pH) and land use scenarios and generally apply to the top two metres of soil.
Ecological Screening Levels (ESLs)	Broadly apply to petroleum hydrocarbons in coarse and fine soils for various land uses.
Petroleum Hydrocarbons Management Limits	Applicable to petroleum hydrocarbon compounds only. These management limits applicable as screening levels following evaluation of human health and ecological risks and risks to groundwater resources. They are relevant for assessing risks to subsurface infrastructure and the risk of fire or explosion. The Management Limits adopted for the Proposal are based on the commercial /industrial use of the Proposal Site and the fine nature of the soils at the Eastern Creek REP.

11.2.4 Preparation of preliminary Conceptual Site Model

A CSM assesses potential sources of contamination, pathways and receptors at a site and the connections between these, as follows:

- **Sources:** A contamination source is an identified (or potential) source of contamination within the Proposal Site. Sources of contamination associated with the Proposal have been identified based on the historic and current land use and activities, as well as based on a review of background information and previous investigation (refer Section 11.2.2)
- **Pathways:** Are the identified (or potential) pathways for contamination to move from the identified sources to the identified receptors.
- **Receptors:** Are the identified (potential) sensitive receptors of contamination.

For a potential risk to exist to human health and/or ecological receptors there must be a clear or suspected source-pathway-receptor (SPR) linkage between the known or potential source(s) and receptor(s) in relation to the Proposal Site. Based on this linkage a level of exposure risk (low, moderate or high) can be identified for each SPR linkage.

A CSM has been prepared for each stage (construction and operation) of the Proposal, based on the following identified potential sources, pathways and receptors.

Table 11-3 Identified CSM components for the Proposal

CSM aspect	Identified elements for the Proposal
Source	The identified (or potential) sources of contamination at the Proposal Site are considered to be: • **S1** – C&D Landfill Waste: – Composition of waste likely to contain heavy metals, PAHs, hydrocarbons, and ACM – Leachate generation from the degrading of landfill mass material – Hazardous ground gases arising from decomposition of landfill material (LFG including CH_4 and CO_2). • **S2** – Imported fill soils for landfill covering • **S3** – Existing contaminated subsurface soils – Hydrocarbons, heavy metals, and PAHs in the vicinity of the current on-site workshops. • **S4** – Fuels and dangerous goods stored onsite
Pathways	The identified (or potential) pathways for contamination to move from the identified sources to the identified receptors at the Proposal Site are considered to be: • **P1** – Ingestion and dermal contact • **P2** – Inhalation of hazardous ground gases • **P3** – Leaching or vertical migration into soils or groundwater • **P4** – Lateral migration of groundwater • **P5** – Lateral migration of hazardous ground gases • **P6** – Inhalation of ACM/fibres.
Receptors	The identified (or potential) receptors of contamination at the Proposal Site are considered to be: • **R1** – Site users (workers and visitors) • **R2** – Construction workers (for the construction of the proposed development) • **R3** – Maintenance workers

CSM aspect	Identified elements for the Proposal
	• **R4** – Adjacent site users • **R5** – Soils or groundwater • **R6** – Terrestrial ecology (flora/fauna) • **R7** – Aquatic ecology.

11.3 Existing Environment

11.3.1 Soils

The existing environment of the Eastern Creek REP with regards to soils is summarised in Table 11-4. Additional information regarding soils is also presented (CES, 2021b) in Section 12.3.1of this EIS.

Table 11-4 Soils at the Eastern Creek REP

Aspect	Description
Soil types and erodibility	The *Soil Landscapes of Sydney 1:100,000 Sheet* (Department of Conservation and Land Management, 1999) shows the Proposal Site is located within *'Disturbed Terrain'*. The Proposal Site has predominantly been raised above the natural ground level using fill and re-worked natural material excavated from the quarry, with the amenity berms adjacent to the landfill that were created from quarry overburden. Previous site investigations, as detailed in Section 11.2.2, observed fill material across the Proposal Site ranging in depth from approximately 0.3 m below ground level (mbgl) to 3.0 mbgl. The surrounding environment, outside the Proposal Site, is mapped as being located within the Blacktown soil landscape. The Blacktown soil landscape is characterised by shallow to moderately deep hard setting mottled texture contrast soils (clays and loams) occurring on gently undulating rises. Limitations of this soil landscape include localised seasonal waterlogging, localised water erosion hazard and localised surface movement potential. Based on previous site investigations, as detailed in Section 11.2.2, the soils within the Proposal Site consist of hummocky terrain which has been extensively disturbed by human activity, with most of the original soil either removed, buried, or greatly disturbed. The erodibility of these soil materials is considered to be high, with a potentially very high to extreme erosion hazard.
Soil salinity	Soil salinity refers to the movement and concentration of salt in soils as a result of weathering rock materials, historic inland seas and deposition of salt from the ocean onto land by wind or rain. Soil salinity mapping by the NSW DPE identifies the Proposal Site as being located in an area of moderate salinity potential. Areas of moderate salinity potential are defined in the Guidelines to Accompany Map of Salinity Potential in Western Sydney as areas where Wianamatta Group shales (Ashfield or Bringelly shales) and tertiary alluvial terraces are found which are present at the Proposal Site. The guidelines note that scattered areas of scalding and salinity indicator plants have been noted but no concentrations have been mapped. Saline areas that have not yet been identified may occur in this zone.
Geology	The *Penrith 1:100,000 Geological Series Sheet 9030* (Chapman and Murphy, 1989), describes the geology of the Proposal Site as the Bringelly Shales of the Wianamatta Group, which includes carbonaceous, claystone, laminate, occasional interbedded units of fine- to medium-grained lithic sandstone and rare coal and tuff. During the 1800s, the Eastern Creek REP was used for breccia quarrying purposes. Quarrying activities continued until September 2006, with the final quarry void estimated to be 12 million m^3. The pit geology comprises shallow fill and clay layers to 18 mbgl, clay and weathered shale to depths of 32 m bgl and Bringelly Shale to depths up to 5 m below the base of the quarry (approximately 140 mbgl). The eastern

Aspect	Description
	and southern edges of the pits are fractured and deformed. The fractures are generally sparse and localised (ERM, 2009)
Groundwater	A search of the groundwater bores summary records available on the NSW Department of Primary Industries (DPI) website was undertaken for this assessment. The search was limited to within an approximate 0.5 km radius of the Proposal Site. Four (4) monitoring wells were identified within this radius. The closest wells are located along the northern and southwestern boundary of the Proposal Site and are used for monitoring purposes. Previous investigations identified a depth to standing groundwater levels ranged from 5 to 12 m below top of cap. Previous groundwater assessments have suggested that the hydrology and groundwater characteristics at the Proposal Site are controlled by the Wianamatta Shales which underly the Proposal Site. The soils produced by this geological material have low permeability and hence a limited ability to transmit groundwater. A shallow perched and intermittent groundwater system is located within the shallow fill and weathered shale and clay up to depths approximating 32 mbgl. This is underlain by discrete layered aquifer systems within the shales, with the majority of flow occurring via fractures and bedding planes. It is likely that historical quarrying activities may have led to an increase in the fracturing of the surrounding shale geology and therefore may also have resulted in an increase in the permeability of the quarry. There is very little seepage from the clay and weathered shale deposits into the open pit. A deeper regional aquifer system is present within the shale and volcanic sediments. The permeability of this aquifer system is very low (ERM, 2009). The nearest groundwater receptor is Ropes Creek, located approximately 700 m to the west. Natural groundwater is expected to flow to the north-west and north under low hydraulic gradients. However, since the Proposal Site is quarried, a very strong inward hydraulic gradient is present (IGGC, 2012) which is likely to influence the flow direction of groundwater within the Primary Operational Area (POA).
Surface water	The nearest surface water receptors are described in Section 12.3.1 and include: • Ropes Creek, which flows in a northerly direction, approximately 700 m to the west of the Proposal Site • An unnamed Ropes Creek tributary, approximately 50 m southwest of the Proposal Site • The channel of Upper Angus Creek, which originates next to the eastern site boundary and runs north into an artificial drainage system through Minchinbury and connects to Eastern Creek • Eastern Creek which flows in a northerly direction approximately 1.5 km east of the Proposal Site. Surface water directly surrounding the void is diverted from natural pathways by berms surrounding the landfill void.
Acid Sulfate Soils (ASS)	ASS is the common name given to naturally occurring soil and sediment containing iron sulphides. When these naturally occurring, sulfides are disturbed and exposed to air by way of excavation, drainage or groundwater drawdown, oxidation may occur, and sulfuric acid is produced. ASS are typically found in low-lying areas and flat locations that are often swampy or prone to flooding. A review of the Australian Soil Resource Information System (ASRIS) map shows the Proposal Site is situated in an area of 'No Known Occurrence' for acid sulfate soil. This is consistent with the identified soil profile at the Proposal Site.

11.3.2 Contamination

Site history

A summary of history of the Proposal Site, based on a review of current and historical aerial imagery, is provided in Table 11-5. Historical aerial imagery is provided as part of the Lotsearch EnviroPro Report for the Proposal Site (Appendix M).

Table 11-5: Aerial imagery review summary

Year	Description of Site	Description of Surrounding Land
1930	The Proposal Site is a vacant block, with sparse vegetation.	The surroundings of the Proposal Site are largely vacant, with some small area appearing to be paddocks.
1949	No significant changes noted.	No significant changes noted.
1955	A quarry is evident in the centre of the Proposal Site. Area to the south of the cell has also been cleared and levelled.	No significant changes noted.
1961	The quarry appears to have been increased in size. Several stockpiles of unidentified material are observable directly southeast of the landfill cell.	Land has been cleared to the northeast of the Proposal Site, with multiple small structure evident. A road has been created running from the north, into the Proposal Site and then heading west out of the Proposal Site. The remainder of the surrounding area appears to remain the same as the 1955 image.
1965	Quarry has increase in size. The Proposal Site now includes several internal roads, several stockpiles to the southeast of the quarry, a large stockpile in the western portion of the Proposal Site and land clearing northeast of the quarry. Several buildings are also observed in the southeastern corner of the Proposal Site.	The area directly south of the Proposal Site also contains several internal roads, stockpiles, and small buildings. The land to the south appears to be part of the onsite quarrying activities. A dam and several additional small buildings are evident northeast of the Proposal Site. The remainder of the surrounding area appears to remain the same as the 1961 image.
1970	No significant changes noted.	No significant changes noted.
1978	Additional large benches have been created in the quarry to increase the size of the cell.	The Western Motorway has been created to the north of the Proposal Site.
1982	No significant changes noted.	A small network of roads and cul-de-sacs are evident to the north of the Western Motorway.
1986	No significant changes noted.	The area to the north of the Western Motorway has been developed into what appears to be low density residential housing.
1991	No significant changes noted.	The area to the north of the Western Motorway has been further developed to include additional low density residential housing.
1994	No significant changes noted.	No significant changes noted.
2000	No significant changes noted.	Area to the west of the residential housing appears to be being developed.
2005	No significant changes noted.	Area being developed to the west of the residential housing appears to now contain a large warehouse structure.
2011	Areas to the west of the landfill cell have been cleared with construction of several buildings evident.	An area directly north of the Proposal Site has been cleared.

Year	Description of Site	Description of Surrounding Land
		Areas to the southeast of the Proposal Site have been cleared with the development or ongoing construction of large warehouse structures observed. The area directly south of the Proposal Site appears to remain part of the landfill.
2016	Small structures and the large sorting warehouse have been constructed in the western portion of the Proposal Site. Small, sorted stockpiles and additional earthworks are also evident in this area.	Large warehouse structures have been erected directly to the north, east and southeast of the Proposal Site. Additional sealed roads have also been constructed to the southeast of the Proposal Site.
2021	An additional warehouse structure has been erected in the western portion of the Proposal Site.	The area directly south of the Proposal Site has now been developed to include two large warehouse structures. A road dividing this site to the landfill is also observable.

Identified nearby contaminated sites and activities

A summary of the results of a search of various NSW EPA registers relevant to the Proposal Site (refer Section 11.2.2), or within the report buffer of one km radius of the Proposal Site is provided in Table 11-6. The search identified only one site in close proximity to the Proposal Site on the Contaminated Land list (being the former Fulton Hogan Industries site to the south of the Proposal Site). A number of activities within and in close proximity to the Proposal Site requiring an EPL and having potential to result in contamination were also identified.

Table 11-6 NSW EPA Register Search Summary

Item	Details
NSW EPA Records	The following site has been identified from the NSW EPA Contaminated Land list within the report buffer: Former Fulton Hogan Industries site – 0 m south of the Proposal Site, which currently does not require regulation under the CLM Act for conducting activities associated with the construction industry.
NSW EPA Notices	None identified.
Site Regulated under the *Contaminated Land Management Act 1997*	None identified.
PFAS Investigation	None identified.
Former Gasworks	None identified.
Other Sites with Contamination Issues	None identified.
EPL	Two (2) EPLs are identified on the Proposal Site: • Current – Dial-A-Dump (EC) Pty Ltd is located onsite and applied EPL 13426 and 20121 for conducting activities associated with recovery of general waste and waste storage (other types of waste). Two (2) other current licensed activities under the Protection of the Environment Operations Act 1997 exist within one km of the Proposal Site: • Current – Fulton Hogan Ltd is located within Lot 2 DP1145808 and applied EPL 21414 for conducting activities associated with recovery of general waste and waste storage (other types of waste)

Item	Details
	• Current – Cleanaway Pty Ltd is located 153 m east of the Proposal Site and applied EPL 21070 for conducting activities associated with recovery of general waste and waste storage

Contaminants of potential concern and potential exposure pathways

Based on the previous and current use of the Proposal Site as a landfill and resource recovery facility, as well as the nearby land uses, potential sources of contamination and associated CoPC that may have occurred as a result of these activities are outlined in Table 11-7 below. All of these areas of CoPCs are present in locations which would not be disturbed by the Proposal.

Table 11-7 Potential Sources of Contamination

Potential Source	Description of contaminant source	CoPC*
Soils within the current re-fuelling areas to the southwest of the landfill, in particular beneath the footprint of the re-fuelling area and associated workshop.	Petroleum, diesel, solvents, or grease	benzene, toluene, ethylbenzene, and xylene (BTEX), total recoverable hydrocarbons (TRH), polycyclic aromatic hydrocarbons (PAH), heavy metals, VOC
Soils within the current workshop areas to the southeast and southwest the landfill including the MPC 1, in particular beneath the footprint of the workshops and parking area for machinery.	Petroleum, diesel, solvents, or grease	BTEX, TRH, PAH, heavy metals, VOC
Fill materials of unknown origin and composition in the mounds surrounding the landfill, below hardstand areas and workshops.	Asbestos, ash, slag, foundry waste	Asbestos, PAH, heavy metals, TRH, BTEX
Stockpiles of non-putrescible material of unknown origin and composition for processing and recycling. Located mainly to the west and northwest of the main landfill. This material is part of the operation of the recycling facility prior to sorting.	Asbestos, ash, slag, foundry waste	Asbestos, PAH, heavy metals, TRH, BTEX, organochlorine pesticides (OCP), organophosphate pesticides (OPP), polychlorinated biphenyls (PCB)
Soils and groundwater within close proximity / down-gradient of the current asphalt plant (off-site) to the south of Eastern Creek REP.	Asphalt	PAH, heavy metals, TRH, BTEX, VOCs
Landfill	Landfill Material and biproducts	BTEX, TRH, PAH, heavy metals, VOC, asbestos, landfill gas, leachate

* Heavy Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn); TRH: Total Recoverable Hydrocarbons; BTEX: Benzene, Toluene, Ethylbenzene, Xylene; PAH: Polycyclic Aromatic Hydrocarbons; OC/OP: Organochlorine / Organophosphorus Pesticides; PCB: Polychlorinated Biphenyls.

Known soil contamination

Figure 11-2 in Section 11.2.2 shows the locations soil samples were taken as part of a previous baseline investigation (Arcadis, 2018) carried out at the Eastern Creek REP.

Concentrations of benzo(a)pyrene (B(a)P) and Benzo(a)pyrene were reported in soil above the NEPM health investigation levels at one location (SB04_0.2 mbgl), located in the southeastern corner of the Proposal Site. Further analysis to identify the extent of PAH contamination in SB04 reported below

Limit of Reporting (LOR) at SB04_0.9 mbgl indicating PAH contamination is limited to surface soils. A review of photos and logs taken during the investigation indicated the presence of ash materials in the soil bores as well as oil / solvent drums stored directly on the ground surface with black staining evident within the vicinity of SB04. The baseline investigation concluded that these factors were likely to be the source of the elevated PAHs concentrations.

TRH were reported above the adopted Tier 1 Management Limits in fill and natural materials in the southeastern corner of the Proposal Site. Further delineation of TRH in samples collected results at below LOR and the adopted Soil Assessment Criteria indicating no vertical migration of TRH contamination.

The Baseline Investigation concluded that there were no risks to ecological receptors due the current and ongoing use of the Eastern Creek REP as a landfill and resource recovery facility.

All other contaminants were reported below the adopted Tier 1 assessment criteria.

Groundwater contamination and leachate

Groundwater results indicated an exceedance of the adopted Tier 1 assessment criteria for Zinc in MW02 (located in the southwestern corner of the Proposal Site in the plant maintenance and workshop area) at a concentration of 11 µg/L exceeding the criterion of 8 µg/L. The baseline investigation concluded that this exceedance was reflective of background concentrations for the local area. All other contaminants of potential concern were below the adopted Tier 1 assessment criteria in groundwater samples (Arcadis, 2018).

Leachate and groundwater are monitored quarterly by Bingo across the Proposal Site. Results of quarterly monitoring do not indicate any major risks to groundwater or significant contamination arising from onsite leachate. The Quarter 3 2021 groundwater monitoring report indicated that levels of contamination remained consistent with previous rounds undertaken (CES, 2021a).

Subsurface Gas

CES undertook an assessment of gas across the Eastern Creek REP in March 2019, including a review of subsurface gas. Monitoring was undertaken at seven subsurface landfill gas bores across the Proposal Site, as shown in Figure 11-2. Subsurface gas (naturally occurring or generated from manmade sources – such as landfills) can migrate through unsaturated soils, underlying rocks or through groundwater. A review of subsurface gas investigations has been carried out to determine whether gas migration or accumulation has occurred within subsurface soils across the Proposal Site.

In regard to subsurface gas investigations:

- The initial and final methane concentrations for all the gas wells except one (located to the north of MPC2) were below the detection threshold prescribed in the guidelines (NSW EPA, 2016) of 1.0 per cent volume per volume (v/v) and the 2018 Dial a Dump Industries Landfill Gas Monitoring Program (DADI, 2018).
- Initial concentrations of carbon dioxide ranged between 0.1 per cent and 8.8 per cent in the gas monitoring installations. This maximum initial concentration of 8.8 per cent CO_2 was recorded in the northeastern portion of the Eastern Creek REP.
- Recorded concentrations of carbon monoxide were below the adopted threshold of 100 ppm as stated in DADI (2018). Hydrogen sulphide concentrations were recorded as <1 ppm for all wells.
- No wells measured gas flow rates above the threshold of 0.5 L/hr as per (DADI) 2018.

Methane results for the building gas accumulation monitoring round recorded concentrations below the assessment criterion prescribed in the EPA guidelines (NSW EPA, 2016) and DADI (2018).

Further subsurface monitoring carried out by CES along the northwestern boundary of the Eastern Creek REP in 2017 and reviewed in 2021 (CES, 2021), concluded that there was considered to be a low risk of landfill gas migrating as subsurface gas from the landfill, due to low levels of methane and carbon dioxide concentrations and the low flow rates of gas detected within nonrioting wells.

11.4 Impact assessment

11.4.1 Stage 1

Operation

Stage 1 would not introduce any new built form or activities and would not result in a material change to the existing level of exposure risk of potential contaminants onsite. Table 11-8 shows the CSM prepared for Stage 1 operations including the potential additional exposure risk (above existing operations) that may arise as a result of the Stage 1 activities. The CSM identified the additional residual waste that would be deposited within the landfill, and potentially dangerous goods sorted onsite as potential contamination sources associated with the Stage 1 operations. However both sources would represent a minor increase in existing quantities of each only, and the additional exposure risk would be considered negligible/low.

Contamination risks associated with the storage and handling of oils, fuel, lubricants and other chemical substances stored at the Proposal Site for the maintenance and operation of vehicles, plant and machinery would be consistent with those already associated with existing operations at Eastern Creek REP and subsequently would be managed in accordance with the existing Soil, Water and Leachate Management Plan. As Stage 1 would not result in any changes to the built form of the Eastern Creek REP, installation of additional spill kits would not be required as they are already located in various locations throughout the Eastern Creek REP.

Table 11-8: Stage 1 operational Conceptual Site Model (CSM)

Potential Source	Transport Pathway	Receptor	Additional Exposure Risk (above existing)
S1 – C&D Landfill Waste (additional quantities of residual waste being deposited into the landfill from MPC1 & MPC2)	**P1** – Ingestion and dermal contact	**R2** – Construction workers **R3** – Maintenance workers	Low
	P2 – Inhalation of hazardous ground gases (LFG)	**R1** – Site users **R2** – Construction workers **R3** – Maintenance workers **R6** – Terrestrial ecology	Low
	P3 – Leaching or vertical migration into soils or groundwater	**R5** – Soils or groundwater	Low
	P4 – Lateral migration of groundwater	**R4** – Adjacent site users **R5** – Groundwater **R7** – Aquatic ecology	Low
	P5 – Lateral migration of hazardous ground gases	**R4** – Adjacent site users	Low
	P6 – Inhalation of ACM/fibres	**R1** – Site users **R2** – Construction workers **R3** – Maintenance workers	Low
	P1 – Ingestion and dermal contact	**R1** – Site users **R3** – Maintenance workers	Low

Potential Source	Transport Pathway	Receptor	Additional Exposure Risk (above existing)
S4 – Fuels and dangerous goods stored onsite	**P3 –** Leaching or vertical migration into soils or groundwater	**R5** – Soils or groundwater	Low

11.4.2 Stage 2

Construction

Soils

Table 11-9 describes potential impacts to soils as a result of the construction of Stage 2 of the Proposal.

Table 11-9: Potential soil impacts – Stage 2 construction

Aspect	Potential impact
Erosion and sedimentation	Temporary exposure of the natural ground surface and subsurface through the removal of vegetation and earthworks would result in short-term risks of erosion and sedimentation. The temporary exposure of soil to water runoff and wind erosion could potentially increase soil erosion. There is the potential that exposed soils – and other unconsolidated materials, such as spoil, sand and other aggregates – could be transported from the construction site into surrounding waterways via stormwater runoff. Mitigation measures described in Section 11.5 will be implemented to manage potential impacts due to the disturbance of soil during construction. It is expected that soil erosion would be adequately managed in accordance with measures applied from the Blue Book (Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Managing Urban Stormwater: Soils and Construction Volume 2 (DECC, 2008a)).
Acid sulfate soils	Exposure of acid sulfate soils could result in the release of acid sulfates, which could potentially damage surrounding vegetation, or cause acidic runoff offsite which could damage aquatic habitats. While the Proposal is not expected to encounter acid sulfate soils within the residual natural soils present within the Proposal Site, the excavation of existing fill material could result in exposure of acid sulfate soils if present. However, given that the majority of fill material is overburden material from the Proposal Site's previous operations as a quarry, the exposure of acid sulfate soils is considered unlikely.
Saline soils	Salinity impacts can include locally severe salt scalding across landscape elements, damage to buildings and infrastructure, fluvial and sheet erosion, high instream salinity, localised waterlogging, flood hazard, and a potential decline in water quality. Excavation and earthworks during construction of the Proposal, if not managed appropriately may cause salinity impacts where there is disturbance of saline soils, or changes to the groundwater system as the Proposal Site is within an area of moderate salinity potential .However, construction of the Proposal is unlikely to create changes in the groundwater system and as it would involve clearing of vegetation in previously disturbed areas the Proposal is not expected to result in salinity impacts.

Contamination

Contamination risks and impacts during construction can be broadly divided into two categories:

- Those that exist from current and historic activities on the Proposal Site
- Those that may be introduced or created as a result of the Proposal's construction

The exposure of any contaminated materials during construction may increase the potential for contaminant mobilisation and may create additional exposure pathways to sensitive receivers (including environmental receptors), surface water bodies and groundwater bodies.

Exposure of existing contaminated soils

The construction works as part of Stage 2 which have the potential to result in the exposure of contaminated soils including:

- General earthworks for the construction of the new exit connections
- More intrusive cut and fill works
- Laydown areas.

Previous investigations have indicated that areas of potential contamination are restricted to the current workshop/waste processing area on the western boundary of the Proposal Site and the existing landfill. As part of the Proposal, the current workshop and waste processing area would remain undisturbed with the current concrete hardstand to remain intact. Similarly, the landfill would also remain intact and undisturbed. It is therefore considered unlikely that construction activities would pose a risk of contamination exposure

Activities required for construction of Stage 2 of the Proposal are estimated to generate approximately 746,900 m^3 of excess material. Surplus fill is intended to be utilised in the following ways:

- Store and use in the landfill as daily cover
- Reuse on site for ongoing projects and operations
- Transport off site for reuse or disposal.

Prior to construction, material to be excavated would be characterised and assessed against the Waste Classification Guidelines as detailed in Section 5.5.2) and against any criteria stated in the EPL for the Eastern Creek REP for use as landfill covering to assess its suitability for reuse. Adequate sampling and testing must be undertaken by a suitably qualified environmental consultant prior to reuse, reprocessing or offsite disposal.

Table 11-10 summarises the CSM for the Stage 2 construction works including potential risk of contaminants entering the Proposal Site from imported fill, and the potential to disturb existing contaminated subsurface soils. It is noted that with the introduction of mitigation measures (as outlined in Section 11.5) the exposure risk is considered manageable.

Contamination of soils due to construction activities

Some construction activities may pose a risk of causing contamination if not appropriately managed. During construction, fuels and chemicals required for construction would need to be stored on the Proposal Site and within construction compounds in bunded areas. There is potential for fuels and chemicals to spread to the surrounding environment, including the soil and groundwater, through spills and leaks.

In addition, risks associated with the mishandling or improper transport of unexpected contamination finds pose a significant risk to construction works as contaminated materials could cross contaminate areas not previously impacted by contamination.

With the implementation of standard construction mitigation measures the risk of contamination due to construction of Stage 2 of the Proposal is considered low. Any disturbances to soil and groundwater contamination can be appropriately managed via the proposed mitigation measures identified in Section 11.5 which outlines measures that will be employed during construction to minimise the risk from handling and storing potentially dangerous goods and unexpected finds within the Proposal Site.

Changes to groundwater flow patterns due to changes to surface water infiltration, topography or intrusive construction works may alter contaminant migration pathways in groundwater. However, due to the depth of groundwater, the Proposal is considered unlikely to intercept groundwater and impacts are considered unlikely.

Table 11-10 summarises the CSM for the Stage 2 construction works including the potential to cause contamination of soils as a result of construction works.

Table 11-10: Stage 2 construction CSM

Potential Source	Transport Pathway	Receptor	Exposure risk
S2 – Imported Fill	**P1** – Ingestion and dermal contact	**R1** – Site users **R2** – Construction workers **R3** – Maintenance workers **R8** – Terrestrial ecology	Moderate
S3 – Existing Contaminated Subsurface Soils	**P1** – Ingestion and dermal contact **P3** – Leaching or vertical migration into soils or groundwater **P4** – Lateral migration of groundwater	**R1** – Site users **R2** – Construction workers **R3** – Maintenance workers **R5** – Soils or groundwater **R7** – Aquatic ecology **R8** – Terrestrial ecology	Moderate
S4 – Fuels and dangerous goods stored onsite	**P1 –** Ingestion and dermal contact	**R1** – Site users **R3** – Maintenance workers	Low
	P3 – Leaching or vertical migration into soils or groundwater	**R5** – Soils or groundwater	Low

Operation

Potential impacts relating to soils during operation are limited, as there would be no ongoing ground disturbance. In addition, the majority of areas within the Proposal Site that are exposed through earthworks would be appropriately landscaped or sealed.

Contamination risks associated with the operation of Stage 2 remain consistent and unchanged with the details in Section 11.4.1 and Table 11-8 and are considered unlikely during the operation of the Proposal.

11.4.3 Stage 3

Construction

Stage 3 construction involves the laying of the concrete hardstand within the northeastern corner of the Proposal Site and the construction of the Site Workshop and Maintenance and Manufacturing Workshop. Contamination risks associated with the construction during Stage 3 are considered to be low as the majority of bulk earthworks would have been completed as part of Stage 2. Potential contamination risks for Stage 3, relate to material brought onto the Proposal Site for the creation of subgrade prior to the pouring and levelling of the concrete slab (as shown in Table 11-11)

The inclusion of a large concrete slab in the northern portion of the Proposal Site may alter subsurface gas migration pathways immediately beneath the slab. As noted in Section 11.3.2, previous investigations have found a low likelihood of landfill subsurface gas migration potential, and the

installation of gas flares within the landfill is likely to further minimise any potential gas migration. It is therefore considered unlikely that the inclusion of a slab across the Stage 3 area would result in materials changes or exposure risks associated with subsurface gas.

Table 11-11: Stage 3 construction CSM

Potential Source	Transport Pathway	Receptor	Exposure risk
S2 – Imported Fill	**P1** – Ingestion and dermal contact	**R1** – Site users **R2** – Construction workers **R3** – Maintenance workers **R8** – Terrestrial ecology	Low
S3 – Existing Contaminated Subsurface Soils	**P1** – Ingestion and dermal contact **P3** – Leaching or vertical migration into soils or groundwater **P4** – Lateral migration of groundwater **P5** – Lateral migration of hazardous ground gases	**R1** – Site users **R2** – Construction workers **R3** – Maintenance workers **R5** – Soils or groundwater **R7** – Aquatic ecology **R8** – Terrestrial ecology	Low
S4 – Fuels and dangerous goods stored onsite	**P1 –** Ingestion and dermal contact	**R1** – Site users **R3** – Maintenance workers	Low
	P3 – Leaching or vertical migration into soils or groundwater	**R5** – Soils or groundwater	Low

Operation

Operational impacts relating to soils and potential contamination risks associated with the operation of Stage 3 remain consistent and unchanged with the details in Section 11.4.1 and Table 11-8 and are considered unlikely during the operation of the Proposal.

11.5 Mitigation measures

The contamination present on the Proposal Site is not considered a risk during construction or operation of the Proposal.

Should any unexpected contamination be found during the construction or operation of the Proposal, this will be managed under an unexpected finds protocol developed as part of the CEMP and the EMS. Details of mitigation measures to be included in these plans are outlined below.

Table 11-12: Mitigation Measures (Contamination)

ID	Mitigation Measures	Timing
SCO1	A Construction Soil and Water Management Sub -Plan to the CEMP (CSWMP) will be prepared in accordance with the Blue Book (Landcom 2008). The sub-plan will soil, surface water and contamination management implementation including: • The preparation of erosion and sediment control plans • Emergency spill procedures and provision of spill kits	Construction

ID	Mitigation Measures	Timing
	• A contingency plan for disturbance of unexpected, contaminated materials (unexpected finds protocol), such as materials that are odorous, stained or containing anthropogenic materials, that may be encountered during construction • Management of acid sulfate soils, if encountered • Management of any salinity impacts. • Management of contaminated soils, if found.	
SCO2	A CEMP will be prepared for the Proposal to manage surplus soils as well as on and off-site movement of material. The document should include: • Details on cut and fill areas. • Excess spoil estimates. • Waste classification requirements. • Soil importation and exportation requirements. • Stockpile storage areas. • Stockpile management procedures. • Details on excess soil use.	Construction

12 WATER AND HYDROLOGY

12.1 Introduction

This chapter describes the potential water and hydrology impacts associated with the Proposal to address the SEARs issued by DPE and other relevant agency requirements. A SWIA has been prepared by AT&L which includes an assessment of potential water and hydrological impacts as a result of the Proposal. The SWIA for the Proposal is provided in Appendix N of this EIS.

Table 12-1 provides a summary of the relevant SEARs which relate to water and hydrology, and where they have been addressed in the EIS.

Table 12-1: Water and Hydrology SEARs

SEARs	Where addressed
An assessment of potential surface and groundwater impacts associated with the development (both quantity and quality), including impacts associated with the new access points. This is to include potential impacts on watercourses, riparian areas, groundwater, and groundwater-dependent communities nearby	Section 12.4 (construction impacts) Section 12.5 (operational impacts) Chapter 14 (groundwater dependent communities) Appendix N (Surface Water Impact Assessment)
A detailed site water balance including a description of the water demands and breakdown of water supplies, and any water licensing requirements	Section 12.5.3 (water demand and supplies) Appendix N (Surface Water Impact Assessment)
Details of existing and proposed stormwater/wastewater management system including the capacity of onsite detention system(s), onsite sewage management and measures to treat, reuse or dispose of water	Section 12.3.2 (existing stormwater / wastewater management) Section 12.5.2 (proposed stormwater / wastewater management) Section 12.5.3 (proposed reuse) Appendix N (Surface Water Impact Assessment) Section 2.6.7 and 2.7.12 (existing water management infrastructure) Section 3.3.9 and 3.5.14 (proposed water management infrastructure)
Description of the measures to minimise water use	Section 12.5.3 (water reuse)
Description of the proposed erosion and sediment controls during construction	Section 12.4.1 (Erosion and Sediment Control Plan) Section 12.6 (construction mitigation measures)
Characterisation of water quality at the point of discharge to surface and/or groundwater against the relevant water quality criteria. This is to include details of the contaminants of concern that may leach from waste into the wastewater and proposed mitigation measures to manage any impacts to receiving waters and monitoring activities and methodologies	Section 12.2.2 (EPL monitoring requirements) Section 12.5.1 (water quality impacts) Section 12.6 (proposed monitoring) Appendix N (Surface Water Impact Assessment)
Details of proposed surface and groundwater monitoring	Section 12.2.2 (EPL monitoring requirements) Section 12.6 (proposed monitoring) Appendix N (Surface Water Impact Assessment)
Characterisation of the nature and extent of any contamination on the site and surrounding area.	Table 12-5 (existing site conditions) Chapter 11 (Soils and contamination) Appendix N (Surface Water Impact Assessment)

Further to the above, the Water and EES Groups of DPE, the EPA and Council require further details on specific requirements relating to their authority. These requirements are discussed throughout the EIS as indicated in Table 12-2.

Table 12-2: Other agency requirements (water and hydrology)

Assessment Requirement	Where addressed
DPE (Water and NRAR)	
• The identification of an adequate and secure water supply for the life of the project. This includes confirmation that water can be sourced from an appropriately authorised and reliable supply. This is also to include an assessment of the current market depth where water entitlement is required to be purchased.	Section 12.3.3 (existing water supply) Section 12.5.3 (water supply requirements) Table 12-13 (site water balance) Appendix N (Surface Water Impact Assessment)
• A detailed and consolidated site water balance.	Table 12-13 (site water balance) Appendix N (Surface Water Impact Assessment)
• Assessment of impacts on surface and ground water sources (both quality and quantity), related infrastructure, adjacent licensed water users, basic landholder rights, watercourses, riparian land, and groundwater dependent ecosystems, and measures proposed to reduce and mitigate these impacts.	Section 12.4 (construction impacts) Section 12.5 (operational impacts) Chapter 14 (riparian land and groundwater dependent ecosystems) Appendix N (Surface Water Impact Assessment) Appendix P (BDAR)
• Proposed surface and groundwater monitoring activities and methodologies.	Surface and groundwater monitoring activities associated with the Proposal will be consistent with the two EPLs for the site, as well as the approved SWLMP. Details of these EPLs are contained in Section 12.2.2
• Consideration of relevant legislation, policies and guidelines, including the NSW Aquifer Interference Policy (2012), the Guidelines for Controlled Activities on Waterfront Land (2018) and the relevant Water Sharing Plans (available at https://www.industry.nsw.gov.au/water).	Section 12.2.2 (objective and performance targets) Chapter 5 (Statutory and planning approvals) Appendix N (Surface Water Impact Assessment)
DPE (Environment, Energy and Science)	
6. The EIS must map the following features relevant to water and soils including: a) Acid sulfate soils (Class 1, 2, 3 or 4 on the Acid Sulfate Soil Planning Map). b) Rivers, streams, wetlands, estuaries (as described in s4.2 of the Biodiversity Assessment Method). c) Wetlands as described in s4.2 of the Biodiversity Assessment Method. d) Groundwater. e) Groundwater dependent ecosystems f) Proposed intake and discharge locations	Figure 12-4 (soil and water features) Chapter 14 (Biodiversity) Appendix E (Concept Design Drawings)
7. The EIS must describe background conditions for any water resource likely to be affected by the development, including: a) Existing surface and groundwater.	Section 12.3 (existing environment) Chapter 11 (Soils and contamination) Appendix N (Surface Water Impact Assessment)

Assessment Requirement	Where addressed
b) Hydrology, including volume, frequency and quality of discharges at proposed intake and discharge locations.	Section 12.3 (existing environment) Appendix N (Surface Water Impact Assessment)
c) Water Quality Objectives (as endorsed by the NSW Government http://www.environment.nsw.gov.au/ieo/index.htm) including groundwater as appropriate that represent the community's uses and values for the receiving waters.	Section 12.2.2 (objectives and performance criteria) Appendix N (Surface Water Impact Assessment)
d) Indicators and trigger values/criteria for the environmental values identified (c) in accordance with the ANZECC (2000) Guidelines for Fresh and Marine Water Quality and/or local objectives, criteria or targets endorsed by the NSW Government.	Section 12.2.2 (objectives and performance criteria) Appendix N (Surface Water Impact Assessment)
e) Risk-based Framework for Considering Waterway Health Outcomes in Strategic Land-use Planning Decisions http://www.environment.nsw.gov.au/research-andpublications/publications-search/risk-based-framework-for-considering-waterway-healthoutcomes-in-strategic-land-use-planning	Section 12.2.2 identifies water quality objectives for the Proposal. A number of design features (existing and proposed) have been incorporated into the Proposal to proactively manage impacts. Section 12.4 and 12.5 describes the impacts from the Proposal identifying that impacts are below the adopted criteria. The above items are considered to align to the Risk-based Framework for Considering Waterway Health Outcomes in Strategic Land-use Planning Decisions (NSW EPA, 2017).
8. The EIS must assess the impacts of the development on water quality, including: a) The nature and degree of impact on receiving waters for both surface and groundwater, demonstrating how the development protects the Water Quality Objectives where they are currently being achieved, and contributes towards achievement of the Water Quality Objectives over time where they are currently not being achieved. This should include an assessment of the mitigating effects of proposed stormwater and wastewater management during and after construction.	Section 12.2.2 (objectives and performance criteria) Section 12.4 (construction impacts) Section 12.5 (operational impacts) Appendix N (Surface Water Impact Assessment)
b) Identification of proposed monitoring of water quality.	Section 12.2.2 (EPL monitoring requirements) Section 12.6 (proposed monitoring) Appendix N (Surface Water Impact Assessment)
c) Consistency with any relevant certified Coastal Management Program (or Coastal Zone Management Plan)	The Proposal Site is not located within close proximity to a coastal area. As such no certified Coastal Management Program (or Coastal Zone Management Plan) applies.
9. The EIS must assess the impact of the development on hydrology, including: a) Water balance including quantity, quality and source.	Section 12.4 (construction impacts) Section 12.5 (operational impacts) Appendix N (Surface Water Impact Assessment)

Assessment Requirement	Where addressed
b) Effects to downstream rivers, wetlands, estuaries, marine waters and floodplain areas.	Section 12.3 (relevant catchments, nearby watercourses, sensitive receiving environments) Section 12.4 (construction impacts) Section 12.5 (operational impacts) Appendix N (Surface Water Impact Assessment)
c) Effects to downstream water-dependent fauna and flora including groundwater dependent ecosystems.	Chapter 14 (Biodiversity) Appendix P (BDAR)
d) Impacts to natural processes and functions within rivers, wetlands, estuaries and floodplains that affect river system and landscape health such as nutrient flow, aquatic connectivity and access to habitat for spawning and refuge (e.g. river benches).	Chapter 14 (Biodiversity) Appendix P (BDAR)
e) Changes to environmental water availability, both regulated/licensed and unregulated/rules-based sources of such water.	Water used would be supplied via on-site rainwater tanks and mains water.
f) Mitigating effects of proposed stormwater and wastewater management during and after construction on hydrological attributes such as volumes, flow rates, management methods and re-use options	Section 12.3.2 and 12.3.3 (existing stormwater and wastewater infrastructure and non-potable water supply) Section 12.4.2 and 12.4.3 (stormwater and wastewater management during construction) Section 12.5.2 and 12.5.3 (utilised and or proposed stormwater and wastewater infrastructure and non-potable water supply during operation)
g) Identification of proposed monitoring of hydrological attributes	Section 12.2.2 (EPL monitoring requirements) Section 12.6 (proposed monitoring) Appendix N (Surface Water Impact Assessment)
EPA	
Applicants must: • identify and estimate the quality and quantity of all pollutants that may be introduced into the water cycle by source and discharge point	Section 12.2.2 (identification of potential pollutants) Section 12.4.1 (construction water quality Impacts) Section 12.5.1 (operational water quality impacts)
• describe the nature and degree of impact that any discharge(s) will have on the receiving environment. This includes consideration of all pollutants that pose a risk of non-trivial harm to human health and the environment (this should also include intercepted saline groundwater or acidic runoff generated by acid sulphate soil where appropriate).	Section 12.4.1 (construction water quality Impacts) Section 12.5.1 (operational water quality impacts)
• demonstrate assessment against the ambient NSW Water Quality Objectives and environmental values for the receiving waters relevant to construction and operating activity. This includes the indicators and associated trigger values or criteria for the identified environmental values.	Section 12.4.1 (construction water quality Impacts) Section 12.5.1 (operational water quality impacts) Appendix N (Surface Water Impact Assessment)
• assess the significance of any identified impacts, including consideration of the relevant environmental values and ambient water quality	Section 12.4.1 (construction water quality Impacts) Section 12.5.1 (operational water quality impacts)

Assessment Requirement	Where addressed
outcomes. Assessment of discharges to surface waters should be guided by the ANZECC guidelines, using local Water Quality Objectives.	Appendix N (Surface Water Impact Assessment)
Blacktown City Council	
b. Water quality and hydrology – demonstrate how the new access roads off Kangaroo Avenue will drain to the site's existing stormwater management basins. Water quality and hydrology must comply with current site approvals issued through the NSW Land and Environment Court.	Due to the existing and proposed site topography, part of the access road off Kangaroo Avenue would drain to a new water quality and OSD basin (Basin B) – details are provided in Section 12.5.2 and Appendix N

12.2 Method of assessment

The surface water assessment has identified the potential impacts associated with the Proposal as it relates to three key aspects:

- Water quality
- Water quantity (stormwater)
- Water use.

For each of the above aspects, the following steps were employed to identify the potential impact associated with the Proposal:

1. Set objectives and performance targets
2. Review existing site features and water quality and hydrology infrastructure
3. Identify proposed additional controls
4. Assess the impact
5. Identify mitigation measures.

The South Creek Flood Study (WorleyParsons, 2015) which has been adopted by Penrith City Council, assessed overland flooding and indicates that the Proposal Site is not flood affected by Ropes Creek flooding in the probable maximum flood (PMF). The *Eastern Creek Hydraulic Assessment* (Catchment Simulation Solutions, 2014) assessed overland flooding of the Eastern Creek catchment and its tributaries, including Angus Creek. The Proposal Site is located upstream of the extent of the hydraulic assessment and is not located within a flood risk zone. The entire Proposal Site is not affected by events up to and including the one per cent Annual Exceedance Probability (AEP) event. Therefore, flooding has not been considered further within the assessment.

12.2.1 Assessment scenarios and approach

Chapter 7 outlines the different assessment approaches adopted within this EIS to assess the potential impacts from the Proposal. Water impacts are largely related to physical changes onsite and the introduction of new built form. The assessment of water related impacts can largely therefore be considered on a 'footprint' basis, rather than in relation to the operational staging. As such, the water and hydrology impact assessment has considered a construction scenario and a full build scenario.

An outline of the scenarios used to determine the potential water and hydrological impacts of the Proposal is provided in Figure 12-1.

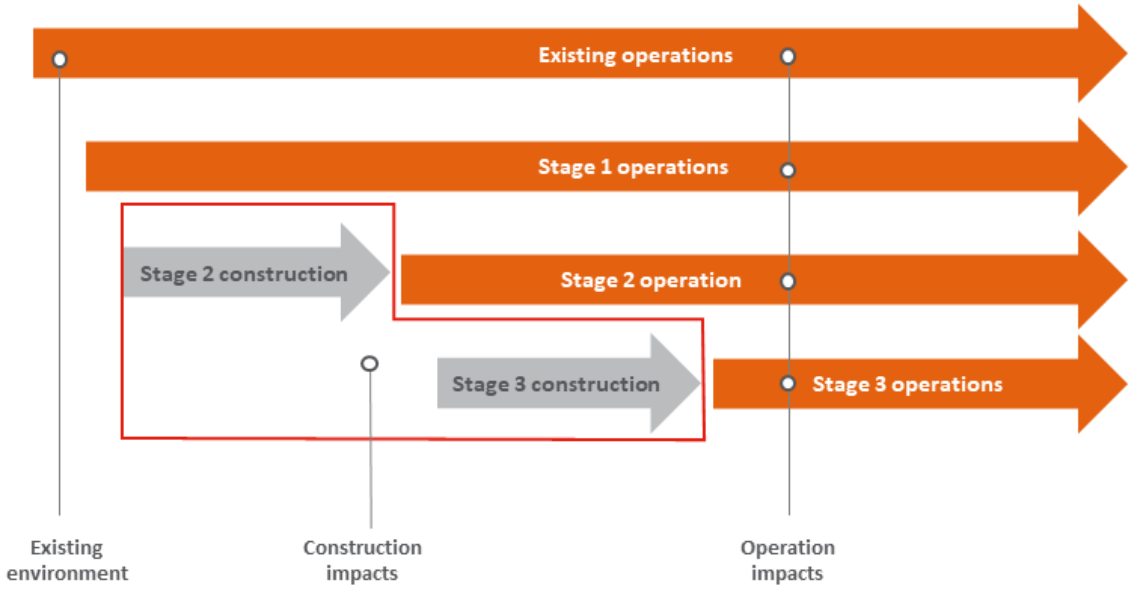

Figure 12-1 Water and hydrological impacts assessment scenarios

12.2.2 Objectives and performance targets

The first step to appraising potential water related impacts from the Proposal comprised reviewing applicable guidelines, policy documents and strategic plans to identify appropriate water and hydrology objectives and performance targets for the Proposal for each aspect.

Water quality

Objectives and performance targets have been set to minimise the potential for pollutants to enter nearby waterways as a result of the Proposal. Objectives and targets have been derived from the following:

- *Blacktown Development Control Plan 2015 (DCP) Part J – Water Sensitive Urban Design and Integrated Water Cycle Management*
- Australian and New Zealand Environment and Conservation Council (ANZECC), *Guidelines for Fresh and Marine Water Quality*, 2018.

The objectives for the management of water quality for the Proposal are centred around the principles of Water Sensitive Urban Design (WSUD) and pollution reduction. The water quality objectives for the Proposal are to:

- Maintain or improve existing water quality within receiving waterways
- Protect the aquatic environment of the downstream waterways
- Prevent bed and bank erosion and instability of waterways
- Provide sufficient flows to support aquatic environments and ecological processes
- Incorporate a WSUD approach into the design of the Proposal
- Ensure appropriate erosion and sedimentation control measures are installed to mitigate potential impacts to receiving waterways.

Stormwater runoff from the Proposal Site will be treated to satisfy the treatment objectives outlined in Part J of Blacktown City Council's DCP (refer Section 5.7). The Eastern Creek Precinct Plan was prepared in accordance with the now repealed SEPP 59 and provides guidelines for planning and development in the Eastern Creek Precinct. The Precinct Plan must be considered in accordance with

Section 2.18 of the Industry and Employment SEPP . Section 5 of the Precinct Plan outlines objectives and controls relating to stormwater management within the Eastern Creek Precinct. The Precinct Plan requires that Development Applications be accompanied by a site-specific Stormwater Management Plan 'consistent with the latest stormwater quality control requirements of Blacktown City Council'.

To satisfy the requirements of the Precinct Plan in relation to stormwater management, stormwater management principles have been designed to comply with Blacktown City Council's Engineering Guide for Development (2005) and the Blacktown DCP. The treatment objectives outlined in the Blacktown DCP and adopted for the Proposal are summarised below in Table 12-3.

Table 12-3: Annual percentage pollutant reduction targets for the Proposal

Pollutant	Reduction target
Gross Pollutants	90%
Total Suspended Solids (TSS)	85%
Total Phosphorus (TP)	65%
Total Nitrogen (TN)	45%
Hydrocarbons	90%

General principles for the application of the ANZECC Guidelines are outlined in the document titled *Using the ANZECC Guidelines and Water Quality Objectives in NSW* (Department of Environment and Conservation, 2006). For each catchment in NSW, the State government has endorsed the community's environmental values for water, known as the 'Water Quality Objectives' (WQOs). The NSW WQOs are the environmental values and long-term goals for consideration when assessing and managing the likely impact of activities on waterways.

In modified environments such as the South Creek sub-catchment, where the Proposal Site is located, there is the potential for the current water quality to not meet the existing guidelines and trigger values for protecting nominated environmental values. The NSW WQOs aim to improve poor water quality and maintain existing good water quality. On this basis, the overall objective of the proposed water management systems at the Eastern Creek REP is to ensure that the Proposal will maintain or improve the quality of surface water that discharges from the Proposal Site.

Existing Environmental Protection Licenses

In addition to the objectives and targets for surface water quality set by Council and ANZECC, the Eastern Creek REP site is subject to two EPLs, EPL 13426 and EPL 20121. EPL 13426 stipulates concentration limits for various water quality parameters. The pollutant concentration limits that apply to the Eastern Creek REP are presented in Table 12-4.

Table 12-4: Summary of EPL concentration limits that apply to the Eastern Creek REP

Pollutant	Concentration limit (100 percentile)	Measured at
Ammonia	1 mg/l	Northern OSD basin and southern OSD basin overflow weirs
pH	6.5 – 8.5	
TSS	50 mg/l	

There is also a requirement in the EPLs that for each monitoring / discharge point (i.e., the northern OSD basin and the southern OSD basin described in Section 2.7.13) the licensee must monitor the concentration of various pollutants at the locations and frequencies as specified in the EPLs. This monitoring includes:

- Quarterly grab samples within the Northern OSD basin and Southern OSD basin for ammonia, pH, electrical conductivity, TSS, total organic carbon (TOC) and heavy metals.

- Grab samples from surface water that is discharged from the Northern OSD basin and Southern OSD basin for ammonia, pH, electrical conductivity, TSS and TOC at the following frequencies:
  - On the first day of an authorised discharge from one or both of the basins and weekly thereafter if the discharge continues.
  - Within three days of the first day of discharge that is occurring as a result of a rainfall event at the premises.

The water quality concentration limits and monitoring requirements stipulated in the EPLs for the Proposal Site are not directly related to the water objectives and targets set by Council and ANZECC. However, they are applicable to the ongoing operation of the Eastern Creek REP and will continue to apply (unless modified) during and following completion of the Proposal.

Water quantity (stormwater)

The Blacktown DCP Part J catchment areas map identifies the Eastern Creek REP as being subject to requiring permanent OSD. The DCP requires that any changes in flow rates and durations as a result of stormwater flows be limited as far as practicable. The objectives for the Proposal are therefore to:

- Capture and manage surface water so as to maintain natural flow variability and maintain natural rates of change in water levels as far as practicable
- Ensure there would be no adverse impact on downstream drainage systems as a result of increases in peak flows as a result of the Proposal.

The intent of this criterion is to reduce the impact of urban development on existing drainage system by limiting post-development peak flow rates to receiving waters to less than or equal to pre-development peak flow rates, and to ensure no flood affectation of upstream, downstream or adjacent properties.

Water use

The Blacktown DCP Part J prescribes that all industrial and business developments must supply 80 per cent of their non-potable demand using non potable sources. Rainwater is required to be the primary source of non-potable water supply and should only be supplemented by recycled water when rainwater cannot meet 80 per cent of the demand. As such, the water use objectives for the Proposal are to:

- Supply 80 per cent of non-potable water demand associated with the Proposal from non-potable sources
- Maximise use of rainwater as a non-potable water source.

12.2.3 Impact assessment

Modelling has been carried out to determine the potential water and hydrology impacts from the Proposal. Impacts have been assessed with the existing (Section 2.7.13) and proposed (Section 3.5.14) additional design controls in place and have been compared to the objectives and performance targets set (Section 12.2.1) to protect the water quality and quantity values of the Proposal Site and the surrounding catchment.

Water quality

Proposed stormwater treatment measures have been modelled using the MUSICX software package (version 1.1.0). Modelling has been undertaken in accordance with the NSW MUSIC Modelling Guidelines (BMT WBM, 2015) and Council's guideline titled *WSUD developer handbook: MUSIC modelling and design guide 2020*. To simulate the stormwater quality the MUSIC model incorporated the following as described in Section 2.3.1 of the SWIA (Appendix N):

- Rainfall data (such as annual rainfall and moisture rates)
- Rainfall runoff parameters (such as soil moisture storage properties)

- Pollution concentrations that would be generated on the Site Workshop and Maintenance and Manufacturing Workshop roof structures and hardstand areas across the Proposal Site
- The treatment controls incorporated into the design (existing and proposed).

As outlined in Council's *WSUD developer handbook*, there is currently no defined way for MUSIC or any other industry-standard water quality model to assess the removal of hydrocarbons or oils from stormwater. Blacktown Council therefore relies on deemed-to-comply solutions to satisfy the target of 90 per cent removal of the average annual load of hydrocarbons. An assessment of the Proposal against Council's deemed-to-comply solutions is provided in Section 12.5.1.

Water quantity

A hydrological and hydraulic model of the proposed extent of work associated with the full build scenario for the Proposal has been setup using the DRAINS software package. The purpose of this modelling is to confirm that the Proposal can be accommodated within existing and proposed stormwater quantity management measures.

The DRAINS model was developed to simulate a range of design storm events and to predict peak flow rates from the Proposal Site. The detention basin modelling capability in DRAINS was used to calculate the stormwater detention volumes required to ensure the post-development peak flow rates are less than or equal to pre-development peak flow rates at each of the existing and proposed basins within the Eastern Creek REP site. As described in Section 2.3.2 of the SWIA (Appendix N), key model parameters utilised include:

- Rainfall intensity frequency duration (IFD) data (BoM, 2016)
- Rainfall / runoff properties of the Proposal Site
- Catchment parameters including details of sub-catchment areas and percentage impervious.

DRAINS modelling for the median storm in the critical ensembles for a range of storm events was undertaken. Storm events accounted for in the modelling include:

- **0.5 average number of exceedances per year (EY):** This is equivalent to a design event with a 2 year average recurrence interval (ARI), ARI meaning the average time period between occurrences equalling or exceeding a given value.
- **10% AEP:** This refers to a 1-in-10 year storm event
- **5% AEP**: This refers to a 1-in-20 year storm event
- **1% AEP**: This refers to a 1-in-100 year storm event

Water use

A daily water balance assessment was undertaken to determine total water supply and demand anticipated for the operation of the Proposal. This assessment considered:

- Rainfall calculations incorporating historical rainfall data from dry, average and wet rainfall years
- The anticipate demand for the full build operation of the Proposal
- Water supply sources.

12.3 Existing environment

Section 2.6.7 and Section 2.7.12 provide a description of the existing water and hydrology infrastructure across the Eastern Creek REP; reiterated below. The Eastern Creek REP has been designed and constructed to include several water infrastructure components for the diversion and separation of cleaner surface water runoff from leachate that is managed via the Site Leachate Management System (Section 2.7.12). Some of these features include:

- Two detention (OSD) basins with capacity to store surface water flows from the pit and operational areas and to contain runoff for the 1 in 100 year rainfall event as shown in Figure 12-2 and Figure 12-3.
- A gross pollutant trap (GPT) located south of the existing MPC2 building. This GPT provides primary treatment of surface water runoff from the MPC2 building, car park and adjacent hardstand areas prior to discharge towards the existing southern OSD basin. A second GPT is provided to the west of MPC1
- A sump, bunding and site grading which allows runoff within the landfill pit to be separated into stormwater and leachate. This system minimises clean surface water flows into the active landfill area therefore reducing overall creation of leachate
- Sediment control measures around the stormwater discharge point including a check dam and double layer of geotextile-wrapped filter bales to ensure discharged stormwater is free of sediment which could impact downstream waterways
- Separately allocated and bunded refuelling location to minimise risk of pollutants from spills associated with refuelling
- Established groundwater quality monitoring points (boreholes) under EPL 13426 to continually monitor and test groundwater quality.

Erosion and sediment controls are also implemented across the Eastern Creek REP and are detailed in the approved existing SWLMP.

Leachate is separate from clean surface water. All leachate generated in the landfill pit is collected in a leachate collection system and prevented from escaping into groundwater or surface water. This system is comprised of the following key features:

- A drainage layer comprising a permeable granular blanket of geosynthetic and granular materials on the floor of the pit which were installed prior to the commencement of filling
- A leachate trench on the pit floor which collects leachate runoff from uncovered areas of the active tipping area
- A sump with risers and extraction pumps located at the lowest elevation of the pit base which collects the leachate in preparation for removal
- Leachate storage tanks which are protected by bunding.

The leachate is pumped to sequential batch reactors, which are processing tanks used for the treatment of wastewater. There are four 110 kL tanks at the facility which have a decanting capacity of around 6 kL per hour. The system can treat up to 600 kL every 24 hours.

The treated leachate is discharged into a Sydney Water sewer on Lot 8 DP1200048 as permitted by Trade Waste Agreement 35580, which allows the discharge of up to 650 kL a day of pre-treated wastewater into Sydney Water infrastructure and is tested every eight days.

No changes are proposed to the landfill operations or leachate management as a part of the Proposal. Leachate management is therefore not considered further within this assessment.

Figure 12-2 Existing Northern OSD Basin (Nearmap, 17 October 2021)

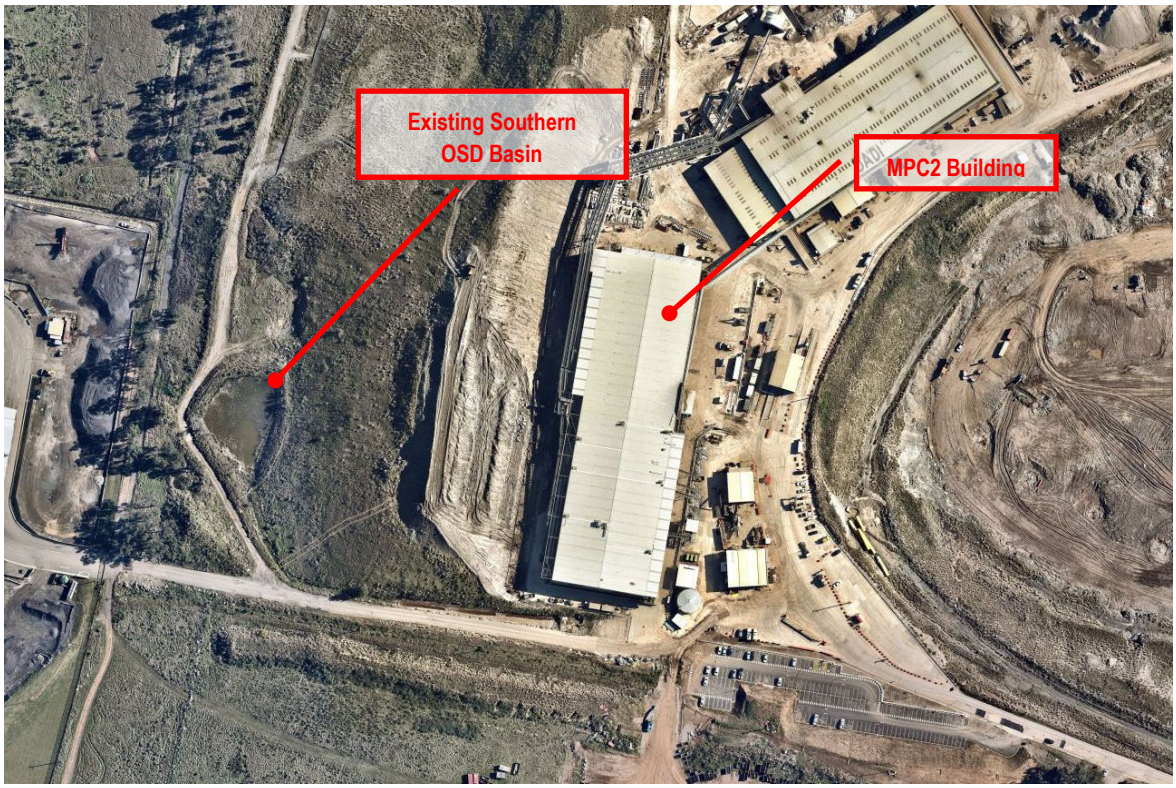

Figure 12-3 Existing Southern OSD Basin (Nearmap, 17 October 2021)

Surface stormwater runoff generated onsite is categorised into one of three broad streams, based on the general quality of runoff and the measures required to manage and treat it.

- Rainfall on the landfill catchment and timber waste yard, or stormwater that has come into contact with mixed waste and uncovered landfill waste. This is directed to the Site Leachate Management System via a network of gravity drainage lines and pumping systems.
- Rainfall on the remainder of the Eastern Creek REP, including internal roads, hardstands, car parks and stockpile areas. This either drains to or is pumped to an existing or proposed surface water management infrastructure (bio-retention system and/or OSD basin) and is then either pumped out for on-site reuse or drains towards a point of discharge from the site.
- Rainfall on roof areas that drains to a rainwater tank, where it is either:
  - Stored for reuse on-site (depending on the volume of storage available during a rainfall event)
  - Overflows the rainwater tank and discharges to an existing water management infrastructure.

12.3.1 Water quality

The existing environment of the Eastern Creek REP with regards to water quality and hydrology is summarised in Table 12-5.

Table 12-5: Water quality at the existing Eastern Creek REP

Aspect	Existing environment
Catchments and Land uses	The Proposal Site is located within the South Creek and Eastern Creek sub-catchments of the Hawkesbury-Nepean surface water catchment. Eastern Creek is a major tributary of South Creek, discharging into South Creek approximately 17 km north of the Proposal Site. The South Creek sub-catchment encompasses most of the Cumberland Plains of Western Sydney, covering an area of 620 km^2, and has been extensively modified and disturbed due to land clearing and urbanisation resulting in significant degradation of water quality, habitat and geomorphology. Drainage within the South Creek sub-catchment is from south to north towards the Hawkesbury River. The catchment is gently undulating, with local relief between 10 and 30 m. Slopes are generally less than five per cent but occasionally up to 10 per cent. The majority of the Proposal Site slopes in a western direction towards the unformed section of Archbold Road. A portion of the Proposal Site slopes in an easterly direction towards Kangaroo Avenue. Apart from the landfill, ground levels on the Proposal Site are generally between RL 60 and RL 85 m AHD. The Proposal Site is not located within the Sydney drinking water catchment (as defined by the State Environmental Planning Policy (Biodiversity and Conservation) 2021) and therefore the water quality provisions of this SEPP do not apply to the Proposal.
Watercourses	The watercourses located within the surface water study area include: • **Ropes Creek**, which flows in a northerly direction, approximately 700 m to the west of the Proposal Site • An unnamed **Ropes Creek tributary**, approximately 50 m southwest of the Proposal Site • The channel of **Upper Angus Creek**, which originates next to the eastern site boundary and runs north into an artificial drainage system through Minchinbury and connects to Eastern Creek • **Eastern Creek** which flows in a northerly direction approximately 1.5 km east of the Proposal Site. Ropes Creek is a third order Strahler stream that is perennial in nature and forms a tributary of South Creek. Records taken from WaterNSW water level gauge at Ropes Creek (WaterNSW, 2020), located about 5.3 km downstream of the Proposal Site, indicate that the mean monthly water level varied between 0

Aspect	Existing environment
	to 0.66 m in depth between January 2014 and November 2021, with fluctuations corresponding largely with rainfall events. The section of Angus Creek located adjacent to the Proposal Site and upstream (south) of the M4 Motorway is a first order Strahler stream that is ephemeral in nature. It is a tributary of Eastern Creek, and discharges into Eastern Creek approximately 4.5 km northeast of the Proposal Site.
Surface Water Quality	• **Ropes Creek –** A review of available existing water quality data indicates that the southern portion of Ropes Creek is generally in poor condition and representative of a heavily urbanised system. Blacktown City Council has reported the southern portion of Ropes Creek to have 'Good' water quality, stating that that water quality indicators remain within guideline limits 85 per cent of the time at the Ropes Creek south monitoring site (Blacktown City Council, 2021). • **South Creek Catchment –** Water quality in the South Creek Catchment is classified as very poor due to runoff from urban and agricultural areas and discharge from the St Marys, Quakers Hill and Riverstone sewage treatments plants (Rae, 2007). The major water quality issues in the South Creek catchment are related to nutrient concentrations and resulting algal and aquatic weed growth. • **Angus Creek –** The *Waterway Health Report Card for 2020-2021* states the waterway health grade for Angus Creek is "Poor", meaning the water quality indicators are within the guideline limits less than 50% of the time at the Angus Creek water quality monitoring site, which is located approximately 4.5 km north-east of the Proposal site. • **Eastern Creek -** The *Waterway Health Report Card for 2020-2021* states the waterway health grade for Eastern Creek is "fair", meaning the water quality indicators are within the guideline limits 70% of the time at both Eastern Creek monitoring sites. The Eastern Creek (north) monitoring site is located around 13 km northeast of the Proposal Site. The Eastern Creek (south) site is around 3.5 km southeast of the Proposal Site.
Hydrogeology	A hydrogeological investigation was undertaken by ERM (2018) on the broader Eastern Creek REP which found two distinct groundwater systems present: a shallow perched and intermittent in the fill, weathered shale and clay, and deeper regional aquifer in the shale and volcanic sediments. The depth to standing groundwater levels ranged from 5 to 12 m below ground level across the Eastern Creek REP. The nearest groundwater receptor is Ropes Creek, located approximately 700 m to the west. Natural groundwater is expected to flow to the north-west and north under low hydraulic gradients
Soils and geology	Based on the Penrith 1:100,000 surface geology mapping sheet (Clark & Jones, 1991) the Proposal Site is underlain by Bringelly Shale of the Wianamatta Group. The Soil Landscapes of Sydney 1:100,000 Sheet (Department of Conservation and Land Management, 1999) shows the Proposal Site is located within 'Disturbed Terrain'. The surrounding environment, outside the Proposal Site, is mapped as being located within the Blacktown soil landscape. The Blacktown soil landscape is characterised by shallow to moderately deep hard setting mottled texture contrast soils (clays and loams) occurring on gently undulating rises. Limitations of this soil landscape include localised seasonal waterlogging, localised water erosion hazard and localised surface movement potential. Based on previous site investigations (Section 11.2.2) the soils within the Proposal Site consist of hummocky terrain which has been extensively disturbed by human activity, with most of the original soil either removed, buried, or greatly disturbed. The erodibility of these soil materials is considered to be high, with a potentially very high to extreme erosion hazard. Soils and geology of the Proposal Site are further detailed in Chapter 11.

Aspect	Existing environment
ASS and contaminated land	The Australian Soil Resource Information System's (ASRIS, 2013) online ASS risk map indicates the Proposal Site is mapped within an area considered to have an extremely low probability of ASS occurrence, indicating that there is no known or expected occurrence of ASS within the construction footprint. ASS are not considered further due to the extremely low probability of occurrence and very low risk.

Figure 12-4 displays the Proposal Site in context with water and soil features, including acid sulfate soils, local waterways, groundwater and proposed intake and discharge locations.

12.3.2 Water quantity (stormwater)

The existing environment of the Eastern Creek REP with regards to water quantity is summarised in Table 12-6.

Table 12-6: Water quantity at the existing Eastern Creek REP

Aspect	Existing environment
Eastern Creek REP sub-catchments	The Eastern Creek REP is located within the following sub-catchments: • **Quarry Catchment,** which generally discharges in a north-westerly direction towards the M4 Motorway. • **Quarry North Catchment,** which also generally discharges in a north-westerly direction towards the M4 Motorway. • **Upper Angus Creek Catchment,** which generally discharges in a northerly direction parallel to Kangaroo Avenue, then towards a precinct-wide basin and onward towards the M4 Motorway. • **Ropes Creek Tributary Catchment,** which generally discharges in a north-westerly direction and ultimately into Ropes Creek approximately 700 m west of the Eastern Creek REP site
Rainfall and climatic conditions	The temperature and rainfall statistics for the area surrounding the Proposal Site were obtained from the closest Bureau of Meteorology climate station at Prospect Reservoir (site number 067019) over the period of 1887 to 2021. Mean rainfall is greatest in March, with a mean monthly rainfall of approximately 101 mm. Mean rainfall is generally lowest in September with a mean monthly rainfall of approximately 46 mm. Mean maximum temperatures generally peak in the summer months at 29°C. Mean maximum and minimum temperatures generally occur in July, at approximately 17°C and 6°C, respectively.
Water quantity infrastructure	Existing water quantity management infrastructure on the Eastern Creek REP comprises: • Northern OSD Basin – Located approximately 250 m northwest of MPC1 – Catchment area: 12.44 ha (not including the timber waste yard) • Southern OSD Basin – Located approximately 200 m west of MPC2 – Catchment area: 10.43 ha The southern basin is connected by a gravity pipe to the northern basin. Both basins overflow during extended rainfall period through natural drainage to Ropes Creek. Stored water from the northern on-site detention basin is transferred via a pump station to four aboveground reuse water tanks with a total combined capacity of 112.5 kL Both of the OSD catchments are contained within and discharge to the broader Quarry Catchment that is defined in the Precinct Plan.

12.3.3 Water use

Existing water uses across the Eastern Creek REP include:

- Internal potable water (e.g., employee showers and inside tap use)
- Internal non-potable (e.g., toilet flushing)
- External non-potable (e.g., irrigation)
- Fire and dust management services (e.g., sprinklers and fire service tanks).

The operational water management system comprises the following systems:

- Surface water management
- Wastewater and leachate management.

Mains water (supplied by Sydney Water to Eastern Creek REP) is used for site amenities, for dust suppression (sprinklers and misters) within the MPC buildings and for operational use within the landfill pit. Mains water is also used to supplement four aboveground water tanks (which are primarily supplied from the basins via the pump station)

Annual total mains water usage (for the 2020 period) was recorded as 41,337 KL/year, or an average of 113 kL/day.

Water from the northern OSD (which is connected to the southern OSD basin via a transfer pipe) is pumped to four aboveground reuse water tanks with a total combined capacity of 112.5 kL, to supply water to Eastern Creek REP's water carting facility. While both the northern and the southern OSD basins are primarily used for onsite detention, both basins have permanent pool volumes (below the outlet invert level) that can be used for reuse purposes. The volume capacity details for these basins are presented in Table 12-7.

Table 12-7 Capacity of the northern and southern OSD basins

Basin	Provided permanent pool volume
Northern OSD basin	500 kL
Southern OSD basin	746 kL

Based on a recent three-day audit undertaken by Bingo in January 2021, the average daily water cart use is estimated to be 178 kL/day, or 64,970 kL/year, accounting for weather variations.

Based on records of the total mains water usage for the 2020 period (41,337 kL/year) and the estimated water reuse (64,970 kL/year), on-site water reuse makes up approximately 61 per cent of the total water demand across the Proposal Site.

12.4 Construction impacts

As described in Section 3.4 the Proposal would be developed across three stages.

This section provides a description of the potential impacts from the Proposal associated with construction works. Stage 2 would comprise the majority of the physical changes to the Proposal Site as well as the majority of the earthworks required. The majority of the impacts described below are therefore likely to be experienced during the construction of Stage 2.

12.4.1 Water quality

Key construction activities that have the potential to impact on surface water quality would include:

- Erosion and sediment control installation
- Grading and earthworks to establish building layout, drainage layout and pavements
- Stormwater and drainage works

- Service installation works
- Building construction works.

As noted in Table 12-5 the Proposal Site is located within 'Disturbed Terrain'. The erodibility of this soil type is considered to be high. Furthermore, disturbances to soils during construction could result in surface water runoff (e.g. sediment laden water) into the downstream receiving waters. This has the potential to transport pollutants such as sediment, chemicals, oils and grease into the downstream receiving waters which could result in water quality and biodiversity impacts.

Without mitigation measures and during typical construction activities, site runoff may convey a substantial sediment load. In addition to the existing controls already in place across the Eastern Creek REP (described in Section 12.3), an erosion and sediment control plan (ESCP) will be prepared and implemented in accordance with measures applied from the Blue Book (Landcom, 2004) through the construction phase of the Proposal. The ESCP and the proposed controls will be established prior to the commencement of construction of Stage 2 of the Proposal and will outline measures (Table 12-8) to protect the downstream drainage system and receiving waters from sediment laden runoff.

During construction, fuels and chemicals required for construction would be stored on the Proposal Site and within construction compounds. Due to this, there is potential for fuels and chemicals to spread to the surrounding environment through spills and leaks.

Water infrastructure and controls utilised during construction to mitigate the potential impacts of construction on surface water quality are detailed below in Table 12-8.

Table 12-8: Water infrastructure and controls utilised during construction of the Proposal

Infrastructure / control	Description
Onsite stormwater detention	The potential impact of sediment-laden runoff from the Proposal Site would be mitigated by utilise both existing and two new proposed OSD basins (described below) to capture and contain runoff from the existing and proposed operational areas and the extent of work under the Proposal. During construction, stormwater runoff generated onsite would utilise the existing water management infrastructure described in Section 12.3 including the Northern and Southern OSD basins. Rainfall on the Proposal Site during construction would be drained or pumped to one of these two OSD basins. Additionally, two basins are proposed to be installed (refer Section 3.3.9) as part of the Proposal: • Basin B – to be located near the north-eastern corner of the Proposal Site, adjacent to the Upper Angus Creek corridor that runs parallel to Kangaroo Avenue • Basin K – to be located near the north-western corner of the Proposal Site, adjacent to the natural low point along the site boundary (Figure 12-4). These basins would be installed and maintained as sediment basins for the duration of construction works. Upon completion of the final built-form works (including road pavements and building works), the basins would be desilted converted to detention basins (e.g., installation of hydraulic outlet controls such as orifice plates).
ESCP	The erosion and sediment controls outlined in the ESCP (and listed in Section 12.6) will include but not be limited to: • Stabilised site access shall be constructed at all entry and exit points to the Proposal Site to prevent the migration of soil and sediments • At the upstream end of works, clean water shall be temporarily diverted around disturbed areas • Sediment fences shall be installed at the downstream end of any disturbed areas

Infrastructure / control	Description
	• The area of soil disturbed at any one time shall be minimised where possible. Any stockpiled material shall be covered, kept moist or planted with hydromulch • Any disturbed areas shall be rehabilitated as soon as practical • Sediment basins and / or traps (including sediment fences) shall be cleaned when the structures are at a maximum of 60 per cent full of solid materials and disposed of in a manner that prevents further pollution of the site • Measures will be inspected regularly and after significant rainfall (nominally more than 25 mm over a 24-hour period) and will be cleaned and repaired, as necessary.
CEMP	Mitigation measures will be incorporated into the CEMP (refer to Section 11.5) including but not limited to the provision of spill kits and a spill response procedure to minimise the risk of spills and leaks spreading to the surrounding environment.

12.4.2 Water quantity (stormwater)

Construction of new access roads, hardstands and buildings would progressively result in an increase in impervious areas within the Proposal Site. As the impervious fraction of the Proposal Site increases, the peak flow rates from surface water runoff across the Proposal Site would increase.

In order to mitigate increases in water quantity and an increase in peak flow rates Basin B and Basin K are proposed to be installed (refer Table 12-8 and Section 3.3.9):

These basins would be installed and maintained as sediment basins for the duration of construction works and would therefore mitigate potential water quantity impacts during construction.

12.4.3 Water use

Potential impacts relating to water use on-site during construction would be limited to minor increases in demand for activities such as dust suppression, wheel wash facilities for construction vehicles exiting the Proposal Site and site office amenities.

The existing operational water management system for the Proposal Site would be utilised during construction of the Proposal. For example, water stored in the existing Northern and Southern OSD basin would be utilised during construction for dust suppression and truck wet down.

Any construction phase activities that require non-potable water, such as dust suppression and wheel wash, would prioritise the use of non-potable water captured and stored onsite (within either existing OSDs or the new proposed basins where practicable).

12.5 Operational impacts

12.5.1 Water quality

An increase in impervious surfaces such as internal access roads, workshop buildings and hardstand area has the potential to increase the quantity of pollutants in particular TSS in surface water runoff.

The Proposal would utilise existing water quality infrastructure (described in Section 12.3) and additional stormwater infrastructure incorporated in the design of the Proposal to manage potential water quality impacts.

The water infrastructure that would be utilised and/or is proposed as part of the Proposal is outlined in Table 12-9 below.

Table 12-9 Water quality infrastructure utilised and/or proposed as part of the Proposal's operation

Water quality infrastructure	Description
GPT	A new GPT incorporating capacity for removal of hydrocarbons would be installed along the proposed section of internal access road adjacent to the MPC2 building. This GPT would capture and treat surface water runoff from the proposed section of access road adjacent MPC2, prior to discharge into the existing catch drain that discharges to the existing southern OSD basin.
Onsite stormwater detention	Stormwater runoff within the Proposal Site would be collected via a network of stormwater drainage infrastructure, including pits, pipes and table drains. This infrastructure would discharge to either an existing or a proposed OSD basin prior to discharge from the Proposal Site. A portion of the Proposal Site, including extents of the proposed work under the Proposal, would discharge towards the northern and southern OSD basins. The remainder of the proposed extent of work would discharge towards one of two new basins: • Basin B – to be located near the north-eastern corner of the Proposal Site, adjacent to the Upper Angus Creek corridor that runs parallel to Kangaroo Avenue. Basin B would also include a bio-retention system, which would be positioned adjacent to the OSD component of the basin such that there would either be no OSD or a shallow OSD depth over the bio-retention system. • Basin K – to be located near the north-western corner of the Proposal Site, adjacent to the natural low point along the site boundary.
Bio-retention system	The objective of bio-retention systems is to provide a filtering effect when stormwater runoff flows through a vegetation layer and sand and/or gravel filer media to remove pollutants from the runoff. To meet the pollutant reduction targets for the Proposal, a 400 m^2 bio-retention system is proposed within Basin B. The location of this basin is shown in Figure 12-4. This bio-retention system has been sized to meet the pollutant reduction targets for Catchment B prior to discharge across the eastern boundary of Eastern Creek REP and into Angus Creek.

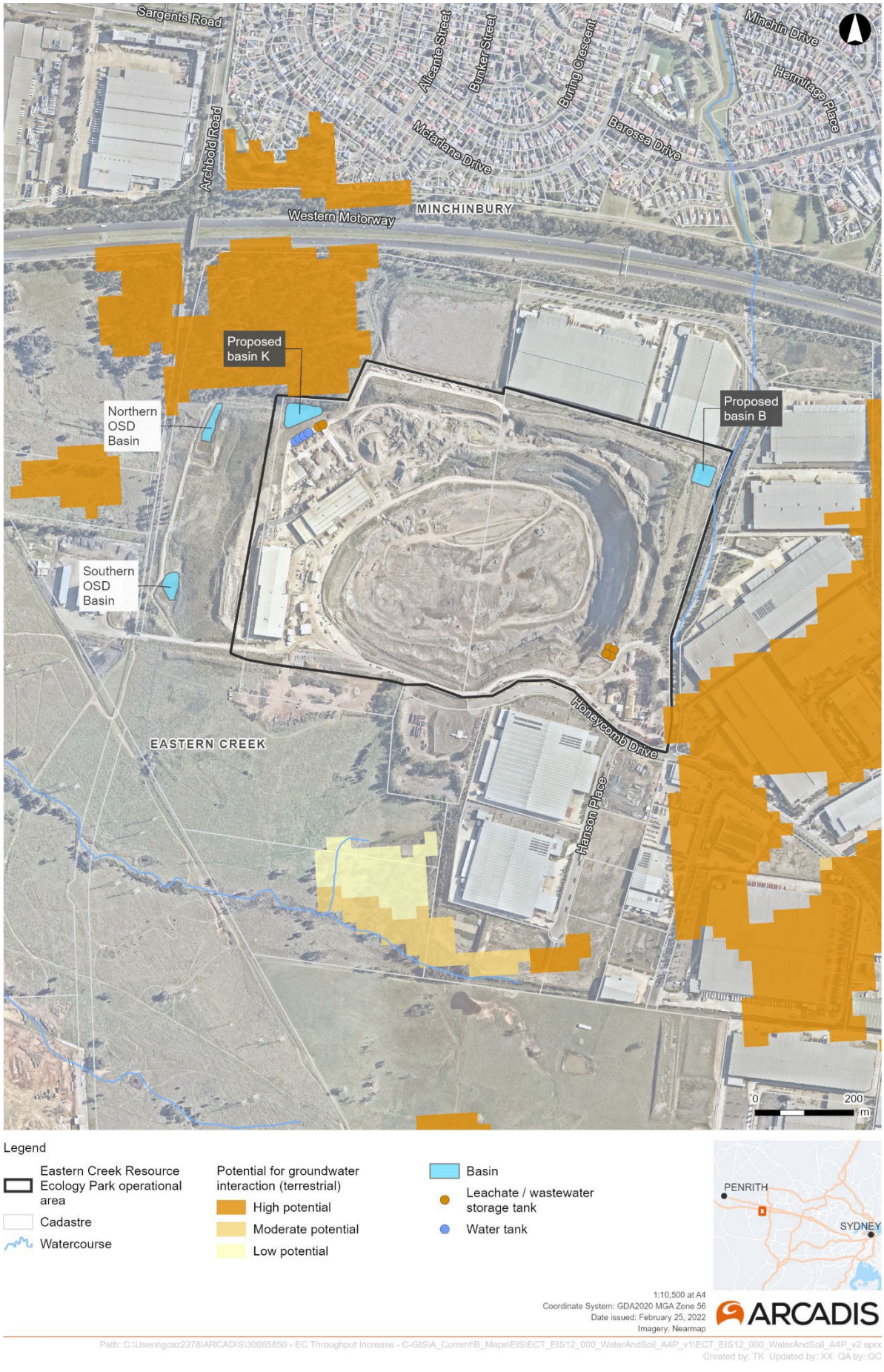

Figure 12-4 Soil and water features and water infrastructure to be utilised by the Proposal

Based on the existing and proposed stormwater quality management measures to be implemented as part of the Proposal, results from the MUSIC model demonstrate the effectiveness of the proposed treatment train (as shown in Table 12-10). The treatment measures would achieve a percentage reduction greater than the target reduction for all parameters. This is due to the stormwater quality and quantity management measures currently in place, as well as those additional measures proposed as part of the Proposal. In addition, the reuse of non-potable water harvested from the existing northern and southern OSD basins also contributes to the high percentage reduction of stormwater pollutants.

Table 12-10: MUSIC model results

Pollutant	Sources – Post-Development (kg/yr)	Residual Load – Post-Development (kg/yr)	% reduction	Target load reduction
TSS	43,560	1040	97.6%	85%
TP	76.55	3.11	95.9%	65%
TN	363.2	30	91.7%	45%
Gross pollutants	4120	0	100%	90%

Council adopts five deemed-to-comply solutions for hydrocarbons in low-risk developments, such as the Eastern Creek REP site:

- Method 1 – Gross pollutant trap with hydrocarbon trap
- Method 2 – Oil baffle (excluding Jellyfish)
- Method 3 – Oil baffle for Jellyfish
- Method 4 – Bio-retention with shallow or no OSD
- Method 5 – Fully covered carparks and driveways

For the catchments discharging towards proposed Basin B and Basin K, Method 4 (Bio-retention with shallow or no OSD) is proposed to satisfy the deemed-to-comply requirement for hydrocarbon removal. This is proposed on the basis that:

a. As described in Table 12-9, the proposed bio-retention component of Basin B would be located adjacent to the OSD component of the basin, such that there would either be no OSD or a shallow OSD depth over the bio-retention system. The bio-retention basin configuration would comply with Council's requirements outlined in Section 11.16 of the *WSUD developer handbook.*

b. The catchment discharging towards Basin K drains to the existing northern bio-retention basin, located upstream of the existing northern OSD basin.

For the proposed section of access road that would drain to the existing southern OSD basin, it is proposed that Method 1 (Gross pollutant trap with hydrocarbon trap) be adopted to capture any hydrocarbons that would discharge from the new access road. This would require the installation of a proprietary device within the proposed pit and pipe /catch drain system that would ultimately discharge to the existing southern OSD basin.

As demonstrated in Table 12-10, MUSIC modelling indicates that the existing and proposed water quality treatment measures utilised as part of the Proposal would comply with Council's annual load reduction target. Furthermore, the Proposal would utilise a number of Council's deemed-to-comply solutions for hydrocarbon removal. As such, impacts to downstream water quality as a result of the Proposal are considered unlikely.

Additionally, operation of the Proposal has been designed such that the concentration limits set by the EPLs (refer Table 12-4) can still be achieved, and that there is no requirement to amend the EPL concentration limits. There would be no material change between the proposed operational activities and the current operational activities on site that would require any changes to discharge limits currently prescribed in the EPL.

12.5.2 Water quantity (stormwater)

As noted in Table 12-9, stormwater runoff within the Proposal Site is proposed to be collected via a network of stormwater drainage infrastructure including pits, pipes and table drains. This infrastructure would discharge to either an existing (Section 12.3.2), or a proposed OSD basin (Table 12-9) prior to discharge from the Proposal Site. The intent of the OSD basins is to attenuate post-development peak flow rates to no greater than pre-development conditions at each point of discharge across the site boundary.

Unmitigated, any increase in the impervious fraction of the Proposal Site has the potential to increase peak flow rates towards the points of discharge across the Proposal Site boundary. The OSD requirement for the Proposal Site would mitigate the impact of the Proposal as a result of an increase in impervious surfaces (roads, hardstands and buildings). The existing OSD basins have been designed to attenuate peak flows up to and including the one per cent AEP event.

A DRAINS model (refer Section 12.2.3) has been developed to determine the adequacy of the existing and proposed OSD to adequately manage stormwater flows for the full build infrastructure of the Proposal. Results of pre-development and post-development DRAINS modelling for a range of storm events are summarised in Table 12-11.

These results demonstrate that the existing and proposed OSD basins would attenuate post-development flow to less than pre-development flow rates for a range of design storms up to the one per cent AEP event. As the post-development flow rates would be less than pre-development flow rates at each of the three discharge points from the Proposal Site, there would be no adverse impact on downstream drainage systems as a result of the Proposal.

Table 12-11: Summary of DRAINS model results (peak flow (m^3/s)

Storm Event	South OSD Basin		Basin K / North OSD Basin		Basin B	
	Pre-development	Post-development	Pre-development	Post-development	Pre-development	Post-development
0.5 EY	0.705	0.299	1.32	0.372	0.354	0.120
10% AEP	1.54	0.450	2.84	0.570	0.762	0.121
5% AEP	1.99	0.725	3.52	0.667	0.944	0.121
1% AEP	2.89	2.05	5.06	1.64	1.36	0.124

12.5.3 Water use

Water demand

The Proposal would result in a minor increase in potable water demand as a result of the following uses:

- New amenities within the proposed Site Workshop and Maintenance and Manufacturing Workshop buildings.
  - Potable water would be supplied for taps, showers and to supplement rainwater tanks for toilet flushing (roof runoff harvested in rainwater tanks would be the primary source of supply for toilet flushing).
- Increase in the number of employees onsite due to the proposed throughput increase and Maintenance and Manufacturing Workshop. The Proposal would require up to an additional 20 FTE employees within the MPC1 and MPC2 facilities and 50 FTE employees for the Maintenance and Manufacturing Workshop.
- Top-up of the water tanks for external reuse (primarily dust suppression).

The daily demand for non-potable water would also likely increase across the Eastern Creek REP as a result of the Proposal. This is as a result of the increase in road surface area that would require dust suppression, as well as the increase in volume of material that would be processed on the Proposal Site.

It has been assumed that the increase in demand would be equivalent to approximately 20 per cent of the current estimated non-potable water demand (i.e., an increase from 178 kL/day to 214 kL/day). This estimate is based on the following:

- The majority of the demand for non-potable water within the Proposal Site would be external uses, primarily for dust suppression of stockpiles and internal access roads. It is estimated the proportion of external non-potable water use is approximately 90 per cent of the total non-potable water use across the site, with the remaining 10 per cent being internal uses including misting systems and hosing of waste within the materials processing buildings.
- There would be no significant increase in the demand for 'internal' non-potable water as a result of the Proposal.
- The increase in throughput would result in a higher rate of stockpile turnover, requiring an increase in stockpile management and demand for water for dust suppression. It is estimated that this increase would represent up to 20 per cent of the current non-potable water use across the Proposal Site.

Rainwater reuse within buildings

In order to satisfy the water reuse objectives for the Proposal the Proposal incorporates two new rainwater tanks, one each for the Site Workshop and the Maintenance and Manufacturing Workshop.

A MUSIC model was developed to determine the rainwater tank volume required to satisfy the Blacktown DCP requirement. To determine the tank volume, the following assumptions were made:

- Non-potable demand of 0.1 kL per toilet per day has been adopted. The number of toilets within the two proposed workshops has been estimated based on their respective floor area
- At least 50 per cent of the total warehouse roof area would drain to the rainwater tank.

Based on the parameters listed above, a summary of rainwater tank water balance results from the MUSIC model is presented in Table 12-12. These model results indicate that 10 kL rainwater tanks at each of the two proposed workshop buildings would be capable of supplying more than 92 per cent of the non-potable water demand in the two buildings, which is assumed to be limited to toilet flushing. Furthermore, the relatively low non-potable water demand modelled would result in a high proportion of inflow to the tank overflowing the tank towards the existing and proposed OSD basins. This indicates that there is opportunity to utilise the proposed rainwater tanks as supplementary storages to supply other non-potable water demands across the Eastern Creek REP.

Table 12-12: Water balance results for rainwater tanks

Component	Adopted rainwater tank volume (kL)	Tank inflow (kL/yr)	Tank overflow (kL/yr)	Non-potable reuse supplied (kL/yr)	Reuse demand (kL/yr)	% reuse demand met
Site Workshop	10	1500	1399	101	110	92.2%
Maintenance and Manufacturing Workshop	10	3175	3073	102	110	93.2%

Other non-potable water use

As described in Section 12.3.3, the average daily water cart use across the Eastern Creek REP is estimated to be 178 kL/day. The water cart facility is used for truck wet washing and dust suppression across the Proposal Site. Stored water from the northern OSD basin (and the southern OSD basin via

a transfer pipe to the northern OSD basin) is transferred to four above ground water tanks with a total combined capacity of 112.5 kL.

As outlined above, it is likely that the daily demand for non-potable water would increase across the Eastern Creek REP as a result of the Proposal. It is estimated that the increase in demand would be equivalent to approximately 20 per cent of the current estimated non-potable water demand (i.e., an increase from 178 kL/day to 214 kL/day).

To cater for the anticipated increase in external non-potable water demand, it is proposed that additional storage tanks be provided to supplement the four existing tanks. Based on MUSIC model results presented in Table 12-13, it is proposed that an additional 112.5 kL of storage tanks be provided, which would effectively double the volume of storage available for external water reuse within the Proposal Site.

The MUSIC model for the Proposal Site has been used to estimate the impact of an increase in non-potable water demand on the demand for mains water to supplement non-potable water sources. Three scenarios have been simulated:

Scenario 0: Current site conditions, based on existing non-potable water demand (178 kL/day) and water storage capacity within the water storage tanks (112.5 kL).

Scenario 1: Proposed site conditions, with an increase in non-potable water demand (214 kL/day) and assuming no change in water storage capacity (112.5 kL).

Scenario 2: Proposed site conditions, with an increase in non-potable water demand (214 kL/day) and including the proposed increase in water tank capacity (225 kL).

A summary of the MUSIC model results for these three scenarios is presented in Table 12-13. The results presented in Table 12-13 demonstrate that the proposed increase in water tank storage volume would increase the average annual volume of water supplied for external reuse. Additional storage would also provide a benefit in terms of an overall reduction in tank overflow, which represents water that would discharge from the Proposal Site via one of the two existing OSD basins.

Table 12-13: Water balance results for site-wide non-potable water supply and demand scenarios

Parameter	Scenario 0	Scenario 1	Scenario 2
Adopted non-potable water demand	178 kL/day	214 kL/day	214 kL/day
Water tank storage volume	112.5 kL	112.5 kL	225 kL
Average annual volumes from Node Water Balance in MUSIC			
[A]: Tank Inflow	37,960 kL	40,340 kL	40,340 kL
[B]: Tank Overflow	7,050 kL	7,210 kL	5,980 kL
[C]: Reuse supplied	30,920 kL	33,170 kL	34,410 kL
[D]: Reuse demand	65,020 kL	78,170 kL	78,170 kL
[E]: Mains water top-up (= [D] – [C])	34,100 kL	45,000 kL	43,760 kL
[F]: % of reuse supplied by non-potable water (= [C] ÷ [D])	47.6%	42.4%	44.0%
[G] % of inflow to tanks supplied for non-potable reuse (= [C] ÷ [A])	81.5%	82.2%	85.3%

The water balance model results presented above demonstrate that the proposed increase in water storage for external reuse would satisfy the water use objectives for the Proposal Site, as the additional storage volume would maximise water reuse and minimise the volume of potable water required to meet non-potable water demand across the Proposal Site.

12.6 Mitigation measures

The Proposal would not have an adverse impact on water or hydrology, with all aspects found to be compliant with their respective objectives and targets. Table 12-14 outlines the mitigation measures that will be implemented to further minimise any water and hydrology impacts.

Table 12-14: Mitigation measures (water and hydrology)

ID	Mitigation measures	Timing
WH1	During construction of the Proposal erosion and sediment control measures will be implemented in accordance with the requirements of the existing Soil, Water and Leachate Management Plan for the Eastern Creek REP relating to new earthworks and *Managing Urban Stormwater – Soils and Construction* (Landcom, 2004).	Construction
WH2	An ESCP will be prepared for the Proposal in line with the ESCP included as Appendix A of Appendix N to the EIS. As a minimum the following measures will be included on the ESCP and implemented during construction: • Stabilised site access shall be constructed at all entry and exit points to the site to prevent the migration of soil and sediments. • At the upstream end of works, clean water shall be temporarily diverted around disturbed areas. • Sediment fences shall be installed at the downstream end of any disturbed areas. • The area of soil disturbed at any one time shall be minimised where possible. Any stockpiled material shall be covered, kept moist or planted with hydromulch. • Any disturbed areas shall be rehabilitated as soon as practical. • Sediment basins and/or traps (including sediment fences) shall be cleaned when the structures are at a maximum of 60% full of solid materials and disposed of in a manner that prevents further pollution of the site. • Measures will be inspected regularly and after significant rainfall (nominally more than 25mm over a 24-hour period) and will be cleaned and repaired, as necessary. • Controls will be installed prior to the commencement of earthworks and construction, to minimise sediment laden run-off into adjoining vegetation and waterways including Angus Creek • Where possible, earthworks would be undertaken during dry weather conditions.	Construction
WH3	Mitigation measures to minimise the potential impacts to water and hydrology during construction will be incorporated in the CEMP (e.g. provision of spill kits and spill response procedures)	Construction
WH4	The existing EPIRMP will be updated if required to accommodate any additional potential impacts identified for the Proposal. The EPIRMP outlines the procedure to be followed in the event of a chemical spill or leak during construction and operation. This will include notification requirements and use of absorbent material to contain the spill or leak.	Construction/Operation
WH5	The existing SWLMP would be updated to include upgrades to water management infrastructure comprised within the Proposal. The Proposal would be operated in accordance with the management measures in Section 8 of the existing Soil, Water and Leachate Management Plan.	Operation

13 HAZARDS AND RISKS

13.1 Introduction

This section includes an assessment of the hazards and risks associated with the Proposal to address the SEARs issued by DPE. A preliminary risk screening has been prepared in accordance with the requirements of the now repealed *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development*. Table 13-1 provides a summary of the relevant SEARs which relate to hazards and risks, and where they have been addressed in this EIS.

Table 13-1 SEARs (Hazards and risk)

SEARs	Where addressed
Fire and incident management	
Identification of the aggregate quantities of combustible waste products to be stockpiled at any one time	Sections 2.7.5 (quantities of waste)
Technical information on the environmental protection equipment to be utilised on the premises such as air, water and noise controls, spill clean-up equipment and fire (including location of fire hydrants and water flow rates at the hydrant) management and containment measures	Sections 2.7.12 (protection equipment)
Details regarding the fire hydrant system and its minimum water supply capabilities appropriate to the site's largest stockpile fire load	Section 2.6.8 (fire management infrastructure)
Details of size and volume of stockpiles and their management and separation to minimise fire spread and facilitate emergency vehicle access	Sections 2.7.5 and 13.4.1(waste storage)
Consideration of consistency with NSW Fire & Rescue Fire Safety Guideline – Fire Safety in Waste Facilities (February 2020)	Section 2.6.8 (fire management infrastructure)
Detailed information relating to the proposed structures addressing relevant levels of compliance with Volume One of the National Construction Code (NCC).	Section 13.4.1 (waste storage)
Hazards and risk	
A preliminary risk screening completed in accordance with *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development* and Applying SEPP 33 (DoP, 2011), with a clear indication of class, quantity and location of all dangerous goods and hazardous materials associated with the development. Should preliminary screening indicate that the project is "potentially hazardous" a Preliminary Hazard Analysis (PHA) must be prepared in accordance with *Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis* (DoP, 2011) and *Multi-Level Risk Assessment* (DoP, 2011).	Section 13.2 and 13.4 to 13.5 (risk screening)

13.2 Method of assessment

A hazard is identified as anything or any situation with a potential for causing damage to people, property or the biophysical environment (DoP, 2011b). Hazard identification was undertaken based on a review of the existing and proposed features of the Proposal Site. In identifying hazards and risks, operational and organisational safeguards designed to prevent or mitigate the effects of hazardous incidents have also been taken into consideration.

13.2.1 Assessment scenarios and approach

Chapter 7 outlines the different assessment approaches adopted within this EIS to assess the potential impacts from the Proposal. Hazards and risks have been assessed on an individual stage basis to take account of the potential impacts from each Stage of the Proposal as shown in Figure 13-1.

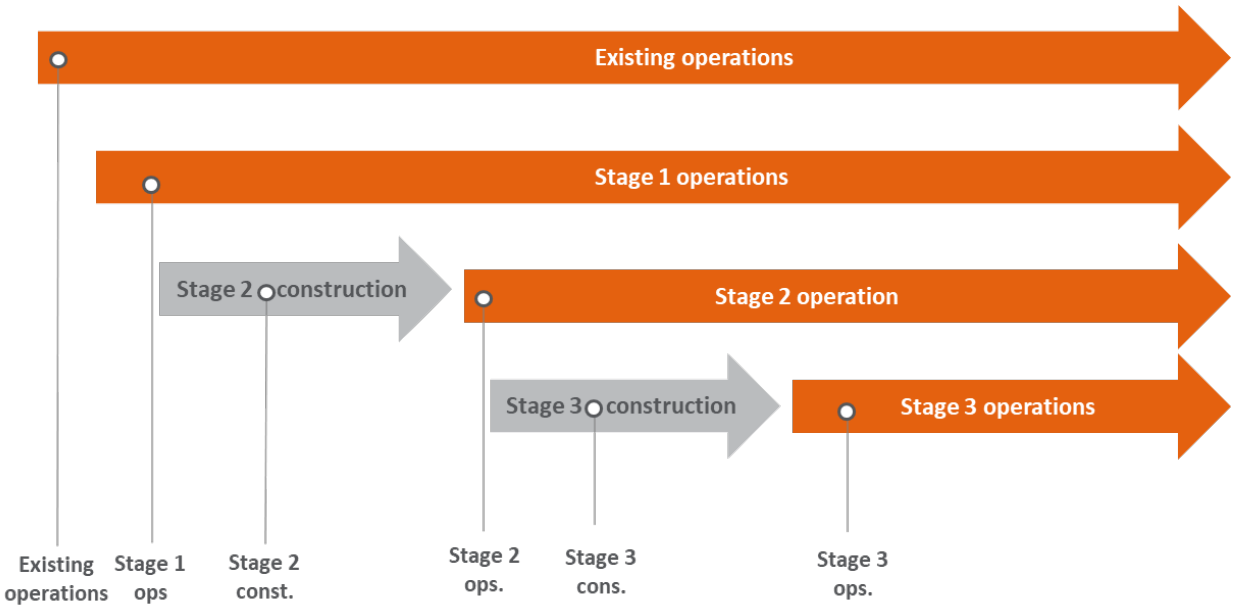

Figure 13-1 Hazards and risks assessment scenarios

13.2.2 Hazard identification and assessment

A desktop review and investigation of background information relevant to the Proposal was undertaken to identify the existing and future site conditions that may present hazards during construction and operation of the Proposal. This included an examination of existing contamination reports (as summarised in Section11.2), aerial imagery and site investigation data relevant to the Proposal Site and surrounds.

The potential for the Proposal to impact on existing hazards along with any new potential hazards generated were then considered. Control measures were then identified to manage potential hazards. In identifying hazard mitigation and management measures the following hierarchy of controls (which range from most effective to least effective) were considered:

- Eliminate the hazard altogether
- Substitute the hazard with a safer alternative
- Isolate the hazard from anyone who could be harmed
- Use engineering controls to reduce the risk
- Use administrative controls to reduce the risk
- Use personal protective equipment (PPE).

This hierarchy starts with the most preferable approach to managing hazards.

13.2.3 State Environmental Planning Policy (Resilience and Hazards) 2021

As discussed in Section 5.6.4, *State Environmental Planning Policy (Resilience and Hazards) 2021* links the permissibility of an industrial development to its safety and environmental performance. Activities involving the handling, storage or processing of a range of materials, which, in the absence of controls may create risk outside the operational borders to people, property or the environment are defined by the SEPP as a 'potentially hazardous industry' and / or 'potentially offensive industry'. Under Section 3.11 of the SEPP, industries or projects determined to be potentially hazardous require the preparation of a PHA.

To determine if the Proposal is defined as a potentially hazardous industry and / or potentially offensive industry under the provisions of the SEPP, a preliminary risk screening was undertaken in accordance with Figure 4 of Applying SEPP 33 (DoP, 2011a). This involved:

- Identification of dangerous goods involved in the Proposal, the quantities of these goods and the distance of the storage location relative to the Proposal Site boundary
- Determination of whether the Proposal would emit a polluting discharge which would cause a significant level of offense, and hence require a licence.

The desktop review and investigation of relevant background information was used to effectively apply the risk screening method prescribed in Applying SEPP 33. This included collecting the following information:

- Details and quantities of all dangerous goods and otherwise hazardous materials involved in the proposed development - including raw materials, intermediates, and products
- Dangerous goods classifications (including all subsidiary classes) for all dangerous goods held on site
- Distance from the boundary for each hazardous substance
- Weekly and annual number of deliveries (and the quantities) of dangerous goods and otherwise hazardous materials to and from the facility
- A locality plan showing the nearest sensitive receiver.

13.3 Existing environment

13.3.1 Surrounding land use

The location of receivers in the vicinity of the Proposal Site are described in detail in Section 2.4 and Figure 2-1. As the Proposal is located in the Eastern Creek REP, within the Eastern Creek industrial precinct / M7 business hub, most of the surrounding uses are of an industrial nature; notably to the north east and south. These industrial developments include Techtronic Industries, H&M distribution warehouse, Kuehne + Nagel (Australia) Pty Ltd warehouse, Kmart distribution centre, Bunnings distribution centre and DB Schenker warehouse. To the west of the Eastern Creek REP is the Fulton Hogan asphalt batching plant and a vacant area of undeveloped land.

The closest residential receivers are located across the M4 Motorway approximately 400 m to the north in the suburb of Minchinbury and approximately 1.2 km west in the suburb of Erskine Park.

As part of the original (as modified) Project Approval for the Eastern Creek REP (MP 06_0139), it was identified that dangerous goods would be stored on site. The EIS (ERM, 2008) prepared for the development included an assessment of the Proposal against the now repealed *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development* to determine if the facility was hazardous or offensive. It was identified that diesel fuel would be stored and handled onsite however it is not classified within the Dangerous Goods Code therefore the development was concluded not be a potentially hazardous industry. The Proposal does not propose any change to the existing fuel storage arrangements on site.

13.3.2 Existing hazards present on the Proposal Site

The Proposal would be carried out within the existing Eastern Creek REP.

Existing hazards at the Eastern Creek REP include (described further in the context of the Proposal in Section 13.4):

- Spills
- Fire and explosion
- Vehicle and machinery use
- Hazardous materials
- Airborne hazards.

Existing hazards and risks associated with the operation of Eastern Creek REP are managed through the EMS and associated operational procedures. The EMS addresses the following issues relevant to hazards and risks at the Eastern Creek REP.

- Staff training to promote environmentally sensitive and safe management of the Facility
- Complaints register to record and monitor complaints to improve site operations.
- Incident reporting as detailed in the EPIRMP
- Chemical spill response
- Inspections and maintenance
- Monitoring requirements
- Site specific environmental management programs to address risks related to waste, water, air quality, noise, traffic, biodiversity and heritage.

Potential hazards associated with the Proposal are discussed below.

Fire and explosion

Fire and explosions have the potential to cause human injury and damage to property and equipment. Fire may be caused by a number of factors, including hot waste loads electrical and chemical causes. Potential scenarios by which the Proposal Site may be impacted by fire or explosion:

- Fire from adjacent properties, including fires from surrounding industrial uses or bushfires
- Fire from waste trucks entering the Proposal Site caused by hot material brought in with waste, or possibly through spontaneous combustion of volatile material in the waste
- Fire or explosion initiated on site, e.g., from a vehicle accident, equipment, by discarded matches or naked flames, by spontaneous combustion of stockpiles or during operations through the baling of materials or the risk of explosion from aerosols.

The aggregate quantities of combustible waste products stockpiled at any one time at Eastern Creek REP are presented in Table 13-2. Stockpiles containing combustible waste materials consist of wood and mixed stockpiles located within the MPC1 building and Eco Products processing area and MPC2. Mixed stockpiles would comprise of building waste with combustible waste materials forming a portion of the material contained within the stockpiles. The risk afforded by a fire amongst a mixed stockpile containing non-combustible materials such as concrete is remote, however a conservative approach has been maintained and the total volume of mixed stockpiles has been used to determine the aggregate quantities of combustible waste products.

Table 13-2 Aggregate quantities of combustible waste material store at any one time (t)

Material	MPC1 – Eco Products area (t)	MPC1 (t)	MPC2 (t)	Total (t)
Wood	3,640	-	-	3,640
Mixed	-	4,320	4,097	8,417
			Total	**12,057**

Item 8.2.5 of the *Fire Safety Guideline – Fire Safety in Waste Facilities* (Fire Safety Guidelines) (FRNSW, 2020) stipulates that the storage method and arrangement of stockpiles is to minimise the risk of collapse and fire spread and provide separation, which permits access for firefighting intervention. It is also noted within the guidelines that fire separating masonry walls and automatic fire sprinkler systems may allow larger stockpile sizes and / or shorter separation distances. It is intended that the majority (if not all) of the additional throughput increase would be directed to MPC2. As such, the existing fire safety infrastructure within MPC2 and the broader Eastern Creek REP described in Section 2.6.8 would be utilised to minimise the risk of fire. Details regarding the management of combustible stockpiles within the MPC2 is detailed below.

Stockpiles within MPC2 consist of incoming mixed waste materials. As noted previously, the fire risk associated with combustible materials in reduced when amongst stockpiles also containing non-combustible building waste such as concrete. Notwithstanding fire safety infrastructure and stockpile management is employed within MPC2 to reduce the risk of fire.

The internal stockpiles within MPC2 comprise of two storage methods

- Vehicles enter the tip floor and deposit waste. This would be piled to a maximum height of 4 m
- This waste is to be continually lifted into the two 6 m deep pits at the north and south end of the tipping floor. These pits are surrounded by 2 m high walls, so the effective depth of waste within the pits can be up to 8 m high before they exceed the height of the walls and become at risk of collapsing.

The majority of waste would be in the two pits which are approximately 50 m apart. Waste on the tip floor would also be separated from the waste pits by a 2m high wall. The pits have a slope of 55° hence it is unlikely that the stockpile would collapse minimising the risk of fire spread.

The only uncontained face would be the waste which has been deposited from trucks onto the tip floor. This face will be maintained at a slope less than 45° in accordance with the Fire Safety Guidelines (Fire and Rescue NSW, 2020).

External stockpiles comprise ferrous bays separated from one another by masonry construction for storage of non-combustible metal.

Attack hydrants are located around the perimeter of MPC2 with, fallback hydrants provided within 70 m of the attack hydrants that are located within 10 m of the building or under the external conveyors. These provide a means of redundancy for FRNSW personnel in the event of a fire occurring in close proximity to the external conveyors.

Furthermore, the tipping floor area is equipped with both an automatic fire sprinkler system at roof level and a remote operated water monitor system capable of providing up to 20,000 L/s. The provision of a thermal camera system within the area further provides a means of detection in the event of a deep-seated fire within the stockpile.

The existing EPIRMP and EMS would be implemented through Stage 1 operation to manage fire risks.

13.4 Impact assessment

13.4.1 Stage 1

Operation

Hazards

Potential hazards to the environment and / or public health identified in relation to the operation of Stage 1 are discussed below and primarily relate to the increased onsite vehicle movements. Further detail is provided in Section 13.6 which outlines the potential hazards identified as part of the risk assessment, the risk associated with the hazard and the proposed mitigation strategy that would be adopted to address the hazard.

Spills

This includes liquid, gas and solid spills and leaks. Depending on the material and circumstances, spills may result in damage to skin, membranes, airways and physical impact and injury (e.g. falling materials). Spills also have the potential to cause harm to the environment, particularly if liquid spills of toxic and / or hazardous substances enter waterways or groundwater and / or contaminate soil.

As Stage 1 would not result in any changes to the built form of the Eastern Creek REP, installation of additional spill kits would not be required as they are already located in various locations throughout the Eastern Creek REP. The existing EMS and EPIRMP will be updated as required.

Fire and explosion

Section 13.3.2 describes the existing hazards and controls associated with the Eastern Creek REP. The Proposal would utilise existing onsite infrastructure and would be subject to the commensurate risks as current operations:

- Fire from adjacent properties, including fires from surrounding industrial uses or bushfires
- Fire from waste trucks entering the Proposal Site caused by hot material brought in with waste, or possibly through spontaneous combustion of volatile material in the waste
- Fire or explosion initiated on site, e.g., from a vehicle accident, equipment, by discarded matches or naked flames, by spontaneous combustion of stockpiles or during operations through the baling of materials or the risk of explosion from aerosols.

It is intended that the majority (if not all) of the additional throughput increase would be directed to MPC2. As such, the existing fire safety infrastructure within MPC2 and the broader Eastern Creek REP described in Section 2.6.8 and Section 13.3.2 would be utilised to minimise the risk of fire.

Vehicle movements and machinery use

Stage 1 would not result in any changes to internal traffic flows however would result in an increase in heavy vehicles, light vehicles, and pedestrian (staff and public) movements on the Proposal Site, presenting potential hazards including:

- Incidents between vehicles
- Incidents between vehicles and pedestrians
- Incidents between vehicles and property.

Incidents involving vehicles may result in injury, loss of life or damage to property. Potential hazards would be managed via existing on site controls outlined within the EMS and including:

- All operations are clearly identified by signage
- All vehicles accessing the Proposal Site will adhere to the signposted speed restrictions
- All drivers will abide by the Transport Code of Conduct

The main internal circulation roadways operate with a one-way traffic flow with two-way connectors to/from the drop-off zone and landfill to minimised conflict points for vehicles.

Hazardous materials

The main sources of hazardous materials at the Proposal Site include:

- **Non-conforming waste:** dangerous and/or hazardous goods that may be mixed in the waste stream and transported to site
- **Hazardous materials used on site:** dangerous goods used for the operation of the Proposal, as well as any polluting discharge that the Proposal may emit. It is likely that chemicals associated with operations, plant and vehicle maintenance would be stored and used onsite.

Non-conforming waste includes dangerous and / or hazardous goods that may be mixed in the waste stream and transported to Eastern Creek REP via truck during operations. Non-conforming waste may present a hazard, as it may contain contaminated material. Examples of non-conforming waste include:

- Hazardous materials
- Gas bottles
- Asbestos (where not delivered directly to landfill).

Non-conforming waste would be managed by the measures described in Section 2.7.6.

Any non-conforming waste would be collected for disposal at an appropriate facility on a regular basis. As a result, the hazards and risks associated with non-conforming waste are anticipated to be negligible.

A small volume of dangerous substances is currently used during operation. The key substances kept on site include diesel, liquid petroleum gas (LPG) for plant and equipment operation (i.e. forklifts), hydraulic oils and fluids. The Stage 1 Proposal includes no additional requirements, beyond the current Project Approval for storage of dangerous goods.

Airborne hazards

Airborne emissions associated with the Proposal may impact the local environment within and surrounding the Proposal Site and raise potential health concerns, such as asthma and allergies, in the local community. Potential emissions from the Proposal include:

- **Vehicle exhaust:** exhaust fumes consisting of lead, carbon monoxide (CO), hydrocarbons and nitrogen dioxide (NO_2) from increased traffic to and from the Proposal Site
- **Dust:** resulting from bulk material handling and equipment / vehicle movements
- **Microbial:** including moulds, microbial spores and pollen within the waste.

The results from the odour assessment outlined in Section 10.4 concluded that odour emissions from the Eastern Creek REP are not anticipated to change under this Proposal, as the tonnage of waste directly disposed of to the landfill (without prior processing in MPC1 or MPC2) would not increase. Significant works have been undertaken at the Eastern Creek REP to mitigate odour impacts on nearby communities, such as the installation of landfill gas flares and increased odour monitoring. The odour risk from the Proposal, and more broadly, the facility, is considered low.

The air quality impacts of the Proposal are presented in Section 10.4. The results of this assessment are summarised below:

- The ‘worst-case’ scenario for air quality impacts would be the 18-month period where Stage 1 operation and Stage 2 construction phases occur concurrently. This scenario would result in additional days above the 24-hour average impact assessment criterion at commercial receivers for both PM_{10} and $PM_{2.5}$ concentrations.
- Stage 2 operations would result in no additional days above the 24-hour average impact assessment criterion for PM_{10} concentrations and one additional day for $PM_{2.5}$ concentrations at residential receivers. There would be no exceedances of the annual average impact assessment

criterion for PM_{10} at residential assessment locations. For $PM_{2.5}$ concentrations, the existing annual average background is already above the impact assessment criteria. For commercial receivers, the maximum number of additional days above the 24-hour average impact assessment criteria is five for PM_{10} concentrations and two for $PM_{2.5}$ concentrations. There is one commercial assessment location above the annual average impact assessment criterion during the Stage 2 operations phase.

- Stage 3 construction activities were considered low potential for dust emissions, and therefore no assessment was required. There is no operational throughput increase in Stage 3, therefore no additional modelling was undertaken.
- Activities during construction (material handling and hauling) are consistent with existing site operations and therefore the existing dust controls implemented for site operations are equally relevant to the construction phase. Similarly, the EMS and AQOGGMP for Eastern Creek outline the roles, responsibilities, and the tasks to be performed to ensure environmental impacts are minimised. The EMS and AQOGGMP will continue to be implemented for the construction and operation of the Proposal.

13.4.2 Stage 2

Construction

Potential hazards and risks associated with the construction of the new exit connections would primarily relate to the construction traffic movements. Further detail is provided in Section 13.6 which outlines the potential hazards identified as part of the risk assessment, the risk associated with the hazard and the proposed mitigation strategy that would be adopted to address the hazard.

Vehicle movements and machinery use

Stage 2 would involve the construction of the connection to the Honeycomb Drive extension and the connection to Kangaroo Avenue, which would require earthworks. Additional earthworks would be required in the northeastern corner of Eastern Creek REP to facilitate site establishment works to support the construction of Stage 3. The works would not result in any changes to internal traffic flows however an increase in heavy vehicles, light vehicles, and pedestrian (staff and public) movements on the Proposal Site present potential hazards including:

- Incidents between vehicles
- Incidents between vehicles and pedestrians
- Incidents between vehicles and property.

Mitigation measures for the management of traffic during construction are presented in Section 8.5.

Contaminated land

The proposed construction of the connection to the Honeycomb Drive extension and the connection to Kangaroo Avenue would require earthworks which have the potential to disturb contaminated soils. Additional earthworks would be required in the northeastern corner of Eastern Creek REP to facilitate construction in Stage 3. An assessment of the potential to disturb contaminated land is provided in Chapter 11 of this EIS. This assessment indicates that while soil and groundwater contamination is present within the Eastern Creek REP, areas of potential contamination are restricted to the current workshop / waste processing area on the western boundary of the Proposal Site and the existing landfill.

As part of the Proposal, the current workshop and waste processing area would remain undisturbed with the current concrete hardstand to remain intact. Similarly, the landfill would also be undisturbed as part of the Proposal. It is therefore considered unlikely that construction activities would pose a risk of contamination exposure. Measures to prevent the introduction of contaminants to the Eastern Creek REP during the construction of the Site Workshop and Maintenance and Manufacturing Workshop would include the verification of materials brought onsite that would form the subgrade for new

concrete slabs. Management plans would be prepared (such as a CEMP and soil management sub-plan) and existing plans and systems updated (ESCMP and the existing site EMS).

Mitigation measures for contaminated material found during construction are presented in Section 11.5. As a result, the construction of the Proposal is not anticipated to result in significant contamination impacts.

Dangerous goods and hazardous materials

During construction, small volumes of fuels and chemicals would be stored on the Proposal Site for use by machinery and equipment. There is potential for these substances to spill into the surrounding environment during refuelling activities, transport and delivery if not managed appropriately. Any fuels and chemicals would be appropriately stored during construction. Section 13.7 outlines measures that will be employed during construction to minimise the risk from handling and storing potentially dangerous goods.

Operation

The operational hazards and risks associated with Stage 2 are generally anticipated to be commensurate to Stage 1, as discussed in Section 13.4.1. The additional throughput from Stage 1 to Stage 2 would increase the number of vehicles accessing Eastern Creek REP. However, the new exit connections would optimise the internal traffic movements allowing for the provision of single direction traffic flows and better dispersion of vehicles across Eastern Creek REP. This would decrease the risks associated with vehicle movements and machinery use. Potential hazards will be managed via existing onsite controls outlined within the EMS.

13.5 Stage 3

Construction

The construction hazards and risks associated with Stage 3 would primarily relate to the construction traffic movements and would be commensurate with those outlined in Section 13.4.2.

Operation

The operational hazards and risks associated with Stage 3 are anticipated to mostly be commensurate to Stage 1, as discussed in Section 13.4.1. There would however be hazards associated with each of the dangerous goods proposed to be stored within the Maintenance and Manufacturing Workshop.

Dangerous goods

As described in Applying SEPP 33 and in Section 13.2, the first stage of determining the *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development* procedural requirements for the Proposal, and in particular to determine if a PHA is required, is to undertake screening tests, including dangerous good quantity / distance thresholds. Hazardous materials are defined as substances which fall within the classification of the *Australian Code for Transportation of Dangerous Goods by Road and Rail* (ADG Code) (National Transport Commission, 2018)

The dangerous goods likely to be used on site within the site Workshop and Maintenance and Manufacturing Workshop and the estimated quantities, along with those dangerous goods already stored on site are presented in Table 13-3.

Table 13-3 Quantities of dangerous goods assessed against screening thresholds

Chemical/ material	Use	Dangerous Goods Class	Storage location	Mode of storage and distance from boundary	Existing maximum quantity stored onsite	Proposed maximum quantity to be stored onsite (estimated)	Threshold
Diesel fuel	Equipment and machinery refuelling	C1 Combustible liquids	General areas	Above ground fuel tank	100,000 L	**150,000 L**	Class C1 liquids stored in a separate bund (or within a storage area where they are the only flammable liquid present) are not considered to be potentially hazardous.
Grease and oil	Equipment and machinery	3 Packing Group(PG) III	Workshop (Mobile plants)	Containers	2,500 L (2.25t)[1]	**4,000 L (3.6t)**	5 t
			Workshop (Fixed plants)	Containers	300 L (0.027t)	**500 L (0.45t)**	
			MPC1	Containers	200 L (0.018t)	**300 L (0.027t)**	
LPG and other flammable gases	Equipment and machinery	C2 Combustible liquids	Workshop (Mobile plants)	Gas bottles	2,565 L (2.565m^3)	**4,500 L (4.5m^3)**	16 m^3 (aboveground)
			Workshop (Fixed plants)	Gas bottles	1,350 L (1.35m^3)		
			MPC1	Gas bottles	35 L (0.035m^3)		
			MPC2	Gas bottles	35 L (0.035m^3)		

1.Conversion factor from *Unit conversion factors* (Department of the Environment and Energy, 2017)

The volume of dangerous goods proposed to be stored on site are well below the screening thresholds for their quantities that would trigger the requirement for a PHA. A minimal number of LPG cannisters (below 16 m^3/ 10 t) would be stored on site within self-bunded drums and bulk containers adjacent MPC1 and MPC2.

Waste LPG gas bottles would be stored in cages (up to three to four at any given time). The LPG storage location will be provided in accordance with *Australian Standard 4332-1995: The storage and handling of gases in cylinders*.

As a C1-Combustible liquid the 150 KL of diesel fuel is not considered to be a dangerous good when stored in a separate bund where there are no other flammable materials stored in accordance with Applying SEPP 33. Self-bunded diesel tanks compliant with *Australian Standard 1940-2004: The storage and handling of flammable and combustible liquids* would be used for the storage of the diesel.

A range of other cleaning product, paint and solvents would be stored on site. All products would be appropriately stored and labelled.

Based on the type and quantities of goods to be stored on site the risk screening concluded that a PHA is not required for the Proposal.

Spills

Impacts associated with the occurrence of spills are commensurate with those outlined in Section 13.4.1. Spill kits will be installed within the Site Workshop and the existing EMS and EPIRMP will be updated as required.

Fire or explosion

No waste would be transported into the proposed Site Workshop or Maintenance and Manufacturing Workshop. Potential scenarios by which the Proposal Site may be impacted by fire or explosion:

- Fire from adjacent properties, including fires from surrounding industrial uses or bushfires
- Fire or explosion initiated on site, e.g., from a vehicle accident, equipment, by discarded matches or naked flames, by spontaneous combustion of stockpiles or during operations through the baling of materials or the risk of explosion from aerosols.

The fire safety infrastructure outlined in Section 2.6.8 and presented in Appendix O demonstrate the measures incorporated into the design and operation of the Eastern Creek REP to minimise the risk of fire. The existing EPIRMP and EMS would be implemented through Stage 3 operation to manage fire risks. The existing EPIRMP outlines necessary training and response protocols. Preventative controls such as equipment inspection and routine maintenance schedules, a 24/7 fire watch and CCTV surveillance are implemented onsite. Mitigating controls of a site warning system and communications, mobile firefighting plant and a water reuse and diversion system are also implemented at Eastern Creek REP.

13.6 Risk assessment

Based on a review of the key hazards, described above, Table 13-4 outlines the potential hazards identified as part of the risk assessment, the risk associated with the hazard and the proposed mitigation strategy that would be adopted to address the hazard, along with the relevant standard or guidance document that would be used in the development of the procedure or engineered control.

13.6.1 Hierarchy of controls

In identifying hazard mitigation and management measures the hierarchy of controls (which range from most effective to least effective) were considered.

The hazard scenarios, mitigation measures and guidelines that would be implemented to minimise risks, along with the type of control that each mitigation measure or guideline represents, are presented in Table 13-4.

Table 13-4 Hazard scenarios and consequences associated with the Proposal

Potential hazard	Risk	Potential impact	Management standards and guidelines	Stage	Hierarchy of control
Light and heavy vehicle, and equipment movements surrounding the Proposal Site	Vehicle accidents, including: • With private vehicles • With Proposal-related light and heavy vehicles • Mobile plant • With pedestrians • With structures	• Physical harm • Property damage • Loss of operating time	Road design including separation, where practicable, of light and heavy vehicles and equipment (e.g., light vehicles have a separate access point as shown on Figure 3-1) and direction of traffic by on site traffic controllers	Stage 1, 2 &3 operation	Engineering
			Heavy vehicle drivers, equipment operators, and traffic controller and spotters trained, licenced and competent.	Stage 2 & 3 construction Stage 1, 2 & 3 operation	Administrative
			Clear signage and road markings (speed limits, directions, no access areas, marked parking bays)	Stage 1, 2 & 3 operation	Administrative
			Operate in accordance with procedures outlined in the existing EMS for Eastern Creek REP	Stage 1, 2 & 3 operation	Administrative
Trucks unloading unsecure or unstable loads	Falling objects, loss of control, vehicle accident, impacts on other vehicles, plant or staff	• Physical harm • Property damage	Drivers and operators licenced and competent	Stage 2 & 3 construction Stage 1, 2 & 3 operation	Administrative
			Operate in accordance with procedures outlined in the existing EMS for Eastern Creek REP	Stage 1, 2 & 3 operation	Administrative
Fires or explosion	Bushfire, fire initiated on-site or at adjacent sites, fire initiated from spontaneous combustion of waste stockpiles on	• Physical harm • Property damage • Loss of operating time	Fire safety design features operated in accordance with *AS 1815: Maintenance of Fire Suppression System and Equipment*	Stage 1, 2 & 3 operation	Engineering

Potential hazard	Risk	Potential impact	Management standards and guidelines	Stage	Hierarchy of control
	site, fire from waste trucks entering the Proposal Site	• Environmental fines	Fire safety design features operated in accordance with *AS 1851-2012 Routine service of fire protection systems and equipment*	Stage 1, 2 & 3 operation	Engineering
			Operate in accordance with procedures outlined in the existing EMS and the EPIRMP for Eastern Creek REP	Stage 1, 2 & 3 operation	Administrative
			Operate in accordance with the existing EPIRMP and Spill Response Procedure	Stage 1, 2 & 3 operation	Administrative
Diesel fuel leak or fire due to vehicle collision or faulty storage	Fire or skin contact/inhalation	• Physical harm • Property damage • Loss of operating time	Storage in a separate bund or within a storage area where no other flammable materials stored	Stage 2 & 3 construction Stage 3 operation	Engineering
			Operate in accordance with the existing Emergency & Fire Response Plan	Stage 1, 2 & 3 operation	Administrative
			Operate in accordance with procedures outlined in the existing EMS for Eastern Creek REP	Stage 1, 2 & 3 operation	Administrative
			Appropriate PPE supplied and worn	Stage 1, 2 & 3 operation	PPE
	Release of dangerous goods	Environmental harm	Dangerous goods would be appropriately bunded	Stage 2 & 3 construction	Engineering
			Spill kits and emergency response equipment located in various locations on site	Stage 2 & 3 construction Stage 1, 2 & 3 operation	Engineering
			Surface and groundwater contingency plans (in the event of contamination) (refer to Chapter 22)	Stage 2 & 3 construction Stage 1, 2 & 3 operation	Administrative

Potential hazard	Risk	Potential impact	Management standards and guidelines	Stage	Hierarchy of control
Non-conforming waste (e.g., paints, chemicals, asbestos, putrescible waste)	Spills, exposure to hazardous substances	Physical harm	Operate in accordance with procedures outlined in the existing EMS for Eastern Creek REP	Stage 1, 2 & 3 operation	Administrative
			Visual inspection of waste at the weighbridge by staff	Stage 1 & 2 operation	Administrative
		Environmental harm including land contamination	Surface and groundwater contingency plans (in the event of contamination) (refer to Chapter 22)	Stage 1, 2 & 3 operation	Administrative
Dust generated from operating equipment, vehicle movements and bulk material handling	Respiratory health impacts, eye and skin irritation	Physical harm	Enclosed areas where practicable, including enclosed working cabins	Stage 1, 2 & 3 operation	Engineering
			Sealed roads	Stage 1, 2 & 3 operation	Engineering
			Covered loads	Stage 2 & 3 construction Stage 1 & 2 operation	Administrative
			Eye protection and dust masks where required	Stage 2 & 3 construction	PPE
Vehicle exhaust generated from movement of trucks and equipment	Respiratory health impacts, eye and skin irritation	Physical harm	Vehicle and equipment maintenance to reduce particulate discharge	Stage 2 & 3 construction Stage 1, 2 & 3 operation	Administrative
			Where practicable, limit vehicle movements within enclosed areas	Stage 1, 2 & 3 operation	Administrative
Storage and handling of potentially hazardous substances	Spills, exposure to hazardous substances	Physical harm	Operate in accordance with procedures outlined in the existing EMS for Eastern Creek REP	Stage 1, 2 & 3 operation	Administrative
		Environmental harm including land	Dangerous goods would be appropriately bunded	Stage 2 & 3 construction Stage 1, 2 & 3 operation	Engineering

Potential hazard	Risk	Potential impact	Management standards and guidelines	Stage	Hierarchy of control
		contamination and water pollution events	Operate in accordance with the existing EPIRMP and Spill Response Procedure.	Stage 2 & 3 construction Stage 1, 2 & 3 operation	Administrative
			Surface and groundwater contingency plans (in the event of contamination) (refer to Chapter 22)	Stage 1, 2 & 3 operation	Administrative
Natural hazards (e.g., flooding and lightning)	Personal injury or potential fire	Physical harm and property damage	Buildings designed to appropriate standards Site drainage and 1:100 ARI flood event	Stage 3 operation	Engineering
			Operate in accordance with procedures outlined in the existing EMS for Eastern Creek REP	Stage 1, 2 & 3 operation	Administrative

13.7 Mitigation measures

Hazards associated with construction of the Proposal will be managed as part of a CEMP, which will be prepared prior to the commencement of construction for Stages 2 & 3. WHS risks will be identified within the CEMP and managed in accordance with the WHS Act. The CEMP will incorporate the mitigation measures identified in Table 13-5 as well as the following procedures:

- Safe operational access and egress for emergency service personnel and workers will be provided at all times
- Excavated material will be reused on site where possible. Any excavated material that requires disposal would be subject to waste classification under the Waste Classification Guidelines (NSW EPA, 2014) and will be disposed of at an appropriate licensed facility.

It is not anticipated that any asbestos containing material (ACM) would be disturbed during construction. Notwithstanding, contaminated materials, including ACM, identified within the Proposal Site will be managed in accordance with the *Model Code of Practice – How to Safely Remove Asbestos* (Safe Work Australia, 2018) including the development of an asbestos removal control plan and an emergency plan. An industrial hygienist would be involved in the development of this plan.

The existing EMS, EPIRMP and associated management plans and operational procedures will be reviewed and updated to capture any additional operational risks from the Proposal

Table 13-5 Mitigation measures (hazards and risks)

ID	Mitigation	Timing
H&R1	A CEMP, or equivalent, will be prepared for the Proposal and will include measures to minimise hazards and risks, including the following: • Health and safety requirements for construction. Construction works, including the storage, handling and use of hazardous construction materials will be undertaken in accordance with the provisions of the WHS Act and WHS Regulation. • Operational access and egress points for emergency service personnel and workers.	Construction
H&R2	The existing EMS, Fire and Emergency Management Plan (FEMP) and EPIRMP will be updated to incorporate procedures and measures for managing the operation of the Site Workshop and Maintenance and Manufacturing Workshop, as appropriate. Updates will include the following requirements: • All staff working onsite will undertake a site induction appropriate to the work activities. • Installation and maintenance activities will be undertaken by trained personnel and by reputable contractors • Liquid spills will be managed in accordance with the existing spill management procedure outlined in the EMS. • All fires will be treated as an emergency and the extinguishment of fires takes precedence over normal operations. The FEMP will be reviewed and updated if required to identify the control measures to be undertaken to prevent fires and actions to be implemented in the event of a fire. • Water used in responding to fire (firewater) has the potential to be a pollutant should it enter surface bodies and/or groundwater. The volume of firewater generated will be minimised through the use of fire retardants and foams. Fire water will be contained where possible. • The existing complaints procedure will be followed in regard to any reports of environmental incidents.	Operation

ID	Mitigation	Timing
	• Vehicle incidents will be minimised by use of appropriate signposting, road markings, speed limits and physical barriers to separate pedestrian and vehicle movements. • Diesel and other chemicals will be stored in self-bunded storage areas/tanks of a size appropriate to the quantity of material.	
H&R3	Within 6 months of approval, a site wide fire strategy would be prepared that identifies upgrades required to the existing systems to meet the relevant FRNSW and BCA requirements.	Operation

PART C

ASSESSMENT OF OTHER ISSUES

14 BIODIVERSITY

14.1 Introduction

This section describes the potential biodiversity impacts associated with construction and operation of the Proposal and how impacts would be managed. Arcadis have prepared a Biodiversity Development Assessment Report (Appendix P) to determine the likelihood of impacts and address the SEARs issued by DPE.

Table 14-1 outlines the SEARs that relate to biodiversity and identifies where they are addressed in this EIS.

Table 14-1: SEARs (Biodiversity)

SEARs	Where addressed
Biodiversity	
An assessment of the proposal's biodiversity impacts in accordance with the *Biodiversity Conservation Act 2016*, including the preparation of a Biodiversity Development Assessment Report (BDAR) where required under the Act, except where a waiver for preparation of a BDAR has been granted.	Appendix P (BDAR) Chapter 14

14.2 Method of assessment

A BDAR has been prepared to support the EIS, considering the construction and operational impacts of the Proposal. The BDAR was prepared in accordance with the requirements of the Biodiversity Assessment Method (BAM) (DPE, 2020a) and is provided in full in Appendix P. Where relevant, the BDAR included assessment and consideration of likely impacts to the aquatic environment and impacts on biodiversity related matters of national environmental significance in accordance with the Commonwealth EPBC Act, including nationally listed threatened and migratory species and ecological communities.

The biodiversity assessment for the Proposal involved the following key activities:

- Definition of the study area
- Desktop assessment to describe the existing environment, landscape features and to identify threatened flora and fauna that may be potentially affected by the Proposal
- Field surveys to identify biodiversity values, Plant Community Types (PCTs) and to determine the likelihood of threatened species and their habitats occurring within the Proposal Site
- Targeted threatened species surveys for animals that have potential habitat within the Proposal Site
- Identification and assessment of likely direct and indirect impacts to biodiversity
- Identification of mitigation measures to avoid, manage or reduce impacts on biodiversity values
- Identification of residual impacts to biodiversity values that cannot be avoided, minimised or mitigated which must be offset.

The BAM requires assessment of species credit species and ecosystem credit species. Species credit species are those where the likelihood of occurrence of a species or elements of suitable habitat for that species cannot be confidently predicted by vegetation surrogates and landscape features. Ecosystem credit species are threatened species where the likelihood of occurrence of a species or elements of the species habitat can be predicted by vegetation surrogates and landscape features, or for which targeted survey has a low probability of detection.

14.1.1 Assessment scenarios and approach

Chapter 7 outlines the different assessment approaches adopted within this EIS to assess the potential impacts from the Proposal. Biodiversity impacts are largely related to the physical changes associated with the Proposal, and have been assessed on a footprint / full build basis as shown in Figure 14-1.

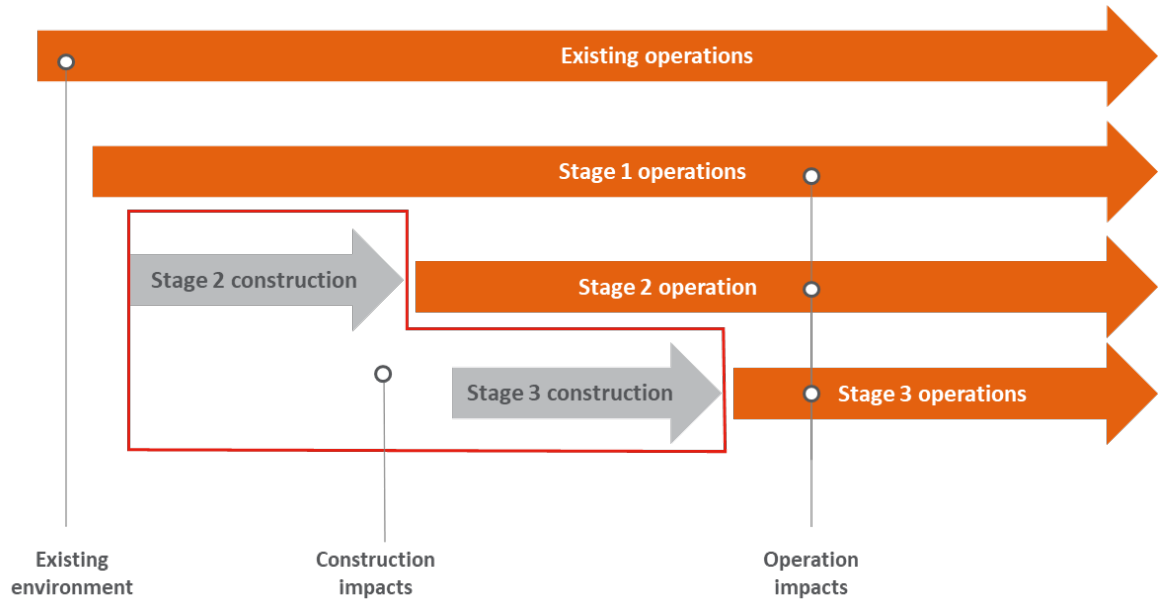

Figure 14-1 Biodiversity assessment scenarios

14.1.2 Subject land and assessment area

The land in which biodiversity values have been assessed is known as the 'subject land' (in accordance with the requirements of the BAM), refer to Figure 14-2. The subject land consists of land that would be directly impacted by construction and operation of the Proposal. The subject land wholly contains the construction (temporary) footprint (inclusive of both Stages 2 and 3 of the Proposal) and design (operational) footprint (Stages 1, 2 and 3 of the Proposal) that are being considered by the EIS.

A separate landscape buffer of 1,500 m around the subject land was also considered. This is referred to as the assessment area in the BDAR, in accordance with the BAM.

14.1.3 Desktop assessment

A review of publicly available information was carried out to identify the existing biodiversity and natural environment features, such as landscape features, PCTs, threatened species, populations and communities as well as important habitat for migratory species, within 10 km of the Proposal Site ('the locality').

The following databases and regional mapping were reviewed:

- Biodiversity Assessment Method Calculator (BAMC) (DPE, 2021b)
- Biodiversity Assessment Method (BAM) (DPE, 2020a)
- Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities working draft (DEC, 2004)
- NSW Surveying threatened plants and their habitats (DPE, 2020b)
- Survey Guidelines for Australia's Threatened Birds (CoA, 2010a) Mammals (CoA, 2011) and Bats (CoA, 2010b)

- 'Species credit' threatened bats and their habitats: NSW survey guide for the Biodiversity Assessment Method (OEH, 2018)
- Remnant Vegetation of the western Cumberland subregion, 2013 update (DPE, 2015a)
- Key Fish Habitat Mapping (NSW DPI, n.d.)
- NSW Soil and Land Information eSPADE (DPE, 2021c)
- NSW BioNet Wildlife Atlas, managed by DPE
- Protected Matters Search Tool, managed by the Commonwealth Department of Agriculture, Water and Environment (DAWE)
- NSW Vegetation Information System (VIS) Classification database, managed by DPE
- NSW BioNet Threatened Biodiversity Data Collection (TBDC), managed by DPE
- NSW Weedwise, managed by DPE.

14.1.4 Habitat suitability for threatened species

The BAM Calculator (BAMC) was used to derive the list of candidate species relevant to the Proposal. The results were also supplemented with database searches, to identify the threatened species that have been previously recorded or are considered likely to occur in the locality.

The Proposal Site itself is highly disturbed and lacks high quality natural habitat. Some species returned from the database searches were removed from the assessment due to the absence of suitable habitat within the Proposal Site. Species that are known to no longer occur in the Sydney urban area were also removed from the assessment.

14.1.5 Field survey

Field surveys were carried out in April 2021, and involved:

- Establishing the extent of native vegetation within the Proposal Site
- Identifying and mapping the type and distribution of PCTs
- Plot based floristic vegetation surveys to identify the condition and integrity of native vegetation
- Assessing the potential habitat for flora and fauna species previously recorded within the locality
- Targeted threatened species surveys for the following three threatened flora species, and eight threatened fauna species. Additional details are provided in Section 2.9 of the BDAR at Appendix P:
  - Acacia pubescens
  - Grevillea juniperina subsp. Juniperina
  - Marsdenia viridiflora subsp. Viridiflora
  - Pteropus poliocephalus (Grey-headed Flying-fox)
  - Phascolarctos cinereus (Koala)
  - Miniopterus orianae oceanensis (Large Bent-winged Bat)
  - Chalinolobus dwyeri (Large-eared Pied Bat)
  - Miniopterus australis (Little Bent-winged Bat)
  - Myotis Macropus (Southern Myotis)
  - Meridolum corneovirens (Cumberland Plain Land Snail)
  - Pommerhelix duralensis (Dural Land Snail)

14.1.6 Biodiversity offsets

An offset, in the form of a biodiversity credit, is required for impacts to plant community types and threatened (species credit) species. The biodiversity credit obligation has been calculated using the BAMC. Areas of the study area that do not possess plant community types have not been assessed and offset credits are not required.

14.3 Existing environment

14.1.7 Landscape context

The Proposal Site is located within the Cumberland sub-region of the Sydney Basin Interim Biogeographic Regionalisation for Australia (IBRA) Bioregion. The Cumberland sub-region is situated in a rain shadow area between the Blue Mountains and east coast on low rolling hills and valleys.

The majority of the Proposal Site is situated within the Cumberland Plains NSW Landscape (DPE, 2016). The Cumberland Plains NSW Landscape is an over cleared landscape with 89 per cent of the landscape currently cleared. It consists of low rolling hills and valleys in a rain shadow area between the Blue Mountains and the coast on horizontal Triassic shales and lithic sandstones forming a down-warped block on the coastal side of the Lapstone monocline with a general elevation 30 to 120 m, and a local relief of 50 m (DPE, 2016).

An area in the northeast of the Proposal Site is situated within the Sydney Basin Diatremes NSW Landscape. This landscape is associated with circular volcanic vents filled with layered, brecciated country rock cemented by a fine-grained basaltic matrix. It is estimated to be 32 per cent cleared (DPE, 2016).

Landscape features relevant to the Proposal Site are summarised below in Table 14-2.

Table 14-2: Landscape features

Landscape feature	Proposal Site
Native vegetation cover	Regional vegetation mapping (OEH, 2013) was used for the purposes of mapping native vegetation within the assessment area. The assessment area is defined as a 1,500 m buffer surrounding the boundary of the subject land (refer to Figure 14-2). The assessment area was determined to have a native vegetation cover of 191.63 ha. Around 0.4 ha (or 0.2 per cent) of which is located within the subject land
Rivers and streams	Angus Creek (a first order stream) runs adjacent to the Proposal Site. Angus Creek is an ephemeral, partially defined waterway which sits within a modified concreted channel and is approximately one to three metres wide. Ropes Creek is the next nearest waterway to the Proposal Site and is located approximately 700 m to the west.
Wetlands	There are no wetlands listed under the *State Environment Planning Policy (Resilience and Hazards) 2021* or important wetlands listed in the Directory of Important Wetlands in Australia (DIWA). No wetlands of international importance (Ramsar) are located within or adjacent to the Proposal Site. The closest Ramsar wetland is located approximately 25 km to the east at Sydney Olympic Park, which contains a waterbird refuge listed under Ramsar.
Connectivity features	The Proposal Site is immediately adjacent to areas of native vegetation to the south and northwest. Native vegetation located to the northwest is surrounded by cleared and disturbed land directly to the east and south and industrial buildings associated with the recycling and waste facility to the southeast. Native vegetation identified to the south of the Proposal Site is encased by cleared and disturbed land. Approximately 700 m to the west is Ropes Creek which provides a vegetated corridor running north south. This corridor is also identified as a biodiversity corridor of

Landscape feature	Proposal Site
	regional significance within the Biodiversity Investment Opportunities Map (BIO Map) for the Cumberland subregion (DPE, 2015b). To the east, the Proposal Site is cut off from the Western Sydney Parklands by the M7 Motorway, and the M4 motorway is to the north of the Proposal Site. The Western Sydney Parklands is also identified as a biodiversity corridor of regional significance (DPE, 2015b). While limited connectivity exists for flying species, such as birds and bats, the Proposal Site has little direct connectivity with vegetated corridors, therefore connectivity is limited.
Areas of geological significance and soil hazard features	The Proposal Site is located on two soil landscape types 'Blacktown' and 'Disturbed Terrain' (DPE, 2015a). The Blacktown soil landscape covers the southwestern portion of the Proposal Site, while the rest of the Proposal Site is Disturbed Terrain. The Blacktown soil landscape is characterised by gently undulating rises on Wianamatta Group shales, broad rounded crests and ridges with gently inclined slopes and cleared Eucalypt woodland and tall open-forest (dry sclerophyll forest). The soils range from shallow to moderately deep and are hard setting, mottled textured clay soils. The Blacktown soil materials have moderate erodibility, low fertility and poor soil drainage. The Disturbed Terrain soil landscape is characterised by level plain to hummocky terrain which has been extensively disturbed by human activity, with most of the original soil either removed, buried or generally disturbed. Disturbed Terrain has highly variable erosion hazards, ranging from low to extreme. The landscape is limited by mass movement, slope and erosion hazards as well as seasonal waterlogging, non-cohesive soils and rocky outcrops.
Areas of outstanding biodiversity value (AOBVs)	Areas of Outstanding Biodiversity Value (AOBVs) are defined under the BC Act. No AOBVs occur within or surrounding the Proposal Site.

Figure 14-2: Location map

14.1.8 Vegetation

Regional vegetation mapping

The regional vegetation mapping Remnant Vegetation of the western Cumberland subregion, 2013 Update (OEH, 2013) was reviewed to inform the vegetation mapping of the subject land. This regional vegetation mapping identified one PCT as occurring within the subject land: –PCT 849 - –Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion

Plant Community Types

Vegetation within the subject land was identified and mapped based on a review of existing regional vegetation spatial datasets, observations made during site inspections, and analysis of data collected during field surveys.

One PCT was identified within the subject land; Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion (PCT 849). PCT 849 is present within the subject land in isolated patches and forms two vegetation zones, covering approximately 0.4 ha of the subject land (Figure 14-3). This vegetation was determined to be of planted to moderate / good condition.

PCT 849 is an open grassy woodland found on the gentle topography associated with the shale plains of western Sydney. This PCT is dominated by *Eucalyptus moluccana*, *Eucalyptus tereticornis* and ironbarks such as *Eucalyptus crebra* (Narrow-leaved Ironbark) and *Eucalyptus fibrosa,* with localised patches of *Corymbia maculate* (Spotted Gum). The understorey is typified by a sparse to moderate cover of shrubs and a high cover of grasses and forbs (DPE, 2021d)

Table 14-3: PCTs identified within the subject land

Vegetation Zone	Plant Community Type	Broad condition class	Description of PCT within subject land	Total area mapped within subject land (ha)	Corresponding Threatened Ecological Community
1	*PCT 849 - Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion*	Moderate/ good	This vegetation zone is present in a small patch along the southern boundary of the subject land. This patch is largely situated outside the subject land except for the overhanging canopy of mature Eucalyptus species.	0.02	Cumberland Plain Woodland in the Sydney Basin Bioregion (Critically Endangered).
2		Planted	The vegetation zone forms a narrow strip of vegetation near the eastern boundary of the subject land. This vegetation is situated on the batter and is likely planted.	0.38	Cumberland Plain Woodland in the Sydney Basin Bioregion (Critically Endangered).

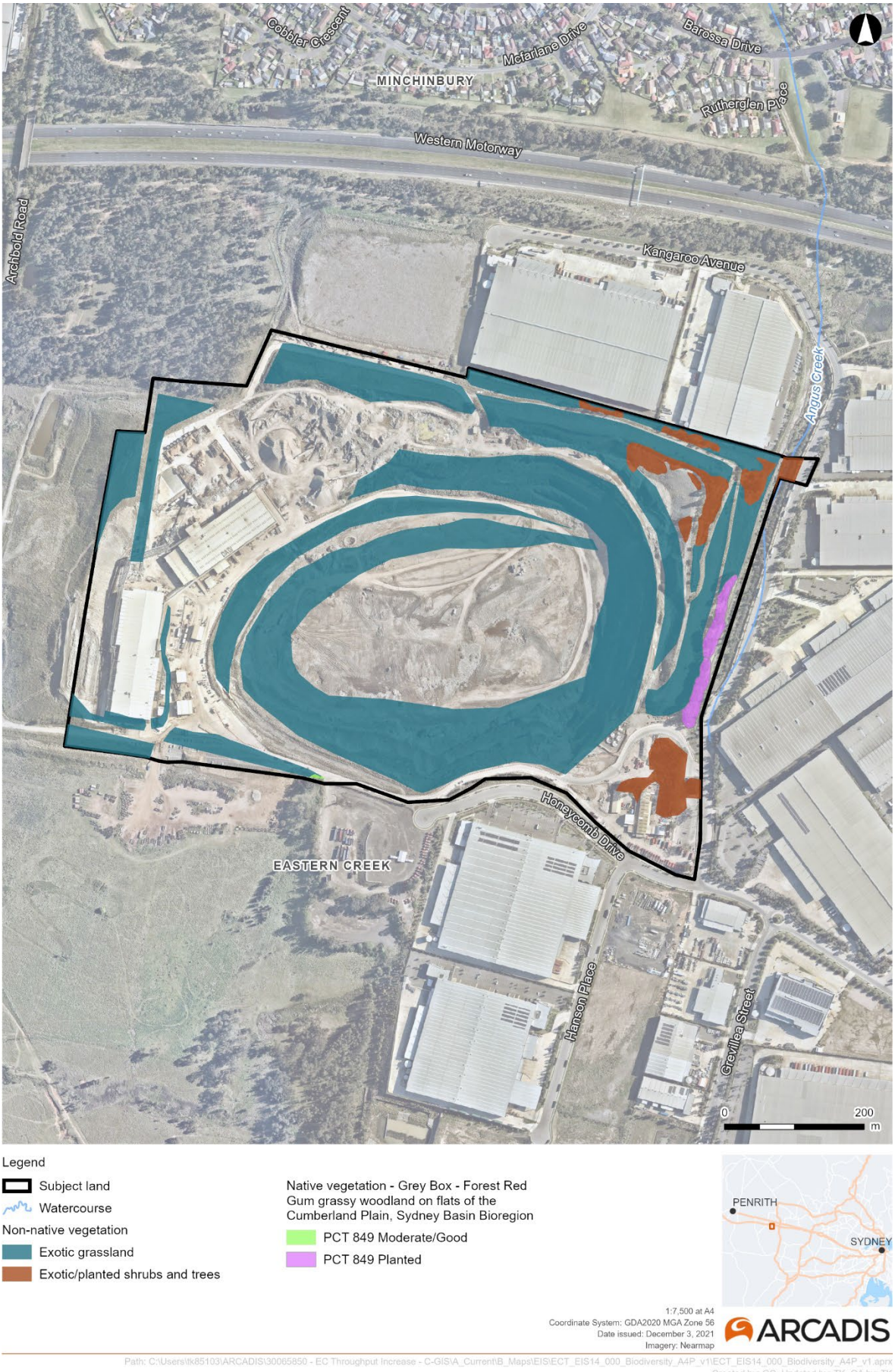

Figure 14-3: Plant Community Type and Vegetation Zones

Threatened ecological communities

PCT 849 is associated with the threatened ecological community (TEC) Cumberland Plain Woodland in the Sydney Basin Bioregion, listed as critically endangered under the BC Act, and Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest, listed as critically endangered under the EPBC Act.

Although in a degraded form and altered structure, the vegetation of PCT 849 within the subject land is consistent with the floristic composition, distribution, landscape position and soil associations detailed in the Final Determination for Cumberland Plain Woodland in the Sydney Basin Bioregion (DPE, 2010).

The NSW Scientific Committee does not exclude patches of vegetation as Cumberland Plain Woodland on the basis of condition or structure thresholds. Therefore, all the vegetation within the subject land identified as PCT 849 is considered Cumberland Plain Woodland in the Sydney Basin Bioregion under the BC Act.

An analysis of PCT 849 in the subject land against the condition and extent criteria required to be the listed TEC under the EPBC Act was undertaken as part of the BDAR (refer to Appendix P). This analysis concluded that PCT 849 within the subject land does not meet the criteria to be Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest under the EPBC Act.

Threatened ecological communities present within the subject land are shown on Figure 14-4.

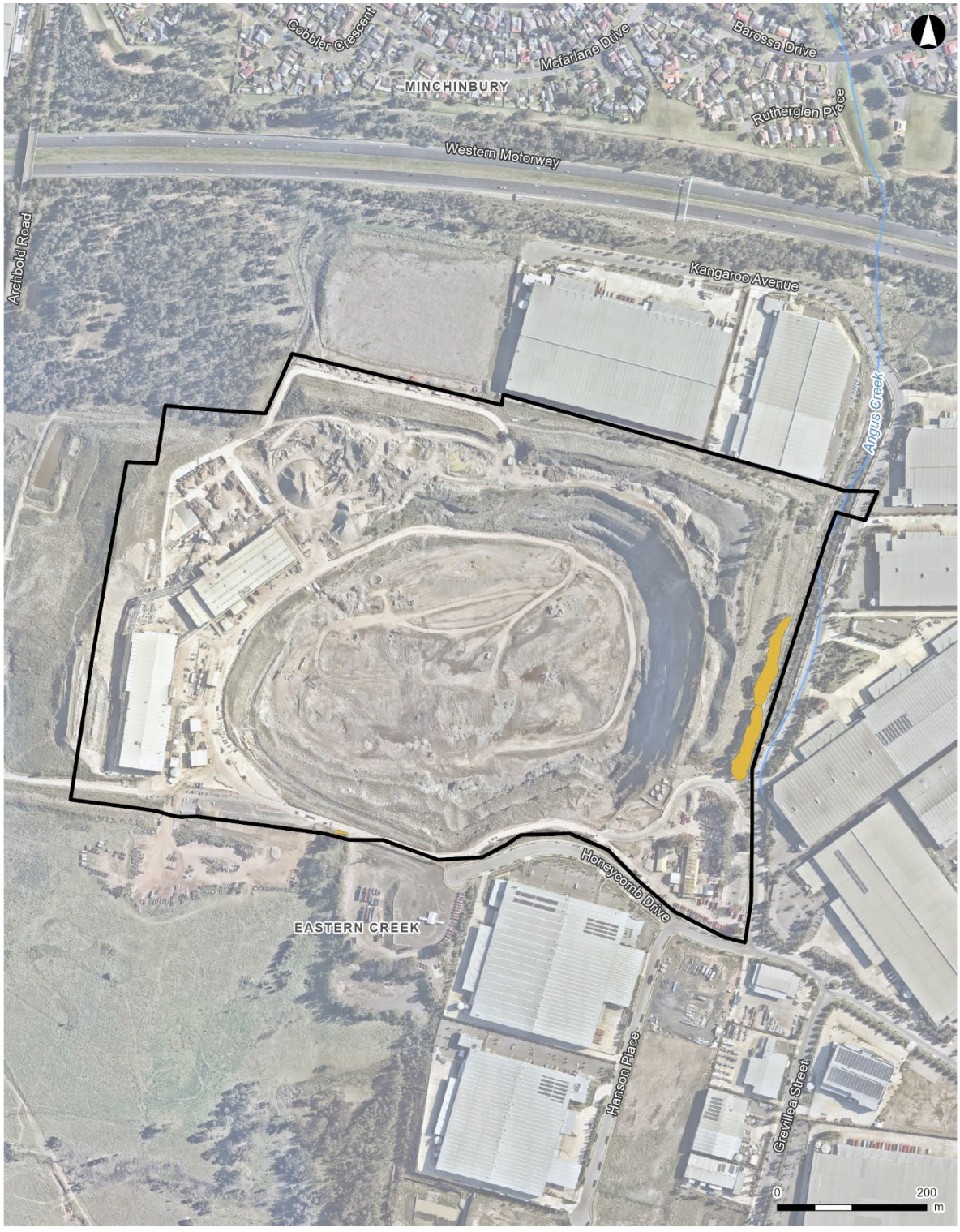

Figure 14-4: Threatened ecological communities

Non-native vegetation

Two vegetation zones, exotic grassland and exotic / planted shrubs and trees were recorded on the subject land during field surveys (described in Table 14-4). These vegetation zones predominantly consist of exotic vegetation and do not conform to the definition of any PCTs as listed in the BioNet Vegetation Classification Database.

Table 14-4: Non-native vegetation recorded within the subject land

Vegetation Zone	Plant Community Type	Description of vegetation within subject land	Total area mapped within subject land (ha)
3	Exotic grassland	Situated within disturbed areas which have been historically cleared or positioned on areas of fill. All areas of this vegetation zone are heavily disturbed and are largely situated on the slopes of the berm associated with the landfill. Here the soils comprise fill material which have become conducive to the establishment of exotic species.	20.85
4	Exotic/planted shrubs and trees	Situated in the northeastern corner of the subject land, predominantly on top of the berm associated with the landfill in areas of highly disturbed soils from the use of fill. While there are sparse occurrences of the native tree *Corymbia maculate* within this vegetation zone, there are no additional native species in the shrub or ground layer.	1.63

Weeds

Of the 22 exotic species recorded in the subject land, five are listed as Priority Weeds (DPE, 2021e) under the NSW *Biosecurity Act 2015* for the Blacktown region, which includes the Blacktown LGA. Of these species, three are also listed as Weeds of National Significance (WoNS) (DPE, 2021e). Priority weeds and WoNS recorded on the subject land are summarised in Table 14-5.

In addition, 15 species recorded within the subject land are recognised as 'High Threat Weeds'. High Threat Weeds are exotic species which are likely to have a significantly detrimental effect on native vegetation and are used when determining vegetation condition.

Table 14-5: Priority Weeds and WoNS recorded in the subject land

Species	Priority Weed	WoNS
Asparagus asparagoides (Bridal Creeper)	Yes	Yes
Cortaderia selloana (Pampas Grass)	Yes	No
Lycium ferocissimum (African Boxthorn)	Yes	Yes
Olea europaea subsp. Cuspidate (African Olive)	Yes	No
Senecio madagascariensis (Fireweed)	Yes	Yes

Fauna habitat

Approximately 99 per cent of the subject land has been cleared of native vegetation and is currently used for industrial purposes. Non-native vegetation within the subject land does not provide habitat to threatened fauna species.

PCT 849 provides potential foraging habitat for two threatened fauna species; the Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*) and the Large Bent-winged Bat (*Miniopterus orianae oceanensis*).

No breeding habitat including nest trees, caves or hollow bearing trees are present within the subject land.

14.1.9 Threatened species

Threatened flora species

The BAMC identified a total of 15 candidate threatened flora species credit species. Of these 15 candidate flora species, 12 were removed from consideration as part of the BDAR due to lack of potential habitat present. Three species were retained for further consideration and subject to threatened species surveys on the subject land (refer to Section 14.1.5 for more information on field surveys).

Table 14-6: Threatened flora species surveyed

Species	BC Act Status	EPBC Act Status	Associated PCTs within the subject land	Survey undertaken or justification for removal
Acacia pubescens	V	V	PCT 849	Species surveyed – Only marginal habitat present but species surveyed due to tolerance to disturbance.
Grevillea juniperina subsp. juniperina	V	-	PCT 849	Species surveyed – Only marginal habitat present but species surveyed due to tolerance to disturbance.
Marsdenia viridiflora subsp. Viridiflora	EP	-	PCT 849	Species surveyed – Only marginal habitat present but species surveyed due to tolerance to disturbance.

E = Endangered population
V = Vulnerable

One threatened flora species, *Eucalyptus scoparia* (Wallangarra White Gum) was precautionarily recorded within the subject land. *Eucalyptus scoparia* is listed as endangered under the BC Act and vulnerable under the EPBC Act and in NSW is locally indigenous to the Tenterfield region within the New England Tablelands. It is also a commonly planted urban tree in Sydney. Within the subject land, two individuals of suspected Wallangarra White Gum were recorded. As no identifying features of buds or fruit could be obtained to confirm the identification, the individuals have been conservatively identified as Wallangarra White Gum based on the bark and leaf size of the individuals. Wallangarra White Gum is not native to the Sydney area and therefore these individuals should be treated as planted vegetation and not of conservation significance.

No other threatened flora species were recorded as part of the targeted threatened species surveys undertaken as part of the BDAR.

Threatened fauna species

The BAMC identified a total of 39 threatened fauna species with a moderate to high potential to occur within the subject land.

Targeted surveys resulted in the detection of two possible threatened microbat species; Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*) which is an ecosystem species and Large Bent-wing Bat (*Miniopterus orianae oceanensis*) which is a dual credit species. Breeding habitat does not occur for these species within the subject land.

Table 14-7: Threatened fauna species surveyed

Species	BC Act Status	EPBC Act Status	Habitat degraded	Survey undertaken or justification for removal
Meridolum corneovirens Cumberland Plain Land Snail	E	-	Yes	Species surveyed - targeted surveys were conducted.
Pommerhelix duralensis Dural Land Snail	E	E	Yes	Species surveyed - targeted surveys were conducted.
Pteropus poliocephalus Grey-headed Flying-fox	V	V	Yes	Species surveyed - targeted surveys were conducted.
Phascolarctos cinereus Koala	V	V	Yes	Species surveyed - targeted surveys were conducted.

E = Endangered
V = Vulnerable

14.1.10 Groundwater dependent ecosystems

Groundwater dependent ecosystems (GDEs) are ecological communities that are dependent, either entirely or in part, on the presence of groundwater for their health or survival.

A review of the Bureau of Meteorology's GDE Atlas was undertaken to determine the occurrence of potential GDEs within and surrounding the subject land (Figure 14-5). There are no potential terrestrial or subterranean GDE's within the subject land. There is one high potential terrestrial GDE directly northwest of the subject land and three more terrestrial GDE's in close proximity to the subject land.

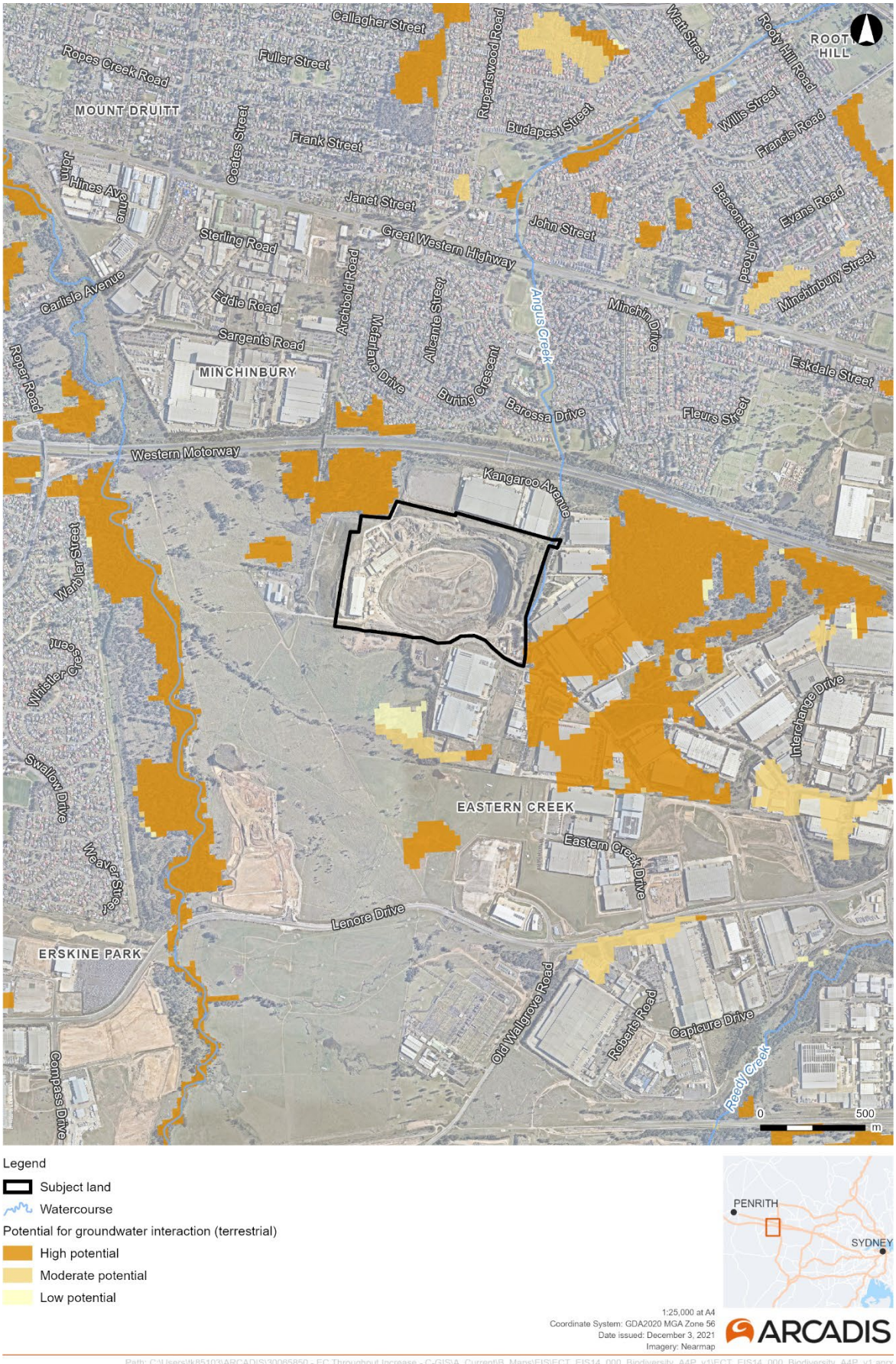

Figure 14-5: Potential GDEs in the vicinity of the subject land

14.1.11 Matters of National Environmental Significance

Matters of National Environmental Significance (MNES) are environmental values that require approval from the Commonwealth Minister for the Environment if an action that may have a significant impact on one or more of these values is proposed (refer Section 5.4).

The only relevant MNES to the Proposal are threatened and migratory species.

Other MNES, including World heritage places, National heritages places and Wetlands of international importance (declared Ramsar wetlands) are not relevant to the Proposal.

Threatened ecological communities

As outlined in Section 14.1.8, PCT 849 is associated with the TEC Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest, listed as critically endangered under the EPBC Act. An analysis of PCT 849 in the subject land against the condition and extent criteria required to be the listed TEC under the EPBC Act was undertaken. The assessment concluded that PCT 849 within the subject land does not meet the criteria to be Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest under the EPBC Act.

Threatened Species

One threatened flora species listed under the EPBC Act, *Eucalyptus scoparia,* was tentatively identified within the subject land. As described in Section 14.1.9, *Eucalyptus scoparia* is not native to the Sydney area and therefore the individuals of this species should be treated as planted vegetation and not of conservation significance.

No fauna species listed under the EPBC Act were recorded during surveys and none were considered to have a moderate or higher likelihood of occurrence or impact.

Migratory Species

One migratory species, the Rufous Fantail (*Rhipidura rufifrons*), was recorded within the subject land during surveys. Further assessment is provided for this species in Section 14.1.12. Following surveys, all other migratory species identified during database searches were determined to have a low likelihood of occurrence in the subject land

Aquatic habitat and threatened species

Angus Creek flows along the eastern boundary of the Proposal Site. The creek is a first order ephemeral stream and runs down the eastern boundary of the Proposal Site from a pipe culvert that passes under Kangaroo Avenue at the southern end of the Proposal Site. It flows in a northerly direction, as a modified, partially concreted channel. The channel is partially fringed by grasses and sedges and emergent aquatic vegetation (*Typha orientalis*) is present.

Angus Creek is Type 3 – Minimally sensitive key fish habitat and Class 3 – Minimal key fish habitat, in accordance with DPI's *Policy and guidelines for fish habitat conservation and management* (DPI, 2013). It is not mapped as Key Fish Habitat or habitat for any threatened species on DPI's Fisheries Spatial Portal. Angus Creek does not provide habitat for any threatened species listed under the *Fisheries Management Act 1994* (FM Act).

14.4 Impact assessment

14.1.12 Construction

The Proposal would require the clearing of approximately 8.62 ha of vegetation within the subject land, including:

- Areas in the northeast of the subject land for the construction of the connection of the Proposal Site to Kangaroo Avenue, for the establishment of the Site Workshop and the Maintenance and Manufacturing Workshop and establishment on the OSD basin
- Areas in the southwest of the subject land for the construction of the connection to the Honeycomb Drive extension
- Areas in the northwest of the subject land for the construction of the OSD basin

The majority of the subject land is highly modified and developed, and as a result, lacks large areas of high quality natural habitats. Areas of vegetation to be cleared by the Proposal are summarised in Table 14-8.

Table 14-8: Areas of vegetation directly impacted by the Proposal

PCT ID	PCT Name	Vegetation zone	Extent to be cleared (ha)
849	Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	849_planted	0.28
849	Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	849_moderate/good	0
Other vegetation types		Exotic grassland	7.36
		Exotic/planted trees and shrubs	0.98
Total area native vegetation (ha)			**0.28**
Total area vegetation (native and non-native) (ha)			**8.62**

Loss of native vegetation

Construction of the Proposal would result in the clearing of approximately 0.28 ha of native vegetation located within the northeast portion of the subject land. PCT 849 qualifies for listing as the Critically Endangered Ecological Community (CEEC) Cumberland Plain Woodland in the Sydney Basin Bioregion under the BC Act, however, does not meet the condition thresholds as the EPBC listed EEC. The areas of PCT 849 to be cleared are listed in Table 14-8.

The area of Cumberland Plain Woodland to be impacted by the Proposal equates to less than one per cent of the estimated geographic extent of Cumberland Plain Woodland within NSW. Areas of PCT 849 that would be cleared as a result of the Proposal are relatively small and isolated patches of low condition vegetation. The area of PCT 849 to be cleared within the northeast portion of the subject land consists of planted native *Corymbia maculate* (Spotted Gum) and a largely exotic ground layer. The entire area of this patch would be removed. There are other patches of Cumberland Plain Woodland surrounding the Proposal Site, particularly to the northwest of the Proposal Site within a conservation area as well as a small patch directly to the south of the Proposal Site. No additional areas of Cumberland Plain Woodland would be impacted by the Proposal and therefore the Proposal would not result in any other patches becoming isolated.

Due to the low habitat value of the Cumberland Plain Woodland within the subject land, it is not anticipated that the patch to be cleared as part of the Proposal would contribute significantly to dispersal of flora and fauna associated with Cumberland Plain Woodland.

Impacts to threatened flora species

No threatened flora species were recorded within the subject land or determined likely to occur within the subject land. Therefore, no further assessment of impacts to threatened flora are required as part of this assessment.

No significant impacts to threatened fauna species listed under the EPBC Act are likely to occur as a result of the Proposal.

Impacts to threatened fauna species

Two threatened microbat species may occur in the subject land: Eastern Coastal Free-tailed Bat and Large Bent-winged Bat. Eastern Coastal Free-tailed Bat is an ecosystem credit species and Large Bent-winged Bat is a dual credit species with only ecosystem credit habitat present. No species credits are required for either species. No other species were considered likely to occur or be impacted.

No impacts to threatened fauna species listed under the EPBC Act are likely to occur as a result of the Proposal.

Impacts to Commonwealth migratory species

One EPBC Act listed migratory species was recorded within the subject land (Rufous Fantail). No additional threatened species, TECs or other MNES or their habitats were recorded within the subject land or considered likely to occur within the subject land.

Significant Impact Assessment using EPBC Act Significant Impact Guidelines 1.1 (DoE, 2013) is provided below.

Important habitat for Rufous Fantail is considered to include moist, dense mangroves, rainforest, riparian areas and wet eucalypt forests with a dense understorey (DoE, 2015). The highly modified vegetation that occurs within the Proposal Site would be unlikely to constitute important habitat for this species. In addition, the threshold area of important habitat impacted that may result in a significant impact to the species and require a referral to DAWE is 750 ha. The area of habitat for this species to be cleared for this proposal is 0.28 ha.

Breeding usually begins in September - October and occurs in humid places, such as creekside vegetation. The Proposal Site does not contain this type of habitat and it is likely that the individual observed was foraging. Foraging resources within the Proposal Site would be removed as part of clearing. However, given the small size, and highly modified nature of the habitat to be cleared, it is considered very unlikely that the Proposal would significantly impact important habitat for this species. It is considered that the Proposal would not seriously disrupt the life cycle of the species. Alternative areas of potential habitat for this species would remain along the riparian areas of Ropes Creek to the west of the Proposal Site, and Western Sydney Parklands to the southeast.

Additionally, the immediate surrounding areas are already highly disturbed and unlikely to provide significant habitat for this species. Therefore, there would be no important habitat impacted by indirect impacts as a result of the Proposal. Further, standard measures to revegetate and manage weeds will form part of the construction environmental management plan for the Proposal, which will minimise the risk of an increase in invasive species as a result of the Proposal.

Impacts to aquatic habitat

Angus Creek would be modified as part of the Proposal through the inclusion of a culvert to facilitation the new connection to Kangaroo Avenue. Risks to aquatic biodiversity are considered to be minimal as the creek has been assessed as providing minimal habitat due to the highly modified nature of the waterway. No threatened aquatic species listed under the FM Act would be impacted by the Proposal. Standard mitigation and management measures, especially erosion and sedimentation minimisation will be employed to reduce the risks of indirect impacts to any surrounding waterways, mainly in reducing run off from the Proposal Site.

Indirect Impacts

During construction of the Proposal, there is the potential for indirect impacts to occur, as summarised below:

- **Inadvertent impacts on adjacent habitat or vegetation –** Surrounding areas are largely lacking in native vegetation, with either cleared and disturbed land or non-native vegetation. A small area to the south of the landfill area is native vegetation, but it is not adjacent to the area of vegetation clearing. There is also a larger area of native vegetation within a conservation area immediately to the northwest of the Proposal Site which is likely to comprise the TEC Cumberland Plain Woodland. With the appropriate mitigation measures implemented as outlined in Section 14.5, inadvertent impacts to this area are unlikely and considered to be minimal. Risks to surrounding vegetation is therefore considered to be low
- **Reduced viability of adjacent habitat due to edge–effects -** Surrounding areas are largely lacking in native vegetation. Native vegetation is present in a small area to the south of the landfill area, as well as a larger area of native vegetation to the northwest. These areas are currently subject to high levels of edge effects. As no adjoining vegetation is to be removed, and construction and operational activities are consistent with current activities of the existing Proposal Site, edge effects are not anticipated to be enhanced by the Proposal
- **Reduced viability of adjacent habitat due to noise, dust or light spill -** Adjacent habitat is primarily disturbed / cleared areas or non-native vegetation, providing limited resources for common flora and fauna. There is also an area of higher quality native vegetation to the northwest of the Proposal Site. Construction activities within the Proposal Site would increase dust, however, impacts to surrounding vegetation are not likely to be significant, given the short term / temporary nature of construction and the existing impacts from the operational landfill
- **Transport of weeds and pathogens from the subject land to adjacent vegetation -** This is a risk since the Proposal Site contains at least 22 weed species, five of which are priority weeds. Areas at risk are most likely to be areas of native vegetation off site, or native vegetation adjacent to the Proposal Site. This risk can be reduced significantly with the inclusion of weed and pathogen management protocols to prevent contaminated material inadvertently being taken off site, in vehicles, boots or topsoil. Measures for management of weeds and pathogens will be included within the CEMP for the Proposal
- **Injury and mortality – fauna -** There is a risk the Proposal may result in the injury and / or mortality of fauna species during the construction of the Proposal. However, with the measures outlined in Section 14.5, the likelihood of this occurring is reduced.

14.1.13 Operation

Operational impacts as a result of the Proposal are considered to be unlikely to occur and would be of minor severity in the event they do occur. These potential operational impacts are limited to the following:

- **Reduced viability of adjacent habitat due to edge–effects -** Native vegetation is present in a small area to the south of the landfill area (and outside of the subject land), as well as a larger area of native vegetation to the northwest. These areas are currently subject to high levels of edge effects. Operational activities of the Proposal would be fairly consistent with current activities of the

existing site therefore, edge effects are not anticipated to be enhanced by the Proposal. Edge effects will be managed by the implementation of the existing EMS and LVMP which will be updated to manage the operation of the Proposal as required

- **Injury and mortality – fauna -** There is a risk the Proposal may result in the injury and / or mortality of fauna species during the operation of the Proposal. However, with the measures outlined in Section 14.5, the likelihood of this occurring is reduced.

No additional operational impacts are expected to occur as a result of the Proposal. With the measures outlined in Section 14.5, the likelihood of operational impacts to biodiversity is low.

14.5 Environmental management measures

14.1.14 Mitigation Measures

The measures in Table 14-9 below will be implemented to mitigate potential direct and indirect biodiversity impacts during construction and operation of the Proposal.

Table 14-9: Mitigation measures (Biodiversity)

ID	Mitigation measures	Timing
BD1	A Flora and Fauna Management sub-plan to the CEMP will be prepared. Clearing of native vegetation within the subject land will not occur until the CEMP, including the Flora and Fauna Management sub-plan has been prepared. The Flora and Fauna sub-plan will include, but not be limited to, the following: • Plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features and revegetation areas • Pre-clearing survey requirements for Plant Community Types (PCT) within and around the impact area including that pre-clearing survey will be undertaken by an ecologist in the areas identified as PCT 849 and the eucalypt trees to be cleared in the northeast corner of the construction footprint. • Procedures for unexpected threatened species finds and fauna handling • Procedures for if any animal is injured on site during works • Clearing of vegetation would be avoided during overland flow events, if possible • Protocols to manage weeds and pathogens • Protocols regarding pits/trenches which may remain open overnight adjacent to native vegetation	Pre-construction and construction
BD2	The currently approved EMS and Landscape and Vegetation Management Plan (LVMP) will be updated to include the new areas of Plant Community Type (PCT) which are to be protected and managed once construction is complete.	Post construction / operation

14.1.15 Biodiversity offsets

The impacts of the Proposal on native vegetation that require offset (in accordance with Section 9.2 of the BAM and as determined using the BAMC) are outlined below in Table 14-10. The full biodiversity offset credit reports are provided within the BDAR (Appendix P) prepared for the Proposal. For the purpose of this EIS, it has been assumed that a future offset requirement will be met through a contribution to the Biodiversity Conservation Fund. The Biodiversity Conservation Fund is administered by the Biodiversity Conservation Trust who take on responsibility for sourcing the

requisite land offsets from a proponent once the payment to the Biodiversity Conservation Fund has been made. Additional details regarding the contribution to the Biodiversity Conservation Fund is included in Appendix P.

Table 14-10: Impact summary for PCTs requiring offsets and the associated ecosystem credit requirements

Vegetation Zone	PCT Name	Area to be impacted (ha)	Ecosystem credits required
849_planted	Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	0.28	6

Impacts to species credit species as a result of the Proposal require offsetting in accordance with Section 10.1.1 of the BAM. As no threatened species credit species were recorded or assumed present within the subject land, no credits for threatened species are required for the Proposal. A dual credit species was recorded, the Large Bent-wing Bat (*Miniopterus orianae oceanensis*), however this species only requires species credits when breeding habitat is to be removed. Breeding habitat is not present within the subject land, only foraging habitat.

15 HERITAGE

15.1 Introduction

This section provides an assessment of impacts to Aboriginal and non-Aboriginal heritage items or sites from the construction and operation of the Proposal. Artefact has prepared an Aboriginal heritage due diligence assessment to determine the likelihood of impact to Aboriginal heritage items or values at the Proposal Site and address the SEARs issued by DPE. The due diligence assessment is provided in Appendix Q of this EIS.

Table 15-1 provides a summary of the relevant SEARs which relate to Aboriginal and non-Aboriginal heritage, and where these have been addressed in this EIS.

Table 15-1: SEARs (Aboriginal Heritage)

SEAR	Where addressed
Cultural heritage and Aboriginal cultural heritage	
an Aboriginal cultural heritage assessment including a due diligence report prepared in accordance with Due diligence code of practice for protection of Aboriginal objects in NSW (OEH, 2010) or an Aboriginal Cultural Heritage Assessment Report (ACHAR);	Chapter 15 Appendix Q (Aboriginal due diligence assessment) The due diligence assessment found that the Proposal is considered to have negligible potential of impacting Aboriginal cultural heritage values given the existing low likelihood of Aboriginal heritage items and sites being present within the Proposal Site. Therefore, an ACHAR is not required.
− justification for the proposed assessment approach; and	Section 15.2 (justification)
− a description of the outcomes of the assessment and details of any impacts on Aboriginal cultural heritage values.	Section 15.4 (outcomes)

15.2 Method of assessment

This assessment considers a construction scenario comprising the following construction activities:

- Site establishment
- Clearing and grubbing
- Earthworks
- Installation of two new exits and associated weighbridges and offices
- Internal road upgrades and necessary water management infrastructure
- Provision of new staff parking
- Installation of two new workshops
- Installation of landscaping, signage and perimeter fencing.

15.2.1 Assessment scenarios and approach

Chapter 7 outlines the different assessment approaches adopted within this EIS to assess the potential impacts from the Proposal. Heritage impacts are largely related to the physical changes associated with the Proposal and have been assessed on a footprint / full build basis as shown in Figure 15-1.

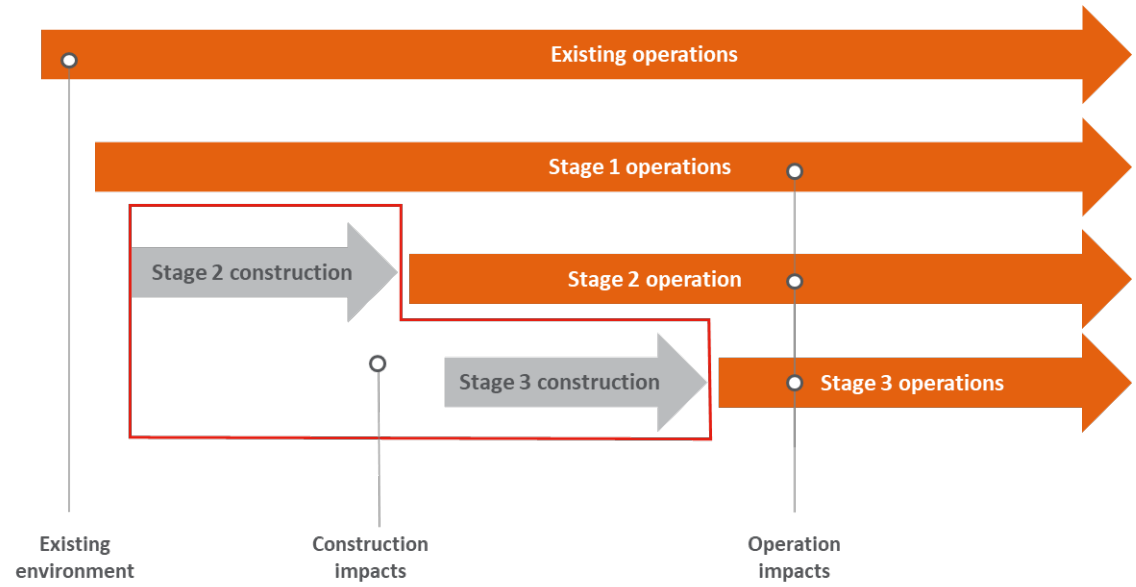

Figure 15-1 Heritage assessment scenarios

15.2.2 Aboriginal heritage

An Aboriginal heritage due diligence assessment was undertaken by Artefact Heritage (Appendix Q of this EIS) to determine the potential for the Proposal to impact any Aboriginal heritage items or values. The assessment included a review of Eastern Creek REP's history, a summary of the Aboriginal history and context, and examination of the likely presence of any heritage items or places of value.

An inspection of the study area was undertaken on 8 March 2021. The study area and areas selected for inspection are shown in Figure 15-2 (assessed areas 1, 2 and 3) while the remaining areas were deemed inaccessible due to existing operations.

The site inspection was undertaken on foot, using a handheld GPS as well as physical maps. As the study area lies in an active site, a photographic record was made of areas that were accessible. Within this constraint, photographs were taken to record different aspects of the landform units within the study area, vegetation, levels of disturbance, and any sensitive landform areas.

An Aboriginal Heritage Information Management System (AHIMS) extensive search was conducted on 10 March 2021 with a buffer of 1 km around the Proposal Site to identify any Aboriginal sites which may have been previously recorded described in Section 15.3.4.

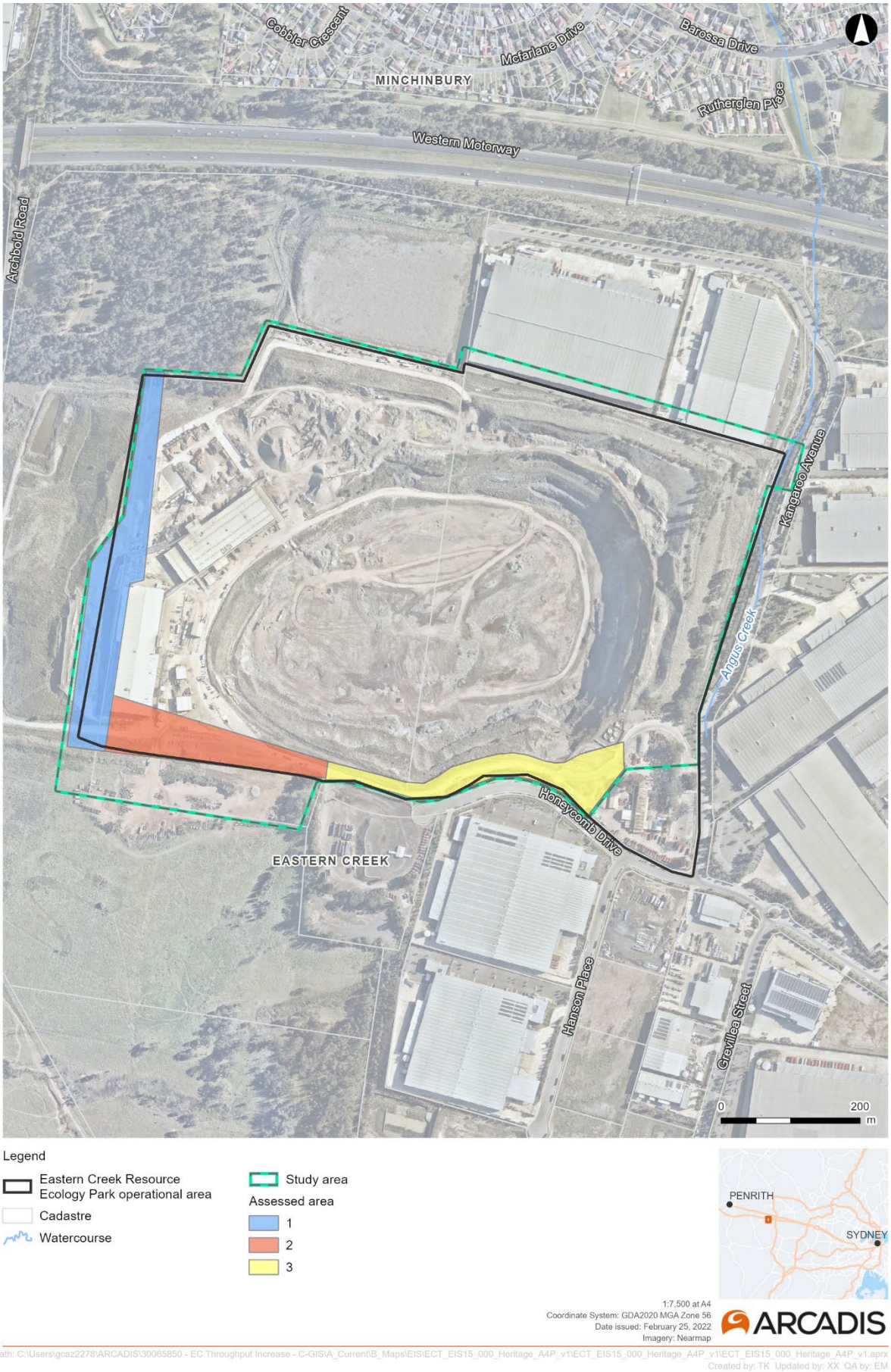

Figure 15-2: Study area and areas selected for inspection

15.2.3 Non-Aboriginal heritage

Items of non-Aboriginal heritage significance are listed in statutory registers, providing them with varying levels of protection. Non-Aboriginal heritage items are listed at a national, State and local level on the following registers:

- EPBC Act Protected Matters Search Tool (DAWE, 2021a)
- National Heritage Register (DAWE, 2021b)
- NSW State Heritage Register (DPE, 2021f)
- Section 170 NSW State agency heritage registers (DPE, 2021f)
- Blacktown Local Environmental Plan 2015 (BLEP 2015).

A review of applicable State and Federal registers was undertaken on 6 July 2021 to identify any non-Aboriginal heritage items within the vicinity of the Proposal Site (described in Section 15.3.5).

15.3 Existing environment

15.3.1 Environmental context

The Proposal Site is located within the Cumberland Plain, which is typified by an undulating landscape of rolling hills and prominent rises. The Proposal Site consists of two soil landscape types 'Blacktown' and 'Disturbed Terrain' (DPE, 2021c). The Blacktown soil landscape covers the south-western portion of the Proposal Site, while the rest of the Proposal Site is categorised as Disturbed Terrain. The Disturbed Terrain soil landscape is characterised by level plain to hummocky terrain which has been extensively disturbed by human activity, with most of the original soil either removed, buried or generally disturbed. The historic quarry activities and construction of supporting infrastructure (buildings, and unsurfaced roads) has subjected the original terrain to substantial disturbance.

The nearest watercourse to the Proposal Site is a channelled portion of Angus Creek, which flows directly adjacent the eastern boundary of the Proposal Site. Ropes Creek is the next nearest watercourse located approximately 700 m to the west. Ropes Creek flows into South Creek, which eventually drains into the Hawkesbury River, 17 km to the west.

The region would have originally featured Cumberland Plain Woodland, which formerly vegetated much of Western Sydney. The current landscape within the Proposal Site has been largely modified for industrial development and cleared of native vegetation. The limited extent of remaining vegetation is likely to be regrowth.

15.3.2 Ethnohistorical background

Prior to the appropriation of their land by Europeans, Aboriginal people lived in small family or clan groups that were associated with particular territories or places. It seems that territorial boundaries were fluid, although details are not known. The language group spoken on the Cumberland Plain is known as Darug (Dharruk – alternative spelling). The Darug language group is thought to have extended from Appin in the south to the Hawkesbury River, west of the Georges River, Parramatta, the Lane Cove River and to Berowra Creek (Attenbrow, 2010). This area was home to Several. different clan groups throughout the Cumberland Plain.

European expansion throughout the Cumberland Plain displaced Aboriginal people from their traditional land and effectively cut off access to many resources. The first European activity in the area was exploratory; however, this was shortly followed by settlement. The first land grants in the Blacktown region were at Prospect Hill. Governor Phillip granted a total of 13 plots, ranging in size from 30 to 70 acres, to emancipated convicts in 1791. Between 1818 and 1920, the area along the M4 Western Highway between Prospect and South creek was granted to ex-convicts and free settlers.

The Proposal Site was quarried for breccia during the 1800s. By the 1930s, the quarry had expanded. During the 1950s it was run by Ray Fitzpatrick Quarries. The Proposal Site remained an active quarry until September 2006 at which time the quarry void was estimated to be 12 million $m^{3.}$ In 2009, the Proposal Site was acquired by DADI who commenced operation of Genesis Xero Waste Management Facility (currently the Eastern Creek REP) which included recycling facilities in 2012. In February 2019, Bingo acquired DADI and continued the operation of the Eastern Creek REP. Aerial maps of the quarry area taken between 1956 and 2005 (Appendix M) held in the NSW Government Historical Imaging database document the increasing expansion of the quarry site westward and southward, into areas already denuded of trees and vegetation.

15.3.3 Archaeological context

There has been extensive archaeological assessment around Eastern Creek. The majority of this work has been in response to planning requirements driven by industrial development associated with the Eastern Creek Precinct. Archaeological assessments of Aboriginal sites have resulted in the development of several predictive trends including:

- Archaeological evidence of Aboriginal occupation is likely to be focussed on higher order watercourses
- Minimally disturbed lower slopes or ridgelines overlooking water courses are highly sensitive
- Historical development is a major factor in reducing the potential for archaeological deposits.

A previous Aboriginal archaeological assessment (McDonald, 2005) of the Eastern Creek REP site identified two isolated finds and one open scatter comprising three artefacts within the Eastern Creek REP boundary. These were recorded on the boundary between a highly disturbed area with low archaeological potential and a minimally disturbed area with relatively high archaeological potential. Given that the surface manifestations of these artefacts were assessed as being “poor”, it was concluded that the public significance of these heritage finds was low.

Examination of assessed areas 1, 2 and 3 did not reveal any areas of archaeological potential, largely due to the heavily disturbed ground. Due to the constraints on the day of the visit, a site survey of the northern and eastern perimeter was not carried out. This area currently has areas of vegetation present. Examination of historical aerial maps indicate extensive ground disturbance currently not visible due to regrowth in this area especially in the perimeter area adjacent to the quarry void. In addition, the remainder of the northern perimeter has also been subject to industrial excavation.

The Proposal Site is a heavily modified environment with little, if any, natural landscape remaining. It is therefore concluded to have nil to low Aboriginal archaeological potential (Figure 15-3). The vegetated conservation area in the north-western corner of the Eastern Creek REP, and 320 m south of the Proposal Site have been previously identified as having ‘high archaeological sensitivity’. Both of these areas of ‘high archaeological sensitivity’ reside outside of the Proposal Site.

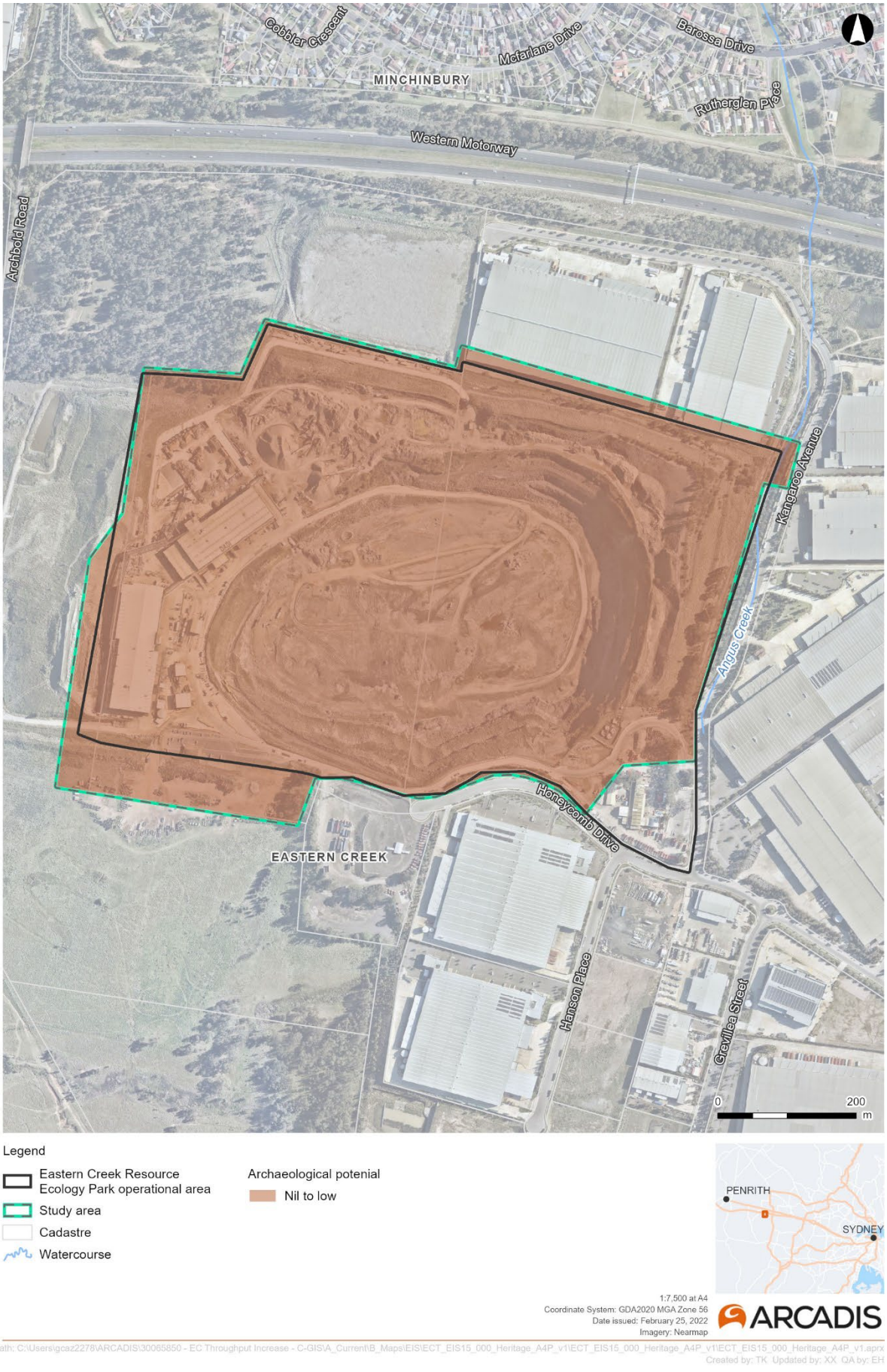

Figure 15-3 Archaeological potential

15.3.4 Aboriginal heritage items

An extensive search of the AHIMS determined that there are 98 registered Aboriginal sites within the search area. The AHIMS database records sites using a list of twenty standard site types, of which two were found within the extensive search (Office of Environment and Heritage (OEH) 2012):

- Artefacts: Objects such as stone tools, modified glass or shell showing evidence of use by Aboriginal people.
- Potential archaeological deposit: An area where Aboriginal objects may exist below the ground surface.

Of the 98 sites identified in the search, about 92 per cent of the sites are artefact sites, 2 per cent consist of Potential Archaeological Deposits (PAD), and about 6 per cent consists of both PAD and Artefact. The results of the search are summarised in Table 15-2.

Table 15-2: Frequency of site features in AHIMS search results

Site Types	Frequency	Percentage
Artefact	90	91.83%
Potential Archaeological Deposit (PAD)	2	2.04%
PAD and Artefact	6	6.12%
Total	**98**	**100%**

The study area lies in proximity to several sites located on the western side of Archbold Road. However, the distribution of the sites recorded in the AHIMS extensive search lie within a 1000 m buffer of the study area. No sites were located within the study area.

Examination of assessed areas 1, 2 and 3 did not reveal any Aboriginal objects or areas of archaeological potential, largely due to the heavily disturbed ground.

15.3.5 Non-Aboriginal heritage items

A search of the EPBC Act Protected Matters Search Tool and National Heritage register revealed that there were no items of national heritage significance within a 1.5 km radius of the Proposal Site.

Online searches of the NSW State Heritage Register, s.170 State agency heritage registers, and BLEP 2015 revealed several locally listed heritage items within the locality of the Proposal Site. The details of these non-Aboriginal heritage items are included within Table 15-3 and their locations depicted in Figure 15-4.

No non-Aboriginal heritage items were identified within, or immediately adjacent, to the Proposal Site.

Table 15-3: Items of State and local heritage significance within 1.5 km of the Proposal Site

Item name	Item number	Address	Distance from Proposal Site	Significance
Southridge (homestead)	I23	1 Southridge Street, Eastern Creek	1840 m	Local
Milestones	I29	Great Western Highway	1240 m	Local
Minchinbury Winery (former)	I39	Minchin Drive, Minchinbury	620 m	Local
Row of Olives (trees)	I38	Minchin Drive, Minchinbury	770 m	Local

The Precinct Plan identifies three additional items which have no formal heritage listing, but are considered to have potential heritage significance, as they potentially contain subsurface archaeological remains of former houses. These items are the Mount Capicure archaeological site, Worker's Cottage archaeological site and Lucan Park / Roberts Homestead. As these items are located in excess of 1.2 km southeast of the southern boundary of the Proposal Site, it was concluded unlikely that the Proposal would impact these items and no further assessment was required.

Southridge (homestead)

The Southridge property is associated with a number of the early settlers of the district from the early to mid-nineteenth century. The property is located on part of the large estate established by emancipist William Hayes. Hayes, for some years, was the estate manager at South Creek for the widow of Governor King. Southridge House was built by French emigrant Moyse Roussell who resided there with his wife, whilst farming the adjacent land. The house is a relatively intact example of a simple mid nineteenth century dwelling. The main core of the original house survives with minor alteration. Southridge Plaza has been constructed around the homestead comprising of courtyards and parklands as well as a variety of retailers, cafes and restaurants.

Milestones

The milestones were commissioned in 1814 from Edward Cureton who was paid to make 54 milestones for the great Western road to Penrith. These obelisks mark the main highway between Sydney and Penrith and the distance to and from each. There are several located along the Great Western Highway within the City of Blacktown and adjoining Local Government Areas. They are highly significant relating to the 1818 completion of the Great Western Highway.

Minchinbury Winery (former)

The former Minchinbury Winery is of significance for its role in the establishment and development of the Australian wine industry. It was the first and largest champagne producer in New South Wales and was the second most important producer in Australia after the Great Western Cellars in Victoria. James Angus who established the Minchinbury Winery is credited with introducing modern wine making techniques into Australia in the late nineteenth century. In 1903, he also introduced the sparkling wine that has made the name Minchinbury famous in Australia.

This site retains the core buildings associated with the former Minchinbury Winery. The complex of cellar buildings includes the 1870 cellar constructed by Dr William McKay through various twentieth century additions for storage, filtration and a boiler to the 1960s additions for bottle washing. The cellar buildings are arranged across the slope of the land, running northwest to southeast. To the north of the main cellar buildings is the former still store.

The remaining stable elements of the winery including all the above elements were incorporated into an adaptive reuse of the site for housing. The original brick cistern and significant site trees including palms, have been retained and a new interpretive trail has been developed through the site. Archaeological remains of a former manager's residence have been retained under the surface of the western car park facing Ann Minchin Way. The works included some reconstruction of original elements and full retention of others. The underground cellars have been incorporated into an underground Gym and swimming pool complex. The Stills store has been converted to a café restaurant.

Row of Olives (trees)

The Row of Olives is the remaining plantings from the 100 Olives planted by Leo Buring along the original entrance drive to the Minchinbury Winery. This is preserved within a public reserve which runs from the Penfold gates at the Great Western Highway along the route of the former driveway up to the Minchinbury Winery site. The driveway does not reach the currently existing winery site as it has been subdivided with surrounding housing. The end of the row of olives marks the end of the original drive to the inner entrance to the Minchinbury Winery site. The end of the row of olives is now connected to the Minchinbury Winery site by a small footpath that runs between houses to Minchin Drive.

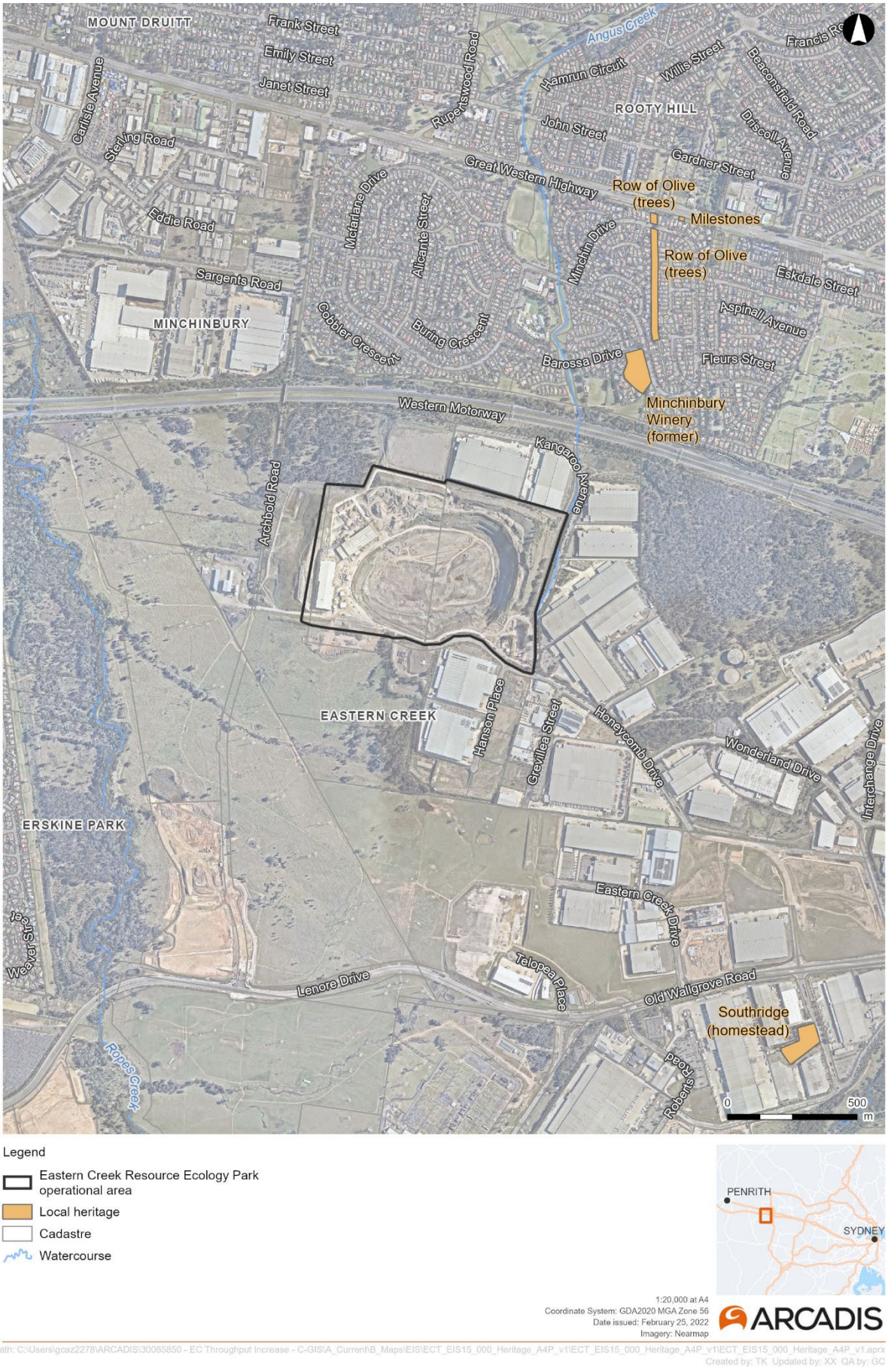

Figure 15-4: Non-Aboriginal heritage items within 1,500 m of the Proposal Site

15.4 Impact assessment

Impacts to Aboriginal and non-Aboriginal heritage have been assessed based on a construction scenario comprising construction activities to be undertaken throughout the entirety of the Proposal rather than by stage. Additionally, a worst case operational scenario representing the full build (i.e. all three stages are completed) in terms of the Proposal footprint and other operational impacts was assessed.

15.4.1 Construction

Aboriginal heritage

Based on a review of the findings of the Aboriginal due diligence assessment and the heavily disturbed nature of the Proposal Site, it was determined that there is a very low likelihood of finding any Aboriginal objects or areas of archaeological sensitivity.

The Proposal would occur within an area which has been heavily disturbed by historical quarrying and earthmoving activities and is classified as having nil to low archaeological potential or Aboriginal significance. There would be no disturbance to the area of high archaeological sensitivity to the north-west of the Proposal Site, therefore impact to significant intact Aboriginal heritage sites or values are unlikely to be impacted by construction activities.

Non-Aboriginal heritage

The desktop heritage assessment did not identify any items of non-Aboriginal heritage significance at or adjacent to the Proposal Site. The nearest identified non-Aboriginal heritage items are in excess of 600 m from the Eastern Creek REP boundary and would not be impacted by the Proposal.

- **Visual impacts:** Due to the topography of the Proposal Site and surrounding area, and the intervening land uses, it is considered highly unlikely that any construction activities associated with the Proposal would be visible from any non-Aboriginal heritage items. The erection of the Site Workshop and Maintenance and Manufacturing Workshop would require the use of cranes / cherry pickers which would extend vertically from the Proposal Site and may be temporarily visible from neighbouring areas. As construction of the Site Workshop and Maintenance and Manufacturing Workshop is to happen over a short period of time, the visual impacts on non-Aboriginal heritage items would be negligible.
- **Noise and vibration impacts:** Section 3.4.4 notes that vibratory plant and equipment would be used during the construction of the Proposal. The closest non-Aboriginal heritage item is located 620 m away from the Proposal Site, making noise and vibration impacts on site visitors to the non-Aboriginal heritage items highly unlikely. A noise and vibration impact assessment is provided in Section 9.4.
- **Traffic and access:** All identified non-Aboriginal heritage sites are located on local roads that are accessed via regionally significant roads including the M4, the Great Western Highway, Wallgrove Road and the M7. While the heritage sites would share the regional road network with the Eastern Creek REP, the local road network utilised to access these non-Aboriginal heritage sites would not be travelled by heavy vehicles accessing the Proposal Site. Therefore, no traffic impacts to these sites are anticipated. A traffic impact assessment is provided in Section 8.4.

15.4.2 Operation

Aboriginal heritage

It is extremely unlikely that items of Aboriginal heritage significance would be disturbed during operation. It is expected that any items of Aboriginal heritage significance would be found during the construction phase of the Proposal during ground disturbing activities. Operation of the Proposal is therefore not expected to impact on known items of Aboriginal heritage.

Non-Aboriginal heritage

No direct operational impacts would occur as a result of the Proposal. Possible indirect impacts could include:

- **Visual impacts:** Based on the Proposal Site topography, height of the Site Workshop and Maintenance and Manufacturing Workshop (refer Section 3.3.5 and 3.3.6) and location of surrounding industrial buildings, it is not anticipated that the Proposal would be visible from any of the non-Aboriginal heritage items identified in Section 15.3.5. As noted above the closest non-Aboriginal heritage item, and the item with the greatest potential to have visibility of the Proposal Site, would be the Minchinbury Winery, located 620 m away on the northern side of the M4. Based on the topography and intervening land uses, the Proposal would not be visible from the Minchinbury Winery.
- **Noise impacts:** Due to the existing noise environment and the closest non-Aboriginal heritage item being located 620 m away, it was concluded that the Proposal would have a negligible impact on noise levels experienced by those visiting the non-Aboriginal heritage items during operation. Additionally, as the use of vibration intensive plant is not proposed during operation, there would be no vibration impacts. A noise and vibration impact assessment is provided in Section 9.4.
- **Traffic and access:** As outlined above, the local road network utilised to access these non-Aboriginal heritage sites would not be travelled by heavy vehicles accessing the Proposal Site. Therefore, traffic impacts to non-Aboriginal heritage items during operation are unlikely. A traffic impact assessment is provided in Section 8.4.

15.5 Mitigation measures

No direct impacts are anticipated to occur as a result of the Proposal on any Aboriginal or non-Aboriginal heritage items or sites of significance. Indirect impacts (visual, noise and vibration) on any items or sites would be negligible. Mitigation measures that will be implemented to minimise impacts to unexpected non-Aboriginal heritage items finds are presented in Table 15-4.

Table 15-4: Mitigation measures (Aboriginal and non-Aboriginal heritage)

ID	Mitigation measures	Timing
HE1	An unexpected finds protocol will be prepared and included in the CEMP. This protocol will outline the procedure for managing the identification of items of potential Aboriginal and non-Aboriginal heritage significance during construction and operation. This protocol will include the following requirements: • If unexpected items are uncovered during construction, works in the vicinity of the item will cease immediately • EES Group will be immediately informed to determine the appropriate management strategy • Should items need to be disturbed (exposed, moved, damaged or destroyed), this will not be undertaken until an excavation permit is received under Section 139 of the Heritage Act 1977. The duration of this will depend on the integrity and significance of the heritage item.	Construction

ID	Mitigation measures	Timing
	Works would not commence in the area, until approval has been obtained from EES and / or the Bingo Environmental Manager	
HE2	The existing AHMP will be updated as required to account for the operation of the Proposal. In the event unexpected items are uncovered during operation, works in the vicinity of the item will cease immediately and the protocol detailed in the updated AHMP will be followed.	Operation

16 SOCIO-ECONOMIC

16.1 Introduction

Potential socio-economic impacts associated with the Proposal have been assessed and are provided in this chapter. Although DPE did not identify any SEARs relating to socio-economic impacts, this chapter has been prepared in order to give consideration to the socio-economic impacts and opportunities provided by the Proposal. The socio-economic profile of the area surrounding the Eastern Creek REP has been identified, including for the suburb of Eastern Creek, Minchinbury and Erskine Park and the wider Blacktown LGA. Construction and operational socio-economic impacts have been assessed to evaluate key issues for the Proposal.

16.2 Method of assessment

The socio-economic assessment is based on desktop analysis and utilises a four-step process in order to identify and assess the socio-economic impacts of the Proposal. Although a Social Impact Assessment has not been prepared for this EIS, the method of assessment was prepared with reference to the *Social Impact Assessment Guideline* (the SIA Guideline) (DPE, 2017) to ensure best industry practice was followed.

The methodology for the assessment included:

- **Scoping**: Identifying the socio-economic issues of concern to the Proposal
- **Baseline analysis**: Describing and analysing the existing socio-economic environment of the Proposal to understand the potentially affected groups or communities
- **Assessment**: Assessing potential changes to existing socio-economic conditions during operation and construction of the Proposal
- **Mitigation**: Recommending management measures to enhance the Proposal's positive benefits and to avoid, manage or mitigate its potential negative socio-economic impacts.

16.2.1 Assessment scenarios and approach

Chapter 7 outlines the different assessment approaches adopted within this EIS to assess the potential impacts from the Proposal. Socio-economic impacts have been assessed on a footprint / full build basis as shown in Figure 16-1.

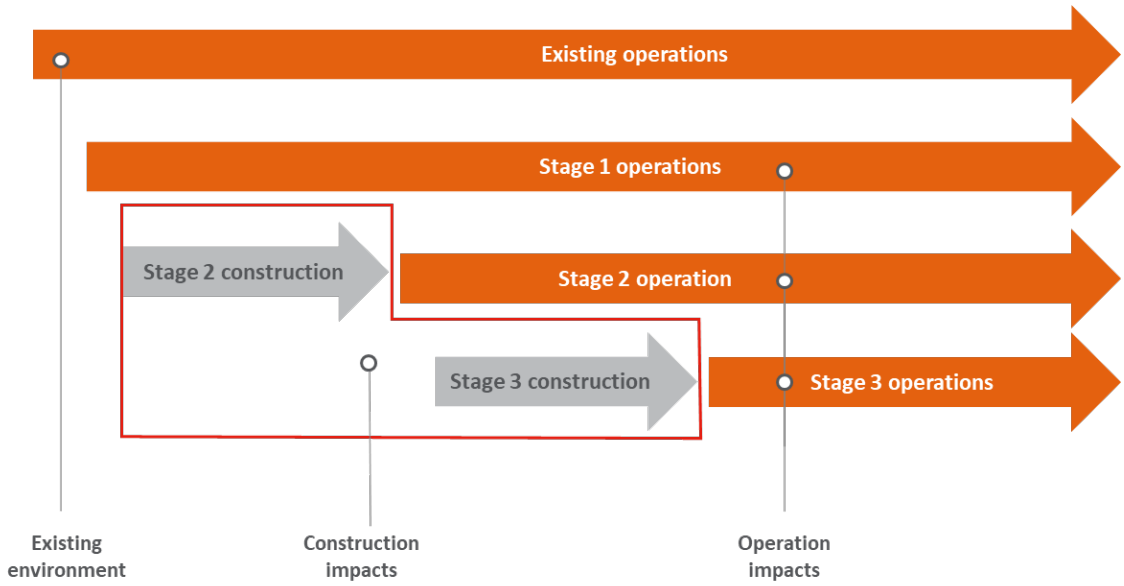

Figure 16-1 Socio-economic assessment scenarios

16.2.2 Scoping

The scoping phase aimed to identify the aspects of the social environment that are likely to be impacted by the Proposal and the selection of appropriate methods to assess these impacts. The scoping phase was developed using the following methods:

- Review of quantitative data to ascertain the demographic within the locality
- Completion of stakeholder identification and analysis
- Identification of the area of social influence (ASI) development.

Key stakeholders

Stakeholders were identified based on desktop review. Identifying individuals, groups or businesses that have the potential to be impacted by activities associated with the Proposal assists in the identification of socio-economic impacts. The key stakeholders for the Proposal are identified in Table 16-1 below.

Table 16-1 Identified stakeholders

Stakeholder groups	Project stakeholders	
Government (State and local)	• DPE • Blacktown City Council • Penrith City Council • Sydney Water • DPE – Office of Strategic Lands	• EPA • TfNSW • FRNSW • Endeavour Energy
Local businesses and Landowners	• Techtronic Industries • H&M distribution warehouse • Kuehne + Nagel (Australia) Pty Ltd warehouse • Pepkor Eastern Creek distribution centre • Hungry Baker • Rhino-rack • LG Electronics • Goodman • Greater Blacktown Chamber of Commerce	• Kmart distribution centre • Bunnings distribution centre • DB Schenker warehouse • Greek Street Food • Fulton Hogan • Red Rich Fruits (NSW) limited • Best & Less DC • Jacfin Pty Ltd • Sargents Charitys • Frasers Property • Hanson
Sensitive receivers	• Residents in Erskine Park • Residents in Rooty Hill • Minchinbury Public School • Western Sydney People's Forum	• Residents in Minchinbury • Erskine Park High School • James Erskine Public School • Neighbourhood Envirowatch

Area of social influence

An Area of Social Influence (ASI) is the geographical social footprint of a project which is not exclusively contained in a project boundary. The ASI for the Proposal is the Eastern Creek industrial precinct, and the neighbouring suburbs Minchinbury, Erskine Park and Rooty Hill and is shown in Figure 16-2. Unlike some of its neighbouring suburbs (e.g., Minchinbury) which contain a large number of residential properties, Eastern Creek is predominantly comprised of industrial and manufacturing properties.

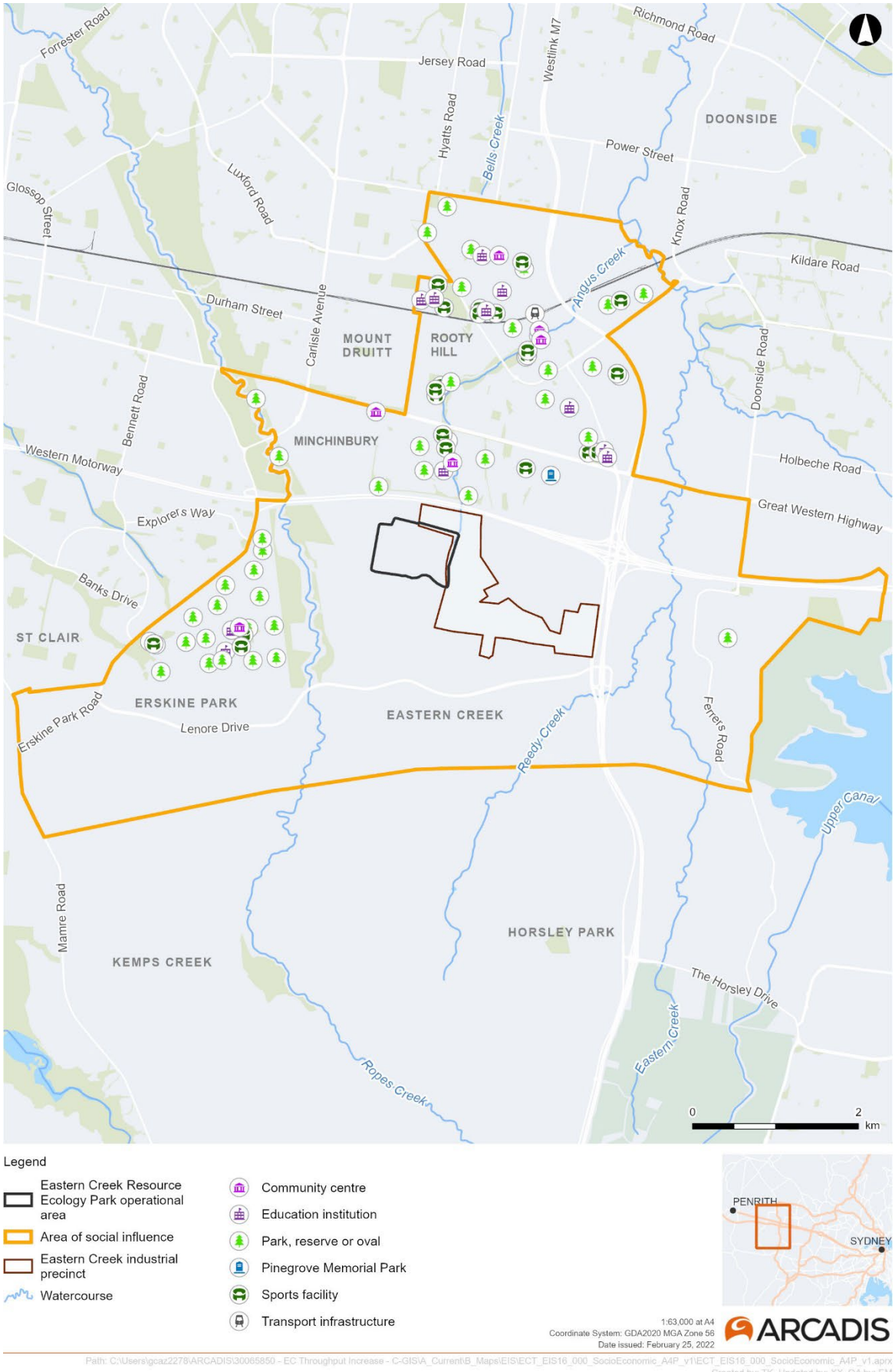

Figure 16-2 Social infrastructure within the vicinity of the Proposal Site

16.2.3 Social baseline analyses

A social baseline analysis was completed, describing and analysing the existing socio-economic environment applicable to the Proposal to understand the potentially affected groups or communities. This was based on a desktop review, including review of:

- Census datasets (Australian Bureau of Statistics (ABS), 2018)
- Blacktown Local Strategic Planning Statement (Blacktown City Council (Council), 2020)
- Spatial Services NSW Point of Interest web service (Department of Finance, Services and Innovation, 2021).

16.2.4 Impact assessment

Each of the social impacts were assessed in the context of the socioeconomic features within the area of social influence for the Proposal. The assessment analysed potential changes and impact to existing socio-economic conditions during construction and operation of the Proposal.

16.2.5 Identification of mitigation

The final step included recommending mitigation measures to manage the potential negative social impacts and improve the positive benefits of the Proposal.

16.3 Existing environment

16.3.1 Social baseline

The social baseline is the nominated set of social indicators for communities that may be affected by the Proposal. The baseline provides a point of comparison that can be used as reference data against which to measure the impacts of the Proposal as it develops.

Regional context

The Blacktown LGA and Eastern Creek area are integral parts of Greater Sydney's industrial fabric and employment lands. The Proposal Site is located within the WSEA which has been identified as a key strategic area that will provide for Sydney's employment growth.

The Central City District together with the Western City District have the largest amount of industrial and urban services land in Greater Sydney. Eastern Creek is the largest industrial precinct within the Central City District accounting for 30 per cent of industrial and urban services land. This indicates that the area is of importance to the regional economic and industrial landscape. The Eastern Creek Precinct is strategically located to benefit from, and serve, both the Central and Western Cities due to its proximity to major transport connections such as the M4 and M7 providing accessibility.

Due to the Proposal's location in relation the M4 and M7, it is strategically placed to provide employment opportunities for residents within the broader region of Western Sydney area where there are currently 220,000 more workers than jobs available.

Local context

As outlined in Chapter 2, the Proposal Site is located within an industrial precinct and therefore has characteristics typical of these areas including a relatively low residential population. For this reason, baseline data was gathered from three Statistical Areas (SA2) including Prospect Reservoir, Rooty Hill - Minchinbury and Erskine Park.

Prospect Reservoir, within which the Proposal resides, is predominantly industrial containing a residential population of 40[7]. The Rooty Hill-Minchinbury area is a residential area located to the north of the Proposal Site across the M4. Erskine Park is located to the west of the Proposal Site and contains both residential and industrial land uses. These areas make up the locality for which the social baseline was established.

Table 16-2 presents the relevant baseline data primarily derived from the 2016[8] Australian Census of Population and Housing (ABS, 2018). This data provides an overview of the social characteristics of the local area likely to be impacted by the Proposal.

Table 16-2 Local socio-demographic context

Social Measure	Locality description
Industry and employment	• The majority (63.7%) of the working age population worked full time and 25.3% worked part time. • Unemployment within the locality is below average (5%) in comparison with the NSW and Australian averages (6.3% and 6.9% respectively) • Healthcare and social assistance, retail trade, manufacturing and construction are the most prominent industries of employment • Most employed people travelled to work using car with the second most used method being train • In the period of September 2019 – September 2020, it has been estimated that industries including accommodation and food services, manufacturing, warehousing, construction and retail trade saw the greatest decrease in the number of Blacktown LGA residents employed.
Income	• Median individual incomes within the Rooty Hill – Minchinbury area align with the NSW median at $663 per week. They are however below the Greater Sydney median ($719/week) • Within the Erskine Park area, strong incomes present with a median of $781/week.
Education	• In comparison with Greater Sydney and NSW, the locality has an above average number of students enrolled in primary school and high school. This indicates that the locality has a high proportion of families with school age children residing within the area.
Housing	• Property in Greater Sydney is generally among the most expensive in Australia and this scenario is reflected by the median mortgage repayments in Rooty Hill – Minchinbury and Erskine Park ($2,000/month). • The median rent for Rooty Hill – Minchinbury and Erskine Park ($400/week and $410/week, respectively) is below the Greater Sydney median but higher than the NSW median. • 9% of households in the Rooty Hill - Minchinbury area had mortgage repayments greater than or equal to 30% of household income. • 10.5% of households in the Erskine Park area had mortgage repayments greater than or equal to 30% of household income. • 3.2% of households within the Rooty Hill – Minchinbury area lived in social housing compared to 0.8% in Erskine Park. Both areas fell below the NSW average.

[7] Due to the small population in Prospect Reservoir, some social indicators were not included in the ABS data.
[8] Note that these statistics are representative of the local community prior to the emergence of COVID-19. Due to the economic impact of COVID-19, it is likely that key statistics, such as employment and industry, are subject to change.

16.3.2 Social infrastructure

Social infrastructure refers to the facilities and services that enhance the social capacity of communities and provides a reference point against which social impacts of the Proposal can be measured. The following essential social infrastructure were identified within the vicinity of the Proposal Site:

- Parks, reserves and ovals
- Sport facilities
- Education institutions
- Transport infrastructure
- Pinegrove Memorial Park
- Art and cultural facilities
- Community centres.

The locations of all identified social infrastructure are shown on Figure 16-2.

16.3.3 Access and connectivity

Existing access to the Proposal Site is from Kangaroo Avenue which connects to Honeycomb Drive to the south which allows access to the broader arterial road network including the M4 and M7 motorways. While the Proposal Site does not have direct access to train services there are a number of bus stops are located just over 400 m away that provide access to services to Mt Druitt and Rooty Hill train station.

16.3.4 Local businesses

Businesses within the locality operate as a mix of industrial uses, bulky goods retailing, as well as retail uses within neighbourhood centres. Except for bulky goods retailing, the majority of retail premises are located within the residential areas of Erskine Park and Minchinbury. These businesses are isolated from the Proposal Site by the surrounding arterial road network, including the M4. There are however a small number of food and drink premises within the industrial precinct that service workers within the area. Industrial uses within the Proposal's locality consists predominantly of warehouse and distribution centres.

16.3.5 Implications

The key implications from the findings of the existing socio-demographic and infrastructure profiles are identified below:

- The population within Erskine Park is relatively advantaged, however the data for Rooty Hill – Minchinbury area reflects the opposite. It is also important to note that due to COVID-19, the unemployment rate in Greater Sydney rose to 5.7 per cent (October 2021) from 4.2 per cent in December 2019 (ABS, 2021a). Unemployment rates for the Blacktown LGA have not been recorded since 2016, however the main industries of employment for the locality are manufacturing, construction, and retail trade, all of which have been impacted in recent years by the COVID19 pandemic resulting in instability in employment levels across Greater Sydney (ABS, 2021b). It can be assumed that employment levels within the Blacktown LGA would experience similar instability as a result of the recession associated with the COVID-19 pandemic.
- Due to the strategic location of the Eastern Creek industrial precinct, employment opportunities provided by the Proposal are likely to extend to the broader Western Sydney area as it is highly accessible
- The population is highly vehicle oriented. Disruptions to the road network could potentially impact those road users

- Businesses that operate within the locality are also highly vehicle oriented indicating that disruptions to the road network could result in decreased productivity
- There are no community facilities that are directly adjacent to the Proposal Site, and most are located within the suburbs of Minchinbury and Erskine Park. This indicates that it is unlikely that the Proposal would directly impact the functioning of these facilities either temporarily or in the long-term. Overall, the social profile indicates that the surrounding population is no more or less susceptible to social impacts from the Proposal compared to the general NSW or Australian population, and that the Proposal is well-suited to the existing area in terms of its scale and industrial nature.

16.4 Impact assessment

16.4.1 Construction

The overall social impact of construction is considered minor due to the short duration of the proposed stages and limited intensity of the works required. Construction impacts associated with the Proposal are outlined below.

Access

Road network

Construction activities would have minimal impact on the road network (see Section 8.4). Construction methods and staging of the Proposal would ensure that disruption to the existing traffic is maintained within acceptable levels.

Minor social impacts would accrue from temporary disruption and change. Where temporary access changes are required, arrangements would be discussed and implemented with early notification to affected communities and businesses. This should help to minimise concern and worry among residents and business owners. It may result in some inconvenience for a short period of time. These impacts are unlikely to affect the residential areas within the locality as they are isolated from the industrial precinct by the arterial road network including the M4.

Amenity

Construction of the Proposal would create potential noise and air pollutants for the duration of the construction phase, which have the potential to impact on nearby residents and businesses if not appropriately managed. The use of plant and equipment throughout the construction phase could result in increased noise impacts at sensitive receivers. Additionally, the disturbance of soil through excavation and the operation of vehicles on unsealed roads would impact air quality. Mitigation measures will be implemented throughout the construction phase to minimise these amenity impacts.

Economic

Employment

Construction of the Proposal would generate approximately 40 temporary employment opportunities. The composition of the construction workforce would vary over the construction period depending on the activities undertaken.

The social baseline analyses identified the construction industry as a prominent industry of employment within the locality. This indicates that construction of the Proposal has the potential to generate employment opportunities for those within the local area.

Impact on businesses

The impact of the construction of the Proposal on retail, commercial and industrial businesses would be anticipated to be minor and appropriate management plans will be applied to mitigate the impact. Some positive impact is likely due to the presence of the workforce in the local area, and their need to use local businesses and services. The Proposal would consider sourcing services and materials from local businesses as part of their procurement strategy.

16.4.2 Operation

The potential social impacts from the operation of the Proposal are outlined below.

Access

The operational phase of the Proposal would result in an increase of heavy vehicles accessing the Proposal Site. This would amount to increased pressure on the surrounding road network potentially impacting neighbouring businesses and nearby residential areas. Businesses along Kangaroo Avenue may experience amenity impacts associated with increased traffic utilisation of the roadway, if left unmitigated. These impacts are assessed in the Traffic Impact Assessment for the Proposal and in Chapter 8 (Traffic and Transport). Proposed upgrades (such as the development of the Honeycomb Drive extension) to the connectivity of the surrounding road network would likely alleviate potential impacts in the area immediately surrounding the Proposal Site.

The staged increase in throughput would minimise the operational impacts on the road network and by extension the community. The operation of Stage 1 of the Proposal would comprise of 500,000 tpa of additional throughput. Due to the 24/7 operation of MPC2 and the existing operational hours of the landfill, it is not anticipated that there would be substantial impact on the surrounding road network during Stage 1 operations as vehicle movements are able to occur outside of peak hours.

Stage 2 operations would include the remaining throughput increase and a new exit road adjacent to MPC2 and onto Kangaroo Avenue. Stage 2 operations would not commence until the construction of one of the new proposed exit connections either to the Honeycomb Drive extension or Kangaroo Avenue has been completed. When complete, Stage 2 operations would include a connection to the Honeycomb Drive extension as well as a connection to Kangaroo Avenue, both would provide an alternate exit for vehicles leaving the Eastern Creek REP.

During operations, the cumulative additional traffic generation of Stage 1 and 2 would be an average of approximately 283 heavy vehicle movements per day. During the operation of Stage 3, an average of approximately 15 heavy vehicles and 50 light vehicles would be generated. This traffic is anticipated to result in negligible adverse impacts on the surrounding area (see Chapter 8.4.2).

Additional information regarding the potential traffic and transport impacts associated with the Proposal is provided in Chapter 8 and Appendix I of this EIS.

Community services and facilities

As discussed in Chapter 4, the Proposal would represent a critical piece of waste infrastructure that would be required to, facilitate circular economy outcomes, and build the resilience of the local recycling sector. The Proposal would provide some of the most advanced recycling capability in the world to mitigate regional recycling crisis and satisfy a society demanding waste industry reform without expanding the footprint of waste infrastructure in the region.

The Eastern Creek REP represents essential waste infrastructure to meet the demand for processing and recovery of the anticipated C&D and C&I waste volumes in Greater Sydney in the next decade. Increasing diversion would address critical constraints on non-putrescible landfill within the region, while significant expansion of the recycling and reprocessing network is critical to meeting State and Commonwealth waste targets and responding to fundamental challenges to the circular economy business model.

This is considered to have a high social (positive) impact due to the recycling issues in NSW and the scale of benefit for the wider community.

Amenity

Noise

The operation of the Proposal would potentially impact amenity for the surrounding land users by generating more traffic movement and increasing noise disturbance. It should be noted that the closest sensitive receivers, located in Minchinbury, are located on the north side of the M4. Due to this existing noise environment, the anticipated impact on noise from increased vehicle movements is minimal. Furthermore, Stage 3 operation of the Proposal would include an enclosed Site Workshop, relocating this activity from elsewhere on site and providing an acoustic and visual barrier. The amenity berms would be removed in select areas however the design utilises existing structures to offset any acoustic or visual benefits provided by the amenity berms. As such, removal of the amenity berms will not result in any further noise impacts. Noise impacts are further assessed in Chapter 9.

Air quality and odour

Air quality and odour impacts to amenity due to operation of the Proposal would be minimal. Operational activities would result in an increased amount of wheel generated dust from transport of incoming and outgoing waste and emissions of exhaust pollutants. The peak 24-hour average modelling results (Section 10.4.3) at some of the adjacent commercial assessment locations are reduced compared to approved operations, even though the throughput increases. This is due to the reconfiguration / optimisation of the Eastern Creek REP, which acts to re-distribute dust emissions, particularly from truck, by re-directing truck exit points to the Honeycomb Drive extension and Kangaroo Avenue in the northeast of the Proposal Site.

Eastern Creek REP has experienced recent odour amenity issues as a result of significant adverse weather events such as the one-in-a-hundred-year event in March 2021, causing excessive leachate volumes. To manage odour and prevent future odour amenity impacts at the Proposal Site and to the surrounding area, Bingo consulted with the NSW EPA and undertook the following activities:

- Manage immediate odour within the vicinity of the leachate riser and landfill gas vent, applying lime to disperse potential odour
- Expand the scope of the odour audit, based on feedback from the community and the EPA
- Commissioned a specialist gas assessment at the site to determine the chemical composition causing odour at the Proposal Site
- Reduced the tip face, increased the application of cover, and further compacted the fill at various locations across the landfill
- Appointed staff to conduct additional odour monitoring.

Bingo additionally installed four temporary LFG flares, gas wells and piping to collect and manage landfill gas as it is generated. It is noted an additional modification application has recently been approved (March 2022) to transfer the system to two 1,500 m^3/hr high temperature, fully enclosed ground flares (Eastern Creek REP Mod 10, MP 06-0139-Mod-10).

As the Proposal does not seek to increase the tonnage of waste disposed directly to the landfill (without prior processing in MPC1 or MPC2), the AQIA (Appendix K) concluded that the risk of odour emissions is considered low. The facility has existing requirements both as conditions of consent and under the Site EPL to not cause or permit emissions of offensive odour from the Proposal Site and would continue to operate as such under the Proposal. The operation of Eastern Creek REP is subject to Bingo's Environmental Management System. Monitoring of air quality conditions would continue under this Proposal and Bingo's existing complaints register will continue to document any community concerns. Air quality impacts are further assessed in Chapter 10.

Economic

Employment

The operation of the Proposal would create up to 70 full equivalent jobs to support the increased throughput. Although the unemployment rate in the Proposal's locality was below the NSW and Greater Sydney average, the level of employment in the key sectors of construction, manufacturing and retail trade experienced instability as a result of public health directives. Therefore, the local community would derive moderate benefit from the job opportunities provided by the Proposal. Due to the Proposal's location in relation to the M4 and M7, it is strategically placed to provide employment opportunities for residents within the broader region of Western Sydney. More broadly, the increased activity in the precinct may attract other businesses or incentivise existing businesses in the precinct to renew longer leases therefore creating even more local employment.

Impact on businesses

As mentioned above, the impact of the Proposal on the road network would be negligible. Further, the length of the internal roads would adequately accommodate the peak demand of incoming vehicles therefore it is not anticipated the Proposal would result in queuing of heavy vehicles on Kangaroo Avenue. As such, the Proposal would not result in any significant impacts to surrounding businesses.

16.5 Mitigation measures

Where appropriate, mitigation measures to minimise traffic network disturbances, noise and air quality impacts will be reviewed and considered for incorporation into the CEMP and the existing EMS. Mitigation measures for these aspects are summarised in Chapter 22. In addition, a social monitoring framework will be incorporated into both the CEMP and EMS to ensure that social issues are managed appropriately. This will include procedures for responding to complaints and engaging with stakeholders to resolve issues. Table 16-3 outlines the mitigation measures that will be implemented by Bingo to further minimise any social impacts.

Table 16-3 Mitigation measures (socio-economic)

ID	Mitigation measures	Timing
SE1	To respond to public and stakeholder concerns relating to the Proposal, the following will be prepared as part of the CEMP: • A consultation strategy outlining measures to maintain communication with the community and all relevant stakeholders throughout construction • A complaint handling procedure would be implemented and a complaints register maintained to manage public complaints • Measures to respond to complaints and feedback received during the construction of the Proposal.	Construction
SE2	Public complaints regarding odours, vermin, litter, dust, traffic and noise will be managed in accordance with the Section 4.6 (Complaints Management) of the currently approved EMS.	Operation

17 LANDSCAPE AND VISUAL AMENITY

17.1 Introduction

This section includes an assessment of the key visual impact-related issues identified for the Proposal, including construction and operational impacts to address the SEARs issued by DPE. Table 17-1 provides a summary of the relevant SEARs which relate to visual amenity, and where these have been addressed in this EIS.

Table 17-1: SEARs (Urban design and visual)

SEARs	Where addressed
Urban design and visual	
An assessment of the potential visual impacts of the project on the amenity of the surrounding area	Section 17.4 (visual impacts)
A landscape plan detailing the use of native species from the relevant native vegetation communities in landscaping works.	Appendix R (Landscape plan)

17.2 Method of assessment

In accordance with *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute, 2013), the visual impact of the Proposal was assessed via the following key steps:

6. **Viewpoint identification:** A review of the applicable guidelines and a desktop analysis of the surrounding area was undertaken to identify areas that would potentially be subject to visual impacts as a result of the Proposal. Based on this assessment, viewpoints were selected and are identified further in Table 17-4 and Figure 17-2.
7. **Site inspection:** Through a site inspection, the relevance of the locations identified as part of the desktop analysis could be validated. Photographs were taken from key viewpoints and are presented in Table 17-5.
8. **Assessment of visual impact:** The visual impact from the key viewpoints was then assessed qualitatively on the basis prescribed assessment criteria. This included identification of the sensitivity of the viewer and the magnitude of the modification to the view created by the Proposal.

17.2.1 Assessment scenarios and approach

Chapter 7 outlines the different assessment approaches adopted within this EIS to assess the potential impacts from the Proposal. Landscape and visual impacts have been assessed on an individual stage basis as shown in Figure 17-1.

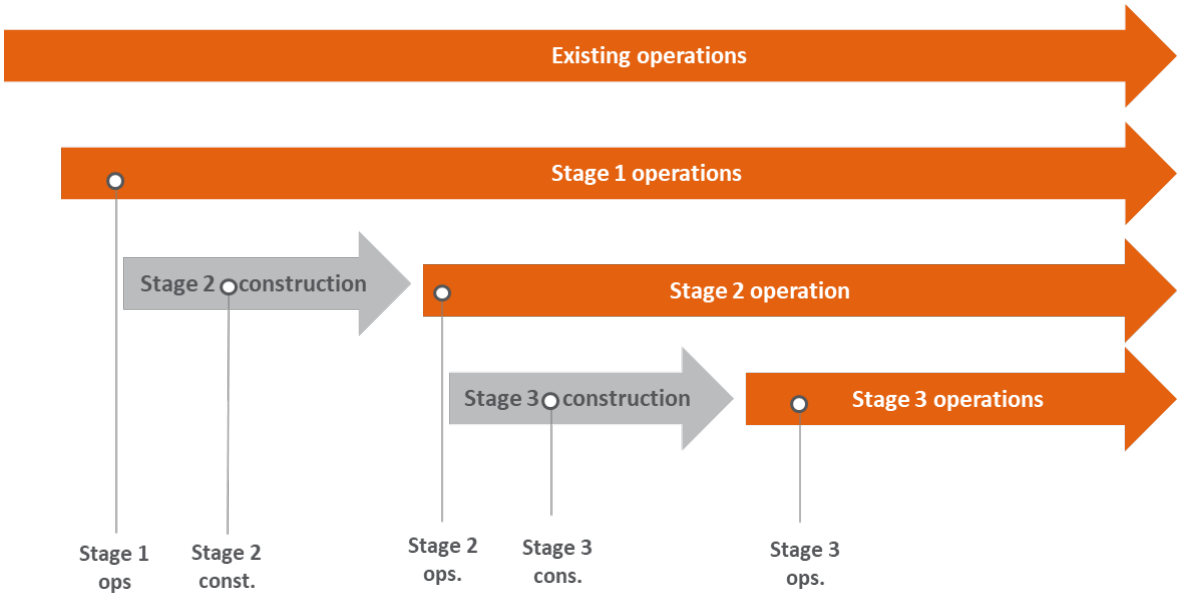

Figure 17-1 Landscape and visual amenity assessment scenarios

17.2.2 Assessment criteria

The visual impact of the Proposal was assessed using a range of criteria against which the relative importance of each observer location was determined, including:

- Context and visual setting
- Visual elements
- Visual character
- Development and surrounding land use
- Distance to view (foreground, middle-ground, and background)
- Visual prominence of the development
- Potential changes to the view setting
- Category of viewer (e.g., resident, worker, open space user)
- Importance of the view including consideration of perceived cultural and historical values.

For each viewpoint, these criteria were addressed under three categories, described in Table 17-2 below.

Table 17-2: Visual impact assessment criteria

Criteria	Description
Visual sensitivity	Visual sensitivity refers to the susceptibility of a view to accommodate change without losing valued attributes. The values of a view refer to any aspect of landscape or views people consider to be important. Visual sensitivity depends on the distance between the viewer and a development, the category of the viewer (e.g., resident, worker, open space user) and the importance of the view (e.g., is it a view people deliberately seek out). In general, views can be classified as: • High sensitivity – Locations where the quality of view is important to the viewer, there is a sustained duration of view and/or large numbers of viewers (e.g., public look-out spots) • Moderate sensitivity – Locations where the quality of view is important to the viewer, but the duration of views and/or number of viewers are lower than high sensitivity views (residential communities with direct view) • Low sensitivity – Locations where the quality of view is not particularly important to the viewer (e.g., industrial areas with employees focused on work).
Magnitude	The magnitude of visual change refers to the scale of the Proposal and the extent and proximity of the view to it. The four levels of magnitude used in the assessment are as follows: • High magnitude – Considerable or uncharacteristic modification to the visual setting • Moderate magnitude – Prominent but not substantially uncharacteristic modification to the visual setting • Low magnitude – Minimal alteration and modification consistent with the existing visual setting • Negligible magnitude – No discernible change to the existing visual setting.
Visual impact	• The visual impact is a result of the visual sensitivity and the visual modification and is summarised on a qualitative basis. The resulting overall visual impact rating for each viewpoint was then determined using the assessment matrix presented in Table 17-3 below.

Table 17-3: Overall impact rating as a combination of visual sensitivity and visual adaption

		Magnitude			
		High	**Moderate**	**Low**	**Negligible**
Visual sensitivity	**High**	High	High-moderate	Moderate	Negligible
	Moderate	High-moderate	Moderate	Moderate-low	Negligible
	Low	Moderate	Moderate-low	Low	Negligible

Table 17-4: Viewpoint locations

Viewpoint ID	Location	Type
01	East of the Proposal Site, on Kangaroo Avenue	Industrial / commercial
02	North of the Proposal Site, on the M4 Motorway	Road
03	North of the Proposal Site, Everton Park, Minchinbury	Public open space / residential
04	West of the Proposal Site, Reserve at Mohawk Place and Sennar Road (behind houses), Erskine Park	Public open space / residential
05	South of the Proposal Site, on Lenore Drive	Industrial

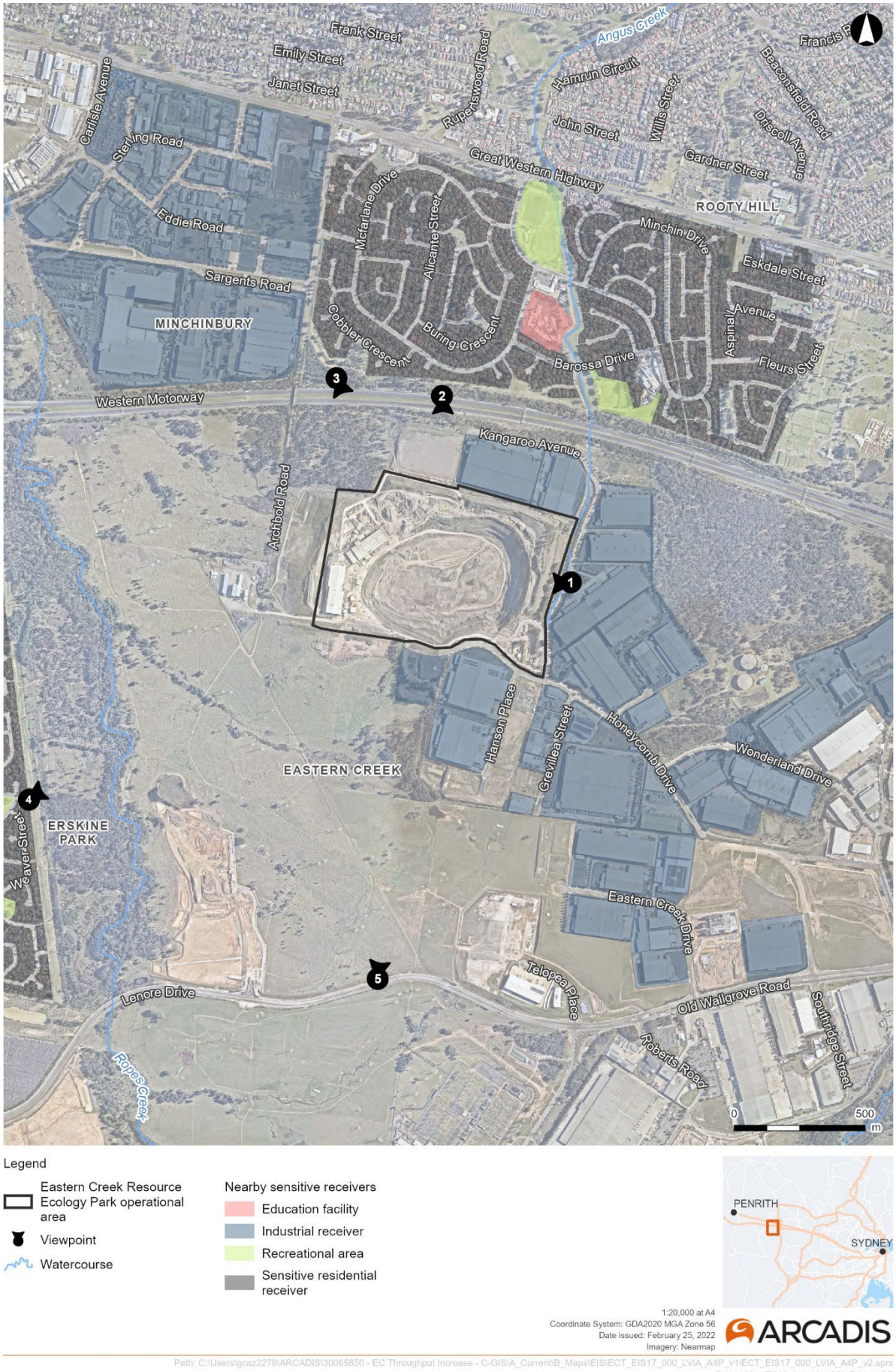

Figure 17-2: Viewpoint locations

17.3 Existing environment

The Eastern Creek REP is located within the established Eastern Creek industrial precinct / M7 business hub and is surrounded by a large range of industrial developments, primarily to the east including:

- Food storage facilities
- Freight and logistics operations
- Resource recovery transfer stations
- Steel and sheet metal manufacturers
- Offices and business park developments
- Fuel stations.

As outlined in Chapter 2, surrounding businesses include Techtronic Industries, H&M distribution warehouse, Kuehne + Nagel (Australia) Pty Ltd warehouse, Kmart distribution centre, Bunnings distribution centre and DB Schenker warehouse. To the west of the Eastern Creek REP is the Fulton Hogan asphalt batching plant and a vacant area of undeveloped land.

The Eastern Creek REP is bounded by industrial developments which border the Western Motorway (M4) to the north, Kangaroo Avenue to the east and Honeycomb Drive to the south. The planned future Archbold Road extension will run parallel to the western boundary of the existing (TfNSW, 2019). The Eastern Creek REP is enclosed by commercial and industrial buildings to the immediate north, east and south. The closest residential receivers are located approximately 400 m to the north in the suburb of Minchinbury and approximately 1.2 km west in the suburb of Erskine Park.

The Eastern Creek REP and surrounding area to the north, east and south has generally low relief with no major hills or ridgelines, other than amenity berms adjacent to the landfill that were created from quarry overburden. A gully lies between the Proposal Site and receivers to the west which is traversed by Ropes Creek approximately 700 m west of the Eastern Creek REP. Angus Creek, a small ephemeral drainage line is located immediately east of the Eastern Creek REP (between the landfill area and Kangaroo Avenue) which drains to the north into Eastern Creek. There are several other ephemeral drainage lines west of the Eastern Creek REP which drain towards Ropes Creek.

The character of the area is strongly influenced by the surrounding industrial precinct, residential areas and major arterial roads. The residential suburbs of Minchinbury and Erskine Park are separated from the industrial precinct by the M4, and the planned future Archbold Road extension respectively.

Based on the surrounding landforms and land uses, the key potential areas where the Proposal may be visible from are:

- Areas within the Eastern Creek industrial precinct
- Residential areas in Minchinbury to the north of the Proposal Site
- Residential areas in Erskine Park to the west of the Proposal Site
- Major roads to the north and south of the Proposal Site.

17.4 Impact assessment

The visual impact for the construction and operation of all three stages of the Proposal is outlined in Table 17-5.

Table 17-5: Visual impact assessment

Viewpoint	View
Viewpoint 1 - East of the Proposal Site, on Kangaroo Ave	
Low sensitivity This viewpoint represents views within the Eastern Creek industrial precinct directly east of the Proposal Site. As this viewpoint is located in an industrial area, the quality of the viewpoint is likely to be of low importance to viewers who would consist predominantly of workers within the area or road users with transient views only. **Moderate magnitude** This viewpoint is currently defined by an amenity berm that is located within the Eastern Creek REP to the east along Kangaroo Avenue. Earthworks along parts of the amenity berm would occur during the construction of Stage 2 and would potentially result in viewers having direct line of sight to the Eastern Creek REP during the construction and operation of Stage 2 and the construction of Stage 3. The Maintenance and Manufacturing Workshop to be constructed during Stage 3 within the eastern portion of the Proposal Site would be in viewers direct line of sight. However, this structure would be consistent with the industrial landscape and would provide a visual buffer between neighbouring land uses to the east and the landfilling activities within the centre of the Eastern Creek REP. Viewers directly across from the proposed Kangaroo Avenue access may have views of the Eastern Creek REP however this is unlikely as the proposed hardstand, elevated around five m higher than the road surface would likely provide a visual buffer. Screen planting and perimeter fencing would also be used along the eastern perimeter of the Proposal Site, between the Maintenance and Manufacturing Workshop and Kangaroo Avenue to provide a natural visual barrier. Based on a low sensitivity and moderate magnitude, this viewpoint would be subject to a **moderate-low impact.**	

Viewpoint	View
Viewpoint 2 - North of the Proposal Site, on the M4 Motorway	
Low sensitivity This viewpoint is representative of the public road users on the M4 Motorway. It is looking through the vegetation along the south of the motorway for eastbound traffic, directly north of the Proposal Site. This setting is characterised by the motorway infrastructure, industrial land uses and some environmental conservation areas. Views of the Proposal Site would likely be brief; however, many road users would potentially be subject to these views.	
Negligible magnitude The M4 Motorway is located approximately 300 m from the Proposal Site. Due to the intervening vegetation and industrial buildings, the majority of visual impacts to this viewpoint would likely occur during Stage 3 construction. The tops of construction equipment used during Stage 3 including cranes and cherry picker, may be visible during construction. However, these would be temporary in nature and not highly intrusive. The Site Workshop and Maintenance and Manufacturing Workshop constructed during Stage 3 would have a maximum height of 14 m. These may be visible from this viewpoint; however it is likely that these structures would also be obstructed from view by intervening vegetation and industrial buildings. A development application (SPP-21-00007) is currently being assessed for a warehouse and distribution facility directly north of the Proposal Site. This has been superimposed within the image demonstrating that the Proposal would likely be obscured entirely from this viewpoint. Furthermore, viewers would consist entirely of public road users meaning that any views of the structures would be experienced briefly.	
Based on a low sensitivity and negligible magnitude, this viewpoint would be subject to a **negligible impact.**	

Viewpoint	View
Viewpoint 3 - North of the Proposal Site, Everton Park, Minchinbury	
High sensitivity Everton Park is a public open space located within a residential area. This viewpoint represents residential and recreational areas in the suburb of Minchinbury, north of the Proposal Site. The quality of view would be of importance to the residential viewers and viewers would be subject to long viewing durations. This location is used for recreational activities and a large number of viewers would be present. This view is therefore of high sensitivity.	
Negligible magnitude The Eastern Creek REP is located approximately 450 m south of this viewpoint across the M4 Motorway. Views of the Eastern Creek REP are obscured by dense vegetation, a noise wall installed to provide visual and acoustic screening for the M4 Motorway, and industrial buildings to the north of the Proposal Site. The tops of construction equipment used during Stage 3 including cranes and cherry picker are unlikely to be visible from this viewpoint during construction. Park users and residents within Minchinbury would not have views of the Site Workshop and Maintenance and Manufacturing Workshop given the intervening structures and vegetation.	
Based on a high sensitivity and negligible magnitude, this viewpoint would be subject to a **negligible impact.**	

Viewpoint	View
Viewpoint 4 - West of the Proposal Site, Reserve at Mohawk Place and Sennar Road (behind houses), Erskine Park	
High sensitivity This viewpoint is located in a residential area approximately 1,200 m from the Proposal Site in Erskine Park. The quality of view would be of importance to the residential viewers and viewers would be subject to long viewing durations. This view is therefore of high sensitivity. **Negligible magnitude** The Eastern Creek REP is obstructed from residential viewers by the dense vegetation that adjoins Ropes Creek. Subsequently it is unlikely that the Proposal would be visible from this viewpoint. The tops of construction equipment used during Stage 3 including cranes and cherry picker, may be visible during construction. However, these would be temporary in nature and not highly intrusive. Based on a high sensitivity and negligible magnitude, this viewpoint would be subject to a **negligible impact.**	

Viewpoint	View
Viewpoint 5 - South of the Proposal Site, on Lenore Drive	

Moderate sensitivity

Located within undeveloped land zoned for industrial uses, viewers would largely consist of public road users. Views of the Proposal Site would be brief; however, given Lenore Drive is a State road many road users would potentially be subject to these views.

Negligible magnitude

This viewpoint is located on the northern verge of Lenore Drive approximately 1,300 m south of the Proposal Site. Views of the Eastern Creek REP are obstructed by the rise in elevation that occurs between the viewpoint and the Eastern Creek REP. Therefore, it is unlikely that the Proposal would be visible to road users.

Based on a moderate sensitivity and negligible magnitude, this viewpoint would be subject to a **negligible impact.**

The Proposal has been assessed as having a 'negligible impact' at all stages for Viewpoints 2 – 5. Visual impacts for Viewpoint 1 have been assessed to be 'moderate-low' due to the earthworks in the north-eastern corner of the Proposal Site during Stage 2 construction likely resulting in views of the Eastern Creek REP during Stage 2 construction and operation and Stage 3 construction.

The industrial precinct and general pattern of industrial type development surrounding the Proposal Site effectively screens the Proposal Site from much of the nearby residential and recreational areas. Vegetation located along the M4 Motorway and Ropes Creek provide further screening for the surrounding sensitive areas.

17.4.1 Stage 1

Operation

Stage 1 would comprise of the initial throughput increase of 500,000 tpa and would not result in any changes to the built form of the Eastern Creek REP. Therefore, there would be no impacts to the landscape and visual amenity as a result of Stage 1.

17.4.2 Stage 2

Construction

Construction works for Stage 2 would likely be visible from Viewpoint 1. Earthworks within the northeastern corner of Eastern Creek REP would likely result in viewers from Viewpoint 1 having direct line of sight to the construction works for Stage 2. Given the low-rise nature of construction works and surrounding industrial land uses, it is unlikely that these works would be overly intrusive and visual impacts would be localised and temporary in nature.

Operation

During Stage 2 operations, the Eastern Creek REP would be visible from Viewpoint 1 due to the earthworks during Stage 2 construction. Screen planting would not be installed along the eastern perimeter of the Proposal Site until the final stages of Stage 3 construction meaning there would likely be minimal visual screening along the eastern perimeter, particularly where earthworks are to be undertaken. Given the surrounding industrial land uses, it is unlikely that these works would be overly intrusive and visual impacts would be localised and temporary in nature. Visual impacts during this stage would likely only impact Viewpoint 1.

17.4.3 Stage 3

Construction

Construction works may be visible from surrounding viewpoints. The most visible elements would likely be equipment such as cranes and cherry pickers during the erection of the Site Workshop and the Maintenance and Manufacturing Workshop. These may be visible from all viewpoints however these would be temporary in nature and not highly intrusive for Viewpoints 2 – 5 as views of the Eastern Creek REP are obstructed by the M4 Motorway, dense vegetation and the surrounding topography as outlined in Table 17-5.

Construction works would be visible from Viewpoint 1 however given the temporary nature of these impacts and the low sensitivity of this viewpoint due to industrial land uses, it is unlikely that these works would be overly intrusive.

Operation

During this stage, the Site Workshop and the Maintenance and Manufacturing Workshop constructed in the northeast corner of Eastern Creek REP would be operational. These structures would be consistent with the surrounding industrial landscape and would provide a visual buffer between neighbouring land uses to the east and the landfilling activities within the centre of the Eastern Creek REP.

Potential views would occur from buildings to the east of the Proposal (Viewpoint 1) and the M4 Motorway (Viewpoint 2). The new structures would be designed to a high quality to blend into the surrounding industrial landscape. While Viewpoint 1 would have visibility of the new structures to the east of the Proposal Site, due to the industrial character of the area, any introduction of industrial elements associated with the Proposal would not change the visual amenity in this area. Views from the M4 are unlikely due to densely vegetated batters and neighbouring industrial buildings providing a visual barrier for receivers to the north. However, should the Proposal be visible from the M4, due to the transient nature of the viewpoint (i.e., it is experienced by moving motorists), impacts to visual amenity would be negligible.

The proposed Site Workshop and Maintenance and Manufacturing Workshop will consider a suitable palette to integrate with the surrounding industrial nature and landscape. Reflective and glare materials and surfaces will be minimised, where possible. An example of the materials and colour palette to be used has been provided in Appendix F. Table 17-6 provides an indicative list of the materials and finishes that will be used for the Proposal.

Table 17-6: Materials and finishes

Infrastructure	Item	Indicative materials	Indicative colour palate
Site Workshop	Roof	Colourbond Custom orb roofing	Grey
	Wall	Colourbond Custom orb cladding	Grey
		Painted CFC cladding	Orange
Maintenance and Manufacturing Workshop	Roof	Colourbond Custom orb roofing	Grey
	Wall	Colourbond Custom orb cladding	Grey
		Painted CFC cladding	Orange

Figure 17-3 below provides an indication of how the Site Workshop and Maintenance and Manufacturing Workshop would look once construction has been completed.

Figure 17-3: Site Workshop and Maintenance and Manufacturing Workshop (indicative)

Additionally, a landscape plan has been prepared for the Proposal and is provided in Appendix R. Landscaping would be carried out across the Proposal Site. Landscaping would include a mix of mature trees, groundcover and grasses.

In particular, screen planting and perimeter fencing would be used along the eastern perimeter of the Proposal Site, between the Maintenance and Manufacturing Workshop and Kangaroo Avenue to provide a natural visual barrier. Screen planting would also be used along the northern perimeter, between the Site Workshop and the northeastern corner. Trees would also be planted within the car park for the Eastern Creek REP to provide shade. Tree species to be used in the landscape planting include Spotted Gum, Black Wattle, Red Ironbark, White Feather Honey Myrtle and Native Blackthorn. A matrix planting of groundcover would be established tree plantings, around the amenities building and along the eastern boundary.

17.5 Mitigation measures

The Proposal Site has been determined to have a moderate-low to negligible impact on visual amenity within the locality. Table 17-7 outlines the mitigation measures that will be implemented by Bingo to further minimise any landscape and visual amenity impacts.

Table 17-7: Mitigation measures (visual amenity)

ID	Mitigation measures	Timing
VA1	Measures will be included within the CEMP (or equivalent) to minimise visual amenity impacts during construction. These will include, but not be limited to, the following: • All works equipment and material will be contained within designated boundaries of the Proposal Site • Material stockpiles, waste, plant, equipment and vehicle parking will be restricted to designated areas, and where possible, located to minimise visual impacts, i.e., setting back large equipment from site boundaries • The height and spread of waste and spoil/soil stockpiles will be minimised and managed in accordance with existing SEQ procedures • The Proposal Site will be left clean and tidy after every shift • The Proposal Site road surfaces will be regularly cleaned or dampened to minimise dust and dirt tracking onto public roads • Any graffiti will be promptly removed.	Construction
VA2	The existing EMS will be updated to include any additional measures to minimise visual impacts from the new operational areas. Any additional landscaping required to minimise visual impacts from the new operational areas will be undertaken in accordance with the existing LVMP (DADI, 2021). The LVMP includes planting methodologies and installation procedures, details native species suitable for screening purposes and required mitigation measures.	Operation

18 WASTE MANAGEMENT

18.1 Introduction

This section includes an assessment of the potential waste related impacts associated with the Proposal to address the SEARs issued by DPE. Table 18-1 provides a summary of the relevant SEARs which relate to waste, and where these have been addressed in this EIS.

Table 18-1: Waste management SEARs

SEAR	Where addressed
Waste management	
A description of each of the waste streams that would be accepted at the resource recovery operation and the landfill, including maximum daily, weekly and annual throughputs and the maximum size for stockpiles	Section 2.7.2 (existing waste types and volumes) Section 3.5.2 (proposed waste types and volumes) Section 2.7.5 (existing storage) Section 3.5.7 (proposed waste storage)
Details of the source of the waste streams to strongly justify the need for the proposed increase in waste receival and processing capacity	Chapter 4 (justification) Section 2.7.2 (existing waste types and volumes) Section 3.5.2 (proposed waste types and volumes)
A description of waste processing operation, including flow diagrams for each waste stream. The description should include information regarding the technology to be used, resource outputs, the quality control measures that would be implemented and the interactions between the resource recovery operations and the landfill operations	Section 2.7.3 (existing waste processing operation) Section 3.5.3 (proposed waste processing operation) Section 2.7.4 and Section 3.5.6 (existing processing equipment and technology Section 2.7.6 (existing quality control measures for non-conforming waste) Section 3.5.8 (proposed quality control measures for non-conforming waste)
Details of how and where waste would be stored (including the maximum daily storage capacity of the site) and handled on site, and transported to and from the site including details of how the receipt of non-conforming waste would be dealt with	Section 2.7.5 (existing storage) Section 3.5.7 (proposed waste storage) Section 2.7.6 (existing quality control measures for non-conforming waste) Section 3.5.8 (proposed quality control measures for non-conforming waste)
Details of the development's waste tracking system for incoming and outgoing waste	Section 2.7.7 and Section 3.5.9 (waste tracking)
Details of the quality of waste produced and final dispatch locations	Section 2.7.2 (existing waste types and volumes) Section 3.5.2 (proposed waste volumes)
Details of the waste management strategy for construction and ongoing operational waste generated	Section 18.4 (ongoing waste generation)
The measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy 2014-2021	Chapter 3 Chapter 4 (justification) Section 18.5 (mitigation measures)
Details of consistency with the EPA's Standards for Managing Construction Waste in NSW (April 2019).	Section 2.7.3 (existing waste processing operation) Section 3.5.3 (proposed waste processing operation) Section 18.4.1

Further to the above, the NSW EPA and Blacktown City Council require further details on specific requirements relating to their authority. These requirements are discussed throughout this EIS and are provided in Table 18-2 below.

Table 18-2: Other agency requirements and relevant report sections (waste management)

Assessment requirements	Where addressed
NSW EPA	
D. Waste generation and management Different assessment requirements apply based on the type of facility (that is landfills, alternative waste treatment plants, liquid waste treatment plants, waste recovery facilities, building demolition waste processing yards, scrap metal yards, waste processing, waste fuel production, energy recovery facilities and in the context of Resource Recovery Orders and Exemptions). The waste transported, generated, or received as part of carrying out the activity should be minimised and managed in a way that protects all environmental values.	Section 18.4 (waste generation)
Blacktown City Council	
4. Waste a. Details of the quantities and classification of all waste streams to be generated on site during construction and operation	Section 18.4 (waste generation)
b. Detail of waste, handling and disposal during construction and operation	Section 18.4 (waste handling)
c. Details of the measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy 2014-2021	Section 18.4 Section 18.5 (mitigation measures) Chapter 4 (justification)

18.2 Method of assessment

A desktop assessment has been carried out to identify the potential for the construction and operation of the Proposal to generate waste and associated impacts. A description of how waste is received at the Proposal Site, including how non-conforming waste is managed, is provided in Section 2.7.

This assessment considers a number of aspects associated with waste management, including:

- Management of waste generated by construction and operation of the Proposal
- Management of normal waste processing activities at the Proposal Site while construction works are undertaken.

Construction and operation of the Proposal has been designed with consideration of the principles of the waste management hierarchy as outlined in the NSW *Waste Avoidance and Resource Recovery Strategy 2014-21* (DPE, 2021a) and as shown in Figure 18-1.

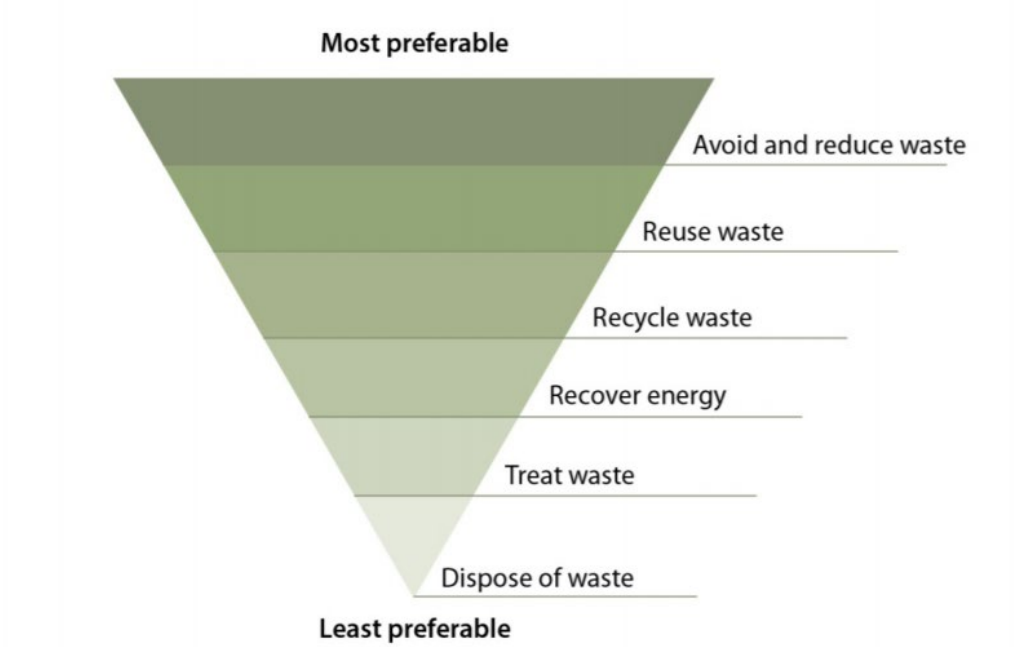

Figure 18-1: Waste hierarchy

18.2.1 Assessment scenarios and approach

Chapter 7 outlines the different assessment approaches adopted within this EIS to assess the potential impacts from the Proposal. Waste management impacts have been assessed on a full build basis as shown in Figure 18-2.

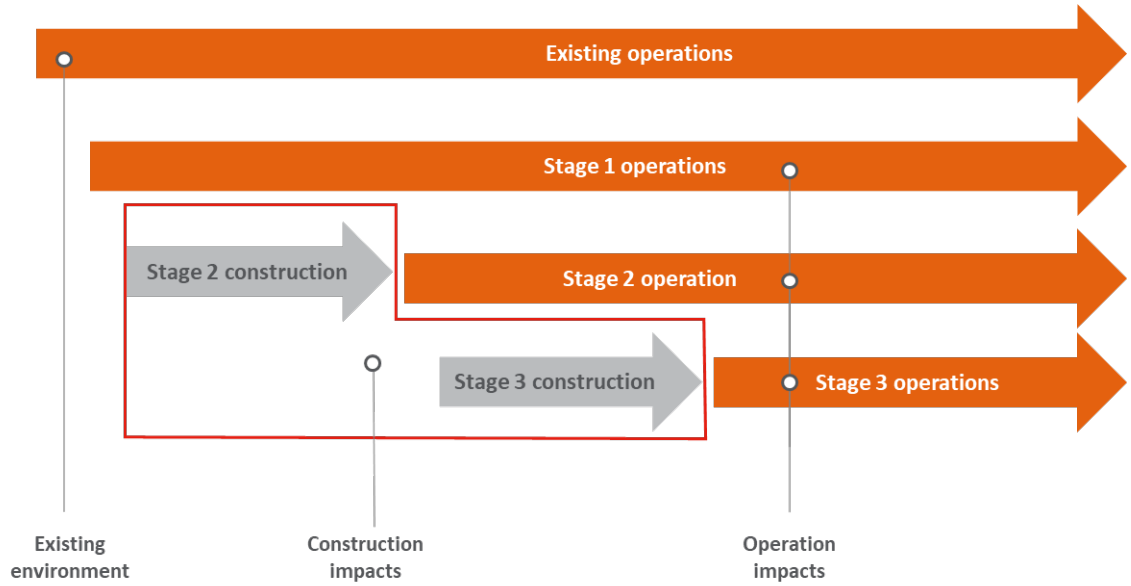

Figure 18-2 Waste management assessment scenarios

18.3 Existing environment

The existing environmental context for the Proposal Site is described in Chapter 2 of this EIS. The Eastern Creek REP includes a number of waste processing facilities and associate ancillary infrastructure. This includes:

- MPC1
- MPC2
- SMA
- Landfill
- Weighbridges and associated weighbridge offices
- Site office building.

These facilities produce minimal quantities of waste in their own right, including:

- Putrescible waste, including but not limited to mixed residual waste and general solid putrescible waste generated within site offices (e.g., lunchrooms)
- Non-putrescible solid waste, including but not limited to recyclable materials, packaging and discarded industrial consumables
- Tool and equipment consumables
- Plant and equipment maintenance waste (e.g., oily rags, oil filters, tyres etc.).

18.4 Impact assessment

18.4.1 Construction

Demolition and construction stages of development projects have the greatest potential for waste generation and therefore minimisation. Waste generating activities and their corresponding waste types associated with the construction of the Proposal are listed in Table 18-3.

At this stage, detailed design has not been carried out. High-level estimates of waste generation rates have been developed for main waste streams during construction and operation, which supports the identification of potential impacts and mitigation measures. More refined waste estimation and management provisions will be detailed in the CEMP as the Proposal progresses. Detailed waste management provisions for site operation will be documented in an updated Waste Management Program, already in place for existing site operations.

Table 18-3: Waste generating activities during construction

Waste generated activity	Waste classification	Waste / resource type
Clearing activities and surplus landscaping	General solid waste	• Green wastes
Construction and internal fit out of buildings, including: • Weighbridge control offices • Site Workshop • Maintenance and Manufacturing Workshop.	General solid waste (non-putrescible)	• Surplus building materials • Surplus concrete and asphalt waste
Office administration, lunchroom and other activities	General solid waste	• General waste from site office including putrescibles, paper, cardboard, e-waste plastics, glass, site litter, cigarette butts and printer cartridges
Operation of plant and equipment	Hazardous waste, special waste, liquid waste	• Waste from operation and maintenance of construction vehicles and machinery including adhesives, lubricants, waste fuels, cleaning products and chemicals, oils, engine coolant, batteries, hoses and tyres • Clean up waste in the event of an accidental spill of fuel or chemicals
Cut and fill activities	General solid waste (non-putrescible), Restricted solid waste	• Excess excavated soils and fill material • Contaminated soils
Construction of internal roads and site access points	General solid waste (non-putrescible)	• Surplus building materials • Surplus concrete and asphalt waste

The mismanagement of waste during construction of the Proposal has the potential to result in the following impacts:

- Excessive materials being directed to landfill due to inadequate collection, reuse, and recycling
- Impacts to human health associated with various types of waste being generated and stored on-site, with the potential for misclassification or mishandling resulting in potential cross contamination
- Environmental impacts from the incorrect storage, classification, transport, and disposal of waste
- Dust impacts due to incorrect storage, handling, transport, and disposal of spoil
- Traffic impact associated with the removal and transport of waste off site.

With the exception of excess soils and fill materials associated with levelling and partial removal of the amenity berms to the west of MPC2 and the partial removal of amenity berm within the northeastern corner of the Proposal Site, the waste quantities anticipated to be generated would be very minor. Earthworks would require approximately 746,900 m^3 of material to be removed from across the Proposal Site including from the amenity berm to the west of MPC2, the amenity berm in the northeastern corner of the Proposal Site for the connection to Kangaroo Avenue and the levelling of the northeastern corner of the Proposal Site for Stage 3 works. Approximately 162,250 m^3 material removed from the amenity berms would be evaluated to determine its appropriateness for reuse elsewhere within the Eastern Creek REP (e.g., as landfilling capping material) and approximately

100,000 m^3 would be reused for construction. The remaining material would be taken off site for reuse or disposal.

Waste streams would need to be managed appropriately to ensure minimisation of waste generation and avoid, where possible, transportation to landfill. Potential waste generated during construction would be managed using the waste hierarchy approach; whereby avoiding the generation of waste and reusing materials are prioritised over waste disposal. Should waste be found to be unsuitable for reuse or recycling, disposal methods would be selected based on the classification of the waste material in accordance with the *Waste Classification Guidelines* (NSW EPA, 2014). The *Waste Classification Guidelines* provide direction on the classification of waste, specifying requirements for management, transportation and disposal of each waste category.

Resource recovery will be applied to the management of construction waste and will include:

- Recovery of resources for reuse - reusable materials generated by the Proposal will be segregated for reuse on site, or off site where possible, including the reuse of the major waste streams
- Recovery of resources for recycling - recyclable resources (such as metals, plastics and other recyclable materials) generated during construction will be segregated for recycling and sent to an appropriate recycling facility for processing.

All waste generated from the demolition of existing infrastructure (such as existing internal roads) would be recycled and processed through the existing waste processing facilities at the Eastern Creek REP. During the demolition process, stockpiles would be created for recyclable materials suitable for processing through the MPCs or SMA (using existing machinery such as excavators and material handlers). Demolition waste would then be processed as per the normal operations of MPC1, MPC2 or the SMA. Materials that are non-recyclable would be sent directly to the landfill.

Where possible excess soils and fill materials would be reused on site, however, there is the potential that this material may be sent to the landfill or offsite should it be found to be not suitable for reuse or no appropriate application is available.

Overall, waste materials generated from construction of the Proposal would be managed in accordance with the five standards outlined for C&D waste in the *Standards for managing construction waste in NSW* (NSW EPA, 2019). These standards include the requirements for:

1. Inspection of waste
2. Sorting of waste
3. Mixing of waste
4. Storage of waste
5. Transport of waste.

Disposal methods for the anticipated construction waste streams are listed in Table 18-4. Specific requirements in accordance with the *Standards for managing construction waste in NSW* (NSW EPA, 2019) would be outlined in the Proposal's CEMP (or equivalent) prepared prior to the commencement of construction activities.

Table 18-4: Construction waste and disposal methods

Waste generated	Management method
Construction waste such as building materials, road base, asphalt and packaging waste	All materials that are potentially recyclable would be disassembled and removed carefully to maximise further reuse and recycling. To ensure diversion from landfill, waste materials would be clearly separated and stored temporarily on-site for reuse or removal to appropriate waste management facilities, including MPC1, MPC2 and the SMA. Stockpiled materials would be monitored and maintained in accordance with the Proposal's CEMP. Where possible, the amount of packaging waste would be minimised by avoiding the ordering of unnecessary or excess supplies and by buying in bulk. Where reasonable and feasible, cost-effective suppliers that use sustainable, recycled and / or recyclable material would be used. All packaging waste generated

Waste generated	Management method
	would be sorted for recycling or disposal at an approved facility. In the event of excess supplies due to accidental over-ordering or design changes, excess material would be reused, returned to the supplier or recycled where feasible.
Contaminated spoil	The handling, storage, movement and disposal of waste material that is identified as being contaminated would be carried out in accordance with the procedures detailed in the unexpected finds protocol in the CEMP and in accordance with the WHS Regulation.
Excess fill material or soils (non-contaminated)	Fill material and soil removed during cut and fill activities would be reused on site where possible. Should no application be found on site, the material would be taken off site for external use or sent to the on site landfill for disposal in accordance with existing practices at the Eastern Creek REP.
Hazardous materials	Any hazardous materials would be isolated and removed by a qualified handler and sent off site to an appropriately licenced facility for recycling or recovery of energy where possible.
Office administration, lunchroom other activities, and sewerage	All waste and recycling generated by the site offices would be source separated into the following dedicated bins: • General waste • Co-mingled recycling. The segregation of recyclables from the general waste stream would maximise resource recovery and minimise materials sent to landfill. All bins would be clearly labelled and coloured to reflect the correct stream. All staff would be trained about the internal office waste management system to ensure adequate understanding across all employees. Sewage waste would be discharged to Sydney Water sewerage infrastructure in accordance with Sydney Water requirements and existing practices at the Eastern Creek REP.
Clean up and liquid waste	Liquid waste could also be generated in the incident of a spill or leak. In these cases, quantities of liquid waste would be minimal. Liquid waste would be collected and transferred to a dedicated recycling facility where possible, to ensure diversion from landfill. Materials collected during clean up would be disposed of at an appropriately licensed facility.
Green waste	Where possible, green wastes would be mulched and re-used in landscaping on site. Alternatively, green waste would be disposed of at an appropriately licenced facility.

18.4.2 Operation

The Proposal would be unlikely to generate substantial quantities of waste with only limited volumes of waste associated with office and workforce activities as well as maintenance activities and waste from activities within the proposed maintenance and manufacturing buildings. The types of operational waste that would be generated, and the disposal method for each type, are presented in Table 18-5.

The Proposal is expected to generate employment for 70 FTE employees who could be on site at any given time during the operation of the Proposal.

The type and volume of waste to be generated during operation are considered minor and commensurate with those produced by existing operations at the Eastern Creek REP.

Table 18-5: Operational waste and disposal methods

Waste generating activity	**Waste classification**	**Waste/ resource type**	**Management method**
Administration, amenities and lunchrooms	General solid waste (putrescible)	Putrescible waste, including but not limited to mixed residual waste and general solid putrescible waste	Putrescible waste would be collected within clearly labelled putrescible waste bins placed throughout the Eastern Creek REP, particularly within office and break areas. The putrescible waste would then be collected by a contractor at regular intervals in accordance with the Eastern Creeks REP's Waste Monitoring Program and broader EMS.
	General solid waste (non-putrescible)	Non-putrescible solid waste, including but not limited to recyclable materials, packaging and discarded consumables	Non-putrescible waste would be collected within clearly labelled waste and recycling bins placed throughout the Proposal Site, particularly within the site office, kitchen and dining areas. The non-putrescible waste would be then collected and processed through existing waste processing infrastructure at the Eastern Creek REP.
	Liquid waste	Sewerage	Sewage waste would be discharged to Sydney Water sewerage infrastructure in accordance with Sydney Water requirements and existing practices at the Eastern Creek REP.
Operation of proposed maintenance and manufacturing buildings	General solid waste (non-putrescible), special waste, liquid waste	Non-putrescible solid waste, including but not limited to: • Tool and equipment consumables • Plant and equipment maintenance waste (e.g. oily rags, oil filters, tyres etc) • Trade waste • Manufacturing waste	Non-putrescible waste would be collected within clearly labelled waste and recycling bins placed throughout the proposed facilities. At regular intervals, an employee would compile non-putrescible waste from these recycling bins into a disposal container such as a general waste bin. The compiled non-putrescible waste would be then collected and processed through existing waste processing infrastructure at the Eastern Creek REP. Any hazardous materials would be isolated and removed by a qualified handler and sent off site to an appropriately licenced facility for recycling or recovery of energy where possible. Liquid waste would be collected and transferred to a dedicated recycling facility where possible, to ensure diversion from landfill.

18.5 Mitigation measures

Waste quantities anticipated to be generated by the Proposal are anticipated to be relatively minor. Table 18-6 outlines the mitigation measures that will be implemented by Bingo to further minimise impacts of waste.

Table 18-6: Mitigation measures (waste management)

ID	Mitigation measures	Timing
WM1	A Waste Management Strategy and Monitoring Program (or equivalent) will be prepared as a sub-plan to the CEMP to minimise waste and will include the following: • Requirements for waste management in accordance with the Standards for managing construction waste in NSW (NSW EPA, 2019) • Waste prioritisation i.e. avoidance and reuse of construction materials will take priority over recycling materials. Recycling of materials will take priority over the disposal of materials • Location and number of collections bins. Adequate general waste and recycling bins will be provided around the proposed works, with particular emphasis on the lunchroom and site office • Waste management protocols: – Management of any identified hazardous waste streams – Procedures to manage waste streams, including handling, storage, classification, quantification, identification, and tracking – Procedures and targets for reuse and recycling of waste materials • Induction and training procedures for staff. An induction will be provided to relevant staff and sub-contractors outlining their responsibilities with regard to waste management	Construction
WM2	The currently approved EMS and Waste Monitoring Program will be updated to as required and may include increased waste limits and any changes in waste received and managed at Eastern Creek REP, as appropriate.	Operation

19 GREENHOUSE GAS EMISSIONS

19.1 Introduction

An assessment of the potential GHG emissions that would be produced by the Proposal has been undertaken. DPE did not identify any SEARS relating to GHG emissions, however this chapter has been prepared in order to give consideration to the GHG generation and opportunities provided by the Proposal.

19.1 Method of assessment

The scoping and quantification of GHG emissions for the Proposal have been based on the following guidelines and regulations:

- The National Greenhouse Accounts Factors, August 2021 (Commonwealth Department of the Environment and Energy, 2021)
- *National Greenhouse and Energy Reporting Act 2007* (NGER Act)
- *National Greenhouse and Energy Reporting Regulations 2008*
- *National Greenhouse and Energy Reporting (Measurement) Determination 2008* (NGER Determination)
- The Greenhouse Gas Protocol (The GHG Protocol) (World Resources Institute/World Business Council for Sustainable Development, 2004).

Under the GHG Protocol, a Proposal's direct and indirect emissions sources can be delineated into Scope 1, Scope 2, and Scope 3 emissions. However, Scope 3 emissions are not reportable under the NGER Act and have not been considered within this assessment although described briefly below for context. The scope of the GHGs assessed for the Proposal comprises of:

- **Scope 1 emissions:** being those GHG emissions released into the atmosphere as a direct result of an activity associated with the Proposal (e.g., fuel combustion within onsite plant and equipment during construction and operation and decomposition of material as part of landfill operation)
- **Scope 2 emissions:** being those GHG emissions released into the atmosphere as a direct result of one or more activities that generate electricity, heating, cooling or steam that is consumed by the facility but do not form part of the facility (e.g., electricity consumed within construction site offices and the operational components of MPC1, MPC2, Site Workshop and Maintenance and Manufacturing Workshop)
- **Scope 3 emissions (not included in this assessment):** includes all other indirect emissions that are a consequence of an organisation's activities but are not from sources owned, or controlled, by the organisation (e.g., waste transported to site by the third party operators).

Quantification of potential emissions from the Proposal has been undertaken in relation to carbon dioxide (CO_2) and other non-CO_2 GHG emissions, including methane (CH_4), and nitrous oxide (N_2O). All emissions are reported as carbon dioxide equivalents (CO_2-e).

19.1.1 Assessment scenarios and approach

Chapter 7 outlines the different assessment approaches adopted within this EIS to assess the potential impacts from the Proposal. GHG impacts have been assessed on a staged basis as shown in Figure 19-1.

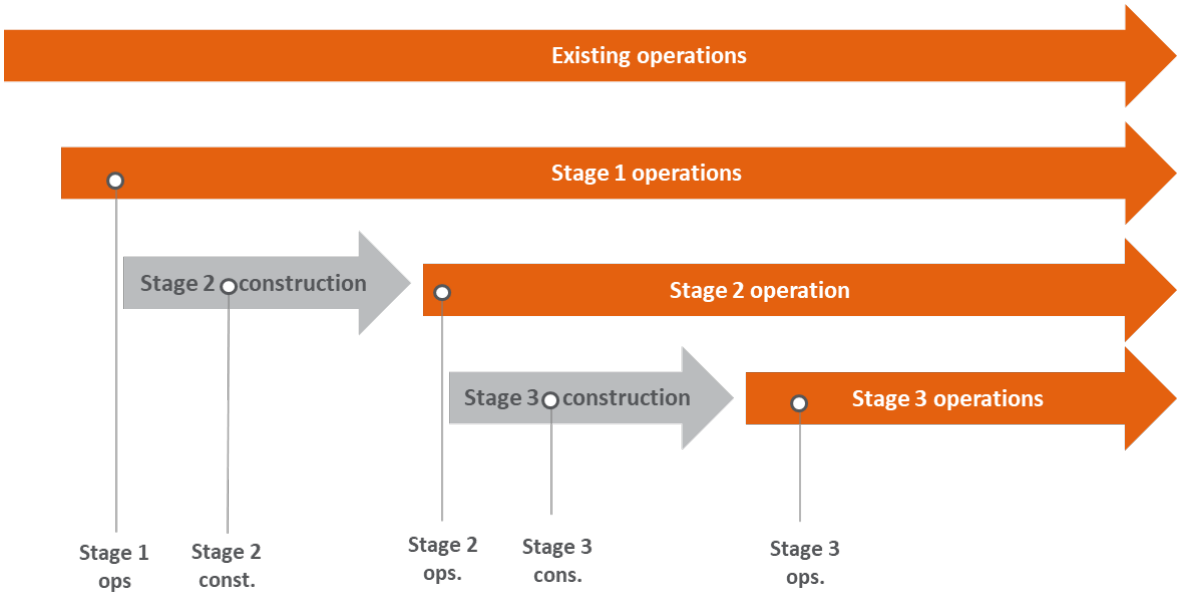

Figure 19-1 GHG assessment scenarios

19.1.2 Assessment boundary

As noted above in accordance with the NGER Act, Bingo's reportable emissions relate to Scope 1 and Scope 2 emissions only. Figure 19-2 below shows the assessment boundary adopted for the purpose of this EIS. The operational components of the Proposal would primarily utilise existing onsite infrastructure. Emissions arising from existing activities have not been included within the scope of the assessment, however where activities are anticipated to intensify due the Proposal these have been accounted for.

A number of opportunities to minimise or abate emissions have been considered as part of the Proposal and ongoing improvements at the Eastern Creek REP. In particular, Bingo are proposing to install a solar photovoltaic (PV) array on the roof top of MPC2 and the proposed Manufacturing and Maintenance Workshop. Emission abatement as a result of the use of solar has been considered within the assessment.

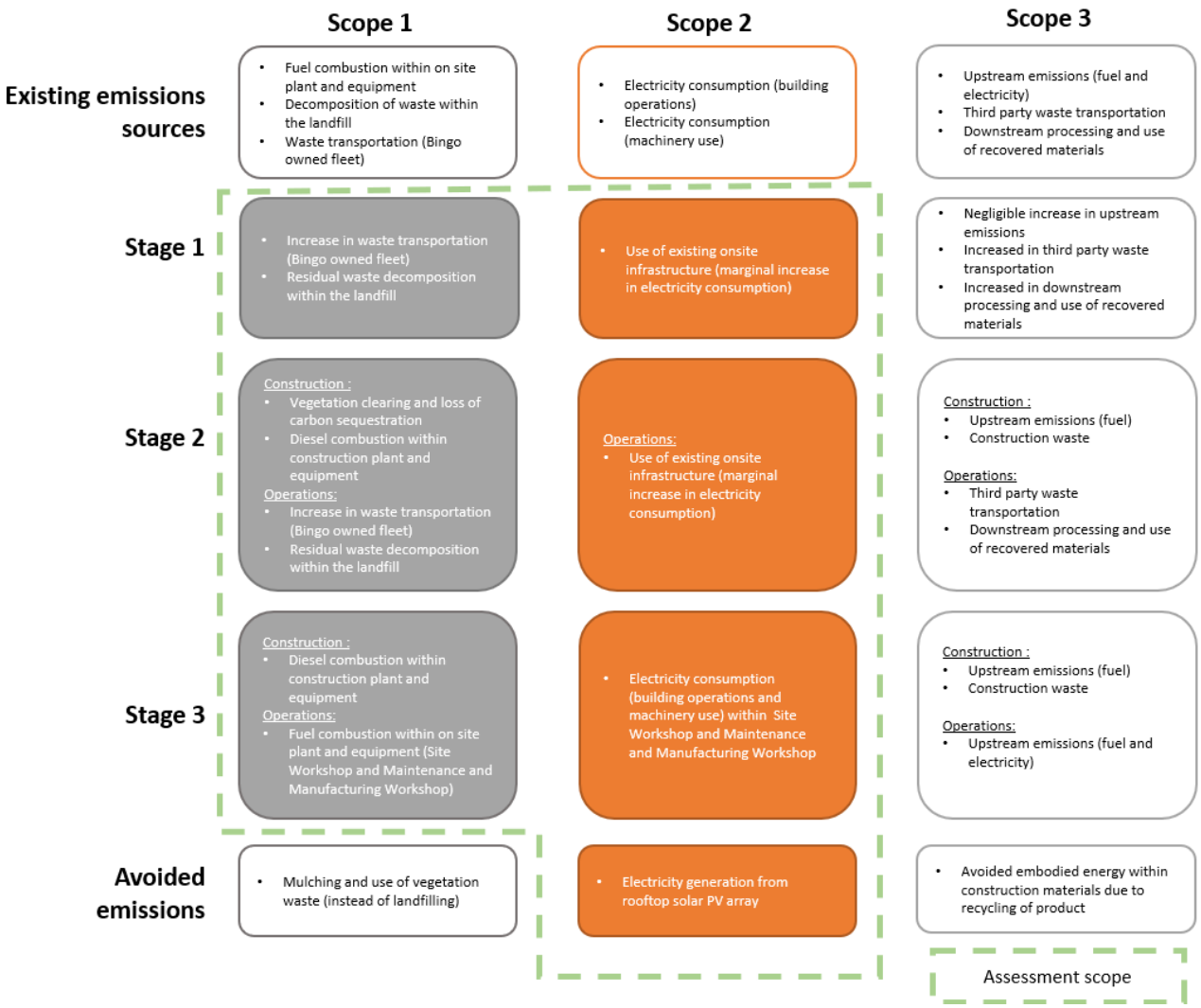

Figure 19-2 Outline of GHG assessment scope

19.2 Existing Environment

Bingo are required to submit National Greenhouse and Energy (NGER) Reports annually under the NGER Act, including for the Eastern Creek REP. For the 2019-2020 reporting period, the Eastern Creek REP reported a total of 55,653 tCO_2-e (Scope 1 + Scope 2) of which the majority 50,975 tCO_2-e was attributed to solid waste disposal on land, within the landfill component of the operations. In addition, Bingo reports truck movements for their NSW fleet via Bingo Bins (7,105 tCO_2-e) which would include vehicles accessing the Eastern Creek REP.

Greenhouse gas emissions from Bingo controlled facilities (combined) contribute to State and National GHG inventories. A summary of NSW and Australia's most recently published GHG emissions inventories including GHG emission categories relevant to the Proposal along with recent contributions of Bingo's Eastern Creek REP as reported in the 2019/2020 are provided in Table 19-1 (Department of Industry, Science, Energy and Resources, 2021).

Table 19-1 Summary of GHG emissions for Bingo's operations at Eastern Creek REP compared to Australia and New South Wales – 2019

Category	Australia	New South Wales	Eastern Creek REP		
	Emissions ($MtCO_2$-e)	Emissions ($MtCO_2$-e)	Emissions ($MtCO_2$-e)	Contribution to NSW emissions	Contribution to national emissions
Inventory Total	529.3	136.6	0.05	0.04%	0.009%

19.3 Impact assessment

The following sections outline the calculated GHG emissions during each stage of the construction and operation of the Proposal. The entire emissions of Eastern Creek REP after the Proposal is completed (i.e., the full 2.95 Mtpa of throughput) have not been assessed. Only emissions attributed directly to the Proposal have been included within the assessment.

19.3.1 Stage 1

As shown in Figure 19-2 emission sources associated with Stage 1 would predominantly relate to an increase in Scope 1 emissions associated with an increase in waste received at Eastern Creek REP. The waste would be processed predominantly within MPC2. All other operations associated with Stage 1 (e.g., vehicle weigh-in) would utilise existing infrastructure resulting in only marginal increases in onsite energy use.

Greenhouse gas emissions (Scope 1 and 2) calculated during Stage 1 of the Proposal would equate to 7,824 tCO_2-e/pa or approximately 0.006 per cent of NSW emissions as reported in 2019. A summary of emissions relating to Stage 1 are shown in Table 19-2.

Table 19-2 Summary of GHG emissions for Stage 1 of the Proposal

Emissions source	Key assumptions	Scope 1 emissions (tCO_2-e/pa)	Scope 2 emissions (tCO_2-e/pa)
Waste transportation (Bingo owned fleet)	• Vehicle movements associated with the Stage 1 throughput increase would be partially accounted for as part of existing movements within Bingo's network (with waste diverted from other facilities to Eastern Creek REP) • Assumes a nominal average travel distance per truck.	1,186	-
Application of waste to land	• MPC2 would achieve up to 90% diversion of waste from landfill, therefore. Conservatively 15% of the increased throughput has been assumed to be applied to landfill • An average emission factor per tonne (as per Bingo's 2019 NGERs reporting) has been applied.	5,250	-
Energy use of existing on site infrastructure	• The increased throughput would be largely processed utilising existing infrastructure onsite. A nominal increase on existing energy and fuel use has been allowed for (based on	202	1,897

Emissions source	Key assumptions	Scope 1 emissions (tCO_2-e/pa)	Scope 2 emissions (tCO_2-e/pa)
	recent NGERs reporting for the Eastern Creek REP and first principles estimation of MPC2 energy use).		
Avoided emissions for solar PV array	• Bingo are proposing to install a solar PV array on MPC2 which will offset existing and future electricity use. Based on the possible PV system sizing daylight hour electricity consumption could be fully offset by the solar array. It is noted that this may occur at an alternate time for Stage 1 (however has been considered within the Stage 1 assessment for simplicity)	-	-711
	Sub total	**6,638**	**1,186**
	TOTAL Scope 1 and 2 emissions		**7,824**

19.3.2 Stage 2

Construction

Stage 2 construction would take approximately 18 months (refer Section 3.4.1). GHG emissions during construction would be primarily related to the combustion of diesel fuel for construction equipment and clearing of vegetation (refer Chapter 3).

Greenhouse gas emissions (Scope 1) calculated during Stage 2 construction of the Proposal would equate to 2,914 tCO_2-e or approximately 0.002 per cent of NSW emissions as reported in 2019. Material emissions sources during Stage 2 construction only involved Scope 1. A summary of emissions relating to Stage 2 construction are shown in Table 19-3.

Table 19-3 Summary of GHG emissions for Stage 2 construction of the Proposal

Emissions source	Key assumptions	Scope 1 emissions (tCO_2-e)	Scope 2 emissions (tCO_2-e)
Vegetation clearing	• Vegetation would be mulched and reused onsite for landscaping purposes • Emissions arising for vegetation clearing would comprise decomposition of vegetation waste as well as loss of carbon sequestration.	285	-
Diesel combustion within construction machinery	• Key activities would include earthworks, vegetation removal and paving works • Diesel consumption rates have been estimated based on the anticipated construction activities and timeframes • It has been assumed that the site office would be powered by a diesel generator.	2,629	-
	Sub total	**2,914**	**-**
	TOTAL Scope 1 and 2 emissions		**2,914**

Operation

Greenhouse gas emissions during Stage 2 operation would be mostly related to the increase in residual waste in landfill after being processed. Greenhouse gas emissions (Scope 1 and 2) calculated during Stage 2 operation of the Proposal would equate to 7,681 tCO_2-e/pa or approximately 0.006 per cent of NSW emissions as reported in 2019. A summary of emissions relating to Stage 2 construction are shown in Table 19-4.

Table 19-4 Summary of GHG emissions for Stage 2 operation of the Proposal

Emissions source	Key assumptions	Scope 1 emissions (tCO_2-e/pa)	Scope 2 emissions (tCO_2-e/pa)
Waste transportation (Bingo owned fleet)	• Vehicle movements associated with the Stage 2 throughput increase would be partially accounted for in Bingo's exiting from movements (with waste diverted from other facilities to Eastern Creek) • Assumes a nominal average travel distance per truck.	1,067	-
Application of waste to land	• MPC would achieve up to 90% diversion of waste from landfill. Conservatively 15% of the increased throughput has been assumed to be applied to landfill • An average emission factor per tonne (as per Bingo's 2019 NGERs reporting) has been applied.	4,725	-
Energy use of existing on site infrastructure	• The increased throughput would be largely processed utilising existing infrastructure onsite. A nominal increase on existing energy and fuel use has been allowed for (based on recent NGERs reporting for the Eastern Creek REP and first principles estimation of MPC2 energy use).	182	1,707
	Sub total	**5,974**	**1,707**
	TOTAL Scope 1 and 2 emissions		**7,681**

19.3.3 Stage 3

Construction

Stage 3 construction would take approximately 14 months (refer Section 3.4.1). Greenhouse gas emissions during construction would be related to the combustion of diesel fuel for construction equipment (refer Chapter 3).

Greenhouse gas emissions (Scope 1) calculated during Stage 3 construction of the Proposal would equate to 670 tCO_2-e or approximately 0.0005 per cent of NSW emissions as reported in 2019. Emissions sources during Stage 3 construction only involved Scope 1. A summary of emissions relating to Stage 3 construction are shown in Table 19-5.

Table 19-5 Summary of GHG emissions for Stage 3 construction of the Proposal

Emissions source	Key assumptions	Scope 1 emissions (tCO_2-e)	Scope 2 emissions (tCO_2-e)
Diesel combustion within construction machinery	• Diesel consumption rates have been estimated based on the anticipated construction activities and timeframes • It has been assumed that the site office would be powered by a diesel generator.	670	-
	Sub total	**670**	**-**
	TOTAL Scope 1 and 2 emissions		**670**

Operation

Stage 3 operations would involve the addition of the operation of the Site Workshop and the Manufacturing and Maintenance Workshop to the overall site operations component, which would include some machinery use as well as electricity consumption (Chapter 3).

Greenhouse gas emissions during Stage 3 operation would be mostly related to increased energy use associated with the addition of the Site Workshop and the Manufacturing and Maintenance Workshop. Greenhouse gas emissions (Scope 1 and 2) calculated during Stage 3 operation of the Proposal would equate to 3,148 tCO_2-e/pa or approximately 0.002 per cent of NSW emissions as reported in 2019. A summary of emissions relating to Stage 3 operation are shown in Table 19-6.

Table 19-6 Summary of GHG emissions for Stage 3 operation of the Proposal

Emissions source	Key assumptions	Scope 1 emissions (tCO_2-e/pa)	Scope 2 emissions (tCO_2-e/pa)
Diesel combustion within machinery	• An estimate of machinery use has been determined based on a review of Bingo's existing operating Manufacturing and Maintenance Workshop (based in Auburn)	570	-
Energy use	• An estimation for electricity use for the Site Workshop and Manufacturing and Maintenance Workshop has been made based on the building type and footprint	-	2,933
Avoided emissions for solar PV array	• Bingo are proposing to install a solar PV array on the Manufacturing and Maintenance Workshop which will offset a proportion of future electricity use. Based on the possible PV system sizing daylight hour, electricity consumption could be fully offset by the solar array.	-	-355
	Sub total	**570**	**2,578**
	TOTAL Scope 1 and 2 emissions		**3,148**

The total operational annual emissions for the Proposal are summarised in Table 19-7 below. Noting that these emissions relate to the Proposal only, not the entire throughput and operational capacity at the Eastern Creek REP.

Table 19-7 Total annual operational emissions expected from the Proposal

Stage	Scope 1 emissions (tCO_2-e/pa)	Scope 2 emissions (tCO_2-e/pa)	Total (tCO_2-e/pa)
Stage 1	6,638	1,186	7,824
Stage 2	5,974	1,707	7,681
Stage 3	570	2,578	3,148
Total	**13,185**	**5,471**	**18,653**

The annual operation of the Proposal would generate approximately 0.018 $MtCO_2$-e pa. Over half of these emissions (53 per cent) are attributed to landfill decomposition of residual waste that could not be recycled. A further 29 per cent of emissions would be attributed to the purchase of electricity to power the recycling activities on site. It is noted that while some abatement from the use of solar has been considered within this assessment, this was a conservative estimate only and it is possible that further opportunities to reduce Scope 2 emissions may be possible to achieve through the installation of additional solar capacity. This is evident through Bingo's proactive approach to its energy and environmental management as signatories to RE100 – an international group of businesses committed to 100 per cent renewable energy. Bingo has made the commitment to use 100 per cent renewable electricity at all Bingo facilities by the end of 2025 which would reduce total emissions associated with the Proposal by over 5,000 tCO_2-e pa.

Annual operational emissions attributed to the Proposal would contribute approximately 0.004 per cent to Australia's annual GHG emissions inventory total and 0.014 per cent to NSW's annual emissions inventory total. This does not represent a substantial impact on a State or National scale.

While the Proposal would result in an increase in direct GHG emissions generated, the recycling of materials would also result in avoided emissions from offsetting the need for new raw materials to be won for virgin materials to be used within construction. For example, if the equivalent quantity of ferrous and non-ferrous metals that would be recovered as a result of the Proposal were to be sourced entirely from virgin material, the embodied energy content would be over 800,000 tCO_2-e/pa. While the recycling process from end to end would also generate emissions not captured above, and this is not a representation of total saving, it indicates that if a full life cycle assessment were conducted for the Proposal it would likely demonstrate a (potentially substantial) overall emission reduction.

19.4 Mitigation measures

GHG emissions produced by the Proposal are anticipated to be minor. Mitigation measures that will be implemented to minimise impacts to further minimise GHG impacts are presented in Table 19-8.

Table 19-8 Mitigation measures (Greenhouse gas emissions)

ID	Mitigation measures	Timing
GG1	Inclusion of energy efficient design aspects, where practicable within the proposed Site Workshop and Maintenance and Manufacturing Workshop, in order to reduce energy and fuel consumption. This could include energy-efficient lighting (e.g., L.E.D lights), ventilation, fixed plant and appliances.	Design
GG2	The CEMP prepared for the Proposal will incorporate measures to minimise GHG emissions impacts including, but not limited to, machinery selection considerations measures such as: • An assessment, where practical, of the fuel efficiency of the construction plant and equipment prior to selection • Where practical the use of equipment with the highest fuel efficiency and which uses lower GHG intensive fuel (e.g., biodiesel, electric powered machinery from renewable energy).	Construction
GG3	The Proposal will investigate options to utilise renewable energy, where possible (e.g., from the power grid, solar powered portable light towers)	Operation
GG4	The currently approved EMS including the Air Quality, Odour and GHG Management Plan will be updated as appropriate to minimise GHG emissions where feasible, including: • Measures to optimise diesel consumption through logistics analysis of site operations and material transport requirements, including optimal use of truck capacity and reduced idle times • Where practical the use of equipment with the highest fuel efficiency and which uses lower GHG intensive fuel (e.g., biodiesel, electric powered machinery from renewable energy).	Operation

20 CUMULATIVE IMPACTS

20.1 Introduction

This section outlines the assessment of cumulative impacts associated with the Proposal to address the SEARs issued by DPE. The Proposal has been assessed in the context of proposed and future developments in the surrounding area that may result in cumulative environmental impacts. The SEARs relevant to cumulative impacts related to the Proposal, and a summary of where they have been addressed are presented in Table 20-1.

Table 20-1: SEARs (Cumulative impacts)

SEARs	Where Addressed
General Requirement	
The Environmental Impact Statement (EIS) for the development must meet the form and content requirements in clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (the Regulation). In addition, the EIS must include a: • Detailed description of the development, including: – Likely interactions between the development and existing, approved and proposed operations in the vicinity of the site	Chapters 8 to 20 (impact assessment) Section 20.4 (potential cumulative impacts)
• Detailed assessment of the key issues specified below, and any other significant issues identified in this risk assessment, which includes: – An assessment of the potential impacts of all stages of the development, including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes	Chapters 8 to 20 (impact assessment) Section 20.4 (potential cumulative impacts)

20.2 Method of assessment

A desktop review of government planning portals was undertaken on 15 November 2021 to identify proposed or approved developments in the vicinity of the Proposal having the potential to result in cumulative impacts. This desktop review included:

- Developing screening criteria that would be used to determine whether a project should be assessed for cumulative impacts
- Identifying projects that could potentially result in cumulative impacts during construction and operation of the Proposal
- Applying the screening criteria to determine which projects should be taken forward to the cumulative impact assessment
- Identifying potential impacts of the above projects where known
- Assessing whether the impacts of the Proposal would combine with the impacts of these projects to create a cumulative effect
- Assessing whether management and mitigation measures considered in this EIS would be sufficient to manage impacts, or need modifying or supplementing.

20.2.1 Assessment scenarios and approach

Chapter 7 outlines the different assessment approaches adopted within this EIS to assess the potential impacts from the Proposal. Cumulative impacts have been assessed for the construction impacts and operation impacts as shown in Figure 20-1.

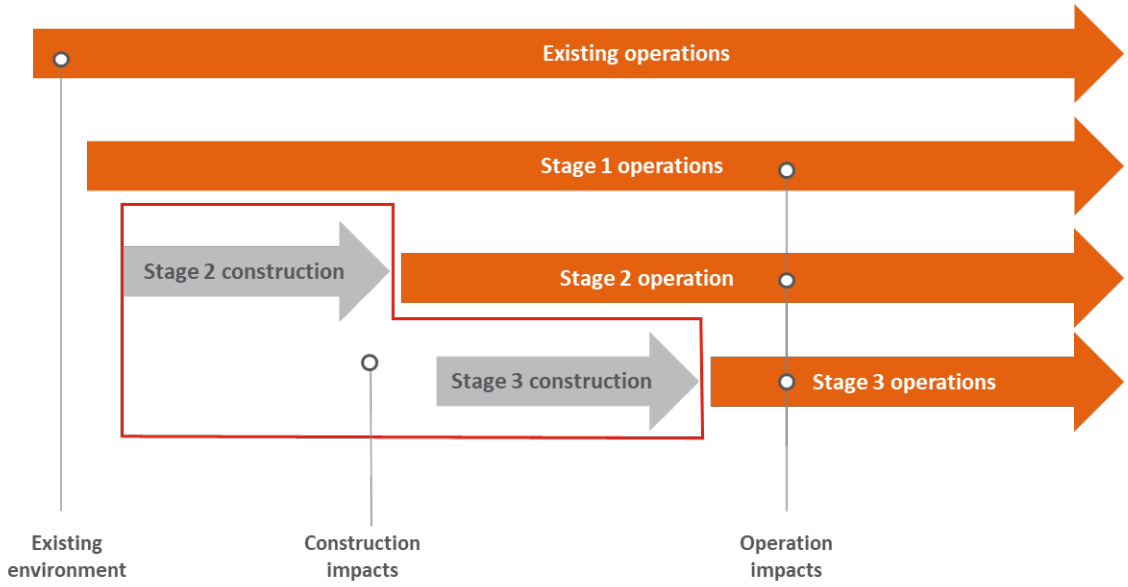

Figure 20-1 Cumulative impacts assessment scenarios

20.2.2 Screening criteria

Screening criteria were developed as shown in Table 20-2 and applied to determine whether each project or local strategic plan that may have the potential to result in cumulative impact with the Proposal should be included in the cumulative impact assessment. Projects that satisfied at least two of the triggers in each of the screening criteria in Table 20-2 were included in the cumulative impact assessment.

Table 20-2: Cumulative impacts assessment criteria

Criteria	Triggers
Location A project was considered relevant for consideration where the project met one of the triggers	Direct overlap: construction footprint(s) intersect with the Proposal
	In the area: within one kilometre of the Proposal construction footprint
Timeframe A project was considered relevant where the project met one of the triggers	Concurrent construction programs
	Consecutive construction programs (less than 18 months between the Proposal and the projects' construction program(s))
	Concurrent operational programs
Status	Approved projects (statutory approvals received), including approved projects that have not started construction, projects currently under construction, and recently completed projects

Criteria	Triggers
A project was considered relevant where the project was at one of the following stages of the statutory assessment and approval process	Proposed projects (currently under statutory environmental impact assessment which includes where an application has been lodged)
Scale of potential impact A project was considered relevant where the project involved substantial impacts to one or more of the following	• Traffic and transport • Noise and vibration • Air quality and odour • Soil and contamination • Water and hydrology • Hazards and risk • Biodiversity • Aboriginal and non-Aboriginal heritage • Landscape and visual amenity • Waste management • Greenhouse gas emissions.

20.2.3 Identification of projects

A search for relevant surrounding projects was undertaken using the following databases:

- Blacktown City Council DA Register
- NSW Government – Sydney Central City Planning Panel
- DPE Major Projects planning panel.

Projects within one km of the Proposal Site were considered for the cumulative impact assessment and were measured against the triggers for the screening criteria identified in Section 20.2.2. In total, four Local Development Applications (Das), three Planning Panel DAs, and four State Significant DAs were identified in the surrounding area. An assessment of these DAs against the criteria triggers is available in Table 20-3.

The projects assessed as part of the cumulative impact assessment are provided in Section 20.3.1.

20.2.4 Approach to potential cumulative impact assessment

Potential cumulative impacts have been considered for assessment based on the likely interactions of the Proposal (Stages 1, 2 and 3) with other reasonably foreseeable future development that was identified. The assessment of cumulative impacts has considered potential environmental impacts for all three stages of the Proposal identified in Chapters 8 to 20 of this EIS. Based on analysis of the timing and environmental aspects of the projects, the potential cumulative environmental impacts relevant to the Proposal were identified and assessed.

20.3 Existing environment

The existing environment for each of the key aspects covered in this cumulative assessment is discussed in detail in the following sections:

- Traffic and transport: Section 8.3 of this EIS
- Noise and vibration: Section 9.3 of this EIS
- Air quality and odour: Section 10.3 of this EIS
- Soil and contamination: Section 11.3 of this EIS
- Water and hydrology: Section 12.3 of this EIS
- Hazards and risk: Section 13.3 of this EIS
- Biodiversity: Section 14.3 of this EIS
- Aboriginal and non-Aboriginal heritage: Section 15.3 of this EIS
- Socio-economic: Section 16.3 of this EIS
- Landscape and visual amenity: Section 17.3 of this EIS
- Waste management: Section 18.3 of this EIS
- Greenhouse gas emissions: Section 19.2 of this EIS.

The nearby developments (within one km of the Proposal Site) considered to have potential to result in cumulative environmental impacts with the Proposal are described in Section 20.3.1 and shown in Figure 20-2.

20.3.1 Surrounding developments

Table 20-3 identifies relevant proposed development in the surrounding area and applies the screening criteria as outlined in Section 20.2

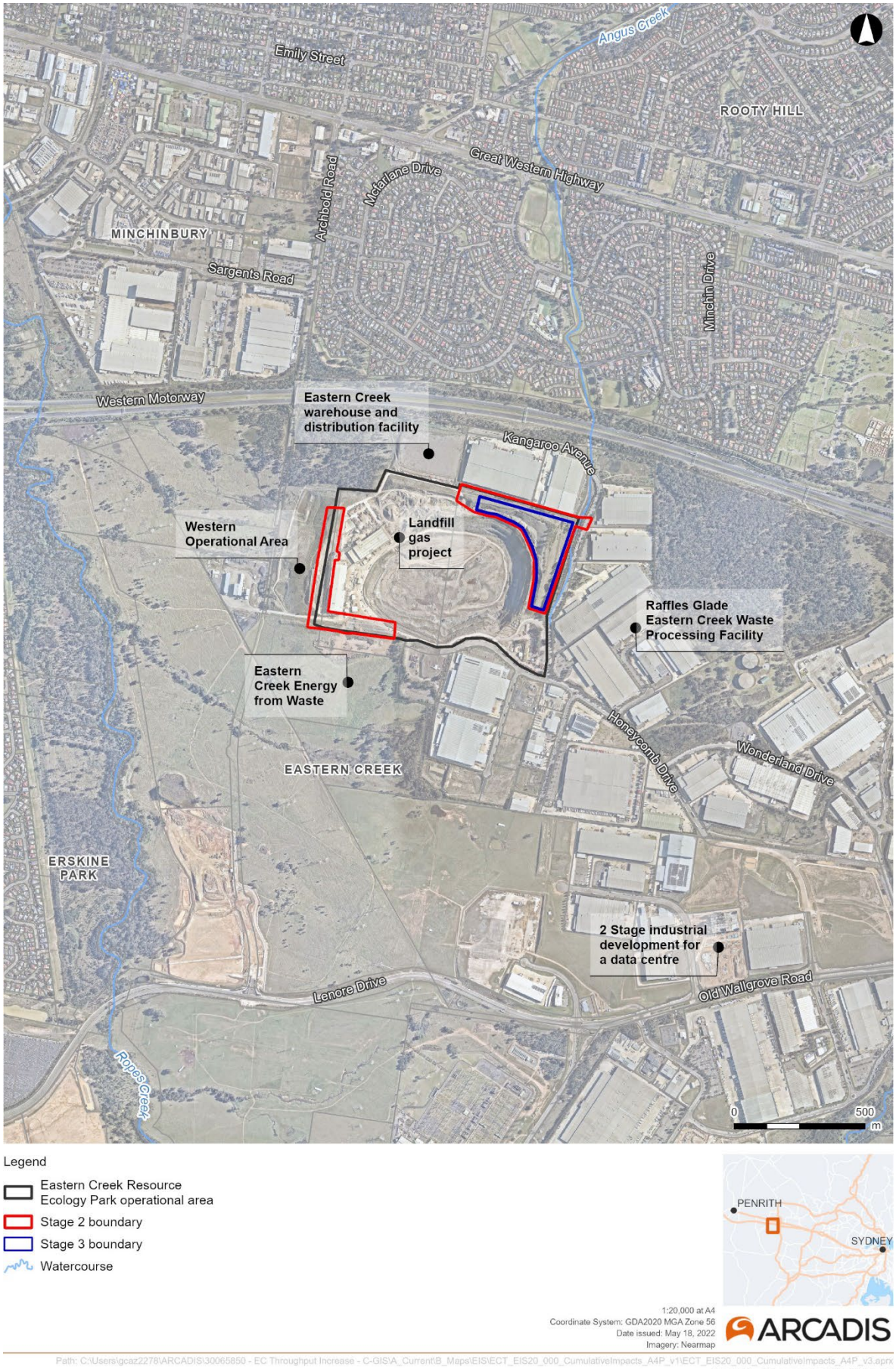

Figure 20-2 Surrounding developments

Table 20-3: Assessment of surrounding developments against trigger criteria for cumulative impacts

Database Searched	Relevant Surrounding Development	Screening Criteria				Comment
		Location	Timeframe	Status	Scale of potential impact	
Blacktown DA Register	2a Southridge Street, Eastern Creek – Restaurant	✗	✗	✗	✗	Considering the scale and location of the proposed development, cumulative impacts are unlikely and further assessment is deemed unnecessary.
	31 Honeycomb Drive, Eastern Creek – Change of Use – Factory/ warehouse – freight transport facility	✓	✗	✗	✗	Considering the scale of the proposed development, cumulative impacts are unlikely. Further assessment is deemed unnecessary.
	2 Cawarra Street, Eastern Creek – two storey dwelling	✗	✗	✗	✗	Considering the scale and location of the proposed development, cumulative impacts are unlikely.
	25 Minchinbury Street, Eastern Creek – Single storey dwelling with secondary dwelling	✗	✗	✗	✗	Considering the scale and location of the proposed development, cumulative impacts are unlikely.
NSW Government Sydney Central City Planning Panel	IRM Eastern Creek Warehouse and Distribution Facility SPP-21-00007	✓	✗	✓	✓	The approval and construction timeframe for this proposal are not expected to coincide with the current Proposal, however operational traffic impacts may be cumulative.
	Cleanaway Raffles Glade Eastern Creek Waste Processing Facility SPP-20-00005	✓	✗	✓	✓	This modification to an existing consent for Cleanaway's site primarily involved the increase of throughput from 30,000tpa to 40,000tpa. This proposal has been approved and the construction timeframe for this proposal is not expected to coincide with the Proposal; however, operational impacts may be cumulative.

Database Searched	Relevant Surrounding Development	Screening Criteria				Comment
		Location	Timeframe	Status	Scale of potential impact	
	2 Stage Industrial Development for a Data Centre SPP-19-00013358pp	✗	✗	✗	✗	The proposal involves a relatively low traffic and parking requirement, minimal impacts from noise, visual amenity, and water and soil. No expected impacts on air quality as a result of this proposal. Unlikely to result in cumulative impacts.
DPE Major Projects planning portal	Eastern Creek Energy from Waste SSD - 8477614	✓	✓	✓	✓	The permissibility of this proposal under the new NSW Waste to Energy Policy (NSW EPA, 2021a) is not confirmed. This project has been considered to assess a worst-case scenario.
	Eastern Creek Energy from Waste SSD - 6236	✓	✓	✓	✓	The permissibility of this proposal under the new NSW Waste to Energy Policy (NSW EPA, 2021a) is not confirmed. This project has been considered to assess a worst-case scenario.
	Eastern Creek REP Mod 9 – Western Operational Area (MP 06_0139-Mod-9)	✓	✓	✓	✓	Potential concurrent construction phases with the Proposal and this modification application. Modification 9 is adjacent to the Proposal's western boundary.
	Eastern Creek REP Mod 10 – Landfill Gas Capture (MP 06_0139-Mod10)	✓	✓	✓	✓	Potential consecutive construction phases between the Proposal and this modification application. Modification 10 occurs within the operational area of Eastern Creek REP.

Database Searched	Relevant Surrounding Development	Screening Criteria				Comment
		Location	Timeframe	Status	Scale of potential impact	
	Eastern Creek Retail Outlet Centre SSD - 10457	✗	✗	✗	✗	Traffic unlikely to cause cumulative impacts with the Proposal. Timeframe for construction unlikely to overlap with the Proposal. Unlikely to result in cumulative impacts.

The following proposals or approved developments have been identified as potentially causing cumulative impacts in conjunction with this Proposal.

Eastern Creek Energy from Waste (SSD 8477614)

The Eastern Creek EfW development comprises the construction and operation of an energy from waste facility implementing moving grate technology with an engineered capacity to treat up to 329,400 tonnes of residual waste fuel. The site is located approximately 500 m southwest of the Proposal and is currently in the planning phase with a Scoping Report lodged to DPE on 15 June 2020 and SEARs issues on 12 August 2020. As the development may be constructed concurrently with the construction and operation of the Proposal, the cumulative impacts of the Eastern Creek Energy from Waste development have been considered. Operation of the development also has the potential to result in additional vehicles on the surrounding arterial road network.

It is noted, that as the Eastern Creek EfW development is currently in the assessment phase, the Environmental Impact Assessment for the development should also consider cumulative impacts with the Proposal. In September 2021 the NSW EPA updated their Energy from Waste Policy Statement and the Energy from Waste Infrastructure Plan to reflect the latest advice on air emissions standards from the NSW Chief Scientist and Engineer. The updates require that EfW projects be located away from high density residential areas within prescribed Energy from Waste Priority Infrastructure Areas, unless the proposal is using energy generated from waste to replace less environmentally sound fuels (including coal or petroleum based fuels) to power the industrial and manufacturing processes on-site. As the project is not for these purposes and located in a high-density residential area there is potential this project may not proceed as it does not comply with the updated Energy from Waste Policy Statement and Energy from Waste Infrastructure Plan.

Eastern Creek Energy from Waste (SSD 6236)

SSD 6236 is also located at the same location as the Eastern Creek EfW development (SSD 8477614). It is assumed that only one Energy from Waste facility would go ahead at the site as both projects are proposed by The Next Generation NSW Pty Ltd. The project which involved the construction and operation of a large-scale energy from waste facility that would thermally treat 552,500 tonnes per annum of unrecyclable non-putrescible residual waste from Sydney-based recycling facilities, primarily from construction and demolition, commercial and industrial, and floc sources was originally refused development consent by the Independent Planning Commission.

As part of its appeal against the Independent Planning Commissions ruling the EIS is currently on exhibition from 13 April 2022 until 21 June 2022 after the Land and Environment Court of NSW ordered that the amended application be lodged and publicly exhibited on the NSW Major Projects Planning Portal.

As outlined above, this project may not proceed on the basis that it does not comply with the Energy from Waste Policy Statement and the Energy from Waste Infrastructure Plan.

Eastern Creek REP Mod 9 – Western Operational Area (MP 06_0139-Mod-9)

An extension to the existing Eastern Creek REP recycling licence boundary (EPL2021) is being proposed to enclose existing and approved processing activities by constructing two new waste facilities. The site is within the approved Project Approval boundary for the Eastern Creek REP and would be adjacent to the Proposal Site's western boundary. The modification forms part of a separate project with its own assessment and approval process and is currently in the early planning phase with a Scoping Report lodged to DPE on 21 September 2021. SEARs for the Modification Application were issued to Bingo on 21 October 2021, and preliminary design and environmental assessment of this modification have commenced. As the development may be constructed concurrently with the construction and operation of the Proposal, the cumulative impacts of the modification have been considered. However, it is noted that the modification is currently in the early phases of planning and development, with the technical investigations not yet completed. As a result, a detailed assessment of the cumulative impacts of the construction and operation of the Proposal with Modification 9 cannot be determined at this stage; however, the modification application report will consider cumulative impacts with this Proposal. It should also be noted that if the results of technical assessments being

completed for Modification 9 during the response to submissions phase of the Proposal, an updated cumulative impact assessment of the Proposal with Modification 9 will be included as part of the Response to Submissions Report.

Note that Modification 9 would comprise enclosure of existing approved activities which is likely to result in improved environmental performance outcomes when compared to existing operations even when considering an increase throughput.

Eastern Creek REP Mod 10 – Landfill Gas Capture and Treatment Project (MP 06-0139-Mod-10)

An upgrade to the existing landfill gas flare system used at the Eastern Creek REP has been approved to replace existing gas capture infrastructure with new 450 mm and 355 mm header lines and two 1,500m^3/hr high temperature, fully enclosed ground flares. The site is within the approved Project Approval boundary for the Eastern Creek REP and would be located within the subject area for this Proposal. A Statement of Environmental Effects submitted to DPE in November 2021 and approved in March 2022. As the modification is proposed to occur in 2022, there is potential for consecutive construction and operation phases, the potential cumulative impacts will be assessed in the sections below.

IRM Eastern Creek Warehouse and Distribution Facility SPP-21-00007

The IRM Eastern Creek warehouse and distribution facility development comprises the construction and operation of a warehouse and distribution facility including a warehouse and distribution space, main ancillary office and dock office, hardstand area for heavy vehicle manoeuvring and marshalling, provision of 281 car parking spaces, signage and retaining walls. The site is located directly north of the Proposal and is currently under assessment by Blacktown City Council. Construction of the development is expected to be undertaken over a duration of between six to eight months, which could overlap with construction of the Proposal. Operation of the development has the potential to result in additional vehicles on the surrounding arterial road network.

Raffles Glade Eastern Creek Waste Processing Facility SPP-20-00005

The Raffles Glade Eastern Creek development comprises increasing the processing capacity of an existing waste processing facility from 30,000 to 40,000 tonnes per year. The nature of waste types to be processed and stored on site consists of plastic, aluminium, liquid paperboard, steel and glass beverage containers. The site is located approximately 200 m east of the Proposal and was approved by the Sydney Central City Planning Panel on 5 March 2021. This development does not have a construction phase as it only includes increasing processing capacity however the operation of the development has the potential to result in additional vehicles on the surrounding arterial road network.

20.4 Impact assessment

The potential cumulative impacts associated with construction and operation of the Proposal and the surrounding developments identified above are considered in the sections below.

Given the nature of the environmental impacts outlined in this EIS, cumulative impacts associated with the following environmental aspects are considered to be minimal or negligible and have not been assessed further as they would not result in cumulative impacts:

- Hazard and risk
- Biodiversity
- Aboriginal and non-Aboriginal heritage
- Socio-economic
- Waste management
- Greenhouse gas.

The sections below identify the potential cumulative impacts between the Proposal and the surrounding developments, the stage of the Proposal during which those impacts may occur and mitigation measures that have been identified to manage the potential cumulative impacts.

20.4.1 Traffic and Transport

The introduction of additional heavy and light vehicles from the construction and operation of the surrounding, proposed developments may result in deterioration of intersection performance on the surrounding road network. Table 20-4 provides a summary of potential cumulative traffic and transport impacts and the measures included in the Proposal to mitigate them.

Table 20-4 Summary of potential cumulative Traffic and Transport impacts

Project	Potential cumulative impact (✓/✗)	Stage when impacts may occur	Description of impacts	Mitigation
Eastern Creek EfW (SSD 8477614)	✓	Stage 3 (Full scale operations)	The quantity of traffic that would be generated by Eastern Creek EfW is currently unknown. Vehicles accessing the site would use Kangaroo Avenue, Honeycomb Drive, and Old Wallgrove Road.	Internal and external roadway improvements in the Proposal would largely mitigate the traffic impacts.
Eastern Creek EfW (SSD 6236	✓	Stage 3 (Full scale operations)	Vehicles accessing the site would use Kangaroo Avenue, Honeycomb Drive, and Old Wallgrove Road. A maximum of 168 trucks delivering input waste material per day is expected, resulting in an additional 336 movements.	Internal and external roadway improvements in the Proposal would largely mitigate the traffic impacts.
Eastern Creek REP Mod 9 – Western Operational Area	✓	Stages 2 and 3 (Construction)	The Scoping Report identifies an increase in traffic during the construction phase of the proposal. Vehicles accessing the site would use Kangaroo Avenue, Honeycomb Drive, and Old Wallgrove Road and the internal roads of the REP. No increase in traffic is predicted during operations.	Internal roadway improvements in the Proposal would largely mitigate the traffic impacts. A TMP will be developed for the construction phases of the Proposal that will take into consideration the additional traffic movements associated with construction of Eastern Creek Mod 9.
Eastern Creek REP Mod 10 – Landfill Gas Capture	✗	N/A	While the SEE does not identify an increase in traffic movements as a result of Eastern Creek REP Mod 10, a small increase in vehicle movements on the Eastern Creek REP site could be expected from the Eastern Creek REP Mod 10. However, it is not predicted to result in cumulative impacts to the road network.	A TMP will be developed for the construction phases of the Proposal that will take into consideration the additional traffic movements associated with Eastern Creek Mod 10.
IRM Eastern Creek Warehouse and	✓	Stages 1, 2 and 3 (construction	The Traffic Impact Assessment report prepared in support of the IRM Eastern Creek Warehouse and Distribution Facility identifies a small	The TIA identified that the network has spare capacity at key intersections, including

Project	Potential cumulative impact (✓/✗)	Stage when impacts may occur	Description of impacts	Mitigation
Distribution Facility		and operation)	increase in traffic during construction and a larger increase during operation. The roadways used to access this development include Kangaroo Avenue, Honeycomb Drive, and Old Wallgrove Road and consequently there is potential that the road network may experience cumulative impacts.	with consideration of background traffic growth (such as from the IRM Eastern Creek Warehouse and Distribution Facility). A TMP will be developed for the construction phases of the Proposal.
Cleanaway Raffles Glade Eastern Creek Waste Processing Facility	✗	N/A	No changes to traffic are expected from this project.	N/A

With the implementation of the mitigation measures identified for the Proposal, cumulative traffic and transport impacts associated with construction and operation of the Proposal are not predicted as:

- Construction traffic for the Proposal is not predicted to have an impact on the capacity of the surrounding road network (see Appendix I and Chapter 8 of this EIS for further detail); and
- The nature of the nearby developments is also not likely to generate significant volumes of construction or operational traffic.

The mitigation measures identified for the Proposal would mitigate any potential cumulative impacts on traffic and transport.

20.4.2 Noise and Vibration

Activities associated with construction and operation of the Proposal and surrounding, proposed developments have the potential to cause cumulative noise impacts through the concurrent use of noisy plant and equipment.

Cumulative noise impacts from traffic are not predicted as vehicles accessing all sites would use the existing, classified road network and exceedance of the RNP is not predicted. Additionally, cumulative vibration impacts during construction are not predicted as none of the developments are in proximity to sensitive, residential receivers.

Table 20-5 provides a summary of potential cumulative noise impacts and mitigation for the Proposal.

Table 20-5 Summary of potential cumulative noise impacts

Project	Potential cumulative impact (✓/✗)	Stage when impacts may occur	Description of impacts	Mitigation
Eastern Creek EfW (SSD 8477614)	✓	Stage 2 and 3 (Construction)	Concurrent use of noisy construction machinery resulting in impacts to receivers. Operation of the Eastern Creek EfW would be expected to comply with operational noise	Measures to reduce noise impacts will be incorporated into the CEMP for the Proposal.

Project	Potential cumulative impact (✓/✗)	Stage when impacts may occur	Description of impacts	Mitigation
			criteria and cumulative operational noise impacts are therefore not predicted.	
Eastern Creek EfW (SSD 6236)	✓	Stage 2 and 3 (Construction)	Concurrent use of noisy construction machinery resulting in impacts to receivers. Operation of the Eastern Creek EfW would be expected to comply with operational noise criteria and cumulative operational noise impacts are therefore not predicted.	Measures to reduce noise impacts will be incorporated into the CEMP for the Proposal.
Eastern Creek REP Mod 9 – Western Operational Area	✓	Stage 2 and 3 (Construction)	Concurrent use of noisy construction machinery at the Eastern Creek REP resulting in impacts to receivers. Eastern Creek REP Mod 9 includes enclosing of some of the Eastern Creek REP operations and is predicted to lead to a decrease in operational noise from the Eastern Creek REP hence cumulative operational noise impacts are not predicted.	Measures to reduce noise impacts will be incorporated into the CEMP for the Proposal. Where feasible and reasonable, works using noisy construction machinery would be scheduled between the proposed developments to prevent cumulative impacts.
Eastern Creek REP Mod 10 – Landfill Gas Capture	✗	N/A	No exceedances of ICNG criteria are expected for Eastern Creek REP Mod 10, hence cumulative noise impacts are not predicted due to the minor nature of the works proposed.	N/A
IRM Eastern Creek Warehouse and Distribution Facility,	✗	N/A	The construction phases for the Proposal and the IRM Warehouse and Distribution Facility would not be concurrent. Operational noise levels from the Eastern Creek Warehouse and Distribution Facility would comply with the established project trigger noise levels at nearby receivers and cumulative operational impacts are not therefore predicted.	N/A
Cleanaway Raffles Glade Eastern Creek Waste Processing Facility	✗	N/A	No construction is proposed for this project hence no noise impacts are predicted. The existing processes at the site will not change as a result of this proposed development hence cumulative operational noise impacts are not predicted.	N/A

The mitigation measures identified for the Proposal would mitigate potential cumulative construction and operational noise impacts.

20.4.3 Air quality

Construction air emissions are predicted to be low and would be managed through standard mitigation measures that would be identified in the CEMP. Similarly, odour emissions were not considered to form a significant impact under the Proposal and cumulative odour impacts are not predicted.

The reconfiguration / optimisation of the Eastern Creek REP would result in a reduction of the 24-hour average modelling results (see Section 10.4) at some of the adjacent commercial assessment locations, compared to approved operations. The reconfiguration acts to re-distribute dust emissions, particularly from truck, by re-directing truck exit points to the Honeycomb Drive extension and Kangaroo Avenue in the northeast of the Proposal Site. The improvements to operational air quality mean that cumulative impacts are predicted to be low, as shown in Table 20-6.

Table 20-6 Summary of potential cumulative air quality impacts

Project	Potential cumulative impact (✓/✗)	Stage when impacts may occur	Description of impacts	Mitigation
Eastern Creek EfW (SSD 8477614)	✓	Stage 3 (Operation)	The EfW Facility has potential to result in emissions and particulates from the ventilation stack during operation. It is assumed the facility would incorporate the Best Available Techniques into their design to ensure the most stringent emissions concentrations limits and ambient air quality criteria are met; however cumulative air quality impacts may occur.	Updates will be made to the Air Quality, Odour and Greenhouse Gas Management Plan (AQOGHGMP), including updates to the air quality monitoring program to monitor compliance with air quality requirements under the EPL for the Eastern Creek REP. The approved Eastern Creek REP EMS would be updated to include practices and measures to minimise the emissions of vehicle and machinery exhaust.
Eastern Creek EfW (SSD 6236)	✓	Stage 3 (Operation)	The EfW Facility has potential to result in emissions and particulates from the ventilation stack during operation. It is assumed the facility would incorporate the Best Available Techniques into their design to ensure the most stringent emissions concentrations limits and ambient air quality criteria are met; however cumulative air quality impacts may occur.	Updates will be made to the Air Quality, Odour and Greenhouse Gas Management Plan (AQOGHGMP), including updates to the air quality monitoring program to monitor compliance with air quality requirements under the EPL for the Eastern Creek REP. The approved Eastern Creek REP EMS would be updated to include practices and measures to minimise the emissions of vehicle and machinery exhaust.
Eastern Creek REP Mod 9 –	✗	N/A	The Eastern Creek REP Mod 9 proposal would involve the enclosure of activities and	N/A

Project	Potential cumulative impact (✓/✗)	Stage when impacts may occur	Description of impacts	Mitigation
Western Operational Area			stockpiles that are currently stored externally, resulting in an improvement to air quality, hence cumulative, negative impacts are not predicted.	
Eastern Creek REP Mod 10 – Landfill Gas Capture	✗	N/A	The SEE for the Eastern Creek Mod 10 proposal concluded that the predicted levels of air pollutants during gas flare operation would fall below NSW EPA criteria at all residential and industrial locations surrounding the Eastern Creek REP. Odorous gases are also predicted to fall below NSW EPA air quality criterion during operation.	N/A
IRM Eastern Creek Warehouse and Distribution Facility,	✗	N/A	Operational air emissions from the IRM Eastern Creek Warehouse and Distribution Facility are predicted to be low and cumulative impacts are not predicted.	N/A
Cleanaway Raffles Glade Eastern Creek Waste Processing Facility	✗	N/A	No changes to operational processes are proposed and cumulative air quality impacts are not predicted.	N/A

The mitigation measures identified for the Proposal would mitigate potential cumulative construction and operational air quality impacts.

20.4.4 Soils and contamination

The surrounding, proposed developments outlined in Section 20.3.1 are located at sites that have been highly modified as a result of historical filling or clearing and agriculture operations. Soil health influenced by past land use has been determined as suitable for continued commercial and industrial works and any residual risk would be managed on site with an OEMP, hence cumulative operational impacts are not predicted.

Table 20-7 provides a summary of the potential cumulative soils and contamination impacts that may occur during construction.

Table 20-7 Summary of potential cumulative soils and contamination impacts

Project	Potential cumulative impact (✓/✗)	Stage when impacts may occur	Description of impacts	Mitigation
Eastern Creek EfW (SSD 8477614)	✓	Stage 2 and 3 (Construction)	Large scale earthworks means that there is the potential for erosion and sediment impacts and possible migration of contamination between the	Preparation of and adherence to the CEMP and the Construction Soil and Water Management Plan

Project	Potential cumulative impact (✓/✗)	Stage when impacts may occur	Description of impacts	Mitigation
			proposal sites due to their proximity.	(CSWMP), updates to the site EMS, SWLMP and EPIRMP to avoid and minimise impacts on soils and contamination.
Eastern Creek EfW (SSD 6236)	✓	Stage 2 and 3 (Construction)	Large scale earthworks means that there is the potential for erosion and sediment impacts and possible migration of contamination between the proposal sites due to their proximity.	Preparation of and adherence to the CEMP and the Construction Soil and Water Management Plan (CSWMP), updates to the site EMS, SWLMP and EPIRMP to avoid and minimise impacts on soils and contamination.
Eastern Creek REP Mod 9 – Western Operational Area	✓	Stage 2 and 3 (Construction)	Large scale earthworks means that there is the potential for erosion and sediment impacts and possible migration of contamination between the proposal sites due to their proximity.	Preparation of and adherence to the CEMP and the Construction Soil and Water Management Plan (CSWMP), updates to the site EMS, SWLMP and EPIRMP.
Eastern Creek REP Mod 10 – Landfill Gas Capture	✗	N/A	Only minor earthworks are proposed for Eastern Creek REP Mod 10 hence cumulative impacts are not likely.	N/A
IRM Eastern Creek Warehouse and Distribution Facility,	✗	N/A	Construction timeframes would not be concurrent hence soil and contamination impacts would not be cumulative.	N/A
Cleanaway Raffles Glade Eastern Creek Waste Processing Facility	✗	N/A	No construction is proposed for this project hence no impacts to soils or contamination are predicted.	N/A

The mitigation measures identified for the Proposal would mitigate potential cumulative construction impacts to soils and contamination. No disturbance to soils or contamination would occur during operations hence cumulative impacts are not predicted.

20.4.5 Water and hydrology

The developments outlined in Section 20.3.1 and the Proposal Site are located within the same water catchment area. Impacts on water quality, quantity or flooding from the developments have the potential to cumulate with impacts from the Proposal, causing downstream impacts on Ropes Creek. Table 20-8 provides a summary of the potential cumulative surface water and hydrology impacts and mitigation for the Proposal.

Table 20-8 Summary of potential cumulative water and hydrology impacts

Project	Potential cumulative impact (✓/✗)	Stage when impacts may occur	Description of impacts	Mitigation
Eastern Creek EfW (SSD 8477614)	✓	All stages	Increase in impervious surfaces resulting in increase in stormwater run-off from the sites and potential for spills during construction and operation resulting in pollution of water ways downstream of the sites.	The CEMP will contain measures to mitigate impacts to surface waters, including the provision of spill kits and emergency spill response procedures. The Proposal includes the installation of stormwater management infrastructure (see Section 3.3.9) that has been designed to mitigate increased surface water generation and discharge and manage potential stormwater pollution incidents.
Eastern Creek EfW (SSD 6236)	✓	All stages	Increase in impervious surfaces resulting in increase in stormwater run-off from the sites and potential for spills during construction and operation resulting in pollution of water ways downstream of the sites.	The CEMP will contain measures to mitigate impacts to surface waters, including the provision of spill kits and emergency spill response procedures. The Proposal includes the installation of stormwater management infrastructure (see Section 3.3.9) that has been designed to mitigate increased surface water generation and discharge and manage potential stormwater pollution incidents.
Eastern Creek REP Mod 9 – Western Operational Area	✓	All stages	Increase in impervious surfaces resulting in increase in stormwater run-off from the sites and potential for spills during construction and operation, resulting in pollution of water ways downstream of the sites.	The CEMP will contain measures to mitigate impacts to surface waters. The Proposal has been designed not to alter surface water discharge from the Proposal Site.
Eastern Creek REP Mod 10 – Landfill Gas Capture	✗	N/A	Only minor earthworks are proposed and Eastern Creek REP Mod 10 involves only small changes to the extent of impervious surfaces hence cumulative impacts to surface	N/A

Project	Potential cumulative impact (✓/✗)	Stage when impacts may occur	Description of impacts	Mitigation
			water and hydrology are not predicted.	
IRM Eastern Creek Warehouse and Distribution Facility,	✓	Stage 3 (Operations)	Increase in impervious surfaces resulting in increase in stormwater run-off from the sites and potential for spills resulting in pollution of water ways downstream of the sites.	The Proposal has been designed not to alter surface water discharge from the Proposal Site.
Cleanaway Raffles Glade Eastern Creek Waste Processing Facility	✗	N/A	No construction is proposed for this project hence no impacts to water and hydrology are predicted.	N/A

The mitigation measures identified for the Proposal and included in the Proposal design would mitigate potential cumulative construction and operational impacts to surface water and hydrology.

20.4.6 Landscape and Visual

The Proposal Site and above developments are located in an industrial area within proximity to low density residential development. Table 20-9 provides a summary of potential cumulative impacts on visual amenity and the landscape.

Table 20-9 Summary of potential landscape and visual amenity impacts

Project	Potential cumulative impact (✓/✗)	Stage when cumulative impacts may occur	Description of impacts	Mitigation
Eastern Creek EfW (SSD 8477614)	✓	Stage 2 and 3 (Construction and Operations)	While the Eastern EfW is located in an industrially zoned area and there is relatively low residential density in surrounding areas, the prominence of the emissions stack and the lighting required for 24 hour operations means that the visual impact of the proposed development is high and cumulative visual impacts may occur if unmitigated. Exterior lighting does not form part of the Proposal and cumulative light spill impacts are not predicted during operation.	The CEMP will include measures to minimise visual impacts during construction. A Landscape and Urban Design Plan (Appendix R) will be implemented for the Proposal, which includes screen planting and provision of visual buffers for the built structures.
Eastern Creek EfW (SSD 6236)	✓	Stage 2 and 3 (Construction and Operations)	From most locations, the lower parts of the Facility will be obscured from view. Where views are possible, these will generally be of the upper parts of the buildings and twin vent stacks protruding above the tree canopy or building line. Landscaping has	The CEMP will include measures to minimise visual impacts during construction. A Landscape and Urban Design Plan (Appendix R) will be implemented for the

Project	Potential cumulative impact (✓/✗)	Stage when cumulative impacts may occur	Description of impacts	Mitigation
			been proposed to soften the appearance of the facility. Given the prominence of the emissions stack and the lighting required for 24 hour operations means that the visual impact of the proposed development is high and cumulative visual impacts may occur if unmitigated. Exterior lighting does not form part of the Proposal and cumulative light spill impacts are not predicted during operation.	Proposal, which includes screen planting and provision of visual buffers for the built structures.
Eastern Creek REP Mod 9 – Western Operational Area	✓	Stage 2 and 3 (Construction)	Minor impacts to visual amenity are expected during construction of Eastern Creek Mod 9, which would be concurrent with the impacts during construction of the Proposal. Cumulative operational impacts are not predicted as Eastern Creek REP 9 would generally result in an improvement to visual amenity as stockpiling and activities that are currently outdoors will be enclosed.	The CEMP will include measures to minimise visual impacts during construction.
Eastern Creek REP Mod 10 – Landfill Gas Capture	✗	N/A	Construction of Eastern Creek REP Mod 10 would largely be shielded from sight by existing buildings and infrastructure.	N/A
IRM Eastern Creek Warehouse and Distribution Facility,	✗	Stage 3 (Operations)	Construction of these proposals would not be concurrent. The IRM Easter Creek Waterhouse and Distribution Facility will be located within existing industrial complex on industrially zoned land and will not exceed the building height limit for the land zoning hence visual impacts are expected to be low and cumulative impacts are not predicted.	N/A
Cleanaway Raffles Glade Eastern Creek Waste Processing Facility	✗	N/A	There is no expected change to landscape and visual amenity of this site.	N/A

The implementation of the Urban Design and Landscape Plan and the mitigation measures identified for the Proposal would mitigate potential cumulative construction and operational landscape and visual amenity impacts.

20.5 Mitigation measures

Across the issues assessed for cumulative impacts, no substantial additional impacts or exceedances of criteria have been identified. As such, the mitigation measures identified for the Proposal would effectively mitigate any cumulative impacts identified within this section.

The mitigation measures for each of the key issues assessed are presented in their respective chapters.

PART D

RISK ASSESSMENT, MITIGATION MEASURES AND CONCLUSION

21 ENVIRONMENTAL RISK ASSESSMENT

21.1 Introduction

An environmental risk analysis (ERA) has been undertaken to quantify the key environmental impacts associated with construction and operation of the Proposal, as identified in Chapters 8 to 20 above.

The ERA has been undertaken to address the SEAR in relation to environmental risk, which are shown in Table 21-1.

Table 21-1: SEARs (Environmental risk)

SEARs	Where addressed
General requirements	
The Environmental Impact Statement (EIS) for the development must meet the form and content requirements in clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (the Regulation). In addition, the EIS must include a: • Risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment	Chapter 7 and Chapter 21 (risk assessment)

21.2 Methodology

An initial qualitative environmental scoping exercise was outlined in the *Eastern Creek Recycling Ecology Park: SSD Scoping Report* (Arcadis, 2020) and is summarised in Chapter 7. This exercise identified the key environmental issues for the Proposal, described them and categorised them according to their unmitigated risk of resulting in a significant impact. This ERA assigns a risk ranking to each impact, both before and after the application of the mitigation measures identified.

An assessment of the environmental risk associated with the Proposal has been undertaken to identify the residual environmental risks present once the mitigation measures identified have been applied for each environmental aspect. This ERA aims to assign a qualitative environmental risk category to each environmental aspect. Each of the potential environmental aspects was initially ranked between ‘low’ and ‘very high’ based on their potential unmitigated impacts.

Mitigation measures to reduce environmental risk, as identified throughout Chapters 8 to 20 and compiled in Chapter 22 were then applied to each aspect and a residual risk ranking was assigned. Risk rankings were determined as a product of the likelihood of an impact occurring and the consequence in the event that it does occur.

The criteria for evaluating likelihood and consequence of risk are identified in Table 21-2 and Table 21-3.

Table 21-2: Criteria for evaluating likelihood

Level	Descriptor	Description	Indicative frequency of occurrence
A	Almost certain	Is expected to occur in most circumstances	Once per month
B	Likely	Will probably occur in most circumstances	Between once a month and once a year
C	Possible	Might occur at some time	Between once a year and once in five years
D	Improbable	Could occur at some time	Between once in five years and once in 20 years
E	Rare	May occur in exceptional circumstances	Once in more than 20 years

Table 21-3: Criteria for evaluating consequence

Level	Category	Safety	Financial	Operational	Environmental	Community
1	Not significant	No medical control	< $250,000	< 6 hours closure or disruption to facility operations	Release to the environment contained immediately	No community or stakeholder complaints
2	Minor	Lost time, injury occurs, or medical control required	≥ $250,000 but less than $2M	≥ 6 hours but less than 24 hours closure or disruption to facility operations	Release to environment contained with internal assistance.	Several community or stakeholder complaints. Complaints rectified within adequate timeframes.
3	Moderate	Serious injury occurs	≥ $2M but less than $10M	≥ 24 hours but less than 48 hours closure or disruption to facility operations	Release to environment contained with external assistance	Multiple and sustained community or stakeholder complaints. Complaints addressed after an interval. Limited media coverage of issues raised.
4	Major	Single fatality occurs	≥ $10M but less than $50M	≥ 2 days but less than 5 days closure or disruption to facility operations	Pollution event with short term detrimental effect	Widespread community and stakeholder concern. Sustained failure to address complaints. Extensive media coverage
5	Severe	Multiple but localised fatalities occur	≥ $50M	≥ 5 days closure or disruption to facility operations	Pollution event with long term detrimental effects	Ongoing and widespread community and stakeholder concern, culminating in litigation. Inability to address complaints. Extensive and sustained negative media coverage.

Table 21-4 provides the risk categories used to guide the identification of an appropriate risk ranking based on the likelihood and consequence levels identified above.

Table 21-4: Risk analysis categories and criteria for risk rating

Likelihood	Consequence				
	1 – Not significant	**2 – Minor**	**3 – Moderate**	**4 – Major**	**5 – Severe**
A – Almost certain	Medium	High	High	Very high	Very high
B – Likely	Medium	Medium	High	High	Very high
C – Possible	Low	Medium	Medium	High	High
D – Improbable	Low	Low	Medium	Medium	High
E – Rare	Low	Low	Low	Medium	Medium

21.3 Risk assessment

Table 21-5: Environmental risk assessment for the Project

Issue	Key issue	Potential impacts	Risk ranking: Pre-mitigation	Mitigation	Risk ranking: Post-mitigation	Reference
Traffic and transport	Yes	Increased traffic on local and regional roads during construction.	M	Construction (Stages 2 and 3) of the Proposal would be minimal in duration and were found to have a minor impact on the local road network. A Construction Traffic Management Plan (CTMP) will be prepared and will include the measures outlined in the TIA, Section 8.5. The CTMP will be implemented during construction of the Proposal to minimise potential traffic impacts.	L	Chapter 8 Appendix I
		Increased traffic on local and regional roads during operation.	M	Operational traffic would increase due to the Proposal and have a minor impact on the local road network. The EMS will be updated to include the measures outlined in the TIA, Section 8.5 and measures will be implemented during operation of the Proposal to minimise potential traffic impacts. All drivers of vehicles will be required to adhere to the Drivers Code of Conduct.	L	
		On site traffic conflict or crossovers, resulting in damage to vehicles, equipment or personnel on site	M	On site traffic may pose a risk of damage to vehicles, equipment or personnel due to increased movements of trucks on site. A number of measures have been incorporated into the design of the Proposal to minimise the potential for traffic conflicts on site, including separation of personnel from moving traffic and machinery; provisions of separate access points for light and heavy vehicles, including two new exit points on the Honeycomb Drive extension and Kangaroo Avenue allowing single flow direction through the Proposal Site; and minimisation of cross over conflict points throughout the Eastern Creek REP. The EMS will be updated to include the measures outlined in the TIA and Section 8.5. The updated measures will be implemented during operation of the Proposal to control traffic movements within the Proposal Site. All drivers of vehicles will be required to adhere to the Drivers Code of Conduct.	L	

Issue	Key issue	Potential impacts	Risk ranking: Pre-mitigation	Mitigation	Risk ranking: Post-mitigation	Reference
Noise and vibration	Yes	Increased noise and vibration levels at nearby receivers (including nearby residential areas and sensitive receivers) during construction of the Proposal.	M	Construction works (mainly associated with Stage 2) are short-term and impacts on nearby sensitive receivers (mainly surrounding industrial areas) are expected to be a minor. Measures outlined in the NVIA, Section 9.5 will be included in the CEMP and will be implemented to manage noise impacts during the construction of the Proposal.	L	Chapter 8 Appendix J
		Increased noise and vibration levels at nearby receivers (including nearby residential areas and sensitive land uses) caused by equipment operation and on site vehicle movements during operation of the Proposal.	M	Operation of the Proposal would have a minor impact on nearby sensitive receivers. Reductions in potential noise sources during operation could be attributed to some existing operations, such as maintenance tasks, being relocated into the proposed Site Workshop. The EMS will be updated to include the measures outlined in the NVIA, Section 9.5. These measures will be implemented to manage noise impacts during the operation of the Proposal.	L	
Air quality	Yes	Increased air pollution (fugitive dust and vehicle emissions) from the construction of the Proposal resulting in impacts on the environment and community.	H	The Proposal would only include earthworks (mostly Stage 2) relating to the construction of the two new connection roads and preparatory site establishment works for Stage 3. Works would be short term, and measures outlined in AQIA, Section 10.5 would be included in the CEMP. These measures will be implemented to manage air quality impacts during the construction of the Proposal minimising the potential for air quality impacts.	M	Chapter 10 Appendix K
		Increased air pollution (PM, TSP and depositional dust) and vehicle emissions from the operation of the Proposal resulting in impacts on the environment and community.	H	Increases in air pollution including dust during operation would be minor. Upgrades to the internal road design, including resurfacing and maintenance of kerbing, guttering and drainage and consistent dust suppression (e.g., water misters, watercart) would also reduce air quality impacts. The currently approved AQOGGMP will be updated to include the findings of the AQIA, Section 10.5, and will include any additional measures proposed. The AQOGGMP will be implemented to manage air quality impacts during the operation of the Proposal.	M	

Issue	Key issue	Potential impacts	Risk ranking: Pre-mitigation	Mitigation	Risk ranking: Post-mitigation	Reference
		Operational odour impacting nearby sensitive receptors	L	No putrescible waste is proposed to be received at the Eastern Creek REP as part of the Proposal and any potential impacts on odour are anticipated to be minor. Measures outlined in AQIA, Section 10.5. will be included in the updated AQOGGMP and the updated Landfill Gas Monitoring Program. These measures will be implemented to manage any odour impacts during the operation of the Proposal. In addition, permanent flares are positioned to capture released gases from landfill further reducing potential odour impacts.	L	
Soils and contamination	Yes	Disturbance of contaminated soil or impacts to groundwater during construction.	M	Construction of the Proposal would involve earthworks (mostly Stage 2) relating to the construction of the two new connection roads and preparatory works for Stage 3. The earthworks have the potential to cause disturbance to contaminated soil particularly if material used in initial construction of the amenity berms was contaminated. Deep excavation is not anticipated for the Proposal and therefore impacts to groundwater are not expected. Measures outlined in Section 11.5 will be included in the CEMP and will be implemented to minimise potential impacts associated with disturbance of any contaminated material encountered.	L	Chapter 11
		Increased erosion and risk of sedimentation due to disturbance of soils during construction.	M	Construction of the Proposal would involve earthworks (mainly Stage 2) and therefore has the potential to result in erosion which can generate suspended solids (including sediments) within runoff during rain events. Measures outlined Section 11.5 will be included in the CEMP and will be implemented to manage the potential for erosion on site and sedimentation off site during construction.	L	
		Contamination of soils and groundwater due to the construction and/or operation of the Proposal, resulting in impacts to the surrounding environment.	M	The construction and / or operation of the Proposal would have the potential to result in contamination of soils (e.g. due to spills and leaks or leachate generation). Groundwater is unlikely to be impacted due to limited excavation depth. Measures outlined in Section 11.5, will be included in the CEMP. The approved EMS will be updated where relevant to include the measures outlined in Section 11.5. Additionally, the	L	

Issue	Key issue	Potential impacts	Risk ranking: Pre-mitigation	Mitigation	Risk ranking: Post-mitigation	Reference
				SWLMP and the site's ESCP will be updated to include the new areas of management. The EMS, SWLMP and ESCP will be implemented to minimise the potential for the Proposal to cause contamination and cause off site impacts.		
Water and hydrology	Yes	Pollutants caused by the construction or operation of the Proposal impacting surface water or groundwater quality	M	Water quality and erosion and sediment controls would minimise surface water quality impacts. Groundwater is unlikely to be impacted due to limited excavation depth. Measures outlined in Section 12.6 will be included in the CEMP and the updated EMS, SWLMP and ESCP will be implemented to minimise potential water quality impacts.	L	Chapter 12 Appendix N
		Changes in surface water run-off causing downstream impacts	M	Existing and proposed stormwater infrastructure, combined with dynamic control measures during construction and operation is expected to adequately control downstream impacts. Control measures could include construction staging to limit large, exposed areas and erosion and sediment controls (both temporary and permanent). Measures outlined in Section 12.6, will be included in the CEMP and the updated, EMS, ESCP and SWLMP will be implemented to minimise potential water quality impacts.	L	
		Flooding causing damage to the Proposal or causing safety risks to personnel	L	Existing and proposed stormwater infrastructure is expected to be sufficient to limit flooding risks. Measures outlined in Section 12.6 will be included in the CEMP and the updated, EMS, ESCP and SWLMP will be implemented to minimise potential impacts associated with flooding.	L	
Hazards and risk	Yes	Possible occurrence of a health and safety or environmental incident caused during construction (e.g. vehicle collision, spill event etc)	M	There is potential for a health and safety or environmental incidents to occur on-site during construction of the Proposal. Measures outlined in Section 13.7 will be included in the CEMP and will be implemented to manage hazards and risks during the construction of the Proposal. Additionally hazards and risks will also be managed in accordance with Bingo's existing standard operating procedures (SOP) and EPIRMP.	L	Chapter 13

Issue	Key issue	Potential impacts	Risk ranking: Pre-mitigation	Mitigation	Risk ranking: Post-mitigation	Reference
		Occurrence of a health and safety or environmental incident caused by operational hazard and risks (e.g. vehicle collision, spill event etc), including risk of fire within the Site Workshop and Maintenance and Manufacturing Workshop or stockpiles.	H	There is potential for a health and safety or environmental incident to occur on-site during operation of the Proposal. Measures have been incorporated into the design of the workshops to minimise potential hazards (such as the inclusion of fire detection, suppression infrastructure, safety equipment, water management infrastructure (e.g., GPTs) to manage spill events and eliminated traffic conflict points). Any additional measures outlined in Section 13.7 will be included in the updated EMS. The existing Emergency and Fire Response Plan (E&FRP) will be updated to include any additional requirements associated with the new structures, and the existing EPIRMP will be reviewed and updated if required. The updated EMS, E&FRP and PIRMP, will be implemented to manage hazards and risks during the operation of the Proposal. Additionally, hazards and risks will also be managed in accordance with Bingo's existing SOPs.	M	
Biodiversity	Yes	Impacts to biodiversity due to the construction and/or operation of the Proposal, such as inadvertent impacts on adjacent habitat or vegetation; impact to fauna due to noise, dust or light spill; and/or transport of weeds and pathogens from the Proposal Site to adjacent vegetation.	L	Construction of the Proposal would include clearing of vegetation (Stages 2 and 3), mainly along the existing amenity berms. Vegetation to be cleared is mostly non-native shrubs and grass approx.th approx. 0.28 ha of native vegetation to be cleared. Due to the low habitat value of the native vegetation, it is not anticipated to contribute significantly to dispersal of flora and fauna associated with Cumberland Plain Woodland. There is a risk of transport of weeds and pathogens from site during clearing, however the implementation of weed and pathogen management protocols would prevent contaminated material inadvertently being taken off site, in vehicles, boots or topsoil. The construction and operation of the Proposal would have a minor impact on biodiversity. Measures outlined in Section 14.5 will be included in the CEMP and the EMS and LVMP will be updated to include any additional measures not previously considered. The CEMP, EMS and LVMP will be implemented to manage any potential biodiversity impact associated with the construction and operation of the Proposal.	L	Chapter 14 Appendix P

Issue	Key issue	Potential impacts	Risk ranking: Pre-mitigation	Mitigation	Risk ranking: Post-mitigation	Reference
Heritage	Yes	Impacts to unidentified heritage items during construction and operation	L	Due to the short-term duration of construction, highly disturbed nature of the site and minimal excavation expected within undisturbed areas (the amenity berms comprise of mostly disturbed material), it is highly unlikely there will be impacts to heritage. However, an unexpected finds procedure will be included in the CEMP and the existing AHMP will be updated to include any additional measure not previously considered and the new areas of operation. The unexpected finds protocols included in the CEMP and the updated AHMP will be implemented in the unlikely event heritage items are discovered.	L	Chapter 15
Socio-Economic	No	Impacts to surrounding communities and businesses	L	The overall social impact of construction is considered minor due to the short duration and limited intensity of the works required. The construction of the Proposal would also generate temporary employment opportunities of up to approximately 40 personnel. During operation, the Proposal would create 70 full-time equivalent jobs and benefit the wider community due to the positive impact of greater recycling outcomes. Minor impacts are expected due to increased traffic on the local road network, potential noise impacts and minor air quality impacts. Notwithstanding, these are expected to be managed appropriately with the implementation of the updated AQOGGMP, and EMS. Additionally, other potential impacts will also be managed in accordance with Bingo's SOPs.	L	Chapter 8 Appendix I Chapter 8 Appendix J Chapter 10 Appendix K Chapter 16
Landscape and visual amenity	Yes	Visual changes during construction and operation of the Proposal.	M	Due to the low-rise nature of the construction works (Stages 2 and 3) and surrounding industrial land uses, it is unlikely that the construction works would be overly intrusive and visual impacts would be localised and temporary in nature. Operationally, due to the industrial character of the surrounding area and selection of appropriate design materials for the Site Workshop and Maintenance and Manufacturing Workshop, the visual amenity in this area will not change. Views from the nearby residential areas are unlikely to change due to densely vegetated batters in the	L	Chapter 17

Issue	Key issue	Potential impacts	Risk ranking: Pre-mitigation	Mitigation	Risk ranking: Post-mitigation	Reference
				north and neighbouring industrial buildings providing a visual barrier. However, should the Proposal be visible from the M4, views of the Proposal would be transient in nature and any impact to visual amenity would be negligible. Measures outlined in Section 17.5 will be included in the CEMP and the EMS and the LVMP will be updated to include any additional measures not previously considered. The CEMP, updated EMS and updated LVMP will be implemented to minimise visual impacts associated with the construction and operation of the Proposal.		
Waste management	Yes	Generation of large volumes of excess fill material during construction resulting in increased waste being sent to landfill.	H	The Proposal would generate large volumes of excess fill material during construction as a result of earthworks. An extended earthworks period is proposed to manage the volume of material that would be generated. Where possible, excavated material from earthworks would be reused onsite for landfill cover or construction purposes. Excess fill will be exported offsite for reuse or disposal at an appropriate facility. Measures outlined in Section 18.5 will be included in the CEMP.	M	Chapter 18
		Excessive generation of waste during operation resulting in increased waste being sent to landfill.	L	The Proposal would generate minor waste quantities during operation. The EMS will be updated as required and will be implemented to minimise waste generation and prioritise reuse / recycling of materials over direction of waste to landfill.	L	Chapter 18
GHG emissions	No	Release of GHG emissions associated with the construction and operation of the Proposal (including CO_2, with smaller contributions from CH_4 and nitrous oxide N_2O)	L	GHG emissions associated with the construction and operation of the Proposal are expected to be minimal. Measures outlined in Section 19.4 will be included in the CEMP. The EMS and the existing AQOGGMP will be updated to include any additional measures not previously considered. The CEMP, EMS and AQOGGMP will be implemented to minimise potential GHG emissions associated with the construction and operation of the Proposal.	L	Chapter 19

Issue	Key issue	Potential impacts	Risk ranking: Pre-mitigation	Mitigation	Risk ranking: Post-mitigation	Reference
Cumulative impacts	No	Cumulative impacts during construction or operation for nearby sensitive receivers (such as worsened air quality, increased traffic and increased noise) from the development of multiple projects including the Proposal.	M	Due to the nature and timing of nearby development cumulative impacts would be minor. Measures outlined in Chapter 22 will be included in the CEMP and the EMS will be updated where required to address additional measures not previously identified. The CEMP and EMS will be implemented to minimise impacts on nearby sensitive receivers.	L	Chapter 20
Ecologically sustainable development (ESD)	Yes	Not adhering to the four principles of ESD: Precautionary principle; inter-generational equity; conservation of biological diversity and integrity; and improved valuation, pricing and incentive mechanisms through the construction and operation phases.	L	The Proposal directly supports and incorporates the four principles of ESD, with particular reference to the precautionary principle, inter-generational equity and the improved valuation, pricing and incentive mechanisms.	L	Chapter 23

21.4 Summary of risk analysis

The ERA in Table 21-5 illustrates how the assessments presented within this EIS have defined the nature of the environmental risk associated with the Proposal and how the relevant measures have been recommended to reduce this risk. Prior to the implementation of mitigation measures, four risks were identified as being ‘high’ and 13 as ‘moderate’ with the remaining eight rated as ‘low’. Following the implementation of mitigation measures, no ‘high’ risks and only four ‘moderate’ risk would remain. Provided management and mitigation measures are implemented and other existing management practices maintained (including an updated EMS and other relevant monitoring and management plans), the remaining residual impacts are expected to be low.

22 COMPILATION OF MITIGATION MEASURES

22.1 Introduction

The EIS for the Proposal has identified a range of environmental impacts and recommended management and mitigation measures to avoid, remedy to mitigate these impacts (refer Chapters 8 to Chapter 20 of this EIS). This compilation of mitigation measures has been provided to satisfy clause 192 (1)(e) of the EP&A Regulation.

This section presents a summary of the measures which the Applicant is committed to implementing either prior to construction, during construction or during operation. These draft mitigation measures may be revised in response to public submissions to the EIS and / or design changes following public exhibition of this EIS. It is envisaged that these mitigation measures will form the basis for the Conditions of Approval which would be provided for the Proposal, subject to successful approval.

The draft Compilation of Mitigation Measures for the Proposal is provided in Table 22-1 below.

The ‘implementation stage’ column of Table 22-1 details the timing as to when the specific mitigation measures would be undertaken.

For the purpose of this Compilation of Mitigation Measures, the following definitions apply to the terms used in the implementation phase column:

- Construction phase – either prior to, or during construction of all physical works for the Proposal
- Operation phase – either prior to, or during the operation of the Proposal.

22.2 Compilation of mitigation measures

Table 22-1: Compilation of mitigation measures

ID	Mitigation measure	Timing
General		
G1	A CEMP will be developed and implemented for the construction phases of the Proposal (i.e. construction of Stage 2 and Stage 3). The CEMP will be prepared in accordance with Environmental Management Plan Guideline (DPIE, 2020). The CEMP will align with the existing EMS for the Eastern Creek REP where feasible and reasonable. The CEMP will include requirements for: • Site inductions, training and awareness for workers on environmental issues including, traffic, noise, air quality and biodiversity • Identification of legal and compliance requirements • Environmental monitoring, management measures and inspections • Environmental incident and emergency planning, preparedness and response • Corrective and preventative actions and reporting • Environmental auditing and reporting	Construction
G2	The currently approved Environmental Management System (EMS) for the Eastern Creek REP will be reviewed and updated (where additional mitigation measures are deemed necessary) to address any changes to operations as a result of the Proposal, prior to commencement of operation of each stage of the Proposal.	Operation
Traffic and transport		
TT1	A Construction Traffic Management Plan (CTMP) will be prepared to mitigate potential construction traffic impacts and will comprise a sub-plan to the CEMP. The CTMP will address the specific traffic control requirements during the construction phase(s) of the Proposal. The plan will assess the provision of traffic control measures, including: • Site signage and road signage • Site traffic rules and traffic management requirements • Any road closures and associated traffic detour routes. The CTMP will include:	Construction

ID	Mitigation measure	Timing
	• Measures to enforce speed limits for construction traffic on site • Provision of safe access and thoroughfare for pedestrians and cyclists • Management of the Proposal Site such that all trucks would enter and leave the site in a forward direction, where feasible and reasonable • Preparation of site-specific traffic control plans (TCPs) in accordance with the principles and guidance set out in the Traffic control at work sites Technical Manual (TfNSW, 2020), to outline how construction vehicle manoeuvres could be accommodated in and out of the work site • Requirements for regular inspection of traffic controls and review of TCPs to identify potential safety hazards and enable implementation of corrective solutions • Any workers required to undertake works or traffic control within the public domain shall be suitably trained and will be covered by adequate and appropriate insurances. All traffic control personnel will be required to hold Transport for NSW accreditation • Provision of tool box talks or alternative communication to inform workers of any changes to site traffic management.	
TT2	The currently approved EMS will be reviewed and updated to include, as a minimum, the new operational traffic flows and new internal pedestrian routes.	Operation
Noise and vibration		
NV1	The CEMP (or equivalent) will include the following measures to minimise noise impacts, including: • Identification of nearby residences and other sensitive land uses • Description and identification of construction activities, including work areas, equipment and duration • Description of what work practices (generic and specific) will be applied to minimise noise and vibration • Consider the selection of plant and processes with reduced noise emissions • A complaint handling process • Induction and training will be provided to relevant staff and sub-contractors outlining their responsibilities with regard to noise.	Construction
NV2	The CEMP will include measures to minimise vibration impacts, such as consideration of use of the smallest vibratory roller where feasible and reasonable.	Construction

ID	Mitigation measure	Timing
NV3	Noise compliance monitoring will continue to be conducted in accordance with the existing EMS for the Eastern Creek REP. The EMS will be reviewed and updated as required prior to commencement of operation of the Proposal.	Operation
Air quality		
AQ1	A CEMP will be prepared prior to construction and implemented to manage air quality impacts during construction, including measures to managed dust generation, stabilisation of exposed areas, handling of materials and the management of exceptional incidents of dust and/or air emissions.	Construction
AQ2	Appropriate communication will be maintained with potentially impacted residences in accordance with the existing EMS. This will include: • Maintaining a complaints register in accordance with the EMS. If a dust complaint is received, the details of the response actions to the complaint will be detailed in the register.	Construction and operation
AQ3	The existing Air Quality, Odour and Greenhouse Gas Management Plan (AQOGGMP) which includes mitigation measures, will be reviewed and updated upon receiving approval, including changes to the air quality monitoring program as required.	Operation
AQ4	The existing boundary dust deposition monitoring sites will be reviewed and relocated as required to account for the revised site layout.	Operation
Soils and contamination		
SCO1	A Construction Soil and Water Management Sub -Plan to the CEMP (CSWMP) will be prepared in accordance with the Blue Book (Landcom 2008). The sub-plan will soil, surface water and contamination management implementation including: • The preparation of erosion and sediment control plans • Emergency spill procedures and provision of spill kits • A contingency plan for disturbance of unexpected, contaminated materials (unexpected finds protocol), such as materials that are odorous, stained or containing anthropogenic materials, that may be encountered during construction • Management of acid sulfate soils, if encountered • Management of any salinity impacts.	Construction

ID	Mitigation measure	Timing
	Management of contaminated soils, if found.	
SCO2	A CEMP will be prepared for the Proposal to manage surplus soils as well as on and off-site movement of material. The document should include: • Details on cut and fill areas. • Excess spoil estimates. • Waste classification requirements. • Soil importation and exportation requirements. • Stockpile storage areas. • Stockpile management procedures. Details on excess soil use.	Construction
Water and hydrology		
WH1	During construction of the Proposal erosion and sediment control measures will be implemented in accordance with the requirements of the existing Soil, Water and Leachate Management Plan for the Eastern Creek REP relating to new earthworks and *Managing Urban Stormwater – Soils and Construction* (Landcom, 2004).	Construction
WH2	An ESCP will be prepared for the Proposal in line with the ESCP included as Appendix A of Appendix N to the EIS. As a minimum the following measures will be included on the ESCP and implemented during construction: • Stabilised site access shall be constructed at all entry and exit points to the site to prevent the migration of soil and sediments. • At the upstream end of works, clean water shall be temporarily diverted around disturbed areas. • Sediment fences shall be installed at the downstream end of any disturbed areas. • The area of soil disturbed at any one time shall be minimised where possible. Any stockpiled material shall be covered, kept moist or planted with hydromulch. • Any disturbed areas shall be rehabilitated as soon as practical. • Sediment basins and/or traps (including sediment fences) shall be cleaned when the structures are at a maximum of 60% full of solid materials and disposed of in a manner that prevents further pollution of the site. • Measures will be inspected regularly and after significant rainfall (nominally more than 25mm over a 24-hour period) and will be cleaned and repaired, as necessary.	Construction

ID	Mitigation measure	Timing
	• Controls will be installed prior to the commencement of earthworks and construction, to minimise sediment laden run-off into adjoining vegetation and waterways including Angus Creek Where possible, earthworks would be undertaken during dry weather conditions.	
WH3	Mitigation measures to minimise the potential impacts to water and hydrology during construction will be incorporated in the CEMP (e.g. provision of spill kits and spill response procedures)	Construction
WH4	The existing EPIRMP will be updated if required to accommodate any additional potential impacts identified for the Proposal. The EPIRMP outlines the procedure to be followed in the event of a chemical spill or leak during construction and operation. This will include notification requirements and use of absorbent material to contain the spill or leak.	Construction/Operation
WH5	The existing SWLMP would be updated to include upgrades to water management infrastructure comprised within the Proposal. The Proposal would be operated in accordance with the management measures in Section 8 of the existing Soil, Water and Leachate Management Plan.	Operation
Hazards and risks		
H&R1	A CEMP, or equivalent, will be prepared for the Proposal and will include measures to minimise hazards and risks, including the following: • Health and safety requirements for construction. Construction works, including the storage, handling and use of hazardous construction materials will be undertaken in accordance with the provisions of the WHS Act and WHS Regulation • Operational access and egress points for emergency service personnel and workers.	Construction
H&R2	The existing EMS, Fire and Emergency Management Plan (FEMP) and EPIRMP will be updated to incorporate procedures and measures for managing the operation of the Site Workshop and Maintenance and Manufacturing Workshop, as appropriate. Updates will include the following requirements: • All staff working onsite will undertake a site induction appropriate to the work activities. • Installation and maintenance activities will be undertaken by trained personnel and by reputable contractors • Liquid spills will be managed in accordance with the existing spill management procedure outlined in the EMS • All fires will be treated as an emergency and the extinguishment of fires takes precedence over normal operations. The FEMP will be reviewed and updated if required to identify the control measures to be undertaken to prevent fires and actions to be implemented in the event of a fire	Operation

ID	Mitigation measure	Timing
	• Water used in responding to fire (firewater) has the potential to be a pollutant should it enter surface bodies and/or groundwater. The volume of firewater generated will be minimised through the use of fire retardants and foams. Fire water will be contained where possible • The existing complaints procedure will be followed in regard to any reports of environmental incidents • Vehicle incidents will be minimised by use of appropriate signposting, road markings, speed limits and physical barriers to separate pedestrian and vehicle movements • Diesel and other chemicals will be stored in self-bunded storage areas/tanks of a size appropriate to the quantity of material.	
H&R3	Within 6 months of approval, a site wide fire strategy would be prepared that identifies upgrades required to the existing systems to meet the relevant FRNSW and BCA requirements.	Operation
Biodiversity		
BD1	A Flora and Fauna Management sub-plan to the CEMP will be prepared. Clearing of native vegetation within the subject land will not occur until the CEMP, including the Flora and Fauna Management sub-plan has been prepared. The Flora and Fauna sub-plan will include, but not be limited to, the following: • Plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features and revegetation areas • Pre-clearing survey requirements for Plant Community Types (PCT) within and around the impact area including that pre-clearing survey will be undertaken by an ecologist in the areas identified as PCT 849 and the eucalypt trees to be cleared in the northeast corner of the construction footprint. • Procedures for unexpected threatened species finds and fauna handling • Procedures for if any animal is injured on site during works • Clearing of vegetation would be avoided during overland flow events, if possible • Protocols to manage weeds and pathogens • Protocols regarding pits/trenches which may remain open overnight adjacent to native vegetation	Pre-construction and construction
BD2	The currently approved EMS and Landscape and Vegetation Management Plan (LVMP) will be updated to include the new areas of Plant Community Type (PCT) which are to be protected and managed once construction is complete.	Post construction / operation
Aboriginal and non-Aboriginal heritage		

ID	Mitigation measure	Timing
HE1	An unexpected finds protocol will be prepared and included in the CEMP. This protocol will outline the procedure for managing the identification of items of potential Aboriginal and non-Aboriginal heritage significance during construction and operation. This protocol will include the following requirements: • If unexpected items are uncovered during construction, works in the vicinity of the item will cease immediately • EES Group will be immediately informed to determine the appropriate management strategy • Should items need to be disturbed (exposed, moved, damaged or destroyed), this will not be undertaken until an excavation permit is received under Section 139 of the Heritage Act 1977. The duration of this will depend on the integrity and significance of the heritage item • Works would not commence in the area, until approval has been obtained from EES and / or the Bingo Environmental Manager	Construction
HE2	The existing AHMP will be updated as required to account for the operation of the Proposal. In the event unexpected items are uncovered during operation, works in the vicinity of the item will cease immediately and the protocol detailed in the updated AHMP will be followed.	Operation
Socio-economic		
SE1	To respond to public and stakeholder concerns relating to the Proposal, the following will be prepared as part of the CEMP: • A consultation strategy outlining measures to maintain communication with the community and all relevant stakeholders throughout construction • A complaint handling procedure would be implemented and a complaints register maintained to manage public complaints • Measures to respond to complaints and feedback received during the construction of the Proposal.	Construction
SE2	Public complaints regarding odours, vermin, litter, dust, traffic and noise will be managed in accordance with the Section 4.6 (Complaints Management) of the currently approved EMS.	Operation
Landscape and visual amenity		
VA1	Measures will be included within the CEMP (or equivalent) to minimise visual amenity impacts during construction. These will include, but not be limited to, the following: • All works equipment and material will be contained within designated boundaries of the Proposal Site	Construction

ID	Mitigation measure	Timing
	• Material stockpiles, waste, plant, equipment and vehicle parking will be restricted to designated areas, and where possible, located to minimise visual impacts, i.e., setting back large equipment from site boundaries • The height and spread of waste and spoil/soil stockpiles will be minimised and managed in accordance with existing SEQ procedures • The Proposal Site will be left clean and tidy after every shift • The Proposal Site road surfaces will be regularly cleaned or dampened to minimise dust and dirt tracking onto public roads • Any graffiti will be promptly removed.	
VA2	The existing EMS will be updated to include any additional measures to minimise visual impacts from the new operational areas. Any additional landscaping required to minimise visual impacts from the new operational areas will be undertaken in accordance with the existing LVMP (DADI, 2021). The LVMP includes planting methodologies and installation procedures, details native species suitable for screening purposes and required mitigation measures.	Operation
Waste management		
WM1	• A Waste Management Strategy and Monitoring Program (or equivalent) will be prepared as a sub-plan to the CEMP to minimise waste and will include the following: • Requirements for waste management in accordance with the Standards for managing construction waste in NSW (NSW EPA, 2019) • Waste prioritisation i.e. avoidance and reuse of construction materials will take priority over recycling materials. Recycling of materials will take priority over the disposal of materials • Location and number of collections bins. Adequate general waste and recycling bins will be provided around the proposed works, with particular emphasis on the lunchroom and site office • Waste management protocols: – Management of any identified hazardous waste streams – Procedures to manage waste streams, including handling, storage, classification, quantification, identification, and tracking – Procedures and targets for reuse and recycling of waste materials • Induction and training procedures for staff. An induction will be provided to relevant staff and sub-contractors outlining their responsibilities with regard to waste management	Construction

ID	Mitigation measure	Timing
WM2	The currently approved EMS and Waste Monitoring Program will be updated to as required and may include increased waste limits and any changes in waste received and managed at Eastern Creek REP, as appropriate.	Operation
Greenhouse gas emissions		
GG1	Inclusion of energy efficient design aspects, where practicable within the proposed Site Workshop and Maintenance and Manufacturing Workshop, in order to reduce energy and fuel consumption. This could include energy-efficient lighting (e.g., L.E.D lights), ventilation, fixed plant and appliances.	Design
GG2	The CEMP prepared for the Proposal will incorporate measures to minimise GHG emissions impacts including, but not limited to, machinery selection considerations measures such as: • An assessment, where practical, of the fuel efficiency of the construction plant and equipment prior to selection • Where practical the use of equipment with the highest fuel efficiency and which uses lower GHG intensive fuel (e.g., biodiesel, electric powered machinery from renewable energy).	Construction
GG3	The Proposal will investigate options to utilise renewable energy, where possible (e.g., from the power grid, solar powered portable light towers)	Operation
GG4	The currently approved EMS including the Air Quality, Odour and GHG Management Plan will be updated as appropriate to minimise GHG emissions where feasible, including: • Measures to optimise diesel consumption through logistics analysis of site operations and material transport requirements, including optimal use of truck capacity and reduced idle times • Where practical the use of equipment with the highest fuel efficiency and which uses lower GHG intensive fuel (e.g., biodiesel, electric powered machinery from renewable energy).	Operation

23 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

23.1 Introduction

An assessment of the Proposal's consistency with the principles of ESD has been undertaken. As required by clause 7(1)(f) of Schedule 2 of the EP&A Regulation, an Environmental Impact Statement must include a justification for the carrying out of the development with regard to the principles of ESD. Table 23-1 provides a summary of the relevant SEARs which relate to ESD, and where these have been addressed in the EIS.

Table 23-1 SEARs (Ecologically Sustainable Development)

SEARs	Where addressed
Ecologically Sustainable Development	
A description of how the development will incorporate the principles of ecologically sustainable development in the design, construction and ongoing operation of the development	Chapter 23 (Ecologically Sustainable Development) Chapter 22 (mitigation measures)
A description of the measures to be implemented to minimise consumption of resources, especially energy and water	Section 23.5 (energy and water) Chapter 19 (greenhouse gas emissions) Chapter 12 (water and hydrology) Appendix N (Surface Water Impact Assessment)

The four principles of ESD as defined in clause 193(1) of the EP&A Regulation as being:

a) ***Precautionary principle**: namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:*
   i) *Careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment*
   ii) *An assessment of the risk-weighted consequences of various options*

b) ***Inter-generational equity**: namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations*

c) ***Conservation of biological diversity and ecological integrity**: namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration*

d) ***Improved valuation, pricing and incentive mechanisms**: namely, that environmental factors should be included in the valuation of assets and services, such as:*
   i) *Polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement*
   ii) *The users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste*
   iii) *Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.*

The following sections detail the consistency of the Proposal with the principles of ESD.

23.2 Precautionary principle

The precautionary principle deals with certainty in decision making. It provides that if there are risks of serious or irreversible environmental damage associated with a proposed development, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

The precautionary principle approach has been applied throughout the design and development of the Proposal and all technical studies associated with the Proposal, with the intent to minimise any potential environmental impacts. This included identifying opportunities to avoid and minimise potential impacts to nearby ecologically sensitive areas and sensitive residential receivers.

This EIS details the evaluation of environmental impacts associated with the Proposal. The EIS was prepared adopting a conservative approach, which included assessing the worst-case and peak impacts and scenarios. It has been undertaken using the best available technical information and has adopted best practice environmental standards, goals and measures to minimise environmental risks. The environmental assessment has been undertaken in collaboration with key stakeholders and relevant statutory and agency requirements. Bingo have prepared a Community and Stakeholder Engagement Strategy and Outcomes Report to establish a productive dialogue with both government agencies and community stakeholders during the preparation of the EIS and the delivery of the Proposal. Feedback received during engagement with identified stakeholders has been considered in the development of the Proposal as detailed in Chapter 6.

The threat of serious or irreversible environmental damage is the fundamental requirement for implementing the precautionary principle. Potential environmental risks associated with the Proposal were identified during the design development stage of the Proposal, to ensure that an appropriate amount of attention was afforded to minimising potential environmental risk and to ensure sufficient time was available for the preparation of detailed technical specialist reports to support this EIS. Technical specialist studies that were undertaken to provide accurate information to assist with the evaluation and development of the Proposal, included:

- Traffic and transport (Appendix I)
- Noise and vibration (Appendix J)
- Air quality (Appendix K)
- Water and hydrology (Appendix N)
- Biodiversity (Appendix P)
- Aboriginal heritage (Appendix Q).

Mitigation measures which have been developed to manage the potential environmental impacts during construction and operation of the Proposal, as identified in these assessments are provided in Chapter 22. Subject to the implementation of these mitigation measures, this EIS did not identify any issues that may cause serious and irreversible environmental damage as a result of the Proposal.

23.3 Intergenerational equity

Intergenerational equity refers to the premise that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations. Premised on the idea of environmental justice (i.e., the notion that people have a right to be protected from environmental pollution and to live in a clean and healthy environment), intergenerational equity distributes wellbeing through time, ensuring the wellbeing of present and future generations of a population or nation (Summers & Smith, 2014).

The Proposal plays a vital role in delivering a sustainable, liveable Greater Sydney for future generations. Projections for the 20 Year Waste Strategy estimate total waste generation in NSW (all streams) will grow by 76 per cent over the next 20 years, from 21 Mtpa to 37 Mtpa. The linkage of waste generation with economic and population growth indicates the majority of that increase will occur in Greater Sydney. This poses a significant challenge due to the diminishing capacity in existing landfill sites across Greater Sydney resulting in more waste being sent to landfill outside the region and increasing cost to the community. Growth in waste generation will increase consumption of landfill

airspace, with just seven years of remaining life in non-putrescible landfill in Greater Sydney, which is forecast to be exhausted by 2028 under BAU conditions.

The 20-Year Waste Strategy (DPE, 2021a) estimates that under BAU, Greater Sydney needs more than 3 Mtpa of additional non-putrescible waste capacity by 2030, and a further 1.2 Mtpa by 2040. The significant challenge to develop new landfill in Greater Sydney supports development of alternatives to landfill. The Eastern Creek REP represents a significant waste management facility servicing the Greater Sydney region. The recent construction and commissioning (as of 2021) of MPC2 contributes to providing the required infrastructure to divert greater amounts of waste from landfill. Using state-of-the-art processing equipment, MPC2 has the ability to achieve recovery yields of up to 90 per cent. At 9,000 m^2 MPC2 will significantly increase recycling capacity and diversion of waste from landfill across its network of recycling facilities located in the Sydney MLA.

Urban services such as waste management play a vital role in enabling cities to develop and its businesses and residents to operate. In a metropolitan region with severe space constraints, significant competition for land and high community sensitivity, optimising under-utilised facilities is a low-friction approach to enhancing the capacity and resilience of the overall system.

The *Greater Sydney Region Plan: A Metropolis of Three Cities* (GSC, 2018a) recognises the challenges the region faces with a growing population and aims to transform Greater Sydney into a metropolis of three cities, one of which being the Central River City where the Eastern Creek REP is located. Greater Sydney Research prepared for the Greater Sydney Commission, informed by an analysis of industrial lands in the Australian Capital Territory, identified a benchmark requirement of three square metres of industrial land per capita for urban services activities (SGS Economics and Planning, 2017). The per capita level provision in the Eastern Harbour City is already well below three square metres per capita. While the Western Parkland City will benefit from the Western Sydney Employment Area, there may be a need to provide additional industrial and urban services areas across the extensive footprint of the Western City to accommodate significant population growth beyond 2036. While the Central River City currently exceeds this minimum benchmark, it too will experience significant population growth (GSC, 2018a). The Proposal would optimise the use of existing urban service land, significantly increasing the resource recovery capacity of waste management infrastructure without further exacerbating space constraints within the region.

Maintaining and improving the liveability of Greater Sydney while increasing waste management capabilities is crucial to ensuring environmental equity for future generations. Liveability is constructed by the sum of the physical and social characteristics experienced in places – including the natural environment, a walkable and mixed-use built environment, economic potential near diverse housing options, and access to a broad range of services, facilities, and amenities—that add up to a community's quality of life. Improving liveability in urban environments necessitates place-based planning for a mix of high-quality places that engage, activate and connect people and communities

Greater Sydney's rapidly growing population and waste production means that urban services land particularly for the purpose of waste management needs to be utilised as efficiently as possible. Urban services play a vital role in facilitating a clean and healthy environment however due to the nature of activities within industrial and urban services land, these land uses are incompatible with sensitive land uses such as residential areas. Additional sites for resource recovery within Greater Sydney would reduce waste going to landfill and the associated transport costs however, identifying suitable sites is challenging due to the potential impacts in air quality, truck movements and noise. Optimising underutilised resources is an ideal solution to managing increasing space constraints and would continue to provide a built environment that promotes wellbeing for Greater Sydney's growing population and future generations. The Proposal is driven by the need to improve outcomes for intergenerational equity, meeting the needs of a rapidly growing Greater Sydney without increasing the footprint of urban services land in the region.

While the Proposal would have some impacts during construction and operation, as outlined throughout this EIS, these impacts are expected to be minor (with the implementation of the identified mitigation measures) and is not expected to disadvantage any sector of the community or future generations. Mitigation measures have also been identified for the Proposal that would be implemented throughout construction and operation (refer to Chapter 22), which would result in there being no significant adverse environmental impacts associated with the Proposal.

Overall, the design of the Proposal has incorporated the ESD principle of intergenerational equity through ensuring that the ongoing operation of the Eastern Creek REP can be operated sustainably to ensure there is no significant ongoing impacts on the surrounding community and future generations. The mitigation measures provided in Chapter 22 of this EIS are reflective of the commitment of Bingo (as the Proponent) to minimising environmental impacts of the Proposal on the surrounding environment during construction and operation.

23.4 Conservation of biological diversity and ecological integrity

This ESD principle stipulates that biological diversity and ecological integrity should be fundamentally considered when assessing the impacts of a Proposal. The design and assessment of the Proposal has been undertaken with the aim of identifying, avoiding, minimising and mitigating impacts on biodiversity.

The Eastern Creek REP site has been previously extensively disturbed and is located within an industrial precinct. An assessment of the biodiversity-related impacts associated with the Proposal has been undertaken. A summary of the potential impacts to biodiversity during construction and operation of the Proposal is provided in Chapter 14 and Appendix P of this EIS. Database searches were carried out for State and Commonwealth records of threatened species and communities and Commonwealth Matter of National Environmental Significance that occur or have the potential to occur within the Proposal Site. Field surveys were also conducted, in accordance with current biodiversity assessment guidelines.

Targeted surveys resulted in the detection of two possible threatened microbat species on the subject land:

- Eastern Coastal Free-tailed Bat (Micronomus norfolkensis) which is an ecosystem credit species
- Large Bent-wing Bat (Miniopterus orianae oceanensis) which is a dual credit species. Breeding habitat does not occur within the Proposal Site, therefore the potential occurrence of this species does not trigger offset requirements.

Offsets for these species are accounted for in the vegetation offsets discussed below.

One threatened flora species, *Eucalyptus scoparia* (Wallangarra White Gum) was precautionarily recorded within the subject land. *Eucalyptus scoparia* is listed as endangered under the BC Act and vulnerable under the EPBC Act. Two individuals of suspected *Eucalyptus scoparia* were recorded. As no identifying features of buds or fruit could be obtained to confirm the identification, the individuals have been conservatively identified as *Eucalyptus scoparia* based on the bark and leaf size of the individuals. *Eucalyptus scoparia* is not native to the Sydney area and therefore these individuals have been treated as planted vegetation and not of conservation significance.

Construction and operational activities of the Proposal would result in the clearing of approximately 0.28 hectares of native vegetation (PCT 849) located within the northeast portion of the Proposal Site. While this area of native vegetation has a low cover of native species, particularly in the ground layer, and a largely planted canopy, it has been identified as PCT 849 on a precautionary basis. This is because, while the canopy is planted, the dominant Eucalyptus species present are associated with PCT 849.

This patch of native vegetation qualifies for listing as the CEEC Cumberland Plain Woodland in the Sydney Basin Bioregion under the BC Act, however, does not meet the condition thresholds as the EPBC listed EEC. Due to the low habitat value of the Cumberland Plain Woodland within the Proposal Site, it is not anticipated that the patch to be cleared as part of the Proposal would contribute significantly to dispersal of flora and fauna associated with Cumberland Plain Woodland.

Avoidance and minimisation measures have been implemented during design of the Proposal to limit indirect impacts to biodiversity.

During the construction and operational phases of the Proposal, there is a possibility of very minor indirect impacts to biodiversity. These include:

- Inadvertent impacts on adjacent habitat or vegetation
- Reduced viability of adjacent habitat due to edge effects

- Reduced viability of adjacent habitat due to noise, dust or light spill
- Transport of weeds and pathogens from the Proposal Site to adjacent vegetation.

With the appropriate mitigation measures implemented, the likelihood of these impacts is reduced, and their affect is minor or negligible.

The impacts of the Proposal on native vegetation that require offset (in accordance with Section 9.2 of the BAM and as determined using the BAMC) are outlined in Chapter 14. The full biodiversity offset credit reports are provided within the BDAR (Appendix P) prepared for the Proposal. For the purpose of the BDAR, it has been assumed that a future offset requirement would be met through a contribution to the Biodiversity Conservation Fund.

The Proposal facilitates a much-needed increase for Greater Sydney's waste management capacity while minimising impacts to biodiversity. Utilising existing infrastructure avoids and minimises impacts to biodiversity and ecological integrity as approximately 99 per cent of the Proposal Site has been cleared of native vegetation due to previous and existing industrial land use.

23.5 Improved valuation, pricing and incentive mechanisms

This principle requires that costs to the environment are incorporated or internalised in terms of overall project costs, ensuring that decision making considers the environmental impacts

One of the most common underlying goals or concepts of sustainability is economic efficiency, including improved valuation of the environment. Resources should be carefully managed to maximise the welfare of society, both now and for future generations. Consideration of economic efficiency, with improved valuation of the environment, aims to overcome the under-pricing of natural resources and as the effect of integrating economic and environmental considerations in decision making, as required by ESD.

Bingo maintains accountability for the significant role they play in social and environmental outcomes in the present and well into the future. As such, they endeavour to ensure that they implement the appropriate actions to improve the Eastern Creek REP's contribution to sustainable development. The underutilisation of the existing Eastern Creek REP infrastructure is the driving force behind the Proposal. The projected increase in waste generation, the shortfall of waste management infrastructure and the growing space constraints within the Greater Sydney region pose a threat to the environmental and social outcomes of future generations. As such, continuing to operate the Eastern Creek REP at its current underutilised capacity would not be in the interest of future generations. Investing in the Proposal will allow Bingo to enact their corporate social responsibility by operating in a manner that contributes to achieving sustainable waste management within Greater Sydney.

While acknowledging that it is often difficult to place a reliable monetary value on the residual, environmental and social effects of the Proposal, the value placed on avoiding and minimising the environmental impacts of the Proposal is demonstrated in the design features incorporated into the Proposal, and the extent of environmental investigations that have been undertaken to inform this EIS.

This EIS has examined the environmental consequences of the Proposal and identifies mitigation measures for areas where adverse environmental impacts may occur. The implementation of mitigation measures represents a capital and/or operational cost for the Proposal, acting as a valuation in economic terms of environmental resources.

23.5.1 Circular economy

Facilities like the Eastern Creek REP have an important role to play in the transition from the traditional linear economy towards a circular economy. A key objective of circular economy (also called circularity) is to keep products, materials, equipment and infrastructure in use for as long as possible thus maximising their value to society.

A circular economy is regenerative by design with the aim of gradually decoupling growth from the consumption of finite resources, instead maximising value and recognising what additional value resources have. It is widely acknowledged the transition from a linear economy (current global manufacturing model) to a circular economy is going to present challenges, however, a stepped approach though a 'recycling economy' may ease or assist in that the transition as demonstrated in Figure 23-1.

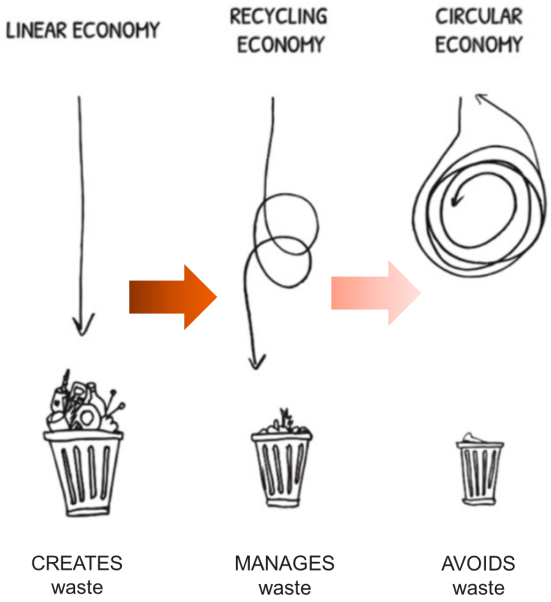

Figure 23-1 Potential pathway to transition towards a circular economy

The Eastern Creek REP has a key role in capturing recoverable materials which would have been otherwise lost to landfill. Further manufacturing these recovered materials increases their commodity value facilitating their on-sell to existing and potentially new endpoint users.

In a linear economy, where landfill was traditionally the only 'waste management' option and the end point of materials at the end of their useful life, the waste industry's sphere of influence and ability to drive change was limited and one directional. Bingo is part of the change away from the traditional linear materials flow path to one where materials and resources are being recovered, given value and facilitating their recirculation back into the economy. However, as long as our economy generates waste it is essential waste is managed effectively to ensure its worth is maximised and it is retained within the economy for as long as possible. Within a 'recycling economy', the waste industry is not the end point of the materials flow path, but rather the industry becomes a critical component of the materials flow path. Facilities like the Eastern Creek REP are a circuit breaker to the traditional one directional path of sending materials to landfill. By no longer being at the end point of the materials flow path the waste industry can exert influence both upstream and downstream.

Aspects where the Eastern Creek REP already plays an active role, and which would be enhanced with more waste being processed through MPC2 include:

- Diverting greater quantities of waste from landfill
- Recirculating more materials back into the economy/ markets
- Improving the quality of recovered materials to reinforce recycling / reuse flows by:
  - Improving service offering (mixed wastes vs comingled wastes vs segregated wastes) and client and customer expectations.

- Introducing controls to ensure the risk of waste contamination is minimal (e.g., incentivising clients who manage their waste to ensure that wastes are not contaminated when they arrive at the Eastern REP for processing)
- Technology solutions to improve materials separation and the quality of recovered materials
- Market development to reduce price volatility of end markets and maximise recovered materials values.

23.5.2 Greenhouse gas emissions

Reducing GHG emissions through increased resource recovery rates and energy efficient design has been a key consideration of the Proposal, improving Bingo's contribution to sustainable waste management. The ability to recover more materials from waste and divert the equivalent amount from landfill is one way that will help reduce GHG emissions which contribute to climate change. GHG emissions are a key factor cited as contributing to global climate change impacts. In August 2021, the Intergovernmental Panel on Climate Change (IPCC) Working Group released its Sixth Assessment Report (AR6) on climate change which stated warming of the climate system is unequivocal and, since the 1950s, many of the climate changes observed are considered unprecedented, with the need for immediate and direct emissions reductions to avoid global warming by 1.5 – 2°C (IPCC, 2021).

Capturing greater quantities of recovered materials allows these materials to be used as a substitute to virgin natural resources, ultimately preserving remaining natural reserves. In addition, utilising recovered materials avoids those energy intensive activities such as mining, crushing and ore processing for example which are required to be undertaken before natural resources can be used to manufacture feedstock and products. Acknowledging energy inputs are still required to recover recyclable materials to manufacture a product(s) which can be used commercially, the benefits gained compared to using virgin natural resources are far greater, particularly around associated reduced energy requirements and lower GHG emissions. These benefits are key reasons which make using recovered materials a more sustainable and favourable option to using natural virgin resources. The greater the percentage of recycled material used, the more significant the sustainable benefits and savings will be.

Bingo is taking a proactive approach to its energy and environmental management and are signatories to RE100 – an international group of businesses committed to 100 per cent renewable energy. Bingo has made the commitment to use 100 per cent renewable electricity at all Bingo facilities by the end of 2025. This will effectively remove all of the electricity GHG emissions component at the Eastern Creek REP.

A summary of estimated annual GHG emissions, alongside energy consumption associated with the operational phase of the Proposal is provided in Chapter 19. The annual operation of the Proposal would generate approximately 0.018 $MtCO_2$-e/pa. Over half of these emissions (53 per cent) are attributed to landfill decomposition of residual waste that could not be recycled. A further 29 per cent of emissions would be attributed to the purchase of electricity to power the recycling activities onsite. Annual operational emissions attributed to the Proposal would contribute approximately 0.004 per cent to Australia's annual GHG emissions inventory total and 0.014 per cent to NSW's annual emissions inventory total. This does not represent a substantial impact on a State or National scale.

While some abatement from the use of solar has been considered within the GHG emissions assessment for the Proposal, this was a conservative estimate only and it is possible that further opportunities to reduce Scope 2 emissions may be possible to achieve through the installation of additional solar capacity. Bingo are committed to the installation of solar on MPC2 and the Maintenance and Manufacturing Workshop as part of the Proposal. This is evident through Bingo's proactive approach to its energy and environmental management as signatories to RE100 – an international group of businesses committed to 100 per cent renewable energy. Bingo has made the commitment to use 100 per cent renewable electricity at all Bingo facilities by the end of 2025 which would reduce total emissions associated with the Proposal by over 5,000 tCO_2-e pa.

23.5.3 Water management

Sustainable water management has also been incorporated into the design and operation of the Proposal. Water is at the core of sustainable development and is critical for socio-economic development, healthy ecosystems and for human survival itself. It is vital for reducing the global burden of disease and improving the health, welfare and productivity of populations. It is central to the production and preservation of a host of benefits and services for people. Water is also at the heart of adaptation to climate change, serving as the crucial link between the climate system, human society and the environment.

Water is a finite and irreplaceable resource that is fundamental to human well-being. It is only renewable if well managed. Water can pose a serious challenge to sustainable development but managed efficiently and equitably, water can play a key enabling role in strengthening the resilience of social, economic and environmental systems in the light of rapid and unpredictable changes.

The Proposal will utilise existing water management infrastructure in conjunction with additional water management infrastructure that would be installed as part of the Proposal. A portion of the Proposal Site, including extents of the proposed work under the Proposal, discharges towards the northern and southern OSD basins. The remainder of the proposed extent of work will discharge towards one of two new basins:

- Basin B – to be located near the northeastern corner of the Proposal Site, adjacent to the Upper Angus Creek corridor that runs parallel to Kangaroo Avenue.
- Basin K – to be located near the northwestern corner of the Proposal Site, adjacent to the natural low point along the site boundary.

The main water conservation strategy utilised at the existing Eastern Creek REP is the reuse of onsite stormwater discharges for dust suppression. This is achieved by reusing water stored at the northern and southern OSD basins and thereafter at the reuse water tanks. Water from the northern OSD (which is connected to the southern OSD basin via a transfer pipe) is pumped to five aboveground reuse water tanks with a total combined capacity of 112.5 kL, to supply water to Eastern Creek REP. While both the northern and the southern OSD basins are primarily used for on site detention, both basins have permanent pool volumes (below the outlet invert level) that can be used for reuse purposes.

As noted in above, there are four existing above ground tanks within the Eastern Creek REP. In addition, the Proposal would include:

- A rainwater harvesting system comprising two 10 kL rainwater tanks would be located within/adjacent to the Site Workshop and Maintenance and Manufacturing Workshop
- Upgrades to the internal recycled water system, including capacity to transfer stored water from the existing northern and southern OSD basins and two additional OSD basins (Basin B and Basin K) as described in Section 3.3.9.
- Additional storage tanks providing a total of 112.5 kL of storage tanks to supplement the four existing aboveground tanks

A summary of the MUSIC model results presented in Table 12-13 demonstrate that the proposed increase in water tank storage volume would increase the average annual volume of water supplied for external reuse. Furthermore, model results (Table 12-12) indicate that 10 kL rainwater tanks at each of the two proposed workshop buildings would be capable of supplying more than 92 per cent of the non-potable water demand in the two buildings, which is assumed to be limited to toilet flushing. Furthermore, the relatively low non-potable water demand modelled would result in a high proportion of inflow to the tank overflowing the tank towards the existing and proposed OSD basins. This indicates that there is opportunity to utilise the proposed rainwater tanks as supplementary storages to supply other non-potable water demands across the Eastern Creek REP.

24 JUSTIFICATION AND CONCLUSION

24.1 Introduction

This section of the EIS provides a justification for the Proposal and a conclusion to the EIS. The justification is based on the strategic need for the Proposal and how the Proposal would fulfill its objectives. The justification also takes into consideration the objects of the EP&A Act.

24.2 Objects of the Environmental Planning and Assessment Act 1979

Consideration has been given to the consistency of the Proposal with the objects of the EP&A Act as outlined in Section 1.3 of the Act, Table 24-1 below.

Table 24-1 Consistency of the with the objective of the EP&A Act

Objective	Consistency of the Proposal
a) **To promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources**	Overall, the Proposal would manage, develop and conserve natural and artificial resources appropriately through increased resource recovery capacity, and would result in a net social and economic benefit to the wider community. The Proposal would allow for the continued use of the Proposal Site in line with existing land use designations. The Proposal represents improved optimisation of an existing critical infrastructure asset, thereby limiting the need to utilise more of the State's resources. Additionally, the Proposal would support the production of eco products for utilisation in the construction sector and for state significant infrastructure projects, reducing the need to win virgin materials to be used within construction. It would promote economic welfare by providing employment during construction and ongoing operation. Potential negative social impacts have been minimised by utilising an existing site where waste management activities have been carried out since 2012.
b) **To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment**	This EIS assesses the Proposal and identifies the likely impacts on the environment and surrounding community. With the implementation of mitigation measures outlined in Chapter 22, residual impacts on the environment are anticipated to be negligible. Bingo's network of facilities incorporates advanced waste management technologies to achieve resource recovery rates in excess of 75 per cent, increasing waste diverted from landfill and producing valuable eco products to support property and infrastructure projects thereby promoting a circular economy hub. The Proposal would support the goal of maintaining a C&D and C&I waste management facility at Eastern Creek, providing a positive economic outcome for NSW. In developing the Proposal extensive engagement has been undertaken with community stakeholders, surrounding landowners and government agencies to optimise outcomes of the Proposal. The principles of ESD have been considered with respect to the development of the Proposal and are discussed in Chapter 23.
c) **To promote the orderly and economic use and development of land**	The Industry and Employment SEPP provides for the land use and zoning for the Proposal Site and surrounding area. Under this SEPP, the Proposal Site is zoned as IN1 which is specified as a prescribed zone within the Transport and Infrastructure SEPP which allows for a waste disposal facility to be permitted with development consent. The Proposal utilises an existing waste management facility in an established industrial area. This avoids the need for new waste facilities in the other, more sensitive, areas, maintaining consistency with the

Objective	Consistency of the Proposal
	principles of inter-generational equity, conservation of biological diversity and improved valuation and pricing of environmental resources. The Proposal would support the existing and permissible land use at the Proposal Site by ensuring that the Proposal Site would continue to be used as a waste disposal facility, which is permissible under the Transport and Infrastructure SEPP for the land zones in the Industry and Employment SEPP and therefore is in line with orderly and economic use and development of land.
d) To promote the delivery and maintenance of affordable housing	The Proposal would not affect the provision or maintenance of affordable housing. However, the Proposal does provide critical infrastructure to support recycling of C&D waste generated from the construction of affordable housing as well as supporting the production of eco products for utilisation in the construction sector.
e) To protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats	This EIS presents a detailed assessment of the potential environmental impact associated with the Proposal. A BDAR has been prepared by Arcadis (Appendix H of this EIS) in accordance with the requirements of the BC Act. The Proposal would require the clearing of approximately 0.28 ha of Cumberland Plain Woodland. It was assessed that the area of the Cumberland Plain Woodland impacted by the Proposal is of low habitat value and would not contribute significantly to dispersal of associated flora and fauna associated with the TEC. This area would be offset as required by the BC Act. No other direct impacts to threatened species would occur as a result of the Proposal. The mitigation measures outlined within Chapter 14 of this EIS would allow for the protection of the environment, including the protection and conservation of native animals and plants, threatened species, populations and ecological communities, and their habitats to manage any indirect impacts to biodiversity due to the Proposal..
f) **To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage)**	An Aboriginal heritage due diligence assessment has been prepared by Artefact to determine the likelihood of impact to Aboriginal heritage items or values at the Proposal Site (Appendix I of this EIS). The Proposal would occur within an area which has been heavily disturbed by historical quarrying and earthmoving activities and is classified as having nil to low archaeological potential or Aboriginal significance. There would be no disturbance to the area of high archaeological sensitivity to the northwest of the Proposal Site, therefore impact to significant intact Aboriginal heritage sites or values is unlikely. Additionally, it is considered extremely unlikely that items of Aboriginal heritage significance would be disturbed during operation. Mitigation measures will be implemented to minimise impacts to unexpected non-Aboriginal heritage items finds are presented, identified in Chapter 15 of this EIS.
g) To promote good design and amenity of the built environment	The Proposal would not result in a change in use of the Proposal Site which would continue to operate as a waste disposal facility. Measures to minimise visual impacts and other amenity related impacts of the Proposal have been incorporated into the design of the built structures of the Proposal and landscaping would be provided to screen the Proposal where feasible and reasonable. The potential for the Proposal to result in visual impacts has been assessed within Chapter 17 of this EIS. The assessment found that the impact of the Proposal, when considering its design features, would result in a negligible impact on four of the five identified visual receivers and a moderate-low impact on viewpoint one. The design features of the Proposal include measures to minimise amenity impacts such as air quality (e.g. installation of wheel washes and improved internal road networks), stormwater controls and landscaping.

Objective	Consistency of the Proposal
h) To promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants	A CEMP and updated EMS, including the mitigation measures proposed in this EIS, will be prepared prior to the commencement of construction and operations respectively, and would include appropriate work health and safety management plan(s).
i) To promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State	The SSD application would be approved by the Planning Minister or the Independent Planning Commission. Planning considerations from State and local Government have been taken into consideration in this EIS. Several government agencies were identified as having a likely interest in the Proposal. These agencies included those agencies whose input was sought for the SEARs issued by DPE as well as other agencies that may have an interest in specific aspects of the Proposal or particular environmental consideration. The EIS will be referred to government agencies as relevant for their review as part of EIS exhibition.
j) To provide increased opportunity for community participation in environmental planning and assessment	Bingo has an existing relationship with the community and has existing, established communication pathways including the Eastern Creek REP website, contact numbers and newsletter updates. A Community and Stakeholder Participation Strategy was prepared to support and guide consultation for three projects that are currently being progressed by DADEC (a fully owned subsidiary of Bingo) at the Eastern Creek REP including the Recycling Infrastructure Optimisation Project. Bingo engaged with DPE to confirm adequacy of the proposed engagement approach and consultation activities. Bingo has consulted extensively with the local community and other relevant stakeholders regarding the Proposal, as documented in this EIS (Chapter 6). The EIS will be placed on public exhibition for a period of not less than 30 days in accordance with Schedule 1 Clause 9 of the EP&A Act

24.3 Proposal Justification

The Proposal would unlock the potential of the strategically significant Eastern Creek REP, facilitating the optimisation of site operations. With benefits of scale and optimal location within the Sydney transport network, and the growth markets of Western Sydney, the Proposal would allow for the much needed increase in Sydney's resource recovery capacity while maintaining and improving operational efficiency and environmental outcomes. The Proposal represents the continued use of an existing waste management site in an established industrial precinct, thus mitigating the need to develop on a greenfield site.

24.3.1 Proposal objectives

The Proposal would support the ongoing efficient use of the Eastern Creek REP site which represents a critical piece of waste infrastructure to meet the growing C&D and C&I waste management needs of Sydney while facilitating circular economy flows. The objectives of the Proposal are to:

- Enhance the operational efficiency of the Eastern Creek REP through improvements in internal design and development of supporting infrastructure
- Support the ongoing investment in strategic infrastructure by the NSW and Commonwealth Governments through providing recycled products for major transport and social infrastructure projects
- Contribute to the State achieving resource recovery target of 80 per cent by 2030 from all waste streams under the 20 Year Waste Strategy (DPE, 2021a) through increasing quantities of waste diverted from landfill

- Increase diversion of C&D and C&I waste from non-putrescible landfill in Greater Sydney, which the 20 Year Waste Strategy (DPE, 2021a) estimates will be exhausted in 2028
- Harness the state-of-the-art advanced waste processing capacity of the recently commissioned MPC2 facility to respond to significant C&I processing capacity shortfalls in the Sydney MLA and in doing so supporting enhanced resource recovery outcomes
- Promote a circular economy hub and reduce disposal costs for process residuals by diverting material from landfill and keeping products and materials in use by governments and industry in accordance with 20 Year Waste Strategy and the NSW Circular Economy Policy Statement – Too Good to Waste (NSW EPA, 2019)
- Contribute to the economy in Western Sydney by creating direct and indirect skilled employment opportunities, both during construction and long-term operation
- Manage potential impacts associated with the construction and operation of the Proposal in an environmentally and socially responsible manner.

24.3.2 Need for the Proposal

The conventional model of recycling that has been historically adopted across Australia is facing considerable disruption and greater vulnerability. This disruption puts recycling outcomes across Australia, including Greater Sydney, at risk. Global market risks, policy drivers and diminishing recycling capacity are all contributing to the need for the Proposal, namely:

- **Non-putrescible waste processing and disposal options in Sydney and NSW**: Non-putrescible waste generation is estimated to grow by 76 per cent over the next 20 years, exhausting the available landfill airspace by 2028 under business as usual conditions. There are significant challenges to developing new landfills in Greater Sydney necessary to provide the required additional non-putrescible waste capacity required. There is also limited recovery of mixed C&I waste in Greater Sydney. The Proposal would significantly increase the recycling capacity and diversion of waste from landfill in Greater Sydney, and make a key contribution to NSW achieving the C&I recovery targets in addition to C&D recovery targets.
- **Planning for future non-putrescible waste management**: The projected increase in population and associated economic growth, as well as numerous current and upcoming large infrastructure projects in Sydney will result in significant increases in non-putrescible waste generation. The proposed increase in throughput of the Eastern Creek REP provides necessary waste infrastructure for both C&D waste generated during construction as well as C&I waste generated by new businesses. Further, the Eastern Creek REP will continuously evolve to increase diversion of waste from non-putrescible landfill using state-of-the-art resource recovery technology.
- **Integrate network efficiency**: Bingo operates an integrated and connected network of resource recovery and waste management facilities across Greater Sydney, including the strategically located Eastern Creek REP. The Proposal would increase throughput and improve operational outcomes at the Eastern Creek REP, which would increase efficiency of the entire Bingo resource and recovery network.
- **Alignment with the NSW circular economy**: The Proposal supports the critical shift in approach to waste management in NSW, from producing low cost, low grade materials to a pull through model that conceives of generating usable and market demanded products using an integrated, closed loop solution.

The Proposal, forming part of the overall Eastern Creek REP, represents critical infrastructure that will be required to increase NSW waste diversion rates, facilitate circular economy flows and build the resilience of the local recycling sector. In addition, the Proposal supports the objectives of a range of strategic planning policies, including:

- *NSW Waste and Sustainable Materials Strategy 2041 – Stage 1: 2021-2027* (DPE, 2021a)
- *National Waste Policy: Less Waste, More Resources* (Australian Government, 2018)
- *NSW Circular Economy Policy Statement – Too Good to Waste* (NSW EPA, 2019)
- *Greater Sydney Region Plan: A Metropolis of Three Cities* (GSC, 2018a)

- *Greater Sydney 2056: Central City District Plan* (GSC, 2018b)
- *Western Sydney Waste Avoidance and Resource Recovery Strategy 2017-2021* (WSROC, 2017)
- *Future Transport Strategy 2056* (NSW Government, 2018).

24.3.3 Site suitability

The strategic location of the Eastern Creek REP, which is central to Greater Sydney and in close proximity to surrounding urban motorway connections, provides efficient connectivity to Bingo's broader resource recovery network. The Proposal Site is of appropriate zoning for an industrial use, being located on land zoned as IN1 – General Industrial. The Proposal Site currently has approval for resource recovery activities to be carried out within the MPC1, MPC2 and the SMA and for disposal to occur within the Landfill. The Proposal would involve the continued use of existing infrastructure at the Eastern Creek REP with supporting infrastructure proposed to provide improve operational efficiency to support the increase in throughput.

The Proposal Site is therefore considered the optimal location and is suitable for the Proposal.

24.3.4 Proposal alternatives

Consideration was given to a number of alternatives as part of the approach and design development of the Proposal. Each of these alternatives have were not considered to be viable as they would not adequately address the Proposal's objectives or address the critical need for the Proposal.

The alternatives considered for the Proposal include:

- **A 'Do nothing' scenario**: This scenario was rejected as it would not provide the critically needed increase in waste management capacity within the Greater Sydney region. This would be inconsistent with the objectives and goals mandated in these strategic planning frameworks. Similarly, a 'do nothing' scenario' would mean that waste generated in the local community would be required to be transported in greater distances to alternative facilities in the Greater Sydney region.
- **Alternative site**: Several alternative sites in the Sydney Metropolitan area were assessed. This scenario was rejected as there is no available land large enough to accommodate such a facility while being a sufficient distance from potentially sensitive land uses. The location of the Proposal is well placed geographically to service Greater Sydney and would utilise the significant benefits that come from co-location with an existing waste management facility.
- **Alternative site configuration and layout**: Design changes have been made to the Proposal in response to advice and consultation with government authorities, service providers and the community, as well as additional data from more detailed environmental and social investigations. Where a refinement was likely to have wider implications, or where a range of constraints and alternatives was considered, design refinements were identified in the context of environmental considerations.
- **Alternative throughput and staging:** It was identified that the Eastern Creek REP could accommodate a higher throughput than proposed as part of the Proposal and consideration was given to alternate options for staging of the Proposal to meet market needs and demands Different staging options or alternative throughput options were discarded as the proposed optimisation and staging of the Eastern Creek REP were found to be the optimal solution for providing immediate relief across the Sydney MLA to increase resource recovery targets.

24.3.5 Environmental impacts

The key environmental issues which were assessed for the Proposal include:

- Traffic and transport
- Noise and vibration
- Air quality
- Soils and contamination
- Water and hydrology
- Hazards and risks.

The TIA assessed the traffic and access impacts associated with the construction and operation of the Proposal. The assessment concluded that during construction of the Proposal there would be no substantial change to the existing roadway capacity or intersection performance during construction phases. Any impact due to construction vehicles during the road network peak periods is expected to be minimal and would have no noticeable impact on the local road network.. Traffic modelling demonstrated that with the operation of the Proposal at the year of opening (2025) and 10 years after opening of the Proposal (2035), all modelled intersections would operate at the same LoS as the existing scenario during the AM and PM peaks, with the exception of one intersection. The Wallgrove Road / Wonderland Drive intersection and the Wonderland Drive / Honeycomb Drive intersection was found to have a reduced LoS in the AM peak (reducing from a LoS B to an acceptable LoS C by 2025), however the modelling showed that this was a result of growth in background traffic and would occur even without the Proposal. All other intersections would maintain the same LoS as existing conditions during the opening and 10 years after opening.

An assessment of noise and vibration impacts associated with the construction and operation of the Proposal was undertaken. An assessment of construction noise impacts determined the predicted noise levels generated by each stage of construction of the Proposal would not exceed the NMLs at the nearby sensitive receivers identified in either calm or noise enhancing meteorological conditions. An assessment of the potential for vibration impacts during construction identified that that there would be no construction activities within the prescribed safe working distances hence vibration impacts due to construction activities are not predicted. An assessment of operational noise impacts determined the predicted noise levels generated by each stage of the Proposal for both hourly average movements and the peak hourly vehicle movement scenarios would not exceed the noise trigger levels in either calm or noise enhancing meteorological conditions.

An assessment of air quality and odour impacts associated with construction and operation of the Proposal was undertaken. For Stage 1 operation combined with Stage 2 construction activities, there are no additional days above the 24-hour average impact assessment criterion for PM_{10} and no exceedances of the annual average impact assessment criterion for PM_{10} at residential assessment locations. There is one additional day above the 24-hour average impact assessment criterion for $PM_{2.5}$ for Stage 1 operations at residential assessment locations, however this additional day coincides with a high background concentration and is not considered material. The assessment identified exceedances of the 24-hour average PM_{10} impact assessment criterion at a commercial assessment location for Stage 1 operations + Stage 2 construction. It is noted that this is a short-term scenario as it includes the construction activities for Stage 2, and would only occur for the Stage 2 construction period. It is noted that one commercial receiver located to the south of the Proposal site would incur the majority of PM_{10} exceedances. This commercial receiver location is to the south of the Proposal Site and was newly constructed (after current operations at the Eastern Creek REP were approved and commenced). Furthermore, exposure to air pollution for sensitive population groups (children, elderly) is unlikely to occur at commercial receptors.

Although Stage 2 operations involve an increase in throughput from Stage 1, modelling results at adjacent commercial assessment locations are reduced compared to Stage 1, as the Stage 2 construction emissions are assumed to occur concurrently with Stage 1 operations only. The peak 24-hour average modelling results at some of the adjacent commercial assessment locations are also reduced compared to approved operations, even though the throughput increases. This is due to the reconfiguration / optimisation of the Eastern Creek REP, which acts to re-distribute dust emissions, particularly from trucks, by re-directing truck exit points to the Honeycomb Drive extension and

Kangaroo Avenue in the northeast of the Proposal Site. The AQIA concluded that existing dust control methods in place at the Proposal Site are consistent with best practice dust control measures for the resource recovery and waste industry and would mitigate potential air quality impacts associated with the Proposal.

The results of a conservative odour modelling scenario for the Eastern Creek REP, accounting for potential cumulative emissions from the approved Modification 10 and proposed Modification 9 with the Proposal, indicate that odour goals will be met at surrounding residential and commercial/industrial receptor locations. The HHRA reviewed the AQIA to estimate the potential for health impacts at relevant receptor locations due to the predicted changes in particulate matter concentrations from the Proposal. For residential receivers the HHRA identified that there are no impacts of concern in the residential areas that require further assessment in relation to risks to human health. For industrial receivers the assessment calculated individual risks at the maximum impacted premises related to changes in $PM_{2.5}$ and PM_{10}, and did not identified health impacts that would be considered to be significant.

An assessment of soils and contamination associated with construction and operation of the Proposal was undertaken. The potential for contamination at the Proposal Site was identified as low and construction works were considered unlikely to expose contaminated soils. The risk of contamination of soils from spills and leaks of fuels, oils and other chemicals used in construction would be managed through the provision of bunding and spill kits, which would be outlined in the CEMP. During site operation, the risk of contamination is through the storage and use of oils, fuels, and other chemicals related to machinery use and maintenance.

Mitigation of soil and contamination risks would involve the implementation of erosion and sediment control measures, the preparation of a CEMP including contingency measures for unexpected finds of contaminated materials, and the update of the existing EMS for the Eastern Creek REP.

The water and hydrology assessment for Proposal focused on three key aspects: water quality; water quantity (stormwater) and water use. The Proposal would result in an increase in impermeable surfaces and therefore higher volume of stormwater runoff, as well as an increased demand in non-potable water at the Site Workshop and Maintenance and Manufacturing Workshop. The assessment identified that during construction and without mitigation, disturbance to soils could result in sediment laden or potentially contaminated surface water runoff entering downstream waterways. Similarly, during operation there is a risk of an increase to pollutant loads in surface water runoff. Existing and proposed stormwater management infrastructure (including OSDs, bioretention systems and gross pollutant traps) implement to manage potential impacts would be compliant with Blacktown Council's WSUD handbook and meet Council's pollution reduction targets. Stormwater management systems at the Proposal Site were assessed to attenuate post-development stormwater flow up to the 1 per cent AEP event. Existing erosion and sediment control measures for the Proposal Site will continue to be implemented, alongside the preparation of an ESCP during construction and the update of the site EMS to include the Proposal. Ongoing compliance monitoring would ensure the quality of stormwater discharged from the Proposal Site would meet relevant limits established through Council and EPA guidelines, and the Proposal Sites EPL. The Proposal would cater for the increase in non-potable water demand through the provision of an additional rainwater storage capacity of 112.5 kL.

An assessment of hazards and risks associated with the Proposal identified that while chemicals and dangerous goods would be stored within the Proposal Site quantities would not be sufficient to trigger the requirement for a PHA in accordance with *State Environmental Planning Policy (Resilience and Hazards) 2021* replacing now repealed *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development* as required by the SEARs. Potential construction and operational hazards include spills, risk of fire and explosion, vehicle movements and machinery use, and receipt of non-conforming waste that may contain contaminated or asbestos-containing material, and airborne hazards. These would be managed through the implementation of operational mitigation measures to minimise hazards and risks, including engineering and administrative controls.

In addition to the key environmental assessments described above, this EIS has also included an assessment of other environmental aspects:

- Biodiversity
- Aboriginal and non-Aboriginal heritage

- Social impacts
- Landscape and visual amenity
- Waste
- GHG emissions
- Cumulative impacts.

It is considered that any potential impacts associated with the Proposal can be satisfactorily mitigated through a range of measures that have been identified within the EIS. In addition, the Proposal has been assessed against – and has been found to be consistent with – the priorities and targets adopted in relevant and draft State plans as well as Government policies and strategies.

24.4 Conclusion

This EIS provides a robust, comprehensive assessment of the Proposal and its relevant environmental issues to meet the requirements of the EP&A Regulation and the SEARs. Potential environmental, social and economic impacts, both direct and cumulative, have been identified and assessed as part of this EIS. The preparation of the EIS has identified and assessed the environmental impacts arising as a result of the Proposal, however, no significant impacts were identified. Identified environmental impacts would be mitigated through the implementation of measures for the construction and operation of the Proposal, which are largely consistent with the measures already in place at the Proposal Site. Extensive consultation has been carried out regarding the Proposal with the community and relevant government agencies as part of the development of the Proposal.

This EIS has concluded that the Proposal should proceed as it would:

- Result in no significant long term adverse impacts to the environment or local community
- Include a range of relevant mitigation measures and commitments that would govern the responsible and appropriate implementation of Proposal activities
- Ensure the ongoing availability of finite landfill space in the Sydney MLA through maximising the diversion of waste from landfill, to meet the demand driven by the ongoing development of infrastructure, housing and businesses in Sydney
- Harness the state-of-the-art advanced waste processing capacity of the recently commissioned MPC2 facility to respond to significant C&I processing capacity shortfalls in the Sydney MLA and in doing so support enhanced resource recovery outcomes
- Satisfy the principles of ESD as described in the EP&A Regulation.

The Proposal would also promote the principles of a circular economy and provide significant benefit in terms of providing a sustainable resource recovery facility for residents of Sydney's west. Overall, the EIS concludes that the development proposed is in the public interest and approval is recommended.

On the basis of the findings detailed within this EIS, the Proposal is considered to be justified and is recommended to proceed subject to consent.

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Eastern Creek Recycling Ecology Park

Recycling Infrastructure Optimisation Project

Appendix A
SEARs checklist

June 2022

APPENDIX A

Secretary's Environmental Assessment Requirements Checklist

Table 25-1: Secretary's Environmental Assessment Requirements

Secretary's Environmental Assessment Requirement	Location addressed in this EIS
General Requirements	
The Environmental Impact Statement (EIS) for the development must meet the form and content requirements in clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (the Regulation).	Throughout this EIS
• A detailed description of the development, including: – An accurate history of the site, including existing or approved operations and development consents	Section 2.3 Section 2.7 Section 2.7 Section 5.5
– The need for the proposed development	Section 4.1
– Justification for the proposed development	Chapter 4
– Likely staging of the development	Section 3.2
– Likely interactions between the development and existing, approved and proposed operations in the vicinity of the site	Section 3.3.1 and Section 3.5.1 Section 20.4
– Plans of any proposed building works	Section 3.3 Appendix E
– Contributions required to offset the proposal and	Section 3.3.11
– Infrastructure upgrades or items required to facilitate the development, including measures to ensure these upgrades are appropriately maintained.	Section 3.3.10
• Consideration of all relevant environmental planning instruments, including identification and justification of any inconsistencies with these instruments	Section 5.2 to 5.7
• Consideration of issues discussed in the public authority responses to key issues (available on the Department's Major Projects website)	Chapters 8 to 20
• A risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment	Section 7.4 Chapter 21
• A detailed assessment of the key issues specified below, and any other significant issues identified in this risk assessment, which includes: – A description of the existing environment, using sufficient baseline data	Chapters 8 to 20 Section 20.4

Secretary's Environmental Assessment Requirement	Location addressed in this EIS
– An assessment of the potential impacts of all stages of the development including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes and – A description of the measures that would be implemented to avoid, minimise, mitigate and if necessary, offset the potential impacts of the development, including proposals for adaptive management and/or contingency plans to manage significant risks to the environment.	
• A consolidated summary of all the proposed environmental management and monitoring measures, highlighting commitments included in the EIS.	Section 22.2
The EIS must also be accompanied by: • High quality files of maps and figures of the subject site and development	Throughout this EIS
• A report from a qualified quantity surveyor providing: – A detailed calculation of the capital investment value (CIV) of the development (as defined in clause 3 of the Environmental Planning and Assessment Regulation 2000), including details of all assumptions and components from which the CIV calculation is derived. The report shall be prepared on company letterhead and indicate the applicable GST component of the CIV – An estimate of the jobs that will be created during the construction and operational phases of the proposed development and – Certification that the information provided is accurate at the date of preparation.	Appendix G CIV
Statutory and strategic context	
• Detailed justification for the proposal and the suitability of the site	Section 5.2 and Section 5.3
• Detailed justification that the proposed land use is permissible with consent	Section 5.3
• Demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, adopted precinct plans, draft district plan(s) and adopted management plans and justification for any inconsistencies. This includes, but is not limited to: – State Environmental Planning Policy (Infrastructure) 2007 – State Environmental Planning Policy (Western Sydney Employment Area) 2009 – State Environmental Planning Policy (State and Regional Development) 2011 – State Environmental Planning Policy No. 33 – Hazardous and Offensive Development – State Environmental Planning Policy No. 55 – Remediation of Land	Chapter 4 Chapter 5 The EIS addresses the updated State Environmental Planning Policies which have been consolidated by the NSW Government and correspond to those reflected within the SEARs, as identified below: • *State Environmental Planning Policy (Infrastructure) 2007;* now *State Environmental Planning Policy (Transport and Infrastructure) 2021*

Secretary's Environmental Assessment Requirement	Location addressed in this EIS
– (Draft) Remediation of Land State Environmental Planning Policy – Greater Sydney Region Plan: A Metropolis of Three Cities – Our Greater Sydney 2056: Central City District Plan – Future Transport Strategy 2056	• *State Environmental Planning Policy (Western Sydney Employment Area) 2009;* now *State Environmental Planning Policy (Employment and Industry) 2021* • *State Environmental Planning Policy (State and Regional Development) 2011;* now *State Environmental Planning Policy (Planning Systems) 2021* • *State Environmental Planning Policy No 33 – Hazardous and Offensive Development* and *State Environmental Planning Policy No 55 – Remediation of Land* are now part of *State Environmental Planning Policy (Resilience and Hazards) 2021*
Suitability of the Site	
• A detailed description of the history of the site, including the relationship between the proposed development, the existing facility and all development consents and approved plans previously and/or currently applicable to the Site	Section 2.3 Section 2.7 Section 2.7 Section 5.5 Section 3.3.1 and Section 3.5.1
• A detailed justification that the site can accommodate the increased throughput capacity at the recycling ecology park, having regard to the scope of the operations of the existing facility and its environmental impacts and relevant mitigation measures.	Section 2.5
Community and stakeholder engagement	
• A community and stakeholder participation strategy identifying key community members and other stakeholders	Chapter 6 Appendix H Engagement report
• Details and justification for the proposed consultation approach(s)	Section 6.2 Appendix H Engagement report
• Clear evidence of how each stakeholder identified in the community and stakeholder participation strategy has been consulted	Section 6.3 and Section 6.4
• Details of issues raised by the community and surrounding landowners and occupiers	Section 6.3.3

Secretary's Environmental Assessment Requirement	Location addressed in this EIS
• Clear details of how issues raised during consultation have been addressed and whether they have resulted in changes to the development	Section 6.4.3 Section 6.3.3 Section 6.5 Appendix H (Engagement report)
• Details of the proposed approach to future community and stakeholder engagement based on the results of consultation.	Section 6.5 and Section 6.6 Appendix H Engagement report
Waste management	
• A description of each of the waste streams that would be accepted at the resource recovery operation and the landfill, including maximum daily, weekly and annual throughputs and the maximum size for stockpiles	Section 2.7.2 Section 3.5.2 Section 2.7.5 Section 3.5.7
• Details of the source of the waste streams to strongly justify the need for the proposed increase in waste receival and processing capacity	Chapter 4 Section 2.7.2 Section 3.5.2
• A description of waste processing operation, including flow diagrams for each waste stream. The description should include information regarding the technology to be used, resource outputs, the quality control measures that would be implemented and the interactions between the resource recovery operations and the landfill operations	Section 2.7.3 Section 3.5.3 Section 2.7.4 and Section 3.5.6 Section 2.7.6 Section 3.5.8
• Details of how and where waste would be stored (including the maximum daily storage capacity of the site) and handled on site, and transported to and from the site including details of how the receipt of non-conforming waste would be dealt with	Section 2.7.5 Section 3.5.7 Section 2.7.6 Section 3.5.8
• Details of the development's waste tracking system for incoming and outgoing waste	Section 2.7.7 and Section 3.5.9
• Details of the quality of waste produced and final dispatch locations	Section 2.7.2 Section 3.5.2
• Details of the waste management strategy for construction and ongoing operational waste generated	Section 18.4
• The measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the *NSW Waste Avoidance and Resource Recovery Strategy 2014-2021*	Chapter 3 Chapter 4 Section 18.5
• Details of consistency with the EPA's Standards for Managing Construction Waste in NSW (April 2019).	Section 2.7.3 Section 3.5.3 Section 18.4.1
Air quality and odour	

Secretary's Environmental Assessment Requirement	Location addressed in this EIS
• A quantitative assessment of the potential air quality, dust and odour impacts of the development in accordance with relevant Environment Protection Authority guidelines. This is to include identification of existing and potential future sensitive receivers and consideration of cumulative local and regional impacts	Chapter 10 Appendix K (AQIA)
• The details of buildings and air handling systems and strong justification (including quantitative evidence) for any material handling, processing or stockpiling external to buildings	Section 10.4 Appendix K (AQIA)
• Details of proposed mitigation, management and monitoring measures during both the construction and operation stages of the development. This is to include strong justification for continued implementation of existing measures and any additional measures proposed as part of the development.	Section 10.5 Appendix K (AQIA)
Traffic and transport	
• Details of all traffic types and volumes likely to be generated during construction and operation, including details of the maximum numbers of each vehicle type per day and per annum	Section 3.4.5 and Section 8.4.1 Section 3.3.10 and Section 8.4.20 Appendix I (TIA)
• A description of key access / haul routes and traffic distribution over these	Section 08.4.2
• An assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections using SIDRA or similar traffic model	Section 8.4.20 Chapter 20 Appendix I (TIA)
• Details and plans of any proposed the internal road network, loading and unloading areas, on-site parking provisions, and sufficient pedestrian and cyclist facilities, in accordance with the relevant Australian Standards	Section 3.2 and Section 3.5.10 Section 8.4.2 Appendix E Concept Design Drawing Appendix F Architectural Drawings
• Details of the largest vehicle anticipated to access and move within the site, including swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site	Appendix I (TIA)
• Details of road upgrades, infrastructure works or new roads or access points required for the development, including how these interact with the existing or proposed road system.	Section 3.3.2 and Section 3.3.3
Noise and vibration	
• A quantitative noise and vibration impact assessment undertaken by a suitably qualified acoustic consultant in accordance with the relevant Environment Protection Authority guidelines which includes: – The identification of impacts associated with site emission and traffic generation at noise affected sensitive receivers	Appendix J (NVIA)

Secretary's Environmental Assessment Requirement	Location addressed in this EIS
– Details of noise monitoring surveys, background noise levels and noise emission levels of proposed activities	Section 9.2.3 Section 9.3.2 Section 9.4 Appendix J (NVIA)
– Consideration of annoying characteristics of noise and prevailing meteorological conditions in the study area	Section 9.4 Appendix J (NVIA)
– A cumulative impact assessment inclusive of impacts from other developments	Section 20.4
– Details and analysis of the effectiveness of proposed management and mitigation measures to adequately manage identified impacts, including a clear identification of residual noise and vibration following application of mitigation these measures and details of any proposed compliance monitoring programs.	Section 9.5 Appendix J (NVIA)
Soils and water	
• An assessment of potential surface and groundwater impacts associated with the development (both quantity and quality), including impacts associated with the new access points. This is to include potential impacts on watercourses, riparian areas, groundwater, and groundwater-dependent communities nearby	Chapter 14 Section 11.4 Section 12.4 Section 12.5 Appendix N (Surface Water Impact Assessment)
• A detailed site water balance including a description of the water demands and breakdown of water supplies, and any water licensing requirements	Section 12.5.3 Appendix N (Surface Water Impact Assessment)
• Details of existing and proposed stormwater/wastewater management system including the capacity of on site detention system(s), on site sewage management and measures to treat, reuse or dispose of water	Section 2.6.7 and 2.7.12 Section 3.3.9 and 3.5.14 Section 12.3.2 Section 12.5.2 Section 12.5.3 Appendix N (Surface Water Impact Assessment)
• Description of the measures to minimise water use	Section 12.5.3
• Description of the proposed erosion and sediment controls during construction	Section 11.4 Section 12.4.1 Section 12.6
• Characterisation of water quality at the point of discharge to surface and/or groundwater against the relevant water quality criteria. This is to include details of the contaminants of concern that may leach from waste into the wastewater and proposed mitigation measures to manage any impacts to receiving waters and monitoring activities and methodologies	Section 11.4 Section 12.2.2 Section 12.5.1 Section 12.6 Appendix N (Surface Water Impact Assessment)

Secretary's Environmental Assessment Requirement	Location addressed in this EIS
• Details of proposed surface and groundwater monitoring	Section 12.2.2 Section 12.6 Appendix N (Surface Water Impact Assessment)
• Characterisation of the nature and extent of any contamination on the site and surrounding area.	Section 11.3 Table 12-5 Appendix N (Surface Water Impact Assessment)
Infrastructure requirements	
• A detailed written and/or graphical description of infrastructure required on the site, including any upgrades required	Chapter 3
• Identification of any infrastructure upgrades required off-site to facilitate the development, including road pavement, and a description of any arrangements to ensure that the upgrades will be implemented in a timely manner and maintained	Section 3.4
• An infrastructure delivery and staging plan, including a description of how infrastructure on and off-site will be co-ordinated and funded to ensure it is in place prior to the commencement of construction	Chapter 3
• An assessment of the impacts of the development on existing utility infrastructure and service provider assets surrounding the site.	Section 3.3
Fire and incident management	
• Identification of the aggregate quantities of combustible waste products to be stockpiled at any one time	Sections 2.7.5
• Technical information on the environmental protection equipment to be utilised on the premises such as air, water and noise controls, spill clean-up equipment and fire (including location of fire hydrants and water flow rates at the hydrant) management and containment measures	Sections 2.7.12
• Details regarding the fire hydrant system and its minimum water supply capabilities appropriate to the site's largest stockpile fire load	Section 2.6.8
• Details of size and volume of stockpiles and their management and separation to minimise fire spread and facilitate emergency vehicle access	Sections 2.7.5 and 13.4.1
• Consideration of consistency with NSW Fire & Rescue *Fire Safety Guideline – Fire Safety in Waste Facilities* (Fire and Rescue NSW, 2020)	Section 2.6.8
• Detailed information relating to the proposed structures addressing relevant levels of compliance with Volume One of the National Construction Code (NCC).	Section 13.4.1

Secretary's Environmental Assessment Requirement	Location addressed in this EIS
Hazards and risk	
• A preliminary risk screening completed in accordance with *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development* and Applying SEPP 33 (DoP, 2011), with a clear indication of class, quantity and location of all dangerous goods and hazardous materials associated with the development. Should preliminary screening indicate that the project is "potentially hazardous" a Preliminary Hazard Analysis (PHA) must be prepared in accordance with *Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis* (DoP, 2011) and *Multi-Level Risk Assessment* (DoP, 2011).	Section 13.2 and 13.4 to 13.5
Urban design and visual	
• An assessment of the potential visual impacts of the project on the amenity of the surrounding area	Section 17.4
• A landscape plan detailing the use of native species from the relevant native vegetation communities in landscaping works.	Appendix R (Landscape plan)
Ecologically sustainable development	
• A description of how the proposal will incorporate the principles of ecologically sustainable development in the design, construction and ongoing operation of the development	Chapter 23 Chapter 22
• A description of the measures to be implemented to minimise consumption of resources, especially energy and water.	Section 23.5 Chapter 19 Chapter 12 Appendix N (Surface Water Impact Assessment)
Cultural heritage and Aboriginal cultural heritage	
• An Aboriginal cultural heritage assessment including a due diligence report prepared in accordance with Due diligence code of practice for protection of Aboriginal objects in NSW (OEH, 2010) or an Aboriginal Cultural Heritage Assessment Report (ACHAR)	Chapter 15 Appendix Q (Aboriginal due diligence assessment)
• Justification for the proposed assessment approach	
• A description of the outcomes of the assessment and details of any impacts on Aboriginal cultural heritage values.	
Biodiversity	
• An assessment of the proposal's biodiversity impacts in accordance with the *Biodiversity Conservation Act 2016*, including the preparation of a Biodiversity Development Assessment Report (BDAR) where required under the Act, except where a waiver for preparation of a BDAR has been granted.	Appendix P (BDAR) Chapter 14
Planning agreement/development contributions	
• Demonstration that satisfactory arrangements have been or would be made to provide, or contribute to the provision of, necessary	Section 3.3.11

Secretary's Environmental Assessment Requirement	Location addressed in this EIS
local and regional infrastructure required to support the development.	
Consultation	
• During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners. In particular you must consult with: – Blacktown City Council – Environment Protection Authority – Department of Planning, Industry and Environment, specifically: ▪ Environment, Energy and Science Group ▪ Water group and NRAR – NSW Fire and Rescue – Sydney Water – Transport for NSW (including former Roads and Maritime Services) – Surrounding local landowners and stakeholders – Any other relevant public transport, utilities or community service providers.	Section 6.3.3 Section 6.4.3 Appendix H (Engagement Report)
• The EIS must describe the consultation process and the issues raised and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.	Section 6.2 Section 6.4.3 Section 6.3.3 Section 6.5 Appendix H (Engagement Report)
References	
• The assessment of the key issues listed above must take into account relevant guidelines, policies, and plans as identified. While not exhaustive, the following attachment contains a list of some of the guidelines, policies, and plans that may be relevant to the environmental assessment of this proposal.	Chapter 25

Eastern Creek Recycling Ecology Park

Recycling Infrastructure Optimisation Project

Appendix B
EP&A Regulation checklist

June 2022

APPENDIX B

Environmental Planning and Assessment Regulation 2000 Checklist (now clauses 190 and 192 of Environmental Planning and Assessment Regulation 2021)

Requirement	Where addressed
6. Form of the environmental impact statement	
(1) An environmental impact statement must contain the following information—	
(a) the name, address and professional qualifications of the person by whom the statement is prepared	Statement of Validity
(b) the name and address of the responsible person	Statement of Validity
(c) the address of the land: (i) in respect of which the development application Is to be made, or (ii) on which the activity or infrastructure to which the statement relates is to be carried out	Statement of Validity
(d) a description of the development, activity or infrastructure to which the statement relates	Statement of Validity
(e) an assessment by the person by whom the statement is prepared of the environmental impact of the development, activity or infrastructure to which the statement relates, dealing with the matters referred to in this Schedule	Statement of Validity
(f) a declaration by the person by whom the statement is prepared to the effect that – (i) the statement has been prepared in accordance with this Schedule, and (ii) the statement contains all available information that is relevant to the environmental assessment of the development, activity or infrastructure to which the statement relates, and (iii) that the information contained in the statement is neither false nor misleading.	Statement of Validity
(2) The person preparing the statement must have regard to the following—	
(a) for State significant development—State Significant Development Guidelines	
(b) not applicable	
7. Content of the environmental impact statement	
(1) An environmental impact statement must also include each of the following:	
(a) a summary of the environmental impact statement	Environmental impact statement summary
(b) a statement of the objectives of the development, activity or infrastructure	Section 1.3
(c) an analysis of any feasible alternatives to the carrying out of the development, activity or	Section 4.3

Requirement	Where addressed
infrastructure, having regard to its objectives, including the consequences of not carrying out the development, activity or infrastructure	
(d) an analysis of the development, activity or infrastructure, including— (i) a full description of the development, activity or infrastructure, and	Chapter 3
(ii) a general description of the environment likely to be affected by the development, activity or infrastructure, together with a detailed description of those aspects of the environment that are likely to be significantly affected, and	Chapters 8 to 20
(iii) the likely impact on the environment of the development, activity or infrastructure, and	Chapters 8 to 20
(iv) a full description of the measures proposed to mitigate any adverse effects of the development, activity or infrastructure on the environment, and	Chapter 22 Chapters 8 to 20
(v) a list of any approvals that must be obtained under any other Act or law before the development, activity or infrastructure may lawfully be carried out	Chapter 5
(e) a compilation (in a single section of the environmental impact statement) of the measures referred to in item (d)(iv)	Chapter 22
(f) the reasons justifying the carrying out of the development, activity or infrastructure in the manner proposed, having regard to biophysical, economic and social considerations, including the principles of ecologically sustainable development set out in subclause (4).	Chapter 4 Chapter 23
(2) Subclause (1) is subject to the environmental assessment requirements that relate to the environmental impact statement.	
(3) Not applicable	
(4) The principles of ecologically sustainable development	Chapter 23

Eastern Creek Recycling Ecology Park

Recycling Infrastructure Optimisation Project

Appendix C
Owner's consent

June 2022

Dial-A-Dump (EC) Pty Limited

ABN: 76 115 345 769

Ph: 9737 0308 Fax: 9737 0351

PO Box 7, Enfield NSW 2136

22 February 2022

Industry Assessments Team
NSW Department of Planning and Environment
Locked Bag 5022
Parramatta NSW 2124.

Dear Sir/Madam,

Landowner consent for SSD-11606719 at the Eastern Creek Recycling Ecology Park - 1 Kangaroo Ave, Eastern Creek NSW

I would like to confirm that Dial-A-Dump (EC) Pty Ltd is the owner and operator of the site 1 Kangaroo Ave, Eastern Creek NSW. The applicant for SSD-11606719 is Dial-A-Dump (EC) Pty Ltd (a fully owned subsidiary of Bingo Industries Ltd).

Dial-A-Dump (EC) Pty Ltd are seeking approval to increase the throughput of the existing Eastern Creek Recycling Ecology Park (REP) (formerly known as the Genesis Waste Management Facility) from the current two million tonnes per annum throughput by an additional 950,000 tonnes per annum to a total of 2.95 million tonnes per annum. The Proposal would include upgrades to internal site infrastructure such as roads and stormwater, optimising the operation of the Eastern Creek REP by improving operational efficiency and environmental outcomes.

This letter confirms that Dial-A-Dump (EC) Pty Ltd, as the owner of the property, is supportive of the proposed development.

Should you require any further information, please do not hesitate to contact me on 0457 034 527 or by email: katie.mccallum@bingoindustries.com.au.

Your sincerely,

Katie McCallum

Senior Legal Counsel

On behalf of Dial A Dump EC Pty Ltd

Eastern Creek Recycling Ecology Park

Recycling Infrastructure Optimisation Project

Appendix D
Approved waste types

June 2022

APPENDIX D

Authorised waste types

Waste Type	Description	Activity
General solid waste (non-putrescible)	Acid Sulphate Soil and Potentially Acid Sulfate Soil that has been treated and meets the definition of General Solid waste (non-putrescible)	*Waste disposal*
Tyres	The tyre has a diameter of 1.2 metres or more; and/or the tyre has been shredded or had its walls removed; and/or the tyre was delivered to the premises as part of a domestic load.	*Waste disposal*
Asbestos waste	As defined in Schedule 1 of the POEO Act, as in force from time to time.	*Waste disposal*
General solid waste (non-putrescible)	As defined in Schedule 1 of the POEO Act, as in force from time to time.	*Waste disposal* *Waste storage*
VENM	VENM listed as key waste type for receival, sorting, recovery, processing (crushing grinding, or separating) and stockpiling VENM used for a range of operational purposes on site such as cover, road construction, fill and blending. "Recycled woodchip and mulch which complies with the exemptions under clause 51A of the POEO regulations 2005 (NSW) will be sold direct from the stockpiles or blended with recycled or VENM soil/sand to provide an organic soil mix."[1]	*Waste Storage* *Resource Recovery*
Paper and cardboard	Plastics and paper/ cardboard will be sorted, placed into bays and bins and stored until sold or transported from site for recycling by others. This also applies to paper and cardboard recovered through sorting processes	*Waste Storage and Resource Recovery*
Glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal	General Solid Waste (non-putrescible) that includes glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal. " Mixed loads delivered to the MPC/ WTS will be segregated by material type and placed in adequate, appropriately labeled bays and bins for transport to appropriate stockpiles for recycling" Co-mingled C&D and C&I waste consisting of metals, brick, concrete, plasterboard, soil, aggregates, plastics and a range of building and demolition wastes. These materials are delivered	*Waste Storage and Resource Recovery*

[1] The 2005 Exemptions have been replaced by the 2014 Orders and Exemptions except for mulch for which the replacement version is dated 2016

Waste Type	Description	Activity
	to the Materials Processing Centre (MPC) for classification and processing"	
Household waste from municipal or domestic clean up that does not contain food waste	General Solid Waste (non-putrescible) that includes household waste from municipal or domestic clean up that does not contain food waste.	*Waste Storage and Resource Recovery*
Office and packaging waste (e.g. paper, cardboard, plastics, glass, metal and timber)	Ferrous and non-ferrous metals recovered through the sorting process as well as plastics and paper/ cardboard will be sorted, placed into bays and bins and stored until sold. The Proposal Site can receive wood waste, metal, glass and plastic for activity of resource recovery and storage. All other office and packaging waste types are included within the scope of supporting approval documentation. C&I waste processed through the modified project would be separated into a number of product streams, including: • Soils and aggregates • Natural Timbers • Paper and Cardboard • Glass • Ferrous and Non-Ferrous Metals	*Waste Storage and Resource Recovery*
Non-chemical waste that is generated from manufacturing and services (including metal, timber, cardboard and paper)	Ferrous and non-ferrous metals recovered through the sorting process, as well as plastics and paper/ cardboard will be sorted, placed into bays and bins and stored until sold or transported from site for recycling by others" C&I waste processed would be separated into a number of product streams, including: • Soils and aggregates • Natural Timbers • Paper and Cardboard • Glass • Ferrous and Non-Ferrous Metals	*Waste Storage and Resource Recovery*

Waste Type	Description	Activity
Non-putrescible vegetative waste from agriculture, siviculture or horticulture	The Proposal Site has approval for receival, sorting, recovery and stockpiling of green waste. This would include vegetative waste from agriculture, siviculture or horticulture. Stockpile limits for include: • Green waste & timber for reuse – 20,000 tonnes • Shredded green waste and timber – 20,000 tonnes The Proposal Site has approval for recovery of garden waste.	*Waste Storage and Resource Recovery* *Composting*
Building and demolition waste comprising unsegregated material (other than material containing asbestos waste or liquid waste) including bricks, concrete (including cured concrete), paper, plastics, glass and metal, and unsegregated timber	The Proposal Site has approval for receival, sorting, recovery, processing (crushing grinding, or separating) and stockpiling. Material subject to theis process may include sand, gravel, rock, road base and demolition materials including bricks, concrete and tiles, with a processing capacity in excess of 150 tonnes per day." Co-mingled C&D and C&I material consisting of metals, brick, concrete, plasterboard, soil, aggregates, plastics and a range of building and demolition wastes. These materials are delivered to the Materials Processing Centre [MPC] for classification and processing." Recycled materials include base materials for buildings, landscaping (including green and timber/wood waste recycling), road construction, plumbing and drainage systems and recovered goods e.g. chairs, clean bricks and pavers.	*Waste Storage and Resource Recovery*