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Environmental Impact Statement Kariong Sand and Soil Supplies Sand, Soil and Building Materials Recycling Facility - SSD8660

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This Environmental Impact Statement has been prepared by the following staff of Jackson Environment and Planning Pty Ltd, Suite 102, Level 1, 25-29 Berry St, North Sydney NSW 2060; in association with Northstar Air Quality Pty Ltd, Waves Consulting, Cardno, Narla Environmental, Bushfire Planning & Design, Seca Solutions, Biosis, Moir Landscape Architecture, Clearsafe and Conzepts Landscape Architects.

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We declare that:

The statement has been prepared in accordance with clauses 6 and 7 of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*.

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 the information contained in the statement is neither false nor misleading.

Report version	Authors	Date	Reviewer	Approved for issue	Date
v1.0	Dr J.Lethlean, R. Loemker and Dr M. Jackson	02/07/18	Dr M.Jackson	Dr M.Jackson	02/07/18
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Executive Summary

About the development

This Environmental Impact Statement (EIS) has been prepared for the proposed development of a sand, soil and building materials recycling facility at 90 Gindurra Rd, Somersby (Lot 4 DP 227279). The facility located at the site is approved to receive sand and soil, which is blended into specific landscape products.

Kariong Sand and Soil Supplies (KSSS) is seeking to implement development consent for the site to enable the company to receive up to 200,000 tonnes of waste for recycling each year. The proposed development will seek to expand the current facility into a best-practice recycling plant that can process a range of sand, soil and building materials, and produce a wide range of landscape supplies. The proposed facility is ideally located to receive waste materials from the Central Coast region. This will assist in achieving the NSW Government's target of an 80% recycling rate for construction and demolition waste by 2021.

Purpose of the Environmental Impact Statement

The EIS study evaluates the social, environmental and economic impacts and benefits of the project. The EIS defines the context of the proposed development, and examines those issues considered to be relevant. This EIS considers the potential environmental effects of the proposal during construction and operation, and proposes mitigation measures to prevent, reduce or offset significant adverse impacts on the environment. The aims of this EIS are to:

- Identify all constraints affecting future development on the subject site;
- Consider the economic, social and environmental impacts of the proposed development; and
- Assess the capability of the subject site to support the proposed development.

In delivering this EIS, Jackson Environment and Planning Pty Ltd has undertaken all statutory planning assessments, including the preliminary hazard analysis and environmental risk assessment, and stakeholder consultation. We consulted with neighbours, Central Coast Council, NSW Department of Planning and Environment, NSW Environment Protection Authority, Roads and Maritime Services, NSW Fire and Rescue, NSW Rural Fire Service, NSW Department of Primary Industries and AusGrid. We have also prepared the waste management, waste and chemical impact assessments.

NorthStar Air Quality Pty Ltd has undertaken the specialist air quality assessment, and Waves Consulting has undertaken the noise and vibration impact assessment. Seca Solutions has undertaken the transport and traffic impact assessment. Cardno has undertaken the engineering design and the soil, water management and flooding study. Soil and contamination assessment has been undertaken by Clearsafe. The fauna and flora study has been undertaken by Narla Environmental. The fire and incident management study has been undertaken by Bushfire Planning & Design, and Aboriginal and historic heritage by Biosis. The visual impact assessment has been undertaken by Moir Landscape Architecture and the landscape concept design by Conzepts Landscape Architects.

The EIS has considered a range of social, environment and economic factors of the project, with a focus on Ecologically Sustainable Development principles. The study found that there were no significant environmental impacts that could not be mitigated by appropriate mitigation measures and management strategies.

The environmental assessment process has been used to inform the upgrade to the site and ensure operations will be sustainable and create minimal disruption to neighbours and the local community. Waste and soil receipt, processing and recycling operations have been designed to minimise traffic impact on local roads, effective management of wastes, protection of soils, protection of surface and ground water quality, and minimise noise and dust emissions.

Planning and approvals pathway

The EIS addresses the NSW Department of Planning and Environment's Secretary's Environmental Assessment Requirements (SSD8660). Consent is now sought for the proposal under the *Environmental Planning and Assessment Act 1979*.

This EIS has been prepared in accordance with the requirements of the *Environmental Planning and Assessment Act 1979*, and Clause 6 and 7 of the *Environmental Planning and Assessment Regulation 2000*. This EIS has been prepared in accordance with the requirements of the *Environmental Planning and Assessment Act 1979*, and Clause 6 and 7 of the *Environmental Planning and Assessment Regulation 2000*. The EIS has also been delivered to meet the Secretary's Environmental Assessment Requirements (SEARs), which were issued on 23 August 2017 by Kelly McNicol, Acting Director, Industry Assessments as a delegate of the Secretary.

Under Section 4.36 of the *Environmental Planning and Assessment Act 1979* and Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011*, the proposed development is considered to be a State Significant Development, requiring an EIS to be submitted with the development application. The development is also considered to be an Integrated Development and will require an Environment Protection Licence from the NSW Environment Protection Authority under Schedule 1 of the *Protection of the Environment Operations Act 1997*.

This EIS has assessed the potential environmental impacts associated with the modifications of KSSS's Resource Recovery Facility at 90 Gindurra Rd, Somersby. The proposal will facilitate the recycling of sand, soil and building materials in the Central Coast area.

General overview of the existing and proposed development

The facility will provide for additional sand, soil and building material recycling in the Central Coast region and will service areas across the Sydney region. The current and proposed development features of the site are listed in Table E1. The proposed development can be implemented with minimal adverse environmental impacts as demonstrated throughout this assessment and is justified in terms of overall economic benefits to both local, state and national economies.

The sand, soil and building materials recycling facility and landscape supplies business will better meet demand and assist in meeting community expectations for efficient and effective recycling of these materials on the Central Coast. The facility is in the IN1 General Industrial zone of Somersby Industrial Park. The facility will provide an important employment role, not only at the facility itself, but also in related industries such as suppliers of equipment, waste collection and recycling services.

The proposed development involves the development of a largely undeveloped industrial site, to enable the facility to be used for the receipt, processing and recycling of construction and demolition waste, as well as supply building and landscape supplies for local projects. The facility will require an Environment Protection Licence from the NSW Environment Protection Authority.

The facility will help achieve a significant reduction in solid waste to landfill and assist the NSW Government to reach its recycling target of 80% for construction and demolition waste by 2021. The proposal will have positive flow on effects throughout the local economy through the creation of 11 new direct jobs. An economic analysis of the project also suggests that development will inject \$73.8M into the Central Coast economy over the next 20 years.

Table E1. Summary of the ‘current’, ‘proposed’ and ‘net change’ in development features of the Kariong Soil and Sand Supplies Facility under SSD application 8660. The impacts of the proposed development have been carefully considered in this Environmental Impact Statement.

Site feature / operating conditions	Current (as per Development Consent DA0506/233/kl)	Proposed	Net change
Types of wastes that can be lawfully received at the facility for recycling	Sand and metal	<p>Sand and metal</p> <p>Soil - Virgin Excavated Natural Material (VENM)</p> <p>Soil – Non-putrescible solid waste meeting the CT1 threshold</p> <p>Concrete, tiles, masonry</p> <p>Asphalt</p> <p>Timber and stumps and rootballs</p> <p>Mixed building waste (masonry, concrete, brick, tiles, wood, timber and metal)</p>	<p>Soil - Virgin Excavated Natural Material (VENM)</p> <p>Soil - Non-putrescible solid waste meeting the CT1 threshold</p> <p>Concrete, tiles, masonry</p> <p>Asphalt</p> <p>Timber and stumps and rootballs</p> <p>Mixed building waste (masonry, concrete, brick, tiles, wood, timber and metal)</p>
Annual processing limit (tonnes per annum)	No limit	200,000 tonnes per annum	200,000 tonnes per annum
Maximum amount of waste that can be stored on-site at any point in time	No limit	50,000 tonnes	50,000 tonnes
Processing equipment	Not stated	<p><u>Outdoor operations:</u></p> <p>Crusher, grinder, shredder, screen, excavator, front-end loader (outdoors)</p> <p><u>Indoor operations:</u></p> <p>Front-end Loader, excavator, conveyor, stackers, trommel screen, station picking line with conveyor, overhead magnet, air blower, hopper and bagging machine</p>	<p><u>Outdoor operations:</u></p> <p>Crusher, grinder, shredder, screen, excavator, front-end loader (outdoors)</p> <p><u>Indoor operations:</u></p> <p>Front-end Loader, excavator, conveyor, stackers, trommel screen, station picking line with conveyor, overhead magnet, air blower, hopper and bagging machine</p>
Weighbridge	None	A new 26m above ground weighbridge will be installed adjacent to the front office	A new 26m above ground weighbridge will be installed adjacent to the front office
Fire suppression system	None	A fire hydrant is to be installed under Stage 1 of the project (DA52541/2017).	A fire hydrant is to be installed under Stage 1 of the project (DA52541/2017)

Site feature / operating conditions	Current (as per Development Consent DA0506/233/kl)	Proposed	Net change
Containment of firewater	None	To be provided by on-site detention system and site bunding	To be provided by on-site detention system and site bunding
Treatment of stormwater runoff from site	Existing stormwater dam in place.	A new OSD and stormwater storage basin will be constructed to capture stormwater and sediment. The site will be contoured to ensure all stormwater run-off is collected. Stored water will be used on site.	A new OSD and stormwater storage basin will be constructed to capture stormwater and sediment. The site will be contoured to ensure all stormwater run-off is collected. Stored water will be used on site.
Operating hours (operational hours)	6:30am to 5:30pm Monday to Saturday	<p>Access: 24 hrs / 7 days per week (to allow for occasional early / late delivery or truck movements which are unavoidable due to traffic delays)</p> <p>Opening hours (staffed): 7:00am to 6:00pm Monday to Saturday. Closed Sunday.</p> <p>Waste deliveries: 7:00am to 6:00pm Monday to Saturday. Closed Sunday.</p> <p>Waste processing (sorting, crushing, grinding, screening): 8:00am to 5:00pm Monday to Friday.</p> <p>Product sales: 7:00am to 6:00pm Monday to Saturday. Closed Sunday.</p>	Expansion of operating hours.

Staging of development

The proposed development will be staged, consisting of two defined project phases. Stage 1 will involve demolishing the existing sheds on the property and constructing an office building and warehouse. The two-stage development approach will enable the proponent in Stage 1 to occupy the site on a more permanent basis, by having an office building for staff to be based. It is noted that Stage 1 is currently underway and was approved by Central Coast Council as a local development under DA52541/2017 on 17/11/2017. The building design and location was modified and approved by Central Coast Council on 21/09/2018 under DA52541/2017.2.

Stage 2 will involve the following construction activities (subject of this SSD development application):

- Clear selected vegetation from the front half of the site as determined by the Fauna and Flora and Vegetation Management Plan;
- Conduct civil and drainage works to ensure the site directs storm water into an on-site detention system;
- Re-develop the existing storm water catchment dam;
- Install a hardstand across the operational areas of the site;
- Allocate areas for vehicle parking and manoeuvring;
- Install a weighbridge;

- Install storage bunkers for receiving incoming material for processing and bunkers for storing processed products ready for sale;
- Install sorting equipment into the Secondary Processing Warehouse;
- Install crushing and shredding machinery;
- Construct a noise barrier along the Eastern boundary of the site; and
- Construct two noise barriers within the operational areas of the site.

Operational description of the development

The site will be developed into a fully integrated, best practice facility for recycling of sand, soil and building materials. The site will comprise seven separate functional areas. A summary of operations and the functional areas of the site is provided in Figures E1 and E2 below.

Summary of Environmental Impact Assessment

Waste Management

The waste generated during the demolition / construction phase of the project is estimated to be 18,090 m³ of inert material (recycled concrete, rubble, and soil), 5 m³ of scrap metal, 100 m³ of woody garden organics and 3 m³ of municipal solid waste (MSW). Concrete will be processed into aggregate for construction of the operational pad for the development. The metal will be recycled at a scrap metal recycling facility, off-site. The woody garden organics will be shredded to produce mulch, and either used on-site or sold. The MSW will be removed from site and disposed in a licensed landfill.

During the operational phase, up to 200,000 tpa of waste materials will be received on site for recycling. The majority will be soil or source-separated inert material. It is estimated that the recycling rate for the facility will be approximately 95%, with approximately 5,225 tpa of residual waste being removed for disposal to landfill. The recovered material will be processed into various building and landscaping products and sold from the premises.

A Waste Management Plan is provided at Appendix H.

Water Impacts

The on-site storm water and erosion control measures will ensure that all storm water is captured and treated on-site.

Erosion on site will be limited by the use of concrete pavements, asphalt and crushed concrete hardstands, as well as vegetation in non-operational areas. Any sediment carried in the storm water will be captured in grassed swales, then in sediment inlet ponds, followed by storage in an OSD basin. Sediment is to be removed regularly. A separate sediment catchment sump will be installed to collect stormwater and sediment from the waste receive and inspection area.

The on-site detention storage is proposed as part of the storage pond in the south-western corner of the site as shown on the Stormwater Management Plan included in Appendix E: Site, civil design and stormwater plans. The total design storage volume of the OSD basin is 685m³. Overflow from the OSD basin will be filtered through a Stormwater 360® Jellyfish™ device (or similar) to further capture sediment before distribution into the undeveloped bushland in the southern end of the site via a level spreader. The estimated pollutant reduction by the OSD basin is within the targets set in the *Gosford Development Control Plan 2013*.

Groundwater will be protected through the operational areas being either sealed hardstand or through the use of bentonite impregnated geotextiles under areas covered in compacted crushed concrete.

The Water Cycle Management Plan and Soil and Water Management Plan Reports are provided at Appendix I.

Soils and Contamination

A site investigation was conducted that included a review of site history, site inspection and soil sampling.

The information obtained from the review of available site history materials and site inspection identified three (3) potential Areas of Environmental Concern (AEC):

1. AEC 1 - Fill Materials of Unknown Origin - Fill materials and natural soils within the site were tested for a range of potential contaminants of concern. The samples tested reported results below the adopted criteria for the proposed development excluding 20-8613/TP3 - 0.5m, which reported a zinc concentration of 575 mg/kg which slightly exceeded the adopted ecological investigation levels. Results from three neighbouring test pits (<20m away) and all other test pits from across the site were analysed to be below the adopted criteria. The Zinc result for this sample appears to be an outlier and is considerably lower than Health Investigation Levels. Therefore, no significant risk of chemical contamination is expected across the site.
2. AEC 2 - Asbestos Containing Material - During the sampling, multiple fragments of non-friable asbestos cement (AC) were identified on ground surfaces within the north-eastern section of the site adjacent the buildings as well as in the central section of site.
3. AEC 3 - Hazardous Building Materials - Due to the age of the onsite buildings and structures, it is likely that hazardous building materials including but not limited to asbestos containing materials and lead paint may be present within these structures.

Based on the scope and limitations of the investigation, in consideration of the site observations and sample analytical results, it is considered that the site is unlikely to pose a significant contamination risk with regards to chemical contamination, however ACM was identified on ground surfaces within the north-eastern and central sections of site. A series of recommended mitigation measures will be implemented to reduce the risk at the site.

A full copy of the Contaminated Site Assessment is provided at Appendix J.

Air Quality

A risk-based assessment of the potential construction phase air quality impacts indicates that the implementation of a range of mitigation measures would be required to ensure that the risks (both health and amenity) to the surrounding community would be low or not significant.

The dispersion model predictions associated with the operational phase of the project indicate that the existing and proposed operations can be performed without additional exceedances of the air quality criteria at any residential or non-residential receptor location surrounding the project site.

A range of emissions control measures would be implemented as part of the project operation and these are discussed in detail in the main body of the report. It is considered that the measures adopted represent best practice dust control, and although additional measures may be available (such as full enclosure), these have been respectfully considered to not be appropriate for use as part of the project. The measures which are adopted have been demonstrated to ensure that the environmental objectives are achieved.

It is further recommended that a campaign of fence-line air quality monitoring is performed to provide the EPA with assurance that the site can be operated with the best practice measures outlined in the report and without giving rise to unacceptable air quality impacts.

A full copy of the Air Quality Impact Assessment is provided at Appendix K.

Transport and Traffic

The level of operation, by 2025, is estimated to generate up to 164 vehicle trips per day consisting of staff operational vehicles, 12 tonne tippers, 32 tonne truck and dog or semis and 40 tonne B-Doubles. Over an average 8 hour working day this equates to 21 trips per hour. However, as the facility will be open for longer (11 hours per day), this is expected to be a maximum hourly traffic rate.

The site operator is anticipating that 25% of materials entering the site will come from Sydney while the remainder will be sourced locally on the Central Coast. It is expected that 100% of the products leaving the site will be used in the local area. These will be bulk loads transported in the various heavy vehicle classes listed above. There will be no sales direct to the public.

The existing road network and major intersections are currently operating at a good level of service with spare capacity and the traffic generated by the proposed development will be distributed to the road network over an 8 hour working day. The additional traffic is expected to have only a minor impact on the LoS of each of these roads and they will still be operating within their existing capacity.

From the route nominated, it is also clear that these additional trips will not have any significant impact on the operational performance of the intersections at Central Coast Highway / Kangoo Road. The intersections of the Central Coast Highway / Wisemans Ferry Road and Wisemans Ferry Road / Gindurra Road have been assessed and as each of these intersections is currently operating at acceptable levels of service with sufficient spare capacity to cater for the additional traffic generated by this proposed development the impact on the future development is acceptable.

The existing access has been reviewed on site and, given the 90 degree bend at Debenham Road, reducing vehicle speeds to less than 40km/hr sight lines at this location is appropriate.

To facilitate the right turn movement into the site it is recommended that the existing centre line marking in Gindurra Road be relocated a minimum of 3 metres south (towards the site) to provide sufficient width for a right turn lane into the site. The right turn lane shall provide sufficient storage for two B-Doubles (60 metres) with “No Stopping” signs installed. Management of vehicles internal to the site through the use of queuing/waiting areas, traffic lights and boom gates to control access to the weighbridge is described.

A full copy of the Traffic Impact Assessment is provided at Appendix L.

Noise and Vibration

A noise and vibration assessment, including noise modelling, was conducted for the proposed development. The assessment found that the predicted noise emissions from the site to the surrounding environment are low. The proposed development satisfies the Project Noise Trigger Levels (PNTLs) of the NSW Noise Policy for Industry (NPI) of the NSW Environment Protection Authority during all the time periods, providing the following noise mitigation measures are included:

- 5m high noise barriers along the eastern site boundary;
- 3m high noise barriers inside the site – one adjacent to the processing zone and another two adjacent to the landscaping storage zone and tip and spread waste inspection area;
- Office/warehouse building façade construction to provide sound insulation;
- Processing building to have all doors and openings completely closed during noisy activities; and

- Processing building mechanical equipment (AC units etc.) should have a maximum aggregate sound power level of 80 dB L_{WA} .

The study concluded that the proposed materials processing facility is a complying development with respect to noise and vibration impacts and is, therefore, suitable for construction and operation.

A full Noise and Vibration Impact Assessment is provided at Appendix N.

Flora and Fauna

In order to facilitate the proposed works, the removal of native vegetation is required. To facilitate development of the site through each stage, the complete clearing of the entire subject site (development area) has been assumed, except for a 10 m protected buffer surrounding a population of the threatened flora species, *Melaleuca biconvexa*. A total of 2.50 ha of native vegetation is proposed to be directly impacted by the development.

Two species credit species have been confirmed on site:

1. Eastern Pygmy-possum, and
2. *Melaleuca biconvexa*

Impacts to Eastern Pygmy-possum are anticipated within vegetation zone 2 (*Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast in moderate to good condition*). A total impact of 1.41 ha to Eastern Pygmy-possum is calculated.

Fifteen (15) individuals of *Melaleuca biconvexa* have been identified on site. The population is restricted to the western edge of the Subject Site. The assessment found that no impacts are anticipated to this species as a result of the proposed development.

The proposed development has been assessed consistent with the Framework for Biodiversity Assessment, including the preparation of a site scale vegetation map and completion of the six Biometric plots and transects. The results of the assessment found that:

- 116 ecosystem credits area required;
- 28 Eastern Pygmy-Possum credits are required.

The proponent will now explore the generation of credits from an on-site Biodiversity Stewardship site, before considering other options such as the purchase of credits from the market or payment to the Biodiversity Conservation Trust.

A full copy of the Flora and Fauna Assessment is provided at Appendix O.

Fire Safety

The proposed development was assessed against the potential threat of bushfire. The proposed works relate to the construction of four unenclosed, non-habitable structures (aggregate storage bay, landscape storage bay, waste receival bay and waste storage bay). The nominated asset protection zones relate to achieving a maximum expected radiant heat load of 29 kW/m². This intent is achieved for the landscape storage bay and waste receival bay, however cannot be achieved for the proposed aggregate storage bay. The proposed aggregate storage bay on the north western end of the site is located within 5m of the western boundary. In the event of a bushfire, the aggregate storage bay could be exposed to flame contact. However, the concrete storage bays should provide some radiant heat shielding against any potential fire running from the west and south west. The proposed waste storage bay on the south eastern end of the development is located within 2m of the eastern boundary. An Asset Protection Zone (APZ) cannot be

provided to the east of this structure. However, the land to the east is managed and the proposed 5m high concrete block wall / acoustic barrier will provide adequate bushfire separation from the land to the east.

The bushfire consultant recommends (where possible) that a minimum 15m APZ is provided around each proposed structure. This would provide a non-vegetated buffer to prevent potential bushfire spreading onto the subject site or fire spreading from the subject site onto the adjoining allotments. The recommended APZs are achieved for all proposed structures except for the proposed aggregate storage bay. This is a concrete open structure containing non-combustible aggregates. This structure and deficient APZ has zero influence with regards to bushfire behaviour or bushfire protection.

The proposed blending and processing areas are not defined by any building works. All proposed built structures are non-combustible and suitably located. In the event of a bushfire it is our view that the proposed development will not influence bushfire behaviour and will not increase bushfire risk for any adjoining properties.

All proposed works are to be constructed from non-combustible materials. The nominated asset protection zones are deemed to be adequate. Site access, including access via the public road system is suitable for emergency response vehicles. The development complies with Planning for Bushfire Protection (2006) with regards to the provision of water. The requirements for electricity and gas (if applicable) can also be complied with. We recommend that a bushfire emergency evacuation plan is prepared such that employees and visitors are informed about suitable egress routes away from the site in the event of bushfire. Compliance with the NCC (2016) via compliance with AS3959, the Australian Standard for the Construction of Buildings in Bushfire Prone Areas can also be achieved.

A full copy of the Bushfire Hazard Assessment is provided at Appendix P.

Heritage

Historical heritage

The assessment has identified that the study area likely contains the archaeological remains of the 1920s cottage and associated buildings in the north eastern section. The significance assessment has identified that these archaeological remains do not contain any significant fabric or research potential and therefore does not require any management. The southern border of the study area is adjacent to a state listed conservation area, Mount Penang Parklands and as such required an assessment of possible impacts resulting from the proposed development. The works are confined to the northern section of the study area with no plans to use the southern section. The significance of the Mount Penang Parklands includes the visual relationship of the conservation area with its surrounds. Therefore, the southern portion of the study area should remain undeveloped to minimise any visual impacts. Built infrastructure within the study area should not exceed the height of extant buildings. It should also be mentioned that cumulative impacts of any future developments within the surrounds of Mount Penang Parklands will contribute the loss of the Parklands significance and should therefore be managed appropriately.

A copy of the Historical Heritage assessment is provided at Appendix Q.

Aboriginal heritage

As part of the Aboriginal archaeological assessment, background research was undertaken for the study area, including a search of the Aboriginal Heritage Information Management System (AHIMS) database and a review of regional and local archaeological survey reports. The AHIMS search identified 35 Aboriginal archaeological sites within a 5 x 5 kilometre search area that encompassed the study area. None of these recorded sites were located within the study area. Previous surveys within the local and regional areas and their findings have been assessed in association with the geology and soil landscape characteristics of the study area to provide a series of predictive statements of the

study area's archaeological potential. From the results of the desktop assessment the study area was assessed to possess low to moderate archaeological potential, as it did not possess landscape features that were closely associated with site distribution patterns for the region.

An archaeological survey of the study area was undertaken on the 2 February 2018, with two representatives of the Darkinjung Local Aboriginal Land Council, Anthony Freeman and Timothy Oliver. The field investigation was conducted in accordance with requirements 5 to 10 of the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW 'the code' (DECCW 2010). The field investigation involved the recording of the disturbances within the study area, and focused on the identification of areas that may possess potential for Aboriginal archaeological sites and objects. The exposure and ground surface visibility (GSV) within the study area was also noted. Areas of exposure were investigated in order to identify any Aboriginal objects/sites that might be present upon the surface. The study area was observed to be highly disturbed by human activity within the area. Poor levels of ground surface visibility and the lack of appropriate sandstone exposures and overhangs suitable for rock engravings, shelters and grinding grooves within the area also contributed to the low potential for identifying these dominant site types within the study area.

The results of the Aboriginal Heritage assessment (Appendix R) indicated that the study area possessed low archaeological potential.

Visual impacts

The existing landscape character is a mix of industrial development, rural properties and bushland ridgelines and corridors. The scale of the built form in the proposal is small compared to existing industrial developments in the Somersby Industrial Area and is more in keeping with adjacent rural residential developments.

The implemented design principles of this report seek to avoid, reduce and where possible, remedy adverse effects on the environment arising from the proposed development. Implementation of the mitigation measures, which propose a combination of primary mitigation measures (site planning principles) and secondary measures (landscaping, street trees, colour and material selections) are proposed to reduce localised negative impacts.

With the implementation of the recommended mitigation measures, the proposed development could be undertaken whilst maintaining the core landscape character of the area and have a negligible visual impact on the surrounding visual landscape.

The full Visual Impact Assessment is provided at Appendix S. A copy of the Landscape Plan is provided at Appendix F.

Waste and chemicals

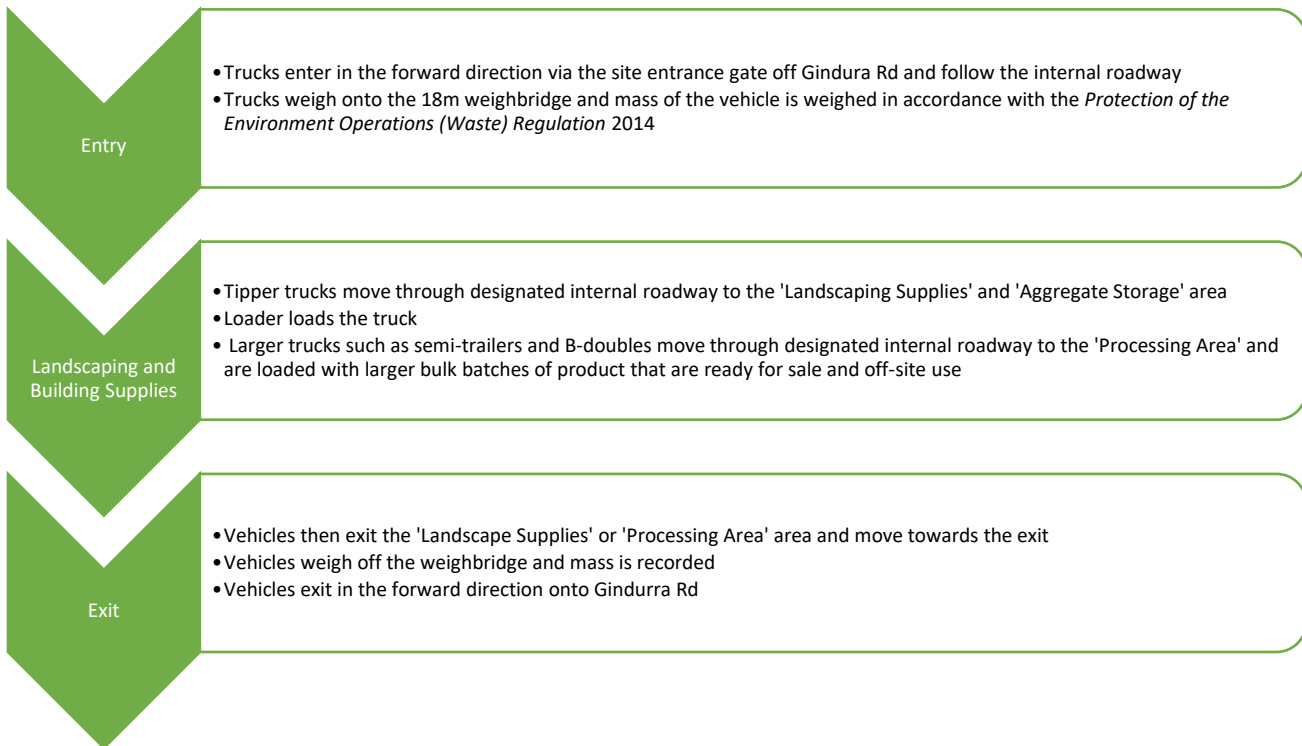
An assessment was conducted of the risk posed by the management and handling of chemicals during the construction and operational phases of the project. Waste management issues are addressed in detail in Chapter 6 of the report. The assessment found that the risk of harm due to chemicals spills and leaks during the construction and operational phases of the project is deemed low. Containment measures and clean-up of the incident will address the negligible harm to environment, consistent with existing pollution incident response procedures in place at the site.

A range of mitigation measures are proposed to minimise impacts from chemicals during the different stages of the project. These measures will help mitigate against the impacts of a chemical spill or fire, thereby reducing the potential for harm to receiving waterways.

Figure E1. Process flow chart for recycling operations.



Figure E2. Process flow chart for landscaping and building supplies part of the operation.



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Appendix C: Secretary's Environmental Assessment Requirements (SEARs)

Appendix D: Site survey

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Appendix G: Quantity Surveyor's report

Appendix H: Waste Management Plan

Appendix I: Water Cycle Management Plan and Soil and Water Plan

Appendix J: Soils and Contamination Impact Assessment

Appendix K: Air Quality Impact Assessment

Appendix L: Traffic Impact Assessment

Appendix M: Proposed amendment to Gindurra Rd near site entrance

Appendix N: Noise and Vibration Impact Assessment

Appendix O: Flora and Fauna Impact Assessment

Appendix P: Bushfire Hazard Assessment

Appendix Q: Historical Heritage Assessment

Appendix R: Aboriginal Heritage Assessment

Appendix S: Visual Impact Assessment

Appendix T: Pollution Incident Response Management Plan

Appendix U: Consultation Report and Responses

Appendix V: Owner's Consent

1 Introduction

This Environmental Impact Statement (EIS) has been prepared for the proposed development of a sand, soil and building materials recycling facility at 90 Gindurra Rd, Somersby (Lot 4 DP 227279).

The facility located at the site is approved for receipt of sand and soil, which is blended into specific landscape products.

Kariong Sand and Soil Supplies (KSSS) is seeking to implement appropriate development consent for the site to enable the company to receive up to 200,000 tonnes of waste for recycling each year. The proposed development will seek to expand the current facility into a best-practice recycling facility that can process a range of sand, soil and building materials, and produce a wide range of landscape supplies. The proposed facility is ideally located to receive waste materials from the Central Coast region. This will assist in achieving the NSW Government's recycling target of an 80% rate for construction and demolition waste by 2021.

Under Section 4.36 of the *Environmental Planning and Assessment Act 1979* and Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011*, the proposed development is considered to be a State Significant Development, requiring an EIS to be submitted with the development application.

Central Coast Council has also advised in a pre-lodgment meeting that under the *Protection of the Environment Operations Act 1997*, the proposed development will require concurrence and licensing from the NSW Environment Protection Authority.

The company is committed to complying with all laws that affect its operations and understands that development approval and appropriate licensing is required prior to the proposed development occurring. In this regard, pursuant to Part 2, Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*, KSSS, as the Proponent, has prepared this Environmental Impact Statement to support its application for development consent.

1.1 Overview

1.1.1 Proposed development

The development project is to establish a sand, soil and building materials recycling facility at the site. It is proposed that the KSSS site be developed to receive, process and store up to 200,000 tonnes per annum of soil, sand and building materials. The complete development would require: installation of security fencing; installation of a 26m weighbridge adjacent the workshop and warehouse; construction of a hardstand area for processing material; construction of storage bays for processed material; construction of hardstand areas suitable for large vehicles; installation of noise barriers; stockpile areas for bulk landscaping product storage; fit out of the secondary sorting warehouse building; grassed swales for sediment and nutrient removal from stormwater; on-site detention system for storm water; and landscaping.

The main operational area will be divided into three main areas; one for receiving and processing incoming material, a secondary sorting warehouse for further waste sorting, and another area for storage of final civil and landscape product and sale of material. It is anticipated that a total final area of the developed operational area on the site will be approximately 5.6ha.

In addition to the sand, soil and building materials recycling facility, a building and landscape supplies business will operate on the site. This will sell recycled products from the recycling operations to commercial customers. It is anticipated that the building and landscape supplies business will bring an additional 10,000 tpa of products onto the site for sale. These products are likely to be mulches, gravels, sands, specialist soils etc.

1.1.2 Purpose of the Environmental Impact Statement

The EIS has prepared by Jackson Environment and Planning Pty Ltd on behalf of Kariong Sand and Soil Supplies. It presents the findings of a comprehensive environmental evaluation, which has been undertaken to establish the potential impacts associated with the development of a 200,000 tpa sand, soil and building materials recycling facility at 90 Gindurra Rd, Somersby.

The EIS study evaluates the social, environmental and economic impacts and benefits of the project. The EIS defines the context of the proposed development, and examines those issues considered to be relevant. This EIS considers the potential environmental effects of the proposal during demolition, construction and operation, and proposes mitigation measures to prevent, reduce or offset significant adverse impacts on the environment. The aims of this EIS are to:

- Identify all constraints affecting future development on the subject site;
- Consider the economic, social and environmental impacts of the proposed development; and
- Assess the capability of the subject site to support the proposed development.

In delivering this EIS, Jackson Environment and Planning Pty Ltd has undertaken all statutory planning assessments, including the preliminary hazard analysis and environmental risk assessment, including stakeholder consultation. We consulted with neighbours, Central Coast Council, NSW Department of Planning and Environment, NSW Environment Protection Authority, Roads and Maritime Services, NSW Fire and Rescue, NSW Rural Fire Service, NSW Department of Primary Industries and AusGrid. We have also conducted the waste management, waste and chemical impact assessments.

NorthStar Air Quality Pty Ltd has undertaken the specialist air quality assessment, and Waves Consulting has undertaken the noise and vibration impact assessment. Seca Solutions has undertaken the transport and traffic impact assessment. Cardno has undertaken the engineering design and the soil, water management and flooding study. Soil and contamination assessment has been undertaken by Clearsafe. The fauna and flora study has been undertaken by Narla Environmental. The fire and incident management study has been undertaken by Bushfire Planning & Design, and heritage by Biosis. And the visual impact assessment has been undertaken by Moir Landscape Architecture and the landscape concept design by Conzepts Landscape Architects.

The EIS addresses the NSW Department of Planning and Environment's Secretary's Environmental Assessment Requirements. Consent is now sought for the proposal under the *Environmental Planning and Assessment Act 1979* from the Minister for Planning.

This EIS has been prepared in accordance with the requirements of the Environmental Planning and Assessment Act 1979, and Clause 6 and 7 of the *Environmental Planning and Assessment Regulation 2000*. The EIS has also been delivered to meet the Secretary's Environmental Assessment Requirements (SEARs), which were issued on 23 August 2017 by Kelly McNicol, Acting Director, Industry Assessments as a delegate of the Secretary (Appendix C).

1.1.3 The proponent

Kariong Sand and Soil Supplies, owned by The Davis Family, is the Proponent seeking a development consent to upgrade its existing Landscaping Supplies business to incorporate a sand, soil and building materials recycling facility. The site was purchased in January 2017. Prior to that, there had been only limited development and activity at the site, despite its IN1 zoning and location within the Somersby Industrial Estate.

The Davis Family also own a successful earthmoving business, Davis Earthmoving & Quarrying Pty Ltd (ABN: 89001288400). The Proponent has a sound understanding of the industry and has the resources to ensure the new facility is constructed to and operates at best practice.

1.1.4 Cost of the development

Based on the proposed development requirements, the total capital value of the project is estimated to be \$9,197,000 excluding GST (see Appendix G for Capital Investment Valuation report). This is a significant capital investment by a family owned company, which will create an estimated 5 jobs in construction (over a 3-month period), providing benefits to the environment and local economy of Somersby and the Central Coast.

1.1.5 Secretary's Environmental Assessment Requirements (SEARs)

The SEARs for the proposed development were issued by the NSW Department of Planning and Environment on 23 August 2017 to enable the EIS to commence.

The key project issues identified by the Secretary for consideration in the EIS are given in Table 1.1. Note that all these requirements have been addressed in the EIS, and the relevant sections are highlighted for easy cross-referencing.

Table 1.1. SEARs addressed in the EIS report.

Secretary's Environmental Assessment Requirements	EIS Section where this requirement is addressed
Detailed description of the development	Chapter 2 – Description of the Proposed Development
Demonstrate that the site is suitable for the proposed use in accordance with State Environmental Planning Policy No. 55 – Remediation of Land	Chapter 8 - Soils and Contamination Impact Assessment Appendix J: Soils and Contamination Impact Assessment
Consideration of all relevant planning instruments	Chapter 2 - Description of the Proposed Development, Strategic Context, Hazard and Risk Analysis
Consideration of issues discussed in Attachment 2 of the SEARs (public authority responses to key issues)	Chapters 6 to 16
Risk assessment of the potential environmental impacts of the development	Chapter 3 - Environmental risk assessment of the potential impacts of the development identifying key issues for assessment
Detailed assessment of the key issues:	
Waste management	Chapter 6 - Waste Management Appendix H: Waste Management Plan
Traffic and transport	Chapter 10 - Traffic and Transport Appendix L: Traffic Impact Assessment
Air quality and odour	Chapter 9 - Air quality Appendix K: Air Quality Impact Assessment
Fire and incident management	Chapter 13 - Fire Safety Appendix P: Bushfire Hazard Assessment
Noise and vibration	Chapter 11 - Noise and Vibration Impact Assessment Appendix N: Noise and Vibration Impact Assessment
Soil and water	Chapter 7 - Water Impact Assessment Appendix I: Water Cycle Management Plan and Soil and Water Plan
Flora and fauna	Chapter 12 - Flora and Fauna Appendix O: Flora and Fauna Impact Assessment
Hazards	Chapter 16 - Waste and Chemicals Impact Assessment Appendix T: Pollution Incident Response Management Plan
Heritage	Chapter 14 - Heritage Appendix Q: Historical Heritage Assessment Appendix R: Aboriginal Heritage Assessment
Visual impacts	Chapter 15 - Visual Impact Appendix S: Visual Impact Assessment
Consolidated summary of all the proposed environmental management and monitoring measures	Chapter 17 - Compilation of mitigation measures

Secretary's Environmental Assessment Requirements	EIS Section where this requirement is addressed
Quantity surveyor report providing a detailed calculation of the capital investment value and a close estimate of the jobs that will be created during the construction and operational phases of the development.	Chapter 4 - Capital investment value
Engineering design	Appendix E: Site, civil design and stormwater plans
Landscape concept design	Appendix F: Landscape design plans
Consultation	Chapter 5 - Consultation Appendix U: Consultation Report and Responses

1.2 Project team

Jackson Environment and Planning Pty Ltd engaged a project team on behalf of Kariong Sand and Soil Supplies to undertake the design and specialist investigations for the EIS. The role of each team member is given below:

- Town planning – Jackson Environment and Planning Pty Ltd;
- Community consultation – Jackson Environment and Planning Pty Ltd;
- Waste management – Jackson Environment and Planning Pty Ltd;
- Air quality – NorthStar Air Quality Pty Ltd;
- Noise and Vibration – Waves Consulting;
- Soil, water and flooding study – Cardno;
- Soils and contamination – Clearsafe;
- Flora and Fauna – Narla Environmental;
- Hazards – Jackson Environment and Planning Pty Ltd;
- Fire and incident management – Bushfire Planning & Design;
- Transport and traffic – Seca Solutions;
- Heritage – Biosis;
- Visual impacts - Moir Landscape Architecture;
- Engineering design – Cardno; and
- Landscape concept design – Conzepts Landscape Architects.

1.3 Consultation

As part of the EIS preparation process, a comprehensive council, agency and community consultation program has been undertaken in accordance with the Department's SEARs requirements. The consultation strategy and findings are documented in Chapter 5, and involvement engagement with:

- Central Coast Council;
- NSW Environment Protection Authority;
- NSW Department of Planning and Environment;
- NSW Office of Environment and Heritage;
- Roads and Maritime Services;
- NSW Fire and Rescue;
- NSW Department of Primary Industry;
- Ausgrid; and
- And a total of 45 businesses and nearby residents within the area.

1.4 Accompanying documentation

The body of the report provides details of the proposed development and a summary of the findings of each of the environmental studies. The details of the environmental assessments for each issue is provided in the individual reports attached to this report as appendices.

The documentation attached to this report includes:

- Original development consent;
- Section 149 certificates;
- SEARs requirements;
- SEPP55 Contaminated site assessment;
- Civil works plan and proposed site layout;
- Landscape concept plan;
- Waste management plan;
- Air quality assessment report;
- Noise assessment report;
- Traffic assessment report;
- Bushfire Hazard report;
- Flora and fauna assessment report;
- Hazards assessment;
- Heritage assessment report;
- Visual impact assessment report; and a
- Quantity surveyor report.

2 Description of the Proposed Development, Strategic Context, Hazard and Risk Analysis

2.1 Site history and approvals

The site was approved by Gosford City Council in 1992 as Sand and Metal Recycling Facility (DA 15337). The Development Consent is provided as Appendix A. In 1992, the site was owned by another party. The site was purchased by its current owners in January 2017.

Over the past 25 years, the site has undergone minimal development. Most of the site is bushland, with two areas cleared and in use. The original consent permitted an operational area of approximately 10,000 m². An additional area of approximately 14,000 m² was subsequently cleared and is currently being used as a processing and sorting area. The Development Consent does not specify a limit on the amount of material that can be received at the site. However, as the site is not covered by an Environment Protection Licence, and there is limited space for processing, development consent is required to expand the operations at the site.

The current facility is approved for receipt of sand, soil and metal for landscaping supplies. The current development consent (DA15337/1992) has no limit on the quality of materials that can be received and processed for sale.

On 17/11/17, the owner sought development approval for Stage 1 of the development works under DA52541/2017 from Central Coast Council (see Appendix A). This development consent provides permission for construction of a new shed with offices & amenities & driveway. The building design and location was modified and approved by Central Coast Council on 21/09/2018 under DA52541/2017.2. Under this modified DA, the building was moved 18 m west of the original proposed location under DA52541/2017, and the front awning has been enclosed. This consent is provided in Appendix A. It is noted that the proposed development under Stage 2, which is the focus of this SSD application, complements Stage 1 of the development. It is further noted that the most recent DA does not refer to a processing limit at the site.

In the absence of a specified processing limit imposed through the planning process, the processing throughput at the site is limited by environmental legislation, which is discussed in further detail in Section 2.6.5. In practice, very little processing will occur at the site until it is developed.

2.2 Site description

The KSSS site is currently operated as a soil and sand recycling business, located at 90 Gindurra Rd, Somersby, NSW. Recycled sand and soil is sold for landscaping. The site's current development approval and infrastructure limits the amount of material that can be accepted and processed (screened and sorted) at the site.

The site currently has development consent as a 'Sand and Metal Recycling Facility', which was originally approved under DA 15337 on 28/02/1992 (See Appendix A). The current consent permits the receiving of soil and sand, screening, landscaping material storage in outdoor concrete block bays and machinery parking at the front of the site. There are some structures on the site.

The total site covers an area of approximately 10.8 hectares. Only approximately 2.4ha at the front of the site is in use. The remainder of the site is bushland. It is proposed that the back (Southern) half of the site remain bushland in the new development.

2.2.1 Local context

The site is located on the eastern edge of the Somersby Industrial Park, located on the Somersby Plateau section of the Hunter Range on the Central Coast of New South Wales. The Somersby Industrial Park (SIP) is approximately 300 hectares in size and is located four to five kilometers west of Gosford.

The key values of the Somersby Industrial Park are¹:

- Economic values that provides substantial employment and industrial development opportunities;
- Ecological and environmental values relating to the remnant native vegetation which provides significant habitat and linkages for a range of threatened flora and fauna species as well as other species; and
- Aboriginal heritage values arising from previous indigenous occupation of the area and represented by unique rock art and culturally significant sites.

The Somersby Industrial Park is bisected by the Sydney-Newcastle F3 freeway which was constructed in the 1980s, and there are direct connections to the F3 from the Somersby Industrial Park. The SIP is also served by a number of internal roads that provide access to all allotments in the park.

Early settlement in the Somersby area occurred in the later 1800s. The Somersby area was exploited for timber and for the resin of the grass trees. When land subdivision took place, a number of settlers moved into the area and established orchards and other agricultural activities.

Around 1910, there was relatively little land under cultivation. Post-WW1, the extent of land cleared increased significantly, although it still remained confined within the general bounds of the SIP.

The most significant alterations to the landscape occurred following the gazettal of the industrial park in 1981. By 1999 only a few isolated pockets of untouched bushland remained with the majority of the SIP having been built upon, cleared of trees and/or shrub understory cleared by heavy machinery.

The SIP was officially opened in June 1980. In July 1981, Local Environmental Plan (LEP) No. 22 at the time was gazetted, which zoned the majority of the SIP for General Industrial 4(a1) with a small area zoned for Business 3(a2). The area is now zoned IN1 General Industrial under the *Gosford Local Environmental Plan 2014*.

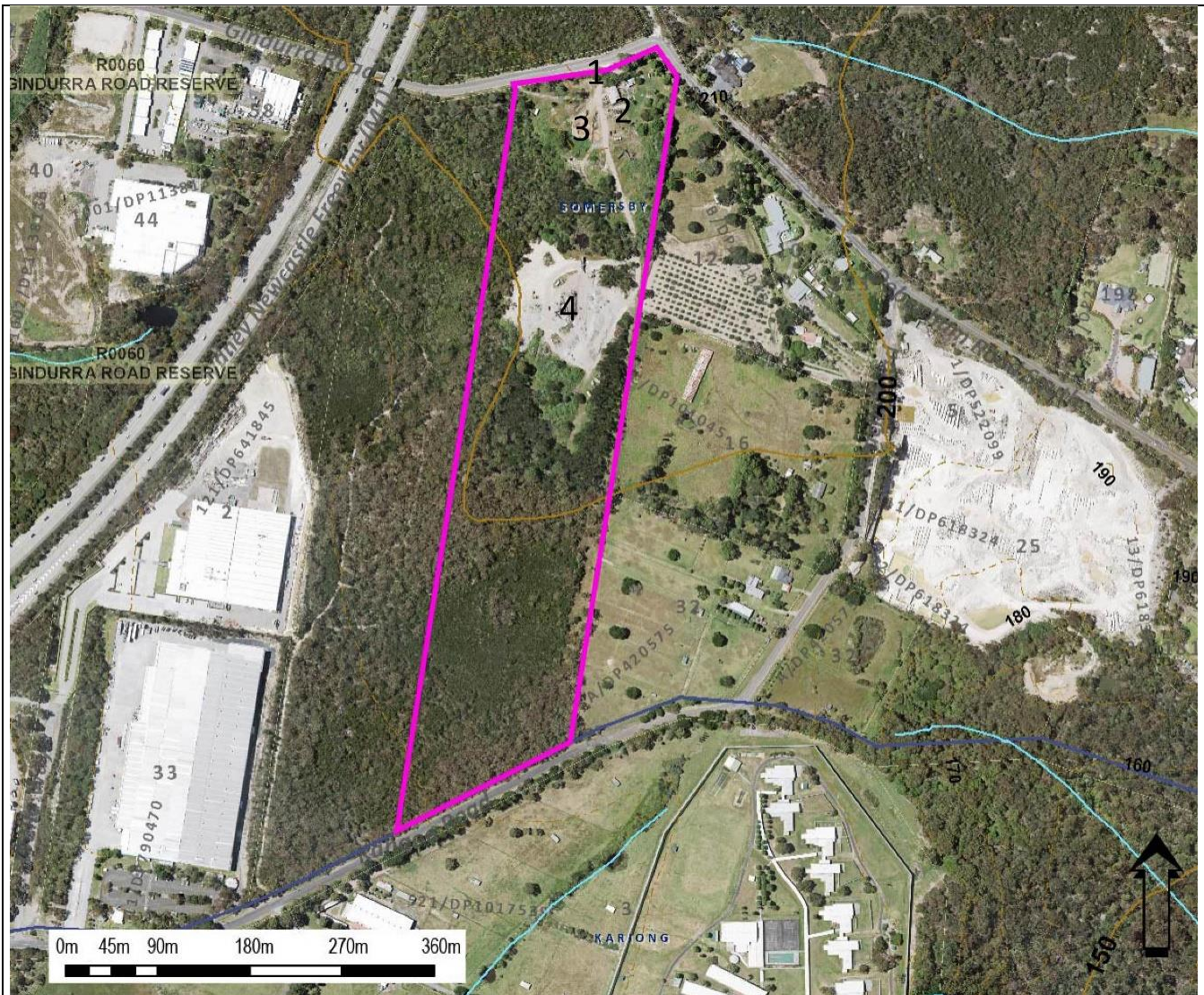
Figure 2.1 shows an aerial view of the site, with the current development at the site. Only a limited area has been cleared. Figure 2.2 shows the land use zoning for the site, which is IN1 General Industrial. The site is part of the Somersby Industrial Estate. Figure 2.3 and Figure 2.4 show the status of the site.

There are several buildings on the site, consisting of an old dwelling and sheds. These will be demolished and replaced with a new warehouse and office building under DA52541/2017.2. That development is subject to a separate development approval as described in Section 2.1 and is not part of this project.

There is a small pond located at the centre of the site, and a dam on the western boundary of the site (overgrown with vegetation). No formal stormwater drainage system exists on the site.

¹ Connell Wagner (2005). DRAFT Plan of Management Somersby Industrial Park. NSW Premier's Department and Gosford City Council, June 2005. Internet publication: <http://search.gosford.nsw.gov.au/documents/00/01/81/47/0001814731.pdf>

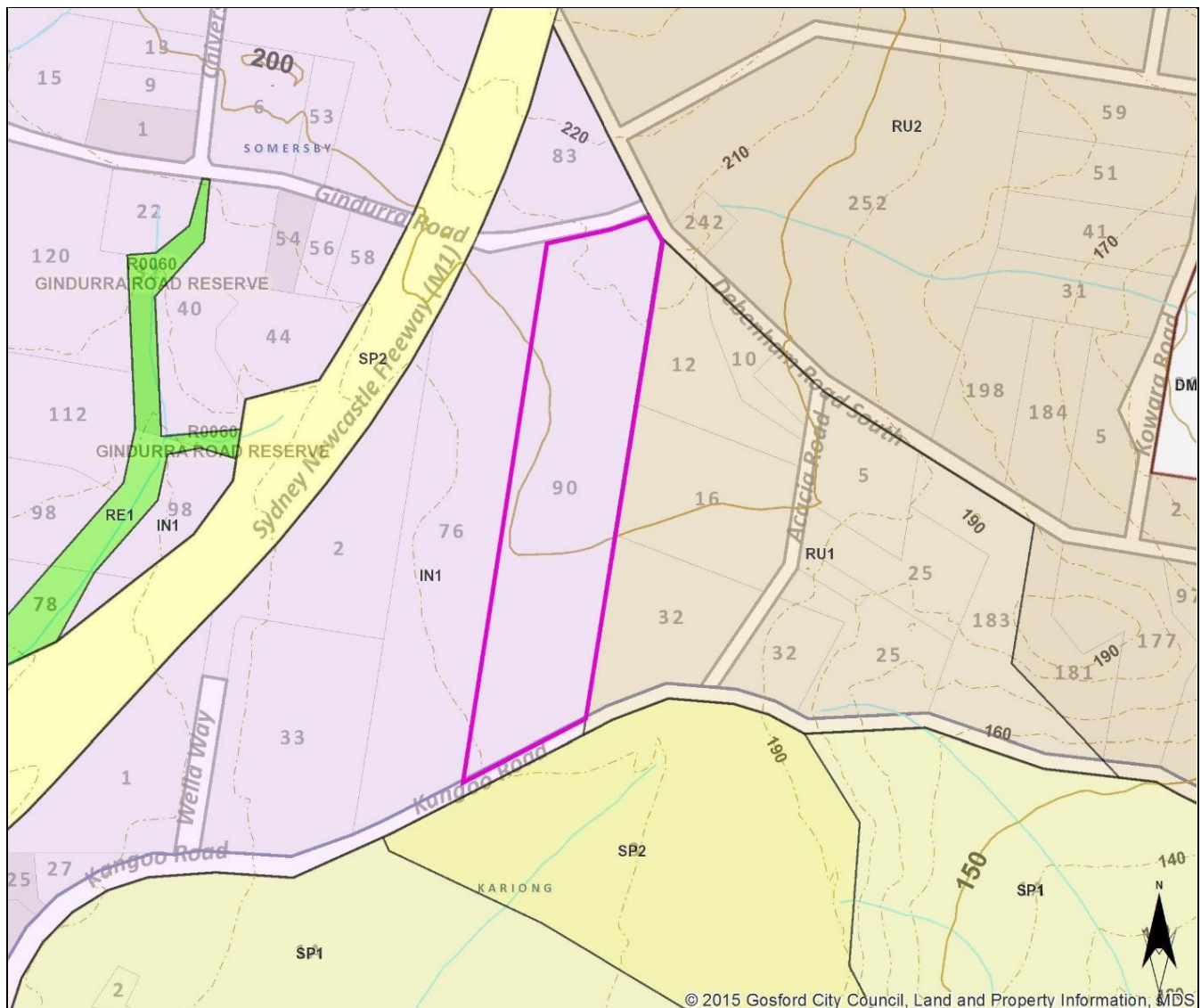
Figure 2.1. Aerial view of the current site. Lot boundaries are shown in purple. 1, entry; 2, existing site buildings; 3, current product storage; 4, main processing area. Source: Central Coast Council.



Date	Revision	Drawn By	Site description	Client	Kariong Sand and Soil Supplies
10/05/17	Revision A	J. Lethlean	90 Gindurra Rd, Somersby. Kariong	Project	Upgrades to a Sand and Soil Supplies Facility
			Sand and Soil Supplies (Lot 4 / DP	Title	Aerial photograph with current operations marked
			227279)	Source	Central Coast Council

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Figure 2.2. Land use zoning of the subject site, showing the area to be zoned IN1 General Industrial. Lot boundaries are shown in purple. Source: Central Coast Council.



Date	Revision	Drawn By	Site description	Client	
10/05/17	Revision A	J. Lethlean	90 Gindurra Rd, Somersby. Kariong Sand and Soil Supplies (Lot 4 / DP 227279)	Project	Kariong Sand and Soil Supplies
				Title	Upgrades to a Sand and Soil Supplies Facility
				Source	Land use zoning
					Central Coast Council

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Figure 2.3. Existing site, south view from the site entrance.



Figure 2.4. Photo of the existing landscaping and building material storage area (centre of the site).



2.2.2 Regional and environmental context

The site is on the Eastern edge of the Somersby Industrial Estate. To the immediate West of the site is a vacant, undeveloped block, which is next to developed IN1 blocks and the M1 Sydney Newcastle Freeway. The bulk of the Somersby Industrial Estate lies to the West of the Freeway.

The land to the East and North-East of the site is zoned rural and consists of rural properties. These include several residences, as well as an orchard and Gosford Quarry.

The land to the South of the site is zoned SP2 Special Purposes. Most of the SP2 land hosts the Kariong Correctional Centre. However, the land immediately south of the development site is used as a riding school for the disabled.

The site immediately to the North is undeveloped land zoned IN1 General Industrial.

2.2.3 Neighbouring properties and sensitive receptors

The site is surrounded by a mix of commercial premises and rural properties, with the closest residential dwellings located approximately 22m from the front boundary of the property. The site is located approximately 200m from the Sydney Newcastle Motorway (M1) (Figure 2.5).

Sensitive receptors are considered in the Environmental Impact Statement along with other issues as raised by the Department of Planning and Environment and other regulatory authorities, to ensure the proposed development will provide an environmentally acceptable and valuable recycling facility to support the Central Coast community.

The adjoining and nearby premises/activities can be considered as sensitive receptors and impacts on these properties will be carefully considered and mitigated as part of the environmental planning investigations in preparing the Environmental Impact Statement for the development.

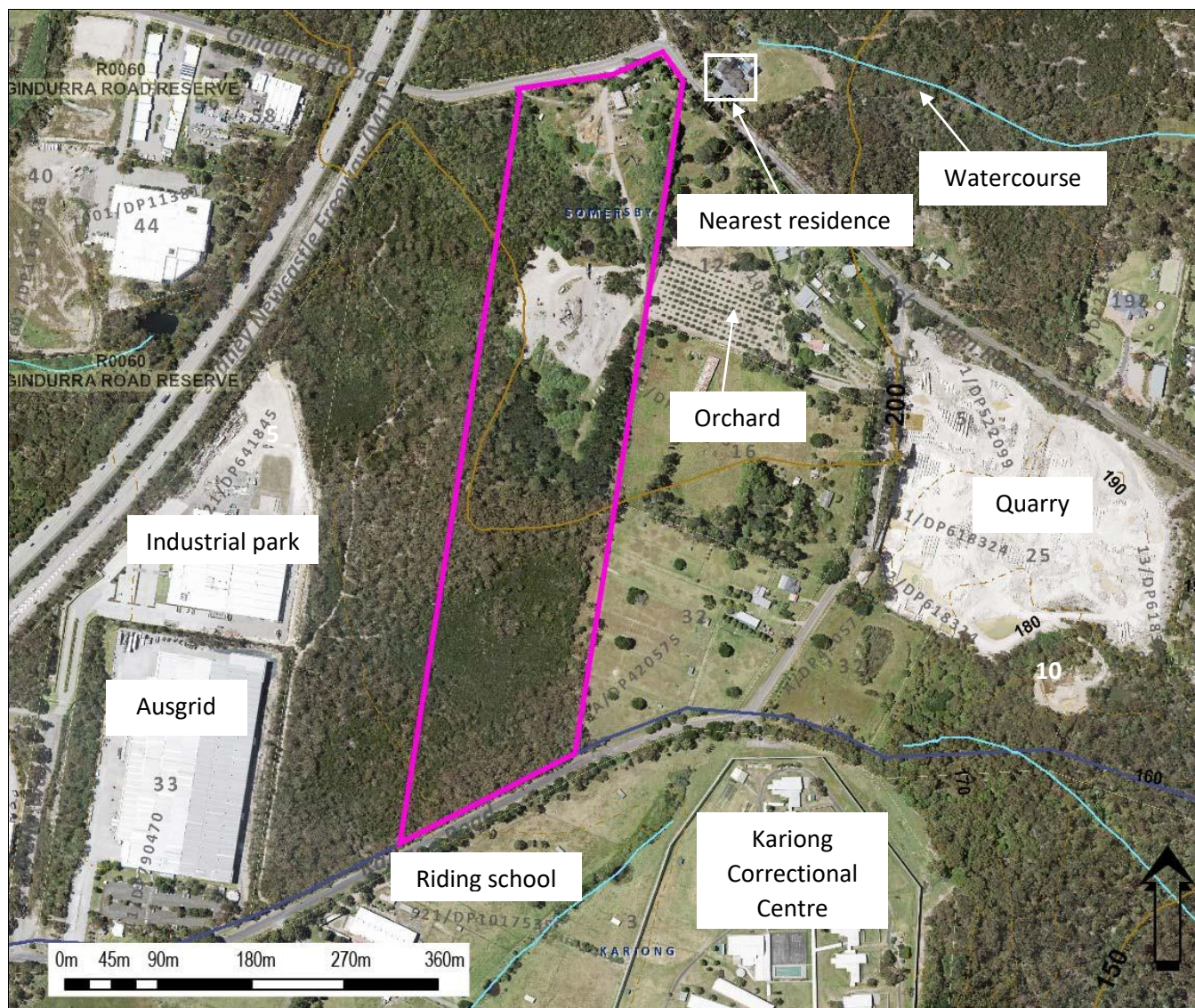
Although the nearest residential zone (R2) is located just over 1km from the site boundary (Figure 2.6), there are several residential dwellings on rural zoned land within 250m of the development site. The nearest sensitive receptor is a residential property approximately 150m to the North-East of the site entrance.

Table 2.1. Properties within 500m of the proposed development site.

No.	Address	Suburb	Zone	Zone Description
1	5 Acacia Rd	Somersby	RU1	Primary Production
2	10 Acacia Rd	Somersby	RU1	Primary Production
3	12 Acacia Rd	Somersby	RU1	Primary Production
4	16 Acacia Rd	Somersby	RU1	Primary Production
5	25 Acacia Rd	Somersby	RU1	Primary Production
6	32 Acacia Rd	Somersby	RU1	Primary Production
7	32 Acacia Rd	Somersby	RU1	Primary Production
8	3 Central Coast Hwy	Kariong	SP1	Special Activities
9	1A Central Coast Hwy	Kariong	SP2	Infrastructure
10	6 Chivers Rd	Somersby	IN1	General Industrial
11	97 Debenham Rd South	Somersby	RU2	Rural Landscape
12	183 Debenham Rd South	Somersby	RU2	Rural Landscape
13	184 Debenham Rd South	Somersby	RU2	Rural Landscape
14	198 Debenham Rd South	Somersby	RU2	Rural Landscape
15	223 Debenham Rd South	Somersby	RU1	Primary Production

No.	Address	Suburb	Zone	Zone Description
16	242 Debenham Rd South	Somersby	RU2	Rural Landscape
17	252 Debenham Rd South	Somersby	RU2	Rural Landscape
18	22 Gindurra Rd	Somersby	IN1	General Industrial
19	40 Gindurra Rd	Somersby	IN1	General Industrial
20	53 Gindurra Rd	Somersby	IN1	General Industrial
21	54 Gindurra Rd	Somersby	IN1	General Industrial
22	55 Gindurra Rd	Somersby	IN1	General Industrial
23	56 Gindurra Rd	Somersby	IN1	General Industrial
24	58 Gindurra Rd	Somersby	IN1	General Industrial
25	21 Kangoo Rd	Somersby	IN1	General Industrial
26	25 Kangoo Rd	Somersby	IN1	General Industrial
27	27 Kangoo Rd	Somersby	IN1	General Industrial
28	33 Kangoo Rd	Somersby	IN1	General Industrial
29	31 Kowara Rd	Somersby	IN1	General Industrial
30	2 Wella Way	Somersby	IN1	General Industrial
31	2 Wella Way	Somersby	IN1	General Industrial
32	2 Wella Way	Somersby	IN1	General Industrial

Figure 2.5. Map of premises surrounding the subject site at 90 Gindurra Rd, Somersby.

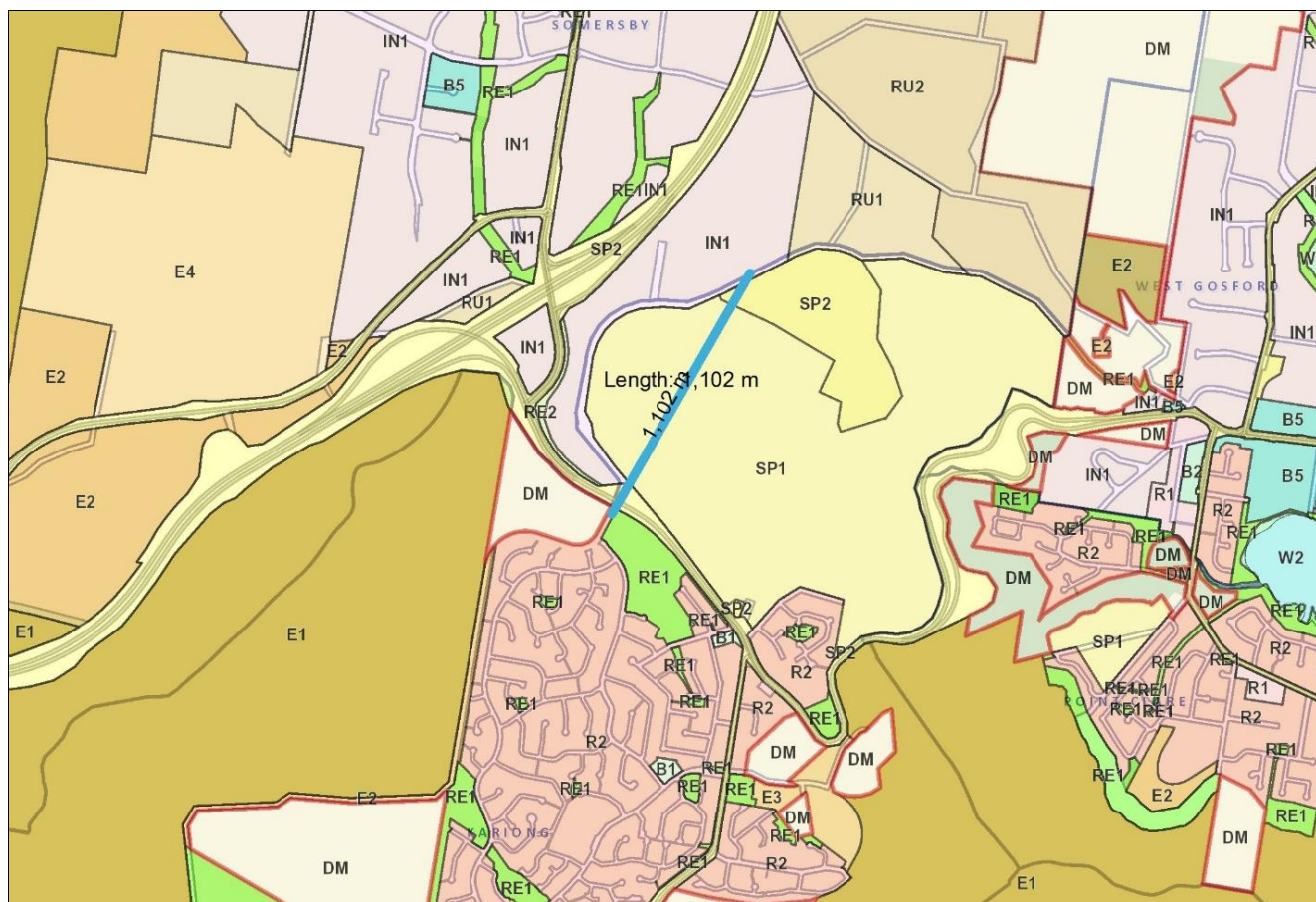


Date	Revision	Drawn By	Site description	Client	Kariong Sand and Soil Supplies
10/06/17	Revision A	J Lethlean	90 Gindurra Rd, Somersby. Kariong Sand and Soil Supplies (Lot 4 / DP 227279)	Project	Upgrades to a Sand and Soil Supplies Facility
				Title	Adjoining premises
				Source	Central Coast Council

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The most significant issue associated with the proposed development is noise generated by the crushing and shredding equipment to be located within the processing area of the site. It is proposed to mitigate the noise using a 5m noise attenuation wall along the eastern boundary, and two internal 3m noise walls within the centre of the site. These design features have been assessed and are further explained within the Noise and Vibration Impact Assessment (Chapter 11).

Figure 2.6. Proximity of development site to the nearest residential zones.



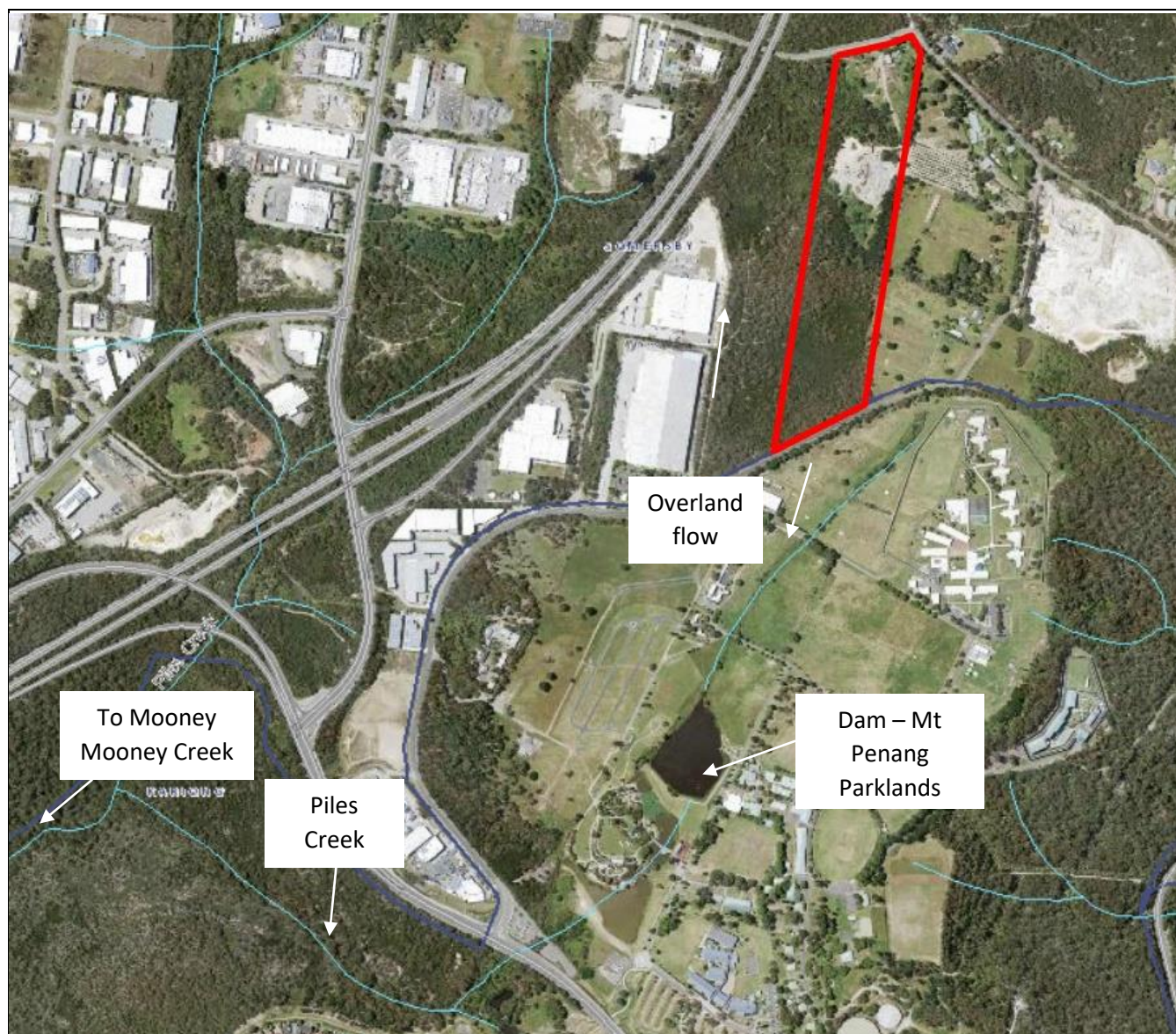
Date	Revision	Drawn By	Site description	Client	Kariong Sand and Soil Supplies
10/05/18	Revision A	J. Lethlean	90 Gindurra Rd, Somersby. Kariong	Project	Upgrades to a Sand and Soil Supplies Facility
			Sand and Soil Supplies (Lot 4 / DP 227279)	Title	Distance to nearest residential zone
				Source	Central Coast Council

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2.2.4 Riparian areas and waterways

The subject site is located at significant distance to riparian areas or a nearby waterway. No sensitive riparian areas or waterways exist on the site. The site drains via overland flow towards the south west of the site, following the gently sloping topography of the landscape. The landscape drains towards a drainage line to the south, commencing ~130 m from the site. This drainage line then terminates in a dam on the Mt Penang Parklands, located 480m to the south of the site (Figure 2.7). The outline from the dam discharges into a minor tributary of Piles Creek, which then discharges into Mooney Mooney Creek, some 5.3km south west of the subject site. Mooney Mooney Creek then flows into the Hawkesbury River.

Figure 2.7. Riparian areas and waterways associated with the subject site. Boundary of subject site shown in red.



Date	Revision	Drawn By	Site description	Client	Kariong Sand and Soil Supplies
27/04/18	Revision A	M.Jackson	90 Gindurra Rd, Somersby. Kariong Sand and Soil Supplies (Lot 4 / DP 227279)	Project	Upgrades to a Sand and Soil Supplies Facility
				Title	Nearby riparian areas and watercourses
				Source	Central Coast Council

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2.3 Overview of proposed development

The development project is to establish a sand, soil and building materials recycling facility at the site. It is proposed that the KSSS site be developed to receive, process and store up to 200,000 tonnes per annum of soil, sand and building materials. The complete development will require: installation of security fencing; installation of a 26m weighbridge adjacent the workshop and warehouse; construction of a hardstand area for processing material; construction of storage bays for processed material; construction of hardstand areas suitable for large vehicles; installation of noise

barriers; stockpile areas for bulk landscaping product storage; fit out of the secondary sorting warehouse building; grassed swales; on-site detention system for storm water; and landscaping.

The main operational area will be divided into three main areas; one for receiving and processing incoming material, a secondary sorting warehouse for further waste sorting, and another area for storage of final civil and landscape product and sale of material. It is anticipated that a total final area of the developed operational area on the site will be approximately 5.6ha (6.05 ha including the warehouse and parking areas).

In addition to the sand, soil and building materials recycling facility, a building and landscape supplies business will operate on the site. This will sell recycled products from the recycling operations to commercial customers. It is anticipated that the building and landscape supplies business will bring an additional 10,000 tpa of products onto the site for sale. These products are likely to be mulches, gravels, sands, specialist soils etc.

The proposed development will involve a new development consent that seeks to increase the maximum waste processing capacity to 200,000 tonnes per annum and extend the range of materials that are able to be processed by including the following as given in Table 2.2.

2.3.1 Waste materials to be received and processed

An overview of the range of range of waste materials to be received at the site for processing, recycling and manufacturing into a range of quality landscaping and building supply materials is summarised in Table 2.2. It is noted that these materials are presented according to waste definitions in the NSW EPA's *Waste Classification Guidelines*². All waste materials to be received and processed are characterised as non-putrescible and do not generate odour.

Table 2.2. Waste materials to be received by the facility, waste classification and approximate tonnages at maximum capacity.

NSW EPA Waste Classification	Material description	% of waste received	Tonnage to be received at maximum capacity (t/ yr) [†]
General solid waste (non-putrescible)	Soils that meet the CT1 thresholds for general solid waste in Table 1 of the NSW EPA's Waste Classification Guidelines	40%	80,000
	Virgin Excavated Natural Material (VENM) (soil)	10%	20,000
	Concrete, tiles, masonry	23%	46,000
	Asphalt	10%	20,000
	Timber, stumps and rootballs (clean, non-treated and non-painted separated timber and woody tree material)	10%	20,000
	Mixed building and demolition waste	5%	10,000
	Metals (ferrous and non-ferrous)	2%	4,000
General solid waste (non-putrescible) or hazardous waste	Materials such as asbestos, tyres, batteries, gas bottles, fire extinguishers and food (unexpected finds to be separated for lawful off-site management)	Minimal	Minimal
Total (tonnes per annum)			200,000

[†] It is noted the facility will also purchase materials for storage and re-selling at the site. Up to 10,000 tonnes per annum of mulches, gravels, sand and specialist soils will be stored and sold from the 'Landscape and Building Supplies' storage area in bulk / commercial sales only.

² NSW EPA (2014). Waste Classification Guidelines – Part 1 – Classifying Waste. Internet publication: <http://www.epa.nsw.gov.au/publications/wasteregulation/140796-classify-waste>

2.3.2 Products manufactured

A focus of the facility is to manufacture a range of sustainable and quality landscaping and building materials that can support the residential and commercial development projects in the Central Coast region of NSW. Manufacturing products to meet the EPA's Resource Recovery Orders under the *Protection of the Environment Operations (Waste) Regulation 2014* is critical to ensure all products can be used in a manner lawfully that protects human health and the environment. Other quality specifications, such as Australian Standards and industry specifications are given in Table 2.3. Further details on the range of specialist civil construction products to be manufactured are given in Table 2.4.

Table 2.3. Products to be manufactured and sold from the Kariong Sand and Soil Supplies facility, including relevant regulatory requirements and industry specifications / standards.

Product output	EPA Resource Recovery Order	Standard or Specification	% of product	Tonnage output per year (approx.)
Manufactured Soils	<i>Excavated Natural Material Order 2014</i>	Australian Standard AS4419 (2003): Soils for Landscaping and Garden Use	40	79,200
Aggregate and road base ¹ Products to include: sand (0-6mm); Aggregate (0-10mm; 10-14mm; 10-20mm; 20-30mm; 30-40mm; 40-60mm); Road base (0-20mm; 20-40mm); and Recycled terra cotta aggregate (0-6mm; 6-10mm; 10-20mm)	<i>Recovered Aggregate Order 2014</i>	IPWEA (2010). Specification for Supply of Recycled Material for Pavements, Earthworks and Drainage	25	50,040
Virgin Excavated Natural Material (VENM) (soil)	EPA VENM validation certificate required	n/a	10	20,000
Asphalt	<i>Reclaimed Asphalt Pavement Order 2014</i>	IPWEA (2010). Specification for Supply of Recycled Material for Pavements, Earthworks and Drainage	10	19,800
Timber mulch	<i>Mulch Order 2016</i>	N/a	11	21,300
Metal (ferrous and non-ferrous)	N/a	N/a	2	4,000
Paper / cardboard	N/a	N/a	0.3	500
Plastic	N/a	N/a	0.3	500
Residual waste sent to landfill	N/a	N/a	2	3,200
TOTAL			100	200,000

¹ Aggregate and road base products include the following product categories as per IPWEA (2010): Road base (Class R1 and R2); Select Fill (Class S); Bedding Material (Class B); and Drainage Medium. These products are further defined in Table 2.3.

Table 2.4. Overview of the specialist civil construction products to be manufactured in under the ‘Aggregate and road base’ product category.

Product category	Class	Description as per IPWEA (2010) ¹
Road base	R1	Suitable for use on roads with a traffic loading of greater than 1x10 ⁶ ESA
	R2	Suitable for use on roads with a traffic loading of less than 1x10 ⁶ ESA
Select fill	S	Material placed directly on the subgrade to improve subgrade performance. Can also be used as engineered fill to raise site levels
Bedding material	B	Material used as support for paving blocks in pedestrian areas, carparks, shopping malls, footpaths, cycleways or on lightly trafficked accessways
Drainage medium	D10, D20 or D75	Backfilling material for storm water pipes, sewer pipes or sub-surface drainage lines

2.3.3 Staging of the development

The proposed development will be staged, consisting of two defined project phases. Stage 1 will involve demolishing the existing sheds on the property and constructing an office building and warehouse.

The two-stage development approach will enable the proponent in Stage 1 to occupy the site on a more permanent basis, by having an office building for staff to be based. It is noted that Stage 1 is currently underway and was approved by Central Coast Council as a local development under DA52541/2017 on 17/11/2017 and further modified under DA52541/2017.2 on 21/09/2018.

Stage 2 will involve the following construction activities:

- Clear selected vegetation from the front half of the site as determined by the Fauna and Flora and Vegetation Management Plan;
- Conduct civil and drainage works to ensure the site directs storm water into a catchment dam;
- Re-develop the existing storm water catchment dam;
- Install a hardstand across the operational areas of the site;
- Allocate areas for vehicle parking and manoeuvring;
- Install a weighbridge;
- Install storage bunkers for receiving incoming material for processing and bunkers for storing processed products ready for sale;
- Install sorting equipment into the Secondary Processing Warehouse;
- Install crushing and shredding machinery;
- Construct a noise barrier along the Eastern boundary of the site; and
- Construct two noise barriers within the operational areas of the site.

A summary of the construction activities under Stage 1 (approved) and Stage 2 is given in Table 2.5. It is noted that Stage 2 is the subject of this State Significant Development application (SSD8660), with environmental, social and economic impacts addressed in this EIS.

Table 2.5. Summary of construction activities under Stage 1 and 2 on the site.

Stage 1	Description	Consent status
i.	Demolish existing corrugated iron sheds	Approved under DA52541/2017 and modified under DA52541/2017.2
ii.	Construct office building and warehouse	
iii.	Construct car park next to buildings and new entrance	
iv.	Install fence at front of site	
Stage 2		
i.	Excavation works to level site in preparation for construction	Approval sought under State Significant Development application SSD8660
ii.	Construct hardstand across operational areas	
iii.	Construct onsite roads, new entrance and modifications to Gindurra Rd (turning lane)	
iv.	Construct stormwater drainage system	
v.	Install weighbridge	
vi.	Construct noise barrier	
vii.	Construct storage bunkers	
viii.	Install processing equipment in operational area and secondary sorting warehouse	
ix.	Commissioning – up to 30,000 tpa throughput for 3 months	
x.	Fully operational – ramp up to 200,000 tpa throughput	

It is noted that the site has been previously used as a sand and soil supplies facility, and has a number of stockpiles of concrete / masonry and soil will need to be processed on site, tested for compliance against a relevant EPA Resource Recovery Order as per Table 2.3 and reused in the civil construction process across the site in accordance with the Waste Management Plan in Chapter 6 and the civil construction plans in Appendix H.

2.3.4 Site layout and operations

The main operational area will be divided into three main areas; one for receiving and processing incoming material, a secondary sorting warehouse for further waste sorting, and another area for storage of final civil and landscape product and sale of material. It is anticipated that a total final area of the developed operational area on the site will be approximately 5.6ha.

In addition to the sand, soil and building materials recycling facility, a building and landscape supplies business will operate on the site. This will sell recycled products from the recycling operations to commercial customers. It is anticipated that the building and landscape supplies business will bring an additional 10,000 tpa of products onto the site for sale. These products are likely to be mulches, gravels, sands, specialist soils, etc. that have been manufactured to meet appropriate standards for their use.

The operational phase of the project consists of receiving, inspecting, processing and storing waste materials from off-site (see Figure 2.13). The resulting products will be stored and sold through a landscape and building supplies business on the site.

All material received and leaving the site will be weighed on the weighbridge. Therefore, the facility operators will know how much material is has been processed, is on-site and has been removed from site. Amounts of waste received, processed and removed from site will be reported via the NSW EPA's Waste and Resource Reporting Portal (WARRP).

The development will consist of site improvement works to allow a greater range of materials to be processed on the site, and to enable up to 200,000 tonnes per annum to be received, processed and temporarily stored on the site. A summary of the site design features is listed as follows.

a) Site levels, drainage design and stormwater treatment

Prior to any construction, areas of the development area will need to be cleared and contoured to provide adequate drainage to a new On-site Detention (OSD) pond. Civil site works will ensure that there is appropriate drainage and stormwater capture at the site. The OSD pond will be constructed in the south-west corner of the development area for stormwater capture (along the western boundary of the site) as per the detailed designs in Appendix E. Stormwater runoff from the site will be intercepted by a grassed swale to help remove sediment, prior to discharged into the OSD pond where further removal of suspended sediment will occur. A Stormwater 360® Jellyfish™ device (or similar) will be used to further remove sediment from the outlet of the OSD pond prior to absorption within the bushland at the rear of the site.

The existing dams located in the centre and on the western boundary of the site will be filled. The captured stormwater will be used for operational purposes at the site, such as dust suppression. This has been considered in the stormwater management system design and the Water Cycle Management Plan for the development (Appendix I). The design is in accordance with best practice guidelines in:

- Landcom (2004). *Managing Urban Stormwater – Soils and Construction*. Published by the NSW Government. Internet publication: <http://www.environment.nsw.gov.au/resources/water/BlueBookV1Chapters.pdf>
- Department of Environment and Conservation (2006). *Managing Urban Stormwater – Harvesting and Reuse*. Published by the NSW Department of Environment and Conservation, Internet: <http://www.environment.nsw.gov.au/resources/stormwater/managestormwater060137.pdf>

b) Roads and pavement design

The site general arrangement plan shows the main traffic flow paths for the site (see Appendix E).

The roads and pavement will be constructed of recycled crushed concrete, concrete or asphalt, in accordance with the NSW EPA's *Specification for Supply of Recycled Material for Pavements, Earthworks and Drainage 2010*. The roads will need to be suitable for use by B-doubles and large mobile equipment (mobile crusher, mobile screen, mobile shredder, front end loaders).

It is noted that the following pavement designs have been specified to help reduce the risk to water quality. These are outlined in the civil plans given at Appendix E:

- Main entrance and areas adjacent to the processing building: reinforced concrete hardstand;
- Waste tip and spread inspection area: bunded reinforced concrete hardstand;
- All waste storage and civil and landscape supply storage areas: recycled crushed concrete hardstand sealed with asphalt; and
- Outdoor processing areas and internal roadways: recycled crushed concrete hardstand over a bentonite (impermeable) geotextile membrane.

It is noted that a turning lane to accommodate a 25m B-double is required, as described in Appendix L Traffic Impact Assessment, is required. As per the site entrance design in Appendix M, this will involve establishment of new line markings on Gindurra Rd to permit the establishment of a turning lane (given sufficient width of Gindurra Rd).

c) Noise barriers

A 5 m constructed noise barrier will be constructed along the eastern boundary of the site, as well as two internal 3m concrete block noise barriers within the site to mitigate against noise impacts, as recommended by the Noise and Vibration Impact Assessment given in Appendix N. Location of the noise barriers are given in Appendix E.

d) Sewage treatment

The site has recently been approved for connection to the Central Coast sewer system.

e) Operational layout design

The operational layout of the development is shown in Figure 2.8. The proposed layout and operations of the development have been informed by guidelines prepared by the NSW EPA (2018) *Standards for Managing Construction Waste in NSW (Public Consultation Draft, October 2017)* and NSW EPA (2014) *Draft Protocol for Managing Asbestos during Resource Recovery of Construction and Demolition Waste*. Detailed site plans are given in Appendix E. Seven separate functional areas of the site will be constructed and operated:

i) *Weighbridge and waste inspection*

A 26m concrete weighbridge will be installed adjacent to the site office. Vehicles will be weighed, visually inspected for asbestos, hazardous or non-compliant waste materials, and vehicles will be directed to the 'Waste Tipping and Inspection Bay'. Upon unloading, vehicles will be re-weighed for nett weight recording over the weighbridge, then will exit the site in the forward direction onto Gindurra Rd.

ii) *Waste Tipping and Inspection Bays*

Three dedicated, concrete floor bays with concrete block walls will be made available for customers to tip and spread loads of waste for physical inspection. Waste will be spread to a depth of ~100mm, visually inspected by trained staff. If minor non-compliant materials are found, these will be removed and stored for off-site disposal. Loads with fibro or possible asbestos containing materials will not be accepted. These loads will be wetted down and managed in accordance with the site's Asbestos Management Procedure. Compliant loads will then be moved with a front end loader to a dedicated concrete block waste storage bay within the 'Waste Storage Area'.

iii) *Waste Storage Area*

Waste materials after inspection will be loaded into separate concrete block bays (movable if needed) along the south-eastern section of the development area. Bays will be provided for: Virgin Excavated Natural Material (VENM); Soils that meet the CT1 thresholds for general solid waste in Table 1 of the NSW EPA's Waste Classification Guidelines; metals; timber; asphalt; mixed building waste; concrete and masonry tiles. The purpose of these bays is to securely hold waste materials prior to processing in the 'Processing Area' of the site. Bays will be labelled accordingly. Concrete block bay walls will be 3m high, and piles will be managed not to exceed this height.

Note that clean building timbers may be separated and stored within the landscaping supplies area for sale (with no further processing).

iv) *Processing Area (Primary Waste Sorting and Processing)*

Waste materials will be moved via front end loader to the 'Processing Area', behind the noise attenuation wall at the rear of the Waste Storage Bays. In this part of the site, an excavator will be used to physically remove / sort recyclable materials from loads as required.

Clean materials free of contaminants will be stored in separate piles and processed further if required through a mobile crusher / grinder / shredder and screening plant within the area. Processed materials will be stored in piles and moved to the 'Product Blending Area' if required.

For mixed building waste, the excavator will remove recyclable materials such as timber, steel, concrete and bricks. These will be stored in piles and taken back to the Waste Storage Area for batch processing through the Processing Area (such as through crushing, grinding, shredding and screening to produce aggregate, soils or mulch at a specific particle size grading).

Waste materials remaining after the primary sorting process from Mixed Building Waste (or other loads of soil, asphalt or concrete / masonry / tiles), this will be transferred via front end loader to the 'Secondary Sorting Warehouse'. Waste materials will then be more fully sorted to produce clean materials for processing.

v) *Secondary Processing Warehouse*

Waste materials that require further sorting to remove physical contaminants to produce clean streams of recovered materials will be transferred through a front end loader, which will enter the rear of the warehouse and deposit this waste into the receiving electric feed hopper of the sorting plant. The front end loader will enter via the southern side of the warehouse.

Waste is then moved onto a conveyor then screen, which will remove fine soils in the loads. This fine soil material (or Recovered Fines) will be separated and placed into a hooklift bin. Remaining materials will pass through a trommel screen for separation of small and coarser concrete and masonry aggregate, followed by a magnet for the separation of ferrous / steel materials. Materials will then drop onto a conveyor, onto an elevated picking line with four persons to sort and deposit separated timber, plastics, concrete / aggregate and non-ferrous materials into bins beneath the picking line. Prior to entry onto the conveyor, a blower will be used to separate light materials, such as paper and cardboard. This will be directed to a hooklift bin for disposal. Remaining materials will be deposited into chutes and into separate hooklift bins beneath the sorting line.

The material remaining after the picking line will be directed to a hook lift bin for disposal at a licenced landfill facility.

Sorted hooklift bins of timber, plastics, concrete / aggregate and non-ferrous materials will be transferred to storage bays or the Processing Area for product manufacturing or off-site recycling. Timber and concrete / aggregate will be transferred to the Waste Storage Bays or specific piles in the Processing Area to be further processed.

A vehicle wash down area will be located outside the south-east corner of the secondary processing shed. The wash bay will be primarily used to clean on-site mobile equipment and the proponent's own collection / transport vehicles.

vi) *Product Blending Area*

Soils and aggregate materials from the Processing Area will be stored in separate piles within the dedicated Product Blending Area. Here, materials will be blended as needed to manufacture specific products for building and landscaping applications.

Products, once blended, will be stored in separate piles and sampled / tested to confirm compliance with an appropriate EPA Resource Recovery Order. Products will then be moved by front end loader to the 'Landscape Storage Bays' or the 'Aggregate Storage Bays', awaiting sale.

vii) *Landscape Storage and Aggregate Storage Areas*

A series of 23 concrete block landscaping products storage bays will be built using movable concrete blocks in the centre and the front of the site. The size of the bays will be adjusted depending on the volume and demand for products sold from the site.

A separate Aggregate Storage Bay will also be constructed using movable concrete blocks along the western side of the site. Approxiamtely four concrete block bays will be made available for aggregates.

Trucks and commercial vehicles that have entered into the site over the weighbridge will manouver into the Landscape Storage and Aggregate Storage Areas, and will be loaded via front end loader. Trucks will then weigh off at the weighbridge before existing the site onto Gindurra Rd.

Figure 2.8. Site layout for the Kariong Sand and Soil Supplies development. Note that detailed site and civil design plans are given in Appendix E.

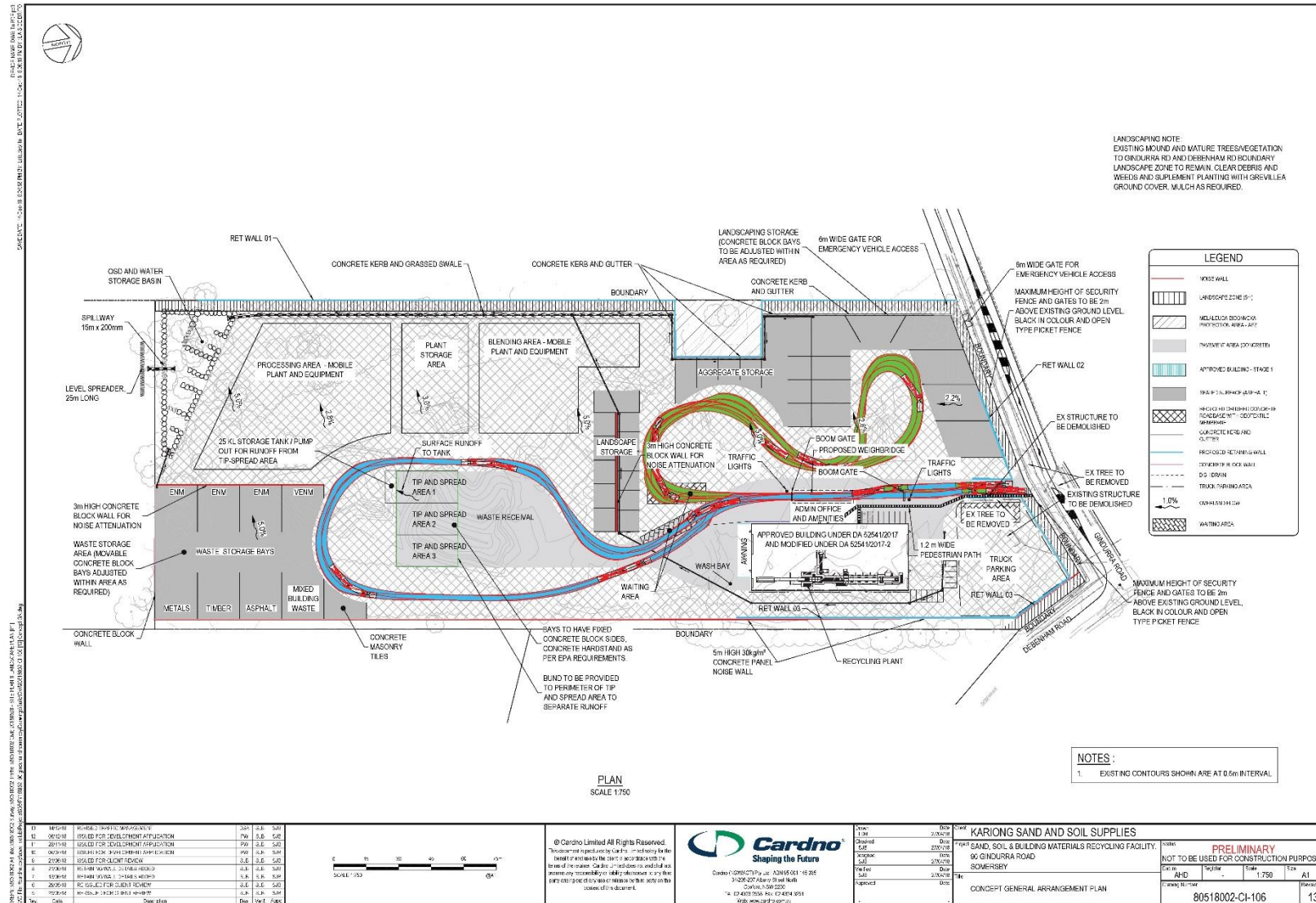
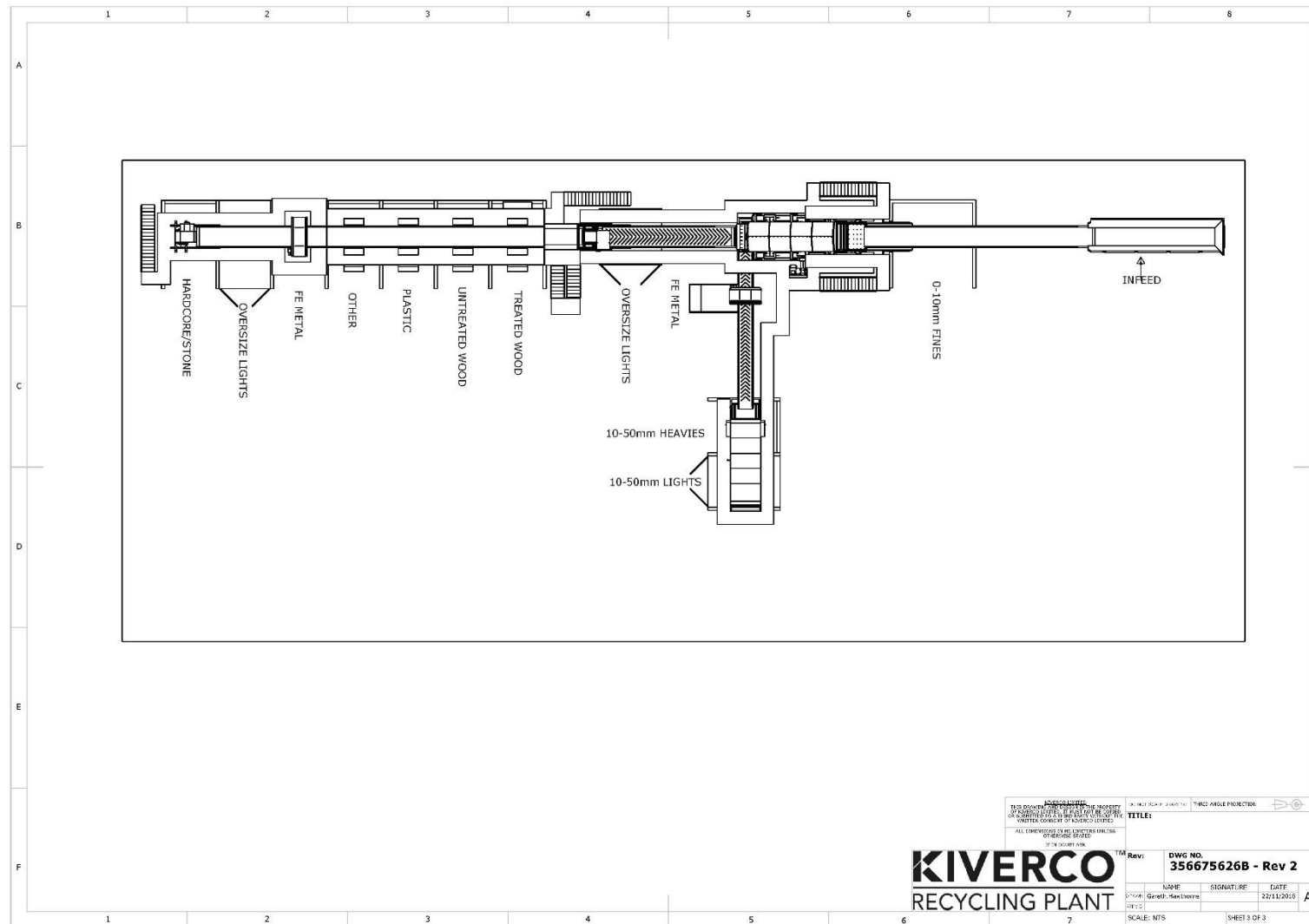


Figure 2.9. Layout within the Secondary Processing Warehouse (provided in Appendix E).



2.3.5 Vehicular and pedestrian access

All vehicles will access the site from a single dual lane access point from the front entrance to Gindurra Rd. As outlined in the site layout plans (Appendix E) and the plans for the proposed amendment to Gindurra Rd (Appendix M), a new 60m turning lane will be marked on Gindurra Rd to permit the carriage of a B-double truck turning right into the site without impeding traffic flow on Gindurra Rd (see Figure 2.10).

It is noted that a mix of staff passenger vehicles and load bearing vehicles (trucks), including 12 tonne tipper trucks, 32 tonne capacity semi-trailers and 40 tonne B-double trucks will access the site. The site entrance from Gindurra Rd has been designed in accordance with *Gosford Development Control Plan 2013* and RMS requirements.

The site will be used and accessed by commercial vehicles only and will not be open to the general public. Pedestrian access and a pathway will be provided from the entrance to the site, to safely permit pedestrians (staff) accessing the site and accessing the staff office and warehouse at the front of the site. The pedestrian pathway is shown in Figure 2.8 and on the site layout plans provided at Appendix E.

Figure 2.10. Proposed update to Gindurra Rd markings near site entrance.



2.3.6 Traffic management

All load-bearing vehicles (trucks), will enter the site via Gindurra Rd in the forward direction, proceed to the weighbridge installed outside the site office for net weight recording in accordance with Clause 36 of the *Protection of the Environment Operations (Waste) Regulation 2014*.

Trucks then proceed to the unloading / loading area adjacent to the processing area. Upon completion of loading / unloading, trucks maneuver in the turning area towards the west of the site, progress along the same path by which they entered, weigh off at the weighbridge and proceed to the exit via Gindurra Rd in the forward direction.

The types and numbers of vehicle movements during the early and full operational phases of the development are summarised given in Table 2.6 below and are further assessed in Chapter 10. All vehicles are to comply strictly with speed limits on site of 5km/hr.

Table 2.6. Estimated types and numbers of vehicle movements during early and fully operational phases of the development.

Type of vehicle	2019	2025
	Number of vehicles / day	Number of vehicles / day
Staff operational vehicles	3.69	9.23
12 t tipper	3.55	35.54
32 t T&D or semi	1.89	18.86
40 t B-double	0.63	6.30

A more detailed analysis of traffic issues is provided in Appendix L: Traffic Impact Assessment.

2.3.7 Weighbridge operations

The use of a weighbridge is a regulatory requirement under Clause 36 of the *Protection of the Environment Operations (Waste) Regulation 2014*.

The weighbridge is located on the Western side of the warehouse / office complex. The weighbridge is a single weighbridge, designed to accommodate extra wide loads (4m wide x 26m long).

All vehicles entering and leaving the site will need to be weighed on the weighbridge, in accordance with Part 3 Division 2 Clause 36 of the *Protection of the Environment (Waste) Regulation 2014*. Vehicles enter from Gindurra Rd and drive towards the weighbridge. A boom gate will be located approximately 30m from the Northern edge of the weighbridge (on the entrance side), for traffic control. Another boom gate is to be installed at the Southern edge of weighbridge to prevent vehicles on the weighbridge from driving into oncoming vehicles. In addition, traffic lights will be installed to control movement of vehicles in both directions.

There is sufficient space for two vehicles to queue behind the entrance boom gate. In the event that additional queuing space is required, vehicles can temporarily park in the truck parking area in the North-East corner of the site. There is sufficient space within the waste receival area for at least two 26m B-double trucks to queue waiting to leave the site. Similarly, there is room for at least two 19m vehicles to queue in the landscape supplies business area, if necessary. This is further described in the Traffic Impact Assessment (Appendix L).

2.3.8 Waste inspection, acceptance and non-conforming waste

The incoming waste inspection and management of non-conforming loads will conform to the standards in the NSW EPA's *Standards for managing construction waste in NSW*³.

Standard 1 Inspection requirements

³ NSW EPA (2018), Standards for managing construction waste in NSW, internet: <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/wasteregulation/18p1270-standards-for-managing-construction-waste-in-nsw.pdf> ; accessed 4/12/2018.

At the verified weighbridge on entry into the facility, trained personnel must:

1. Inspect the entire top of each load from an elevated inspection point or by using a video camera connected to a monitor and determine whether or not the load contains any asbestos waste and any other unpermitted waste;
2. Where the load is identified as containing, or is reasonably suspected to contain, any asbestos waste, reject the entire load of waste by directing the driver to immediately leave the facility and record the information required by Standard 1.4 into the C&D waste facility's rejected loads register; and
3. Where the load is not rejected, record the details as required by clause 27 of the Waste Regulation and direct the driver and the load of waste to proceed directly to inspection point 2.

At inspection point 2 – tip and spread inspection area, trained personnel must:

1. Direct the driver of the vehicle to tip the entire load on the tip and spread inspection area;
2. Spread the entire load and inspect the visible surface area for any asbestos waste and any other unpermitted waste;
3. Manually turn, or direct a plant operator to turn, the entire load and inspect the entire load for any asbestos waste and any other unpermitted waste on or beneath the visible surface;
4. Where any asbestos waste is identified, reject the entire load of waste.
5. Where any other unpermitted waste is identified under this Standard 1.2, remove that waste from the load or reject the entire load of waste.
6. Where a load is rejected under this Standard 1.2, ensure that the entire load is immediately reloaded onto the vehicle in which it arrived or onto another vehicle and ensure that the vehicle with the rejected load leaves the C&D waste facility on the same business day and then immediately record the information required by Standard 1.4 into the C&D facility's rejected loads register; and
7. Ensure that all waste that may lawfully be received at the C&D waste facility proceeds to be sorted and stored in accordance with Standards 2, 3 and 4.

A load of construction waste received at the C&D waste facility that, upon receipt, only contains waste that meets the requirements of a resource recovery order, as evidenced by a statement of compliance for that waste which has been provided and kept in accordance with the applicable resource recovery order and is current at the time of receipt. The statement of compliance must be made available for inspection to an authorised officer of the EPA if requested. This load of waste must be immediately transferred to the appropriate waste storage area referred to in Standard 4.

2.3.9 Wastes processed

Figure 2.11 shows the anticipated composition of the material that will be delivered to the site for processing. Figure 2.12 shows the extrapolated tonnes received over the first 6-7 years of operation, assuming the facility reaches full capacity in 2025. As these charts show, most of the waste will be source-separated, inert material, such as soil or concrete/brick/tiles. The aim will be to recover as much material as possible to recycle into products for sale through the landscape and building supplies business to be located at the site.

Figure 2.11. Composition of incoming waste stream.

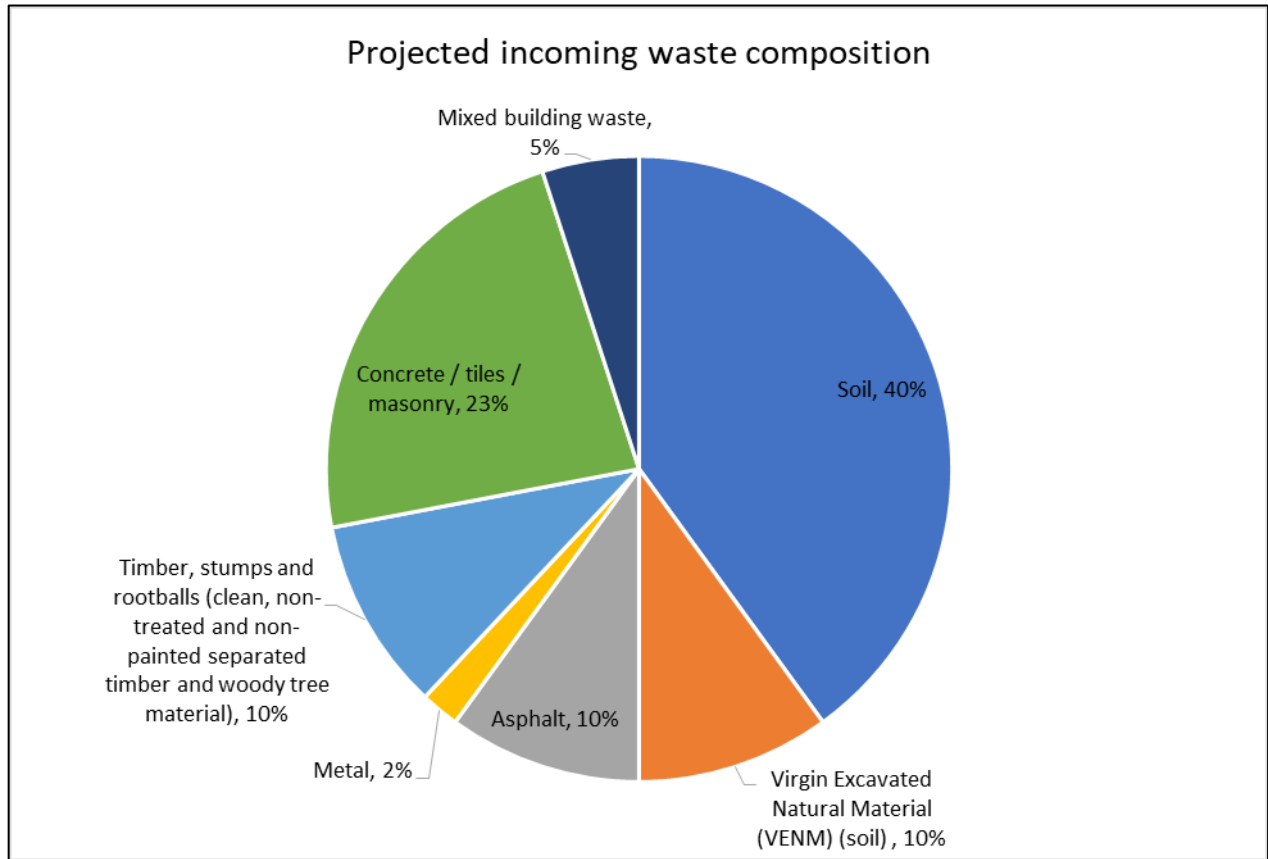


Figure 2.12. Estimates of amounts of incoming waste during operational phase.

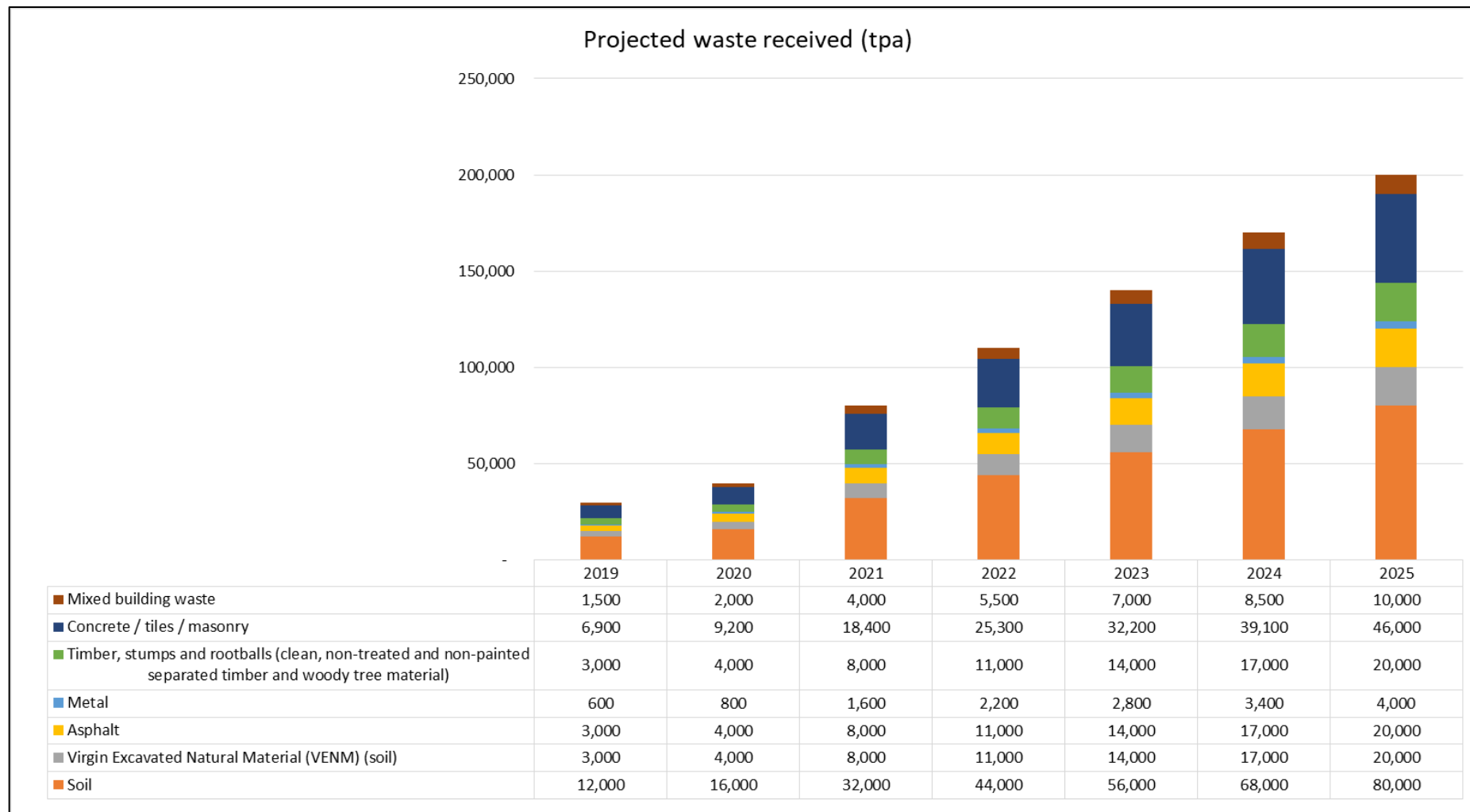


Figure 2.13. Process flow chart for recycling operations.



2.3.9.1 Building and landscape supplies business

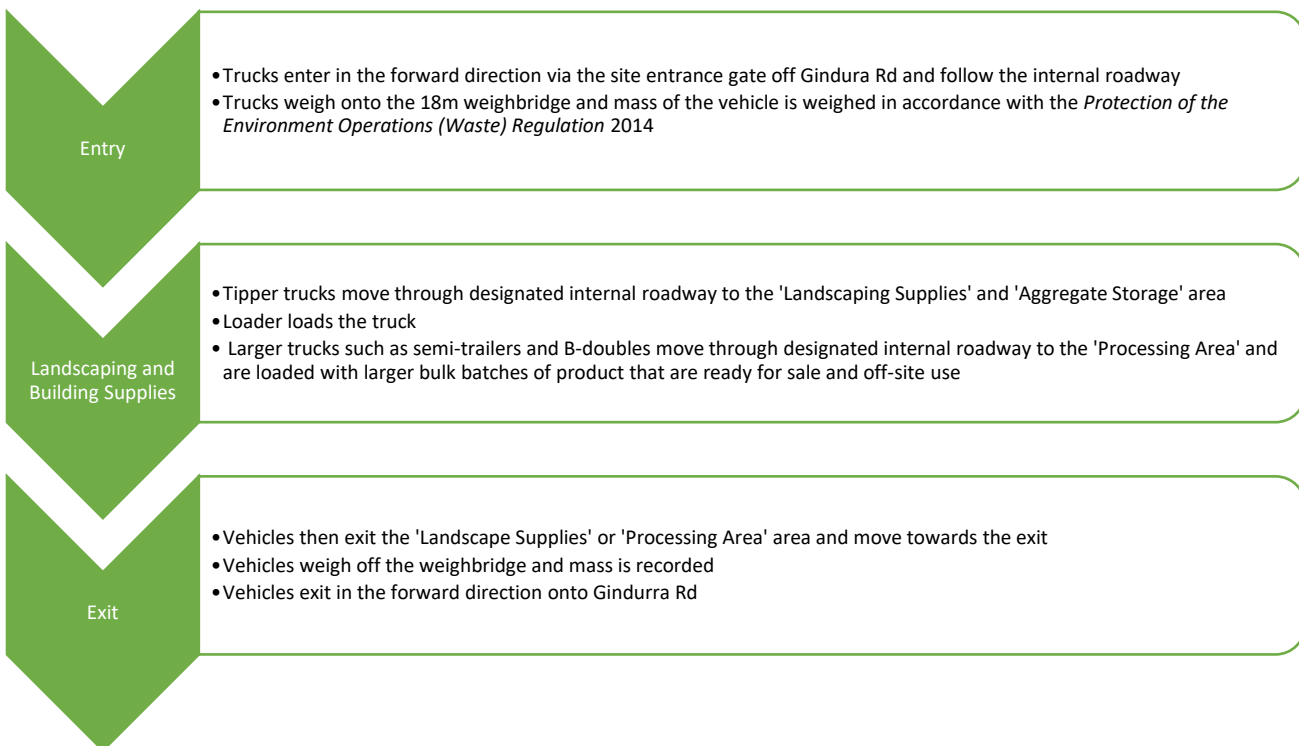
The building and landscape supplies business will consist of the storage and sale of products such as aggregate, soil, crushed asphalt, mulch, timber and metal.

Finished products from the processing area will be transferred via front-end loader to the landscape and building supplies area and unloaded into concrete bunkers. Products will be regularly tested to ensure they meet the appropriate standards.

In addition, a limited amount (up to 10,000 tpa) of clean sand and soil will be brought onto the site for sale in the landscape and building supplies business. This material will be transported from other suppliers. This material will be unloaded in the landscape and building supplies area, then pushed into bunkers for storage. Suppliers will be responsible for providing products that meet the specifications provided by Kariong SSS. Incoming products will be inspected, and suppliers will be required to provide proof (test reports or compliance certificates) that the products meet the specifications.

Products sold from the landscape and building supplies business will be removed from the storage bunkers and loaded into waiting haulage vehicles using a front-end loader. Only commercial customers will be permitted onto site, with most vehicles being large vehicles for bulk haulage.

Figure 2.14. Process flow chart for landscaping and building supplies part of the operation.



2.3.9.2 List of plant and equipment to be used during operations

Mobile plant and equipment will be used across the recycling operations, and for servicing the landscaping supplies area of the operations. A list of plant and equipment used outdoors across the site, and indoors in the Secondary Processing Warehouse is given in Table 2.7.

Table 2.7. Mobile plant and equipment to be used in the operation.

Operational Area	Make	Model	Function
Tip and Spread Area	Volvo Front End Loader	L150	Spreading waste materials for inspection and movement of wastes to Waste Storage Area
Waste Storage Area	Volvo Front End Loader	L150	Loading and movement of waste materials
Processing Area	Volvo Front End Loader	L150	Loading and movement of waste materials
	CAT Excavator	330	Sorting of large recyclable items during primary sorting
	Metso Crusher	1213S	Crusher for size reducing timber, concrete, masonry and tiles
	Peterson shredder	2710D	Shredding timber and rootballs to produce mulch.
	Metso screening plant	ST3.5	Screening aggregates and soils into specific particle size gradings
Secondary Processing Warehouse	Volvo Front End Loader	L150	Loading and movement of waste materials
	Leibherr Telehandler	LH24	Loading of waste materials from concrete bay into hopper
	Kiverco conveyor / stackers / trommel screen		For transferring waste from hopper to screen or picking line
	Kiverco 6-station picking line with conveyor		Staff will pick different recyclable materials from the mixed waste as it passes by on the conveyor belt.
	Kiverco Overhead magnet		Removes steel and iron from the residual waste stream
	Kiverco Air blower		Removes trace elements of light contaminant materials, such as plastic and paper from the final waste stream.
	Hopper and bagging machine (Rotto Chopper)		For loading of products into 2-tonne bulka bags
Blending Area	Volvo Front End Loader	L150	Loading and blending of materials, and moving of products
Landscape Supplies Area	Volvo Front End Loader	L35	Loading of landscape supplies and aggregates onto trucks
Other	Water Cart Truck		For dust suppression on internal roads as required

Equipment will usually remain in its operational area. The crusher, shredder and screen will remain in the waste processing area. The secondary processing equipment will be permanently fixed in the secondary processing warehouse. To avoid conflicts and to ensure each area is properly serviced, each operational area will have its own dedicated front end loader/s and excavators. An area near the processing area has been allocated for parking the mobile plant overnight. The water cart will usually be parked near the office building at the end of each day, for the convenience of the truck driver.

2.3.9.3 Authorised amount (maximum stock held on site)

Under Clause 10B of the *Protection of the Environment Operations (Waste) Regulation 2014*, operators of licensed resource recovery facilities are required to not exceed the storage of a certain amount of waste and processed products (from waste) on site at any one point in time. This is referred to the 'Authorised Amount'. Exceedance of the Authorised Amount triggers the requirement for payment of the Waste and Environment Levy for tonnages of waste and product held on site (above the Authorised Amount). This regulatory measure encourages operators of resource

recovery facilities to manage the inventory of waste and products held on site to avoid potential risks and hazards to the environment, public safety and human health.

An assessment of the storage capacity of the site based on designated areas for waste storage, processing, blending and product storage is provided in Table 2.8.

Table 2.8. Analysis of the storage capacity of the site for waste materials and processed products, based on the site layout and concrete block and outdoor storage areas (as shown in Table 2.8).

Waste or product storage area (refer Error! Reference source not found.)	Waste material or product storage	Bay or pile dimensions (m)	Volume stored (maximum) (m ³)	Bulk density (t/m ³)	Maximum storage capacity (tonnes)
Waste storage bays	Soil (Bay 1)	21 m (wide) x 18m (deep) x 3 m (high)	1,130	1.1	1,243
	Soil (Bay 2)	21 m (wide) x 18m (deep) x 3 m (high)	1,130	1.1	1,243
	Soil (Bay 3)	21 m (wide) x 18m (deep) x 3 m (high)	1,130	1.1	1,243
	Virgin Excavated Natural Material	21 m (wide) x 18m (deep) x 3 m (high)	560	1.1	616
	Metals	21 m (wide) x 18m (deep) x 3 m (high)	1,130	0.8	904
	Timber	21 m (wide) x 18m (deep) x 3 m (high)	1,130	0.8	904
	Asphalt	21 m (wide) x 18m (deep) x 3 m (high)	1,130	1.1	1,243
	Mixed building waste	21 m (wide) x 18m (deep) x 3 m (high)	1,130	0.7	791
	Concrete / masonry / tiles	21 m (wide) x 18m (deep) x 3 m (high)	560	1.2	672
Tip and spread area	Tip and spread area 1	Assume no storage	-	-	-
	Tip and spread area 2	Assume no storage	-	-	-
	Tip and spread area 3	Assume no storage	-	-	-
Processing area	Waste for crushing / grinding and processed product in piles	Assume 50% area can be used for temporary storage, total area ≈76m x 97m	11,050	1.1	12,155
Secondary Sorting Warehouse	Recovered sorted materials from magnet and picking line.	6 x 10m ³ skip bins	60	0.7	42
	Recovered soil from trommel	1 x 20m ³ skip bin	20	1.5	30
Blending area	Processed products awaiting blending of blended awaiting for storage in	Assume 50% area can be used for temporary storage, total area ≈3,130 m ²	4,700	1.3	6,110

Waste or product storage area (refer Error! Reference source not found.)	Waste material or product storage	Bay or pile dimensions (m)	Volume stored (maximum) (m ³)	Bulk density (t/m ³)	Maximum storage capacity (tonnes)
	landscaping supplies bays				
Landscape storage (centre of site 13 bays total)	Landscaping supplies	Total storage area in bays ≈67m x 18m x 3m high	3,600	1.5	5,400
Aggregate storage area (4 bays)	Recovered aggregates	Total storage area in bays ≈40m x 11m x 3m high	1,320	1.3	1,716
Landscape storage bays at front of site (12 bays)	Various landscape supply materials	Total storage area in bays ≈3,365 m ² x 3m high	10,095	1.1	11,105
Total estimated site storage capacity			39,875 m ³		45,417 t

¹ Density factors sourced from NSW EPA (2015). *Waste Levy Guidelines* (Table 4.1).

It is noted that as part of the development, the site will store up to 10,000 tonnes of pebbles, bricklayers sand, plasterers sand, washed paving sand, soil mixes, pine mulches, timber mulches and other landscaping products which will be purchased and sold commercially from the site.

The analysis in Table 2.8 suggests that operationally, the site can store up to 39,875m³ of wastes and processed products, equivalent to an estimated 45,417 tonnes of materials. These estimates include the storage of the purchased landscaped supply materials which will be sold commercially from the site.

As a consequence, the total amount of waste and products derived from waste that can be safely stored on the site is estimated to be 50,000 tonnes at any one point in time. Given this, the proponent will seek to apply for an Authorised Amount of 50,000 tonnes at any one point in time under Clause 10B of the *Protection of the Environment Operations (Waste) Regulation 2014*.

2.3.9.4 Stockpile heights

Stockpile heights have been based on best practice guidelines outlined in the South Australian Environmental Protection Agency (EPA SA, 2010)⁴ in order manage fire, dust and odour:

- Stockpiles of waste materials in the designated waste storage area will be limited to 3m. Height guidance will be provided by the 3m height of the concrete block bays;
- Stockpiles of inert material such as concrete, brick, soil etc. will be limited to a maximum of 5m in height in the processing and blending areas. Height poles to the exact length (5m) will provide on-site guidance for stockpile management;
- Stockpiles of organic material such as timber and mulch will be limited to a maximum of 3m in height in the processing and blending areas. Height poles to the exact length (3m) will provide on-site guidance for stockpile management; and
- Stockpiles of all processed products, aggregates and landscaping supplies will be limited to 3m. Height guidance will be provided by the 3m height of the concrete block bays.

⁴ EPA South Australia (2017). Guideline for stockpile management: Waste and waste derived products for recycling and reuse. Internet publication: http://www.epa.sa.gov.au/environmental_info/waste_management/solid_waste/storage_and_stockpiling

2.3.10 Environmental benefits

The proposed development will consider environmental best practice and sustainability to reduce the impact of the development on the environment. The following features will be built into the design of the proposed upgrade of the site:

- Waste will be received in a dedicated area and closely inspected upon arrival, as per the NSW EPA (2018) *Standards for Managing Construction Waste in NSW* and the NSW EPA (2014) *Draft Protocol for Managing Asbestos during Resource Recovery of Construction and Demolition Waste* to minimise the risk of contamination in the final products;
- Noise will be controlled using strategically-placed noise barriers;
- Advanced crushing, grinding, shredding and sorting technology will be used in the facility to maximise the diversion of waste from landfill, with a target of 95% recovery;
- More refined sorting of materials will occur within an enclosed warehouse building environment;
- Minimise the disposal of waste to landfill, and maximise the diversion of quality recycled materials into local markets;
- Concrete and asphalt hard stand to be used extensively across the site, including roads and waste storage and product storage bays to protect groundwater;
- Operational areas will comprise a compacted concrete aggregate hardstand and lined with geotextile membrane to avoid soil disturbance and to improve the quality of runoff water and to protect groundwater; and
- Upgrading the stormwater management system on-site to protect surface water quality, firewater containment in the event of a fire incident and avoid impacts on receiving waterways.

2.3.11 Economic benefits

The facility upgrade will represent a new development that will assist in creating jobs within the Central Coast region. The proposed development will provide a broader range of recycling options and make progress towards the NSW Government's recycling targets. The project will create 5 jobs in construction over a 3-month period and 11 new permanent jobs, injecting more than \$73.8 million into the local economy over a 20-year period.

2.3.12 Social benefits

The facility will create 5 jobs in construction over a 3-month period and 11 new permanent jobs. This will contribute towards employment in the area.

The facility will provide a local destination for building waste, as well as a local outlet for high quality recycled building and landscape products. This will reduce the need for transport of waste outside the area and the need to import products from Sydney, thus reducing transport costs and traffic.

2.4 Project Justification

2.4.1 Strategic Drivers

2.4.1.1 NSW EPA's Strategic Plan and the WARR Strategy 2014-21

In NSW, the State Government has committed to ambitious targets for recycling across the State. These targets are published in the NSW Waste Avoidance and Resource Recovery Strategy. By 2021/22, the NSW Government intends to increase recycling rates for:

- Municipal solid waste from 52% (in 2010–11) to 70%;
- Commercial and industrial waste from 57% (in 2010–11) to 70%;
- Construction and demolition waste from 75% (in 2010–11) to 80%; and
- Waste diverted from landfill from 63% (in 2010–11) to 75%.

A critical pathway to achieving these recycling targets is investment in new infrastructure. To encourage investment in new recycling facilities, the NSW Government is investing \$337 million between 2017 and 2021 to build new recycling facilities. This investment is required to capture an additional 3.3 million tonnes of waste per year and have this material sustainably diverted from landfill.⁵

2.4.1.2 NSW Waste Less, Recycle More Initiative

The NSW Government's \$337 million Waste Less, Recycle More program includes \$22.5 million allocated to business recycling, and a further \$48 million to support the development of new infrastructure for both municipal, commercial and construction and demolition waste materials.

To date, approximately 822 projects have been funded, supporting 845 jobs and processing 2.2 million tonnes of waste.

2.4.1.3 NSW EPA draft Waste and Resource Recovery Infrastructure Strategy 2017-2021

The population of NSW is expected to grow to over 8.2 million by 2021 and this will increase the amount of waste generated across the state. By 2021, it is expected NSW will need to process nearly 20 million tonnes of waste.

The NSW Environment Protection Authority's (EPA) Waste Avoidance and Resource Recovery (WARR) Strategy 2014–21 sets targets for the diversion of waste from landfill, increasing from 63% in 2014/15 to 75% by 2021. To achieve the target, significant investment is needed to develop infrastructure that will process this forecast increase in waste volume. The draft Waste and Resource Recovery Infrastructure Strategy⁶ was developed to assist councils and waste industry participants to understand the expected increase in waste streams and to plan sufficient infrastructure capacity to process projected volumes.

The NSW Government is investing a further \$168 million between 2017 and 2021 to stimulate investment in new waste processing technologies and capacity across NSW. This is part of the nine-year \$802.7 million Waste Less, Recycle More initiative. Increased investment in resource recovery infrastructure is good for public health, the environment and the economy. It creates jobs and stimulates innovative technology. Successfully meeting NSW's diversion target would result in an estimated additional 1,590 jobs in NSW; energy savings equivalent to the energy usage of 1.49 million households each year; water savings equivalent to 5,392 Olympic-sized swimming pools each year and greenhouse gas benefits equivalent to removing 530,971 cars from the road.

The EPA recently finalised an infrastructure needs analysis to inform the development of the draft strategy. It is anticipated that the infrastructure strategy will aid ongoing development of regional waste and resource recovery implementation plans. Local governments and waste industry participants lead planning and investment in NSW's waste and resource recovery systems. The draft strategy has been developed to guide decision making to ensure NSW gets the correct mix of infrastructure to meet future needs.

⁵ NSW EPA (2014). *NSW Waste Avoidance and Resource Recovery Strategy: 2014 – 2021*. Internet publication: www.epa.nsw.gov.au/your-environment/recycling-and-reuse/warr-strategy

⁶ NSW EPA (2017). *NSW Waste and Resource Recovery Infrastructure Strategy: 2017 – 2021: Draft for Publication*. Internet publication: www.epa.nsw.gov.au/your-environment/recycling-and-reuse/warr-strategy/policy-makers

The draft infrastructure plan identifies a significant shortfall in construction and demolition waste processing capacity in the Hunter and Central Coast Region. The draft strategy estimates that an additional capacity of approximately 461,000 tpa will be needed by 2021 to meet the NSW waste diversion target for C&D waste.

The proposed development will provide an additional 200,000 tpa capacity to the region, helping to ensure the Central Coast, and Hunter Region, have adequate processing capacity to meet the projected need.

2.4.2 Site suitability

The selected site is suitable as a sand, soil and building materials recycling facility:

- It is located within an industrial estate away from built-up urban areas;
- It is easy for heavy vehicles to access using major roads for the majority of their journey;
- The site is within easy reach for its customers, both projects generating sand, soil and building waste materials and potential customers requiring the processed product;
- The site is relatively flat, making it suitable for processing equipment and heavy vehicle maneuvering;
- The site is elevated, and not prone to flooding;
- There is sufficient area on the site allowing for a suitable processing area to be cleared and maintain visual and landscaped screens; and
- As discussed in detail in this EIS, the potential emissions can be mitigated to ensure there is no impact on surrounding properties.

2.4.3 Strategic context

The Gosford Community Strategic Plan⁷ identifies the need to increase job opportunities and economic growth in the region by diversifying the types of industry in the area and by encouraging new businesses. The proposed development meets both of these objectives by using under-utilised industrial land to establish a business that will create 11 ongoing jobs. The facility will also service the local construction industry, supplying it with high quality recycled products.

The Central Coast Regional Action Plan⁸ and the Regional Economic Development and Employment Strategy, both developed under the NSW 2021 initiative, identify the need to create more local jobs by attracting new and diverse businesses to the region.

2.4.4 Ecologically Sustainable Development

The NSW Government is committed to encouraging Ecologically Sustainable Development, and this is a key objective of the State's environmental laws. The *Protection of the Environment Administration Act* 1991 defines ecologically sustainable development under Section 6(2) as: 'ecologically sustainable development requires the effective integration of economic and environmental considerations in decision-making processes.'

The National Strategy for Ecologically Sustainable Development (NSED) (1992) states that there are two main features which distinguish an ecologically sustainable approach to development. These features are:

- The need to consider in an integrated way, the wider economic, social and environmental implications of our decisions and actions for Australia, the international community and the biosphere; and

⁷ Gosford City Council (2013), *Community Strategic Plan - Developed 2011 & updated July 2013*. Internet publication: www.gosford.nsw.gov.au/about-council/governance-and-strategy/citywide-planning-and-reporting

⁸ DPC (2012), *Central Coast Regional Action Plan*. Internet publication: http://www.rdacc.org.au/nsw_2021_and_the_central_coast_regional_action_plan_nsw_state_government

- The need to take a long-term rather than a short-term view when taking those decisions and actions.

The *Protection of the Environment Administration Act 1991* highlights four key principles of ecologically sustainable development under Section 6(2) (a)-(d). These principles are:

- **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; and
 - (ii) an assessment of the risk-weighted consequences of various options.
- **Intergenerational 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.
- **Protecting Biodiversity** – conservation of biological diversity and ecological integrity-namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration.
- **Improved valuation** – improved valuation, pricing and incentive mechanisms should be promoted to ensure the full costs, including the cost to environmental and social systems, are included in the final valuation of the product or service. 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; and
 - (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 principles of ESD have been considered throughout the preparation of this EIS. The Chapter summarises what steps have been taken to achieve the principles of ESD.

The proposed Facility has been designed to minimise impacts and where possible, improve the natural, social and economic environment of the region. This includes ensuring the protection and management of air quality, soil and surface waters as well as the appropriate storage, management and disposal of wastes and hazardous substances. Impacts on social systems, such as noise, vibration, traffic and transport, fire and heritage have been managed and improved through the proposed mitigation measures.

The main processing area is located in an outdoor area. This is necessary to accommodate vehicle movements and to reduce costs. The air quality and noise modelling show that the mitigation measures will ensure that the outdoor processing area has negligible impact on neighbouring properties. The distance to neighbouring properties is far enough to minimise any impacts.

It is also important to note that the design of the site has considered best practice measures for waste receipt, onto a concrete and bunded hardstand, with a 25kL underground concrete tank for pump out and disposal of leachate (rainwater coming into contact with waste). Whilst this operation is outdoors, the design of this part of the site has considered the potential risks to water quality (from possible non-compliant waste materials and chemicals in mixed building waste in particular).

In addition, the processing and recycling of the mixed building waste stream will be done within the secondary sorting warehouse. Processing of this waste stream in an enclosed environment will ensure that the waste material will not come into contact with rainwater, thereby avoid the potential for contaminated runoff requiring treatment in the OSD pond and stormwater treatment system.

The design of the outdoor waste storage, processing and product storage areas has considered environmental best practice in pavement design, to protect groundwater. The main access driveway and the waste tip and spread inspection area will comprise a fully engineered and bunded hardstand (waste tipping and inspection area), to avoid movement of any pollutants into groundwater. A flexible asphalt pavement will be provided beneath the waste storage bays, the landscaping storage bays and the aggregate storage bays to further protect groundwater. The other operational areas of the site will be paved in recycled crushed concrete, with an engineered bentonite geotextile layer (impermeable barrier) to prevent any infiltration moving into groundwater.

Other water sensitive urban design and treatment measures are proposed to protect surface and groundwater quality. The measures will include a grassed swale to pre-treat runoff from the working areas of the site. This is a critical component in the capture of sediment from the working areas of the site. Furthermore, an OSD basin in the south-west corner of the site will capture on-site stormwater and erosion sediment. The design will include sediment inlet ponds to enhance the capture of sediment. Sediment will be regularly removed from the OSD basin, and any overflows will be directed to a Stormwater 360® Jellyfish™ device to further remove sediment prior to discharge to the vegetated areas to the south of the site. Captured water will be re-used on site, mainly for dust suppression on roads and stockpiles, and in the crushing and screening operations.

The overall pavement design strategy and system of water management, therefore, is in line with best practice and will ensure the outdoor operations of the facility can be performed sustainably and in a manner that protects the environment and the amenity of neighbours.

The processing capacity of the Facility will result in considerable social and economic benefits at both the local and regional level. The facility will be able to receive 200,000 tonnes of sand, soil and building materials per annum for recycling in the Central Coast region of NSW.

The development is consistent with current approved use and will enable additional material to be received, sorted and recycled by the facility to improve recycling outcomes for the Central Coast region, which has a critical shortfall of 461,000 tonnes per annum of recycling capacity⁹ to help the region reach a recycling target of 80% for construction and demolition waste materials 2021 as per the NSW Government's *Waste Avoidance and Resource Recovery Strategy 2014 - 2021*.

The proposed development will provide an additional 200,000 tpa capacity to the region, helping to ensure the Central Coast, and Hunter Region, have adequate processing capacity to meet the projected need.

The proposed upgrade the facility will enable the efficient entry, drop off of materials and loading of vehicles at the site, improving operational efficiency whilst not impacting on neighbouring land uses.

2.4.5 Precautionary Approach

A precautionary approach to the identification and management of environmental issues has been taken throughout the preparation of this EIS. In some instances, where information was not fully obtainable for reasons outside the

⁹ See section 2.4.4 in this EIS and NSW EPA (2017). NSW EPA (2017). *NSW Waste and Resource Recovery Infrastructure Strategy: 2017 – 2021: Draft for Publication*. Internet publication: www.epa.nsw.gov.au/your-environment/recycling-and-reuse/warr-strategy/policy-makers

control of Jackson Environment and Planning, a precautionary approach has been taken to ensure all appropriate measures were employed to prevent any associated environmental degradation.

2.5 Benefits to Current and Future Generations

The benefits to future generations include the protection and improved environmental management, increased employment opportunity, improved recycling infrastructure to respond to increasing demand (and community expectations) for efficient and effective sand, soil and building material recycling. Benefits also include the subsequent economic and social benefits which will be vital for the sustainable expansion and growth of the Somersby industrial area.

2.5.1 Protection of Biodiversity

A total of 2.5 ha of native vegetation is proposed to be impacted by the project, with a further 4.12 ha of cleared land and exotic vegetation also to be impacted within the Subject Site. Although complete clearing has been used to calculate credits within the Subject Site, several avoidance measures have been implemented during project design. Several mitigation measures will also be implemented during development to reduce impacts as much as possible, as recommended by Narla Environmental in their Flora and Fauna Impact Assessment.

Avoidance and mitigation measures include:

- A 10 m buffer surrounding *Melaleuca biconvexa* individuals to ensure the species is not impacted by the development;
- Preparation of a Vegetation Management Plan (VMP) to guide the on-going protection and management of the *Melaleuca biconvexa*;
- Avoidance of the southern portion of the Subject Property, which totals 4.1 ha and contains habitat for *Prostanthera junonis* and *Hibbertia procumbens*. The area partially falls under Management Zone 1b and 1d of the Somersby Industrial Park Draft Plan of Management (Connell Wagner 2005) and the feasibility of entering into a Biodiversity Stewardship Agreement will be investigated;
- Assigning an Ecologist to undertake a pre-clearing survey of the vegetation prior to clearing and development. If any significant ecological values such as nests are found, clearing is to be delayed until the nest is vacated;
- Assigning an Ecologist to be present on site during the clearing events. The Ecologist will be able to guide works crews away from sensitive ecological features and will be on hand to capture and relocate displaced fauna. Where possible the clearing of mature trees will be avoided if they can be accommodated into the development footprint;
- Preventing the inadvertent introduction of exotic flora propagules by following the DEP (2015) 'Arrive Clean, Leave Clean' Guidelines; and
- Ensuring appropriate erosion and sedimentation controls are maintained throughout the construction phase and the period immediately following as outlined in the 'Blue Book' (Landcom 2004).

The unavoidable impact of clearing vegetation will be completely offset.

A total of 116 ecosystem credits and 28 Eastern Pygmy-Possum species credits must be retired in order to offset the impacts of the proposed development. The proponent has a number of options to satisfy the offset obligations of the project.

The proponent will investigate the feasibility of protecting the southern portion of the Subject Property under a Biodiversity Stewardship Agreement. This part of the Subject Property contains intact vegetation and habitat for

Eastern-pygmy Possum and a number of threatened species, including *Prostanthera junonis* and *Hibbertia procumbens*.

The southern portion of the Subject Property is currently a management zone under the Somersby Industrial Zone Plan of Management (Connell Wagner, 2005), and totals 4.1 ha. Due to the relatively small size of the potential Biodiversity Stewardship Agreement site additional credits are likely to be required in addition to those generated on-site.

A review of the credits currently available on the offsets market revealed that no credits matching either PCT or Eastern Pygmy-Possum are currently available. The proponent will consider completing a Credits Wanted request for the required credits as the project proceeds.

Landholders Expression of Interest (EOIs) details were also reviewed as part of this project. A number of EOIs are available for the credits required, including:

- PCT 1783 – No EOIs listed;
- PCT 1776 – No EOIs listed; and
- Eastern Pygmy-Possum – EOI 187, EOI 189 and EOI 207.

The landholders listed in the EOI register will be contacted to determine if interest to enter into a Biodiversity Stewardship Agreement still exists and, if still interested, the likely cost of the credits required to offset the project.

Finally, payment into the Biodiversity Conservation Fund (BCF), which is administered by the Biodiversity Conservation Trust (BCT), is also an option for the project. The current price to offset the credit requirement for the proposed project is \$611,309.77 (ex GST), which includes \$5,144.40 (ex GST) for each ecosystem credit and \$521.42 (ex GST) for each species credit.

Further investigations will be completed to determine the most efficient and effective offset approach for the project.

2.5.2 Valuation of Resources

The assessment of environmental, social and economic issues undertaken in this study has allowed for the improved valuation of these resources when considering the merits of the proposed development. The environmental and social costs with the proposed development have been minimised through the proposed mitigation measures, while it is expected that the proposed development will inject \$73 million into the local economy over the twenty-year life of the project and create 11 new and ongoing local employment positions within the community.

2.6 Planning and legislative requirements

This section summarises the planning and legislative requirements for the development approval, and how the proposed development meets those requirements.

2.6.1 Project approval

The proposed development will involve modification of the current Development Consent conditions. The maximum waste processing capacity will be increased to 200,000 tonnes per annum. The facility will include features outlined in Section 1.1.1.

Under Section 4.36 of the *Environmental Planning and Assessment Act 1979* the proposed development is considered to be a State Significant Development, requiring an EIS to be submitted with the development application.

Central Coast Council has advised that the proposed development will require concurrence and licensing by the NSW Environment Protection Authority under the *Protection of the Environment Operations Act 1997*.

The company is committed to complying with all laws that affect its operations and understands that development approval and appropriate licensing is required prior to the proposed development occurring. In this regard, pursuant to Part 2, Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*, Kariong Sand and Soil Supplies, as the Proponent, sought the Secretary's environmental assessment requirements with respect to the proposed Environmental Impact Statement. The SEAR's (8660) for the project was issued on 23 August 2017 by the NSW Department of Planning and Environment.

2.6.2 NSW statutory legislation

This section addresses how the proposed development complies with the relevant NSW planning legislation. The relevant NSW legislation includes:

- *Environmental Planning and Assessment Act 1979*;
- *Environmental Planning and Assessment Regulation 2000*;
- *Protection of the Environment Operations Act 1997*;
- *Waste Avoidance and Resource Recovery Act 2001*;
- *Water Management Act 2000*;
- *Biodiversity Conservation Act 2016*;
- *State Environmental Planning Policy (State and Regional Development) 2011*;
- *State Environmental Planning Policy (Infrastructure) 2007*;
- *State Environmental Planning Policy No. 55 - Remediation of Land*; and
- *State Environmental Planning Policy No.33 - Hazardous and Offensive Development*.

2.6.3 *Environmental Planning and Assessment Act 1979*

The proposed development is consistent with the overall objectives of the *Environmental Planning and Assessment Act 1979*. Section 5 of the *Environmental Planning and Assessment Act 1979* and the accompanying Regulation provide the framework for environmental planning in NSW and include provisions to ensure that proposals which have the potential to impact the environment are subject to detailed assessment, and to provide opportunity for public involvement. The objectives of this Act as contained in Clause 1.3 are:

- 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;
- b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment;
- c) to promote the orderly and economic use and development of land;
- d) to promote the delivery and maintenance of affordable housing;
- e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats;
- f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage);
- g) to promote good design and amenity of the built environment,
- h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants;
- i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State; and
- j) to provide increased opportunity for community participation in environmental planning and assessment.

Under Section 4.36 of the *Environmental Planning and Assessment Act* 1979, the proposed development is considered to be a State Significant Development, requiring an EIS to be submitted with the development application. Under Clause 5.5 of the Act, an Environmental Impact Statement in the form prescribed by the Regulations must accompany the development application.

The relevance to the proposed development is described as follows:

The proposed development is consistent with the nominated objectives of the Act and is considered capable of fulfilling the statutory requirements. The site investigations have determined that the proposed development will not result in any significant negative impacts that cannot be adequately mitigated or managed. This EIS confirms that the proposed development can be undertaken in a manner which will not adversely impact on natural resources but will promote the economic use of the land in a manner which will provide an improved level of resource management, employment and economic benefits for the Central Coast region of NSW.

2.6.4 *Environmental Planning and Assessment Regulation 2000*

The facility triggers Clause 32(1)(b)(iii) and Clause 32(1)(d)(iv) of Schedule 3 of the Regulation (see clauses below).

Clause 32: Waste management facilities or works:

1) Waste management facilities or works that store, treat, purify or dispose of waste or sort, process, recycle, recover, use or reuse material from waste and:

(b) (iii) that have an intended handling capacity of more than 30,000 tonnes per year of waste such as glass, plastic, paper, wood, metal, rubber or building demolition material.

Or for developments that are located:

(d)(i) in or within 100 metres of a natural waterbody, wetland, coastal dune field or environmentally sensitive area, or

(ii) in an area of high water table, highly permeable soils, acid sulphate, sodic or saline soils, or

(iii) within a drinking water catchment, or

(iv) within a catchment of an estuary where the entrance to the sea is intermittently open, or

(v) on a floodplain, or

(vi) within 500 metres of a residential zone or 250 metres of a dwelling not associated with the development and, in the opinion of the consent authority, having regard to topography and local meteorological conditions, are likely to significantly affect the amenity of the neighbourhood by reason of noise, visual impacts, air pollution (including odour, smoke, fumes or dust), vermin or traffic.

As described in Section 1.1.1, the facility will process up to 200,000 tpa and the nearest residential dwelling is located less than 250m away from the site entrance. Therefore, the proposed project would constitute a State Significant Development under Clause 23(3) of Schedule 1 of the *State Environmental Planning Policy (State and Regional Development)* 2011. As the proposed development is considered to be a State Significant Development, it requires an Environmental Impact Statement.

This Environmental Impact Statement is part of the development application.

2.6.5 *Protection of the Environment Operations Act 1997*

The *Protection of the Environment Operation Act 1997* (POEO Act) prohibits any person from causing pollution of waters, or air and provides penalties for air, water and noise pollution offences. Section 48 of the Act requires a person to obtain an Environment Protection License (EPL) from the NSW Environment Protection Authority before carrying out any of the premise-based activities described in Schedule 1 of the Act.

Schedule 1 of the Act (Clause 34) details “Resource Recovery” as an activity. This clause applies to the following activities:

- Recovery of general waste, meaning the receiving of waste (other than hazardous waste, restricted solid waste, liquid waste or special waste) from off site and its processing, otherwise than for the recovery of energy.
- Recovery of hazardous and other waste, meaning the receiving of hazardous waste, restricted solid waste or special waste (other than asbestos waste or waste tyres) from off site and its processing, otherwise than for the recovery of energy.
- Recovery of waste oil, meaning the receiving of waste oil from off site and its processing, otherwise than for the recovery of energy.
- Recovery of waste tyres, meaning the receiving of waste tyres from off site and their processing, otherwise than for the recovery of energy.

These activities are declared to be a scheduled activity if it meets the following criteria:

- If the premises are in the regulated area:(a) involves having on site at any time more than 1,000 tonnes or 1,000 cubic metres of waste, or (b) involves processing more than 6,000 tonnes of waste per year.

The relevance to the proposed development is as follows:

The proponent will require a licence to operate from the NSW EPA. The proponent will apply for an Environment Protection Licence following submission of this development application.

2.6.6 *Waste Avoidance and Resource Recovery Act 2001*

The *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) promotes waste reduction and better use of our resources in NSW. It includes provisions for waste strategies and programs, and for industry actions to reduce waste.

The WARR Act requires the Environment Protection Authority to produce and implement a state-wide waste strategy. The NSW Waste Avoidance and Resource Recovery Strategy 2014-2021 sets a recycling rate target for C&D materials of 85% by 2020-21.

The relevance to the proposed development is as follows:

The proposed development will assist in meeting the NSW state target for recycling C&D materials.

2.6.7 *Water Management Act 2000*

The objects of the *Water Management Act 2000* are to provide for the sustainable and integrated management of the water sources of the state for the benefit of both present and future generations and, in particular:

- Ecologically sustainable development;
- Protect, enhance and restore water resources;

- Recognise and foster social and economic benefits;
- Recognise the role of the community;
- Provide efficient and equitable sharing of water;
- Management of water sources with other aspects of the environment including native vegetation and native fauna;
- Encourage the sharing of responsibility and efficient use of water; and
- Encourage best practice management and use of water.

In NSW, the regulator and policy maker for water resource management is the NSW DPI Water. The department develops natural resource management policy frameworks, strategies and plans related to water management. DPI Water is accountable for water sharing plans (WSPs), which define the rules for sharing the water resources of each regulated river valley between consumptive users and the environment. WSPs are made under the *Water Management Act 2000*. WaterNSW operates in accordance with these WSPs and delivers water to customers and the environment. Customers' water accounts are credited with their shares of available water and, as they use their water, their usage is debited from their accounts.

The relevance to the proposed development is as follows:

The proposed development is consistent with the nominated objectives of the Act and is considered capable of fulfilling the statutory requirements. The site investigations have determined that the proposed development will not result in any significant negative impacts on water that cannot be adequately mitigated or managed.

2.6.8 *Biodiversity Conservation Act 2016*

The purpose of this Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development, in particular to:

- Conserve biodiversity at bioregional and State scales;
- Maintain the diversity and quality of ecosystems and enhance their capacity to adapt to change and provide for the needs of future generations;
- Improve, share and use knowledge, including local and traditional Aboriginal ecological knowledge, about biodiversity conservation;
- Support biodiversity conservation in the context of a changing climate;
- Support collating and sharing data, and monitoring and reporting on the status of biodiversity and the effectiveness of conservation actions;
- Assess the extinction risk of species and ecological communities, and identify key threatening processes, through an independent and rigorous scientific process;
- Regulate human interactions with wildlife by applying a risk-based approach;
- Support conservation and threat abatement action to slow the rate of biodiversity loss and conserve threatened species and ecological communities in nature;
- Support and guide prioritised and strategic investment in biodiversity conservation;
- Encourage and enable landholders to enter into voluntary agreements over land for the conservation of biodiversity;
- Establish a framework to avoid, minimise and offset the impacts of proposed development and land use change on biodiversity;

- Establish a scientific method for assessing the likely impacts on biodiversity values of proposed development and land use change, for calculating measures to offset those impacts and for assessing improvements in biodiversity values;
- Establish market-based conservation mechanisms through which the biodiversity impacts of development and land use change can be offset at landscape and site scales;
- Support public consultation and participation in biodiversity conservation and decision-making about biodiversity conservation; and
- Make expert advice and knowledge available to assist the Minister in the administration of this Act.

The *Biodiversity Conservation Act* 2016 and the supporting Regulations establish a modern and integrated legislative framework for land management and biodiversity conservation. Biodiversity elements include major innovations to offsetting and private land conservation, as well as improvements to threatened species conservation and how we manage human-wildlife interactions. The Act and its Regulations are administered by the Office of Environment and Heritage.

The relevance to the proposed development is as follows:

Consideration of the *Biodiversity Conservation Act* 2016 is required as part of the proposed development, given requirement for clearing of some native vegetation, which will generate the requirement for Biodiversity Offsets. This is assessed in full in this EIS.

2.6.9 *State Environmental Planning Policy (State and Regional Development) 2011*

Clause 23 of the *SEPP (State and Regional Development) 2011* defines the following waste and resource management facilities as State Significant Development. Clause 23(3), in particular, applies to the proposed development:

23 Waste and resource management facilities

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

Under these circumstances, it is evident that the proposed development is a project to which Part 4, Division 4.7 State Significant Development of the *Environmental Planning and Assessment Act* 1979 applies. Under Clause 4.12(8) of the *Act*, an Environmental Impact Statement, in the form prescribed by the Regulations, must accompany the development application.

The proposed State Significant Development requires an EIS to support the development assessment process. The consent authority is the Independent Planning Commission.

2.6.10 *State Environmental Planning Policy (Infrastructure) 2007*

The *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP) has specific planning provisions and development controls for 25 types of infrastructure works or facilities:

1. air transport facilities
2. correctional centres
3. educational establishments
4. electricity generating works
5. electricity transmission and distribution
6. emergency services facilities and bushfire hazard reduction

7. flood mitigation works
8. forestry activities
9. gas transmission and distribution
10. health services facilities
11. housing and group homes
12. parks and other public reserves
13. port, wharf and boating facilities
14. public administration buildings and buildings of the Crown
15. rail infrastructure facilities
16. research stations
17. road and traffic facilities
18. sewerage systems
19. soil conservation works
20. stormwater management systems
21. telecommunications networks
22. travelling stock reserves
23. waste or resource management facilities
24. water supply systems
25. waterway or foreshore management activities.

The Infrastructure SEPP outlines the planning rules for these works and facilities, including:

- Where such development can be undertaken;
- What type of infrastructure development can be approved by a public authority under Part 5 of the Environmental Planning and Assessment Act (EP&A Act) following an environmental assessment (known as ‘development without consent’);
- What type of development can be approved by the relevant local council, Minister for Planning or Department of Planning under Part 4 of the EP&A Act (known as ‘development with consent’);
- What type of development is exempt or complying development;
- The relationship of other statutory planning instruments to the Infrastructure SEPP.

Division 23 Clauses 120 and 121 applies to the proposed development:

Division 23 Waste and resource management facilities

120 Definitions

In this Division:

prescribed zone means any of the following land use zones or a land use zone that is equivalent to any of those zones:

- (a) RU1 Primary Production,
- (b) RU2 Rural Landscape,
- (c) IN1 General Industrial,
- (d) IN3 Heavy Industrial,
- (e) SP1 Special Activities,

(f) SP2 Infrastructure.

Resource recovery facility means a facility for the recovery of resources from waste, including such works or activities as separating and sorting, processing or treating the waste, composting, temporary storage, transfer or sale of recovered resources, energy generation from waste gases and water treatment, but not including re-manufacture of material or goods or disposal of the material by landfill or incineration.

121 Development permitted with consent

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

(2) Development for the purposes of a waste or resource transfer station may be carried out by any person with consent on:

(a) land in a prescribed zone, or

(b) land in any of the following land use zones or equivalent land use zones:

(i) B5 Business Development,

(ii) B6 Enterprise Corridor,

(iii) IN2 Light Industrial

(iv) IN4 Working Waterfront, or

(c) land on which development for any of the following purposes is permitted with consent under any environmental planning instrument:

(i) industry,

(ii) business premises or retail premises,

(iii) freight transport facilities.

(3) Development for the recycling of construction and demolition material, or the disposal of virgin excavated natural material (within the meaning of Schedule 1 to the Protection of the Environment Operations Act 1997) or clean fill, may be carried out by any person with consent on land on which development for the purpose of industries, extractive industries or mining may be carried out with consent under any environmental planning instrument.

The relevance to the proposed development is as follows:

The development involves establishing a facility to recycle sand, soil and building materials on a site zoned IN1 (General Industrial). Therefore, the proposed development is permissible with consent under the Infrastructure SEPP.

2.6.11 State Environmental Planning Policy No. 55 - Remediation of Land

The object of *State Environmental Planning Policy No. 55 - Remediation of Land* (SEPP 55) is to provide for a Statewide planning approach to the remediation of contaminated land.

In particular, the SEPP aims 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:

- (a) by specifying when consent is required, and when it is not required, for a remediation work, and
- (b) by specifying certain considerations that are relevant in rezoning land and in determining development applications in general and development applications for consent to carry out a remediation work in particular, and
- (c) by requiring that a remediation work meet certain standards and notification requirements.

The relevance to the proposed development is as follows:

To ensure the development complies with the SEPP 55, a contaminated site assessment was undertaken (see Chapter 8).

2.6.12 State Environmental Planning Policy No.33 - Hazardous and Offensive Development

The aims of the *State Environmental Planning Policy No.33 - Hazardous and Offensive Development* (SEPP 33) are:

- a) to amend the definitions of hazardous and offensive industries where used in environmental planning instruments;
- b) to render ineffective a provision of any environmental planning instrument that prohibits development for a storage facility on the ground that the facility is hazardous or offensive if it is not a hazardous or offensive storage establishment as defined in this Policy;
- c) to require development consent for hazardous or offensive development proposed to be carried out in the Western Division;
- d) to ensure that in determining whether a development is a hazardous or offensive industry, any measures proposed to be employed to reduce the impact of the development are considered;
- e) to ensure that in considering any 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 any adverse impact; and
- f) to require the advertising of applications to carry out any such development.

The relevance to the proposed development is as follows:

As a waste facility, the development is a *potentially offensive industry*. As such, a preliminary hazard analysis must be prepared as part of the development application. The preliminary hazard analysis is to be found in Chapter 3 of this Environmental Impact Statement.

2.6.13 Proposed reforms to the Protection of the Environment Operations (Waste) Regulation 2014

The NSW Government implemented substantial reforms to modernise the NSW waste industry with the introduction of the *Protection of the Environment (Waste) Regulation 2014*.

The 2014 reforms were designed to achieve the objectives of the *Protection of the Environment Operations Act 1997* (POEO Act), including to protect the environment and reduce risks to human health in New South Wales. The reforms also aimed at providing a level playing field for waste operators, minimise illegal dumping and minimise activities that distorted the market, including excessive stockpiling.

The 2014 reforms led to significant improvements in the operation of most waste facilities and improved ability for the EPA to efficiently regulate waste facilities. Despite this, based on numerous investigations, industry feedback and

data analysis, the EPA has become aware of a range of ongoing issues in the construction and demolition (C&D) waste sector.

The EPA has proposed that the government make a number of changes to the waste regulatory framework in NSW to meet the objectives of the POEO Act. These proposed changes complement existing waste policy in NSW, including the NSW Government's *Waste Avoidance and Resource Recovery Strategy 2014–21*.

The proposed adopted in November 2018 are set out in the *Standards for Managing Construction Waste in NSW* (EPA, 2018).

The relevance to the proposed development is as follows:

To ensure best practice standards are met now and, in the future, the proponent will implement these proposed measures;

- Implement waste inspection requirements;
- Implement the waste sorting requirements;
- Implement the waste storage requirements; and
- Comply with transport requirements.

2.6.14 Commonwealth Policy and Legislation - *Environment Protection and Biodiversity Conservation Act 1999*

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) came into force from 16 July 2000. The EPBC Act requires actions which are likely to have a significant impact on matters of National Environmental Significance, or which have a significant impact on Commonwealth land, to be referred to the Commonwealth Minister for the Environment for approval.

The relevance to the proposed development is as follows:

The subject site is not listed as a national heritage place and the proposed development would not impact on any national heritage places. The proposed development would not impact on any threatened species or communities.

No National Environmental Significance matters would be impacted by the proposed development. As such, the proposed development has not been referred to the Commonwealth Minister for the Environment and approval pursuant to the EPBC Act is not required.

2.6.15 Approvals/Licenses Required

The development is considered to be a State Significant Development under Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011*.

A State Significant Development is development for which a development application is to be submitted to the Minister for Planning with an Environmental Impact Statement.

As part of the development assessment process, it is understood that an Environment Protection Licence (EPL) for the site will be required under the *Protection of the Environment Operations Act 1997*. As part of the approvals process, the Proponent will apply for an EPL that reflects the waste materials that can be lawfully received on site for recycling, total annual processing limit, the authorised amount (that is, the amount of waste that can be stored on-site at any one point in time) and environment protection licence discharge limits.

2.6.16 Local Environmental Planning Instruments

2.6.16.1 Gosford Local Environment Plan 2014

The proposed development of the KSSS sand, soil and building materials recycling facility is permitted under the *Gosford Local Environmental Plan 2014* with consent. The proposed development will focus on upgrading the resource recovery activities on land zoned as IN1 General Industrial. The objectives of the IN1 zoning are as follows:

- To provide a wide range of industrial and warehouse land uses;
- To encourage employment opportunities;
- To minimise any adverse effect of industry on other land uses;
- To support and protect industrial land for industrial uses;
- To promote ecologically, socially and economically sustainable development;
- To ensure that retail, commercial or service land uses in industrial areas are of an ancillary nature; and
- To ensure that development is compatible with the desired future character of the zone.

Under the *Gosford Local Environmental Plan 2014*, the following land uses are permitted with consent (Table 2.9).

Table 2.9. Land uses are permitted with consent under the Gosford Local Environmental Plan 2014.

Permitted types of development in IN1 General Industrial Zones (<i>Gosford Local Environmental Plan 2014</i>)	
Recreation areas	Neighbourhood shops
Depots	Places of public worship
Freight transport facilities	Restaurants or cafes
Garden centres	Roads
General industries	Rural supplies
Hardware and building supplies	Timber yards
Industrial training facilities	Vehicle sales or hire premises
Landscaping material supplies	Warehouse or distribution centres
Light industries	Any other use not prohibited in the LEP (including a recycling facility).

It is noted that the building and landscape supplies business fits the definition of “landscape material supplies” under the Gosford LEP. As such, it is explicitly permitted with consent under the Gosford LEP 2014.

While the resource recovery facilities are not specifically defined as permissible development, they fall under the category of under the LEP as “Any other development not specified in item 2 (Permitted with Consent) or 4 (Prohibited)”. Therefore, the use of the site as a sand, soil and building materials recycling facility is permitted with consent under the Gosford LEP 2014. It is also noted that the development of a ‘resource recovery facility’ with consent under clause 120 of the *State Environmental Planning Policy (Infrastructure) 2007* overrides the provisions of the Gosford LEP.

2.6.16.2 Gosford Development Control Plan 2014

The purpose of the *Gosford Development Control Plan 2014* is:

- To identify Council’s expectations and requirements for development within Gosford local government area and build upon the Gosford LEP 2014, the Gosford Planning Scheme Ordinance and Interim Development Order No. 122 by providing detailed objectives and controls for development;
- To ensure that all development is consistent with the desired character for the surrounding neighbourhood;

- To identify approaches and techniques which promote quality urban design and architectural outcomes in Gosford local government area; and
- To promote best practice and quality environmental outcomes.

The development is required to demonstrate full compliance with the following elements of the *Gosford Development Control Plan 2014*.

- Chapter 3.11 Industrial Development: This chapter sets out constraints for industrial developments, including lot sizes, road widths, stormwater drainage, setbacks, building height, carparks, landscaping and pollution control.
- Chapter 6.1 Acid Sulphate Soils: Under this chapter, a preliminary soil assessment to determine the extent of acid sulfate soils at the site will be required. If acid sulfate soils are present, an Acid Sulfate Soils Management Plan will need to be prepared for submission with the development application.
- Chapter 6.3 Erosion Sedimentation Control: Under this chapter an Erosion and Sediment Control Plan (ESCP), developed to the Soils and Construction Managing Urban Stormwater Standards (Landcom 2004) standards, will be required to gain development consent or building approval. The ESCP must be approved before commencement of site works.
- Chapter 6.6 Preservation of Trees or Vegetation: This chapter sets out when Council consent or permission is required to remove trees in areas not already defined as protected by other legislation. The flora and fauna study will need to comply with this chapter and assess the vegetation on the site against criteria listed in this chapter of the DCP.
- Chapter 6.7 Water Cycle Management: This chapter requires a Water Cycle Management Plan strategy to be prepared to address the management of all water on site, including stormwater and waste water. The Water Cycle Management Plan strategy must incorporate water sensitive urban design principles and development control targets.
- Chapter 7.1 Car Parking: This chapter sets out the required number of carparking spaces and the design criteria for carparking areas.
- Chapter 7.2 Waste Management: Under this chapter, a Waste Management Plan is required to be prepared. The Waste Management Plan is to be submitted with the development application and is to cover the construction and ongoing operational phases of the development.

The following studies and supporting documentation will need to be prepared for the proposed development. Minimum requirements are:

- Streetscape perspective
- Landscape concept plan and report
- Arborist report
- Noise impact assessment report
- Geotechnical Report
- Preliminary Soils Assessment or Acid Sulfate Soil Management Plan
- Drainage Management Plan
- Erosion and Sediment Control Plan
- Traffic impact assessment report
- Heritage impact assessment report

- Aboriginal archaeological assessment report
- Bushfire assessment report
- Flora & Fauna Impact Assessment Report
- Threatened species impact assessment report
- Flood study
- Demolition work plan
- Water Cycle Management Plan
- Waste management plan.

Key parts of the DCP that relate to this development are outlined in Table 2.10 below. A summary of how the development complies with DCP requirements is also provided in this table.

Table 2.10. Key provisions in the *Gosford Development Control Plan 2013* that have been considered in the EIS.

DCP Clause No.	Objective / Requirement	How this DCP clause will influence the proposed development	Compliance
Chapter 3.11 Industrial Development			
3.11.3 Objectives	<p>The general objectives of this chapter are as follows:</p> <p>a. To encourage good design solutions for industrial development.</p> <p>b. To ensure that new industrial development represents a high level of urban design with recognition of the form and character of the existing man-made and natural context.</p> <p>To ensure the efficient use of urban land by maximising development potential of new and existing land and infrastructure.</p>	Building and infrastructure design	The development will meet the requirements in the DCP.
3.11.5 Building	<p>c. Side and rear boundaries shall observe the following minimum set-back requirements:</p> <p>i. Lots 2500m² to 4000m² 3m</p> <p>ii. Lots greater in area than 4000m² 5m</p>	<p>Weighbridge placement.</p> <p>Although not strictly a building, the noise barriers are built structures. The noise barrier along the Eastern boundary will need to be at least 5m from the site boundary.</p>	<p>The weighbridge will be set back more than 5m inside the site boundary.</p> <p>Noise barrier to be constructed along the Eastern boundary will be set back at least 5 m from the site boundary.</p>
	<p>f. Where the industrial allotment adjoins or abuts rural, residential or open space land the development is not to be carried out within five (5) metres of the boundary of the allotment adjoining or abutting that land.</p>	<p>Although not strictly a building, the noise barriers are built structures. The noise barrier along the Eastern boundary will need to be at least 5m from the site boundary.</p>	<p>Noise barrier to be constructed along the Eastern boundary will be set back at least 5 m from the site boundary.</p>

DCP Clause No.	Objective / Requirement	How this DCP clause will influence the proposed development	Compliance
3.11.5.3 Building Height	<p>A maximum requirement is not prescribed; however, the following principles are to be followed in the design and location of buildings within the site:</p> <ul style="list-style-type: none"> a. The privacy and amenity of any adjoining residential areas is to be maintained and protected. b. The overshadowing of adjoining properties is to be minimised, with special attention to employee amenity or recreation areas. <p>The building(s) should not project above the skyline and detract from the natural landscape when viewed from a distance.</p>	Although not strictly a building, the noise barriers are built structures.	The noise barrier along the Eastern boundary is 5 high. It will comply by being set back from the boundary, behind trees. The noise barrier is expected to be less than the height of the existing trees along the boundary. The noise barrier will increase the privacy to the neighbouring property.
3.11.5.4 Building Appearance	This clause sets out appearance of buildings that can be seen from the road and the colour of roofs that can be seen from neighbouring properties.	This clause does not apply to this development.	The noise barriers will not be visible from the road and will not have roofs. The front entrance and boundary of the site will be landscaped according to the Landscape Concept Plan and blend in similar to other industrial development in Somersby. It is noted that the Warehouse Building is already approved by Central Coast Council under DA52541/2017.

DCP Clause No.	Objective / Requirement	How this DCP clause will influence the proposed development	Compliance
3.11.6.2 Outdoor Storage Areas	<p>a. Where the proposed use of the site shall require open areas for the storage of goods or materials, adequate provision is to be included in the design layout of the site and should not encroach on carparking areas, driveways or landscaped areas. These areas are required to be screened from view from any road or other public area.</p> <p>Where the use of the proposed development is not known, outdoor storage area(s) shall be provided.</p> <p>b. Screen fences should be of materials compatible with or which complement the materials, colours, textures, etc. of the materials used in the buildings on the site. When the screening is visible from roads etc., the materials should be in relation to those used for the front facade of the building.</p> <p><u>Note:</u> Security fencing and screen fencing should not intrude into the front set back area between the street frontage and the building.</p>	<p>Much of the development will consist of storage of incoming materials awaiting processing and outgoing products awaiting sale.</p>	<p>The storage areas are well back from the street front and set back from the site boundaries. The front, east and west boundaries of the site will be attractively landscaped. The stored materials will not be visible from the road, nor the neighbouring property.</p> <p>Materials will be stored in purpose-built concrete bunkers, which are widely used in this industry.</p> <p>Refer to the Visual Impact Assessment in Chapter 15 and Appendix S.</p>
3.11.7.3 Loading and Unloading	<p>a. Provision must be made on-site for the loading and unloading of vehicles, with adequate manoeuvring space so that vehicles can enter and leave the site travelling in a forward direction.</p> <p>b. Wherever practical loading docks or vehicular entries to building shall not be provided on any street elevation. Where such facilities can only be provided to street frontages, they must be screened with landscaping.</p> <p>c. The loading/unloading and associated manoeuvring areas are to be exclusive of the relevant carparking requirement.</p> <p>d. Loading docks may be internal or external and shall be located so as not to be visible from any adjoining residential area and not to transmit excessive noise to any such area.</p> <p>A minimum loading area/dock of 3.5 metre width x 8 metre length x 3.6 metre height clearance for single unit truck vehicles is to be provided. Large-scale developments shall be designed to accommodate semi-trailers. In general, turning circles will be required to be provided to accommodate the largest type of truck which could reasonably be expected to service the site.</p>	<p>Loading and unloading vehicles is a key feature of the site's operations.</p>	<p>On-site traffic plans, with swept paths showing vehicle manoeuvring space and turning circles are provided in the site plans at Appendix E.</p> <p>All loading and unloading areas will be outdoors. Hence, there will be no loading docks as part of the development.</p>

<p>3.11.8.3 Landscaping</p>	<ul style="list-style-type: none"> a. All set back and carparking areas are to be landscaped and maintained in accordance with sound landscaping principles. b. The design of all buildings, car parks, storage areas, access, and other features such as open drains shall be integrated with the landscape proposals. Trees should be incorporated wherever possible. In open car parks they should be so spaced that at least 50% of the area of car parking spaces will be under the canopy of the trees when they reach maturity. c. Landscaping must be provided across the frontage of a site having a minimum depth of five (5) metres except in the case of corner allotments where the secondary street frontage shall have a minimum depth of two (2) metres. Earth mounding should be considered within this setback area. The earth mounding should not be steeper than a 1:3 grading in order for satisfactory maintenance of the mound. d. All existing trees shall be retained except for those which have been accurately shown and marked for removal on the development application and their removal is approved by Council; or where in any other case the prior written consent of the Council is obtained for their removal under the provisions of the CI 5.9 of Gosford LEP 2014 and the Preservation of Trees or Vegetation Chapter of this DCP. Further detailed information is contained in the Chapters titled Preservation of Trees or Vegetation and Landscaping in this DCP. e. All necessary measures are to be taken to prevent damage to trees and root systems during site works and construction. Failure to adhere to this requirement may render the developer and/or the agent liable to action under the provision of CI 5.9 of the Gosford LEP 2014. f. Landscaped areas shall be planted and maintained with appropriate trees, shrubs and ground covers of advanced plant stock in accordance with the detailed landscape plan to be submitted for the site and approved by Council prior to the release of the complying development certificate. g. Plants used in landscape areas shall generally be selected native plants chosen for their suitability to the area and their intended 	<p>Large areas of the site will be landscaped or left as vegetation to meet the requirements of the DCP.</p>	<p>The Landscape Plan in Appendix F has been prepared in accordance with this clause of the DCP.</p> <p>Also refer to Appendix E for site civil designs on retaining walls on the western side of the site. These plans show landscaping measures and kerb and guttering to separate the grassed swales for treatment of surface runoff from operational hardstand areas.</p>
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DCP Clause No.	Objective / Requirement	How this DCP clause will influence the proposed development	Compliance
	<p>purpose and, where grass is not used, fast growing ground covers in tanbark, wood chips, or other approved mulch of at least 100mm depth shall be used.</p> <p>h. Council prefers that Australian native trees and shrubs be used for landscaping due to their more likely suitability to their natural habitat, their relatively fast growth and low maintenance characteristics and to assist in achieving a common landscape theme.</p> <p>All landscaped and grassed areas shall be separated from adjacent driveways and parking areas by means of a kerb or other approved device to prevent vehicle encroachment.</p>		
3.11.8.4 Pollution Control	<p>a. Noise</p> <p>Any premises, machinery, or activity shall not give rise to an offensive noise to either residential or other industrial premises and shall comply with the requirements of the Industrial Noise Policy of the Department of Environment and Climate Change. Noise should not be transmitted to adjoining incompatible land uses or be permitted to invade into areas within developments that require low noise levels.</p> <p>Where this is likely to be an issue, or where requested by the Council, an acoustic consultant's assessment and report is to be submitted.</p>	<p>The crushing and grinding operations can generate significant noise. Noise mitigation measures will be required to meet the required outcome.</p>	<p>An overview of the results of the Noise and Vibration Impact Assessment and a summary of the proposed mitigation measures are provided in Chapter 11. A copy of the Noise and Vibration Assessment Impact Assessment is provided at Appendix N.</p>
	<p>b. Air</p> <p>Premises must comply with the requirements of the Protection of Environment Operations Act, 1997 and regulate the control of air impurity emissions as defined.</p>	<p>Dust is the primary air emission from C&D recycling facilities. The facility will need to implement dust-mitigation measures</p>	<p>The modelling indicates that dust emissions will be controlled and no off-site dust impacts will occur. An overview of the results of the Air Quality Impact Assessment and a summary of the proposed mitigation measures are provided in Chapter 9. A copy of the Air Quality Assessment Impact Assessment is provided at Appendix K.</p>

DCP Clause No.	Objective / Requirement	How this DCP clause will influence the proposed development	Compliance
	<p>c. Liquid Wastes</p> <p>Liquid Wastes from industrial processes shall be disposed of to comply with the requirements of the relevant Water Supply Authority and any requirements of the Office of Environment and Heritage.</p>	Only small quantities of liquid waste will be generated on-site; mainly in the workshop.	The measures to be employed for dealing with liquid wastes are outlined in Chapter 3 & 16.
	<p>d. Stormwater</p> <p>Stormwater drainage systems must be designed so that significant levels of nutrients and other substances are not discharged into the hydrological environment of the City.</p>	The final site layout and civil design must ensure stormwater run-off is captured and remains on-site, with adequate treatment to meet water quality targets.	The proposed final land contours and stormwater plan are discussed in Chapter 7, and a copy of the Stormwater Plan is provided in Appendix E and Appendix I. The assessment shows that the proposed stormwater design fully meets council's on-site detention and water quality targets.
3.11.8.6 Advertising Signs	<p>All advertising signs should be designed as an integral part of the design of the external elements of the development ie building - landscaping - signage.</p> <p>Signs are to be primarily for the identification of the premises and its occupants, and any development providing for different ownership or tenancies shall include a single Pole or Pylon Sign providing space for each operation to be included and in accordance with the Advertising Signage Chapter of this DCP.</p> <p>For details as to the control of the signs and types of signs which may be utilised refer to the Advertising Signage Chapter of this DCP</p>	Appropriate signage.	Signage will comply with the DCP.

DCP Clause No.	Objective / Requirement	How this DCP clause will influence the proposed development	Compliance
3.11.9.2 Road Access	<p>a. To ensure satisfactory road access for safety and convenience, industrial developments should be on land serviced and accessed by fully constructed and sealed roads. Where this situation does not exist, the developer will be required to:</p> <ul style="list-style-type: none"> i. provide kerb and gutter along the total frontage of the site and the construction of a sealed road to Council requirements, and ii. extension of a constructed sealed road to Council requirements to give road access to the nearest sealed arterial or distributor road. <p>All construction work to be in accordance with engineering plans approved by the Council and in accordance with the Council specification.</p> <p>b. Access crossings from public roads and driveways with the building set-back are to be perpendicular to the road, and be</p> <ul style="list-style-type: none"> i. separated or divided at the property boundary for ingress and egress movements. ii. a minimum of six (6) metres from an intersecting road or break in a traffic island, and <p>located to provide adequate sight distance</p>	<p>The site will be regularly accessed by large vehicles. Safe site access is essential.</p>	<p>The proposed upgrade to the site access road, and the addition of a turning lane on Gindurra Rd is outlined in Chapter 10 and the plans are provided in Appendix M.</p>

DCP Clause No.	Objective / Requirement	How this DCP clause will influence the proposed development	Compliance
3.11.9.3 Stormwater Drainage	<p>a. All surface and roof stormwater are to be drained to the nearest Council piped stormwater system provided the system is capable of carrying the discharge. If the existing system is not capable of carrying the discharge, the water is to be discharged via a new system to be provided by the developer as directed by Council. This may include a requirement to provide on-site detention of stormwater flows.</p> <p>b. For sites which require drainage through adjoining property(s), the applicant shall be responsible for the acquisition of inter-allotment drainage easements (where necessary) and shall lodge proof of agreement with adjoining owner(s) with the development application.</p> <p>c. In addition to the erosion and sedimentation controls, energy dissipation may be required at the point of discharge from the property, to reduce erosion potential.</p> <p>d. Design for stormwater drainage shall be in accordance with the procedures specified in "Australian Rainfall and Runoff Vols 1 and 2, Edition 1987" and Council's "Specification for Drafting and Design of Stormwater Drainage Works and Roadworks".</p> <p>e. Provision is to be made for the collection and dispersal of overland runoff upstream of the development for the 1% AEP flood event.</p> <p>The floor level of buildings is to be a minimum 500mm above the finished site surface levels or 500m above the 1% AEP Flood Level where applicable.</p>	Design of stormwater system and operations.	All stormwater will be captured and retained on-site. A Stormwater Management Plan is summarised in Chapter 7 and a copy of the Plan is provided in Appendix E. The Water Cycle Management Plan and the Stormwater Management Plan reports are provided at Appendix I.
3.11.9.4 Water and Sewer	<p>Arrangements are to be made with the relevant Water Supply Authority for the provision of reticulated water and sewer services.</p> <p>Headworks and Augmentation contribution charges will be applied to ensure that each additional user pays the appropriate charge for the provision of those services.</p>	Water and sewage services for the development operations.	The site is already connected to the town water supply. Connection to the council sewerage system will be performed under DA52541/2017.2.

DCP Clause No.	Objective / Requirement	How this DCP clause will influence the proposed development	Compliance
3.11.9.5 Solid Wastes	A garbage and recycling storage area is to be provided, designed and constructed in accordance with Council's requirements so as to conceal its contents from view from public places and adjacent properties and is to be blended into the landscaping layout. The storage area is to be located so as to be readily accessible from within the site, and to the garbage collector from the adjoining road. The storage area is to be of sufficient size to accommodate trade wastes and recyclable material generated.	Waste management	A waste management plan is summarised in Chapter 6 and a copy of the Plan is provided in Appendix H.
3.11.9.6 Other Services	<p>Arrangements must be made with the relevant service authority for the supply of electricity, gas and telephone.</p> <p>Early discussion with the appropriate Authorities is recommended, and applications to Council for development consent should identify requirements for electricity sub-stations and other facilities which will affect the design and layout of the proposed development.</p>	Supply of utility services to the site suitable for the development.	The development covered by this development application and this EIS requires only electricity to supply the weighbridge and processing equipment within the Secondary Sorting Warehouse. External plant and equipment will be powered by diesel. Ausgrid has been consulted as part of the preparation of this EIS.
Chapter 6.1 Acid Sulphate Soils			
6.1.5 Development Application Procedure	<p>Step 1 Check Clause 7.1 of the Gosford LEP 2014 and the Development Control Plan 2013 - Acid Sulfate Soils maps. These maps introduce various classes of land and determine whether a Development Application is necessary.</p> <p>Step 2 If the Gosford LEP 2014 and the Development Control Plan 2013 - Acid Sulfate Soil Maps held by Council identify that a Development Application is required, there are two options. Either:</p> <p>(a) A suitably qualified professional is required to carry out a preliminary soil assessment to determine the extent of acid sulfate soil. Details are provided in Section 6.1.9 of this chapter and the Office of Environmental Heritage (OEH) Guidelines.</p> <p>(b) Assume that the soils within the site of the proposal contain acid sulfate soil and by-pass this step and carry out step 3.</p> <p>Step 3 Engage a suitably qualified professional to prepare an Acid Sulfate Soil Management Plan for</p>	Site construction	<p>The ASS Map shows site has the ASS Class 5. This has been considered in the Soil and Water Plan (Appendix I).</p> <p>A Contaminated Site Assessment is summarised in Chapter 8 and a copy of the Plan is provided in Appendix J.</p>

DCP Clause No.	Objective / Requirement	How this DCP clause will influence the proposed development	Compliance
	all proposals which will disturb/expose acid sulfate soils or potential acid sulfate soils.		
Chapter 6.3 Erosion Sedimentation Control			
	<p>The objectives of this chapter are:</p> <ul style="list-style-type: none"> To prevent land from being degraded by soil erosion or unsatisfactory land and water management practices. To protect streams and waterways from being degraded by erosion and sediment caused by unsatisfactory land and water management practices. <p>To promote and protect biodiversity.</p>	Civil works, construction and site contours.	<p>An Erosion and Sediment Control Plan is summarised in Chapter 7 and a copy of the Plan is provided in Appendix E.</p> <p>A Soil and Water Management Plan is summarised in Chapter 7 and a copy of the Plan is provided in Appendix I.</p> <p>A Landscape Plan is summarised in Chapter 15 and a copy of the Plan is provided in Appendix F.</p> <p>The development will comply with the provisions of the DCP.</p>
Chapter 6.5 On-site Effluent and Greywater Disposal			
6.5.3 Objectives of Chapter	<p>The objectives of this Chapter are as follows:</p> <ol style="list-style-type: none"> To protect the health of people through proper on-site disposal of effluent and waste water. To protect the natural environment from improper methods of on-site effluent and waste water disposal. <p>To specify the requirements of suitable on-site sewage disposal systems and waste water recycling systems.</p>	Management of sewage generated on-site.	Connection to the council sewer system will be implemented as part of DA52541/2017.2.

DCP Clause No.	Objective / Requirement	How this DCP clause will influence the proposed development	Compliance
Chapter 6.6 Preservation of Trees or Vegetation			
6.6.1.4 Objectives of the Chapter	<p>To preserve the amenity of the Gosford City Local Government Area through the preservation trees and other vegetation.</p> <ol style="list-style-type: none"> To define Council's responsibilities and requirements with respect to the protection, retention and replacement of trees and native vegetation. To ensure proper consideration is given to trees and vegetation in planning, designing and constructing development. To minimise unnecessary injury to, or destruction of, trees and vegetation. To facilitate the removal of undesirable exotic plants, noxious weeds, dangerous trees and other inappropriate plantings. <p>To specify the requirements for the submission of sufficient and relevant information by those who wish to ringbark, cut down, top, lop, remove, injure or wilfully destroy any tree or other vegetation.</p>	Site clearing and landscaping.	A Landscape Plan is summarised in Chapter 15 and a copy of the Plan is provided in Appendix F.
Chapter 6.7 Water Cycle Management			
6.7.3 Objectives	<p>The objectives of this chapter are to:</p> <ul style="list-style-type: none"> Provide direction and advice to applicants in order to facilitate WSUD, IWCM and Flood Mitigation within the development application process Provide design principles that will assist development to meet the purpose of this chapter of the DCP. <p>Provide objectives and performance targets for specific water management elements including water conservation, retention / detention, stormwater quality, and flooding caused by Local Overland Flooding, Mainstream Flooding or Storm Surge.</p>	On-site water management.	<p>A Water Cycle Management Strategy is summarised in Chapter 7 and a copy of the Strategy is provided in Appendix I.</p> <p>The facility intends to use captured surface run-off for dust control.</p>

DCP Clause No.	Objective / Requirement	How this DCP clause will influence the proposed development	Compliance
Chapter 7.1 Car Parking			
7.1.1.3 Objectives	<p>The objectives of this chapter are as follows:</p> <ul style="list-style-type: none"> a. To facilitate traffic management and safe traffic movement. b. To establish an appropriate environmental quality for parking facilities associated with site development c. To provide parking facilities which are convenient and sufficient for the use of service groups, employees, and visitors. <p>To ensure that a balance is achieved between the needs of the proposed development and its use, and that of vehicular and pedestrian traffic.</p>	Car parking	Twelve carpark spaces are provided for employees adjacent to the warehouse / office complex approved in DA52541/2017 on 17/11/2017.
Chapter 7.2 Waste Management			
7.2.3.2 Objectives	<p>Waste minimisation</p> <ul style="list-style-type: none"> • To assist applicants in planning for suitable waste management, through the preparation of a waste management plan. • To minimise resource requirements and construction waste through reuse and recycling and the efficient selection and use of resources. • To minimise demolition waste by promoting adaptability in building design and focusing upon end of life deconstruction. • To encourage building designs, construction and demolition techniques in general which minimise waste generation. • To maximise reuse and recycling of household waste and industrial/commercial waste. <p>Waste management</p> <ul style="list-style-type: none"> • To assist applicants in planning for sustainable waste management, through the preparation of a waste management plan. • To assist applicants to develop systems for waste management that ensure waste is transported and disposed of in a lawful manner. 	Waste management	A Waste Management Plan is summarised in Chapter 6 and a copy of the Strategy is provided in Appendix H.

DCP Clause No.	Objective / Requirement	How this DCP clause will influence the proposed development	Compliance
	<ul style="list-style-type: none"> To provide guidance in regard to space, storage, steep narrow allotments, amenity and management of waste management facilities. To ensure waste management systems are compatible with collection services. To minimise risks associated with waste management at all stages of development. 		

2.6.17 Somersby Industrial Park Plan of Management

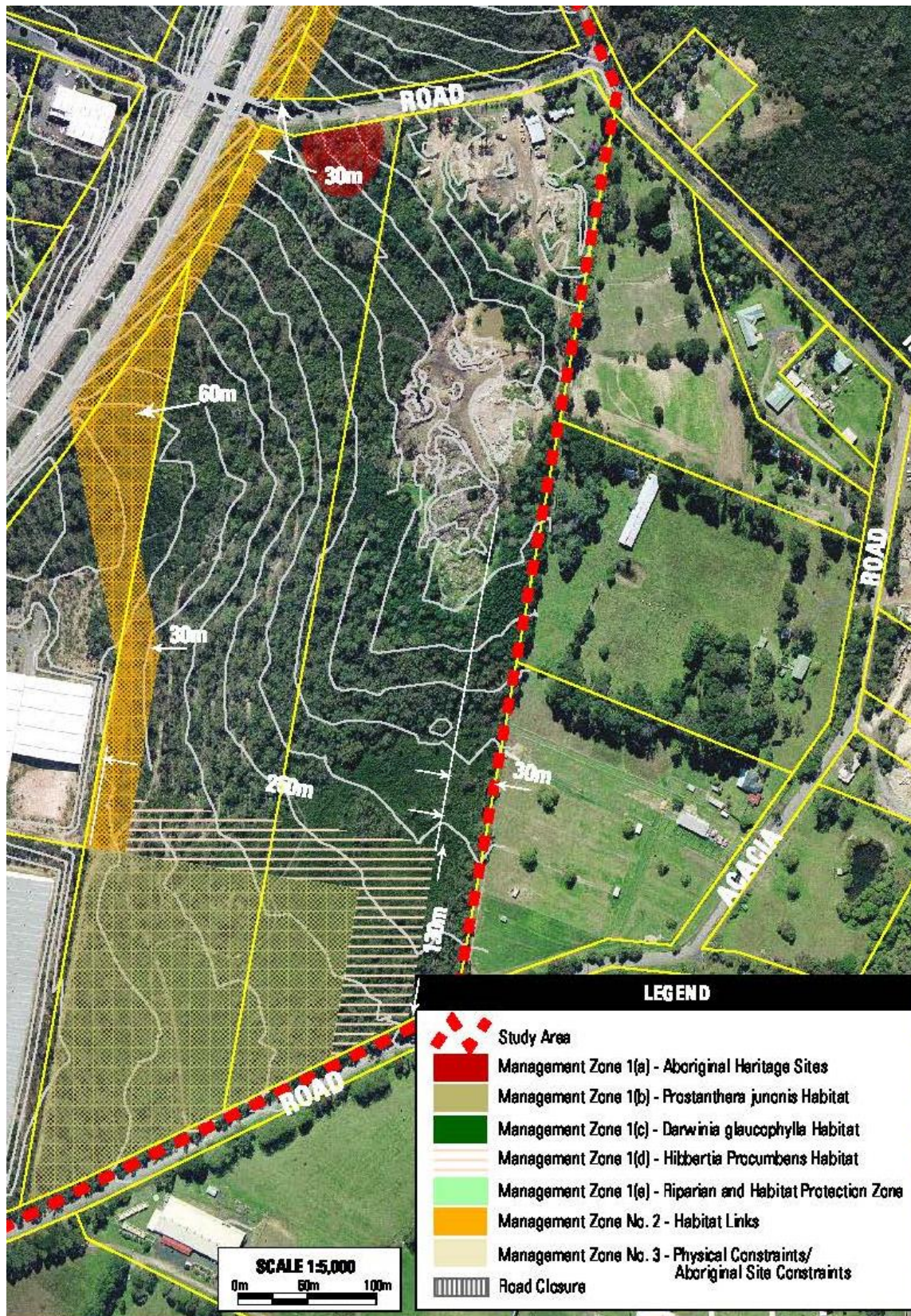
The Somersby Industrial Park Plan of Management¹⁰ was prepared for the City of Gosford in 2005. The Plan identifies key environmental values in the Somersby area, and identifies areas that should be protected.

The draft Plan identifies a small area of land on the (western) adjacent lot that is an Aboriginal management zone. However, this should not be impacted by the proposed development (also refer to Chapter 14 and Appendix R for more information on the impact assessment conducted).

Appendix B of the Somersby Industrial Park Plan of Management contains a series of maps showing various key environmental values within the Somersby study area. The draft Plan identifies much of the existing vegetation on the proposed development site as being significant habitat. However, the recommended management areas are confined to the south of the site, which would be unaffected by the proposed development (see Figures 4.1, 4.1a and 4.9 in Appendix B of the draft Plan). The management zones on the site are shown in Figure 2.15 below.

¹⁰ As defined in Connell Wagner Pty Ltd (2005). *DRAFT Plan of Management Somersby Industrial Park*. NSW Premier's Department and Gosford City Council. June 2005.

Figure 2.15. Extract from Draft Somersby Industrial Park Plan of Management showing management areas on the site. Source: Draft Somersby Industrial Park Plan of Management 2005.



3 Environmental risk assessment of the potential impacts of the development identifying key issues for assessment

A Preliminary Hazard Analysis and Environmental Risk Assessment has been performed to identify key potential impacts of the development, as well as potentially offensive or hazardous issues that need to be considered as part of the EIS process.

The assessment has been performed according to AS/NZS ISO 31000: 2009 *Risk Management – Principles and Guidelines* and the Preliminary Hazardous Analysis has been informed by the *Hazardous and Offensive Development Application Guidelines - Applying SEPP 33* (NSW Department of Planning, 2011)¹¹. We have also considered the following guidelines published by the NSW Department of Planning in 2011:

- *Hazardous Industry Planning Advisory Paper No 2 - Fire Safety Study Guidelines*¹²
- *Hazardous Industry Planning Advisory Paper No 3 - Risk Assessment*¹³
- *Hazardous Industry Planning Advisory Paper No 4 - Risk Criteria for Land Use Safety Planning*¹⁴
- *Hazardous Industry Planning Advisory Paper No 6 - Hazard Analysis*¹⁵.

3.1 Scope

The assessment has been performed to identify the risks posed to people, property and the environment, and to identify potential hazardous and offensive issues that need to be addressed as part of the development to ensure compliance with SEPP 33. The assessment also considers off-site risks to people, property and the environment (in the presence of controls) arising from atypical and abnormal hazardous events and conditions (i.e. equipment failure, operator error and external events). The hazard treatment measures that have been proposed assist in producing a 'low' level of risk in accordance with the risk acceptance criteria.

3.2 Methodology

The methodology used to inform preliminary hazard analysis and environmental risk assessment has included the following steps:

¹¹ NSW Department of Planning (2011). Hazardous and Offensive Development Application Guidelines - Applying SEPP 33. Published by the NSW Department of Planning. Internet publication: <http://www.planning.nsw.gov.au/en/Policy-and-Legislation/~media/3609822D91344221BA542D764921CFC6.ashx>

¹² NSW Department of Planning (2011). Hazardous Industry Planning Advisory Paper No 2 - Fire Safety Study Guidelines. Published by the NSW Department of Planning. Internet publication: <http://www.planning.nsw.gov.au/Policy-and-Legislation/~media/CCC734E980C4427DB95D319DF073C41A.ashx>

¹³ NSW Department of Planning (2011). Hazardous and Offensive Development Application Guidelines- Risk Criteria for Land Use Safety Planning. Published by NSW Department of Planning. Internet publication: <http://www.planning.nsw.gov.au/Policy-and-Legislation/~media/0D39F08E7889409BBA1FA88D5FB859FD.ashx>

¹⁴ NSW Department of Planning (2011). Hazardous Industry Planning Advisory Paper No 4 - Risk Criteria for Land Use Safety Planning. Published by the NSW Department of Planning. Internet publication: <http://www.planning.nsw.gov.au/Policy-and-Legislation/~media/0D39F08E7889409BBA1FA88D5FB859FD.ashx>

¹⁵ NSW Department of Planning (2011). Hazardous Industry Planning Advisory Paper No 6 - Hazard Analysis. Published by NSW Department of Planning. Internet publication: <http://www.planning.nsw.gov.au/Policy-and-Legislation/~media/3ACC37BE3EFE4BAAB3EBA5872AFBA8BD.ashx>

- Identify and screen the hazards associated with the project;
- Examine the maximum reasonable consequence of identified events;
- Qualitatively estimate the likelihood of events;
- Proposed risk treatment measures;
- Qualitatively assess risks to the environment, member of the public and their property arising from atypical and abnormal events and compare these to applicable qualitative criteria;
- Recommend further risk treatment measures if considered warranted; and
- Qualitatively determine the residual risk assuming the implementation of the risk treatment measures.

It is important to note that this preliminary hazard analysis and environmental risk assessment has been undertaken at an early stage of the proposed development to help inform key issues to be considered in the EIS. All hazards need to be identified, and an assessment of the resultant risk levels on a cumulative basis is also undertaken as part of the study.

3.3 Risk management

The environmental risk assessment has been informed by AS/NZ 31000: 2009 *Risk Management Principles and Guidelines* and *Hazardous Industry Planning Advisory Paper No 3 - Risk Assessment* (NSW Department of Planning, 2011). The risk management process has been informed by the following elements:

- Establish the context;
- Identify the risks;
- Analyse the risks;
- Evaluate the risks; and
- Treat risks.

3.4 Risk criteria

The following principles have been adopted to identify and assess risk in this study. This has been informed by the *Hazardous Industry Planning Advisory Paper No. 4 – Risk Criteria for Land Use Safety Planning* (NSW Department of Planning, 2011).

- the avoidance of all avoidable risks;
- the risk from a major hazard should be reduced wherever practicable, even where the likelihood of exposure is low;
- the effects of significant events should, wherever possible be contained within the site boundary; and
- where the risk from an existing installation is already high, further development should not pose any incremental risk.

3.4.1 Qualitative measurement of consequence, likelihood and risk

To undertake a qualitative risk assessment, it is useful to describe the levels of consequence of a particular event, and the likelihood or probability of such an event occurring. Risk assessment criteria have been developed in AS/NZS ISO 31000: 2009 which allows the risk assessor to develop risk criteria during the establishment of the context.

In according with AS/NZS ISO 31000: 2009, the following tables have been reviewed as part of establishing the context of the project. These tables were considered to be consistent with the specific objectives of the preliminary hazard analysis and environmental risk assessment.

Table 3.1. Qualitative measures of probability.

Event	Likelihood	Description
A	Almost certain	Happens often
B	Likely	Could easily happen
C	Possible	Could happen and has occurred elsewhere
D	Unlikely	Hasn't happened yet but could
E	Rare	Conceivable, but only in extreme circumstances

Table 3.2. Qualitative measures of maximum reasonable consequence.

Event	People	Environment	Asset / Production
1	Multiple fatalities	Extreme environmental harm (e.g. widespread catastrophic impact on environmental values of an area)	More than \$1B loss or production delay
2	Permanent total disabilities, single fatality	Major environmental harm (e.g. widespread substantial impact on environmental values of an area)	\$100M to \$1B or production delay
3	Minor injury or health effects (e.g. major lost workday case / permanent disability)	Serious environmental harm (e.g. widespread and considerable impact on environmental values of an area)	\$5M - \$100M loss or production delay
4	Minor injury or health effects (e.g. restricted work or minor lost workday case)	Material environmental harm (e.g. localised and considerable impact on environmental values of an area)	\$250K to \$5M loss or production delay
5	Slight injury or health effects (e.g. first aid / minor medical treatment needed)	Minimum environmental harm (e.g. minor impact on environmental values of an area)	Less than \$250K or production delay

Combining the probability and consequence tables, Table 3.3 provides a qualitative risk analysis matrix to assess risk levels.

Table 3.3. Qualitative risk analysis matrix used in this preliminary hazard analysis and environmental risk assessment.

		Probability [‡]				
Consequence		A	B	C	D	E
	1	1 (H)	2 (H)	4 (H)	7 (M)	11 (M)
	2	3 (H)	5 (H)	8 (M)	12 (M)	16 (L)
	3	6 (H)	9 (M)	13 (M)	17 (L)	20 (L)
	4	10 (M)	14 (M)	18 (L)	21 (L)	23 (L)
	5	15 (M)	19 (L)	22 (L)	24 (L)	25 (L)

[‡] Legend – L: low; M: Moderate; H: high; Risk numbering: 1 – highest; 25 – lowest risk. Colour coding: Green: tolerable risk; orange: ALARP – as low as reasonably practicable; red: intolerable risk.

Risk acceptance criteria for the project have been formulated following consideration of the *Hazardous Industry Planning Advisory Paper No 4 - Risk Criteria for Land Use Safety Planning* (NSW Department of Planning and Environment, 2011d) and *AS/NZS ISO 31000 2009 – Risk Management Principles and Guidelines*.

In assessing the tolerability of risk from potentially hazardous development, both qualitative and quantitative aspects need to be considered. Relevant general principles considered in this study as documented in the *Hazardous Industry Planning Advisory Paper No 4 - Risk Criteria for Land Use Safety Planning* (NSW Department of Planning, 2011):

- the avoidance of all avoidable risks;
- the risk from a major hazard should be reduced wherever practicable, even where the likelihood of exposure is low;
- the effects of significant events should, wherever possible be contained within the site boundary; and
- where the risk from an existing installation is already high, further development should not pose any incremental risk.

3.5 Site description

The subject site is located at 90 Gindurra Rd, Kariong. The site is also identified as Lot 4 / DP 227279. The site consists of 10.8 ha of IN1 zoned industrial land located in the Central Coast Council local government area.

A full site description is given in Section 2.2.

3.6 Process

A detailed overview of current and proposed operations is given in Section 2.3.4.

3.7 Hazardous materials stored on-site

The NSW Department of Planning (2011) in the *Hazardous and Offensive Development Application Guidelines - Applying SEPP 33* sets out a process for screening potentially hazardous materials that are stored on site as part of a proposed development.

Potential risk typically of holding certain types of hazardous materials on site depends on:

- the properties of the substance(s) being handled or stored;
- the conditions of storage or use;
- the quantity involved;
- the location with respect to the site boundary; and
- the surrounding land uses.

Risk screening needs to be undertaken as part of the SEPP 33 guidelines based on an estimate of the consequences of fire, explosion or toxic release from material(s) being handled. It considers information from the proponent on the properties of the materials, quantity, type of storage or use, and location. A risk screening analysis for the proposed development is given in Table 3.4 below.

Table 3.4. Risk screening analysis of potentially hazardous materials held on site as part of the development.

Material / potential pollutant	Storage location	Dangerous Goods Class ¹	Packing Group ²	Maximum quantity on site (tonnes if a unit is not given)	Screening method ³	Threshold ⁴	Notes
Soil (Bay 1)	Waste storage bays	n/a	n/a	1,243	n/a	n/a	Not a dangerous good and is not flammable
Soil (Bay 2)	Waste storage bays	n/a	n/a	1,243	n/a	n/a	Not a dangerous good and is not flammable
Soil (Bay 3)	Waste storage bays	n/a	n/a	1,243	n/a	n/a	Not a dangerous good and is not flammable
Virgin Excavated Natural Material	Waste storage bays	n/a	n/a	616	n/a	n/a	Not a dangerous good and is not flammable
Metals	Waste storage bays	n/a	n/a	904	n/a	n/a	Not a dangerous good and is not flammable
Timber	Waste storage bays	n/a	n/a	904	n/a	n/a	Not a dangerous good and is not flammable
Asphalt	Waste storage bays	n/a	n/a	1,243	n/a	n/a	Not a dangerous good and is not flammable
Mixed building waste	Waste storage bays	n/a	n/a	791	n/a	n/a	Not a dangerous good and is not flammable
Concrete / masonry / tiles	Waste storage bays	n/a	n/a	672	n/a	n/a	Not a dangerous good and is not flammable
Waste for crushing / grinding and processed product in piles	Processing area	n/a	n/a	12,155	n/a	n/a	Not a dangerous good and is not flammable
Secondary Sorting Warehouse	Recovered sorted materials from magnet and picking line.	n/a	n/a	42	n/a	n/a	Not a dangerous good and is not flammable

Material / potential pollutant	Storage location	Dangerous Goods Class ¹	Packing Group ²	Maximum quantity on site (tonnes if a unit is not given)	Screening method ³	Threshold ⁴	Notes
Secondary Sorting Warehouse	Recovered soil from trommel	n/a	n/a	30	n/a	n/a	Not a dangerous good and is not flammable
Landscaping supplies	Landscape storage (centre of site 13 bays total)	n/a	n/a	5,400	n/a	n/a	Not a dangerous good and is not generally not flammable
Recovered aggregates	Aggregate storage area (4 bays)	n/a	n/a	1,716	n/a	n/a	Not a dangerous good and is not flammable
Various landscape supply materials	Landscape storage bays at front of site (12 bays)	n/a	n/a	11,105	n/a	n/a	Not a dangerous good and is not flammable
Diesel	Above ground bunded fuel tank in warehouse	3	III	5,000 L	Table 1	10,000 L or kg	Below threshold
Engine coolant	Warehouse	n/a	n/a	100 L	n/a	n/a	Not classified as a dangerous good
Hydraulic oil	Warehouse	3	III	1,000 L	Table 1	10,000 L or kg	Below threshold
Engine oil	Warehouse	3	III	1,000 L	Table 1	10,000 L or kg	Below threshold
Gear oil	Warehouse	3	III	1,000 L	Table 1	10,000 L or kg	Below threshold
Transmission oil	Warehouse	3	III	1,000 L	Table 1	10,000 L or kg	Below threshold
Degreaser	Warehouse	3	III	1,000 L	Table 1	10,000 L or kg	Below threshold
Brake fluid	Warehouse	3	III	500 L	Table 1	10,000 L or kg	Below threshold
Grease drum cartridges	Warehouse	3	III	<100 L	Table 1	10,000 L or kg	Below threshold
Gas (LPG) – Forklift gas	North side external wall of warehouse, under cover, locked cage	2.1	n/a	1,000 kg	Table 3	10,000 kg	Below threshold

¹ Class 2.1 Dangerous Goods are classified as ‘flammable gases’; Class 3 Dangerous Goods are classified as ‘flammable liquids’; ² Packing Group III is a group of dangerous goods that are classified as ‘substances presenting lower danger’. ³ Screening method is the methodology used to assess dangerous goods in the NSW Department of Planning (2011) *Hazardous and Offensive Development Application Guidelines - Applying SEPP 33*. ⁴ Where dangerous goods are stored on-site which exceed the nominated thresholds as per Department of Planning (2011) *Hazardous and Offensive Development Application Guidelines - Applying SEPP 33*, the proposed development is considered to be hazardous and requires detailed assessment under SEPP 33.

3.7.1 Soil, metals, asphalt, concrete / tiles / masonry, timber / stumps and mixed construction & demolition waste

The proposed development will receive loads of waste materials comprising soils and virgin excavated natural material), asphalt, concrete/tiles/masonry, timber, stumps and rootballs and mixed construction and demolition waste which will be tipped and inspected within the Tip and Spread area, then stored in separate concrete block bays in the waste receival area. These waste materials are then processed in the Processing Area then the Secondary Sorting Warehouse and stored in the landscaping or waste processing area for sale and dispatch. A maximum of 50,000 tonnes of these waste materials and processed products will be stored on site at any one point in time.

While these materials are not classified as dangerous goods according to the Dangerous Goods Code, timber/stumps/rootballs and the mixed construction and demolition waste are combustible if exposed to a prolonged and persistent heat source.

Though materials are stored in a dry state, strict procedures are in place at the premises to avoid any hot work during operations and smoking is strictly prohibited in all parts of the site. Generally, dust is will be suppressed during shredding of timber/stumps/rootballs outdoors, so the risk of fire or explosion caused by dust is considered very low.

It is noted that no waste materials will be stored in the Secondary Sorting Warehouse. All materials processed in the warehouse and sorted and recyclable materials removed in bins for further processing outdoors and stockpiled for sale in the Landscape Supplies area.

Surrounding land uses are industrial or rural residential with neighbours identified in Section 2.2.3 of this EIS. Surrounding land uses are not considered to be a fire risk, and the likelihood that fire could spread and impact on the proposed development is considered to be low. The risk of fire resulting from a bushfire that could be propagated by adjoining properties with bushland is considered in Chapter 13 and Appendix P of this EIS.

3.7.2 Diesel

Diesel is classified as a Class 3 combustible liquid according to the Australian Dangerous Goods Code. Limited volumes of diesel will be stored in the warehouse for the purpose of fuelling of trucks or mobile plant and equipment on-site. In the event of a spill, diesel is damaging to soils and aquatic ecosystems and fires can occur if it is ignited (flash point 61°C to 150°C).

The risks associated with this project include diesel storage and use. The use of diesel will be in accordance with the requirements of AS 1940: 2004 - *The storage and handling of flammable and combustible liquids*¹⁶. The above ground tank of diesel stored in the warehouse will be appropriately bunded to ensure any spills are contained within the bunding. Given the small quantity to be stored on site (5,000 L), this hazardous material is considered to be low risk on the site.

¹⁶ AS 1940: 2004 - *The storage and handling of flammable and combustible liquids*. Published by SAI Global. Internet publication: <http://infostore.saiglobal.com/store/Details.aspx?ProductID=253546>

3.7.3 Engine coolant

Very small quantities of engine coolant (100 L) will be stored in the warehouse for servicing on-site vehicles. Engine coolant, containing water and ethylene glycol mixes are not considered hazardous according to the Australian Dangerous Goods Code, but can be poisonous if ingested and can be toxic to aquatic organisms if leaked into waterways.

Engine coolant will be appropriately stored in a bunded container in the warehouse and stored and used in accordance with its approved Material Safety Data Sheet¹⁷.

3.7.4 Hydrocarbons (including hydraulic oil, engine oil, gear oil, transmission oil, brake fluid, grease drum cartridges and degreaser)

Liquid hydrocarbons including hydraulic oil, engine oil, gear oil, transmission oil, brake fluid, grease and degreaser are classified as Class 3 combustible liquids according to the Australian Dangerous Goods Code. Limited volumes of these fluids are stored in the warehouse for the purpose of servicing on-site vehicles. In the event of a spill, these hydrocarbons can be damaging to soils and aquatic ecosystems and fires can occur if it is ignited.

The risks associated with this project include storage and use of hydrocarbons. The use of these fluids will be in accordance with the requirements of AS 1940: 2004 - *The storage and handling of flammable and combustible liquids*. The above containers of these fluids stored in the warehouse will be appropriately bunded to ensure any spills are contained within the bunding. Given the small quantity to be stored on site these hazardous material (5,600 L in total) is considered to be low risk on the site.

3.7.5 Gas (LPG) – Forklift gas

Liquefied petroleum gas (LPG) used as a fuel in forklifts on site is classified as a Class 2.1 flammable gas under the Australian Dangerous Goods Code. Limited volumes of LPG are stored external to the warehouse on the northern side under the awning structure for the purposes of fuelling the forklift units.

The risks associated with the storage of small volumes of LPG will be minimised in a dedicated space on the external wall on the northern side of the warehouse (under the awning structure) in an approved rack with safety chains consistent with the Material Safety Data Sheet¹⁸.

3.7.6 Further hazard identification, scenarios, consequence, likelihood analysis and risk assessment

To help understand further hazards possible as part of the proposed development, a series of potential worst-case scenarios have been assessed to determine possible consequences, likelihood and risk. The

¹⁷ Shell Australia (2016). Material safety data sheet – Shell HD N 50:50 engine coolant. Internet publication: <http://www.shell.com.au/products-services/solutions-for-businesses/lubricants/products/types-oils-lubricants/coolants.html>

¹⁸ ELGAS (2016). Material safety data sheet for storage of LPG gas cylinders. Internet publication: <http://www.elgas.com.au/storage-handling-lpg-gas-bottles-cylinders>

NSW Department of Planning's (2011) *Hazardous Industry Planning Advisory Paper No 6 - Hazard Analysis* has been used to assist in guiding this analysis.

As per the above guidelines, we have qualitatively assessed the impacts of the largest possible event on people, plant and the environment. The worst-case scenarios reflect any foreseeable factors that could exacerbate the severity of an accident, including abnormal process conditions, out of hours manning levels, and the potential for control measures to be disabled or rendered inoperable by the accident.

The worst-case scenarios we have assessed include the following:

- Entry to site:
 - Vehicle collision on entry to the site, resulting in fire and possible death;
 - Leaks / spills on vehicle entry or within the site, with potential impacts on stormwater and fire risk;
 - Vehicle/plant/equipment or material within warehouse or across site stolen, and leads to equipment failure and possible safety risk to staff;
 - Excess noise and vibration from truck movements on site;
- Secondary Sorting Warehouse operations:
 - Vehicle collision in warehouse, resulting in fire and possible death;
 - Leak / spill from vehicle collision adjacent to warehouse, with potential impacts on stormwater and fire risk;
 - Vehicle or plant/equipment theft and malicious damage, leading to equipment failure and injury to person(s);
 - Fire caused by ignition source (e.g. cigarette, hot work, welding or bushfire) near the warehouse;
- Waste receiving and processing operations:
 - Collision between vehicles with other on-site vehicles through driver error, or pedestrian, resulting in possible fire or death;
 - Vehicle/plant/equipment across site stolen, and leads to equipment failure and possible safety risk to staff;
 - Vehicle/plant/equipment theft and malicious damage, leading to equipment failure and injury to person(s);
 - Fire caused by excess dust and build-up of electrostatic electricity associated with outdoor processing;
 - Asbestos is concealed and received in mixed construction and demolition waste;
 - Excess noise and vibration from operational plant on site;
 - Excess dust from operations of plant and equipment on the site;
 - Dust created by internal traffic movements of plant, equipment and trucks during dry weather;
 - Fire caused by ignition source (e.g. cigarette, hot work, welding or bushfire) near the waste receiving and processing area;
- Landscaping supplies operation:
 - Collision between vehicles with other on-site vehicles through driver error, or pedestrian, resulting in possible fire or death;

- Spilling of landscaping supplies material on operational pad during loading, that may then impact on stormwater;
- Dust created during loading of trucks on windy days or during dry weather.
- Fire caused by ignition source (e.g. cigarette, hot work, welding or bushfire) near the landscape supplies area.

Prevention and treatment measures to reduce the likelihood and resulting consequences from these worst-case scenarios are mapped out in Table 3.5 below. Note that a risk rating category has been prepared to understand the significance of these risks – on the environment and human health. Note that the risk ratings estimated as part of the qualitative analysis are specified after implementation of the risk prevention, treatment and detection measures.

As a result of this analysis, it is suggested that the worst-case scenarios modelled with risk prevention, treatment and detection measures are all moderate or low risks. All risks are low except those that involve potential for hazardous waste receiving, excess noise / vibrations and excess dust.

The proposed project is not considered a potentially hazardous development as per Figure 11 of the SEPP33 Guidelines, so no further Preliminary Hazard Analysis or Multi-Level Risk Assessment has been performed.

However, we have identified a number of moderate risks to the environment, people and property, and these will be evaluated further in this EIS. These risks are described in Section 3.8.

Table 3.5. Hazard identification, scenario, consequence, prevention/treatment measures and risk rating table.

Facility event	Cause / comment	Possible scenarios, results & consequences	Prevention, Treatment Measures and Detection Protection Required	Likelihood	Consequence	Risk rating and category (after treatment measures) ¹
Entry to site						
Vehicle collision	Vehicle collision on entry to the site, resulting in fire and possible death	Fire possible near warehouse, potentially spreading to landscaping supplies or waste receiving area with potentially flammable materials (e.g. shredded timber mulch). Possible impacts on stormwater from discharge of fire water	<ul style="list-style-type: none"> • Ensure vehicle speed limits and regular driver education • Firefighting equipment • Emergency management / response plan • Pollution incident response management plan / Environmental management plan • Traffic management plan • Work health and safety plan • Hazardous material management plan • Operator and driver training • Spill response equipment and training • Contact emergency services (NSW Fire & Service) 	Unlikely (D)	4	21 (Low risk)
Leak / spill	Leaks / spills on vehicle entry or within the site, with potential impacts on stormwater and fire risk	Collision causes leakage of vehicle fuel or oil onto road pavement and possible stormwater impacts and a fire risk	<ul style="list-style-type: none"> • Ensure vehicle speed limits and regular driver education • Firefighting equipment • Emergency management / response plan • Pollution incident response management plan / Environmental management plan • Traffic management plan • Work health and safety plan • Hazardous material management plan • Operator and driver training • Spill response equipment and training • Emergency response 	Possible (C)	5	22 (Low risk)

Facility event	Cause / comment	Possible scenarios, results & consequences	Prevention, Treatment Measures and Detection Protection Required	Likelihood	Consequence	Risk rating and category (after treatment measures) ¹
			<ul style="list-style-type: none"> • Communications • Spill containment and sweeping of hardstand • Contact emergency services (NSW Fire Service) 			
Vehicle / plant / equipment theft / malicious damage	Vehicle / plant / equipment or material stolen	Components of a truck or plant/equipment are stolen and leads to equipment failure and possible safety risk to staff	<ul style="list-style-type: none"> • Ensure staff compliance with site security measures • Emergency management / response plan • Traffic management plan • Work health and safety plan • Contact emergency services (Police) • Site security / limited access 	Possible (C)	5	22 (Low risk)
Excess noise and vibration from truck movements on site	Increased truck vehicle movements result in excess noise and vibration impacts on neighbours	Increased truck movements result in excess noise and vibration nuisance impacts on neighbours	<ul style="list-style-type: none"> • Ensure vehicle speed limits and regular driver education • Traffic management plan • Ensure site complies with operating hours in the development consent 	Possible (C)	5	22 (Low risk)
Warehouse operations						
Vehicle collision	Possible collision of delivery vehicles with other on-site vehicles through driver error, or pedestrian, resulting in possible fire or death	Fire possible in warehouse, potentially spreading to landscaping supplies or waste receival area with potentially flammable materials (e.g. shredded timber mulch). Possible impacts on stormwater	<ul style="list-style-type: none"> • Ensure vehicle speed limits and regular driver education • Firefighting equipment • Emergency management / response plan • Pollution incident response management plan / Environmental management plan • Traffic management plan • Work health and safety plan • Hazardous material management plan • Operator and driver training 	Unlikely (D)	4	21 (Low risk)

Facility event	Cause / comment	Possible scenarios, results & consequences	Prevention, Treatment Measures and Detection Protection Required	Likelihood	Consequence	Risk rating and category (after treatment measures) ¹
		from discharge of fire water	<ul style="list-style-type: none"> • Spill response equipment and training • Contact emergency services (NSW Fire & Rescue) 			
Leak / spill	Leakage of fuel and oil containers in warehouse	Leaking fuel and oil potentially moving into stormwater impacts and a fire risk	<ul style="list-style-type: none"> • Ensure vehicle speed limits and regular driver education • Firefighting equipment • Emergency management / response plan • Pollution incident response management plan / Environmental management plan • Traffic management plan • Work health and safety plan • Hazardous material management plan • Operator and driver training • Spill response equipment and training • Emergency response • Communications • Spill containment and sweeping of hardstand • Contact emergency services (NSW Fire Service) 	Possible (C)	5	22 (Low risk)
Vehicle collision	Leak / spill from vehicle collision adjacent to warehouse	Fire possible in warehouse, potentially spreading to landscaping supplies or waste receival area with potentially flammable materials (e.g. shredded timber mulch). Possible impacts on stormwater	<ul style="list-style-type: none"> • Ensure vehicle speed limits and regular driver education • Firefighting equipment • Emergency management / response plan • Pollution incident response management plan / Environmental management plan • Traffic management plan • Work health and safety plan • Hazardous material management plan 	Unlikely (D)	4	21 (Low risk)

Facility event	Cause / comment	Possible scenarios, results & consequences	Prevention, Treatment Measures and Detection Protection Required	Likelihood	Consequence	Risk rating and category (after treatment measures) ¹
		from discharge of fire water	<ul style="list-style-type: none"> • Operator and driver training • Spill response equipment and training • Contact emergency services (NSW Fire & Rescue) 			
Theft / malicious damage	Vehicle or plant/equipment theft and malicious damage	Components of a truck / plant or equipment are stolen and leads to equipment failure and possible safety risk to staff	<ul style="list-style-type: none"> • Ensure staff compliance with site security measures • Emergency management / response plan • Traffic management plan • Work health and safety plan • Contact emergency services (Police) • Site security / limited access • Contact emergency services (NSW Police) 	Unlikely (D)	5	24 (Low risk)
Fire and bushfire	Fire caused by ignition source (e.g. cigarette, hot work, welding or bushfire)	Fire possible in warehouse, potentially spreading to landscaping supplies or waste receival area with potentially flammable materials (e.g. shredded timber mulch). Possible impacts on stormwater from discharge of fire water	<ul style="list-style-type: none"> • Ensure staff compliance with hot work procedures • Regular machinery maintenance and safety inspections • Dust minimisation practices • Firefighting equipment • Emergency management / response plan • Pollution incident response management plan / Environmental management plan • Traffic management plan • Work health and safety plan • Hazardous material management plan • Operator and driver training • Spill response equipment and training • Contact emergency services (NSW Fire Service) 	Unlikely (D)	4	21 (Low risk)

Facility event	Cause / comment	Possible scenarios, results & consequences	Prevention, Treatment Measures and Detection Protection Required	Likelihood	Consequence	Risk rating and category (after treatment measures) ¹
Waste receipt and processing operations						
Vehicle collision	Collision between vehicles with other on-site vehicles	Fire possible in waste receipt and processing area. Possible impacts on stormwater from discharge of fire water	<ul style="list-style-type: none"> • Ensure vehicle speed limits and regular driver education • Firefighting equipment • Emergency management / response plan • Pollution incident response management plan / Environmental management plan • Traffic management plan • Work health and safety plan • Hazardous material management plan • Operator and driver training • Spill response equipment and training • Contact emergency services (NSW Fire & Rescue) 	Unlikely (D)	4	21 (Low risk)
Theft	Vehicle/plant/equipment across site stolen, and leads to equipment failure and possible safety risk to staff	Components of a truck / plant or equipment are stolen and leads to equipment failure and possible safety risk to staff	<ul style="list-style-type: none"> • Ensure staff compliance with site security measures • Emergency management / response plan • Traffic management plan • Work health and safety plan • Contact emergency services (Police) • site security / limited access • Contact emergency services (NSW Police) 	Unlikely (D)	5	24 (Low risk)
Theft / malicious damage	Vehicle/plant/equipment theft and malicious damage, leading to equipment failure and injury to person(s)	Components of a truck / plant or equipment are stolen and leads to equipment failure and injury to person(s)	<ul style="list-style-type: none"> • Ensure staff compliance with site security measures • Emergency management / response plan • Traffic management plan • Work health and safety plan 	Unlikely (D)	5	24 (Low risk)

Facility event	Cause / comment	Possible scenarios, results & consequences	Prevention, Treatment Measures and Detection Protection Required	Likelihood	Consequence	Risk rating and category (after treatment measures) ¹
		possible safety risk to staff	<ul style="list-style-type: none"> • Contact emergency services (Police) • site security / limited access • Contact emergency services (NSW Police) 			
Excess dust and fire	Fire caused by excess dust and build-up of electrostatic electricity associated with outdoor processing	Excess build-up of dust during baling operations, and spark through electrostatic electricity or spark through equipment electrical failure	<ul style="list-style-type: none"> • Ensure staff compliance with hot work procedures • Regular machinery maintenance and safety inspections • Dust minimisation practices • Firefighting equipment • Emergency management / response plan • Pollution incident response management plan / Environmental management plan • Traffic management plan • Work health and safety plan • Hazardous material management plan • Operator and driver training • Spill response equipment and training • Contact emergency services (NSW Fire & Rescue) 	Unlikely (D)	4	21 (Low risk)
Hazardous waste receipt	Asbestos concealed and received in mixed construction and demolition waste	Release of asbestos fibres and inhalation by staff	<ul style="list-style-type: none"> • Ensure all waste inspected on receipt • Any asbestos waste separated by trained staff in asbestos identification and management consistent with the non-confirming waste procedure • Wrapping and sealing of asbestos for lawful off-site disposal • Pollution incident response management plan / Environmental management plan 	Possible (C)	3	13 (Moderate risk)

Facility event	Cause / comment	Possible scenarios, results & consequences	Prevention, Treatment Measures and Detection Protection Required	Likelihood	Consequence	Risk rating and category (after treatment measures) ¹
			<ul style="list-style-type: none"> • Work health and safety plan • Hazardous material management plan • Contact EPA 			
Excess noise and vibration	Excess noise and vibration from operational plant on site	Operational plant and equipment results in excess noise and vibration nuisance impacts on neighbours	<ul style="list-style-type: none"> • Approved operating hours to be complied with • Noise minimisation procedures complied with • Regular machinery maintenance and safety inspections 	Possible (C)	3	13 (Moderate risk)
Excess dust	Excess dust from operation of plant and equipment on the site	Operational plant and equipment results in excess dust and nuisance impacts on neighbours	<ul style="list-style-type: none"> • Regular machinery maintenance and safety inspections • Dust minimisation practices • Dust suppression equipment 	Possible (C)	3	13 (Moderate risk)
Excess dust	Dust created by internal traffic movements of plant, equipment and trucks during dry weather	Excess build-up of dust during dry weather, leading to off-site dust movement and nuisance impacts on neighbours	<ul style="list-style-type: none"> • Dust minimisation practices • Dust suppression equipment • Dust minimisation practices • Traffic management plan • Work health and safety plan • Operator and driver training 	Possible (C)	3	13 (Moderate risk)
Fire	Fire caused by ignition source (e.g. cigarette, hot work, welding or bushfire) near the waste receival and processing area	Fire possible in waste receival and processing area. Possible impacts on stormwater from discharge of fire water	<ul style="list-style-type: none"> • Ensure staff compliance with hot work procedures • Regular machinery maintenance and safety inspections • Dust minimisation practices • Firefighting equipment • Emergency management / response plan • Pollution incident response management plan / Environmental management plan 	Unlikely (D)	4	21 (Low risk)

Facility event	Cause / comment	Possible scenarios, results & consequences	Prevention, Treatment Measures and Detection Protection Required	Likelihood	Consequence	Risk rating and category (after treatment measures) ¹
			<ul style="list-style-type: none"> • Traffic management plan • Work health and safety plan • Hazardous material management plan • Operator and driver training • Spill response equipment and training • Firewater containment within the site OSD system • Contact emergency services (NSW Fire Service) 			
Landscape supplies operations						
Vehicle collision	Collision between vehicles with other on-site vehicles	Collision through driver error, or pedestrian, resulting in possible fire or death	<ul style="list-style-type: none"> • Ensure vehicle speed limits and regular driver education • Firefighting equipment • Emergency management / response plan • Pollution incident response management plan / Environmental management plan • Traffic management plan • Work health and safety plan • Hazardous material management plan • Operator and driver training • Spill response equipment and training • Contact emergency services (NSW Fire & Rescue) 	Unlikely (D)	4	21 (Low risk)
Spill	Spilling of landscaping supplies material on operational pad during loading	Spill of soil or landscaping material that may generate dust and be transferred into	<ul style="list-style-type: none"> • Operator and driver training • Spill response equipment and training • Spill containment and sweeping of hardstand 	Possible (C)	3	13 (Moderate risk)

Facility event	Cause / comment	Possible scenarios, results & consequences	Prevention, Treatment Measures and Detection Protection Required	Likelihood	Consequence	Risk rating and category (after treatment measures) ¹
		stormwater causing water pollution				
Excess dust	Dust created during loading of trucks on windy days or during dry weather	Excess generation of dust during dry weather, leading to off-site dust movement and nuisance impacts on neighbours	<ul style="list-style-type: none"> • Dust minimisation practices • Dust suppression equipment • Dust minimisation practices • Traffic management plan • Work health and safety plan • Operator and driver training 	Possible (C)	3	13 (Moderate risk)
Fire and bushfire	Fire caused by ignition source (e.g. cigarette, hot work, welding or bushfire) near the landscape supplies area	Fire possible in landscaping supplies area. Possible impacts on stormwater from discharge of fire water	<ul style="list-style-type: none"> • Ensure staff compliance with hot work procedures • Regular machinery maintenance and safety inspections • Dust minimisation practices • Firefighting equipment • Emergency management / response plan • Pollution incident response management plan / Environmental management plan • Traffic management plan • Work health and safety plan • Hazardous material management plan • Operator and driver training • Spill response equipment and training • Firewater containment within the site OSD system • Contact emergency services (NSW Fire Service) 	Unlikely (D)	4	21 (Low risk)

Risk rankings: 1, highest risk; 25, lowest risk. Colour coding: Green: tolerable risk; orange: ALARP – as low as reasonably practicable; red: intolerable risk.

3.8 Risks to the environment, people and property to be investigated in this EIS

In addition to the SEAR's requirements to be addressed as part of this EIS, the following issues have been identified for further analysis and assessment. These principal issues have already been identified as part of the Preliminary Environmental Assessment to inform the SEAR's requirements, however the Preliminary Hazard Analysis and Environmental Risk Assessment has identified a number of sub-issues which need to be addressed in the EIS.

The list of issues below (Table 3.6) have all been classified as moderate risk according to the risk assessment done. All risks that have been identified as low risk are within acceptable limits and will be controlled through the mitigation measures as defined in Chapter 17.

Table 3.6. Key risks to the environment, people and property to be considered in addition to the SEAR's requirements as part of this EIS.

Principal issue or risk	Description	Study to assess issue or risk
Hazardous waste receipt	Asbestos concealed and received in mixed construction and demolition waste, leading to release of asbestos fibres and inhalation by staff	Waste management study (Chapter 6 and Appendix H)
Excess noise and vibration	Excess noise and vibration from operational plant on site. Operational plant and equipment results in excess noise and vibration nuisance impacts on neighbours	Noise and vibration impact assessment (Chapter 11 and Appendix N)
Excess dust	Excess dust from operation of plant and equipment on the site, including vehicle movements during dry weather and loading of landscaping supplies during dry weather. Operations lead to excess dust and nuisance impacts on neighbours	Air quality impact assessment (Chapter 9 and Appendix K)

4 Capital investment value

Based on the proposed development requirements, the total capital value of the project is estimated to be \$9,197,000 excluding GST.

A summary of the costs is provided in Table 4.1. The full Capital Investment Valuation report is provided at Appendix G.

Table 4.1. Summary of Capital Investment Costs.

Ref	Description	% Cost	Cost / m ²	Sub Total (\$)	Total (\$)
1.0	DEMOLITION				
2.0	SITE CLEARING AND EARTHWORKS	4.84	7.35	445,577	445,577
3.0	PAVEMENTS	9.44	14.31	867,870	867,870
4.0	CONCRETE WORKS	8.47	12.84	778,770	778,770
5.0	METALWORK, SIGNAGE & LINEMARKING	0.11	0.16	10,000	10,000
6.0	SITE SERVICES	6.96	10.56	640,330	640,330
7.0	WEIGHBRIDGE	2.17	3.30	200,000	200,000
8.0	SITE WORKS	23.03	34.93	2,118,268	2,118,268
9.0	LANDSCAPING	0.22	0.34	20,335	20,335
10.0	WORKS OUTSIDE BOUNDARY	0.87	1.32	80,000	80,000
11.0	PRELIMINARIES AND MARGIN	4.50	6.83	413,850	413,850
12.0	SUBTOTAL [EXCL GST]				5,575,000
13.0	MOBILE PLANT/EQUIPMENT	39.38	59.73	3,622,000	3,622,000
14.0	TOTAL [EXCL GST]				9,197,000
		100.00	151.68	9,197,000	9,197,000

4.1 Assumptions

The following assumptions have been made in the preparation of the Capital Investment Value Estimate: -

General assumptions

1. The works will be competitively tendered to a suitable number of qualified contractors under a fixed lump sum contract;
2. Assumed works to construction site are to be complete in normal working hours;
3. Works are included for Stage 2 only (Stage 1 to include all demolition works and construction of warehouse) (previously approved under DA52541/2017.2);
4. Assumed builder will have clear access to the work area;
5. Assumed existing service connections are sufficient;
6. Assumed no hazardous material to be removed from site;

Specific assumptions

7. All hazardous materials and excess spoil is to be stockpiled and remain on site;
8. All volumes have been taken from Cardno's provided bulk quantities as per the provided Civil Drawings;
9. Cardno Bulk Earthwork Quantities are assumed to be for Stage 2 only and exclude earthworks to the Stage 1 Structures (previously approved under DA52541/2017.2);
10. Quantity of trees to be removed is a provisional quantity;
11. Heavy vehicle pavement and asphalt pavement profiles has been assumed;
12. Waste receive area concrete slab profile has been assumed;
13. An allowance for site signage has been assumed to be required;
14. All electrical services have been assumed include extent of lighting and connection requirements;
15. Retaining wall details have been assumed based on previous project data and should be updated once further information becomes available;
16. Assumed 3000 long x 2000 high movable precast panels are adequate for bay walls;
17. Fencing has been assumed to be included in Stage 1 works (under DA52541/2017.2) as per the Waste Management Report prepared by Jackson Environment and Planning Pty Ltd;
18. Provisional allowance has been included for an 18m twin deck weighbridge;
19. Supply of equipment has been adopted as per Jackson Environment & Planning advice;
20. Assumed spray seeding to landscape zones and grassed swale to be sufficient;
21. Provisional allowance for plants have been included;
22. Project duration for road work has been assumed to be 1 week and include afterhours work;
23. Provisional allowances have been included for the Identified Risk Items for bushfire risk.

4.2 Exclusions

The following costs have been excluded from the capital investment valuation:

General

1. Land costs and legal fees [NB: Unless noted otherwise];
2. Holding costs and interest charges;
3. GST;
4. Escalation;
5. Removal of contaminated / hazardous materials;
6. Authority's fees and charges;
7. Design & Consultant costs (Pre-Construction costs);
8. Soil remediation;

- 9. Delay costs;
- 10. Cost of finance.

Project Specific Exclusions

- 11. Demolition of existing sheds/buildings on site;
- 12. Site Fencing;
- 13. Spoil removal off site;
- 14. Dewatering;
- 15. Waste bins/Receptacles;
- 16. Line marking to internal roads/carparks;
- 17. Services Relocations/ replacements [NB: Unless otherwise noted];
- 18. Out of hours work;
- 19. Maintenance and irrigation to landscaping;
- 20. Retroreflective markers;
- 21. CCTV.

5 Consultation

A consultation report was prepared to help brief neighbours, Council and agencies on the project and the key environmental issues. The consultation summary report was sent to key stakeholders, including State Government agencies, Central Coast Council and 33 properties within 500m of the site. This report is provided in Appendix U. The consultation phase for the project addresses all of the SEARs requirements under SSD8660.

5.1 SEARs consultation requirements

The SEARs included the requirement to consult with key government agencies, Council and local residents and properties. This included:

- Environment Protection Authority;
- Roads and Maritime Services;
- Central Coast Council;
- Office of Environment and Heritage;
- Department of Primary Industries;
- Ausgrid;
- NSW Fire and Rescue;
- Rural Fire Service; and
- The surrounding land owners and occupiers that are likely to be impacted by the proposal.

A copy of the SEARs (SSD 8860) is provided at Appendix C.

5.2 Consultation with Central Coast Council

A pre-lodgement meeting was held with Central Coast Council on 6 July 2017. A pre-lodgement summary of the project was prepared that provided an overview of the proposed development and identified the most likely environmental issues arising from the development. The pre-lodgement report was provided to Central Coast Council ahead of the meeting and used as the basis for discussion.

In addition, Council provided input into the SEARs. In addition to the points raised at the pre-lodgement meeting, Council requested that the development application provide an analysis of the economic and social benefits of the project, and the need for the project at that location.

Council confirmed that the site does have a water connection, and connection to sewer is available (following resolution of developer contributions, which has now been resolved). Any development application would need to address either connection to sewer or on-site waste water treatment.

Council confirmed the management areas in the Somersby Industrial Park Plan of Management, which includes areas at the back of the site, which are not to be developed. The southern end of the site includes protected biodiversity areas. A flora and fauna assessment is required for the proposed development area. In addition, an Aboriginal Heritage due diligence assessment would be required.

Council confirmed that impact assessments and management plans would be required to address the key issues of noise, dust, soil, water, stormwater and traffic. In addition, a plan showing the management of any hazardous materials, such as hazardous waste and chemicals, should be prepared.

The site is in a bushfire prone area. This needs to be taken into consideration for any building design.

It should be noted that the proponent has had ongoing contact with Central Coast Council regarding development at the site while the development approval process for Stage 1 of the project was proceeding.

5.3 Agency consultation

Consultation with a number of different State Government agencies was a requirement of the SEARs. In the first instance, a SEARs summary report was prepared, and submitted to the Department of Planning and Environment. This was circulated to various agencies for their comments and for them to provide input into the SEARs.

In addition, each of the agencies were sent a copy of the consultation summary report, to provide the agency with the opportunity to provide any additional input, as they saw fit.

The section below summarises the key requirements in the SEARs from each agency. Full details of the requirements by each agency is provided in the copy of the SEARs at Appendix C.

5.3.1 NSW Department of Planning and Environment

The Department of Planning and Environment (DPE) required that an Environmental Impact Statement (EIS) be prepared, which specifically addressed the following issues:

- Waste management;
- Traffic and transport;
- Air quality and odour;
- Fire and Incident Management;
- Noise and Vibration;
- Soil and water;
- Flora and fauna;
- Hazards;
- Heritage; and
- Visual impact.

DPE also listed the key stakeholders to be consulted during the preparation of the development application. DPE confirmed no additional issues need to be considered in the EIS.

5.3.2 NSW Environment Protection Authority

The NSW Environment Protection Authority (EPA) provided comprehensive details of the requirements of the EIS. In addition, it specifically highlighted the following issues to be addressed:

- The management, processing of storage of waste received at the premises;
- Impacts on water quality and site water management;
- Potential noise impacts during construction and operations;
- Potential odour issues during operation; and
- Impacts on air quality.

EPA also highlighted the need for the development to include a weighbridge for the purpose of recording waste received. It also required that a Pollution Incident Response Management Plan be prepared. As a result of the consultation, the EPA confirmed they have no additional issues that need to be considered in the EIS.

It is further noted that the EPA was formally consulted to help inform the Water Cycle Management Plan in December 2018 (Mr Tristan Hinchcliffe, NSW EPA, Newcastle Office).

5.3.3 Office of Environment and Heritage

The Office of Environment and Heritage (OEH) recommended that the EIS specifically address the following issues:

- Biodiversity and offsetting;
- Aboriginal culture heritage;
- Water and soils; and
- Flooding.

OEH provided details on how to investigate and address each of the above issues. In addition, the Heritage Council of NSW required that a historical archaeological assessment be prepared. OEH confirmed no additional issues need to be considered in the EIS.

5.3.4 Roads and Maritime Services

The Transport Division of NSW Roads and Maritime Services (RMS) required that a traffic and transport study be prepared. The study should be consistent with the Road and Related Facilities section within the DPE's EIS Guidelines and the Traffic Impact Studies section within the RMS's Guide to Traffic Generating Developments (2002).

Specific requirements by RMS included:

- Assessment of all relevant vehicular traffic routes and intersections for access to/from the subject property;
- Current traffic counts for all relevant traffic routes and intersections;
- The anticipated additional vehicular traffic generated from both the construction and operational stages of the project;
- The distribution on the road network of the trips generated by the proposed development;
- Consideration of the traffic impacts on existing and proposed intersections, in particular, the intersection of Central Coast Highway and Kangoo Rd, and the capacity of the local and classified road network to safely and efficiently cater for the additional vehicular traffic generated by the proposed development during both the construction and operational stages;
- Identify the necessary road network infrastructure upgrades that are required to maintain existing levels of service on both the local and classified road network for the development;
- Traffic analysis of any major / relevant intersections impacted, using SIDRA or similar traffic model;
- Any other impacts on the regional and state road network including consideration of pedestrian, cyclist and public transport facilities and provision for service vehicles; and
- Details of any measure proposed to manage and/or mitigate impacts as a result of the proposal identified in the traffic and transport study.

As a result of the consultation process, RMS confirmed they have no more additional issues that need to be considered in the EIS.

5.3.5 NSW Rural Fire Service

The NSW Rural Fire Service required that a Bush Fire Assessment report be prepared that demonstrates compliance with the guideline *Planning for Bush Fire Protection 2006*.

5.3.6 NSW Fire and Rescue

NSW Fire and Rescue did not provide any specific requirements beyond those identified by DPE.

5.3.7 NSW Department of Primary Industries

The NSW Department of Primary Industries (DPI) recommended that the EIS specifically address the following issues:

- Water – Identification of an adequate and secure water supply for the life of the project; a site water balance; assessment of the impact on ground and surface water and details of ongoing water monitoring; and
- Biosecurity – Biosecurity risk assessment and a Biosecurity Response Plan.

5.3.8 AusGrid

The key issue for AusGrid is that any changes to traffic, dust and vibration at the site do not impact on the operation of the Ausgrid warehouse located at Lot 11 Kangoo Rd, Somersby, which is located South-west of the site.

The various studies show that the likely impact on the AusGrid warehouse will be negligible.

5.4 Neighbours consulted

The SEARs required the proponent to consult with the surrounding land owners and occupiers that may be affected by the proposal. A copy of the Consultation Summary Report was mailed to all properties within 500m of the main processing area. Property occupiers were encouraged to provide feedback. Figure 5.1 shows the area encompassed by the 500m consultation distance. Table 5.1 provides a list of all the properties attempted to be contacted as part of the pre-submission consultation.

There are a number of properties in the surrounding area that are currently vacant and undeveloped. Assistance was sought from Council to contact them to obtain feedback on the project. Of the five properties contacted by Council, two property owners requested information on the project. No comments were received.

Figure 5.1. Aerial map showing 500m radius around the proposed development site.



Date	Revision	Drawn By	Site description	Client	Kariong Sand and Soil Supplies
29/01/2018	Revision A	J Lethlean	90 Gindurra Rd, Somersby. Kariong Sand and Soil Supplies (Lot 4 / DP 227279)	Project	Upgrades to a Sand and Soil Supplies Facility
				Title	500m Consultation Radius
				Source	Central Coast Council

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Table 5.1. List of properties within 500m

No.	Address	Suburb	Zone	Zone description
1	5 Acacia Rd	Somersby	RU1	Primary Production
2	10 Acacia Rd	Somersby	RU1	Primary Production
3	12 Acacia Rd	Somersby	RU1	Primary Production
4	16 Acacia Rd	Somersby	RU1	Primary Production

No.	Address	Suburb	Zone	Zone description
5	25 Acacia Rd	Somersby	RU1	Primary Production
6	32 Acacia Rd	Somersby	RU1	Primary Production
7	32 Acacia Rd	Somersby	RU1	Primary Production
8	3 Central Coast Hwy	Kariong	SP1	Special Activities
9	1A Central Coast Hwy	Kariong	SP2	Infrastructure
10	6 Chivers Rd	Somersby	IN1	General Industrial
11	97 Debenham Rd South	Somersby	RU2	Rural Landscape
12	183 Debenham Rd South	Somersby	RU2	Rural Landscape
13	184 Debenham Rd South	Somersby	RU2	Rural Landscape
14	198 Debenham Rd South	Somersby	RU2	Rural Landscape
15	223 Debenham Rd South	Somersby	RU1	Primary Production
16	239 Debenham Rd North	Somersby	RU2	Rural Landscape
17	242 Debenham Rd South	Somersby	RU2	Rural Landscape
18	252 Debenham Rd South	Somersby	RU2	Rural Landscape
19	22 Gindurra Rd	Somersby	IN1	General Industrial
20	40 Gindurra Rd	Somersby	IN1	General Industrial
21	53 Gindurra Rd	Somersby	IN1	General Industrial
22	54 Gindurra Rd	Somersby	IN1	General Industrial
23	55 Gindurra Rd	Somersby	IN1	General Industrial
24	56 Gindurra Rd	Somersby	IN1	General Industrial
25	58 Gindurra Rd	Somersby	IN1	General Industrial
26	76 Gindurra Rd	Somersby	IN1	General Industrial
27	83 Gindurra Rd	Somersby	IN1	General Industrial
28	21 Kangoo Rd	Somersby	IN1	General Industrial
29	25 Kangoo Rd	Somersby	IN1	General Industrial
30	27 Kangoo Rd	Somersby	IN1	General Industrial
31	33 Kangoo Rd	Somersby	IN1	General Industrial
32	31 Kowara Rd	Somersby	RU2	Rural landscape
33	2 Wella Way	Somersby	IN1	General Industrial

5.5 Consultation outcomes

There was little feedback received on the project beyond the original agency requirements of the SEARs. Of the 33 properties within 500m, three provided feedback. The main concerns are noise, dust and traffic. In particular, the neighbouring property at 12 Acacia Rd, Somersby, has raised a strong objection to the development, citing concerns about noise, dust, groundwater and traffic. Table 5.2 provides a summary of the feedback received during the consultation.

These issues have been assessed in detail as part of the EIS investigations. The impact assessment studies conducted show that the environmental and amenity impacts on surrounding properties will be minimal, and within acceptable thresholds.

Table 5.2. Consultation summary.

Neighbour Organisation /	Reason for consultation	Issue	How issue has been addressed in EIS
NSW Department of Planning and Environment	SEARS Requirement	No further feedback beyond SEARS requirements	Fully addressed in the EIS
NSW EPA	SEARS Requirement	No further feedback beyond SEARS requirements	Fully addressed in the EIS
NSW Roads and Maritime Services	SEARS Requirement	No further feedback beyond SEARS requirements	Fully addressed in the EIS
Central Coast Council	SEARS Requirement	No further feedback beyond SEARS requirements	Fully addressed in the EIS
Rural Fire Service	SEARS Requirement	No further feedback beyond SEARS requirements	Fully addressed in the EIS
NSW Fire and Rescue	SEARS Requirement	No further feedback beyond SEARS requirements	Fully addressed in the EIS
Department of Primary Industries	SEARS Requirement	No further feedback beyond SEARS requirements	Fully addressed in the EIS
Office of Environment and Heritage	SEARS Requirement	No further feedback beyond SEARS requirements	Fully addressed in the EIS
Ausgrid	SEARS Requirement	No further feedback beyond SEARS requirements. Expressed specific concern that dust, traffic and vibration are properly managed.	Fully addressed in the EIS
Surrounding Properties			
Somersby Unit Trust 54 Gindurra Rd	Nearby property	Concerned about dust and traffic to be generated by the facility. There is another facility near to this property with large stockpiles of soil that generate dust problems for surrounding properties. Further, the amount of heavy traffic, especially on weekends, was seen as a safety concern.	<p>Air quality issues have been addressed in the Air Quality Impact Assessment (See Appendix K).</p> <p>Traffic issues have been addressed in The Traffic Impact Assessment (see Appendix L).</p> <p>It should be noted that 54 Gindurra Rd is on the Western side of the Sydney-Newcastle Freeway. Therefore, it is unlikely to be impacted by dust and traffic generated by the proposed development site.</p>

Neighbour Organisation /	Reason for consultation	Issue	How issue has been addressed in EIS
Borg Manufacturing 2 Wella Rd	Nearby property	Confirmed that they had received the consultation report and were satisfied that environmental issues were being addressed. No concerns raised.	None required.
Frank Tripolone 12 Acacia Rd	Nearby property	<p>Raised concerns about excessive noise and dust, and its impact on both their own amenity and the value of the property. The proposed mitigation measures were thought inadequate. The owner also raised concerns about the impact on groundwater quality. The increase in traffic was considered excessive.</p> <p>The owner also noted that their property was already impacted by a neighbouring quarry, and that the proposed development would compound those impacts.</p>	<p>The impact assessment studies conducted in preparation of the development application, which are attached to this report, indicated that all impacts are within acceptable limits. Mitigation measure will be taken to reduce the impact of dust and noise, in particular.</p> <p>The proposed use is appropriate for IN1 zoned land. The proponent believes that all impacts have been fully addressed in the EIS.</p>
Mr Guangmil Leng 31 Kowara Rd	Nearby property	Mr Leng owns a (currently not operating) motel business at the site. He has concerns about noise impacting on the motel business if it re-opens.	<p>The noise mitigation measures and the distance of 31 Kowara Rd from the development site will minimise the noise impacts.</p> <p>See Chapter 11 and Appendix N.</p>

6 Waste Management

6.1 Introduction

As outlined in Section 2.3.1, the majority of waste received at the site will be processed into saleable products, and sold from the site. The amount of waste generated on-site that requires disposal at a licensed landfill will be minimal.

A Waste Management Plan has been prepared that meets the requirements of the Gosford *Development Control Plan* 2013. The objectives of the Waste Management Plan as stated in the Gosford *Development Control Plan* 2013 (the DCP) are to:

- Maximise reuse and recycling of materials;
- Minimise waste generation;
- Ensure appropriate collection and storage of waste;
- Minimise the environmental impacts associated with waste management;
- Avoid illegal dumping;
- Promote improved project management;
- Optimise adaptive reuse opportunities of existing building/structures;
- Ensure appropriate waste storage and collection facilities;
- Maximise source separation and recovery of recyclables;
- Ensure waste management facilities are as intuitive for occupants as possible and readily accessible to occupants and service providers;
- Ensure appropriate resourcing of waste management systems, including servicing;
- Minimise risk to health and safety associated with handling and disposal of waste and recycled material and ensure optimum hygiene;
- Minimise adverse environmental impacts associated with waste management; and
- Discourage illegal dumping by providing on site storage, and removal services.

A full Waste Management Plan is given in Appendix H.

6.2 Legislative requirements and related documentation

The explicit details of managing particular types of wastes are clearly defined in the *EPA Waste Classification Guidelines* of the *Protection of Environment Operations Act 1997 (POEO Act)* to manage different waste types generated on-site. These include:

- Taking waste to the right waste management facility; and
- Specialised storage, handling, treatment and disposal requirements.

Other relevant legislation and publications are:

- *Environmental Planning and Assessment Act 1979*;
- *Waste Avoidance and Resource Recovery Act 2001*;
- *Protection of the Environment Operations (Waste) Regulation 2014*;
- *Work Health and Safety Act 2011* and the *Work Health and Safety Regulations 2011*;
- *Environmental Protection (Controlled Waste) Regulation 2001*;
- *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008: Part 5A, Division 4, Clause 5A.26 Garbage and waste storage*;
- *Australian Standards 2601-2001 Demolition of Structures*;
- *Gosford Development Control Plan 2013 – Part 7.2 Waste Management*;

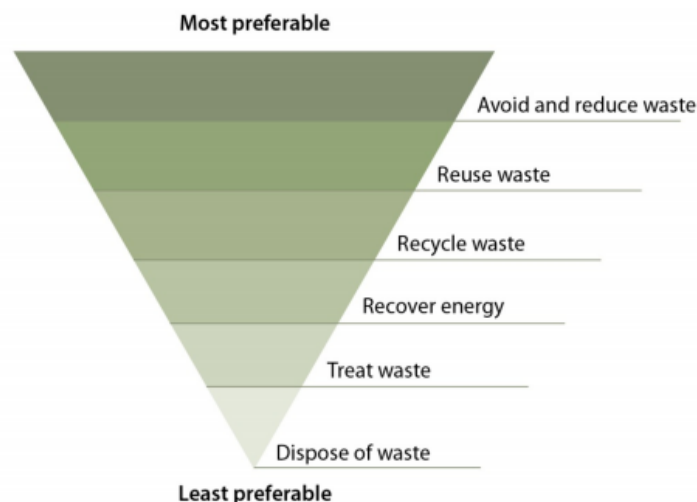
- *Recovered Aggregate Order 2014 and Recovered Aggregate Exemption 2014;*
- *“Batch Process” Recovered Fines Order 2014 and “Batch Process” Recovered Fines Exemption 2014; and*
- *NSW EPA’s Draft Protocol for managing asbestos during resource recovery of construction and demolition waste.*
- *NSW EPA (2018) Standards for Managing Construction Waste in NSW.*

The *Waste Avoidance and Resource Recovery Strategy 2014-21* has the following objectives:

- Waste Avoidance
- Increase recycling rate of Construction and Demolition waste to 80%
- Divert 75% waste from landfill
- Manage problem wastes better
- Reduce Litter
- Reduce Illegal Dumping

The manner in which waste is to be managed is driven by the Ecologically Sustainable Development principles. Guidance in managing waste has been provided by the hierarchical chart below (Figure 6.1).

Figure 6.1. The waste hierarchy as published in the NSW Waste Avoidance and Resource Recovery Strategy 2014-21.



6.3 Project Description

The project is to establish a sand, soil and building materials recycling facility at 90 Gindurra Rd, Somersby. There will also be a building and landscape supplies business at the site, which will source the majority of its products for sale from the C&D recycling facility.

The project consists of two stages; the demolition and construction phase and the operational phase.

The demolition and construction phase involve the following activities:

- Clear selected vegetation from the front half of the site as determined by the Fauna and Flora and Vegetation Management Plan;
- Conduct civil and drainage works to ensure the site directs storm water into a catchment dam;
- Re-develop the existing storm water catchment dam;

- Install a hardstand across the operational areas of the site;
- Allocate areas for vehicle parking and manoeuvring;
- Install a weighbridge;
- Install storage bunkers for receiving incoming material for processing and bunkers for storing processed products ready for sale;
- Install sorting equipment into the Secondary Processing Warehouse;
- Install crushing and shredding machinery;
- Construct a noise barrier along the Eastern boundary of the site; and
- Construct two noise barriers within the operational areas of the site.

Most of the activities relate to earthmoving, which will utilise recycled materials as far as possible.

The operational phase involves the operation of the sand, soil and building materials recycling facility to produce recycled products. The building and landscape supplies business will mainly sell recycled materials produced by the recycling facility. However, it will also import some additional products from off-site, such as compost and specialist soils.

6.3.1 Demolition and construction phase

The demolition / construction phase consists of removing existing stockpiles of concrete, rubble and metal from the site. The site then needs to be cleared and levelled. This will involve excavating some areas and filling other areas of the site. The site will then be compacted, to form a working hard stand using recycled concrete aggregate above a geotextile membrane. Selected areas of the site will be surfaced in recycled asphalt (under the landscaping material storage bays and waste storage bays), which will be brought onto the site. The crushed concrete aggregate hardstand areas will be compacted to form a hardstand surface suitable to support the operational machinery and heavy vehicle traffic. The main access driveway and the tip and spread inspection area will be provided with an engineered concrete hardstand.

Material in the existing stockpiles will be used for pavement construction as far as possible. Cleared woody garden organics and trees will be mulched and either used on site or sold.

6.3.2 Operational phase

The operational phase of the project consists of receiving, inspecting, processing and storing waste materials from off-site. The resulting products will be stored and sold through a landscape and building supplies business on the site.

All material received and leaving the site will be weighed on the weighbridge. Therefore, the facility operators will know how much material is has been processed, is on-site and has been removed from site. Amounts of waste received, processed and removed from site will be reported via the New South Wales Waste and Resource Reporting Portal (WARRP).

In accordance with the NSW EPA (2018) *Standards for managing construction waste in NSW* and the NSW EPA's Draft Protocol for managing asbestos during resource recovery of construction and demolition waste, incoming loads will be thoroughly inspected using a two-stage process; initial inspection at the weighbridge and a thorough inspection at the waste receiving area. All material arriving on site will be unloaded in a designated receiving tip and spread area (bundled concrete hardstand with 25kL pumpout tank for any contaminated stormwater for off-site disposal at a licenced facility). The load will be spread out to a height of no more than 100mm using an excavator. The load will be inspected to ensure no unacceptable materials are in the load. Loads with unacceptable material (such as hazardous materials, asbestos, etc.) will be re-loaded and removed from site.

Non-hazardous contaminants, such as plastic, treated timber and paper/cardboard, will be removed during the inspection stage. These will be stored separately in a bunker or skip bin awaiting removal from site for disposal at a licensed landfill. Recoverable materials are sorted and stored in separate storage bunkers awaiting processing.

Mixed building waste will be inspected in the receival area, then transferred to the secondary processing shed for sorting.

The processing equipment includes a crushing, shredding and screening equipment. Inert materials, such as concrete, bricks, rubble, rocks are crushed, screened and blended to meet product specifications. The final products, such as aggregate, roadbase, soil substitute, are transferred to the storage bunkers or stockpiles in the building supplies business area. All products will be tested in line with EPA requirements to ensure products meet the requirements of the relevant regulatory instrument and the client's specification.

Clean timber and tree waste will be shredded to product mulch, which will be sold through the landscape and building supplies business.

Scrap metal will be stored in bunkers and periodically removed from site by a scrap metal recycler.

6.4 Waste Management

The implementation of waste management practices outlined in this waste management plan meet the key objectives of Gosford DCP Part E7.2. These measures address the economic, environmental and safety imperatives during the demolition and construction phases and into the operational phase. These enhanced management practices also produce triple bottom line benefits including financial efficiencies, sustainable demolition and construction methods and a safe work site for the duration of the demolition and construction process.

These positive outcomes will be achieved through thorough planning and procurement of exacting measurements reducing upfront costs of demolition and construction which will benefit the business directly.

The benefits of the management practices outlined in the plans will be realised from the outset by both the business and the broader community in the form of reduced costs of disposal, reduced costs of legal liability and common good through:

- Separation of waste at the source during the demolition phase;
- Maximising recovery of valuable resources;
- Exercising due diligence for safe disposal of waste; and
- Providing a safe worksite.

6.4.1 Demolition and construction phase

The development phase of the project does not involve the demolition of any built structures. There are a number of stockpiles on site, mainly used concrete (approximately 18,090 m³). There is also a small stockpile of recyclable metal.

This phase of the project involves levelling the site, removing excess stockpiled material, and constructing a hardstand across the operational area of the site using a crushed concrete aggregate base.

6.4.1.1 Waste generation

The waste streams generated on site during the demolition and construction phase are as summarised in Table 6.1 below.

It should be noted that existing concrete stockpiles on site need to be sampled and tested for compliance with the EPA's *Recovered Aggregate Resource Recovery Order 2014* to confirm the material is acceptable for use in construction works on the site. Non-compliant materials will be removed for disposal at an appropriate facility.

Table 6.1. Estimated waste generation during demolition and construction phase.

Source	Material	Description	Estimated amount
Land clearing	Woody garden organics	Tree stumps and branches, as well as some grasses.	100 m ³
Stockpile removal, processing	Stockpiled C&D waste	Existing concrete stockpiles on site need to be sampled and tested for compliance with the EPA's <i>Recovered Aggregate Resource Recovery Order 2014</i> to confirm the material is acceptable for use in construction works on the site. There are also small amounts of scrap metal stockpiles at the site.	18,090 m ³
Site levelling	Soil	In order to level the site, some soil may need to be removed.	500 m ³
Site capping / pavement construction	Recycled concrete and asphalt	Recycled crushed concrete will be used as an engineered pavement (above a geotextile membrane) across the operation areas. Recycled asphalt will be brought onto the site to be laid down and compacted to produce a final sealed layer beneath the waste storage bays, landscaping storage and aggregate storage bays.	5,000 m ³
Employee waste	MSW	Small amounts of packaging waste and other MSW will be generated by employees on site conducting the development project.	240L per week for 12 weeks

6.4.1.2 Waste management measures

The management and destination of waste materials from the demolition and construction phase of the project is summarised in Table 6.2 below.

As noted above, the stockpiles of used concrete need to be inspected and tested for compliance with the EPA's *Recovered Aggregate Resource Recovery Order 2014* to confirm the material is acceptable for use in construction works on the site.

Table 6.2. Waste management measures during demolition and construction phase.

Material	Treatment / destination	Estimated recovery rate
Woody garden organics	Woody garden organics will be shredded and either used as mulch on site or sold as mulch in the landscape products business.	100%
Stockpiled C&D waste	Concrete stockpiles will be investigated and tested for compliance with EPA <i>Recovered Aggregate Resource Recovery Order 2014</i> . Compliant materials to be used as a base for the hardstand area. Scrap metal will be sold. Any non-useable material, including stockpiles found to be contaminated will be removed from site and disposed in a licensed landfill.	95%
Soil	Any excess material will be sold directly off-site as fill or stockpiled for sale in the building products business.	100%
Recycled asphalt	Recycled asphalt brought onto the site will comply with EPA <i>Reclaimed Asphalt Pavement Resource Recovery Order 2014</i> and will be used as a top layer for the hardstand that forms the operational area of the site in accordance with the EPA <i>Reclaimed Asphalt Pavement Resource Recovery Exemption 2014</i> . Any excess will be sold as product in the building supplies business.	100%
MSW	MSW will be collected in a MGB and removed weekly by a licensed waste removal contractor, and disposed at a licensed landfill.	0%

The overall waste recovery rate for the demolition / construction phase will be 95-100%.

Residual waste will be collected in a separate stockpile or skip bin and regularly removed from site for disposal in a licensed landfill (Genesis Landfill, Eastern Creek, EPL: 13426). Recovered metal will be removed to a metal recycler off-site (One-Steel, EPL: 1977).

6.4.2 Operational phase

The operational phase consists of the operation of the 200,000 tpa C&D recycling facility, as well as the 10,000 tpa landscape supplies business. The recycling facility will be operated in accordance with the NSW EPA's *Standards for Managing Construction Waste in NSW* and the NSW EPA's *Draft Protocol for Managing Asbestos During Resource Recovery of Construction and Demolition Waste*.

6.4.2.1 Waste generation

The site operations will generate very little waste itself. The vast bulk of “waste” materials will be brought onto site for processing. While a small proportion of this material will be non-recyclable “residual” waste, most material will be recovered, processed and sold as products. The total amount of residual waste is expected to range from approximately 2,340 tonnes in the first year of operation up to approximately 5,225 tpa once the facility reaches full capacity. Figure 6.2 shows the anticipated composition of the material that will be delivered to the site for processing. Figure 6.3 shows the extrapolated tonnes received over the first 6-7 years of operation, assuming the facility reaches full capacity in 2025. As these charts show, the majority of the waste will be source-separated, inert material, such as soil or concrete/brick/tiles. The aim will be to recover as much material as possible to recycle into products for sale through the landscape and building supplies business to be located at the site.

6.4.2.1 Waste management measures

Table 6.3 summarises the waste treatment and destination for each of the incoming waste streams. The majority of waste received at the site will be processed into re-usable products for sale through the on-site building and landscape supplies business. The small amount of dry residual waste will be stored separately on-site, in either skip bins or bunkers, prior to removal to a licensed landfill for disposal.

It is noted that the NSW Government intends to revoke the general Resource Recovery Order and Resource Recovery Exemption for recovered fines. When this occurs, KSSS intends to apply for a site-specific resource recovery order to enable it to sell its recovered fines as replacement soil product for construction works. In the meantime, KSSS will seek EPA-approved landfill alternative daily cover markets for its recovered fines.

6.4.2.2 Stockpile heights

Stockpile heights have been based on best practice guidelines outlined in the South Australian Environmental Protection Agency (EPA SA, 2010)¹⁹ in order manage fire, dust and odour:

- Stockpiles of waste materials in the designated waste storage area will be limited to 3m. Height guidance will be provided by the 3m height of the concrete block bays;
- Stockpiles of inert material such as concrete, brick, soil etc. will be limited to a maximum of 5m in height in the processing and blending areas. Height poles to the exact length (5m) will provide on-site guidance for stockpile management;
- Stockpiles of organic material such as timber and mulch will be limited to a maximum of 3m in height in the processing and blending areas. Height poles to the exact length (3m) will provide on-site guidance for stockpile management; and

¹⁹ EPA South Australia (2017). Guideline for stockpile management: Waste and waste derived products for recycling and reuse. Internet publication: http://www.epa.sa.gov.au/environmental_info/waste_management/solid_waste/storage_and_stockpiling

- Stockpiles of all processed products, aggregates and landscaping supplies will be limited to 3m. Height guidance will be provided by the 3m height of the concrete block bays.

Figure 6.2. Composition of incoming waste stream.

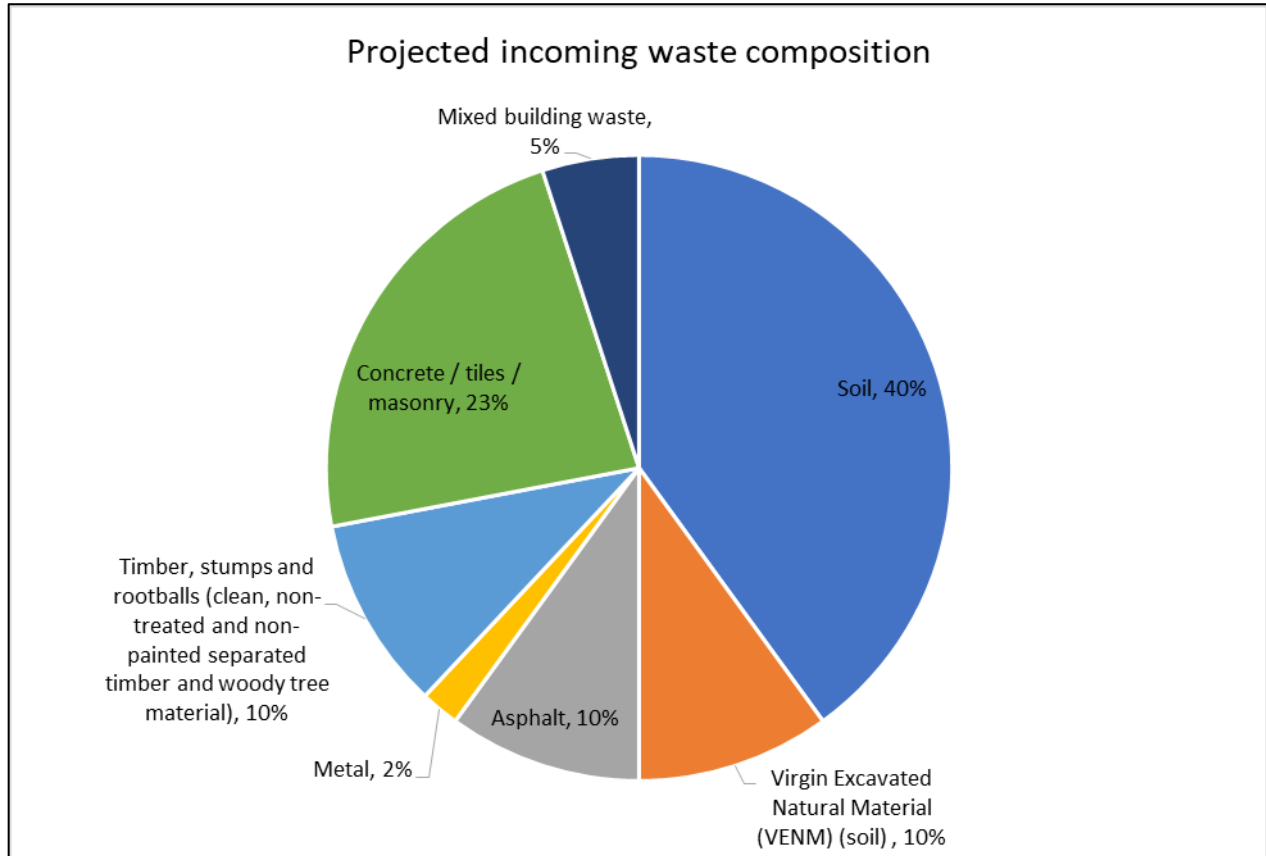


Figure 6.3. Estimates of amounts of incoming waste during operational phase.

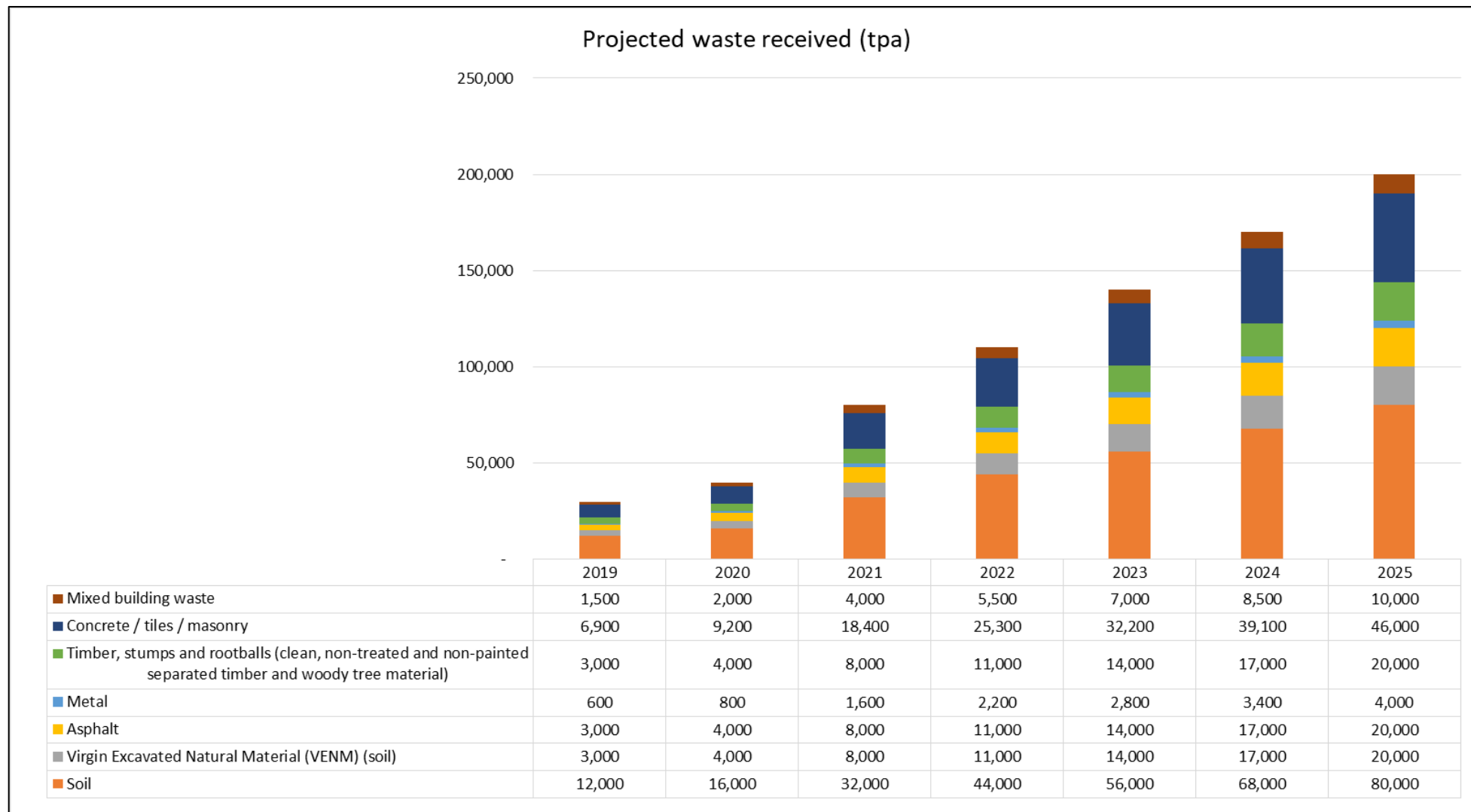


Table 6.3. Waste Management during the operational phase.

Incoming Material	Description	Processing / treatment	Destination	Resource Recovery Order for Products	Expected recovery rate (wt%)
Mixed building waste	Mixed building waste from demolition or construction projects. Waste may contain cardboard, plastic, etc. among the concrete, bricks, soil, metal.	<p>Loads will be received separately in B-Doubles, semi-trailers, skip bins or rigid trucks, tipped in the unloading bay associated with the 'Waste receiving area', then moved via front end loader to the 'Mixed building waste' storage bay. Material will then be subject to a primary sorting process using a grab excavator to remove concrete, steel and timber. Residual waste to be stored in skip bin or a separate bunker and disposed off-site.</p> <p>Concrete, masonry, clean timber from the primary sorting process will be separated and crushed/shredded and screened to specifications to produce saleable products.</p> <p>Residual waste from the primary sorting process will be transferred by front end loader to the secondary sorting facility located in the warehouse building at the North of the site. The secondary sorting process consists of a screen trommel, a picking station, a magnet and a blower. Concrete, brick, asphalt, paper, cardboard, plastic and metals will be separated at the secondary processing stage. Separated materials will be stored in skip bins prior to being transferred for recycling. Residual waste from the secondary processing stage will be stored in skip bins prior to being disposed off-site at a landfill.</p>	<p>Recovered materials will be processed into saleable products and sold either directly to customers or through the on-site building supplies business. Aggregate will be sold to construction and road projects. Recovered fines will be sold as soil or landfill alternative daily cover. Re-useable timber will be sold for construction and landscape projects.</p> <p>Residual waste will be collected in a separate bunker or skip bin and regularly removed from site for disposal in a licensed landfill (Genesis Landfill, Eastern Creek, EPL: 13426).</p>	<p><i>Recovered Aggregate Resource Recovery Order 2014;</i></p> <p><i>“Batch process” Recovered Fines Resource Recovery Order 2014</i></p> <p><i>Mulch Resource Recovery Order 2016;</i></p> <p><i>Recovered Plasterboard Resource Recovery Order 2014.</i></p>	85%

Incoming Material	Description	Processing / treatment	Destination	Resource Recovery Order for Products	Expected recovery rate (wt%)
Concrete tiles / masonry	Source-separated inert building materials, such as concrete, tiles, bricks and rubble.	Loads will be received separately in B-Doubles, semi-trailers or rigid trucks, tipped in the unloading bay associated with the 'Waste receiving area', then moved via front end loader to the 'Concrete/tiles/masonry' storage bay. Material will then be crushed / screened in the 'Processing area' then stored in a pile then moved to the 'Landscape supplies' bunker for sale.	<p>Clean, inspected material will be crushed, screened and blended to produce aggregate and soil-replacement products. These will then be sold either directly to customers or through the on-site building supplies business.</p> <p>Any contaminants will be collected in a separate bunker or skip bin and regularly removed from site for disposal in a licensed landfill (Genesis Landfill, Eastern Creek, EPL: 13426).</p>	<p><i>Recovered Aggregate Resource Recovery Order 2014;</i></p> <p><i>“Batch process” Recovered Fines Resource Recovery Order 2014</i></p>	99%
Timber, stumps, and rootballs	Clean, non-treated and non-painted separated timber and woody tree material.	Loads will be received separately in rigid trucks, tipped in the unloading bay associated with the 'Waste receiving area', then moved via front end loader to the 'Timber' storage bay. Material will then be chipped in an on-site shredder. Chipped material will then be moved via front end loader to the 'timber' mulch storage bay in the landscape supplies area	<p>Clean, inspected material will be shredded, screened and blended to produce a range of mulches and landscape products. These will then be sold either directly to customers or through the on-site building supplies business.</p> <p>Any contaminants will be collected in a separate bunker or skip bin and regularly removed from site for disposal in a licensed landfill (Genesis Landfill, Eastern Creek, EPL: 13426).</p>	<i>Mulch Resource Recovery Order 2016</i>	99%
Metal	Steel, iron, copper, aluminium and other metal items.	Loads will be received separately in rigid trucks, tipped in the unloading bay associated with the 'Waste receiving area', then moved via front end loader to the 'Metals' storage bay. Material will then be picked up and taken off-site for recycling in a semi-trailer on a periodic basis.	<p>Clean, inspected metals will be sorted into metal types. Some scrap metal may be shredded to reduce size and save space. Recovered metal will be removed to a metal recycler off-site (One-Steel, EPL: 1977).</p> <p>Any contaminants will be collected in a separate bunker or skip bin and regularly removed from site for disposal in a licensed landfill (Genesis Landfill, Eastern Creek, EPL: 13426).</p>	n/a	99%

Incoming Material	Description	Processing / treatment	Destination	Resource Recovery Order for Products	Expected recovery rate (wt%)
Asphalt	Recovered asphalt from re-surfacing roads and pavements.	Loads will be received separately in B-Doubles, semi-trailers or rigid trucks, tipped in the unloading bay associated with the 'Waste receiving area', then moved via front end loader to the 'Asphalt' storage bay. Material will then be crushed / screened in the 'Processing area' then stored in a pile then moved to the 'Landscape supplies' bunker for sale.	<p>Clean, inspected material will be crushed, screened and blended to produce aggregate and soil-replacement products. These will then be sold either directly to customers or through the on-site building supplies business.</p> <p>Any contaminants will be collected in a separate bunker or skip bin and regularly removed from site for disposal in a licensed landfill (Genesis Landfill, Eastern Creek, EPL: 13426).</p>	<i>Reclaimed Asphalt Pavement Resource Recovery Order 2014</i>	99%
Virgin Excavated Natural Material (VENM)	Natural material that has been excavated or quarried from the ground in an area uncontaminated by chemicals and does not contain sulphidic soils.	Loads will be received separately in B-Doubles, semi-trailers or rigid trucks (e.g. 12 t), tipped in the unloading bay associated with the 'Waste receiving area', then moved via front end loader to the 'VENM' storage bay. Material will then be screened in the 'Processing area' then stored in a pile then moved to the 'Landscape supplies' bunker for sale.	<p>Clean, inspected material will be crushed, screened and blended to produce aggregate and soil-replacement products. These will then be sold either directly to customers or through the on-site building supplies business.</p> <p>Any contaminants will be collected in a separate bunker or skip bin and regularly removed from site for disposal in a licensed landfill (Genesis Landfill, Eastern Creek, EPL: 13426).</p>	Not applicable	100%
Soil	Soils that meet the CT1 thresholds for general solid waste in Table 1 of the NSW EPA's Waste Classification Guidelines	Loads will be received separately in B-Doubles, semi-trailers or rigid trucks, tipped in the unloading bay associated with the 'Waste receiving area', then moved via front end loader to the soil storage bay. Material will then be screened in the 'Processing area' then stored in a pile then moved to the 'Landscape supplies' bunker for sale.	<p>Clean, inspected material will be crushed, screened and blended to produce aggregate and soil-replacement products. These will then be sold either directly to customers or through the on-site building supplies business. Any contaminants will be collected in a separate bunker or skip bin and regularly removed from site for disposal in a licensed landfill.</p>	<i>Excavated Natural Material Resource Recovery Order 2014</i>	99%

6.5 Management of hazardous, toxic and liquid waste

As far as possible, no hazards, toxic or liquid waste will be accepted at the site. Where such material is delivered, but not detected at arrival, it will be removed and stored in a designated area awaiting removal by a licensed waste contractor. The procedure for detecting and managing unacceptable waste is provided at Attachment 1 of Appendix H. This procedure is consistent with the NSW EPA guidelines. Chemical, flammable and radioactive wastes will be managed using the same procedures.

6.6 Incident Management – Spills

Spills on-site during the demolition and construction and operational phases likely to occur are oils, fuel, paints and primers. To better manage a spill incident Spill Response Kits will be kept on-site, at various clearly identified locations in easily accessible areas. The MSDS will be placed within sight and near spill kits. The MSDS has clear instructions on spill response management – cleanup and disposal.

6.7 Impacts assessment and mitigation measures

During the demolition and construction process, a series of best practice resource recovery measures will be implemented to avoid, reduce/reuse and recover waste to minimise disposal to landfill and maximise recovery.

To help in waste management planning during each stage of the project, an estimate of the types and quantities of waste to be generated during the demolition / construction and operational phases has been prepared. This analysis is given in Table 6.1 and Figure 6.3.

It is noted that the majority of materials to be generated through the demolition and construction phase is inert material, mainly concrete and soil. The majority of this will be re-used on site.

Some living and dead trees, shrubs and grasses (as identified in the Fauna and Flora report) will need to be cleared from the site to permit construction. As mentioned earlier, all waste materials will be processed at the facility or sent to a licensed recycling facility for processing.

The overall recovery rate during the operational phase is expected to be very high (approximately 95%). It is anticipated that a maximum approximately 5,225 tpa of residual waste requiring off-site disposal will be generated at the site. This will be regularly removed from site and disposed in a licensed landfill.

Overall the waste impacts of the facility are believed to be positive, with wastes being recovered and recycled, instead of being sent to landfill.

6.8 Conclusion

The waste generated during the demolition / construction phase of the project is estimated to be 18,090 m³ of inert material (recycled concrete, rubble, and soil), 5 m³ of scrap metal, 100 m³ of woody garden organics and 3 m³ of municipal solid waste (MSW). Inert material will be used as fill on site. The metal will be recycled at a scrap metal recycling facility, off-site. Woody garden organics will be shredded to produce mulch, and either used on-site or sold. MSW will be removed from site and disposed in a licensed landfill.

During the operational phase, up to 200,000 tpa of waste materials will be received on site for recycling. The majority will be soil or source-separated inert material. It is estimated that the recycling rate for the facility will be approximately 95%, with approximately 5,225 tpa of residual waste being removed for disposal to landfill. The recovered material will be processed into various building and landscaping products and sold from the premises.

This facility will make a major contribution towards meeting the NSW Waste Strategy's target of 80% recycling of C&D waste by 2021.

7 Water Impact Assessment

7.1 Introduction

This chapter provides a summary of the investigation into water management issues for the proposed development. Cardno (NSW/ACT) Pty Ltd was engaged to prepare a Soil and Water Management Plan and a Water Cycle Management Plan for the proposed industrial development at 90 Gindurra Road, Somersby. The reports are provided at Appendix I.

7.2 Legislative requirements

Section 6.3.6.1 of the Gosford DCP 2013 requires that a Soil and Water Management Plan be prepared for any developments where the soil surface exposure is greater than 2,500m². Similarly, *Managing Urban Stormwater: Soils and Construction*, Landcom, 2004 (the Blue Book) requires a SWMP for developments over 2,500m².

The Water Cycle Management Plan has been prepared in accordance with the requirements of Chapter 6.7 – Water Cycle Management of Gosford City Council's Development Control Plan 2013 (DCP 2013). The objectives of this Water Cycle Management Plan align with the purpose of Gosford City Council's Chapter 6.7 (Water Cycle Management) from DCP 2013. These include to:

- 1) Maintain and restore natural water balance whilst reducing the cost of providing and maintaining water infrastructure in a sustainable and efficient manner;
- 2) Reduce risk to life and damage to property by restricting and controlling building and other development so that it minimises risks to residents and those involved in rescue operations during floods;
- 3) Reduce nuisance and high-level flooding and the cost of providing and maintaining flood mitigation infrastructure whilst improving water quality in streams and groundwater;
- 4) Reduce potable water demand by using stormwater as a resource;
- 5) Protect and enhance natural water systems (creeks, rivers, wetlands, estuaries, lagoons and groundwater systems);
- 6) Protect and enhance the water quality, by improving the quality of stormwater runoff from the urban catchments; and
- 7) Integrate stormwater management systems into the landscape in a manner that provides multiple benefits, including water quality protection, stormwater retention and detention, public open space and recreational and visual amenity.

7.3 Baseline conditions

The site currently has only a limited area cleared. As such, most of the site has natural landform contours. The site currently falls to the south and south-west at approximately 7% grade.

None of the site is paved. Some cleared areas are compacted soil. However, most of the site is pervious. A review of the NSW Office of Environment and Heritage, eSPADE V2.0 Mapping System (NSW Office of Environment and Heritage, 2016) indicates that the site is situated within the Sydney Town landscape (9130st) typically comprising undulating to rolling low hills and moderately inclined slopes on quartz sandstone of the Terrigal and Hawksbury sandstone formations with typical slope gradients of between 5- 25%. Moderate to severe sheet erosion and rilling is present in areas where vegetation has been extensively cleared for development. Soil profiles are expected to comprise up to

0.3m of loose brown loamy sands overlying 1.5m of brown sandy clay loams and underlying sandstone bedrock. It is understood that these soil possess strong sodicity and high erodibility.

The site has three dams/ponds to collect water from the cleared areas; two in the centre of the site and one on the western boundary (see site survey at Appendix D). Water quality testing of the on-site water found that the water quality was below the trigger values in the ANZECC Guidelines for Marine and Fresh Water Quality²⁰.

Stage 1 of the development, which was approved on 17/11/2017 (DA52541/2017) includes a building comprising an office and a warehouse. The proponent has sought development approval to include concrete paving around the building. This has been approved by Central Coast Council under DA52541/2017.2.

7.4 Proposed development

Stage 2 of the proposed development includes clearing the development area (approximately 5.6 ha). Stage 2 of the proposed works involves the following elements, as shown on Cardno's Concept General Arrangement Plan drawing for the site, included in Appendix E:

- Installation of security fencing;
- Construction of a hardstand area for receiving waste material;
- Construction of areas for processing and blending waste material;
- Construction of storage bays for processed material and
- Construction of on-site roads suitable for large vehicles.

Topsoil is to be stripped from the site after the establishment of erosion and sediment controls and stored in nominated stockpiles. Stockpiles are to be free draining at all times and located a minimum distance of 5 metres from diversion drains.

The site entrance road to the weighbridge and to the waste receival area, the waste receival area and the area around the warehouse building will be paved with concrete. The waste and product storage bays will be sealed with asphalt. The remainder of the site will be covered with crushed compacted concrete over a layer of geotextile (impregnated with bentonite).

The site will be contoured such that stormwater will be channeled towards grassed swales then an On-site Detention (OSD) and Water Storage Basin at the south-west corner of the site. The main flow to the OSD basin will be via a channel drain along the western boundary. There is also a pipe drain leading from the waste storage bays.

A 25kL sump is to be installed adjacent to the waste receival and inspection area to capture the stormwater and any sediment to run-off from this area. The sump will be emptied regularly, on an as-needs basis.

The OSD basin will be surrounded by grass swales to reduce erosion and sediment build up in the basin, as well as help reduce the nutrient load in the stormwater. The Landscape Plan (Appendix F) provides details of the grass swale plantings. The species to be used for the bio-swales include *Dianella caerulea*, *Hardenbergia violacea* and *Lomandra longifolia*.

The OSD basin will have compartments for trapping sediment, which will be regularly cleared. The overflowing water is captured in a central compartment. Stormwater will be utilised for on-site uses, such as dust suppression.

The overflow from the OSD basin will flow to a level spreader via a spillway. In the event of an overflow, excess stormwater will flow to the undeveloped southern end of the property. No stormwater should leave the property.

²⁰ Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000) Table 3.4.1: Trigger Values for Freshwater Ecosystems (95 percent level of species protection).

7.5 Impact assessment

7.5.1 Water conservation

In accordance with Section 6.7.7.1.1 of the DCP, the target for potable water reduction is 40%.

The proposed development intends to reduce potable water usage by storing stormwater runoff in the storage pond for re-use over the site in dust suppression. In this manner, potable water will not be used for this purpose.

Developed site imperviousness is estimated at 17% based upon 17,000 m² of development over the 100,810 m² site. Therefore, the stormwater retention volume required is 114.7m³. The OSD basin has a permanent storage volume of 250m³.

The expected re-use over the site consists of the following elements:

- Dust suppression on all roads and operational surfaces across the site will be performed, using a truck water cart, with water applied at a rate of 2.2L/m²/hr.;
- All waste materials will require a 1% increase in moisture content to achieve a minimum of 1.5% moisture content for good dust control during processing. This is equivalent to approximately 2ML/yr;
- Application of water sprays via sprinklers or misting to material stockpiles recommended in the Air Quality Impact Assessment to prevent wind erosion, with assumed application rate of 2.2L/m²/hr; and
- Water captured in a 10kL rainwater tank attached to the secondary processing warehouse will be used inside the warehouse using internal misting sprays for dust suppression at an estimated rate of 2.1kL/day.

7.5.2 Stormwater management

The proposed development does not connect any part of the site to the street. Therefore, the Site Discharge Index is zero.

In order to meet the water quality requirements associated with the site, the following measures will be employed:

- A 10kL rainwater tank to capture runoff from the shed roof of Stage 1;
- A 25kL stormwater sump dedicated to capturing run-off and sediment from the waste receiving and inspection area;
- Stormwater pits used for runoff capture will be fitted with litter baskets and oil socks;
- A grassed swale to pre-treat runoff from the working areas of the site;
- Sediment inlet ponds at the entry to the proposed pond storage to capture sediment from site runoff;
- A storage pond to capture runoff from the site. The pond will consist of a permanent pool for re-use purposes, and an on-site detention component to ensure site discharge meets Council's requirements; and
- A "Jellyfish" device (or equivalent) to treat any overflow from the OSD basin prior to discharge via a distributing spreader.

Central Coast DCP 2013 Section 6.7.7.3.3 requires, as a minimum, the reductions in total pollutant load, compared to untreated runoff from impervious areas of the developed site a presented in Table 7.1. The predicted reduction figures were estimated using MUSIC modelling software.

Table 7.1. Target and predicted stormwater pollutant reductions.

Pollutant	Minimum Reduction	Predicted reduction
Total Suspended Solids (TSS)	80%	87.6%
Total Phosphorus (TP)	45%	75.6%
Total Nitrogen (TN)	45%	53.7%
Gross Pollutants	80%	100%

Section 6.7.7.4.4 of DCP 2013 requires on-site detention to ensure that post developed flows from a development site do not exceed pre-development flows for all storm events up to and including the 1% AEP storm events. A DRAINS computer model (Version 2016.10) was developed to demonstrate compliance with DCP 2013. Results of peak outflows from the DRAINS model are summarised in Table 7.2.

Table 7.2. Summary of DRAINS Peak Outflows.

Storm event	Predeveloped flows	Developed flows (no OSD)	Developed flows (with OSD)
5 year ARI (20% AEP)	752 L/s	850 L/s	643 L/s
100 year ARI (1% AEP)	1780 L/s	1850 L/s	1770 L/s

There are no external catchments that drain into the site within the proposed development area as the eastern site boundary is located along the ridge line of the topography. The site is not located in any drainage black spots. The development site is not impacted by creeks, rivers or lagoons. The development site is not subject to flooding. The development site is not impacted by existing drainage easements or stormwater pipes.

7.6 Mitigation measures

7.6.1 Construction phase

In order to limit the amount of erosion during the construction phase, there will be limited access to certain areas (see Table 7.3).

Table 7.3. Limitations to access during construction phase.

Land Use	Limitation	Comments
Construction areas	Disturbance to be no further than five metres from the edge of any essential engineering activity shown on the plans	All workers will clearly recognise these zones that, where appropriate, are identified with barrier fencing (upslope) and sediment fencing (downslope), or similar materials
Access areas	Limited to a maximum width of 5 metres.	The site manager will determine and mark the location of these zones on site. All workers are to clearly recognise these zones.
Remaining lands	Entry prohibited	Barrier fencing shall be used to prevent access to these areas.

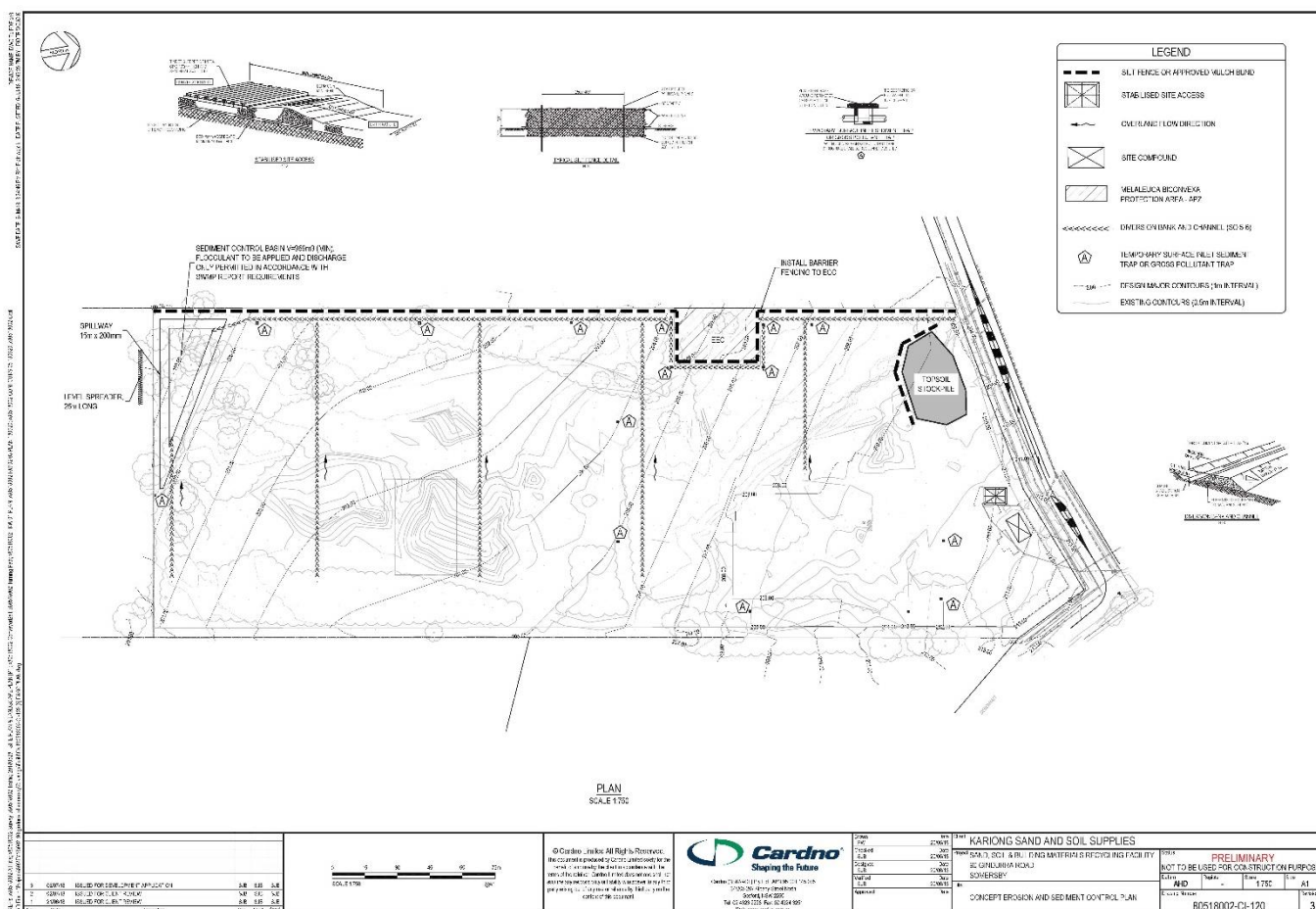
The works on the site will be staged as follows to minimise soil erosion and run-off at the site:

- Site establishment and installation of erosion and sediment control measures;

- b) Topsoil stripped to stockpiles;
- c) Cut to fill earthworks operations;
- d) Topsoil spread over earthworks area and stabilisation with hydro-seed;
- e) Construction of pavements; and
- f) Erosion and sediment control measures to remain in operation until completion of proposed development works.

A sediment basin will be established during construction to manage soil loss over the site. This basin will be converted to the permanent OSD basin upon completion of construction. Boundary drainage swales and diversion bunds are to be installed prior to site earthworks to prevent external catchment runoff from entering the site and off-site deposition of eroded site sediment. Barrier fencing and sediment fencing will be installed (see Erosion and Sediment Control Plan at Appendix E).

Figure 7.1. Erosion control measures during construction.



A stabilised site access, via Gindurra Rd, shall be designed to capture any soil materials collected on vehicles such that they are not deposited on public roads. Should soil material be spilled on public roads or transported from the site onto a public road, the soil shall be removed within the same working day. Loads to and from the site shall be covered at all times.

Topsoil is to be stripped from the site after the establishment of erosion and sediment controls and stored in nominated stockpiles. Stockpiles are to be free draining at all times and located a minimum distance of 5 metres from

diversion drains. As shown on the Erosion and Sediment Control Plan drawing, sediment fences are to be placed downslope of each stockpile. Stockpiles are to be stabilised if unused for longer than 14 days. Stabilisation requires a minimum ground cover of 50% on each stockpile. Topsoil is to be re-spread over the completed earthworks and stabilisation measures employed to promote revegetation of the disturbed area.

Progressive covering of exposed areas is required as soon as possible after filling/regrading. Cover is to be bitumen emulsion and seed, and watering as required to create instant cover and reduce dust issues. Revegetation and stabilisation of disturbed areas should be undertaken within 10 days of earthworks completion. All erosion and sediment controls are to remain in place until stabilisation / revegetation of earthworks is established. All stabilised areas are to be free of vehicle and pedestrian traffic to prevent disturbance of stabilisation measures.

All erosion and sediment measures will require regular inspection and maintenance by the Contractor – the nature of the site requires that daily checks of control measures prior to site closure be undertaken, and within 24 hours of each rainfall event. The Contractor shall nominate a person to be responsible for the daily checks and after rainfall checks, including on RDOs, weekends and holiday periods.

The daily site inspection shall be recorded on a check sheet that includes the following information:

- The condition of each measure noted on the Erosion and Sediment Control Plan drawing;
- Maintenance requirements of each measure;
- Volumes of sediment removed where applicable; and
- Disposal locations.

A copy of the check sheets shall be provided to the Superintendent on a weekly basis.

Drains shall be checked to ensure they are operating effectively, are not blocked, and are not eroding due to higher than allowable velocities. Linings shall be repaired immediately if required, and check dams installed where required.

Trapped sediment shall be removed from sediment fences. Dispose to an approved landfill location or waste treatment facility in accordance with Council requirements.

7.6.2 Operational phase

The on-site detention storage is proposed as part of the storage pond in the south-western corner of the site as shown in Figure 7.2. Details are provided in the Stormwater Management Plan included in Appendix E: Site, civil design and stormwater plans. The total storage volume of the OSD basin is 685m³ at 1.14 m storage depth. Overflow from the OSD basin will be treated using a “Jellyfish” device (or equivalent) and distributed into the undeveloped bushland in the southern end of the site via a spreader.

Maintenance and inspection of revegetation will be required to ensure that the site is stabilised and future erosion is prevented. For areas stabilised with grass-seeding, regular watering will be required until an effective ground cover has been established and plants are growing vigorously. Re-seeding may be required in areas of inadequate coverage.

Groundwater will be protected through the following measures:

- The waste material storage area has been bunded to prevent runoff from this area mixing with stormwater runoff from the remainder of the site. Runoff will be captured in a tank within the site and will be disposed of in accordance with the Environmental Protection License for the site. The bunded area is also on a concrete surface which prevents movement of runoff to groundwater.
- In order to prevent potential infiltration of leachate from unsealed sections of the hardstand, a bentonite impregnated geotextile liner will be used (Bentofix® GCL or equivalent). Bentofix® Geosynthetic Clay Liner (GCL) is factory produced wide width rolls of bentonite “sandwiched” between layers of geotextile. GCL’s are

an engineered replacement for traditional clay lining of proposed containment structures. The permeability of Bentofix® GCL is less than 2.5×10^{-11} m/s when installed in accordance with the manufacturer's recommendations and will form a suitable barrier to prevent contaminants entering the groundwater.

- In addition to the use of the geotextile liner the site surface grading has been formed to direct surface water to swales that will transport the surface water to the water storage basin.
- The proposed water storage basin will be lined with an impermeable liner (HDPE) to prevent leaching of potential contaminants collected on site to the underlying groundwater system.

It is proposed to monitor the quality of the captured stormwater and the groundwater at the site regularly. This will form a condition of the Environmental Protection Licence, and will be negotiated with the EPA.

7.1 Conclusions

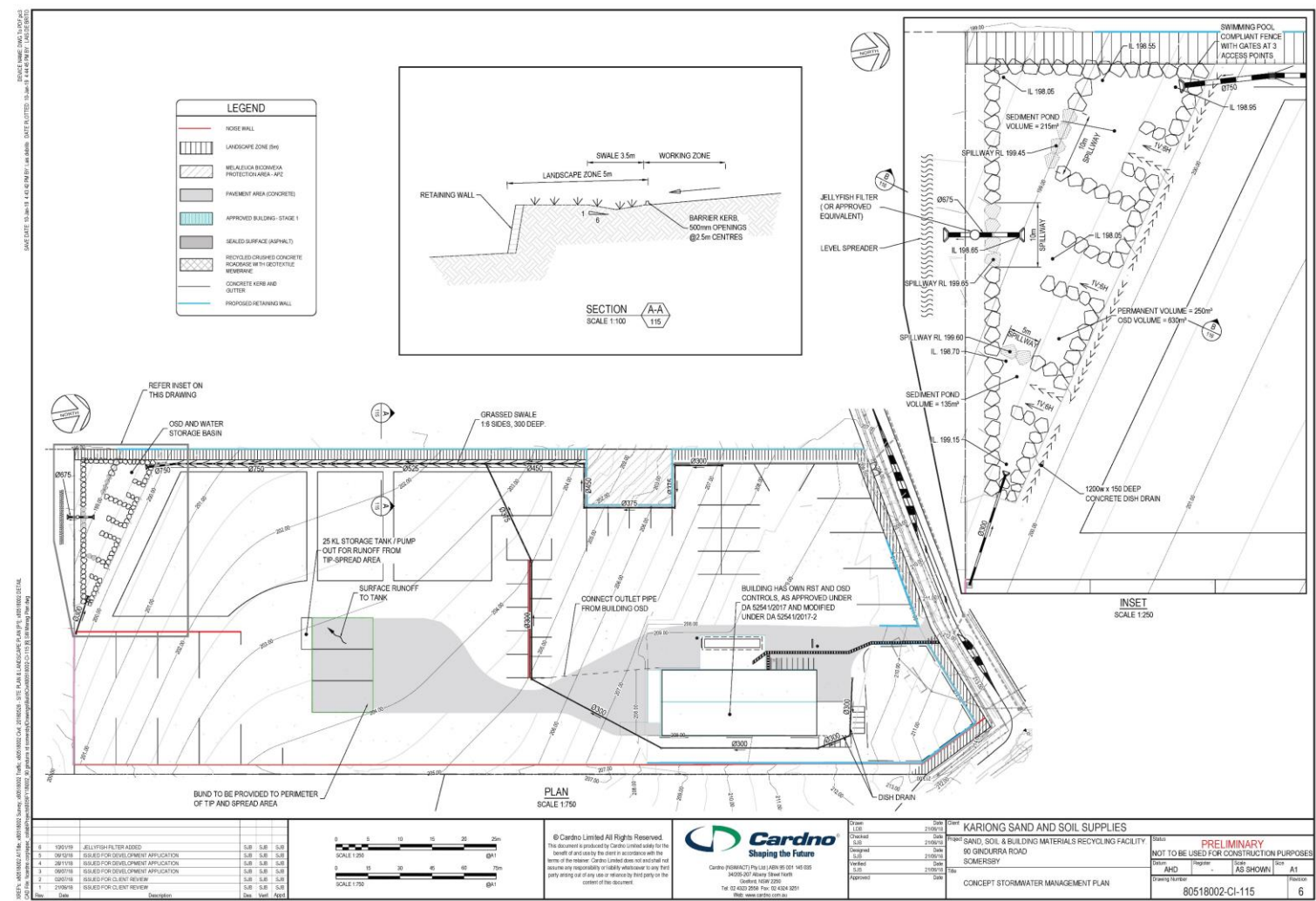
The on-site stormwater and erosion control measures will ensure that all stormwater is captured and treated on-site.

Erosion on site will be limited by the use of pavements, bitumenised areas and compacted hardstands, as well as vegetation in non-operational areas. Any sediment carried in the stormwater will be captured in the OSD basin, with the sediment removed regularly.

A geotextile layer under the site will ensure minimum penetration into the sub-soil and groundwater by water and/or contaminants at the site.

The estimated pollutant reduction by the OSD basin is within the targets set in the DCP. The Water Cycle Management Plan and Soil and Water Management Plan Reports are provided at Appendix I.

Figure 7.2. Stormwater capture, drainage and management plan.



8 Soils and Contamination Impact Assessment

8.1 Introduction

Clearsafe Environmental Solutions Pty Ltd (Clearsafe) was engaged by Kariong Soil and Sand Supplies (C/- Jackson Environment and Planning Pty Ltd) to undertake a Stage 1 Preliminary Site Investigation with limited sampling of a nominated portion of the property located at 90 Gindurra Rd, Somersby NSW 2250 (hereafter referred to as 'The Site'). The purpose of the Stage 1 Preliminary Site Investigation was to assess the nature / extent of soil contamination, if any, and identify areas of environmental concern (AEC).

8.2 Legislative requirements

A contamination assessment is required to satisfy the State Environmental Planning Policy No. 55 - Remediation of Land (SEPP 55).

The object of SEPP 55 is to provide for a Statewide planning approach to the remediation of contaminated land.

In particular, the SEPP aims 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:

- (a) by specifying when consent is required, and when it is not required, for a remediation work, and
- (b) by specifying certain considerations that are relevant in rezoning land and in determining development applications in general and development applications for consent to carry out a remediation work in particular, and
- (c) by requiring that a remediation work meet certain standards and notification requirements.

The purpose of the contamination assessment is to determine whether contamination or other areas of concern (such as acid sulfate soils) exist at the site. SEPP 55 determines that consent for any remediation work is required, and that any remediation work meets appropriate standards.

8.3 Baseline conditions

8.3.1 Geology and hydrology

The site is classified as being located within the Middle Triassic Age - Hawkesbury sandstone, medium to very coarse-grained quartz sandstone, minor laminated mudstone and siltstone lenses.

Soil Landscapes of the Gosford 1:100 000 Sheet Survey (1000133), Profile 257, collected from an auger by Mr Casey Murphy on November 29, 1988, provide the following information:

- Physiography: woodland shrub understorey on sandstone-quartz lithology and used for timber/scrub/unused. Slope 2.0% (measured), elevation 200.0 m, aspect south west. Surface condition is loose, profile is well drained, erosion hazard is slight, and no salting evident;
- Vegetation Use: limited clearing at the site, used for timber/scrub/unused, with improved pasture in the general area;
- Surface Conditions: loose when described, ground cover is 100%;
- Erosion/ Land Degradation: slight; wind erosion at site is none; no salting evident;
- Soil Hydrology: profile is well drained, run on is low and runoff is moderate; and
- Soil Type: Earthy Sand (GSG), Uc4.21 (PPF).

A review of the Acid Sulfate Soil Risk Map - Edition Two supplied by the Department of Land and Water Conservation indicates that the site lies in an area with no known occurrence of acid sulfate soil materials.

8.3.2 Site Condition and Surrounding Environment

The site was inspected on the 10 February 2018. At the time of inspection, the site was not operational. During the site inspection the following observations were made:

- The ground surface of the site is predominately grass cover;
- A roadway passes through a majority of the northern section of the site. The roadway was observed to consist of recycled materials including crushed brick, concrete and gravel. Asbestos cement fragments were identified within the south eastern section of the roadway;
- There is developed vegetation (large trees and shrubs) present along the entire site in particular the southern section;
- No visible signs of plant stress were observed on site;
- The topography of the site slopes in a south-western direction, therefore it is predicted that drainage on site flows in the same direction;
- Possible former watercourse that appears to be a dried-up creek bed runs from the north to the south in the western central side of the site;
- Multiple structures including old caravans, storage sheds, outhouse toilet and a demountable were observed within the northern section of the site at the time of the inspection that are currently used for storage purposes. These structures were observed to potentially contain hazardous materials including but not limited to lead paint and asbestos;
- At the time of inspection obvious signs of chemical/oil spills were observed on ground surfaces within the largest shed located in the north eastern section of the site;
- An underground septic tank was identified adjacent the outhouse toilet in the north eastern section of site;
- Multiple industrial vehicles were observed within the north eastern section of site;
- Multiple stockpiles of anthropogenic material such as brick, steal, concrete slabs etc. were identified during the inspection in various locations across the site (refer appendix A of the Soils and Contamination Impact Assessment Report). The stockpiled materials are understood to be outside the scope of the current assessment;
- Fill material of unknown origin was observed generally across the site. The identified fill material generally consisted of brown silty sandy loam with gravel, coal wash, brick, concrete, timber, glass etc. This was underlain by natural yellow sand and yellow / red sandstone rock;
- Asbestos containing material (ACM) in the form of asbestos cement (AC) fragments were identified on the ground surfaces in the north eastern corner of the site adjacent the buildings as well as within the central section of site.

8.3.3 Site history review

Site history information has been compiled from the following sources:

- Search of EPA Contaminated Lands Register;
- Review of Historical Aerial Photographs;

- Review of Section 149 (2&5) Planning Certificates; and
- Review of Previous Environmental Reports.

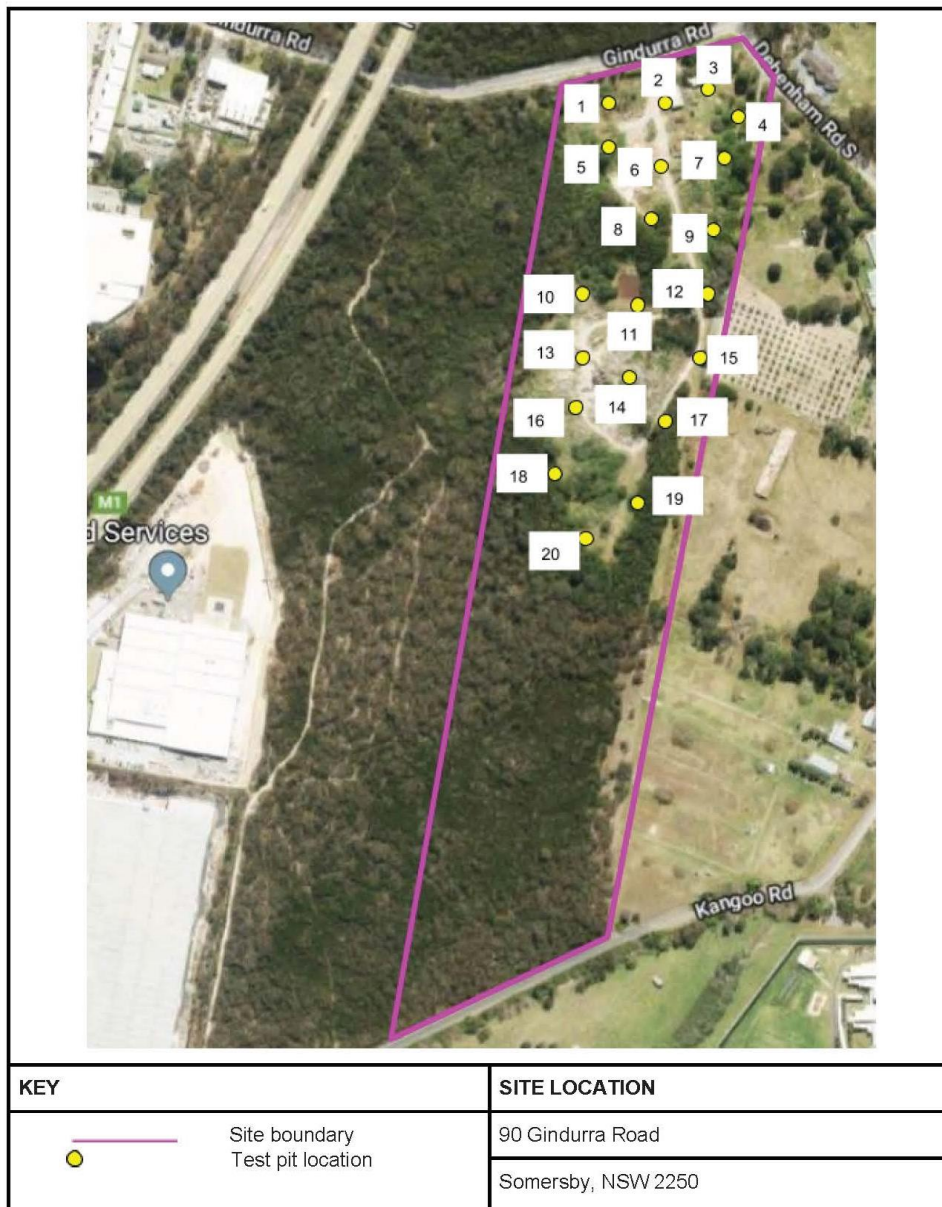
No information relevant to the site was found in a search of the EPA Contaminated Lands registers conducted on 19 February 2018.

The Section 149(2) certificate for the site indicates that Council has not been advised that the land is contaminated, and is not subject to a management, maintenance or audit order.

8.3.4 Sampling

A total of twenty (20) Test Pits were excavated across the site as part of the current assessment. The sampling locations were selected primarily on the basis of a judgmental sampling pattern with sampling concentrated around potential areas of environmental concern. The final test pit locations are presented in the Site Diagram in Appendix A of the Soil Contamination Assessment in Appendix J of this report, with sampling locations labelled TP1 to TP20.

Figure 8.1. Location of sample test pits. Source: Clearsafe Soil Contamination Assessment (Appendix J).



A total of thirty five (35) primary soil samples were forwarded for laboratory analysis for various combinations of the following analytes:

- Total petroleum hydrocarbons (TPH);
- Benzene, Toluene, Ethylbenzene and Xylene (BTEX);
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Select heavy metals (As, Cd, Cr, Cu, Pb, Zn, Hg, Ni);
- Organochlorine / organophosphate pesticides (OCP/OPP);
- Polychlorinated biphenyls (PCBs); and
- Asbestos.

Samples were also collected for laboratory analysis for asbestos during the inspection with a total of thirty eight (38) samples collected.

Groundwater was not encountered during the site assessment. Sampling of groundwater was not undertaken as it is outside the scope of the current assessment.

The results for the soil samples collected from test pits are summarised below:

- Heavy Metals: Results of analysis were all below adopted criteria excluding 20-8613/TP3 - 0.5m, which reported a zinc concentration of 575 mg/kg which slightly exceeded the adopted ecological investigation levels;
- TPH/BTEX: Results of analysis were all below adopted criteria;
- PAH: Results of analysis were all below adopted criteria;
- PCBs: Results of analysis were all below adopted criteria;
- OCP & OPP: Results of analysis were all below adopted criteria;
- Asbestos: Multiple fragments of fibrous cement (AC) sheeting were visually observed within the north eastern corner and central section of the site. Three (3) representative samples were collected and two of them reported results of Asbestos Detected. Asbestos was not detected in the remaining soil samples collected as part of the assessment (refer to Clearsafe Reports 20-8613-01-ID & 20-8613-01-ID). Based on site observations and laboratory analysis results the identified asbestos is considered non-friable.

8.4 Proposed development

The development of the site will involve considerable earthworks at the site. Although the site is relatively level, creating the correct contours for stormwater flow and the construction of hardstand areas will involve substantial cutting and filling. As far as possible, existing soil and stockpiled concrete at the site will be re-used as fill. Additional soil will be brought on-site as required, as per the civil works plan. Any material brought onto the site will be clean fill.

The activities at the site during the operation phase include crushing and screening of inert building materials, such as concrete, brick and tiles. Some green waste and timber will also be shredded at the site and sold as mulch.

Strict waste receiving protocols will control the quality of the incoming materials, and minimise the risk of hazardous materials, such as asbestos, being received and processed at the site. A risk assessment is provided in Chapter 3. A protocol for dealing with non-conforming waste is provided in Appendix H: Waste Management Plan.

8.5 Impact assessment

The information obtained from the review of available site history materials and site inspection and sampling identified three (3) Areas of Environmental Concern (AEC) including:

AEC 1 – Fill of unknown origin

Fill material of unknown origin was observed generally across the site. The identified fill material generally consisted of brown silty sandy loam with gravel, coal wash, brick, concrete, timber, glass etc. This was underlain by natural yellow / light brown sand and sandstone rock. Fill was evident across most of the site.

Although fill of unknown origin was present across the majority of the site soil samples were all within adopted assessment criteria and predominantly below detection limits for the majority of chemicals analysed. Sample 20-8613/TP3 - 0.5m which reported a Zinc concentration of 575 mg/kg, was slightly above adopted criteria for the Ecological Investigation Levels for an Industrial/ Commercial development. Results from three neighbouring test pits (<20m away) and all other other test pits from across the site were analysed to be below the adopted criteria. Test Pit 3 is located in an area proposed for development into a sealed car park therefore the slightly elevated zinc concentration above the adopted EILs is considered a negligible risk. The Zinc result for this sample appears to be an outlier and is considerably lower than Health Investigation Levels. Therefore, no significant risk of chemical contamination is expected across the site.

Multiple stockpiles / dumping areas were identified within the central area of the site as part of the current assessment. The assessment of stockpiled materials was outside the scope of the current assessment. The stockpiled materials will be part of a detailed waste classification assessment done separately. It is noted however that the sampling undertaken as part of the current assessment included sampling of soils immediately adjacent to and centrally within stockpiling areas to assess potential impacts from stockpiles on soils throughout the site.

AEC 2 – Asbestos Containing Materials

During the assessment, multiple fragments of non-friable asbestos cement (AC) were identified on the ground surfaces within the north eastern corner of the site adjacent to onsite structures and also within the central section of the site (refer to Figure 4). The identified asbestos containing material (ACM) in the central section of the site was significantly more concentrated with several fragments of AC identified. The identified fragments in the central area of the site also included fragments in a section of the access road which consisted primarily of crushed recycled materials such as concrete, brick etc. Three representative samples of suspected asbestos cement materials were collected for laboratory analysis. Two of the samples reported as Asbestos Detected (refer to Clearsafe Report 20-8613-01-ID in Appendix J).

Asbestos was not observed at depth in any of the test pits and all soils samples across the site reported No Asbestos detected (refer to Clearsafe Reports 20-8613-02-ID in Appendix J). Based on site observations and laboratory analysis results the identified asbestos is considered non-friable. The identified asbestos containing materials appear to be limited to ground surfaces and near surface soils.

AEC 3 – Hazardous building materials within and immediately surrounding buildings and structures

During the site inspection, the onsite buildings and structures were suspected of potentially containing hazardous building materials including but not limited to asbestos containing materials (ACM) and lead paint in their construction. Prior to any proposed demolition of onsite structures, a hazardous materials survey should be undertaken.

8.6 Mitigation measures

The site is considered suitable for the proposed development subject to the following recommendations:

1. An appropriate Asbestos Management Plan should be implemented prior to any development to manage the identified non-friable ACM associated with AEC 2 (see section 8.5 above);
2. The Asbestos Management Plan should include detailed inspection and remediation prior to any future development;

3. Asbestos removal should be undertaken in accordance with an Asbestos Removal Scope of Works / Remedial Action Plan prepared by a Licensed Asbestos Assessor or Competent Person;
4. Asbestos removal works should be undertaken by a licensed asbestos removal contractor;
5. Subsequent to licensed asbestos removal work, a Clearance Certificate must be issued by a Licensed Asbestos Assessor or Competent Person prior to reoccupation;
6. Construction works should include an Unexpected Finds Protocol (UFP) to provide recommended actions for the identification of any further ACM on the ground surfaces or within excavations;
7. The Site must be managed such that the ground surfaces are at all times free of visible ACM. Any identified ACM must be managed in accordance with the UFP; and
8. Prior to demolition, the onsite buildings and structures should be assessed for hazardous materials including but not limited to asbestos and lead paint. All asbestos containing materials within the buildings and structures at the site must be removed prior to demolition in accordance with Safe Work Australia Codes of Practice.

8.7 Conclusions

A site investigation was conducted that included a review of site history, site inspection and soil sampling.

The information obtained from the review of available site history materials and site inspection identified three (3) potential Areas of Environmental Concern (AEC):

4. AEC 1 - Fill Materials of Unknown Origin - Fill materials and natural soils within the site were tested for a range of potential contaminants of concern. The samples tested reported results below the adopted criteria for the proposed development excluding 20-8613/TP3 - 0.5m, which reported a zinc concentration of 575 mg/kg which slightly exceeded the adopted ecological investigation levels. Results from three neighbouring test pits (<20m away) and all other test pits from across the site were analysed to be below the adopted criteria. The Zinc result for this sample appears to be an outlier and is considerably lower than Health Investigation Levels. Therefore, no significant risk of chemical contamination is expected across the site.
5. AEC 2 - Asbestos Containing Material - During the sampling, multiple fragments of non-friable asbestos cement (AC) were identified on ground surfaces within the north-eastern section of the site adjacent the buildings as well as in the central section of site.
6. AEC 3 - Hazardous Building Materials - Due to the age of the onsite buildings and structures, it is likely that hazardous building materials including but not limited to asbestos containing materials and lead paint may be present within these structures.

Based on the scope and limitations of the investigation, in consideration of the site observations and sample analytical results, it is considered that the site is unlikely to pose a significant contamination risk with regards to chemical contamination, however ACM was identified on ground surfaces within the north-eastern and central sections of site. A series of recommended mitigation measures will be implemented to reduce the risk at the site.

A full copy of the Contaminated Site Assessment is provided at Appendix J.

9 Air quality

9.1 Introduction

Northstar Air Quality Pty Ltd (Northstar) were engaged to perform an air quality impact assessment (AQIA) for the proposed development of the Kariong Sand and Soil Supplies site (the project) located at 90 Gindurra Road, Somersby NSW (the project site).

This AQIA forms part of the Environmental Impact Statement (EIS) prepared to accompany the development application for the project under Part 4 of the *Environmental Planning and Assessment Act 1979*. The project will be assessed as a State Significant Development under Section 89(c) of the *Environmental Planning and Assessment Act 1979* and Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011*.

The AQIA presents an assessment of the impacts of the proposed operations at the project site, associated with both the construction phase and operational phase of the development. Regarding potential construction impacts, this has been assessed using a risk-based assessment methodology, and appropriate construction control measures proposed to manage that risk. Regarding potential operational impacts, the assessment has used a quantitative dispersion modelling assessment, and the predicted incremental change in air quality in the area surrounding the project site is presented in addition to an assessment of compliance with relevant air quality criteria associated with cumulative impacts.

The full AQIA is given in Appendix K of the EIS. The main findings and recommendations from the investigation are given in this chapter of the EIS.

9.2 Legislative requirements

Secretary's Environmental Assessment Requirements (SEARs 8660) have been provided for the project by the NSW Department of Planning and Environment (DPE). In relation to air quality and odour, the SEARs state that the EIS must provide:

- A quantitative assessment of the potential air quality, dust and odour impacts of the development in accordance with relevant Environmental Protection Authority guidelines;
- the details of buildings and air handling systems and strong justification for any material handling, processing or stockpiling external to a building; and,
- details of proposed mitigation, management and monitoring measures.

Further to the above, NSW EPA has also provided a general list of requirements, and those broad requirements have been adopted as part of this assessment. These broad requirements are reproduced in Table 1 of Appendix K and have been given due consideration within the performance of this assessment. The section of the report where each general requirement has been addressed is provided in Table 1 of the AQIA (Appendix K).

Further to the above, the policies, guidelines and plans which have been referenced during the performance of the AQIA include:

- *Protection of the Environment Operations (Clean Air) Regulation 2002*;
- *Approved Methods for the Modelling and Assessment of Air Quality in NSW* (NSW EPA, 2017);
- *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (DEC, 2006);
- *Technical Framework: Assessment and Management of Odour from Stationary Sources in NSW* (NSW DEC, 2006); and
- *Technical Notes: Assessment and Management of Odour from Stationary Sources in NSW* (NSW DEC 2006).

9.3 Baseline conditions

Section 4.1.1 of the AQIA by Northstar Air Quality Pty Ltd provides an overview of baseline air quality and receptors surrounding the proposed development (see Appendix K: Air Quality Impact Assessment).

9.3.1 Discreet receptor locations

Air quality assessments typically use a desk-top mapping study to identify 'discrete receptor locations', which are intended to represent a selection of locations that may be susceptible to changes in air quality. In broad terms, the identification of sensitive receptors refers to places at which humans may be present for a period representative of the averaging period for the pollutant being assessed (see also Section 3.2 and Table 4 of Appendix K for a discussion on how this consideration has been applied to the adopted impact assessment criteria). Typically, these locations are identified as residential properties although other sensitive land uses may include schools, medical centres, places of employment, recreational areas or ecologically sensitive locations.

It is important to note that the selection of discrete receptor locations is not intended to represent a fully inclusive selection of all sensitive receptors across the study area. The location selected should be considered to be representative of its location and may be reasonably assumed to be representative of the immediate environs. In some instances, several viable receptor locations may be identified in a small area, for example a school neighbouring a medical centre. In this instance, the receptor closest to the potential sources to be modelled would generally be selected and would be used to assess the risk to other sensitive land uses in the area. It is further noted that in addition to the identified 'discrete' receptor locations, the entire modelling area is gridded with 'uniform' receptor locations (see Section 4.1.2) that are used to plot out the predicted impacts, and as such the accidental non-inclusion of a location sensitive to changes in air quality does not render the AQIA invalid, or otherwise incapable of assessing those potential risks.

To ensure that the selection of discrete receptors for the AQIA are reflective of the locations in which the population of the area surrounding the project site reside, population density data has been examined. Population density data based on the 2016 census have been obtained from the Australian Bureau of Statistics (ABS) for a 1 square kilometre (km²) grid, covering mainland Australia²¹. Using a Geographical Information System (GIS), the locations of sensitive receptor locations have been confirmed with reference to their population densities.

For clarity, the ABS use the following categories to analyse population density (persons·km⁻²):

- Very high >8,000
- High >5,000
- Medium >2,000
- Low >500
- Very low <500
- No population 0

Using ABS data in a GIS, the population density of the area surrounding the project site are presented in Figure 9.1 (this is shown as Figure 4 in Appendix K). The project site is located in an area of very low (<500 persons·km⁻²), low (500 to 2000 persons·km⁻²) and medium (2000 to 5000 persons·km⁻²).

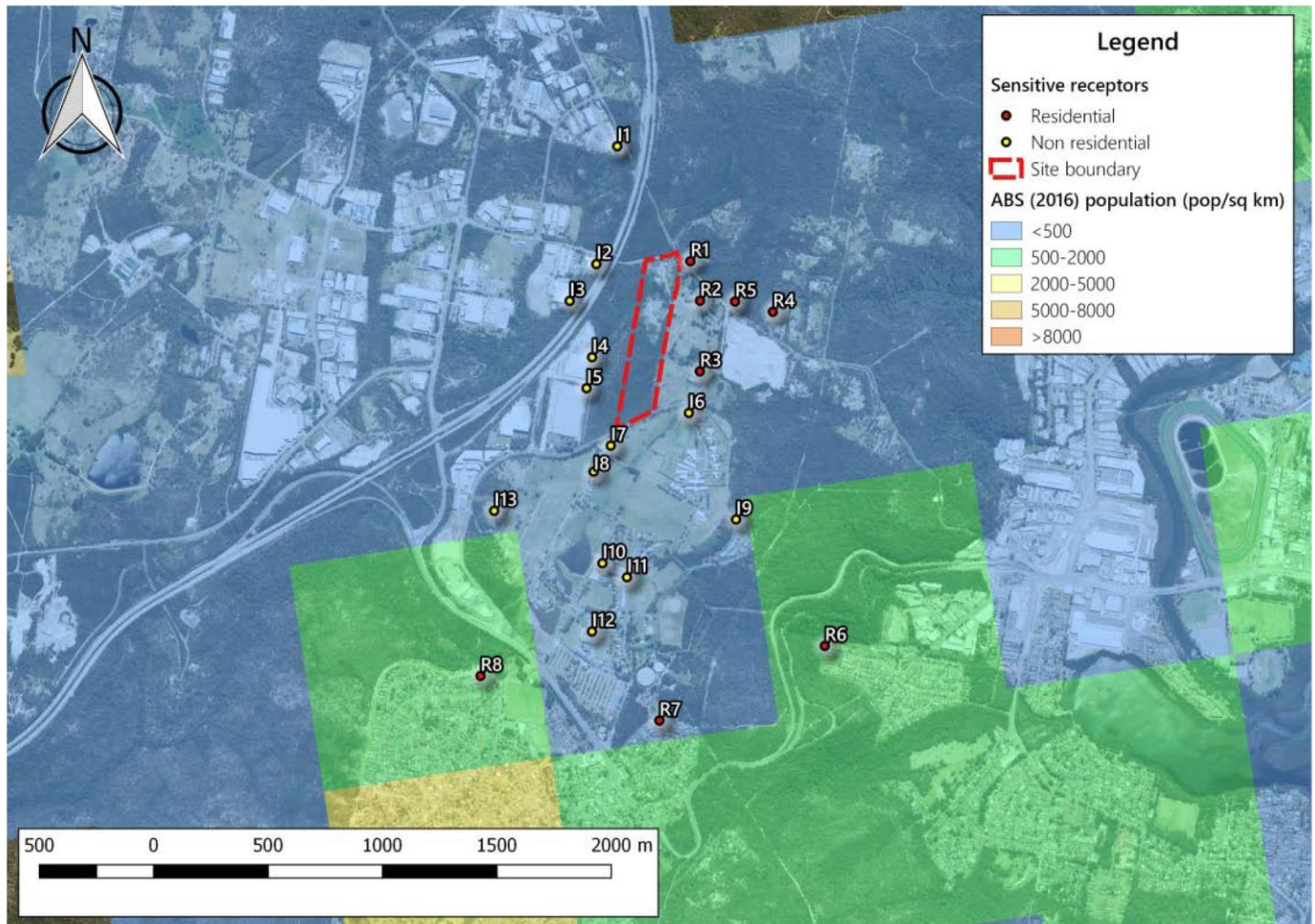
A number of residential locations, industrial locations and educational receptor location have been identified and these receptors adopted for use within this AQIA are presented in Table 5 of Appendix K. Figure 9.1 identifies that the

²¹ Australian Bureau of Statistics. Retrieved from 3101.0 - Australian Demographic Statistics: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3101.0Jun%202015?OpenDocument>

receptors selected are located in directions which correspond to surrounding populated areas and are therefore appropriate.

The nearest identified schools to the project site are Parklands Community Preschool (I10) and Ngaruki Gulgul Central School (I13) which are located approximately 600 m from the project site boundary, and around 950 m from site activities. These sensitive receptor locations have been specifically included within the assessment.

Figure 9.1. Population density and sensitive receptors surrounding the project site.



Note: Areas with no colour represents a 1 km² grid cell with zero population

9.3.2 Air quality

The air quality experienced at any location will be a result of emissions generated by natural and anthropogenic sources on a variety of scales (local, regional and global). The relative contributions of sources at each of these scales to the air quality at a location will vary based on a wide number of factors including the type, location, proximity and strength of the emission source(s), prevailing meteorology, land uses and other factors affecting the emission, dispersion and fate of those pollutants.

When assessing the potential impact of any particular source of emissions on the air quality at a location, the impact of all other sources of an individual pollutant should also be assessed. This 'background' air quality will vary depending on the pollutants to be assessed and can often be characterised by using representative air quality monitoring data.

A detailed description of the air quality environment surrounding the project site is presented in the AQIS in Appendix K (refer to Appendix A of the AQIA).

A summary of the background air quality adopted for use within this AQIA is presented in Table 9.2 below (refer to Table 6 of Appendix K).

Table 9.2. Background air quality data adopted for use within the AQIA.

Pollutant	Averaging Period	Maximum Concentration	Criterion from Table 3	Source
TSP	Annual	32.8 g·m ⁻³	90 g·m ⁻³	Estimated on a TSP:PM ₁₀ ratio of 2.2 : 1 ¹
PM ₁₀	24 hours	58.6 g·m ⁻³	50 g·m ⁻³	Wyong AQMS 2015 ^{1,2}
	Annual	14.9 g·m ⁻³	25 g·m ⁻³	
PM _{2.5}	24 hours	13.2 g·m ⁻³	25 g·m ⁻³	Wyong AQMS 2015 ¹
	Annual	5.2 g·m ⁻³	8 g·m ⁻³	
Dust deposition	Annual	2 g·m ² ·month ⁻¹	4 g·m ² ·month ⁻¹	Difference in NSW OEH maximum allowable and incremental impact criterion

Note: 1) Justification for the use of data from Wyong provided in Appendix K (refer to Appendix A of the AQIA); 2) Discussion of existing exceedance of criterion discussed in Appendix K (refer to Appendix A of the AQIA).

Table 9.2 indicates that concentrations of particulate matter (24-hour average PM₁₀) exceeded the relevant air quality criteria as detailed in Table 3 in 2015 (on 6 May 2015) (Appendix K). The NSW Air NEPM Compliance Report for 2015 (NSW OEH, 2015) indicated that the exceedance on 6 May 2015 was an 'exceptional' event and was due to a dust storm which affected PM₁₀ concentrations at the Wyong site and in a wider area, from Albury to Sydney and to Tamworth.

The AQIA has been performed to assess the contribution of the project to the air quality of the surrounding area. A full discussion of how the project impacts upon the air quality, including the contribution during such 'exceptional events' is presented in Section 6 of Appendix K.

9.4 Proposed development

A detailed overview of the proposed development (for construction and operational phases) is provided in Section 2.3 of this EIS and is further highlighted in Section 2.3 of the AQIA given in Appendix K of the EIS. No further details are repeated in this chapter.

9.5 Impact assessment

To form the quality impact assessment for construction and operational phases of the development, a series of best practice construction and operational management practices will be employed at the site to mitigate against impacts on air quality. These are given in Section 5 of the Northstar AQIA, given in Appendix K. These are not repeated in this Chapter.

9.5.1 Construction phase

Table 9.3 lists the relevant mitigation measures identified, and have been presented as follows (see also Table 17 of Appendix K): N = not required (although they may be implemented voluntarily); D = desirable (to be considered as part of the CEMP, but may be discounted if justification is provided); and H = highly recommended (to be implemented as

part of the CEMP, and should only be discounted if site-specific conditions render the requirement invalid or otherwise undesirable).

The following measures are recommended as highly recommended (H) or desirable (D) by the IAQM methodology for a low risk site for earthworks, construction and construction traffic. A detailed review of the recommendations would be performed once details of the construction phase are available.

Table 9.3. Site-Specific Management Measures (see also Table 17 of Appendix K).

Recommended Mitigation Measure		Risk & Recommendation
1	Communications	High
1.1	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	H to be implemented
1.1	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.	H to be implemented
1.2	Display the head or regional office contact information.	H to be implemented
1.3	Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the relevant regulatory bodies.	H to be implemented
2	Site Management	High
2.1	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.	H to be implemented
2.2	Make the complaints log available to the local authority when asked.	H to be implemented
2.3	Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.	H to be implemented
2.4	Hold regular liaison meetings with other high-risk construction sites within 500 m of the site boundary, to ensure plans are coordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.	H to be implemented
3	Monitoring	High
3.1	Undertake daily on-site and off-site inspections where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary.	H to be implemented
3.2	Carry out regular site inspections to monitor compliance with the dust management plan / CEMP, record inspection results, and make an inspection log available to the local authority when asked.	H to be implemented
3.3	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	H to be implemented
3.4	Agree dust deposition, dust flux, or real-time continuous monitoring locations with the relevant regulatory bodies. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences.	H to be implemented
4	Preparing and Maintaining the Site	High
4.1	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	H to be implemented

Recommended Mitigation Measure		Risk & Recommendation
4.2	Erect solid screens or barriers around dusty activities or the site boundary that they are at least as high as any stockpiles on site.	H to be implemented
4.3	Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	H to be implemented
4.4	Avoid site runoff of water or mud.	H to be implemented
4.5	Keep site fencing, barriers and scaffolding clean using wet methods.	H to be implemented
4.6	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below	H to be implemented
4.7	Cover, seed or fence stockpiles to prevent wind erosion	H to be implemented
5	Operating Vehicle/Machinery and Sustainable Travel	High
5.1	Ensure all on-road vehicles comply with relevant vehicle emission standards, where applicable	H to be implemented
5.2	Ensure all vehicles switch off engines when stationary- no idling vehicles	H to be implemented
5.3	Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable	H to be implemented
5.4	Impose and signpost a maximum-speed-limit of 25 km·h ⁻¹ on surfaced and 15 km·h ⁻¹ on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate	H to be implemented
5.4	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	H to be implemented
5.5	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)	H to be implemented
6	Operations	High
6.1	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems	H to be implemented
6.2	Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate	H to be implemented
6.3	Use enclosed chutes and conveyors and covered skips	H to be implemented
6.4	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate	H to be implemented
6.5	Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	H to be implemented
7	Waste Management	High
7.1	Avoid bonfires and burning of waste materials.	H to be implemented
8	Measures Specific to Demolition	Medium
8.1	Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	D to be considered
8.2	Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water	H to be implemented

Recommended Mitigation Measure		Risk & Recommendation
	can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	
8.3	Avoid explosive blasting, using appropriate manual or mechanical alternatives.	H to be implemented
8.4	Bag and remove any biological debris or damp down such material before demolition.	H to be implemented
8.5	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.	D to be considered
8.6	Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.	D to be considered
8.7	Only remove the cover in small areas during work and not all at once	D to be considered
9	Measures Specific to Construction	Low
9.1	Avoid scabbling (roughening of concrete surfaces) if possible	D to be considered
9.2	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place	D to be considered
10	Measures Specific to Track-Out	n/a
11	Specific Measures to Construction Traffic (adapted)	High
11.1	Ensure all on-road vehicles comply with relevant vehicle emission standards, where applicable	H to be implemented
11.2	Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	H to be implemented
11.3	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	H to be implemented
11.4	Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	H to be implemented
11.5	Record all inspections of haul routes and any subsequent action in a site log book.	H to be implemented

Notes D = desirable (to be considered), H = highly recommended (to be implemented), N = not required (although can be voluntarily implemented)

For almost all construction activity, the adapted methodology notes that the aim should be to prevent significant effects on receptors through the use of effective mitigation and experience shows that this is normally possible.

Given the limited size of the site, residual impacts associated with fugitive dust emissions from the project construction activities would be anticipated to be 'low' or 'not significant'.

9.5.2 Operational phase

The methodology used to assess operational phase impacts is discussed in Section 5 of Appendix K. This section presents the results of the dispersion modelling assessment and uses the following terminology:

- Incremental impact – relates to the concentrations predicted as a result of the operation of the project in isolation.
- Cumulative impact – relates to the concentrations predicted as a result of the operation of the project PLUS the background air quality concentrations discussed in Section 4.2 of Appendix K.

The results are presented in this manner to allow examination of the likely impact of the project in isolation and the contribution to air quality impacts in a broader sense.

9.5.3 Particulate Matter - Annual Average PM₁₀ and PM_{2.5}

The predicted annual average particulate matter concentrations (as TSP, PM₁₀ and PM_{2.5}) resulting from the proposed operations at the project site are presented in Table 18 of Appendix K.

The results indicate that predicted incremental concentrations of TSP, PM₁₀ and PM_{2.5} at receptor locations are low (<2% of the annual average TSP criterion, <2.5% of the annual average PM₁₀ criterion and <1.5% of the PM_{2.5} criterion).

The addition of existing background concentrations (refer Section 4.2 of Appendix K) results in predicted concentrations of annual average TSP being less than 39%, annual average PM₁₀ being less than 53% and annual average PM_{2.5} being less than 67% of the relevant criteria at the nearest receptors.

9.5.4 Particulate Matter – Annual Average Dust Deposition Rates

Table 19 of Appendix K presents the annual average dust deposition predicted as a result of the operations at the project site. Annual average dust deposition is predicted to meet the criteria at all receptors surrounding the project site where the predicted impacts are <16% of the incremental criterion at receptor locations.

No contour plot of annual average dust deposition is presented, given the minor predicted contribution from the operations at the project site at the nearest sensitive receptors.

9.5.5 Particulate Matter - Maximum 24-hour Average

Table 20 of Appendix K presents the maximum 24-hour average PM₁₀ and PM_{2.5} concentrations predicted to occur at the nearest residential receptors as a result of the operations at the project site only.

The predicted incremental concentration of PM₁₀ and PM_{2.5} are demonstrated to be small. At the receptor where the maximum impact is expected to occur (receptor I4, 2 Wella Way, Somersby) operation of the project would contribute up to 21% of the 24-hour PM₁₀ criterion and up to 5.5% of the 24-hour PM_{2.5} criterion.

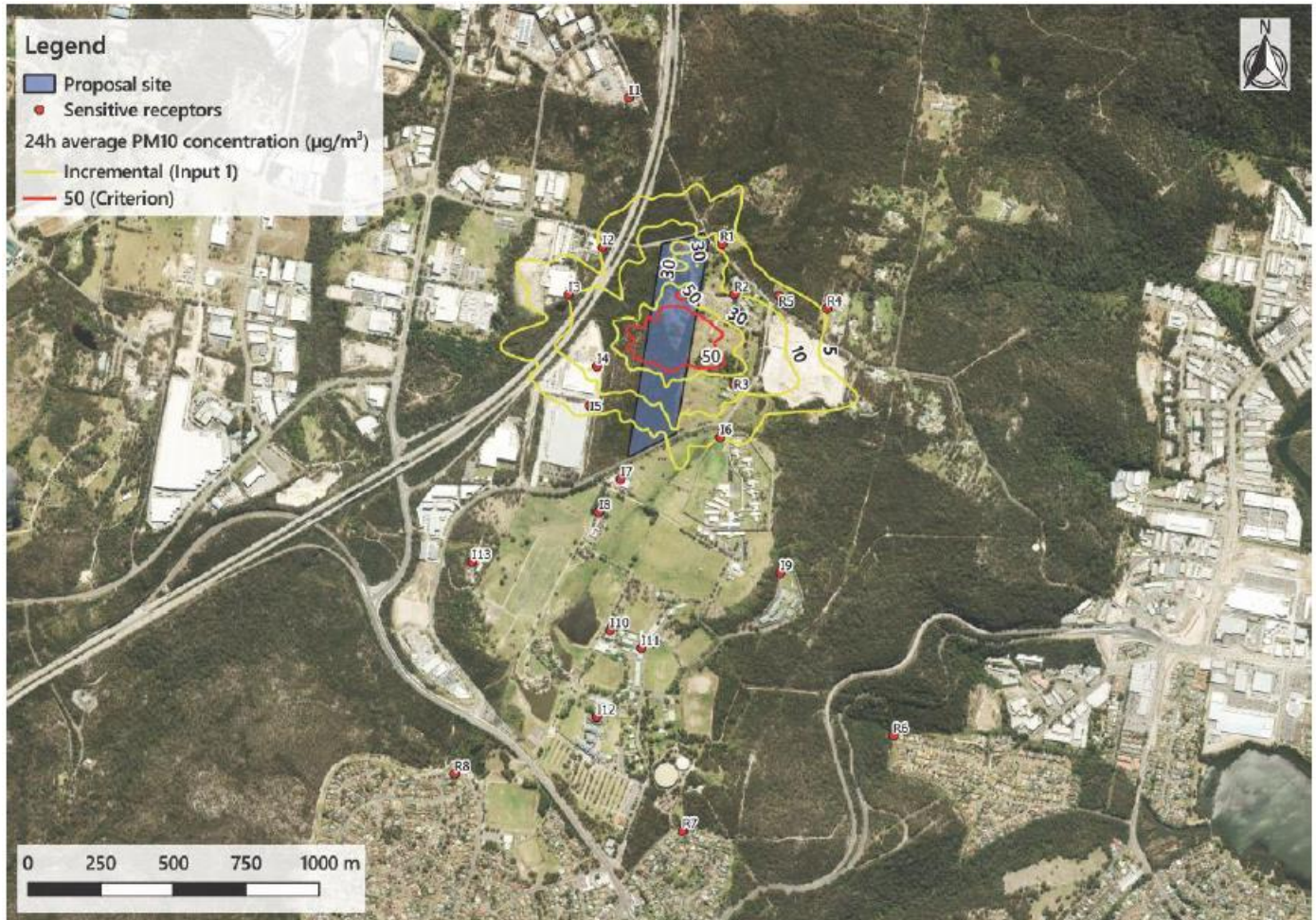
The predicted maximum 24-hour average PM₁₀ and PM_{2.5} concentrations resulting from the operation of the project, with background included are presented in Table 21 and Table 22 respectively of Appendix H.

Results are presented for the receptor at which the highest incremental impacts have been predicted (receptor I4 – refer Table 20 of Appendix K). The left side of the tables show the predicted concentration on days with the highest background, and the right side shows the total predicted concentration on days with the highest predicted incremental concentrations.

One exceedance of the 24-hour average impact assessment criterion for PM₁₀ is predicted although no additional exceedances are shown to eventuate because of the operation of the project. The predicted exceedance is driven by the background air quality (i.e. existing sources) and is not contributed to by the proposed operations at the project site.

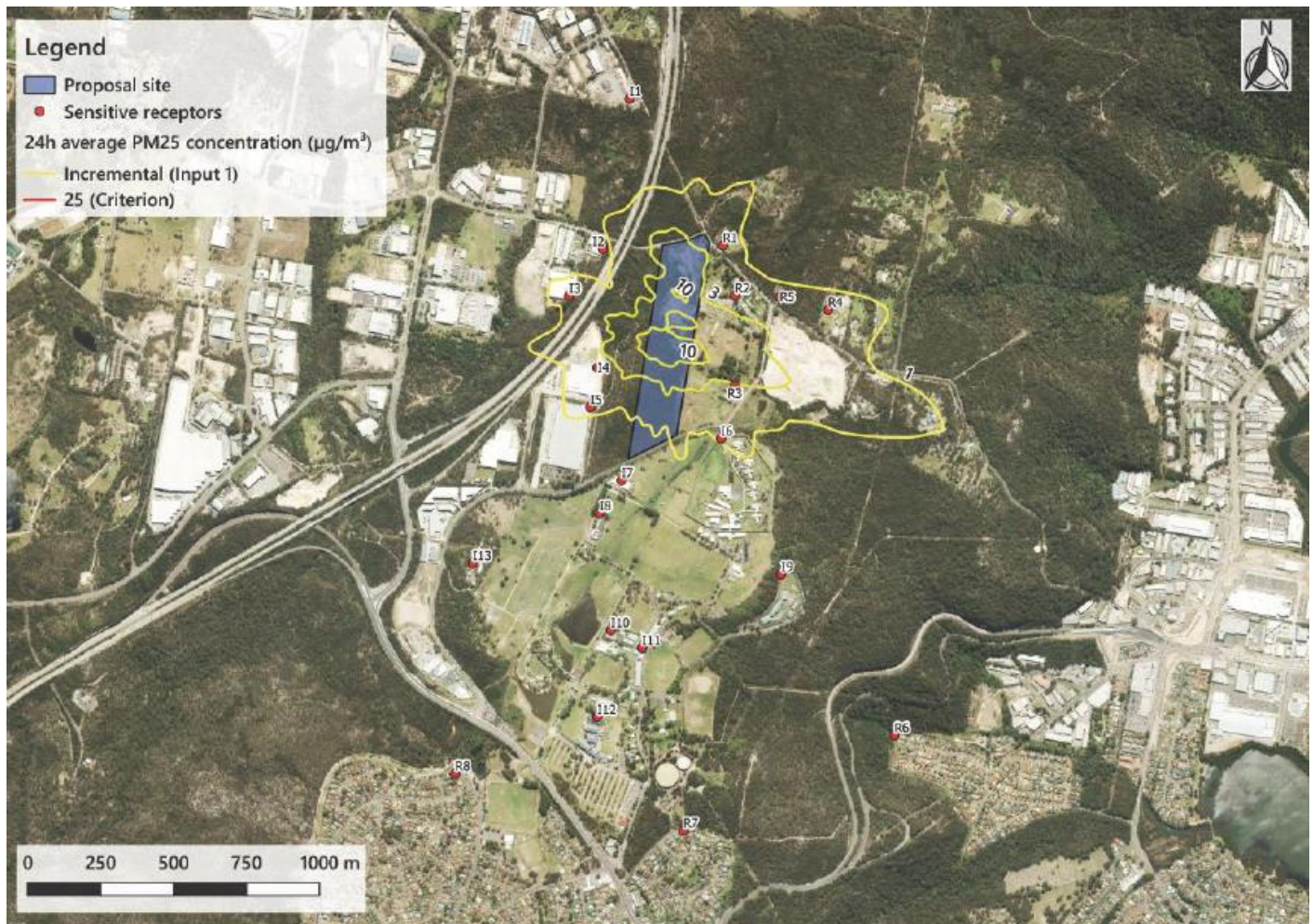
No exceedances of the 24-hour average PM_{2.5} impact assessment criterion is predicted as a result of the project operations. Contour plots of the incremental contribution of the proposed operations at the project site to the 24-hour average PM₁₀ and PM_{2.5} concentrations are presented in Figure 9.2 and Figure 9.3 (as per Figures 8 and 9 of Appendix K: Air Quality Impact Assessment).

Figure 9.2. Incremental 24-hour PM₁₀ concentrations.



Note 1: Criterion = $50 \mu\text{g}\cdot\text{m}^{-3}$ (cumulative)

Figure 9.3. Incremental 24-hour PM_{2.5} concentrations.



Note 1: Criterion = 25 $\mu\text{g}\cdot\text{m}^{-3}$ (cumulative)

9.6 Mitigation measures

9.6.1 Construction Phase

Based on the findings of the construction phase air quality assessment, even with no mitigation measures there is a low risk of human health effects associated with construction phase activities. These are associated with emissions from earthworks and from construction traffic.

There is a high risk of adverse dust soiling (amenity) impacts if no mitigation measures were to be applied to control emissions, in relation to earthworks and construction traffic. There is also a low impact associated with construction.

A range of mitigation and management measures are presented in Section 6.5 of the AQIA (Appendix K), which would result in the risks associated with construction to be reduced to 'low' or 'not significant'.

9.6.2 Operational Phase

Based on the findings of the operational phase air quality impact assessment, it is considered that the particulate control measures proposed to be implemented will be sufficient to ensure that exceedances of all particulate criteria would not be experienced as a result of the project operation.

No additional exceedances of the 24-hour PM_{2.5} or PM₁₀ criteria are predicted as a result of the proposed activities at the project site. While dispersion modelling predicts that one exceedance of the 24-hour PM₁₀ criterion is likely at nearby residential locations, on that instance the incremental impact from the project operation resulting in the exceedance is very low with the background (non-project) concentration of 58.6 µg·m⁻³ already in exceedance of the 50 µg·m⁻³ criterion. The operations at the project site would not have contributed significantly during that day of exceedance.

A number of mitigation measures are proposed to be implemented as part of the project. Where defensible quantification of the control efficiencies afforded by these measures can be determined, these have been applied within the assessment. Additional measures may also be applied during certain wind conditions and although these measures have not been included within dispersion modelling, they would act to further reduce the generation of particulate.

The mitigation measures which will be used as part of the project operation are summarised in Table 9.4 below.

Table 9.4. Summary of emission reduction methods adopted as part of project operation.

Emission control method	Control efficiency (%)
Road Haulage	
Vehicle restrictions that limit the speed of vehicles on the road.	Not quantified
Surface improvement by paving	Assessed through emission factor
Surface treatment - watering	30
Materials Handling	
Minimising the drop height from vehicles	30
Application of water	50
Modification of activities in windy conditions	Not quantified
Loading materials to a 3-sided enclosure	30
Covering loads with a tarpaulin	Not quantified
Limit load sizes to ensure material is not above the level of truck sidewalls	Not quantified
Minimising travel speeds and distances	Not quantified
Keep travel routes and materials moist	50
Materials Processing	
Application of water	91.6 (screen); 77.7 (crush); 50 (shred)
Modification of activities in windy conditions	Not quantified
Wind Erosion	
Application of water	50
3-sided enclosures around stockpiles	75
Modification of activities in windy conditions	Not quantified

It is noted that the full enclosure of any part of the process is not proposed, nor is it considered to be required. Results of the dispersion modelling exercise indicate that all air quality criteria can be achieved at all surrounding residential and non-residential land uses with the controls adopted, which are considered to represent best practice.

9.6.3 Monitoring

The predictions presented in this AQIA indicate that there would be no predicted exceedances of the adopted air quality criteria. However, given that the site is not proposed to be enclosed, it is recommended that a campaign of fence-line air quality monitoring is performed, to provide the EPA with assurance that the site can be operated with the best practice measures outlined in the report and without giving rise to unacceptable air quality impacts.

9.7 Conclusions

Northstar Air Quality Pty Ltd conducted an air quality impact assessment (AQIA) for the proposed development of the Kariong Sand and Soil Supplies site (the project) located at 90 Gindurra Road, Somersby NSW (the project site). The full investigation is given in Appendix H and a summary is presented in the EIS report.

This AQIA forms part of the Environmental Impact Statement (EIS) prepared to accompany the development application for the project under Part 4 of the *Environmental Planning and Assessment Act 1979*.

The AQIA presents an assessment of the impacts of the proposed operations at the project site, associated with both the construction phase and operational phase of the development. The incremental change in air quality in the area surrounding the project site is presented in addition to an assessment of compliance with relevant air quality criteria associated with cumulative impacts.

The assessment has been presented to provide confidence that the operations can be performed with no exceedances of the relevant air quality criteria.

A risk based assessment of the potential construction phase air quality impacts indicates that the implementation of a range of mitigation measures would be required to ensure that the risks (both health and amenity) to the surrounding community would be low or not significant.

The dispersion model predictions associated with the operational phase of the project indicate that the existing and proposed operations can be performed without additional exceedances of the air quality criteria at any residential or non-residential receptor location surrounding the project site.

To adequately account for a potential uncertainty in the modelled meteorological conditions, a second meteorological file was used as input to the dispersion model. The results of that sensitivity assessment indicate that the existing and proposed operations can be performed without additional exceedances of the air quality criteria at any residential or non-residential receptor location surrounding the project site.

One exceedance of the 24 hr PM₁₀ criterion is noted, although this was due to an 'exceptional' event (a dust storm which affected PM₁₀ concentrations at the Wyong site and in a wider area, from Albury to Sydney and to Tamworth). Significantly, the project is demonstrated not to contribute to any additional exceedances of the air quality criteria.

A range of emissions control measures would be implemented as part of the project operation and these are discussed in detail in the main body of the report. It is considered that the measures adopted represent best practice dust control, and although additional measures may be available (such as full enclosure), these have been respectfully considered to not be appropriate for use as part of the project. The measures which are adopted have been demonstrated to ensure that the environmental objectives are achieved.

It is further recommended that a campaign of fence-line air quality monitoring is performed to provide the EPA with assurance that the site can be operated with the best practice measures outlined in the report and without giving rise to unacceptable air quality impacts.

The results of the air quality impact assessment indicate that the granting of Development Consent for the project should not be rejected on the grounds of air quality.

10 Traffic and Transport

10.1 Introduction

Seca Solution Pty Ltd undertook the traffic impact assessment to support the proposal for the upgrading and increasing the processing capacity at the existing Kariong Sand and Soil Supplies facility located at 90 Gindurra Road, Somersby. As heavy vehicle movements to and from the site will impact on the regional and state road network the application will also be reviewed by Roads and Maritime Services (RMS) and their concurrence will be required.

The full traffic and transport impact assessment is given in Appendix L of the EIS. The main findings and recommendations from the investigation are given in this chapter of the EIS.

10.2 Legislative requirements

In preparing this document, the following guides and publications were used:

- RMS Guide to Traffic Generating Developments, Version 2.2 Dated October 2002;
- RMS Technical Direction TDT 2013/ 04a Updated traffic surveys;
- Council Development Control Plan 2015;
- Australian / New Zealand Standard – Parking Facilities Part 1: Off-street car parking (AS2890.1:2004).

10.3 Baseline conditions

The subject site is located at 90 Gindurra Road Somersby. The surrounding land use consists primarily of light industrial and rural residential properties.

The main road through the locality is the Central Coast Highway (A49) which lies to the south of the subject site. This road provides a major link between the M1 Pacific Motorway to Gosford and through to the Central Coast. In the vicinity of the subject site it provides 2 lanes of travel in each direction with additional lanes provided at intersections to maintain capacity. Being an arterial road, the Central Coast Highway carries over 40,000 vehicles per day.

Wisemans Ferry Road is a regional road connecting the Central Coast Highway with the Pacific Highway, Somersby Industrial Area and the rural residential and agricultural areas of the Somersby plateau, Mangrove Mountain, Mangrove Creek and through to Wisemans Ferry on the Hawkesbury River. At its southern end Wisemans Ferry Road connects with the Central Coast Highway via a signalised intersection at the start of the southbound on ramp to the M1 Pacific Motorway. Between the Central Coast Highway and the Pacific Highway, it passes under the M1 and connects with the southbound off ramp and the northbound on ramp. This section has a four-lane divided formation and the Pacific Highway intersection is a two-lane roundabout. North of the Pacific Highway the formation becomes two-lane divided standard up to the Gindurra Road / Somersby Falls Road intersection which is also under roundabout control. North of this intersection Wisemans Ferry Road reverts to a two-lane rural road formation. The whole section between the Central Coast Highway and Gindurra Road is designed to cater for heavy vehicles accessing the businesses within the Somersby Industrial Area. The posted speed limit is 70km/h.

Gindurra Road is a local road providing access to businesses within the eastern section of the Somersby Industrial Area including the subject site. At its eastern end it connects with Debenham Road South which provides access to primarily rural residential properties and a few scattered light industrial developments as well as providing an alternative light traffic connection with Dyer Crescent at West Gosford. Gindurra Road was upgraded about 2 years ago to provide a 10-metre- wide asphalt pavement to cater for heavy vehicle access to the industrial developments in this area. This pavement width provides a single lane of travel in each direction with sufficient space for kerb side parking to both sides, however there is little demand for on-street parking. There are no pedestrian footpaths provided along Gindurra

Road, although the grass verges on each side are wide enough to provide for pedestrian access. The posted speed limit is 50 km/hr.

Kangoo Road is a local road that provides a connection between the Central Coast Highway and Debenham Road. It lies generally to the south-east of Gindurra Road and connects with Debenham Road about 330 metres south of Gindurra Road. It provides access primarily to light industrial businesses as well as Mount Penang Parklands and several rural residential properties. It also forms the southern boundary of the subject site, however, there is no existing access to the site from Kangoo Road. About 450 metres before it connects with Debenham Road the road name changes to Acacia Road. For a length of 1km from the Central Coast Highway, Kangoo Road has kerb and gutter along its eastern side and a pavement that varies between 9 to 10 metres wide, which is suitable for heavy vehicles servicing the adjacent industrial developments. Past this point and along the frontage of the subject site to Debenham Road, Kangoo Road narrows to a typical two-lane rural road standard with a pavement width of 6 metres and narrow gravel shoulders. The posted speed limit is 50km/h.

The section of Debenham Road between Gindurra Road and Acacia Road (Kangoo Road) is a two-lane rural road with a 7-metre-wide sealed pavement and narrow gravel shoulders. The posted speed limit is 50km/h.

Pedestrian and cycling facilities are provided along the Central Coast Highway and a short section of Wisemans Ferry Road in the form of shared paths and on-road cycle lanes. There is no direct connection between these facilities and the subject site.

A regular bus service is provided between Gosford and Somersby by Busways with the route including Central Coast Highway, Kangoo Road, Debenham Road, Gindurra Road, Somersby Falls Road and Pile Road.

As part of the project work Seca Solution collected traffic data at the intersection of Central Coast Highway and Kangoo Road during typical weekday morning and afternoon peak periods. This survey was completed on Thursday 30 November 2017 from 6.00am to 8.00am and from 3.00pm to 6.00pm.

Traffic surveys were also conducted at the intersection of Central Coast Highway and Wisemans Ferry Road on Thursday 7 December 2017 from 6.00am to 8.00am and 4.00pm to 6.00pm.

Advice from the RTA Guide to Traffic Generating Developments indicates that peak hour volumes typically represent around 10% of the daily traffic volumes. During the morning peak hour (7.00am to 8.00am) the two-way traffic volumes along Central Coast Highway were 3,900 vehicles per hour and in the afternoon peak (4.45pm to 5.45pm) volumes were 4,300 vehicles per hour. Daily volumes along Central Coast Highway could therefore be in the order of 41,000 vehicles per day, reflecting both local demand as well as through traffic in this location.

Peak hour volumes along Kangoo Road were significantly lower with two-way volumes averaging 340 vehicles per hour. This would give daily flows in the order of 3,500 vehicles per day.

Traffic surveys were previously conducted at the Wisemans Ferry Road / Gindurra Road intersection in December 2015. During the morning peak hour (6.15am to 7.15am) the two-way traffic volumes along Wisemans Ferry Road were 453 vehicles per hour and in the afternoon peak (3.30pm to 4.30pm) volumes were 545 vehicles per hour. Daily volumes along Wisemans Ferry Road could therefore be in the order of 5,000 vehicles per day.

Peak hour volumes along Gindurra Road were slightly lower with two-way volumes averaging 394 vehicles per hour. This would give daily flows in the order of 4,000 vehicles per day.

A spot check of current traffic volumes was conducted at the Wisemans Ferry Road / Gindurra Road intersection on Thursday 23 November 2017 from 6.15am to 7.15am. This count indicated an increase in traffic volumes along Wisemans Ferry Road of 12% and a 17% increase in Gindurra Road since the previous count in December 2015. On

this basis, the current daily traffic volumes in Wisemans Ferry Road would be 5,600 vehicles per day and 4,700 vehicles per day in Gindurra Road.

10.4 Proposed development

The subject site is located at 90 Gindurra Road, Somersby. The surrounding land use consists primarily of light industrial and rural residential properties.

The site is currently used for storing and screening soil and sand, which is sold for landscaping. It was originally approved as a Sand and Metal Recycling Facility on 28/02/1992 (DA 15337). As part of the original approval, only the front section of the site was approved for this use. The site's current development approval and infrastructure limits the amount of material that can be accepted and processed (screened and sorted) at the site.

The project allows for the upgrade of onsite facilities to accommodate an increase in throughput from the current 6,000 tonnes per annum (processing limit is imposed by the need for a EPA licence under Schedule 1 of the *Protection of the Environment Operations Act 1997*) to a proposed 200,000 tonnes per annum and the expansion into a best-practice recycling plant that can process a range of sand, soil and building materials. We have reviewed the SEARs that have been issued and note the requirements of the Roads and Maritime Services (RMS) for the project.

10.5 Impact assessment

Kariong Sand and Soil Supplies has provided details of their operational analysis for the proposed development of the site which includes estimates of the traffic volumes that will be generated at various stages of development. A copy of the traffic generation analysis is included at Appendix L (see Appendix A of this report).

At full development (expected to be in 2025) the site will be capable of receiving, processing and storing up to 200,000 tonnes per annum of soil, sand and building materials. It is also expected to supply and deliver up to 10,000 tonnes per annum of landscape supplies.

This level of operation is estimated to generate up to 164 vehicle trips per day (82 inbound and 82 outbound) consisting of:

- Staff operational vehicles x 20;
- 12 tonne tippers x 77;
- 32 tonne truck and dog or semis x 41;
- 40 tonne B-Doubles x 14;
- Landscaping x 12 (typically 5-10 tonne loads).

It should be noted that the vehicle numbers are based on the assumption that most vehicles will transport at full capacity. Mixed C&D loads, which are sometimes lighter than single material loads, are a relatively small proportion of the overall incoming waste stream (estimated at 10%). Most loads will be largely single material loads from large demolition or earthmoving projects. As transport is a significant cost of waste management, it is anticipated that the majority of vehicles will be at full capacity.

Averaged over an 8-hour working day this equates to 21 trips per hour. The facility shall operate 6 days per week (Monday – Saturday). Limited annual variation is expected except for holiday periods. The development is not expected to generate a high level of pedestrian activity. Possibly some staff who may travel by public transport.

The site operator is anticipating that 25% of materials entering the site will come from Sydney, while the remainder will be sourced locally on the Central Coast. It is expected that 100% of the products leaving the site will be used in the local area. These will be bulk loads transported in the various heavy vehicle classes listed above. There will be no sales direct to the public.

Vehicles accessing and egressing the site at Gindurra Road will travel to and from the Central Coast Highway and M1 Motorway via Wisemans Ferry Road and Gindurra Road. According to the operational details provided these vehicles will be distributed to the network as follows:

- M1 Motorway south – 40 trips per day (20 inbound, 20 outbound);
 - Inbound Route: M1 Motorway northbound off-ramp, Central Coast Highway, Wisemans Ferry Road, Gindurra Road; and
 - Outbound Route: Gindurra Road, Wisemans Ferry Road, Central Coast Highway, M1 southbound on-ramp.
- M1 Motorway north – 62 trips per day (31 inbound, 31 outbound).
 - Inbound Route: M1 Motorway southbound off-ramp, Wisemans Ferry Road, Gindurra Road
 - Outbound Route: Gindurra Road, Wisemans Ferry Road, M1 Motorway northbound on- ramp.
- Central Coast Highway – 62 trips per day (31 inbound, 31 outbound).
 - Inbound Route: Central Coast Highway, Wisemans Ferry Road, Gindurra Road;
 - Outbound Route: Gindurra Road, Wisemans Ferry Road, Central Coast Highway.

The distribution of trips is shown diagrammatically in Figure 2 of Appendix L.

The major impact of the development will be increased traffic movements along Gindurra Road and Wisemans Ferry Road. Due to the low volumes of additional traffic that will be generated from this development and the low incidence of crashes it is considered that the additional traffic movements at this intersection will have a minimal impact upon road safety.

Current daily traffic volumes in the other major roads in the network area:

- Central Coast Highway – 41,000 vehicles per day;
- Wisemans Ferry Road - 5,600 vehicles per day;
- Gindurra Road – 4,700 vehicles per day; and
- Kangoo Road - 3,500 vehicles per day.

The RMS Guide to Traffic Generating Developments, Section 4 (Table 4.4) in Appendix L provides guidance as to the operating level of service for urban roads at various ranges of mid-block traffic volumes. According to Table 4.4, the roads surrounding the subject site are currently operating at the following levels of service during peak periods:

- Central Coast Highway: 2 lanes each direction, 2,150 vehicles per hour – LoS D.
- Wisemans Ferry Road: 1 lane each direction, 273 vehicles per hour – LoS B.
- Gindurra Road: 1 lane each direction, 200 vehicles per hour (two way) – LoS A.
- Kangoo Road: 1 lane each direction, 170 vehicles per hour (two way) – LoS A.

The additional 21 trips per hour that will be generated by the full development will have only a minor impact on the LoS of each of these roads as they will still be operating within their existing capacity.

Most of the construction work will be contained within the site so minimal impact is expected upon the external road network. There will be a requirement for construction machinery and traffic associated with workers to access the site. A Traffic Management Plan will be required for work on site and to provide access controls. This will be completed as part of the design process by the contractor on site.

During the construction of the site access there will be a need to manage traffic flows along Gindurra Road. The Traffic Control Plan for this work will be prepared as part of the detailed design stage of the project.

10.6 Mitigation measures

All vehicles shall be able to enter and exit in a forward direction. Access and internal circulation are to be designed in accordance with AS2890 and Council's DCP.

Vehicular access will be provided off Gindurra Road via a secure gate located a sufficient distance within the property so that vehicles up to the size of a B-Double will be able to store without interrupting traffic flow in Gindurra Road. Internal roadways will allow vehicles to circulate within the site to load or unload and exit via Gindurra Road in a forward direction.

The posted speed limit along Gindurra Road is 50 km/h. According to Austroads Guide to Road Design the sight distance requirement to approaching vehicles for a left turning driver is 69 metres at an approach speed of 50km/h.

We note that development consent for Stage 1 development works for the site was provided by Central Coast Council on 17/11/2017 under DA52541/2017, specifically for construction of a 'New Shed with Offices, Amenities and Driveway'. Under Condition 2.8a of DA52541/2017, it is noted that Central Coast Council requires that the '...vehicle crossing shall be located approximately 14m west of the existing vehicle crossing to achieve the minimum sight distance of 69m in accordance with Figure 3.3 of AS 2890.22002'. Seca Solution has reviewed this advice, and it is recommended the proposed entrance design and location is satisfactory for the SSD proposal, with a sight distance of 55m, and is compliant with AD2890.22002. This sight distance is satisfactory given vehicle speeds approaching the site from the east are likely to be travelling less than 40 km/hr, given the right angle turn from Debenham Road.

Service vehicle access will be available via the main entry / exit off Gindurra Road.

It is proposed to adjust the existing centreline in Gindurra Road to provide a right turn lane for vehicles entering the site. No Stopping signs will also be required along the frontage of the site. The access point will be designed to ensure vehicles can enter the site with minimal delays to other road users.

The existing access to the site will be modified to ensure that heavy vehicles up to a B-Double can enter and exit safely. Local bus services are available from a bus stop in Gindurra Road about 500 metres to the south of the site. This service provides access to and from Gosford railway station. All vehicles will be able to enter and exit the site in a forward direction, with the internal parking layout to be designed at the detailed design stage in accordance with Council requirements and AS/NZS 2890.1:2004 Parking facilities Off-street car parking.

The accesses, internal roads and parking aisles will be designed in accordance with AS/NZS 2890.1:2004 Parking facilities Off-street car parking. The aisle width requirement is 5.8 metres.

As the site will not be open to the public it is proposed to provide 10 parking spaces on site for employees only. A parking area for heavy vehicles is also proposed within the site near the main entrance off Gindurra Road.

Neither the Gosford DCP nor the RMS guidelines provide parking requirements for this type of development. The parking layout shall be designed in accordance with AS/NZS 2890.1:2004 Parking facilities Off-street car parking. Parking Class: 1A (residential, staff).

- Bay lengths: 5.4 metres;
- Bay widths: 2.5 metres; and
- Aisle widths: 5.8 metres.

The operational analysis indicates that staff will total a maximum of 11, therefore the 10 parking spaces that will be provided on site will be sufficient for staff needs. Service vehicle parking will be accommodated on site within the

servicing and loading / unloading area near the main building. Internal pedestrian access will be provided from the main gate to the main building.

To facilitate the right turn movement into the site it is recommended that the existing centre line marking in Gindurra Road be relocated a minimum of 3 metres south (towards the site) to provide sufficient width for a right turn lane into the site. The right turn lane should be a minimum of 60 metres in length to provide sufficient storage for two B-Doubles. The site access should be designed to ensure that the largest vehicle entering or exiting the site is able to do so without encroaching on the opposite lane in Gindurra Road. No Stopping signs would need to be installed on both sides of Gindurra Road for the full length of the right turn lane.

10.7 Conclusions

The Kariong Sand and Soil supplies site is located at 90 Gindurra Road, Somersby (Lot 4 DP 227279) and is currently used for storing and screening soil and sand, which is sold for landscaping. It is proposed to develop the site over the next 7 years to receive, process and store up to 200,000 tonnes per annum of soil, sand and building materials with all materials then being exported from the site.

This level of operation, by 2025, is estimated to generate up to 164 vehicle trips per day consisting of staff operational vehicles, 12 tonne tippers, 32 tonne truck and dog or semis and 40 tonne B-Doubles. Over an average 8 hour working day this equates to 21 trips per hour.

The site operator is anticipating that 25% of materials entering the site will come from Sydney while the remainder will be sourced locally on the Central Coast. It is expected that 100% of the products leaving the site will be used in the local area. These will be bulk loads transported in the various heavy vehicle classes listed above. There will be no sales direct to the public.

The existing road network and major intersections are currently operating at a good level of service with spare capacity and the traffic generated by the proposed development will be distributed to the road network over an 8 hour working day. The additional traffic is expected to have only a minor impact on the LoS of each of these roads and they will still be operating within their existing capacity.

From the route nominated it is also clear that these additional trips will not have any significant impact on the operational performance of the intersections at Central Coast Highway / Kangaroo Road. The intersections of the Central Coast Highway / Wisemans Ferry Road and Wisemans Ferry Road / Gindurra Road have been assessed and as each of these intersections is currently operating at acceptable levels of service with sufficient spare capacity to cater for the additional traffic generated by this proposed development the impact on the future development is acceptable.

The existing access has been reviewed on site and, given the 90 degree bend at Debenham Road, reducing vehicle speeds to less than 40km/hr sight lines at this location would be appropriate.

To facilitate the right turn movement into the site it is recommended that the existing centre line marking in Gindurra Road be relocated a minimum of 3 metres south (towards the site) to provide sufficient width for a right turn lane into the site. The right turn lane shall provide sufficient storage for two B-Doubles (60 metres) with “No Stopping” signs installed.

It is therefore recommended that with the minor works at the access that the proposed development be approved due to the minimal impact on traffic, access and safety.

11 Noise and Vibration Impact Assessment

11.1 Introduction

Waves Acoustic Consulting (Waves Consulting) were engaged to prepare a Noise and Vibration Impact Assessment (NVIA) to demonstrate the noise and vibration impacts associated with the proposed development.

A full copy of the Noise and Vibration Impact Assessment is provided at Appendix N.

11.2 Legislative requirements

The SEARs (SSD 8660) identifies the following requirements for noise and vibration:

- Comprehensive background noise monitoring assessment at all nearby noise sensitive receivers
- Operational noise modelling and assessment in accordance with the NSW Industrial Noise Policy (INP) to include spectral data of proposed plant, noise modification factors and weather impacts on noise propagation.
- Operational traffic noise analysis in accordance with the NSW Road Noise Policy (RNP).
- Operational vibration modelling and analysis in accordance with the NSW EPA's Assessing Vibration: A Technical Guideline.
- Construction Noise and Vibration Assessment in accordance with the Interim Construction Noise Guidelines (ICNG).

The assessment report covers all requirements of the SEARs. However, please note that the SEARs request the use of the ECRTN for road traffic noise assessment, which has since been rescinded and replaced by the RNP. In addition, the NSW INP has recently been replaced by the Noise Policy for Industry (NPI).

11.3 Baseline conditions

The existing site is large (>110,000 m²) with several buildings and sheds to the north of the site. Mixed materials receipt, sorting and crushing is currently undertaken towards the middle of the site.

The site is situated at an interface between industrial zoned land / buildings and rural residential dwellings. The nearest industrial buildings are approximately 130m to the west. The industrial zone to the west is large and extends for over 1000m. The Pacific Hwy is located approximately 150m to the west of the site and cuts through the industrial zone with an overpass above Gindurra Rd.

Rural residential zones with residential dwellings are located along the north-eastern, eastern and south-eastern boundaries of the site. The closest residential dwellings are located within 50m (north-east), 160m (east) and 190m (south-east). The Kariong Correctional Facility is located 170m south-east of the site boundary. The nearest commercial facility is the Central Coast Riding for the Disabled, which is located 100m south of the site boundary.

To characterize the existing acoustic environment in the area, a survey of environmental noise levels was conducted during October 2017. The noise logger was installed adjacent to the residential property at 12 Acacia Rd, Somersby.

Table 11.1. Unattended noise monitoring results (from Table 4 in NVIA at Appendix N).

Date	L _A F ₉₀ Background Noise Levels			L _A eq Ambient Noise Levels		
	Day	Evening	Night	Day	Evening	Night
Wednesday 11 October 2017		47			54	
Thursday 12 October 2017	46	43	46	60	52	56
Friday 13 October 2017	45	47	37	51	52	50
Saturday 14 October 2017			33			47
Sunday 15 October 2017		42	44		48	57

Date	L _{AF90} Background Noise Levels			L _{Aeq} Ambient Noise Levels		
	Day	Evening	Night	Day	Evening	Night
Monday 16 October 2017	43	44	46	50	52	56
Tuesday 17 October 2017	45	46	43	51	51	52
RBL	45	46	44	-	-	-
Log Average				55	52	54

It was noted that the evening and night-time noise levels were similar to the daytime noise levels, which is atypical. The logger data indicates that industrial noise throughout the evening and night-time is primarily responsible for this noise trend. During weekdays the industrial noise rises steadily throughout the evening and night-time. The overall noise level rises sharply each weekday between 0400 and 0700. This is most likely a combination of local industrial activities preparing for shipping and transport and a rise in traffic noise on the nearby Pacific Hwy. The noise environment surrounding the proposed site is dominated by a combination of local industrial noise sources and traffic noise along the Pacific Hwy.

Attended measurement of ambient noise were taken at several representative locations on 19 October 2017. These have been used to determine the various noise sources that influence the existing noise environment.

Table 11.2. Attended noise monitoring results (from Table 5 in NVIA at Appendix N).

Measurement location	Measured Noise Levels (dB re 20 µPa)			Character of the Ambient Noise
	L _{Aeq}	L _{AFMax}	L _{AF90}	
Logger Location as per Figure 1 of NVIP (on eastern boundary of site)	48	61	45	Traffic noise from the Pacific Hwy, local industrial noise / reversing beepers, and flora and fauna noise.
Adjacent to 242 Debenham Rd, Somersby	67	83	45	Local traffic movements, traffic noise from the Pacific Hwy, industrial noise, and flora and fauna noise.
Acacia Rd opposite Kariong Correctional Facility	60	78	47	Local traffic movements, traffic noise from the Pacific Hwy, industrial noise, and flora and fauna noise.

The environmental noise in the area is typically dominated by industrial noise and traffic on the nearby Pacific Hwy and surrounding local roads. Flora and fauna noise were also found to be contributing sources of noise in the environment.

11.4 Proposed development

The proposed development consists of the redevelopment of the existing industrial facilities at the site. KSSS proposes to demolish existing industrial buildings and to upgrade the site to handle a proposed capacity of up to 200,000 tpa of material per year by 2025. The noise generating activities will be conducted during both the construction and operational phases of the development.

11.4.1 Operational phase

The proposed operational hours for the facility are summarized in Table 11.3. A summary of the expected additional vehicle movements is provided in Table 11.4.

Table 11.3. Opening hours of new facility.

Operational activity	Hours
Access	24 hrs./ 7 days per week (i.e. to allow for occasional early / late delivery or truck movements which are unavoidable due to traffic delays, etc.)
Opening hours (staffed)	0700 to 1800 Mon – Fri, 0800 to 1600 Sat. Closed Sunday
Waste deliveries	0700 to 1800 Mon – Fri, 0800 to 1600 Sat. Closed Sunday
Waste processing (sorting, crushing, grinding, screening)	0800 to 1700 Mon – Fri
Product sales	0700 to 1800 Mon – Fri, 0800 to 1600 Sat. Closed Sunday

Table 11.4. Summary of expected vehicle movements.

Type of vehicle	Total vehicles per day		
	2018	2021	2025
Staff operational vehicles	4	7	9
12t tipper	4	14	36
32t T&D or semi	2	8	19
40t B-double	1	5	6
Total	10	34	70

The main noise and vibration sources from the proposed facility will include:

- Offsite vehicle movements on the nearby road network;
- Onsite vehicle movements – mainly delivery trucks, excavator and loader;
- Concrete and building material processing / crushing;
- Screening and sorting of materials;
- Stockpiling of refined products; and
- Mechanical services and maintenance activities associated with the new heavy-vehicle maintenance building.

Potential noise impacts from operation of the proposed development, which are assessed in the NVIA, include:

- Noise emission from the fixed noise sources associated with the development to any nearby sensitive receivers, i.e. the outdoor crushing / screening plant and mechanical services / processing activities associated with the new building;
- Noise emission from vehicle movements on site to any nearby sensitive receivers, i.e. delivery trucks, excavator and loader movements;
- Additional noise emission from vehicle movements on the adjacent roads to any nearby sensitive receivers.

11.4.2 Construction phase

For this project, the construction works would be undertaken in accordance with the Interim Construction Noise Guidelines and would typically occur during the standard working hours between:

- 0700 to 1800 hrs Monday to Friday; and
- 0800 to 1300 hrs Saturday.

There would generally be no construction works on Sundays or public holidays.

In general, the majority of the construction phase will focus on earth works to prepare the site for future operations. The earthworks will be required to remove the large existing stockpiles of material and process / crush these for use elsewhere on site or for removal.

Chapter 8 of the NVIA (Appendix N: Noise and Vibration Impact Assessment) provides a summary of the equipment to be used and the associated power sound levels. The expected construction traffic volumes are an additional 4 B-double trucks per day.

Potential noise impacts from construction of the proposed development, which are assessed in the NVIA, include:

- Noise emission from the fixed noise sources associated with the development to any nearby sensitive receivers, i.e. the outdoor crushing / screening plant used to process existing stockpiles;
- Noise emission from vehicle movements on site to any nearby sensitive receivers, i.e. delivery trucks, excavators, bulldozers and loaders;
- Additional noise from construction vehicle movements on the adjacent roads to any nearby sensitive receivers.

11.5 Impact assessment

Noise modelling of the fixed and mobile noise sources has been used to predict the noise from the typical operation of the facility to the surrounding sensitive receivers.

11.5.1 Operational phase

With no noise mitigation several of the nearby residential receivers demonstrated exceedances of the Project Noise Trigger Levels (PNTLs) during the day time operations when the crusher and screening plant are operational. In addition, delivery trucks and onsite vehicle movements were found to exceed the PNTLs during the evening and night-time periods.

Noise barriers were investigated as potential feasible and reasonable mitigation measures to satisfy the PNTLs. Noise modelling was undertaken to optimize the height and extents of noise barriers across the site to satisfy the PNTLs during all assessment periods. Figure 4 in Chapter 6 of the NVIA (Appendix N: Noise and Vibration Impact Assessment) shows the optimized noise barriers across the site that are recommended to achieve compliance with the PNTLs. The barriers consist of a 5m high barrier along the eastern site boundary, a 3m high noise wall adjacent to the product sales area and a 3m high noise wall adjacent to the processing zone. These barriers must be used in conjunction with restricting the crushing and screening plant to the processing zone indicated.

A selection of the predicted worst case scenario operational noise levels due to onsite noise sources with the recommended noise barriers are summarised and compared against the NPI project noise trigger levels in Table 13 in Chapter 6 of the NVIA (Appendix N: Noise and Vibration Impact Assessment). The results demonstrate that the noise emissions from the site to the surrounding environment (with the recommended noise barriers and processing zone restrictions) are low. The proposed development satisfies the PTNLs at all nearby residential receivers except for 10 Acacia Rd, which has a 1dB exceedance about the trigger level. In this case, the 1dB exceedance at 10 Acacia Rd is considered to be negligible as per the guidance in the NPI. The noise emissions from the site to all residential receivers are therefore considered compliant with the NPI guidelines. No further mitigation measures or actions are required as a result.

The PNTLs at all nearby correctional, commercial and industrial receivers are also satisfied.

The offset distances (in all directions) between the vibrationally intensive equipment and any sensitive receivers is large (>300m). The potential for vibration impacts due to the construction or operation of the development are effectively nil. All vibration criteria with respect to cosmetic damage to buildings and human comfort impacts will be satisfied as a result.

11.5.2 Construction phase

During standard construction hours, exceedances of the Noise Management Levels (NMLs) of up to 12 dB are predicted at the closest residential receivers on Acacia Rd and Debenham Rd South. Noise levels were not predicted to exceed 75 dB $L_{Aeq, 15m}$ at any receivers. Therefore, no receivers were found to be highly noise affected as per the ICNG.

The predicted increase in noise levels on Gindurra / Debenham Rd South due to construction traffic generation by the proposed development is <0.5 dB. Therefore, the proposed development generates negligible additional traffic noise. The RNP 2 dB increase criteria are satisfied as a result.

11.6 Mitigation measures

The following mitigation measures were included in the noise modelling. With these measures implemented, the noise levels are within acceptable levels.

- A 5m high noise barrier along the eastern site boundary;
- Two 3m high noise barriers inside the site adjacent to the processing zone and landscaping storage zone;
- Maintenance building façade construction to provide a minimum airborne sound insulation performance of 35 dB R_w . This requirement will be reviewed and confirmed during the detailed building design;
- Processing building to have all doors and openings completely closed during noisy activities;
- Processing building mechanical equipment (AC units, etc.) should have a maximum aggregate sound power level of 80 dB L_{WA} . This requirement will be reviewed and confirmed during the detailed building design.

11.7 Conclusions

This chapter provides a summary of the investigation into noise management issues for the proposed development.

A noise and vibration assessment, including noise modelling, was conducted for the proposed development. The assessment found that the predicted noise emissions from the site to the surrounding environment are low. The proposed development satisfies the Project Noise Trigger Levels (PNTLs) of the NSW Noise Policy for Industry (NPI) of the NSW Environment Protection Authority during all the time periods, providing the following noise mitigation measures are included:

- 5m high noise barriers along the eastern site boundary;
- 3m high noise barriers inside the site – one adjacent to the processing zone and another adjacent to the landscaping storage zone;
- Office/warehouse building façade construction to provide sound insulation;
- Processing building to have all doors and openings completely closed during noisy activities; and
- Processing building mechanical equipment (AC units etc.) should have a maximum aggregate sound power level of 80 dB L_{WA} .

The study concluded that the proposed materials processing facility is a complying development with respect to noise and vibration impacts and is, therefore, suitable for construction and operation.

A full Noise and Vibration Impact Assessment is provided at Appendix N.

12 Flora and Fauna

This chapter provides a summary of the investigation into flora and fauna management issues for the proposed development. A full Flora and Fauna Impact Assessment is provided at Appendix O.

12.1 Introduction

Narla Environmental were engaged to prepare a Biodiversity Assessment Report meet the requirements of the SEARs and the *NSW Biodiversity Offsets Policy for Major Projects*²². A copy of the full report is provided as Appendix O.

12.2 Legislative requirements

The Biodiversity Assessment Report was conducted to assist the proponent meet their obligations under the *Biodiversity Conservation Act 2016*.

The *Biodiversity Conservation Act 2016* and the supporting Regulations establish a modern and integrated legislative framework for land management and biodiversity conservation. Biodiversity elements include major innovations to offsetting and private land conservation, as well as improvements to threatened species conservation and how we manage human-wildlife interactions. The Act and its Regulations are administered by the Office of Environment and Heritage.

Consideration of the *Biodiversity Conservation Act 2016* is required as part of the proposed development, given requirement for clearing of some native vegetation, which will generate the requirement for Biodiversity Offsets.

12.3 Baseline conditions

12.3.1 Site Description and Land-use History

The Subject Property is located between Gindurra Road and Kangoo Road and is situated approximately 120m east (at the closes point) of the Pacific Motorway.

The Subject Property covers an area of approximately 10.75 ha, which is currently zoned 'IN1 – General Industrial'. Land adjoining the subject site to the East is zoned 'RU1 – Primary Production', whilst a number of other surrounding properties to the south of the site are zoned for various types of infrastructure.

The Subject Site, which is 6.57 ha in size, has undergone extensive historical clearing, and is now highly infested by exotic weeds with natural regeneration of native vegetation along the western border of the subject site. Much of the weed infested and cleared land is currently occupied by large expanses of old stockpile materials, exotic grasslands, weed infestations and a number of abandoned caravans and site offices.

Native vegetation exists within a strip approximately 50m wide from the north of the subject site along the western border which extends down into the south of the Subject Site. This vegetation eventually leads into in-tact remnant native vegetation outside of the impact zone. Vegetation outside the impact zone was not assessed and therefore not considered part of this BAR.

The southern part of the Subject Property (outside of the Subject Site) is an area 4.1 ha in total. This area is completely vegetated with remnant vegetation including historically mapped Coastal Upland Swamp Endangered Ecological Community and habitat for threatened flora. The proponent has deliberately avoided clearing this area as part of this proposal, with all native vegetation being retained. Part of the southern portion of the Subject Property is currently a

²² NSW Office of Environment and Heritage (OEH) (2014) NSW Biodiversity Offsets Policy for Major Projects.

management zone under the Somersby Industrial Zone Plan of Management²³ and contains intact vegetation and habitat for a number of threatened species, including *Prostanthera junonis* and *Hibbertia procumbens*.

12.3.2 Soil Landscapes and Geology

The subject site is situated on the 'Sydney Town Soil Landscape', however is situated on the border of the 'Somersby Soil Landscape'²⁴.

The Sydney Town soil landscape is characterised by undulating to rolling low hills and moderately inclined slopes on quartz sandstone (Hawkesbury Sandstone and Terrigal Formation: Narrabeen Group) along the edge of the Somersby Plateau and as ridges and crests in the Macdonald Ranges and Watagan Mountains. Local relief to 80 m. Slope gradients 5–25%. Ridges and crests are moderately broad, slopes moderately inclined and drainage lines narrow. Occasional rock benches are present. This landscape is typically situated on Hawkesbury Sandstone—medium- to coarse-grained quartz sandstone with minor shale and laminite lenses; and Narrabeen Group—Gosford Subgroup—Terrigal Formation, lithic/quartz sandstone, siltstone and claystone. Field survey indicates the dominant lithology present is coarse quartz sandstones. The soils of Sydney Town are shallow to deep (150 cm) Yellow Earths, Earthy Sands and some Siliceous Sands on crests and slopes; shallow to moderately deep (150 cm) Siliceous Sands, Leached Sands and Grey Earths in poorly drained areas and drainage lines; moderately deep (100–150 cm) Yellow Podzolic Soils and Gleyed Podzolic Soils associated with shale lenses.

The Somersby soil landscape is characterised by gently undulating to rolling rises on deeply weathered Hawkesbury Sandstone plateau. Local relief to 40 m; slopes are long, and drainage lines are narrow. Extensively cleared low eucalypt open-woodland and scrubland. This landscape is typically situated on Hawkesbury Sandstone—medium- to coarse-grained quartz sandstone with minor shale and laminite lenses. Deep (10 m) weathering in many areas of the sandstone is widespread. Soils are moderately deep to deep (100–300 cm) Yellow Earths and Earthy Sandson crests and slopes with Grey Earths in poorly drained areas and Leached Sands and Siliceous Sands along drainage lines.

12.3.3 IBRA bioregions, IBRA subregions and Mitchell Landscapes

The subject site is within the NSW Sydney Basin IBRA region (version 7) and Pittwater IBRA subregion. The development site occurs entirely within one NSW Mitchell Landscape, 'Somersby Plateau' (Mitchell Landscapes V3.1).

12.3.4 Percentage of Native Vegetation Cover

The native vegetation cover is assessed at two scales, which for this assessment are a 100 ha circle and a 1,000 ha circle. The area of vegetation in each circle before development was mapped using the 'Greater Hunter Vegetation Mapping'²⁵, with the extent of vegetation updated using imagery obtained from NSW LPI SIX Viewer **Figure 12.1**. Polygons tagged 'Non Native Vegetation' (MU000) were assumed to not contain native vegetation and were therefore excluded from this assessment.

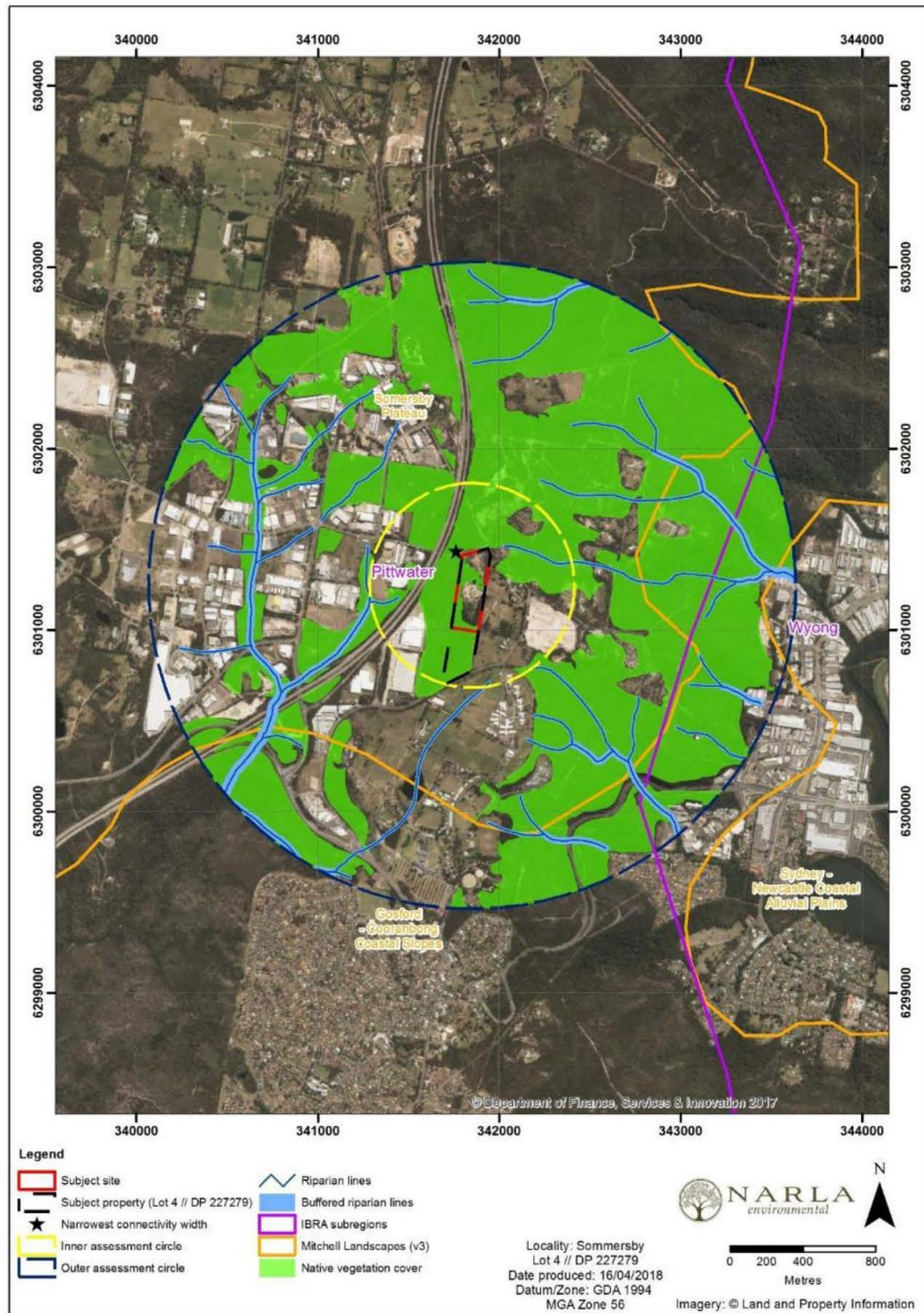
The inner assessment circle (100ha) was assessed to have a native vegetation coverage of 49.5ha (46-50%). The outer assessment circle (1000ha) was assessed to have a native coverage of 564.4ha (56-60%).

²³ Connell Wagner (2005) DRAFT Plan of Management, Somersby Industrial Park. NSW Premier's Department and Gosford City Council. Reference 1144/01. Revision 6

²⁴ Chapman and Murphy (1989) Soil Landscapes of the Sydney 1:100 000 Sheet. Soil. Conservation Service of NSW, Sydney.

²⁵ NSW Office of Environment and Heritage (OEH) (2013) The Native Vegetation of the Sydney Metropolitan Area, Volume 2: Vegetation Community Profiles, Version 2.0, NSW Office of Environment and Heritage, Sydney.

Figure 12.1. Native vegetation coverage. Source: Biodiversity Assessment Report (Appendix O).



12.3.5 Description of the Native Vegetation on the Subject Site

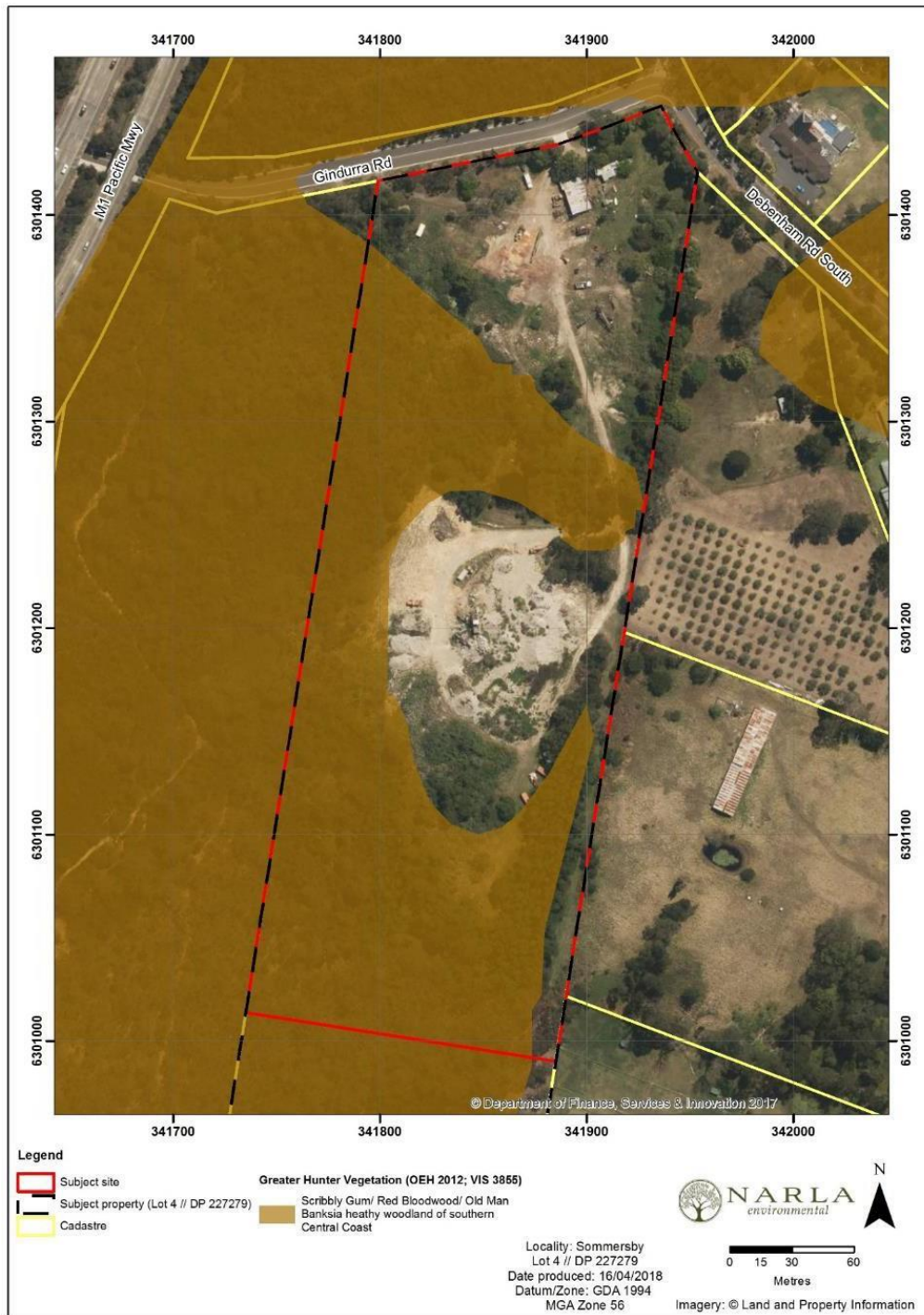
Vegetation within the subject site had been historically mapped within the Gosford Mapping System (Bell 2004) within three vegetation communities, including:

- E29 - Hawkesbury Banksia Scrub – Woodland;

- E26 - Exposed Hawkesbury Woodland; and
- Xr - Disturbed - Canopy Only.

Greater Hunter Native Vegetation Mapping²⁶ revealed that the subject site contained only one vegetation community: Scribbly Gum / Red Bloodwood / Old Man Banksia heathy woodland of southern Central Coast.

Figure 12.2. Native vegetation coverage of the site.

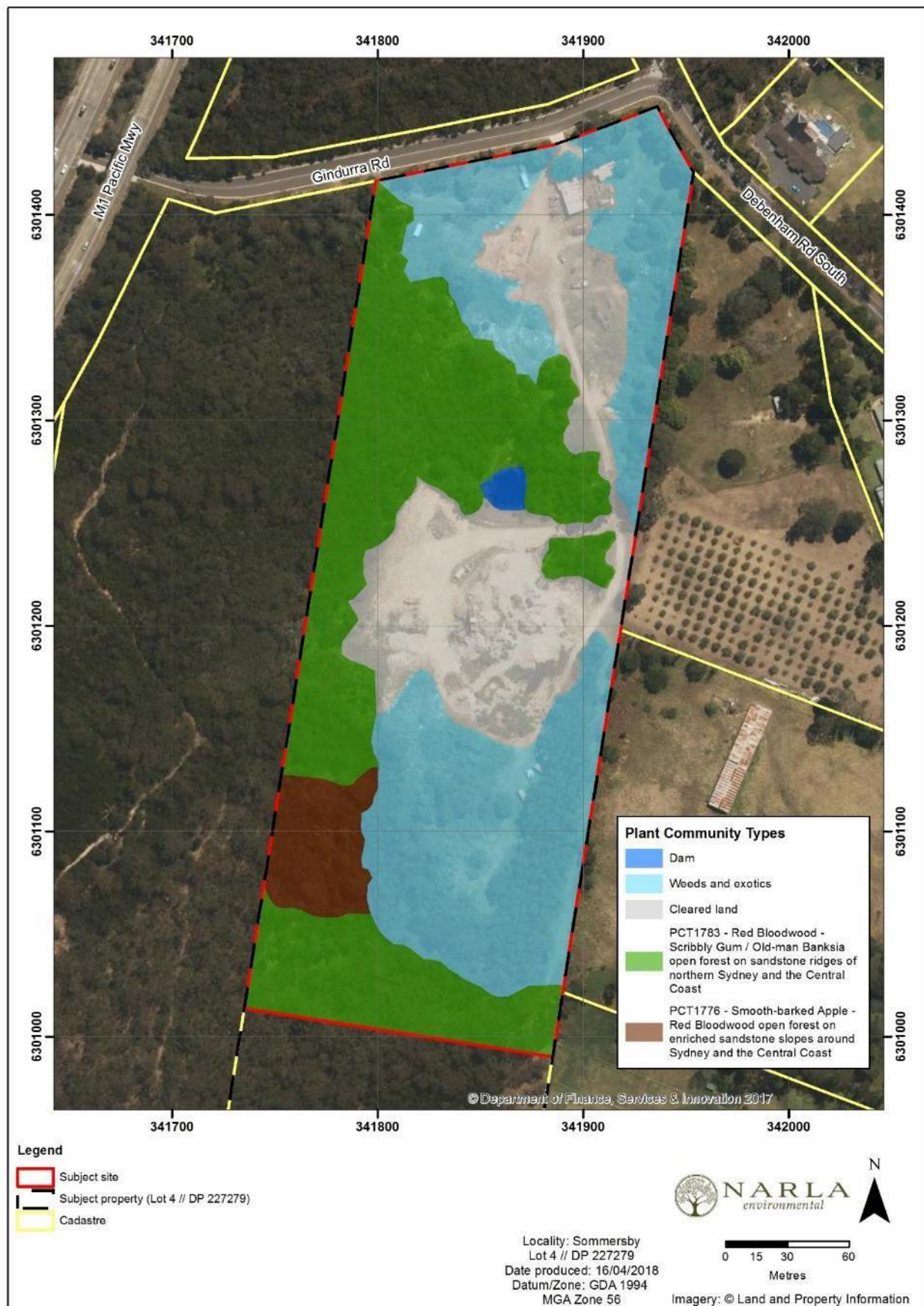


²⁶ Sivertsen, D., Roff, A., Somerville, M., Thonell, J., and Denholm, B. (2011) Hunter Native Vegetation Mapping. Geodatabase Guide (Version 4.0), Internal Report for the Office of Environment and Heritage, Department of Premier and Cabinet, Sydney, Australia.

Table 12.1. Field Validated Plant Community Types.

Vegetation type (Bell 2004)	Plant Community Type	Total area (ha)	Comment
Exposed Hawkesbury Woodland – Banksia Scrub Woodland Variant	1783 - Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast	2.19	PCT 1783 low condition class was dominated by <i>Leptospermum polygalifolium</i> (Tantoon), <i>Acacia parramattensis</i> (Parramatta Wattle), <i>Acacia decurrens</i> (Black Wattle) with scattered <i>Eucalyptus punctata</i> (Grey Gum). This condition class was dominated by weeds and had a low native canopy overstory and groundcovers (shrubs, grasses and other).
Exposed Hawkesbury Woodland – Type Variant	1783 - Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast		PCT 1783 moderate to good condition class reflected the above floristic diversity, with a higher species richness of canopy species, including <i>Eucalyptus capitellata</i> (Brown Stringybark), <i>Angophora costata</i> (Sydney Red Gum) and <i>Corymbia gummidera</i> (Red Bloodwood), and a midstory of a broader range of <i>Banksia</i> sp. including <i>Banksia ericifolia</i> (Heath-leaved Banksia), <i>Banksia oblongifolia</i> (Fern-leaved Banksia), <i>Banksia marginata</i> (Silver Banksia) and <i>Banksia serrata</i> (Old-man Banksia) and a groundcover dominated by <i>Imperata cylindrica</i> (Blady Grass) with other scattered shrubs, grasses and herbs. This condition class contained some weed infestations on the outer edges, and smaller occurrences throughout. The community included patches of tall senescent <i>Banksia ericifolia</i> , reflecting the low fire frequency history within the subject site.
Exposed Hawkesbury Woodland – Type Variant	1776 - Smooth-barked Apple - Red Bloodwood open forest on enriched sandstone slopes around Sydney and the Central Coast	0.31	Smooth-barked Apple - Red Bloodwood open forest on enriched sandstone slopes around Sydney and the Central Coast (PCT 1776) was represented by a small patch in the south-west corner of the Subject Site. This community was identified by a floristic assemblage dominated by <i>Syncarpia glomulifera</i> (Turpentine), Sydney Red Gum, Red Bloodwood, and Broad-leaved Scribbly Gum and <i>Allocasuarina littoralis</i> with a sparse shrub layer consisting of <i>Leucopogon juniperinus</i> (Prickly Beard- heath) with minimal groundcovers including <i>Xanthosia pilosa</i> (Woolly Xanthosia), <i>Xanthosia tridentata</i> (Rock Xanthosia), <i>Bossiaea obcordata</i> (Spiny Bossiaea), <i>Hovea linearis</i> among other shrubs, grasses and herbs. The vegetation was mapped in moderate to good condition.
-	Cleared land	1.65	
-	Dam	0.04	
-	Weeds and exotics	2.38	
Total area (ha)		6.57	

Figure 12.3. Field Validated Plant Community Types.



12.3.6 Vegetation zones

Three (3) vegetation zones were identified based on the PCT classification described above and an assessment on condition consistent with the requirements of the FBA²⁷ (Table 1.1 and Figure 12.4).

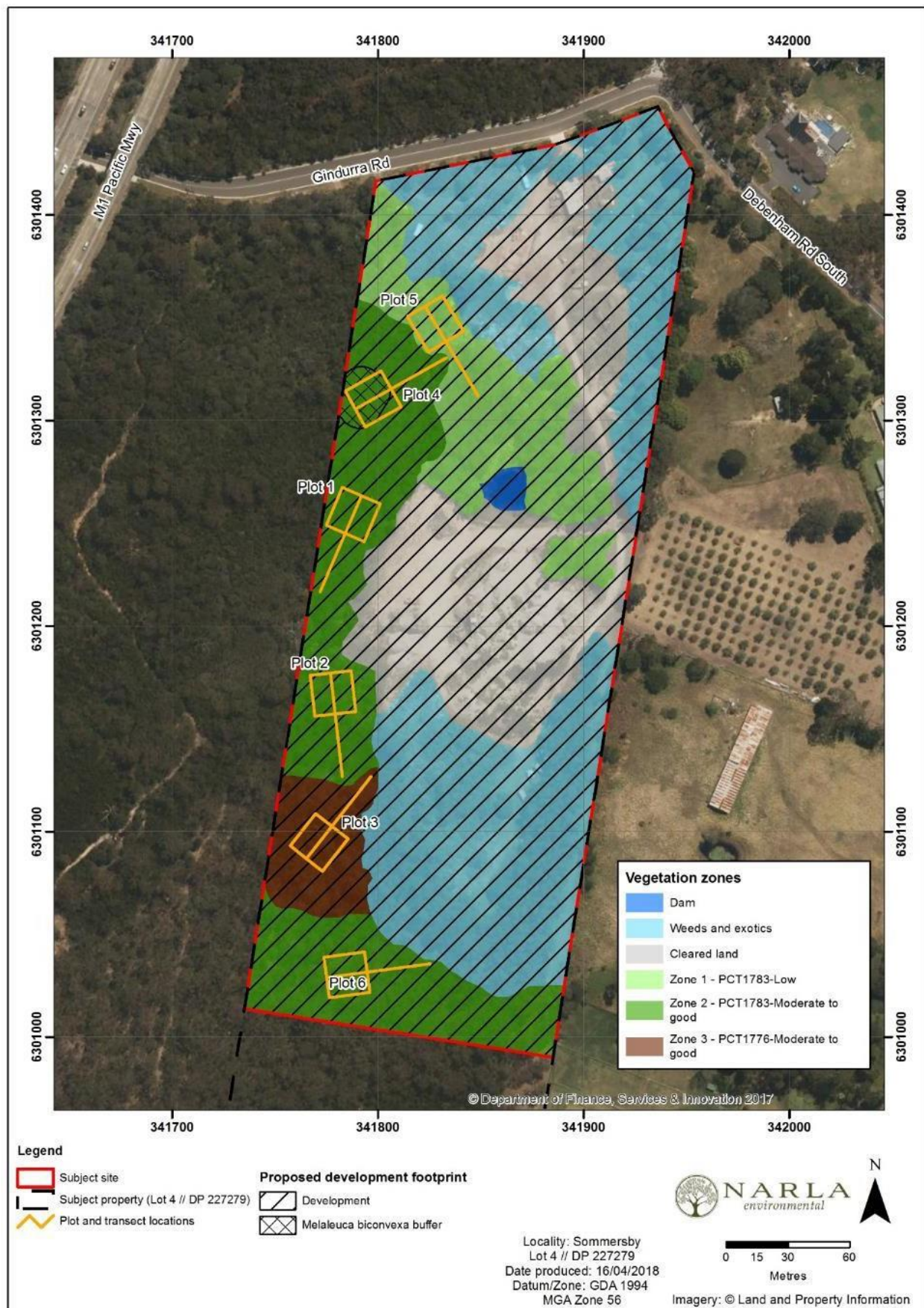
A total of 0.06 ha of vegetation will be retained within the subject site, within the buffer area protected due to the presence of *Melaleuca biconvexa* individuals. This is in addition to the 4.1 ha of native vegetation within the subject property which has been avoided, which lies south of the subject site.

²⁷ NSW Office of Environment and Heritage (OEH) (2014) Framework for biodiversity assessment. State of NSW and Office of Environment and Heritage, Sydney.

Table 12.2. Vegetation zones within the subject site.

Vegetation zone ID	PCT ID	Common Name	PCT name	Condition	Area impacted (ha) - clearing
Zone 1: PCT 1783 – Low Condition	PCT1783	Sydney North Exposed Sandstone Woodland	Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast	Low	0.78
Zone 2: PCT 1783 – Moderate to Good Condition	PCT1783	Sydney North Exposed Sandstone Woodland	Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast	Moderate to Good	1.41
Zone 3: PCT 1776 – Moderate to Good Condition	PCT1776	Coastal Enriched Sandstone Dry Forest	Smooth-barked Apple - Red Bloodwood open forest on enriched sandstone slopes around Sydney and the Central Coast	Moderate to Good	0.31
Total					2.50

Figure 12.4. Vegetation zones and plot and transect locations.



12.3.7 Biometric Plots and Transects

Six (6) plots and transects were established within the Subject Site to best sample the natural variation of the vegetation across the Subject Site. The summarised results obtained from each plot are provided in Table 12.3. The (6) six plot and transect locations are shown in Figure 12.4.

Table 12.3. Biometric plot and transect results.

Plot No.	1	2	3	4	5	6
Vegetation zone	Zone 2	Zone 2	Zone 3	Zone 2	Zone 1	Zone 2
Coordinates (Easting)	341792	341776	341765	341787	341822	341777
Coordinates (Northing)	6301262	6301176	6301086	6301307	6301355	6301031
Native Plant Species Richness (%)	29	29	18	23	6	39
Native Over-storey Cover (%)	24	20.5	20.5	5	1.1	43.5
Native Mid-storey Cover (%)	16.5	12.2	11.7	12	18.2	5.5
Native Ground Cover (Grasses) (%)	4	50	24	40	16	40
Native Ground Cover (Shrubs) (%)	18	32	14	6	6	18
Native Ground Cover (Other) (%)	56	8	2	2	4	6
Exotic Plant Cover (%)	16	12	0	49.6	88	0
Number of Trees with Hollows	0	3	0	0	1	18
Over-storey regeneration (score) (%)	1	1	0.66	1	0	1
Fallen Logs (m)	27	41	26	14	26	57

12.3.8 Candidate list for survey

Narla Environmental performed specialised surveys to target all potentially occurring threatened fauna (Table 12.4). These targeted surveys were undertaken during the same period as the collection of the BioMetric Plot data, from 16th January 2018 to 10th April 2018. After answering the geographic and habitat questions the BCC produces a candidate species list for further consideration. Consistent with Section 6.5.1.3 of the FBA²⁸, each species listed was reviewed

²⁸ NSW Office of Environment and Heritage (OEH) (2014) Framework for biodiversity assessment. State of NSW and Office of Environment and Heritage, Sydney.

and a habitat assessment conducted to determine if the species required further assessment, including targeted survey.

Ten (10) fauna species and one endangered population were identified by the BCC as requiring further consideration. Nine of these species were subject to targeted survey within the subject site utilising the described fauna detection methods.

Cercartetus nanus (Eastern Pygmy Possum) was confirmed on the subject site through targeted surveys (Figure 8). No other threatened fauna were observed within the subject site.

Thirteen (13) threatened ‘species credit’ flora species were deemed as having potential to occur on the subject site. Targeted surveys were conducted for each of these species during the field assessment on the 16th January 2018 and 10th April 2018. The Random Meander technique was employed with maximum effort, directed toward sampling areas likely to be directly affect by the proposal. This survey period aligned with the flowering period (when the species are most conspicuous) of most flora species, thereby having the greatest chance of displaying key diagnostic features.

During targeted surveys, Narla Ecologists identified the presence of one threatened flora species within the subject site, *Melaleuca biconvexa*, which is listed as Vulnerable under the TSC Act and EPBC Act. Fifteen (15) individual specimens were recorded on the subject site (Figure 12.7). The occurrence of *Melaleuca biconvexa* was restricted to the western boundary of the subject site, confined to a small patch of mature individuals with evidence of regeneration. This species will not be impacted by the proposed development, due to a 10m buffer being placed around the population and excluded from development. Please note that *Melaleuca biconvexa* was not initially identified by the BCC.

No other threatened flora species were identified within the subject site during site inspection.

Table 12.4. Identifying candidate species for further assessment (species credit species).

Common name	Scientific name	TSC Act status	EPBC Act status	Further Assessment Required	Justification
Ancistrachne maidenii	<i>Ancistrachne maidenii</i>	Vulnerable	Not Listed	No	No individuals were recorded on the subject site during the site assessment. Site assessment revealed that the subject site provided suboptimal habitat to the species.
Regent Honeyeater	<i>Anthochaera phrygia</i>	Critically Endangered	Critically Endangered	No	No individuals were recorded on the subject site during the site assessment. Site assessment revealed that the subject site provided suboptimal habitat to the species.
Thick-leaf Star-hair	<i>Astrotricha crassifolia</i>	Vulnerable	Vulnerable	No	No individuals were recorded on the subject site during the site assessment. Site assessment revealed that the subject site provided suboptimal habitat to the species.
Thick Lip Spider Orchid	<i>Caladenia tessellata</i>	Endangered	Vulnerable	No	No individuals were recorded on the subject site during the site assessment. Site assessment revealed that the subject site provided suboptimal habitat to the species.
Netted Bottle Brush	<i>Callistemon linearifolius</i>	Vulnerable	Not Listed	No	No individuals were recorded on the subject site during the site assessment. Site assessment revealed that the subject site provided suboptimal habitat to the species.
Gang-gang Cockatoo population, Hornsby and Ku-ring-gai Local Government Areas	<i>Callocephalon fimbriatum</i> population in the Hornsby and Ku-ring-gai Local Government Areas	Endangered Population	Not Listed	No	The population is believed to be largely confined to an area bounded by Thornleigh and Wahroonga in the north, Epping and North Epping in the south, Beecroft and Cheltenham in the west and Turramurra/South Turramurra to the east. It is known to inhabit areas of

Common name	Scientific name	TSC Act status	EPBC Act status	Further Assessment Required	Justification
Eastern Pygmy-possum					Lane Cove National Park, Pennant Hills Park and other forested gullies in the area. The subject site is therefore outside of the expected range of this species and holds no suitable foraging or nesting habitat. No previous records are found to occur on the subject site or immediate surroundings.
	<i>Cercartetus nanus</i>	Vulnerable	Not Listed	Yes	Targeted surveys confirmed that this species is present within the subject site. Credit calculations have been determined and are discussed in Section 6.
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Vulnerable	Vulnerable	No	No individuals were recorded on the subject site during the site assessment. Site assessment revealed that the subject site provided suboptimal habitat to the species.
Leafless Tongue Orchid	<i>Cryptostylis hunteriana</i>	Vulnerable	Vulnerable	No	No individuals were recorded on the subject site during the site assessment. Site assessment revealed that the subject site provided suboptimal habitat to the species.

12.3.9 Ecosystem Credit Species

Species that require ecosystem credits have a high likelihood of being present on the development site, based on the data entered into the BCC including PCT details, patch size and the location of the development.

Nineteen (19) ecosystem credit species were identified by the BCC (Table 12.5). A habitat assessment was conducted for each species to determine if the species should remain in the assessment or be removed consistent with Section 6.3.1.8 of the FBA²⁹.

One ecosystem credit species Barking Owl (*Ninox connivens*) was confirmed on site, with potential habitat for the other 18 species also considered present. Therefore, all ecosystem species were maintained in the assessment.

²⁹ NSW Office of Environment and Heritage (OEH) (2014) Framework for biodiversity assessment. State of NSW and Office of Environment and Heritage, Sydney.

Table 12.5. Identifying candidate species for further assessment (ecosystem credit species).

Common name	Scientific name	TSC Act status	EPBC Act status	Species present in vegetation zone?
Barking Owl	<i>Ninox connivens</i>	Vulnerable	-	Yes – Species Confirmed on Site
Black-chinned Honeyeater (eastern subspecies)	<i>Melithreptus gularis subsp. gularis</i>	Vulnerable	-	Potential
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	Vulnerable	-	Potential
Eastern Freetail-bat	<i>Mormopterus norfolkensis</i>	Vulnerable	-	Potential
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	Vulnerable	-	Potential
Glossy Black-Cockatoo	<i>Calyptorhynchus lathami</i>	Vulnerable	-	Potential
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	Vulnerable	-	Potential
Little Eagle	<i>Hieraetus morphnoides</i>	Vulnerable	-	Potential
Little Lorikeet	<i>Glossopsitta pusilla</i>	Vulnerable	-	Potential
Masked Owl	<i>Tyto novaehollandiae</i>	Vulnerable	-	Potential
New Holland Mouse	<i>Pseudomys novaehollandiae</i>	Not Listed	Vulnerable	Potential
Powerful Owl	<i>Ninox strenua</i>	Vulnerable	-	Potential
Scarlet Robin	<i>Petroica boodang</i>	Vulnerable	-	Potential
Sooty Owl	<i>Tyto tenebricosa</i>	Vulnerable	-	Potential
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	Vulnerable	Endangered	Potential
Square-tailed Kite	<i>Lophoictinia isura</i>	Vulnerable	-	Potential
Swift Parrot	<i>Lathamus discolor</i>	Endangered	Critically Endangered	Potential
Turquoise Parrot	<i>Neophema pulchella</i>	Vulnerable	-	Potential
Varied Sittella	<i>Daphoenositta chrysoptera</i>	Vulnerable	-	Potential

12.3.10 Connectivity Value

There are no rivers, streams or estuaries identified within the subject site based on the topographic mapping available (1: 25,000 scale). The closest drainage feature lies approximately 90m to the east of the subject site and is an unnamed first order stream draining east to Narara Creek. The nearest estuary lies approximately 2km to the east of the subject site, being part of the Brisbane Water Estuary.

The absence of these features was confirmed during the field visit and the proposal is not expected to impact on rivers, streams or estuaries.

There are no local or important wetlands located within the subject site or within the 1,000 ha assessment circle.

The site does not incorporate a state or regional biodiversity link approved by the Chief Executive, OEH.

12.4 Proposed development

The proposed development requires considerable clearing of vegetation in the northern half of the site. Approximately 6.7 hectares will need to be cleared to facilitate the development.

A small dam in the centre of the site will be filled. All stormwater will be directed to a dam on the western boundary of the site. The water collected in this dam will be used for operations, such as dust suppression.

The southern half of the site, approximately 4.1ha, will be untouched by the development.

12.5 Impact assessment

12.5.1 Percentage of Native Vegetation Cover

The change in native vegetation cover is assessed at two scales, which for this assessment are a 100 ha circle and a 1,000 ha circle. The area of vegetation in each circle before development was mapped using the 'Greater Hunter Vegetation Mapping' (VIS3855), with the extent of vegetation updated using imagery obtained from NSW LPI SIX Viewer. Polygons tagged 'Non Native Vegetation' (MU000) were assumed to not contain native vegetation and were therefore excluded from this assessment.

The proposed footprint of the development will impact on 2.5 ha of native vegetation, with the after-development calculations taking that impact into account.

Due to the small amount of clearing no change will occur in either assessment circle, and a score of 0 is allocated for the percent native vegetation score.

12.5.2 Connectivity Assessment

As the proposed development does not impact on a connectivity value class such as a riparian buffer of a 4th – 6th Strahler stream order, estuary or important wetland, or State or Regional biodiversity link, a complete connectivity assessment was required.

The site adjoins contiguous native vegetation to the west, between the subject site and the M1 Pacific Motorway. The vegetation, although narrow near the subject site, extends north for over 5km before being cut by the M1 Pacific Motorway. To the south of the subject site the connection is far more restricted, ending approximately 500m south of the subject site.

An assessment of the impact of the proposed development on both connectivity width and condition was conducted. Although the development will impact on native vegetation within the subject site, the narrowest part of the link remains off-site, to the north-west of the subject site. The width of the connected link will therefore not be impacted by the proposed development. Due to the small amount of impact proposed within the subject site, and the overall good condition of the link, no reduction in average condition (for either over-storey or mid-storey) is expected from the development.

As no change in connectivity width or condition is anticipated a score of 0 is allocated for the connectivity score.

12.5.3 Patch Size

Patch size was calculated using the site vegetation map combined with all vegetation within 100 m identified through the vegetation mapping amended from OEH³⁰ referred to in Section 3.2 of the Biodiversity Assessment Report provided in Appendix O.

Due to the large, contiguous patch of vegetation extending north the maximum patch size of 1,001ha was entered into the credit calculator. A total patch size score of 12 is recorded.

12.5.4 Landscape Score

The final landscape score was calculated to be 12.

12.5.5 Current and Future Site Value Scores

The current and future site value scores for the vegetation zones assessed were calculated based on the data from the six plots and transects collected on site and entered into the BCC. As described above, the complete clearing of the subject site (apart from the *Melaleuca biconvexa* population and associated 10 m buffer) has been assessed.

The current site value scores range between 45.31 / 100 to 83.85 / 100 (Table 12.6). For areas of complete clearing the future site value score is 0 / 100.

Table 12.6. Current and future site value scores.

Vegetation zone ID	PCT ID	PCT name	Condition	Area impacted - (ha)/	Current site value	Future site value - clearing
Zone 1: PCT 1783 – Low Condition	PCT1783	Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast	Low	0.78	45.31	0
Zone 2: PCT 1783 – Moderate to Good Condition	PCT1783	Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast	Moderate to Good	1.41	83.85	0
Zone 3: PCT 1776 – Moderate to Good Condition	PCT1776	Smooth-barked Apple - Red Bloodwood open forest on enriched sandstone slopes around Sydney and the Central Coast	Moderate to Good	0.31	48.96	0

³⁰ NSW Office of Environment and Heritage (OEH) (2013) The Native Vegetation of the Sydney Metropolitan Area, Volume 2: Vegetation Community Profiles, Version 2.0, NSW Office of Environment and Heritage, Sydney.

12.5.6 Threatened Species and Populations

Species credit species are those species that cannot be reliably predicted by habitat surrogates, the PCT or distribution, and therefore require additional assessment, and potentially targeted survey.

A component of preparing a candidate species list for survey includes the completion of geographic and habitat questions required by the BCC. The question posed and responses are provided below (Table 12.7). No impact will occur through the proposal to any species or habitat type listed in the geographic/habitat questions in the BCC.

Table 12.7. Assessment of geographic and/or habitat features.

Common name	Scientific name	Feature	Impacted?
Rosenberg's Goanna	<i>Varanus rosenbergi</i>	Land within 250 m of termite mounds or rock outcrops	Yes
Red-crowned Toadlet	<i>Pseudophryne australis</i>	Heath or eucalypt forest on sandstone with a build-up of litter or other debris and containing, or within 40 m of, ephemeral or intermittent drainage lines	Yes
Giant Barred Frog	<i>Mixophyes iteratus</i>	Land below 1000 m in altitude and within 40 m of rainforest or eucalypt forest with deep leaf litter	No – the nearest rainforest/eucalypt forest with, suitable deep leaf litter is substantially further from the subject site than 40m.
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Land containing escarpments, cliffs, caves, deep crevices, old mine shafts or tunnels	No – No sandstone escarpments, rock crevices or flat sandstone rocks on exposed cliff edges or sandstone outcropping were present within or near the subject site.
Giant Burrowing Frog	<i>Heleioporus australiacus</i>	Land within 40 m of heath, woodland or forest	Yes
Broad-headed Snake	<i>Hoplocephalus bungaroides</i>	Land within 500 m of sandstone escarpments with hollow-bearing trees, rock crevices or flat sandstone rocks on exposed cliff edges and sandstone outcropping	No – No sandstone escarpments, rock crevices or flat sandstone rocks on exposed cliff edges or sandstone outcropping were present within or near the subject site.
Eastern Osprey	<i>Pandion cristatus</i>	Land within 40 m of fresh/brackish/saline waters of larger rivers or creeks; estuaries, coastal lagoons, lakes and/or inshore marine waters	No – Whilst one small ephemeral dam occurs within the subject site, it is not large enough to contain foraging habitat for the species. The closest water body that may provide intermittent foraging habitat for the species is substantially further than 40m from the subject site.
Squirrel Glider population, Barrenjoey Peninsula	<i>Petaurus norfolcensis</i> - endangered population Barrenjoey Peninsula	High nectar-producing shrubs & trees (including Acacias, Banksias, Corymbias, Eucalypts, mistletoes and Xanthorrhoeas)	No – The subject site is outside the species distribution for this population.

Common name	Scientific name	Feature	Impacted?
Koala population, Pittwater Local Government Area	<i>Phascolarctos cinereus</i> - endangered population Pittwater	Land within 40 m of eucalypt forests and woodlands	No –the subject site is outside the Pittwater Local Government Area.
<i>Lasiopetalum joyceae</i>	<i>Lasiopetalum joyceae</i>	Lateritic to shaley ridgetops	Yes

12.5.7 Final project footprint and assessment of impacts

The proposed development is restricted to the northern sections of 90 Gindurra Road, Somersby NSW (Lot 4 / DP 227279). The total area of the Subject Property is 10.75 ha, with the Subject Site (area proposed for development) totalling approximately 6.7 ha. Total impacts to native vegetation total 2.50 ha, with the remainder of the Subject Site consisting of already cleared land or dominated by exotic vegetation.

For the purposes of this assessment all lands within the Subject Site are assessed for complete clearing, except for a 10 m buffer surrounding the *Melaleuca biconvexa* individuals recorded on site. Assuming complete clearing will provide the proponent with maximum flexibility during the development of the site. The final project impact is provided in Table 12.8 and the footprint is displayed in Figure 12.2.

Table 12.8.Total impact on native vegetation.

Vegetation zone ID	PCT ID	PCT name	Condition	Area impacted (ha) - clearing
Zone 1: PCT 1783 – Low Condition	PCT1783	Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast	Low	0.78
Zone 2: PCT 1783 – Moderate to Good Condition	PCT1783	Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast	Moderate to Good	1.41
Zone 3: PCT 1776 – Moderate to Good Condition	PCT1776	Smooth-barked Apple - Red Bloodwood open forest on enriched sandstone slopes around Sydney and the Central Coast	Moderate to Good	0.31
Total				2.50

Two species credit species have been confirmed on site:

1. Eastern Pygmy-possum, and
2. *Melaleuca biconvexa*

Impacts to Eastern Pygmy-possum are anticipated within vegetation zone 2 (*Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast in moderate to good condition*). A total impact of 1.41 ha to Eastern Pygmy-possum is calculated. Figure 12.6 contains the species polygon.

Fifteen (15) individuals of *Melaleuca biconvexa* have been identified on site. The population is restricted to the western edge of the Subject Site. As this area is to be excluded from development and will be protected within a 10 m buffer. (Figure 12.7)

The assessment found that no impacts are anticipated to this species as a result of the proposed development.

Figure 12.5. Development footprint and native vegetation extent.

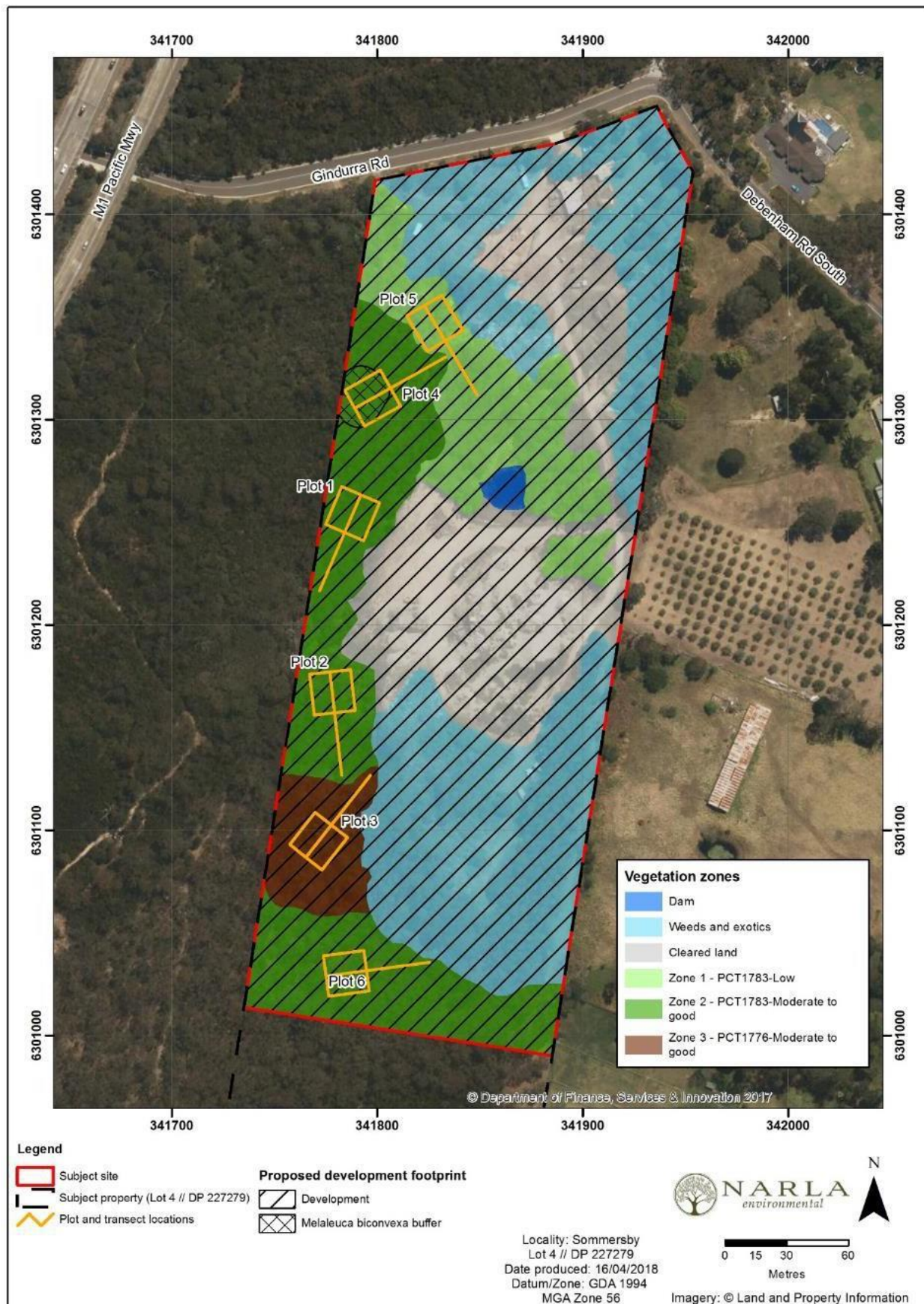


Figure 12.6. Eastern Pygmy-possum species polygon.

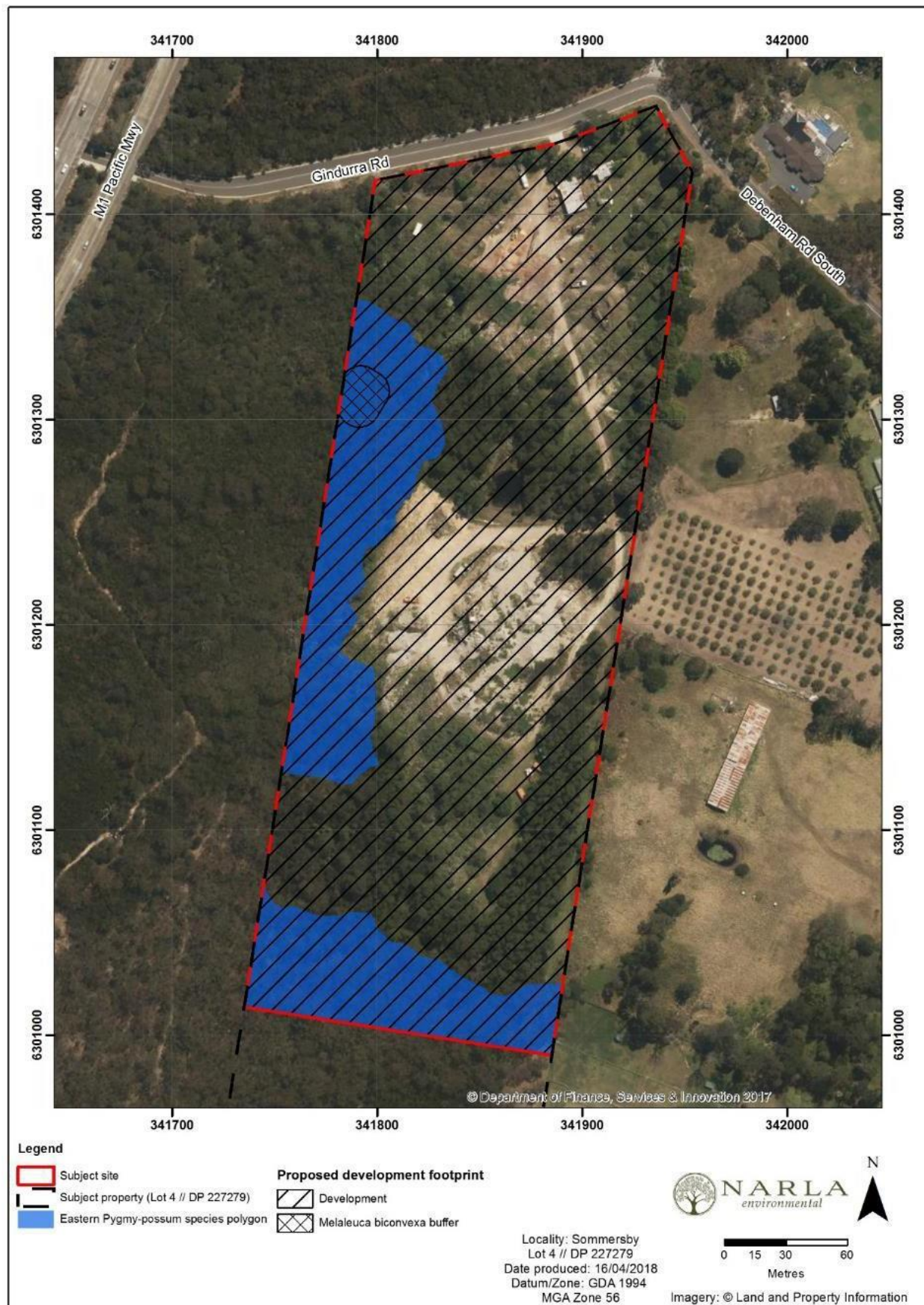
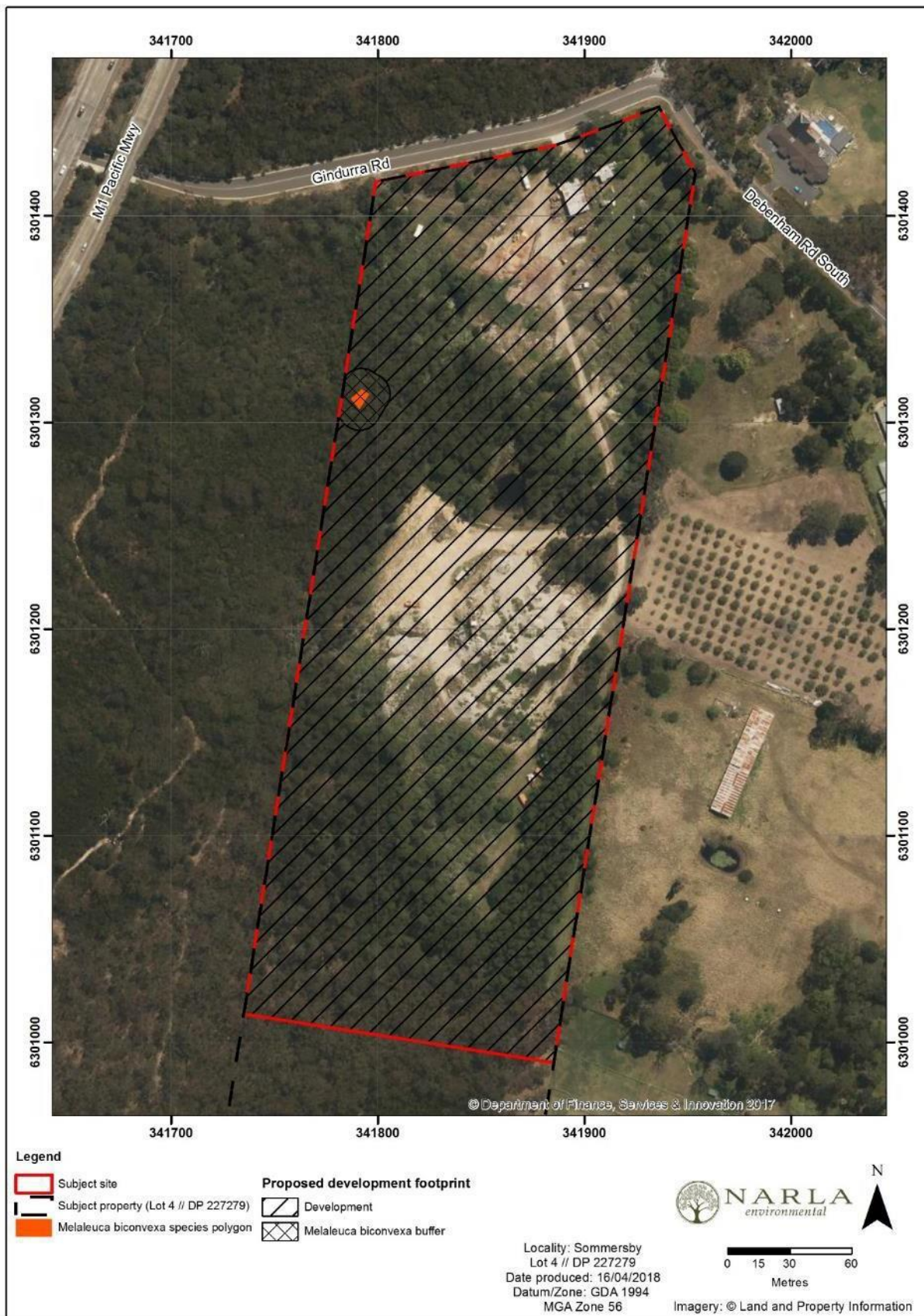


Figure 12.7. *Melaleuca biconvexa* species polygon.



12.5.8 On-going Operations

Narla Environmental have undertaken a comprehensive assessment of the cumulative impacts from all clearing activities and operations, associated edge effects and other direct impacts on biodiversity in accordance with the EP&A Act 1979. Provided these recommendations are followed, impacts to biodiversity will be reduced.

12.5.8.1 Stormwater

Prior to any construction, areas of the site will need to be cleared and contoured to provide adequate drainage to the existing stormwater detention pond. Civil site works will need to ensure that there is appropriate drainage and stormwater capture at the site. There is an existing stormwater dam on the subject site. This will be modified and enlarged as a point for stormwater capture (along the western boundary of the site). The two dams located in the centre of the site shall be filled. The captured stormwater would be used for operational purposes at the site.

This needs to be considered in the stormwater management system design. The design will consider best practice guidelines in Landcom (2004). Managing Urban Stormwater harvesting and reuse 'The Blue Book'.

Provided these measures are taken, and all control measures are in line with the two above mentioned documents, there should be no significant impact on biodiversity within the subject site.

12.5.8.2 Noise

A 5m constructed noise barrier will be constructed along the eastern boundary of the site, as well as two internal 3m noise barriers within the site to mitigate against noise impacts. Noise is not likely to further impact upon any threatened species within the subject site, as the subject site is already situated within close proximity to a number of busy roads and motorways.

12.5.8.3 Sewerage

The site will be connected to the town sewerage system as part of the development approved under DA52541/2017.2.

12.5.9 Biosecurity Risk Assessment

Biosecurity risks have the potential to impact native biodiversity unless reasonable control measures have been identified and implemented. Narla has identified such biosecurity risks and provided recommended control measures for pre and post development (Table 12.9).

Table 12.9. Biosecurity Risk Assessment Analysis.

Identified Risk	Risk Analysis	Risk Rating Prior to Implementation of Control	Solution/ Control Measure	Residual Risk Rating Post Control
Pathogens	Infection by <i>Phytophthora cinnamomi</i> and <i>Puccinia psidii</i> (Myrtle Rust). These pathogens were not recorded within the subject site. <i>Phytophthora</i> and Myrtle Rust are pathogens which can be spread through infected soil, with potentially large detrimental impact.	High	Basic control principles include avoiding transport of sediment onto the vegetated areas of the property by cleaning all work clothing, gloves, tools and machinery that enter any protected, vegetated areas. In some cases, a solution of 70% ethanol or methylated spirits in 30% water may be sufficient to disinfect equipment prior to use. The report, 'Arrive Clean, Leave Clean' (Commonwealth of Australia 2015) provides further information and best practice methods to reduce spread of these pathogens between work Subject Sites.	Low
Pests	Vertebrate pests were recorded on the subject site, including <i>Oryctolagus cuniculus</i> (European Rabbit) and <i>Vulpes vulpes</i> (European Fox).	High	Vertebrate pests should be controlled on an annual basis (or more regularly as required). Control methods include 1080 fox baiting, trapping, den fumigation and shelter habitat removal.	Low
Weeds	The subject site (Development area) was heavily infested with environmental and priority weeds.	High	All environmental and priority weeds will be entirely eradicated from the subject site and then managed under a Vegetation Management Plan (VMP). The VMP will require an annual site visit by a team of qualified bush regenerators to ensure the control of weeds within the subject site.	Low

12.6 Mitigation measures

A total of 2.50 ha of native vegetation is proposed to be impacted by the project, with a further 4.12 ha of cleared land and exotic vegetation also to be impacted within the Subject Site. Although complete clearing has been used to calculate credits within the Subject Site, several avoidance measures have been implemented during project design. Several mitigation measures will also be implemented during development to reduce impacts as much as possible.

Avoidance and mitigation measures include:

- A 10m buffer surrounding *Melaleuca biconvexa* individuals to ensure the species is not impacted by the development.
- Preparation of a Vegetation Management Plan (VMP) to guide the on-going protection and management of the *Melaleuca biconvexa*,
- Avoidance of the southern portion of the Subject Property, which totals 4.1 ha and contains habitat for *Prostanthera junonis* and *Hibbertia procumbens*. The area partially falls under Management Zone 1b and 1d of

the Somersby Industrial Park Draft Plan of Management (Connell Wagner 2005) and the feasibility of entering into a Biodiversity Stewardship Agreement will be investigated.

- Assigning an Ecologist to undertake a pre-clearing survey of the vegetation prior to clearing and development. If any significant ecological values such as nests are found, clearing is to be delayed until the nest is vacated.
- Assigning an Ecologist to be present on site during the clearing events. The Ecologist will be able to guide works crews away from sensitive ecological features and will be on hand to capture and relocate displaced fauna. Where possible the clearing of mature trees will be avoided if they can be accommodated into the development footprint.
- Preventing the inadvertent introduction of exotic flora propagules by following the DEP (2015)
- ‘Arrive Clean, Leave Clean’ Guidelines.
- Ensuring appropriate erosion and sedimentation controls are maintained throughout the construction phase and the period immediately following as outlined in the ‘Blue Book’ (Landcom 2004).

The unavoidable impact of clearing vegetation will be completely offset.

A total of 116 ecosystem credits and 28 Eastern Pygmy-Possum species credits must be retired in order to offset the impacts of the proposed development. The proponent has a number of options to satisfy the offset obligations of the project.

The proponent will investigate the feasibility of protecting the southern portion of the Subject Property under a Biodiversity Stewardship Agreement. This part of the Subject Property contains intact vegetation and habitat for Eastern-pygmy Possum and a number of threatened species, including *Prostanthera junonis* and *Hibbertia procumbens*.

The southern portion of the Subject Property is currently a management zone under the Somersby Industrial Zone Plan of Management³¹ and is 4.1 ha in total. Due to the relatively small size of the potential Biodiversity Stewardship Agreement site additional credits are likely to be required in addition to those generated on-site.

A review of the credits currently available on the offsets market revealed that no credits matching either PCT or Eastern Pygmy-Possum are currently available. The proponent will consider completing a Credits Wanted request for the required credits as the project proceeds.

Landholders Expression of Interest (EOIs) details were also reviewed as part of this project. A number of EOIs are available for the credits required, including:

- PCT 1783 – No EOIs listed;
- PCT 1776 – No EOIs listed; and
- Eastern Pygmy-Possum – EOI 187, EOI 189 and EOI 207.

The landholders listed in the EOI register will be contacted to determine if interest to enter into a Biodiversity Stewardship Agreement still exists and, if still interested, the likely cost of the credits required to offset the project.

Finally, payment into the Biodiversity Conservation Fund (BCF), which is administered by the Biodiversity Conservation Trust (BCT), is also an option for the project. The current price to offset the credit requirement for the proposed project is \$611,309.77 (ex GST), which includes \$5,144.40 (ex GST) for each ecosystem credit and \$521.42 (ex GST) for each species credit.

Further investigations will be completed to determine the most efficient and effective offset approach for the project.

³¹ Connell Wagner (2005) DRAFT Plan of Management, Somersby Industrial Park. NSW Premier’s Department and Gosford City Council. Reference 1144/01. Revision 6

12.7 Conclusions

Two species credit species have been confirmed on site:

1. Eastern Pygmy-possum; and
2. *Melaleuca biconvexa*

Impacts to Eastern Pygmy-possum are anticipated within vegetation zone 2 (*Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast in moderate to good condition*). A total impact of 1.41 ha to Eastern Pygmy-possum is calculated.

Fifteen (15) individuals of *Melaleuca biconvexa* have been identified on site. The population is restricted to the western edge of the Subject Site.

The assessment found that no impacts are anticipated to this species as a result of the proposed development.

The proposed development has been assessed consistent with the FBA, including the preparation of a site scale vegetation map and completion of the six Biometric plots and transects. The results of the assessment found that:

- 116 ecosystem credits area required
- 28 Eastern Pygmy-Possum credits are required.

The proponent will now explore the generation of credits from an on-site Biodiversity Stewardship site, before considering other options such as the purchase of credits from the market or payment to the BCT.

13 Fire Safety

13.1 Introduction

Bushfire Planning and Design has been engaged to undertake a bushfire hazard assessment at the subject site. The site is mapped as being bushfire prone under Section 146 of the *Environmental Planning and Assessment Act 1979*.

The development is captured under Section 4.14 of the *Environmental Planning and Assessment Act 1979*; Consultation and development consent – certain bush fire prone land. For the purpose of bushfire assessment, the development is considered infill development as described in the New South Wales Rural Fire Service document *Planning for Bushfire Protection 2006*. The site is currently used for storage and sorting of landscape materials and a Development Application is required to increase the permitted operational area to allow the design and construction of a recycling facility.

The proposed development relates to the proposed construction of internal roads, non-habitable storage bays, hardstands and earth works. The development is considered to be a Class 7 development (National Construction Code (NCC 2017) Classification). Class 7 developments are not required to comply with the NCC (2017) with regards to bushfire protection and as a consequence, nor are they required to comply with AS3959. The general fire safety provisions of the NCC are deemed to be adequate. The project is required to comply with the aims and objectives of *Planning for Bushfire Protection 2006* with regards to access, water and services, emergency planning and landscaping/vegetation management.

The full Bushfire Hazard Assessment is given in Appendix P. The main findings and recommendations from the investigation are given in this chapter of the EIS.

13.2 Legislative requirements

The main legislation, planning instruments, development controls and guidelines that are related to this project are as follows:

Part 4 Division 4.3 Section 4.14 *Environmental Planning and Assessment Act, 1979*

Consultation and development consent— certain bush fire prone land

(1) Development consent cannot be granted for the carrying out of development for any purpose (other than a subdivision of land that could lawfully be used for residential or rural residential purposes or development for a special fire protection purpose) on bush fire prone land unless the consent authority:

*(a) is satisfied that the development conforms to the specifications and requirements of the document entitled *Planning for Bush Fire Protection*, prepared by the NSW Rural Fire Service in co-operation with the Department of Planning (or, if another document is prescribed by the regulations for the purposes of this paragraph, that document) that are relevant to the development (“the relevant specifications and requirements”), or*

(b) has been provided with a certificate by a person who is recognised by the NSW Rural Fire Service as a qualified consultant in bush fire risk assessment stating that the development conforms to the relevant specifications and requirements.

Although, it is noted that, under Part 4 Division 4.3 Section 4.14 Clause 1B, this section does not apply to State Significant Developments. However, a Bushfire Assessment was a requirement of the SEARs.

All new developments must comply with the Building Code of Australia. The BCA is a performance based code which derives its statutory power from the *Environmental Planning and Assessment Act 1979*. Compliance with the BCA can

be achieved via a performance based solution or a deemed-to-satisfy solution. With regards to the construction of a building in a bushfire prone area, the deemed to satisfy method of compliance is achieved by complying with the Australian Standard AS3959 (2009).

There is a New South Wales variation in the BCA which excludes BAL FZ construction standards as a deemed to satisfy solution. Buildings exposed to radiant heat levels greater than 40kW/m² are considered to be in the flame zone, BAL FZ. For developments that require a BAL FZ level of construction, an alternative solution is required to be submitted. An alternative solution is one which is different to the deemed to satisfy provisions but meets the performance requirements of the BCA and the Objectives of Planning for Bushfire Protection.

The EP&A Regulation requires a Certifying Authority, prior to issuing a construction certificate or complying development certificate, to be satisfied that the relevant requirements of the BCA will be met.

13.3 Baseline conditions

The site is located at 90 Gindurra Rd, Somersby (Lot4/DP227279) which is under the jurisdiction of the Central Coast Council. The land is zoned IN1 General Industrial and is accessed from Gindurra road on the northern boundary. Kangoo road borders the southern boundary. The site is currently used for storing and screening soil and sand, which is sold for landscaping. The majority of the site is bushland with approximately 14,000 m² cleared and currently used as a processing and sorting area. Bushland is located to the west of the site and to the north of Gindurra road. Managed land is located to the east and to the south of Kangoo road.

The study found that the vegetation within 100m of the site could significantly influence bushfire behavior. This includes Hawkesbury Banksia Scrub and Hawkesbury Woodland. The northern part of the site has been part cleared (approximately 14,000m²) for its current land usage approved under a separated development application. Disturbed canopy, bare ground and patches of vegetation and regrowth are distributed around the northern part of the site (refer site photos in Appendix N). Vegetation and slopes associated with the site that influence Bushfire Attack Levels is given in Figure 13.1 (also see Figure 1a in Appendix N).

13.4 Proposed development

The proposed development will extend the existing facility towards the south. The vegetation to the south of the proposed works is a combination of Hawkesbury Banksia Scrub and Hawkesbury Woodland (Gosford Council vegetation mapping). The land to the west of the proposed works is dominantly Hawkesbury Banksia Scrub and the land to the east is dominantly managed land.

The effective slope is 0-5° down-slope the west, east and south and up-slope to the north. The Bushfire Hazard Assessment considers the bushfire risks associated with key parts of the proposed development, including:

- Proposed aggregate storage bay;
- Proposed landscape storage bay;
- Proposed waste receival storage bay; and
- Proposed blending area and proposed waste processing area.

All structures will be constructed of non-combustible materials. A 5m high non-combustible noise barrier will be constructed along the eastern boundary of the development. Storage bays will be surrounded by 3m concrete walls. A stormwater storage dam will be constructed in the south-west corner of the development.

It should be noted that most of the materials on site will be non-flammable.

Figure 13.1. Vegetation and slopes associated with the subject site, and Bushfire Attack Levels (also see Figure 1a in Bushfire Assessment report).

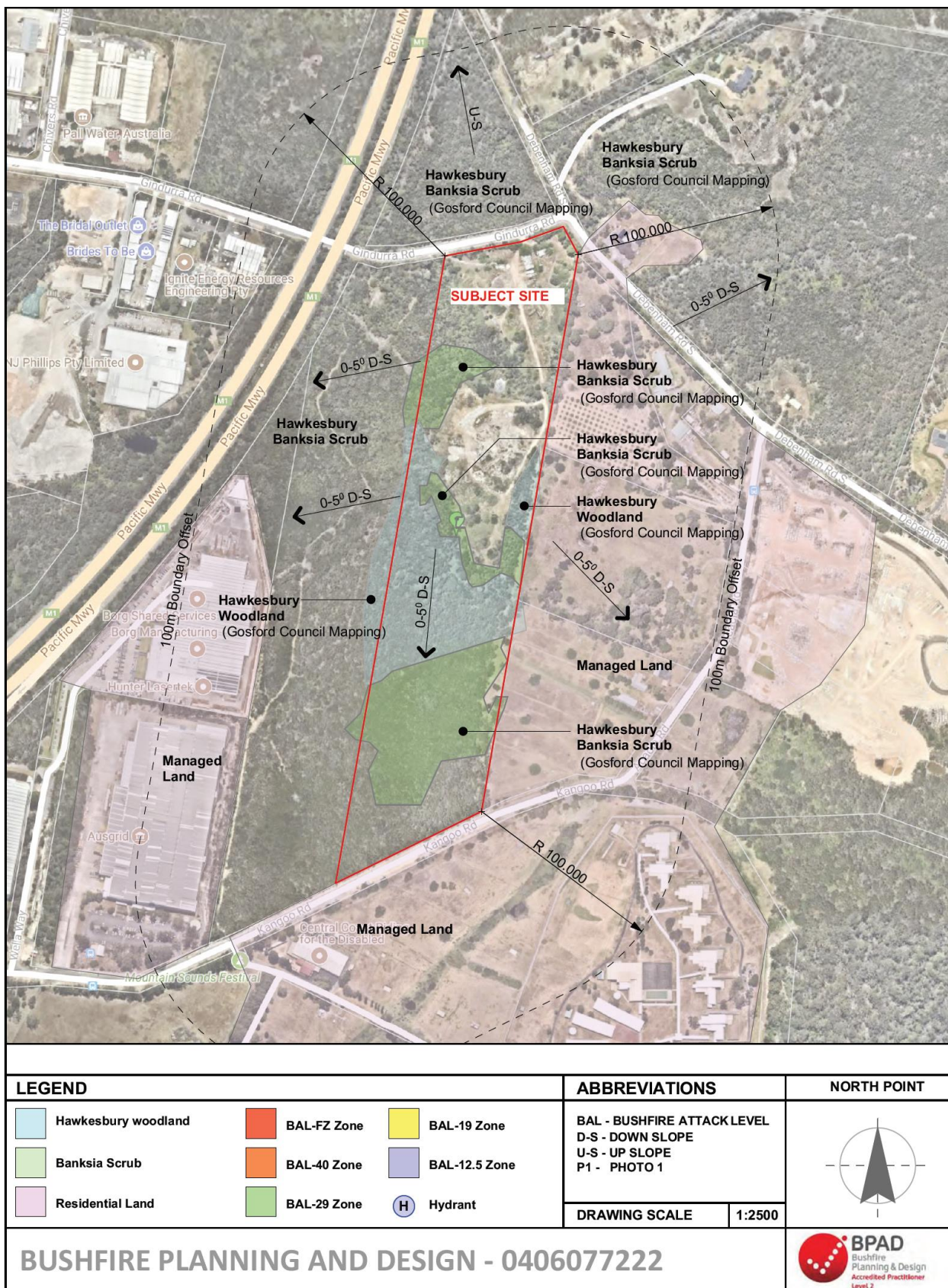
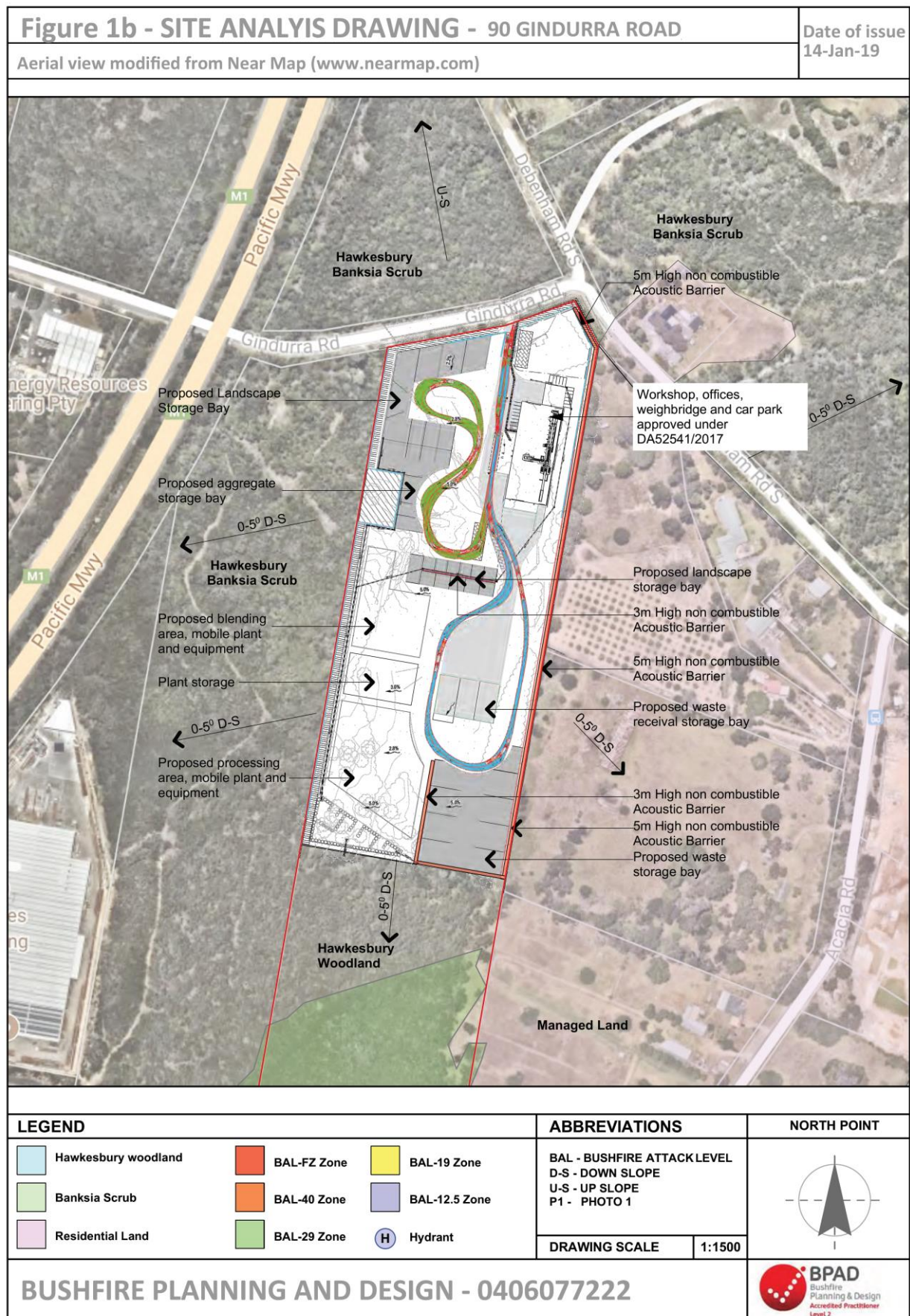


Figure 13.2. Site layout within context of bushfire risk (also see Figure 1b in Bushfire Assessment report).



13.4.1 Fire equipment and fire water containment

As part of the Stage 1 development (DA 52541/2017.2), a fire hydrant will be installed at the site, near the office. The details and specifications are provided in Appendix A, included in the hydraulic services plans. Fire extinguishers will be installed inside the warehouse and office area.

The design flow rate for the fire hydrant is 20 L/s. The volume of water over 90 minutes of continual flow would be 108 m³. The total volume of the onsite stormwater OSD basin is 630m³, which is expected to have a permanent volume of 250m³. In addition, there is a 25kL sump near the waste receival area, to capture the most contaminated stormwater. In the event of a fire, the fire water would be contained on-site within the stormwater capture system. After the fire, any contaminated water will be pumped out and removed from site by an appropriately licensed liquid waste contractor and disposed at a licensed facility.

13.5 Impact assessment

Table 2.1 of Appendix N provides a detailed overview of the BAL assessment of the proposed development. The main findings from the assessment are:

13.5.1 Proposed aggregate storage bay

The proposed aggregate storage bay is located 11m from the western boundary. The proximity to the boundary and the vegetation to the west yields an expected radiant heat load less than 40 kW/m² (ie. BAL-40). The northern facade and southern facade are also assessed as BAL-40. The eastern facade has greater than 40m separation from the eastern boundary. The land to the east is dominantly managed land.

13.5.2 Proposed landscape storage bay

The proposed landscape storage bay has greater than 15m separation in all directions (with APZ management) and yields a maximum expected radiant heat load less than 29 kW/m² (ie. BAL-29). The land to the north and south of the landscape storage bay has a disturbed canopy. After the establishment of the APZs for each processing bay there will be approximately 40m of managed land to the north and south of this storage bay.

13.5.3 Proposed waste receival storage bay

The proposed waste receival storage bay is located 13m from the eastern boundary. The land to the east of the boundary is managed land. A small parcel of woodland is located between this processing bay and the eastern boundary. Hawkesbury Woodland and a thin band of Hawkesbury Banksia Scrub is located to the south. After the establishment of the APZs for each processing bay there will be approximately 70m of managed land to the north and at least 21m to the south and 15m to the east of this processing bay. The maximum expected radiant heat load less than 29 kW/m² (ie. BAL-29).

13.5.4 Proposed blending area and proposed waste processing area

Both of these areas (see Figure 13.2) are open spaces with no building structures. Mobile plant and equipment, grinders, crushers etc. will be used in this location. The proposed blending area will have a 3m high non-combustible noise barrier (wall) to the east. The protection of machinery is not addressed in any legislative context with regards to bushfire protection.

13.6 Mitigation measures

Section 4 and 5 of the full Bushfire Hazard Assessment describe the construction materials and requirements of the Asset Protection Zone to comply with Planning for Bushfire Protection (2006). Based on woodland (and scrub) with a

maximum 0-5° down-slope, a minimum 15m APZ is recommended to be applied around each processing bay. It is noted that the proposed works are non-habitable storage bays, however providing the nominated separation distances around these processing bays will provide adequate bushfire protection to the workshop and office proposed for the northern end of the site approved (not yet constructed) under a separate DA.

13.6.1 Asset Protection Zone requirements

The following points are to be adhered to for providing APZs.

- The Inner Asset Protection Area (IPA) is to have a tree canopy cover less than 15%;
- The Outer Asset Protection Area (OPA) is to have a tree canopy cover less than 30%;
- No trees are to be located within 2m of the building roof line;
- Garden beds with flammable shrubs are to be located a minimum 10m from the building;
- Tree limbs within 2m of the ground are to be removed; and
- Removal of ground fuels should be removed each year prior to the bushfire season (October-March).

13.6.2 Site access

Sufficient access is also required to comply with the Planning for Bushfire Protection (2006). These include:

- Minimum carriageway width of 4.5m (one way) or 8m (two way);
- Minimum vertical clearance of 4m to any overhanging obstructions;
- Curves have a minimum 6m inner radius;
- Minimum 6m between inner and outer curves;
- Crossfall is not more than 10°;
- Maximum grades for sealed roads is 15°;
- Maximum grades for unsealed roads is 10°;
- Some short constrictions in the access may be accepted where they are not less than 3.5m and extend for no more than 30m;
- For internal roads: roads are to be through roads. Maximum length of a dead end roads is 100m in from a through road. Dead end roads to be clearly sign posted.
- For internal roads: provide a minimum 12m outer radius turning circle for dead end roads.

13.6.3 Water requirements

The proposed development can comply with the PBP (2006) with regards to water requirements. Reticulated water is provided however the hydrant sizing, spacing or pressures have not been tested. Fire hydrant spacing, sizing and pressures comply with the Australian Standard AS 2419.1. It is assumed that reticulated water services installed by Central Coast Council (Gosford City Council) have been installed in accordance with the Australian Standard. No additional water for the suppression of bushfire is required for the proposed development. The following points are to be adhered to for the life of the development:

- All above ground water and gas service pipes and fittings external to the building are metal.

13.6.4 Electricity and gas requirements

The proposed development can comply with the PBP (2006) with regards to electricity and gas requirements. The following points are to be adhered to (where applicable) for the provision of electricity and gas services where applicable:

- Where practicable place electrical transmission lines are underground or;
- If overhead electrical transmission lines are proposed, lines are installed with short pole spacing (30metres), unless crossing gullies, gorges or riparian areas; and no part of a tree is closer to a power line than the distance set out in accordance with the specifications in 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002);
- Reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities;
- Metal piping is to be used;
- All fixed gas cylinders are to be kept clear of all flammable materials to a distance of 10m and shielded on the hazard side of the installation;
- Release valves are directed away from the building and at least 2m away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are to be metal; and
- Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

13.6.5 Landscaping and property maintenance

It is expected that the nominated APZs will be maintained by the owner of the land as part of the development. It is accepted practice that after construction of a dwelling, gardens will be established and landscaping of the grounds will be undertaken. The following principles should be applied for the establishment of gardens and property maintenance:

- Apply the principles for APZ and vegetation management as attached to the appendix of this report;
- Maintain short cropped grass less than 100mm adjacent to any building;
- Keep areas under fences, fence posts and gates and trees raked and cleared of fuel; and
- Utilising non-combustible fencing and retaining walls.

Prior to the bushfire season which runs from October to March the site should be maintained utilising the following guidelines from Appendix 5 of the Planning for Bushfire Protection (2006):

- Remove organic material from the roof and gutters and valleys;
- Check tiles and roof lines for broken tiles or dislodged roofing materials;
- Ensure painted surfaces are in good condition with decaying timbers being given particular attention to prevent the lodging of embers within gaps;
- Doors are fitted with draught seals and well maintained;
- Mats are of non-combustible material or in areas of low potential exposure;
- Screens on windows and doors are in good condition without breaks or holes in fly screen material and frames are well fitting into sills and window frames;
- Where applicable, check pumps and water supplies are available and in working order;
- Where applicable, drenching or spray systems are tested before the fire season;
- Hoses and hose reels are not perished and fittings are tight and in good order; and
- Woodpiles, garden sheds and other combustible materials are located away from the house.

13.7 Conclusions

The proposed development has been assessed against the potential threat of bushfire. The three storage bays are assessed as follows. The aggregate storage bay will receive a maximum predicted radiant heat load of BAL-40 (40 kW/m²). The landscape storage bay and waste receival bay both will receive a maximum predicted radiant heat load of BAL-29 (29 kW/m²). The proposed 5m high acoustic barrier on the eastern boundary and the two 3m high acoustic barriers in the proposed blending and processing areas are non-combustible structures. The proposed blending and processing areas are not defined by any building works.

All proposed built structures are non-combustible and suitably located. In the event of a bushfire it is our view that the proposed development will not influence bushfire behaviour and will not increase bushfire risk for any adjoining properties.

The nominated BAL-ratings which correspond to the Australian Standard AS3959 (The Australian Standard for the Construction of a Building in a Bushfire Prone Area) are provided for reference and can be adopted for the construction of the proposed works. The Class 7 development is not required to comply with AS3959. The general fire safety construction provisions of the NCC (2017) are taken as acceptable solutions, but the aims and objectives of PBP apply in relation to other matters such as access, water and services, emergency planning and landscaping/vegetation management.

We recommend that all proposed works are constructed from non-combustible materials. The asset protection zones nominated in figure 1 are deemed to be adequate. Site access, including access via the public road system is suitable for emergency response vehicles. The development complies with *Planning for Bushfire Protection* (2006) with regards to the provision of water. The requirements for electricity and gas (if applicable) can also be complied with. We recommend that a bushfire emergency evacuation plan is prepared such that employees and visitors are informed about suitable egress routes away from the

The full Bushfire Hazard Assessment, with recommended mitigation actions, is provided at Appendix P of this EIS.

14 Heritage

14.1 Introduction

The historical and aboriginal heritage history of the site was investigated to determine whether the development would have any impact on any known historical or aboriginal sites or features at the site.

14.2 Legislative requirements

14.2.1 Environmental Protection and Biodiversity Conservation Act 1999

The *Environmental Protection and Biodiversity Act 1999* (EPBC Act) is the national Act protecting the natural and cultural environment. The EPBC Act is administered by the Department of Environment and Energy (DEE). The EPBC Act establishes two heritage lists for the management of the natural and cultural environment:

- The National Heritage List (NHL) contains items listed on the NHL that have been assessed to be of outstanding significance and define "critical moments in our development as a nation".³
- The Commonwealth Heritage List (CHL) contains items listed on the CHL that are natural and cultural heritage places that are on Commonwealth land, in Commonwealth waters or are owned or managed by the Commonwealth. A place or item on the CHL has been assessed as possessing "significant" heritage value.⁴

14.2.2 NSW Heritage Act 1977

Heritage in NSW is principally protected by the *Heritage Act 1977* (Heritage Act) (as amended) which was passed for the purpose of conserving items of environmental heritage of NSW. Environmental heritage is broadly defined under Section 4 of the Heritage Act as consisting of the following items: "those places, buildings, works, relics, moveable objects, and precincts, of State or Local heritage significance". The Act is administered by the NSW Heritage Council, under delegation by the Heritage Division, Office of Environment and Heritage. The Heritage Act is designed to protect both known heritage items (such as standing structures) and items that may not be immediately obvious (such as potential archaeological remains or 'relics'). Different parts of the Heritage Act deal with different situations and types of heritage and the Act provides a number of mechanisms by which items and places of heritage significance may be protected.

14.2.3 Gosford Local Environment Plan 2014

The *Gosford Local Environmental Plan 2014* contains schedules of heritage items that are managed by the Council. As the project is being undertaken under Part 4 of the EP&A Act, the Council is responsible for approving controlled work via the development application system.

14.3 Baseline conditions

14.3.1 Historical Heritage

A search of the National Heritage List and Commonwealth Heritage List did not yield any results associated with the study area.

There are no items/conservation areas listed on the SHR within the study area. However, the following heritage item is in the vicinity of the study area:

- Mount Penang Parklands, (Item No. 1667), Pacific Highway, Somersby, NSW 2250, Lot 702, DP 1128417, Lots 10, 12 and 16, DP 1149050, Lot 1 DP 715442, Lots 601, 602, 603 and 607, DP 823147, Lot 475, DP 823714, located immediately south of the study area.

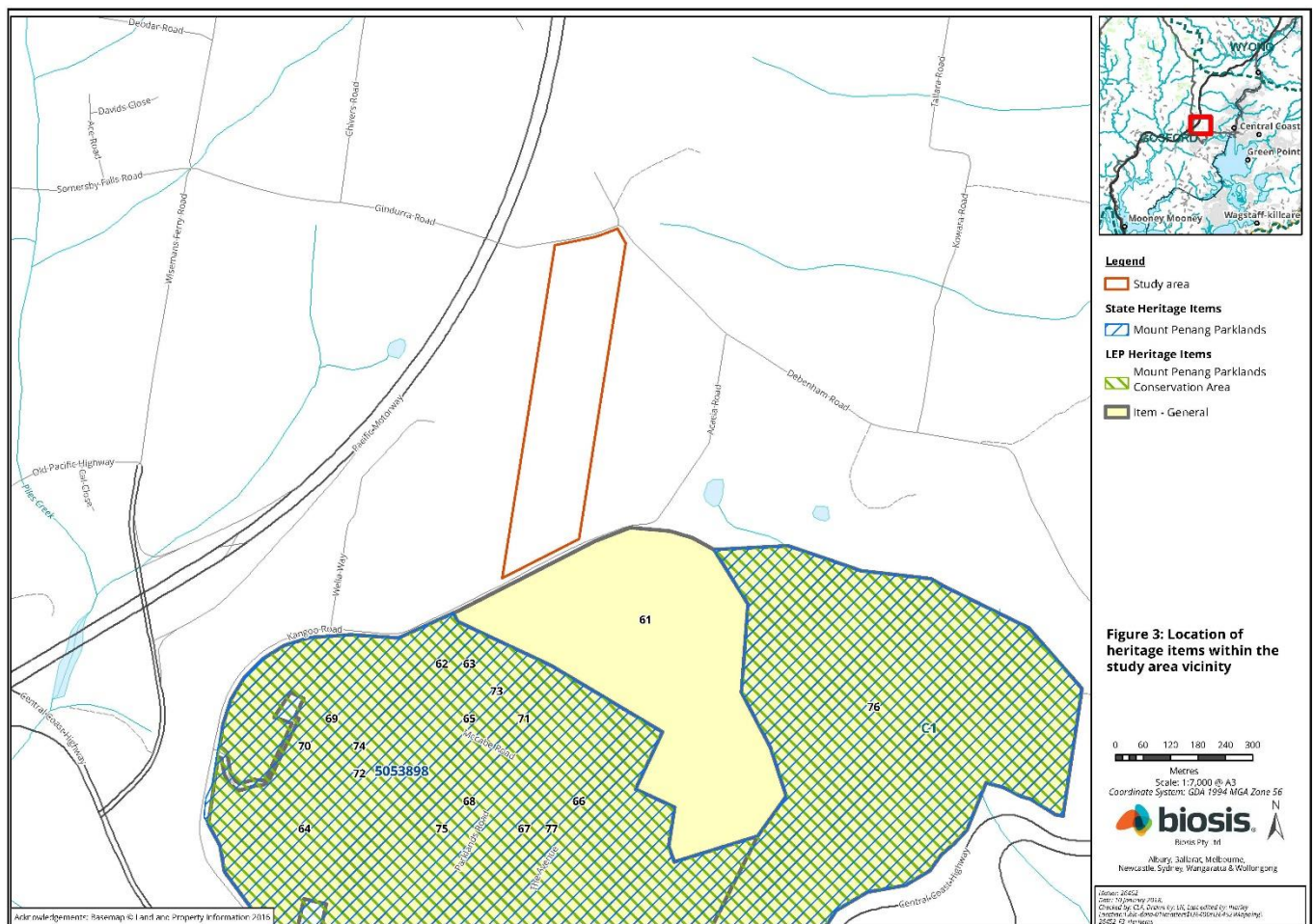
There are no items within or adjacent to the study area that are entered on a State government instrumentality Section 170 Register.

The study area is not listed as an item of local significance on the Gosford LEP 2014 Schedule 5. The study area is situated within the vicinity of the following heritage items and conservation area of local and state significance:

- Remnant farm buildings—the barn, storage shed and dairy (Item No. 61), Central Coast Highway, Somersby, NSW 2250, Lot 521, DP 1017539. Local heritage item, immediately south of the study area.
- Eastern bushland (Item No. 76), Central Coast Highway, Somersby, NSW 2250, Lot 10, DP 1149050. Local heritage item south east of the study area.
- Dormitories—“Carinya”, “Sobraon”, “Walpole”, “Vernon” and “The Wood Building” (Item No. 62), Central Coast Highway, Somersby, NSW 2250, Lot 10, DP 1149050. State heritage item located in the Mt Penang Parklands south of the study area.
- Administration and service buildings—maintenance store, cultural centre, admissions/operations annexe and theatre, school house, Girrakool House, occasional child care, flats (Item No. 63), Central Coast Highway, Somersby, NSW 2250, Lot 10, DP 1149050. State heritage item located in the Mt Penang Parklands south of the study area.
- Residential buildings—six residential cottages, deputy superintendent’s cottage (Item No. 64), Central Coast Highway, Somersby, NSW 2250, Lot 10, DP 1149050. State heritage item located in the Mt Penang Parklands south of the study area.
- Service and amenity buildings—art room and ablutions block, former officers’ dining room, dining room, main kitchen and laundry (Item No. 65), Central Coast Highway, Somersby, NSW 2250, Lot 10, DP 1149050. Local heritage item located in the Mt Penang Parklands south of the study area.
- McCabe Complex—two cottages, McCabe Conference Centre (Item No. 66), Central Coast Highway, Somersby, NSW 2250, Lot 10, DP 1149050. State heritage item located in the Mt Penang Parklands south of the study area.
- Sports fields—three sports fields, sports oval (Item No. 67), Central Coast Highway, Somersby, NSW 2250, Lot 10, DP 1149050. State heritage item located in the Mt Penang Parklands south of the study area.
- Built landscape elements—gazebo, stone walls, sculpture park (Item No. 68), Central Coast Highway, Lot 10, DP 1149050. Local heritage item located in the Mt Penang Parklands south of the study area.
- Old pine tree group (Item No. 69), Central Coast Highway, Somersby, NSW 2250, Lot 10, DP 1149050. Local heritage item located in the Mt Penang Parklands south of the study area.
- Dam (Item No. 70), Central Coast Highway, Somersby, NSW 2250, Lot 10, DP 1149050. Local heritage item located in the Mt Penang Parklands south of the study area.
- White poplar avenue (Item No. 71), Central Coast Highway, Somersby, NSW 2250, Lot 10, DP 1149050. Local heritage item located in the Mt Penang Parklands south of the study area.
- Mature cultural plantings (Item No. 72), Central Coast Highway, Lot 10, DP 1149050, Lot 702, DP 1128417. Local heritage item located in the Mt Penang Parklands south of the study area.

- Mature cultural plantings, including coral trees, brush box, camphor laurels, white poplars, hoop pines, an oak and a larch (Item No. 73), Central Coast Highway, Somersby, NSW 2250, Lot 10, DP 1149050, Lot 702, DP 1128417. Local heritage item, located in the Mt Penang Parklands south of the study area.
- Two groups of scribbly gums (Item No. 74), Central Coast Highway, Somersby, NSW 2250, Lot 10, DP 1149050. Local heritage item, located in the Mt Penang Parklands south of the study area.
- Sports field perimeter brush box and eucalypt plantings (Item No. 75), Central Coast Highway, Somersby, NSW 2250, Lot 10, DP 1149050. Local heritage item, located in the Mt Penang Parklands south of the study area.
- Entry drive with perimeter brush box and eucalypt plantings (Item No. 77), Central Coast Highway, Somersby, NSW 2250, Lot 10, DP 1149050. State heritage item, located in the Mt Penang Parklands south of the study area.
- Mount Penang Parklands Heritage Conservation Area (Item No. C1), Central Coast Highway, Somersby, NSW 2250, Lot 702, DP 1128417, Lots 10, 12 and 16, DP 1149050, Lot 1 DP 715442, Lots 601, 602, 603 and 607, DP 823147, Lot 475, DP 823714. State listing located immediately south of the study area.

Figure 14.1. Location of historical heritage items in the vicinity of the development site (extracted from Historical Heritage Assessment in Appendix R: Aboriginal Heritage Assessment).



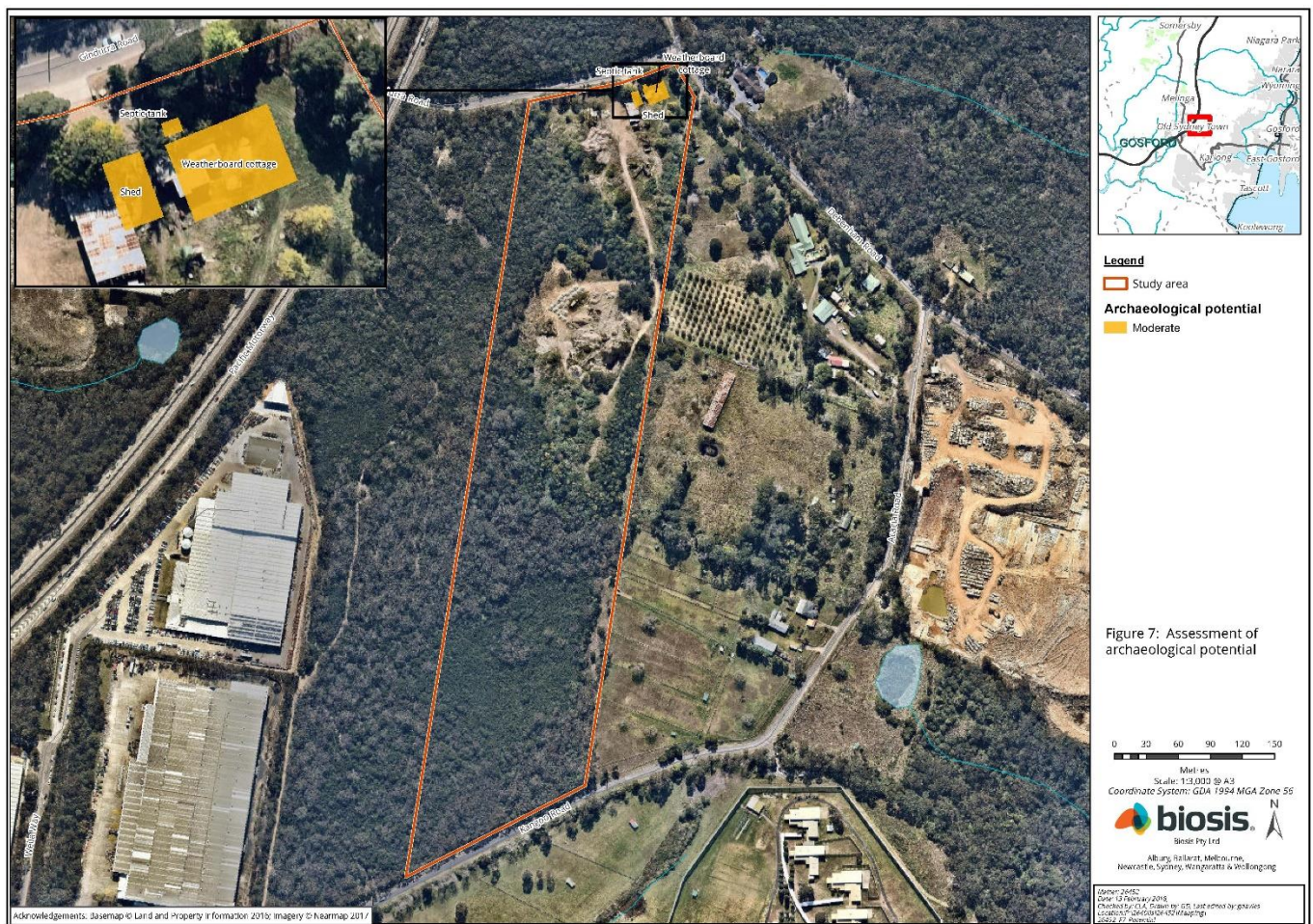
The study area contains limited built fabric in the northern section of the study area, including sheds, a demountable office building, and fence lines.

Historical research identified one residence in the north eastern corner of the property, at the junction of what is now Gindurra Road and Debenham Road South. It was built in the 1920s and was described as ‘Weather Board, Iron roof, 9 Rooms, Hall, Kitchen, Offices, 8 foot verandah on 3 sides’, was given the name ‘Brayton’, and was surrounded by orchards. The 1965 subdivision plan also showed the weatherboard cottage was still present, as well as the addition of a septic tank and shed. The physical inspection did not identify the 1920s, 9 bedroom, weatherboard residential building or septic tank in the study area nor any of the associated orchards.

Built fabric identified in the study areas consisted of a corrugated iron shed and storage area built in 1965, a small storage building with particle board walls and a corrugated iron gable roof built after 1965, and a flat roofed portable building on raised foundations, with a corrugated iron skillion roof protruding from the north facing wall.

The archaeological potential is assessed to be moderate, consisting of footings for the 1920s residential building and a septic tank. Figure 14.2 shows the likely location of the old residence at the site.

Figure 14.2. Archaeological potential at the development site (extracted from Historical Heritage Assessment at Appendix Q).



The study area does not present with any fabric or possible archaeological features that would be considered significant, either at a local or state level. The former buildings date from the 1920s, a well-documented time frame for this region with much recorded on the small citrus farming industry. The potential archaeological remains would not therefore demonstrate any degree of rarity or aesthetic characteristics considered to be of high quality. Any artefactual material that may be present either within secure subfloor deposits or backfill from the septic tank would

not present any new or informative material that could present new information. Therefore the study area is not considered to be significant at a local or state level.

14.3.2 Aboriginal heritage

An extensive search of the AHIMS database was conducted on 17/01/2018 (Client service ID: 313504). The search identified one Aboriginal archaeological sites within a 200 metres of the study area, and a further 35 Aboriginal archaeological sites within 5 x 5 kilometre search area, centred on the proposed study area (Table 2 and Table 3). None of these registered sites are located within the study area.

The northern section of the study area was identified during the survey as having heavy disturbances from the previous use of the study area. The disturbance levels in the heavily vegetated southern section of the study area could not be confirmed as much of this area was inaccessible due to the vegetation.

The majority of AHIMS sites in the vicinity of the study area consist of rock engravings and grinding grooves, as is to be expected in areas of sandstone geology, which the study area overlies. The survey did not identify any sandstone exposures within the study area which could contain rock engravings or grinding grooves.

No previously unrecorded Aboriginal sites or objects were located during the field survey. The northern section of the study area was determined to be significantly disturbed by the pervious use of the study area as a sand and soil recycling centre. This would have significantly impacted soil deposits and resulted in the disturbance and destruction of potential sites. The southern section of the study area was heavily vegetated and could not be accessed during the survey due to this vegetation. Observations of the vegetation in this area consisted of shrubs and small trees, with occasional mature scribbly gums showing evidence of burning present.

Due to the high levels of disturbance identified in the northern section and the lack of sandstone exposures and overhangs suitable for rock, engravings, shelters and grinding grooves, there is a low potential for Aboriginal sites to be present within the study area.

14.4 Proposed development

The proposed development would involve clearing the northern half of the site. Any remnants of the former residence and septic tank would be either removed or covered with fill. It is intended that a car park is located in the area where the former residence is likely to have been located.

The area of the site marked for development is considered “disturbed”, and unlikely to retain any sites of aboriginal significance. The remainder of the site is considered to have low potential for aboriginal heritage sites. This area, at the southern end of the site, will remain undisturbed by the proposed development.

14.5 Impact assessment

14.5.1 Historical heritage

Table 14.1 provides a summary of the assessment of the historical heritage of the site.

Table 14.1. Summary of historical heritage assessment

Heritage Item		Significance	Discussion	Assessment	Mitigation measures
Mount Penang Parklands, (Item No. 1667), Pacific Highway, Somersby,		State significance	No know items of heritage significance are located within the study area, however the Mount Penang Parklands listed as a conservation area on the NSW state heritage register, is	No impact	The southern portion of the study area should not be

Heritage Item	Significance	Discussion	Assessment	Mitigation measures
NSW 2250, Lot 702, DP 1128417, Lots 10, 12 and 16, DP 1149050, Lot 1 DP 715442, Lots 601, 602, 603 and 607, DP 823147, Lot 475, DP 823714,		located adjacent to the study area on its southern border. The heritage listing for the conservation area incorporates its natural setting and the significant views and vistas surrounding the parklands as part of its significance. Developments surrounding the conservation area should incorporate a curtilage of the natural bushland that is currently extant to minimise any loss of value to the heritage item. The proposed development will be confined to the northern portion of the study area with no plans to develop the southern portion, which currently consists of natural bushland. Built infrastructure proposed should not exceed current building heights within the study area as this will help minimise any visual impacts.		developed in the future.

The study area has been assessed as not containing any items of heritage significance. Therefore the proposed project will not have any negative impacts upon items within the study area. The significance of the state listed Mount Penang Parklands incorporates many elements with notable aesthetic qualities associated with its site and the available views. The proposed development at 90 Gindurra Road is situated within the northern portion of the study area, with the southern portion being left undeveloped. As the development plans are confined to the northern portion of the study area any views and vistas associated with the listed heritage item will not be impacted by the proposed usage of the study area.

14.5.2 Aboriginal heritage

Background research has identified that the study area had been subjected to past vegetation clearance for agricultural use including orcharding and heavy disturbances from its use as a sand and soil recycling centre. In addition, the sloped nature of the landform pattern, the lack of proximity to any perennial source of water and the lack of suitable sandstone outcrops or overhangs for shelter, which are common elsewhere in the region, indicate the study area was not likely utilised by Aboriginal people for occupation, and is thus of low archaeological potential. A survey undertaken in the study area also did not identify any new sites within the study area, although there were some access constraints due to dense vegetation cover. Based on the background research and survey results there is low likelihood for potential archaeological deposits to be present within the study area. No further archaeological assessment is recommended.

14.6 Mitigation measures

The following mitigation measures were identified to preserve the historical and aboriginal heritage of the site:

- The southern portion of the study area should not be developed in the future.
- If any suspected archaeological remains are discovered during the development, all activity must stop and an archaeologist consulted.
- If any suspected human remains are discovered during the development, all activity must stop and the find reported to the NSW Police and the Coroner.

14.7 Conclusions

14.7.1 Historical heritage

The assessment has identified that the study area likely contains the archaeological remains of the 1920s cottage and associated buildings in the north eastern section. The significance assessment has identified that these archaeological remains do not contain any significant fabric or research potential and therefore does not require any management. The southern border of the study area is adjacent to a state listed conservation area, Mount Penang Parklands and as such required an assessment of possible impacts resulting from the proposed development. The works are confined to the northern section of the study area with no plans to use the southern section. The significance of the Mount Penang Parklands includes the visual relationship of the conservation area with its surrounds. Therefore the southern portion of the study area should remain undeveloped to minimise any visual impacts. Built infrastructure within the study area should not exceed the height of extant buildings. It should also be mentioned that cumulative impacts of any future developments within the surrounds of Mount Penang Parklands will contribute the loss of the Parklands significance and should therefore be managed appropriately.

14.7.2 Aboriginal heritage

As part of the Aboriginal archaeological assessment, background research was undertaken for the study area, including a search of the Aboriginal Heritage Information Management System (AHIMS) database and a review of regional and local archaeological survey reports. The AHIMS search identified 35 Aboriginal archaeological sites within a 5 x 5 kilometre search area that encompassed the study area. None of these recorded sites were located within the study area. Previous surveys within the local and regional areas and their findings have been assessed in association with the geology and soil landscape characteristics of the study area to provide a series of predictive statements of the study area's archaeological potential. From the results of the desktop assessment the study area was assessed to possess low to moderate archaeological potential, as it did not possess landscape features that were closely associated with site distribution patterns for the region.

An archaeological survey of the study area was undertaken on the 2 February 2018, with two representatives of the Darkinjung Local Aboriginal Land Council, Anthony Freeman and Timothy Oliver. The field investigation was conducted in accordance with requirements 5 to 10 of the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW 'the code' (DECCW 2010). The field investigation involved the recording of the disturbances within the study area, and focussed on the identification of areas that may possess potential for Aboriginal archaeological sites and objects. The exposure and ground surface visibility (GSV) within the study area was also noted. Areas of exposure were investigated in order to identify any Aboriginal objects/sites that might be present upon the surface. The study area was observed to be highly disturbed by human activity within the area. Poor levels of ground surface visibility and the lack of appropriate sandstone exposures and overhangs suitable for rock engravings, shelters and grinding grooves within the area also contributed to the low potential for identifying these dominant site types within the study area.

The results of the assessment (Appendix R) indicated that the study area possessed low archaeological potential.

15 Visual Impact

15.1 Introduction

Moir Landscape Architecture was commissioned to prepare a Visual Impact Assessment (VIA) for the proposed development Kariong Sand and Soil Supplies development, including the operation for the expanded operational area for design and construction of a recycling facility (the Proposal) on Lot 4 DP227279, 90 Gindurra Road Somersby. The report has been developed with regard to the Secretary's Environmental Assessment Requirements (SEARs) SSD8660.

Survey work was undertaken during January 2018 using key viewpoints and locations with potential views towards the site. The report details the results of the field work, documents the assessment of the landscape character and visual setting, and assesses potential visual impacts associated with the proposal.

The report also provides an overview of the proposed landscape treatments which will assist in the mitigation of potential visual impacts. This information is provided to assist in understanding the likely impacts and how they may be managed to ensure that the positive character of the immediate area and surrounding visual landscape are not overly modified or diminished.

The full Visual Impact Assessment is given in Appendix Q of the EIS. The main findings and recommendations from the investigation are given in this chapter of the EIS.

15.2 Legislative requirements

The purpose of this report is to provide a qualitative and quantitative assessment of the visibility and potential visual impacts of the proposal. In particular the 'additional impacts' from the development, which are principally the noise attenuation wall along the eastern side of the development. The VIA will support the Environmental Impact Statement (EIS) under Part 4 & Section 4.36 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for State significant development SSD8660.

15.3 Baseline conditions

The subject land, referred to as "the Site" is located at 90 Gindurra Road, Somersby, and occupies the lot known as Lot 4 in DP227279. With reference to Central Coast Council's *Gosford Local Environment Plan* (LEP) 2014, the Site is zoned IN1 (General Industrial) zone.

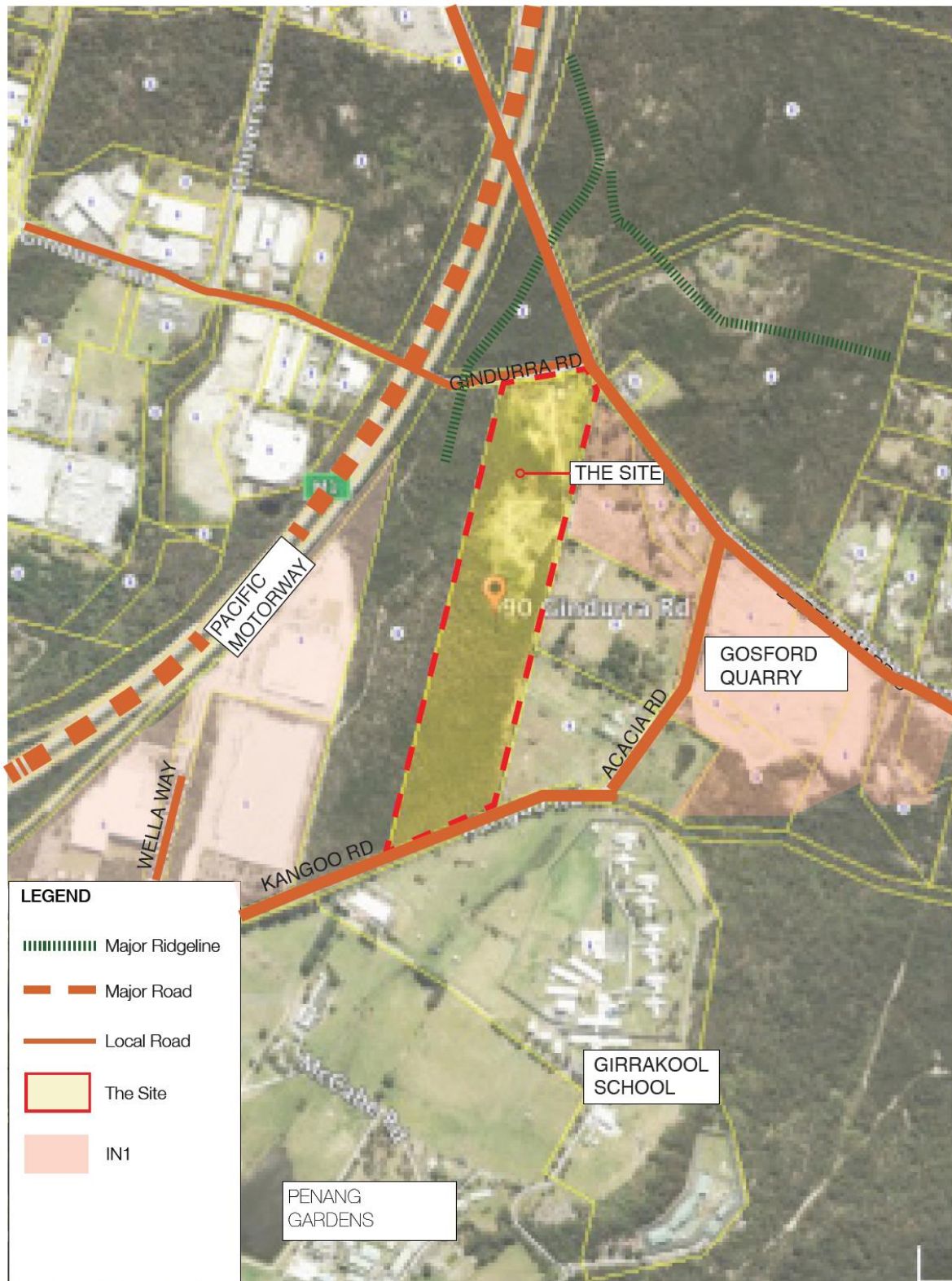
The Site is located on the southern side of Gindurra Road in the suburb of Somersby within the Central Coast Local Government Area (LGA). The Site covers an area of approximately 10.8 ha and sloping from the northern boundary at Gindurra Road in a south-easterly direction. The Site has been used for sand and metal recycling since 1992 and overtime has expanded its operational footprint (see Figure 15.1; see also Figure 3 of Appendix Q).

15.3.1 Land use

Under the Gosford LEP 2014, the site is within the Somersby Business Park. The site is zoned as IN1 (General Industrial) zone under Central Coast - Gosford LEP 2014. The proposed landuse is consistent with the LEP purpose. Due to historic clearing of the site and disturbance from previous and current land use the Heritage Council of NSW acknowledges it is unlikely to be affected by historic features. The adjoining lot to the north and west is predominantly bushland mixed with industrial, the east is bounded by an orchard and Gosford quarries site and to the south is Girrakool School and Mt Penang Gardens. Mt Penang Gardens is a significant recreation and open space resource for the Central Coast region.

The site forms the eastern edge of the industrial zone of the Somersby Industrial Park (SIP) and is bordered to the east by small rural properties within an (RU1). The sandstone Quarry on Debenham Rd S is a significant landmark in the immediate site surrounds.

Figure 15.1. Regional context (see Figure 3 in Appendix Q).



15.3.2 Major roads

The Site is located east of the Pacific Motorway with local roads Acacia and Kangoo to the east and south. The site is accessed via Gindurra Rd which, via a tunnel under the M1 connects the Western and Eastern industrial zones of Somersby. With restrictions on height the tunnel is primarily used by smaller vehicles and local traffic. Debenham Rd S connects Gindurra Rd with Acacia Rd and Kangoo Rd travelling through a semi rural landscape. Debenham Rd S provides a direct connection into West Gosford.

The M1 is a prominent feature in the landscape surrounding the site however visual connectivity with the M1 is limited due to its elevation in relation to the site and the extent of vegetation between the site and the motorway.

15.3.3 Topography

Topography (describes the shapes and landform) surrounding the Site is undulating (smooth and wave like). The land rises to the north from Kangoo Rd from approximately 195 Australian Height Datum (AHD) to 213 AHD at the site entry on Gindurra Rd. Views from within the industrial area are generally contained by vegetation and buildings however distant views to ridgelines are accessible from within the site.

Although the site is elevated the undulating nature of the landscape contains views from the North, East and West. Views from the South are primarily screened by vegetation.

15.3.4 Vegetation

Vegetation on site is mapped as E26 - Exposed Hawkesbury Woodland and E29 - Hawkesbury Banksia Scrub - Woodland. Areas of Sandstone Hanging Swamp Endangered Ecological Community (EEC) have been identified on the southern portion of the site. Surrounding roads are well vegetated and significant areas of bushland exist to the north of the site. Surrounding ridgelines are well vegetated and influence the character of the site by dominating the visible horizons.

15.4 Proposed development

The total developed area on site will cover approximately 65,000 m² and be implemented in 2 stages.

- Stage 1 (Approved under DA54541/2017)
 - a. Demolish existing corrugated iron sheds;
 - b. Construct office building and warehouse;
 - c. Construct car park next to buildings and new entrance;
 - d. Install fence at front of site
- Stage 2 (Approval sought under State Significant Development application SSD8660)
 - e. Excavation works to level site in preparation for construction
 - f. Construct hardstand across operational areas
 - g. Construct onsite road, new entrance and modifications to Gindurra (turning lane)
 - h. Construct stormwater drainage system
 - i. Install weighbridge
 - j. Construct noise barriers of varying heights and lengths at key points identified in the Noise and Vibration Report
 - k. Construct storage bunkers
 - l. Install processing equipment
 - m. Commissioning - up to 30,000 tpa throughput for 3 months
 - n. Fully operational - ramp up to 200,000 tpa throughput.

The final developed site will be landscaped, with native vegetation selected to surround the developed area of the site. There will be dense landscaped zones along the western and northern boundary, including along Gindurra Rd and Debenham Rd. The landscaped areas will consist of a mix of large trees (*Corymbia gummifera*, *Eucalyptus racemose*), medium trees (*Allocasuarina littoralis*, *Banksia serrata*, *Ceratopetalum gummiferum*) and shrubs (*Banksia ericifolia*, *Bauera rubioides*, *Doryanthes palmari*, *Kunzea ambigua*, *Leptospermum polygalifolium*, *Hakea sericea*). More details are provided in the Landscape Plan, which is attached as Appendix F.

15.5 Impact assessment

15.5.1 Viewpoint Analysis

This part of the visual assessment considers the likely impact that development would have on the existing landscape character and visual amenity by selecting prominent sites, otherwise referred to as viewpoints.

A visual impact assessment was conducted. The report is provided at Appendix S.

15.5.2 Viewpoint Selection Process

Viewpoints are selected to illustrate a combination of the following:

- Present landscape character types.
- Areas of high landscape or scenic value.
- Visual composition (eg. focused or panoramic views, simple or complex landscape pattern).
- Range of distances.
- Varying aspects.
- Various elevations.
- Various extent of development visibility (full and partial visibility).
- Sequential along specific routes.

Viewpoints have been carefully selected to be representative of the range of views within the study area. The selection of viewpoints is informed by topographical maps, field work observations and other relevant influences such as access, landscape character and the popularity of vantage points.

A total of 10 viewpoints were recorded as part of the field work process. The majority of these viewpoints were taken from publicly accessible roads surrounding the site. The viewpoints which have been included represent the areas from where the development would appear most prominent, either based on the degree of exposure or the number of people likely to be affected.

It is important to note that viewpoints for this study have been taken only from accessible public land.

15.5.3 Process of Viewpoint Analysis

Once the viewpoint was selected, panoramic photographs were taken at eye level from the viewpoints towards The Site. Photographs were taken with a Canon EOS 5D Mark III digital SLR through a 50mm lens to best represent the human eye.

The visual impact of the viewpoint was then assessed both on site and in the topographic and aerial information to ensure accuracy. The findings of the viewpoint analysis have been quantified and are summarised in Table 4 of Appendix Q. Viewpoint assessment locations are given in Figure 15.2 (see also Figure 5 of Appendix S).

15.5.4 Overview of Viewpoint Analysis

The visual sensitivity and visual effect of each viewpoint have been assessed which, when combined, result in an overall visual impact for the viewpoint (Refer to Table 3 in Appendix S). Of the ten (10) viewpoints assessed as part of this VIA, the proposal would be visible from a total of five (5) viewpoints. Of the five (5) viewpoints from which the proposal would be visible, four of these have been assessed as having a low visual impact with one having a Moderate Visual Impact.

Figure 15.2. Viewpoint assessment locations (see also Figure 5 of Appendix S).



15.5.5 Photomontage development

A photomontage is a visualisation based on the superimposition of an image (ie building, road, landscape addition etc) onto a photograph for the purpose of creating a realistic representation of proposed or potential changes to a view. (Horner and Maclellan *et al.*, 2006). A photomontage has been prepared for Viewpoint VP05. This location has been selected to illustrate the potential visual impact of the sound attenuation barrier.

The photo simulations based on photography from typical sensitive viewpoints are included within the following analysis section. The images that the photo simulations have been based on were captured with a Canon EOS 50D Mark III Full Frame Digital SLR through a 50mm fixed focal lens which closely represent the central field of vision of the human eye. The full series of photomontages are given in Section 5 of Appendix S. A photomontage before and after development for viewpoint 05 (VP05) is given in Figure 15.3, which has been identified as having the potential for most visual impact of the development (classified as ‘moderate impact’ in Table 3 of Appendix S).

Figure 15.3 Panoramic photomontages ‘before’ and ‘after’ development (as per Section 5 of Appendix S).



PANORAMA VP05 Existing View



PHOTOMONTAGE VP05 View of proposal



PHOTOMONTAGE VP05 View of Proposal - highlighted orange. The building structure can be seen. The sound attenuation wall is obscured by existing vegetation.

The study found that the proposal is likely to be viewed as a continuation of the existing industrial development in a large scale industrial zone and as the site is already disturbed it is our determination that the visual impacts from public domain areas are acceptable.

15.6 Mitigation measures

These principles may be incorporated into the concept design to achieve better visual integration of the proposal and the existing visual character at both, local and regional scales. The mitigation measures can mitigate any visual impact of the proposed development whilst enhancing the visual character of the surrounding environment.

15.6.1 Incorporated Mitigation Methods

Methods incorporated into the concept design for mitigating the potential visual impact include:

- The built form of the proposed buildings are of a similar scale to the surrounding industrial and commercial buildings.
- Building materials selected will reduce colour contrast and blend any new and existing structures, as far as possible, into the surrounding landscape.
- The existing vegetation buffer along the southern boundary will be retained and supplementary planting incorporated where possible (in accordance with the screen planting principles).
- Retention of existing trees within the Site to assist in fragmenting views of the proposed development.

15.6.2 Screen Planting Principles

The following principles will apply to screen planting:

- Foreground visual planting is to be undertaken in areas of highest visual effect, such as along Gindurra Rd and on the sites Eastern boundary;
- The use of endemic flora species which will integrate with the existing landscape character whilst providing habitat for fauna; and
- Planting should aim to fragment views instead of blocking completely.

The Landscape Plan has incorporated these principles, and ensures that a dense landscape zone will provide visual screening of the facility from the road and neighbouring properties.

15.7 Conclusions

With all visual impact assessments, the objective is not to determine whether the proposal is visible or not, it is to determine how the proposal will impact on existing visual amenity, landscape character and scenic quality. If there is a potential for a negative impact on these factors it must then be investigated and determined how this impact can be mitigated to the extent that the impact is reduced to an acceptable level.

The existing landscape character is a mix of industrial development, rural properties and bushland ridgelines and corridors. The scale of the built form in the proposal is small compared to existing industrial developments in the Somersby Industrial Area and is more in keeping with adjacent rural residential developments.

The implemented design principles of this report seek to avoid, reduce and where possible, remedy adverse effects on the environment arising from the proposed development. Implementation of the mitigation measures, which propose a combination of primary mitigation measures (site planning principles) and secondary measures (landscaping, street trees, colour and material selections) are proposed to reduce localised negative impacts.

With the implementation of the recommended mitigation measures, the proposed development could be undertaken whilst maintaining the core landscape character of the area, and have a negligible visual impact on the surrounding visual landscape.

The full Visual Impact Assessment is provided at Appendix S of this EIS. A copy of the Landscape Plan is provided at Appendix F.

16 Waste and Chemicals Impact Assessment

16.1 Introduction

The waste and chemical impact assessment addresses the impacts and mitigation measures for the appropriate and sustainable management of wastes and chemicals during operations. Impacts and mitigation measures are considered for the construction and ongoing operational phase of the project, consistent with the Secretary's Environmental Assessment Requirements (SEARs) for SSD8660.

In this chapter, we assess the adequacy of the proposed measures to minimize natural resource consumption and minimize impacts from handling, transporting, storing, processing and reprocessing of waste and/or chemicals.

Management and mitigation measures are then proposed to minimize the consumption of natural resources, maximize waste avoidance and recycling. We then outline how the project will contribute to recycling goals of regional waste strategies and the *NSW Waste Avoidance and Resource Recovery Strategy 2014 – 2021*. We also consider measures to prevent litter and waste blowing or tracking from the premises.

This chapter provides a summary of the investigation into chemicals management issues for the proposed development. An assessment of the hazards is detailed in Chapter 3.

16.2 Legislative requirements

The following guidelines and legislation influence the management of chemicals in NSW:

- *Protection of the Environment Operations Act 1997 (POEO Act 1997)*
Regulates chemical pollution and wastes, establishes management and licensing requirements along with offence provisions to deliver environmental outcomes.
- *Chemical Control Orders*
Made under the *Environmentally Hazardous Chemicals Act 1985* when chemicals or chemical wastes pose serious threats to the environment and there are particular challenges in their management. Out of the five chemical control orders in place in NSW, the applicable CCO for the facility is the *Scheduled Chemical Wastes Chemical Control Order 2004*³². Scheduled chemical wastes are wastes containing chemicals defined by the schedule attached to the order and special care is required to minimise their impacts on the environment. The CCO establishes requirements for the management and control of the wastes that contain scheduled chemicals at a combined concentration above 2 mg/kg. It covers certain activities such as generating, processing, storing, distributing, conveying and disposing of scheduled chemical wastes.
- *Waste Avoidance and Resource Recovery Act 2001*
This Act underpins the NSW Government's *Waste Avoidance and Resource Recovery Strategy 2014 – 2021*, setting targets for recycling and reduction of litter in six key result areas.
- NSW Environment Protection Authority (2014). *Waste Classification Guidelines: Part 1, Classifying waste*.
- NSW Department of Planning (2011). *Hazardous and Offensive Development Application Guidelines - Applying SEPP 33*.

³² NSW EPA (2004). *Environmentally Hazardous Chemicals Act 1985 – Chemical Control Order in Relation to Scheduled Chemical Wastes*. Internet publication: <http://www.epa.nsw.gov.au/resources/pesticides/scwcco2004.pdf>

16.3 Baseline Conditions

16.3.1 Generation and management of waste – current operations

A full description of the processes for avoiding the generation of waste, recovering and processing waste for recycling, and management of residual waste for disposal is provided in Chapter 6 of this EIS. For brevity, this content is not repeated in this section.

16.3.2 Chemical use, handling and storage

A small range of fuels, oils, fluids and gases will be stored in the warehouse for the principal purpose of servicing on site vehicles and mobile plant and equipment. These chemicals are stored in a cool, shaded area of the warehouse, on bunded stands and shelves as per the requirements of the Australian Dangerous Goods Code.

Chemicals to be stored on site are given in Table 16.1. These chemicals and their Australian Dangerous Goods classification are also given in Table 3.4, within the Environmental Risk Assessment section of the EIS (see Section 3.7).

Table 16.1. List of chemicals stored on-site during operational phase.

Potential pollutant	Storage location	Maximum quantity on site
Hydraulic oil	Storage area (warehouse)	1,000 Litres
Engine oil	Storage area (warehouse)	1,000 Litres
Gear oil	Storage area (warehouse)	1,000 Litres
Transmission oil	Storage area (warehouse)	1,000 Litres
Degreaser	Storage area (warehouse)	1,000 Litres
Brake fluid	Storage area (warehouse)	500 Litres
Grease drum cartridges	Storage area (warehouse)	100 Litres
Diesel	Storage area (warehouse)	5,000 Litres
LPG (gas)	Storage area (warehouse)	1,000 Kg

It is noted that an audit of licenced sites by the NSW EPA in 2008³³ found that the main chemicals stored at regulated sites that pose risks to the environment are hydrocarbons, such as fuels, oils and lubricants (46% of sites), followed by metals and metalloids and other halogenated organic compounds. Management of these chemicals according to best practice is required to minimise impacts on soils, waterways and public health.

³³ NSW EPA (2009). New South Wales State of the Environment Report. Chapter 5. Internet publication: http://www.epa.nsw.gov.au/soe/soe2009/chapter5/chp_5.2.htm

Once the construction phase is completed, chemicals as per Table 16.1 will be safely stored in the new warehouse building (approved under DA52541/2017) according to *Code of Practice for Managing the Risks of Hazardous Chemicals in the Workplace*³⁴.

A Pollution Incident Response Management Plan outlining procedures and practices in the event of an incident or chemical spill on the site has been prepared (Appendix S). Procedures for the protection of stormwater in the event of a spill are given in Chapter 7.

16.4 Impact assessment

16.4.1 Management of wastes during the construction and management phase of the project

A full description of the potential impacts from waste generation and recycling operations during the construction and operational phases of the project is provided in Chapter 6 of this study. For brevity, this content is not repeated in this section.

16.4.2 Chemicals use and Code of Practice

The chemicals on-site are fuels – diesel and LPG, oils - grease and degreasers. Risk of harm to environment is due to leaks, spills and fire during the construction and operation phases of the facility.

Commercial and industrial users of hazardous chemicals such as petrochemicals, flammable oils and fluids have a duty of care to manage the risks associated with hazardous chemicals in the workplace. This includes ensuring the safe use, handling and storage of chemicals, as well as specific duties under the model Work Health and Safety Regulations and the *Code of Practice for Managing the Risks of Hazardous Chemicals in the Workplace*.

A substance is deemed to be a hazardous substance if it meets the classification criteria specified in the *Approved Criteria for Classifying Hazardous Substances (NOHSC:1008, 2004)*³⁵.

16.4.3 Chemicals use – construction phase

To avoid the impacts of chemicals on the environment during the construction phase of the development, all fuels, oils, lubricants and chemicals will be securely stored in the warehouse building only in accordance with the *Code of Practice for Managing the Risks of Hazardous Chemicals in the Workplace*³⁶.

16.4.4 Risk to Environmentally Sensitive Areas

The subject site is located at significant distance to riparian areas or a nearby waterway. No sensitive riparian areas or waterways exist on the site. The site drains via overland flow towards the south west of the site, following the gently sloping topography of the landscape. The landscape drains towards a drainage line to the south, commencing ~130 m from the site. This drainage line then terminates in a dam on the Mt Penang Parklands, located 480m to the south of the site (Figure 2.7). The outline from the dam discharges into a minor tributary of Piles Creek, which then discharges

³⁴ Safe Work Australia (2012). Model Code of Practice - Managing Risks of Hazardous Chemicals in the Workplace. <http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/managing-risks-of-hazardous-chemicals-in-the-workplace>

³⁵ Available at: <http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/ns2004criteriaforclassifyinghazardous>

³⁶ Safe Work Australia (2012). Model Code of Practice - Managing Risks of Hazardous Chemicals in the Workplace. <http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/managing-risks-of-hazardous-chemicals-in-the-workplace>

into Mooney Mooney Creek, some 5.3km south west of the subject site. Mooney Mooney Creek then flows into the Hawkesbury River.

A small area of threatened flora species, *Melaleuca biconvexa* exists on the North-west boundary of the site, and will be protected through a 10m buffer and fencing to exclude this part of the site from the development. Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast (PCT 1783) was determined to be the dominant native vegetation community located on the south of the site (see Chapter 12). These areas are excluded from the development and are unlikely to be affected by an incident at the facility.

Given the distance between the subject site and these ESA's, a small chemical spill that is appropriately contained and cleaned up as per the existing Pollution Incident Response Management Plan (Appendix S), the risk to ESA's is considered to be low.

16.5 Mitigation measures

16.5.1 Waste management and mitigation measures

A full overview of measures proposed to avoid, reduce and recycle wastes is defined in Chapter 6 of this EIS, and is not repeated here again. Please note that the contribution of the project to the NSW EPA's draft *Waste and Resource Recovery Infrastructure Strategy 2017-2021* is given in Chapter 2.4.1.3.

16.5.2 Chemical use risk mitigation

The risk of chemical contamination occurring on site is mainly due to spills and leaks. To reduce these risks, mitigation measures have been proposed to reduce risk to 'as low as reasonable practicable'. These are defined in Table 16.2.

Table 16.2. Risk, likelihood and mitigation measures proposed during the construction and operational phases of the project.

Risk	Likelihood	Impact	Mitigation
Construction Phase			
Spills & Leaks	High	Low	No chemical storage on site during construction works. Maintain spills management response kit onsite – immediate clean-up of spill as per Pollution Incident Response Management Plan (Appendix S)
Fire Hazard	Low	Medium	Fire safety measures as per Fire Safety Procedures in the Pollution Incident Response Management Plan (Appendix S)
Operational Phase			
Spills	High	Medium risk - Potential to cause contamination to land and waters	Maintain spills management response kit onsite – immediate clean-up of spill as per Pollution Incident Response Management Plan (Appendix S)
Leaks from vehicles onsite	Medium	Low risk	Maintain spills management response kit onsite – immediate clean-up of spill as per Pollution Incident Response Management Plan (Appendix S)
Fire risk	Medium	High Risk	Fire safety measures as per Fire Safety Procedures in the Pollution Incident Response Management Plan (Appendix S)

Impacts from spills will be remediated by using a spill response management system as addressed in the Pollution Incident Response Management Plan presented at Appendix T.

Risk from bush fires is identified as a hazard, though it is proposed that these risks will be mitigated by implementing a number of measures as described in Chapter 13 Fire Safety:

- Maintenance of Asset Protection Zones (Inner and Outer);
- Ensuring adequate site access for fire-fighting appliances;
- Provision of a fire hydrant and protection for water piping;
- Safety measures regarding placement and installation of electricity and gas requirements; and
- Landscaping and property maintenance to minimise fuel loads and fire risk.

16.5.3 Other reporting requirements

If there is an incident involving a chemical spill, a chemical pollution event or a possible misuse of a chemical or pesticide, there is a 24-hour Environment line (131 555) that can be contacted to report the incident. This procedure is defined in the Pollution Incident Response Management Plan (Appendix T).

The health, safety and welfare of people at workplaces where chemicals are used and stored are regulated by WorkCover NSW, through *Worksafe Australia Model Code of Practice-Managing Risks of Hazardous Chemicals in the Workplace* under the *Work Health and Safety Act 2011*. There is an additional requirement for people conducting business or undertaking use of chemicals in their workplace to help manage health and safety risks associated with hazardous chemicals.

16.6 Conclusion

This section has focused on the management and handling of chemicals during the construction and operational phases of the project. Waste management issues are addressed in detail in Chapter 6 of the report. The assessment found that the risk of harm due to chemicals spills and leaks during the construction and operational phases of the project is deemed low. Containment measures and clean-up of the incident will address the negligible harm to environment, consistent with existing pollution incident response procedures in place at the site.

A range of mitigation measures are proposed to minimise impacts from chemicals during the different stages of the project. These measures will help mitigate against the impacts of a chemical spill or fire, thereby reducing the potential for harm to receiving waterways.

17 Compilation of mitigation measures

17.1 Introduction

A wide range of mitigation measures to prevent or minimise environmental impacts which may be generated by the proposal have been detailed throughout this EIS. This Section of the report is a compilation of the recommended mitigation measures. Implementation of these measures would be considered necessary to minimise impacts and maximise positive outcomes on the physical, social and economic environments of the local area and wider region.

17.2 Objective

The objective of this Section of the EIS is to outline how the recommended environmental protection measures will be implemented and managed in an integrated manner to demonstrate that the proposal is capable of complying with statutory obligations under EPA licenses or approvals. This includes the environmental management and cleaner production principles which will be followed when planning, designing, establishing and operating the proposal.

17.3 Cleaner Production Principles

Cleaner production is a practical method for protecting human and environmental health. This is achieved through the continuous application of an integrated, preventive environmental strategy towards processes, products and services. Cleaner production increases the overall efficiency of products and services and reduce damage and risks for humans and the environment. A proactive approach to the reduction in the risk and consequence of potential environmental impacts at the source results in a decreased reliance on reactive environmental mitigation measures.

The cleaner production techniques that are applicable to the ongoing operations of the project include:

- Selecting and using the most appropriate technology and materials to reduce the quantity of resources used and to minimise the amount of waste generated;
- Improved operation and maintenance practices to reduce the quantity of resources used and to minimise the amount of waste generated;
- Employing processes that are efficient in their consumption of energy, materials and natural resources and reduce greenhouse gas emissions;
- Selecting energy efficient plant and equipment for use in the facility;
- Reuse of captured stormwater as the primary source of water for the site;
- Safely disposing of any residual wastes and process residues;
- Promoting the safe use, handling, recycling and disposal of waste products through an understanding of their life cycle.

Where cleaner production principles can no more remove environmental risk or consequence, mitigation strategies must be considered to ensure the remaining potential environmental harm is reduced to the lowest risk level possible.

17.4 Mitigation Strategies

Without appropriate environmental management measures being incorporated in the design of the Project and the contractual arrangements associated with the proposed works, there will be the potential for adverse impacts on the environment. Effective implementation is necessary to ensure the Project has minimal impact on the physical, social and economic environments of the local area and wider region.

Table 17.1 summarises the mitigation measures identified in this EIS to ameliorate impacts and safeguard the environment so that the desired environmental outcomes are achieved for the various components of the project for design, construction and operation.

Table 17.1. Compiled Environmental Mitigation Measures.

DESIRED OUTCOME	MITIGATION MEASURES
Waste	
Minimise the amount of waste generated and sent to landfill from site – construction phase	Woody garden organics will be shredded and either used as mulch on site or sold as mulch in the landscape products business.
	Concrete stockpiles will be investigated and tested for compliance with EPA <i>Recovered Aggregate Resource Recovery Order</i> 2014. Compliant materials to be used as a base for the hardstand area in accordance with the EPA <i>Recovered Aggregate Resource Recovery Exemption</i> 2014. Scrap metal will be sold. Any non-useable material, including stockpiles found to be contaminated will be removed from site and disposed in a licensed landfill.
	Any excess material will be sold directly off-site as fill or stockpiled for sale in the building products business.
	Recycled asphalt brought onto the site will comply with EPA <i>Reclaimed Asphalt Pavement Resource Recovery Order</i> 2014 and will be used as a top layer for the hardstand that forms the operational area of the site in accordance with the EPA <i>Reclaimed Asphalt Pavement Resource Recovery Exemption</i> 2014. Any excess will be sold as product in the building supplies business.
	MSW will be collected in a MGB and removed weekly by a licensed waste removal contractor, and disposed at a licensed landfill.
Minimise the amount of waste generated and sent to landfill from site – operational phase	Mixed building waste from demolition or construction projects. Waste may contain cardboard, plastic, etc. among the concrete, bricks, soil, metal. Recovered materials will be processed into saleable products and sold either directly to customers or through the on-site building supplies business. Aggregate will be sold to construction and road projects. Recovered fines will be sold as landfill alternative daily cover. Re-useable timber will be sold for construction and landscape projects. Residual waste will be collected in a separate bunker or skip bin and regularly removed from site for disposal in a licensed landfill (Genesis Landfill, Eastern Creek, EPL: 13426).
	Products to be tested and sold under a relevant EPA Resource Recovery Order: <i>Recovered Aggregate Resource Recovery Order</i> 2014; <i>“Batch process” Recovered Fines Resource Recovery Order</i> 2014; <i>Mulch Resource Recovery Order</i> 2016; <i>Recovered Plasterboard Resource Recovery Order</i> 2014.
	Concrete / tiles / masonry: Clean, inspected material will be crushed, screened and blended to produce aggregate and soil-replacement products. These will then be sold either directly to customers or through the on-site building supplies business. Any contaminants will be

DESIRED OUTCOME	MITIGATION MEASURES
	<p>collected in a separate bunker or skip bin and regularly removed from site for disposal in a licensed landfill (Genesis Landfill, Eastern Creek, EPL: 13426).</p> <p>Products to be tested and sold under a relevant EPA Resource Recovery Order: <i>Recovered Aggregate Resource Recovery Order 2014</i>; “Batch process” <i>Recovered Fines Resource Recovery Order 2014</i>.</p>
	<p>Timber, stumps, and rootballs: Clean, inspected material will be shredded, screened and blended to produce a range of mulches and landscape products. These will then be sold either directly to customers or through the on-site building supplies business. Any contaminants will be collected in a separate bunker or skip bin and regularly removed from site for disposal in a licensed landfill (Genesis Landfill, Eastern Creek, EPL: 13426).</p> <p>Products to be tested and sold under a relevant EPA Resource Recovery Order: <i>Mulch Resource Recovery Order 2016</i>.</p>
	<p>Metal: Clean, inspected metals will be sorted into metal types. Some scrap metal may be shredded to reduce size and save space. Recovered metal will be removed to a metal recycler off-site (One-Steel, EPL: 1977). Any contaminants will be collected in a separate bunker or skip bin and regularly removed from site for disposal in a licensed landfill (Genesis Landfill, Eastern Creek, EPL: 13426).</p>
	<p>Asphalt: Clean, inspected material will be crushed, screened and blended to produce aggregate and soil-replacement products. These will then be sold either directly to customers or through the on-site building supplies business. Any contaminants will be collected in a separate bunker or skip bin and regularly removed from site for disposal in a licensed landfill (Genesis Landfill, Eastern Creek, EPL: 13426).</p> <p>Products to be tested and sold under a relevant EPA Resource Recovery Order: <i>Reclaimed Asphalt Pavement Resource Recovery Order 2014</i>.</p>
	<p>Virgin Excavated Natural Material (VENM): Clean, inspected material will be crushed, screened and blended to produce aggregate and soil-replacement products. These will then be sold either directly to customers or through the on-site building supplies business. Any contaminants will be collected in a separate bunker or skip bin and regularly removed from site for disposal in a licensed landfill (Genesis Landfill, Eastern Creek, EPL: 13426).</p>
	<p>Soils that meet the CT1 thresholds for general solid waste in Table 1 of the NSW EPA’s Waste Classification Guidelines: Clean, inspected material will be crushed, screened and blended to produce aggregate and soil-replacement products. These will then be sold either directly to customers or through the on-site building supplies business. Any contaminants will be collected in a separate bunker or skip bin and regularly removed from site for disposal in a licensed landfill.</p>

DESIRED OUTCOME	MITIGATION MEASURES
	Products to be tested and sold under a relevant EPA Resource Recovery Order: <i>Excavated Natural Material Resource Recovery Order 2014</i> .
Maximum amount of stock held on site at any one point in time	A maximum of 50,000 tonnes of waste and waste derived products will be held on site at any one point in time. This figure includes 10,000 tonnes of landscaping materials which will be purchased and sold commercially from the site.
Minimise stockpile heights	Stockpiles of waste materials in the designated waste storage area will be limited to 3m. Height guidance will be provided by the 3m height of the concrete block bays. Stockpiles of inert material such as concrete, brick, soil etc. will be limited to a maximum of 5m in height in the processing and blending areas. Height Poles to the exact length (5m) will provide on-site guidance for stockpile management. Stockpiles of organic material such as timber and mulch will be limited to a maximum of 3m in height in the processing and blending areas. Height Poles to the exact length (3m) will provide on-site guidance for stockpile management. Stockpiles of all processed products, aggregates and landscaping supplies will be limited to 3m. Height guidance will be provided by the 3m height of the concrete block bays.
Stormwater management and soil erosion	
Prevent soil erosion during construction	Sediment barriers and a temporary OSD basin will be established prior to any earthworks on site.
	Stockpiles of topsoil will have water applied at the rate of 2.2L/m ² /hr to reduce wind erosion.
Prevent soil erosion during operations	All operational and storage areas within the development area will be hardstand; concrete pavement, bitumen or compacted crushed concrete with a geotextile underlay.
	Sediment barriers and fences will be permanently maintained on site.
Stormwater capture and treatment	The site will be contoured to direct stormwater towards drains that channel stormwater to grassed swales then to an OSD basin. The OSD basin will precipitate sediment and remove pollutants. Grass swales will help reduce the nutrient load of the stormwater. A “Jellyfish” device will be installed to treat any overflow from the OSC Basin.

DESIRED OUTCOME	MITIGATION MEASURES
Water cycle management	Water captured in the OSD basin and the rainwater tank attached to the warehouse will be used on site, mainly for dust control. Stormwater runoff from the waste tip and spread area will be collected in a pump out tank and will be periodically transported off site for lawful treatment, recycling or disposal.
Soil and Contamination	
Management of risks associated with asbestos during construction phase	An appropriate Asbestos Management Plan should be implemented prior to any development to manage the identified non-friable ACM associated with AEC 2.
	The Asbestos Management Plan should include detailed inspection and remediation prior to any future development.
	Asbestos removal should be undertaken in accordance with an Asbestos Removal Scope of Works / Remedial Action Plan prepared by a Licensed Asbestos Assessor or Competent Person.
	Asbestos removal works should be undertaken by a licensed asbestos removal contractor.
	Subsequent to licensed asbestos removal work, a Clearance Certificate must be issued by a Licensed Asbestos Assessor or Competent Person prior to reoccupation.
	Construction works should include an Unexpected Finds Protocol (UFP) to provide recommended actions for the identification of any further ACM on the ground surfaces or within excavations.
	The Site must be managed such that the ground surfaces are at all times free of visible ACM. Any identified ACM must be managed in accordance with the UFP.
	Prior to demolition, the onsite buildings and structures should be assessed for hazardous materials including but not limited to asbestos and lead paint. All asbestos containing materials within the buildings and structures at the site must be removed prior to demolition in accordance with Safe Work Australia Codes of Practice.
Soil and groundwater contamination	A geotextile layer will be installed under all operational and storage areas of the site. Paving and hardstand will be installed over the geotextile. The OSD Basin will be lined with HDPE (or equivalent).
Air Quality (Dust and Other Emissions)	
Minimise impacts on air quality by controlling dust and other emissions – construction phase	

DESIRED OUTCOME	MITIGATION MEASURES
Communications	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
	Display the head or regional office contact information.
	Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the relevant regulatory bodies.
Site management	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
	Make the complaints log available to the local authority when asked.
	Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
	Hold regular liaison meetings with other high-risk construction sites within 500 m of the site boundary, to ensure plans are coordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.
Monitoring	Undertake daily on-site and off-site inspections where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary.
	Carry out regular site inspections to monitor compliance with the dust management plan / CEMP, record inspection results, and make an inspection log available to the local authority when asked.

DESIRED OUTCOME	MITIGATION MEASURES
	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
	Agree dust deposition, dust flux, or real-time continuous monitoring locations with the relevant regulatory bodies. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences.
Preparing and Maintaining the Site	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
	Erect solid screens or barriers around dusty activities or the site boundary that they are at least as high as any stockpiles on site.
	Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
	Avoid site runoff of water or mud. Use sediment barriers and fences.
	Keep site fencing, barriers and scaffolding clean using wet methods.
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below
	Cover, seed or fence stockpiles to prevent wind erosion
Operating Vehicle/Machinery and Sustainable Travel	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems
	Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate
	Use enclosed chutes and conveyors and covered skips

DESIRED OUTCOME	MITIGATION MEASURES
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate
	Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste management	Avoid bonfires and burning of waste materials.
Specific Measures to Construction Traffic (Ensure all on-road vehicles comply with relevant vehicle emission standards, where applicable
	Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
	Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
	Record all inspections of haul routes and any subsequent action in a site log book.
Minimise impacts on air quality by controlling dust and other emissions – operational phase	
Road haulage	Vehicle restrictions that limit the speed of vehicles on the road (<30 kh/hr)
	Surface improvement by paving
	Surface treatment - watering (2.2L/m ² /hr)

DESIRED OUTCOME	MITIGATION MEASURES
Materials handling	Minimising the drop height from vehicles (<1.5m)
	Application of water (2.2L/m ² /hr)
	Modification of activities in windy conditions
	Loading materials to a 3-sided enclosure
	Covering loads with a tarpaulin
	Limit load sizes to ensure material is not above the level of truck sidewalls
	Minimising travel speeds and distances (<30 kh/hr)
	Keep travel routes and materials moist
Materials processing	Application of water
	Modification of activities in windy conditions
Wind erosion	Application of water
	3-sided enclosures around stockpiles
	Modification of activities in windy conditions

DESIRED OUTCOME	MITIGATION MEASURES
Transport and Traffic	
Vehicle access, management, parking and design	All vehicles shall be able to enter and exit in a forward direction. Access and internal circulation are to be designed in accordance with AS2890 and Council's DCP.
	Vehicular access will be provided off Gindurra Road via a secure gate located a sufficient distance within the property so that vehicles up to the size of a B-Double will be able to store without interrupting traffic flow in Gindurra Road. Internal roadways will allow vehicles to circulate within the site to load or unload and exit via Gindurra Road in a forward direction.
	Service vehicle access will be available via the main entry / exit off Gindurra Road.
	The access point will be designed to ensure vehicles can enter the site with minimal delays to other road users. To facilitate the right turn movement into the site it is recommended that the existing centre line marking in Gindurra Road be relocated a minimum of 3 metres south (towards the site) to provide sufficient width for a right turn lane into the site. The right turn lane should be a minimum of 60 metres in length to provide sufficient storage for two B-Doubles. The site access should be designed to ensure that the largest vehicle entering or exiting the site is able to do so without encroaching on the opposite lane in Gindurra Road. No Stopping signs would need to be installed on both sides of Gindurra Road for the full length of the right turn lane.
	No Stopping signs will be required along the frontage of the site.
	The existing access to the site will be modified to ensure that heavy vehicles up to a B-Double can enter and exit safely. Local bus services are available from a bus stop in Gindurra Road about 500 metres to the south of the site. This service provides access to and from Gosford railway station. All vehicles will be able to enter and exit the site in a forward direction, with the internal parking layout to be designed at the detailed design stage in accordance with Council requirements and AS/NZS 2890.1:2004 Parking facilities Off-street car parking.
	The accesses, internal roads and parking aisles will be designed in accordance with AS/NZS 2890.1:2004 Parking facilities Off-street car parking. The aisle width requirement is 5.8 metres.
	As the site will not be open to the public, it is proposed to provide 10 parking spaces on site for employees only. A parking area for heavy vehicles is also proposed within the site near the main entrance off Gindurra Road.
	The parking layout shall be designed in accordance with AS/NZS 2890.1:2004 Parking facilities Off-street car parking. Parking Class: 1A (residential, staff). Bay lengths: 5.4 metres; Bay widths: 2.5 metres; and Aisle widths: 5.8 metres.
	Internal pedestrian access will be provided from the main gate to the main building.

DESIRED OUTCOME	MITIGATION MEASURES
Noise and Vibration	
Minimising noise emissions during the construction phase	Construction works to be limited to 7am to 6pm Monday to Friday, 8am to 1pm on Saturday. No construction work on Sundays or public holidays.
	Avoiding the use of noisy plant working simultaneously and close together during construction works.
	Equipment used intermittently is to be shut down when not in use.
	Where possible, equipment with directional noise emissions should be orientated away from sensitive receivers.
	Regular compliance checks on noise emissions from all plant and machinery.
	Non-tonal reversing alarms should be used on all items and heavy vehicles used for construction.
Minimising noise emissions during the operational phase	5m high noise barriers to be built and maintained along the eastern site boundary.
	3m high noise barriers to be built and maintained inside the site – one adjacent to the processing zone and another adjacent to the landscaping storage zone.
	Office/warehouse building façade construction to be fitted with sound insulation.
	Processing building to have all doors and openings completely closed during noisy activities
Flora and Fauna	

DESIRED OUTCOME	MITIGATION MEASURES
Avoiding impacts from stormwater	Prior to any construction, areas of the site will need to be cleared and contoured to provide adequate drainage to a stormwater detention pond in the south-west corner of the site. Civil site works will need to ensure that there is appropriate drainage and stormwater capture at the site. The three dams located on-site will be filled. The captured stormwater will be used for operational purposes at the site.
Noise	A 5m constructed noise barrier will be built along the eastern boundary of the site, as well as two internal 3m noise barriers within the site to mitigate against noise impacts. Noise is not likely to further impact upon any threatened species within the subject site, as the subject site is already situated within close proximity to a number of busy roads and motorways.
Sewerage	The site will be connected to the town sewerage system as part of DA52541/2017.2.
Biosecurity risks – pathogens	Basic control principles include avoiding transport of sediment onto the vegetated areas of the property by cleaning all work clothing, gloves, tools and machinery that enter any protected, vegetated areas. In some cases, a solution of 70% ethanol or methylated spirits in 30% water may be sufficient to disinfect equipment prior to use. The report, 'Arrive Clean, Leave Clean' (Commonwealth of Australia 2015) provides further information and best practice methods to reduce spread of these pathogens between work Subject Sites.
Pests	Vertebrate pests should be controlled on an annual basis (or more regularly as required). Control methods include 1080 fox baiting, trapping, den fumigation and shelter habitat removal.
Weeds	All environmental and priority weeds will be entirely eradicated from the subject site and then managed under a Vegetation Management Plan (VMP). The VMP will require an annual site visit by a team of qualified bush regenerators to ensure the control of weeds within the subject site.
Avoidance of impacts during clearing operations	A 10 m buffer surrounding <i>Melaleuca biconvexa</i> individuals to ensure the species is not impacted by the development.
	Preparation of a Vegetation Management Plan (VMP) to guide the on-going protection and management of the <i>Melaleuca biconvexa</i> .
	Avoidance of the southern portion of the Subject Property, which totals 4.1 ha and contains habitat for <i>Prostanthera junonis</i> and <i>Hibbertia procumbens</i> . The area partially falls under Management Zone 1b and 1d of the Somersby Industrial Park Draft Plan of Management (Connell Wagner 2005) and the feasibility of entering into a Biodiversity Stewardship Agreement will be investigated.

DESIRED OUTCOME	MITIGATION MEASURES
	Assigning an Ecologist to undertake a pre-clearing survey of the vegetation prior to clearing and development. If any significant ecological values such as nests are found, clearing is to be delayed until the nest is vacated.
	Assigning an Ecologist to be present on site during the clearing events. The Ecologist will be able to guide works crews away from sensitive ecological features and will be on hand to capture and relocate displaced fauna. Where possible the clearing of mature trees will be avoided if they can be accommodated into the development footprint.
	Preventing the inadvertent introduction of exotic flora propagules by following the DEP (2015) 'Arrive Clean, Leave Clean' Guidelines.
	Ensuring appropriate erosion and sedimentation controls are maintained throughout the construction phase and the period immediately following as outlined in the 'Blue Book' (Landcom 2004).
Secure Ecosystem Credits	A total of 116 ecosystem credits and 28 Eastern Pygmy-Possum species credits must be retired in order to offset the impacts of the proposed development.
Fire Safety	
Asset Protection Zone requirements	The following points are to be adhered to for providing APZs; The Inner Asset Protection Area (IPA) is to have a tree canopy cover less than 15%; The Outer Asset Protection Area (OPA) is to have a tree canopy cover less than 30%; No trees are to be located within 2m of the building roof line; Garden beds with flammable shrubs are to be located a minimum 10m from the building; Tree limbs within 2m of the ground are to be removed; and Removal of ground fuels should be removed each year prior to the bushfire season (October-March).
Site Access	Sufficient access is also required to comply with the Planning for Bushfire Protection (2006). These include: Minimum carriageway width of 4.5m (one way) or 8m (two way); Minimum vertical clearance of 4m to any overhanging obstructions; Curves have a minimum 6m inner radius; Minimum 6m between inner and outer curves; Crossfall is not more than 10°; Maximum grades for sealed roads is 15°; Maximum grades for unsealed roads is 10°; Some short constrictions in the access may be accepted where they are not less than 3.5m and extend for no more than 30m; For internal roads: roads are to be through roads. Maximum length of a dead end roads is 100m in from a through road. Dead end roads to be clearly sign posted; For internal roads: provide a minimum 12m outer radius turning circle for dead end roads.
Water requirements	All above ground water and gas service pipes and fittings external to the building are metal.

DESIRED OUTCOME	MITIGATION MEASURES
Electricity and Gas requirements	Where practicable place electrical transmission lines are underground or; If overhead electrical transmission lines are proposed, lines are installed with short pole spacing (30metres), unless crossing gullies, gorges or riparian areas; and no part of a tree is closer to a power line than the distance set out in accordance with the specifications in 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002); Reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities; Metal piping is to be used; All fixed gas cylinders are to be kept clear of all flammable materials to a distance of 10m and shielded on the hazard side of the installation; Release valves are directed away from the building and at least 2m away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are to be metal; Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.
Landscaping and property maintenance	<p>The following principles should be applied for the establishment of gardens and property maintenance: Apply the principles for APZ and vegetation management as attached to the appendix of this report; Maintain short cropped grass less than 100mm adjacent to any building; Keep areas under fences, fence posts and gates and trees raked and cleared of fuel; and Utilising non-combustible fencing and retaining walls.</p> <p>Prior to the bushfire season, which runs from October to March, the site should be maintained utilising the following guidelines from Appendix 5 PBP (2006): Remove organic material from the roof and gutters and valleys; Check tiles and roof lines for broken tiles or dislodged roofing materials; Ensure painted surfaces are in good condition with decaying timbers being given particular attention to prevent the lodging of embers within gaps; Doors are fitted with draught seals and well maintained; Mats are of non-combustible material or in areas of low potential exposure; Screens on windows and doors are in good condition without breaks or holes in fly screen material and frames are well fitting into sills and window frames; Where applicable, check pumps and water supplies are available and in working order; Where applicable, drenching or spray systems are tested before the fire season; Hoses and hose reels are not perished and fittings are tight and in good order; and Woodpiles, garden sheds and other combustible materials are located away from the house.</p>
Heritage	
Measures to preserve historic and Aboriginal Heritage	The southern portion of the study area should not be developed in the future.
	If any suspected archaeological remains are discovered during the development, all activity must stop and an archaeologist consulted.
	If any suspected human remains are discovered during the development, all activity must stop and the find reported to the NSW Police and the Coroner.

DESIRED OUTCOME	MITIGATION MEASURES
Visual Impact	
Methods incorporated into the concept design for mitigating the potential visual impact	The built form of the proposed buildings are of a similar scale to the surrounding industrial and commercial buildings.
	Building materials selected will reduce colour contrast and blend any new and existing structures, as far as possible, into the surrounding landscape.
	The existing vegetation buffer along the southern boundary will be retained and supplementary planting incorporated where possible (in accordance with the screen planting principles).
	Retention of existing trees within the Site to assist in fragmenting views of the proposed development.
Screen planting principles	Foreground visual planting is to be undertaken in areas of highest visual effect, such as along Gindurra Rd and on the sites Eastern boundary.
	The use of endemic flora species which will integrate with the existing landscape character whilst providing habitat for fauna.
	Planting should aim to fragment views instead of blocking completely.
Waste and Chemicals	
Spills and leaks – Construction phase	No chemical storage on site during construction works. Maintain spills management response kit onsite – immediate clean-up of spill as per Pollution Incident Response Management Plan (Appendix S)
Fire hazards – Construction phase	Fire safety measures as per Fire Safety Procedures in the Pollution Incident Response Management Plan (Appendix S).
Spills and leaks – Operational phase	Maintain spills management response kit onsite – immediate clean-up of spill as per Pollution Incident Response Management Plan (Appendix S).
Fire risk	Fire safety measures as per Fire Safety Procedures in the Pollution Incident Response Management Plan (Appendix S).

17.5 Environmental Management System

Adopting an Environmental Management System (EMS) and a monitoring program, for both the construction and operational phases, is an important component of the proposal to demonstrate KSSS's commitment to implementing the measures outlined in this EIS.

To ensure an integrated approach, the EMS will include Environmental Management Plans (EMPs), specifically created to address the management and mitigation of the following environmental issues, as compiled in the table above. These sub plans include:

- Waste;
- Water;
- Soils and contamination;
- Air quality;
- Traffic;
- Noise and vibration;
- Flora and fauna;
- Fire safety;
- Historic and Aboriginal heritage;
- Visual impact; and
- Work health and safety.

The key objectives of the EMPs will be to ensure:

- Works are carried out in accordance with relevant environmental statutory requirements and relevant non-statutory policy, as detailed throughout this EIS;
- Works are carried out in accordance with the goals and requirements presented in this EIS;
- Works are carried out in such a way as to minimise the likelihood of environmental degradation;
- Works are carried out in such a way as to manage the impact of the works on neighbouring properties;
- All employees engaged in the works comply with the terms and conditions of the EMPs;
- Clear procedures for management of environmental impacts, including corrective actions;
- Continual improvement of environmental management; and
- Responsibilities and reporting requirements to ensure compliance with the EMP.

The EMPs will be prepared following assessment and approval of the Project, and will serve as working documents to be used throughout the detailed design, construction and operational stages. They will be integrated into KSSS's existing management systems, procedures and plans for its activities within the facility, to ensure consistency in approach.

Each EMP developed for the site will contain, but not be limited to, the following information:

- Goals and objectives;
- Licenses, permits, approvals and statutory requirements;
- Lists of required actions, timing and responsibilities (including relevant environmental authorities);
- Operational procedures for preventing environmental impacts;
- Reporting requirements and procedures;
- Corrective and preventative action procedures;
- Procedures and forms for documentation and reporting of issues;
- Standard specifications for incorporating environmental safeguards;
- Environmental awareness and environmental management training and education requirements

- Guidelines for emergencies;
- Surveillance, review and auditing procedures for modification of the EMPs;
- Complaint procedures;
- Maintenance and monitoring programs; and
- Quality assurance procedures

Adherence to the EMPs will enable environmental safeguards and mitigation measures to be effectively implemented and sustainable work practices adopted for the entire Project. This also demonstrates the KSSS's commitment to preventing environmental pollution, minimising the impact of the proposal on the environment and complying with all relevant legislation.

17.6 Environmental Monitoring and Reporting

Environmental monitoring will be a fundamental component of the Operational EMPs for the proposal. Monitoring programs will be developed and presented in EMPs, in accordance with the conditions of approval and Licence requirements.

However, specific environmental monitoring recommended for the project have been defined in the environmental investigations done for the EIS. This monitoring is recommended for implementation, in addition to any specific environmental monitoring required as a condition of the SSD planning approval or EPA Licence for the site. Proposed environmental monitoring is given in Table 17.2.

Table 17.2. Environmental monitoring as recommended through technical investigations done in the EIS.

Environmental issue	Monitoring	Purpose	Proposed limit conditions
Waste	Weighbridge records for all incoming waste materials and outgoing products and waste exported by the site under an appropriate EPA Resource Recovery Order	For monthly reporting to the EPA for compliance with proposed Authorised Amount and annual processing limits	Maximum 50,000 tonnes of waste or product held on site at any one point in time Annual processing limit of 200,000 tonnes per year
	Periodic water quality sampling in stormwater detention dam	Assess quality of water stored on site and effectiveness of stormwater quality controls on site	Water quality parameters and frequency of testing as recommended by the EPA
Water	Water quality grab samples during overflow events	Assess quality of water discharged from site in peak storm events	Water quality parameters as recommended by the EPA
	Groundwater quality testing through upstream and downstream bores	To monitor groundwater quality.	Water quality parameters as recommended by the EPA
Air quality	Campaign fence line monitoring (north / south / east and wet boundaries), including a meteorological station on site	To confirm the effectiveness of dust control measures on the site, and to validate predictions in the air quality impact assessment	Periodic monitoring of dust deposition, PM ₁₀ and PM _{2.5} at a frequency as required by the EPA
Noise and vibration	Periodic noise and vibration validation monitoring at closest residential receivers along Acacia Rd (No's 10, 12, 16 and 32)	Confirm the effectiveness of noise and vibration controls and management practices on the site during construction and operation	As per predicted worst-case noise levels (LA _{eq, 15m}) in Table 13 of Appendix N)

Monitoring requirements will be focused on ensuring compliance with the relevant environmental sub-plans, for example:

- Visually monitoring dust generation from work zones to ensure that excessive dust is not being produced;
- Monitoring noise and vibration generation from work zones to ensure that excessive noise and vibration is not being produced; and
- Monitoring stockpiling heights.

Monitoring requirements will also be focused on ensuring current mitigation/management systems remain fit for purpose and are in good working order to ensure they will remain effective.

Operational monitoring may also result from investigative monitoring or regulatory compliance monitoring, such as conducting investigative noise monitoring in response to specific complaints.

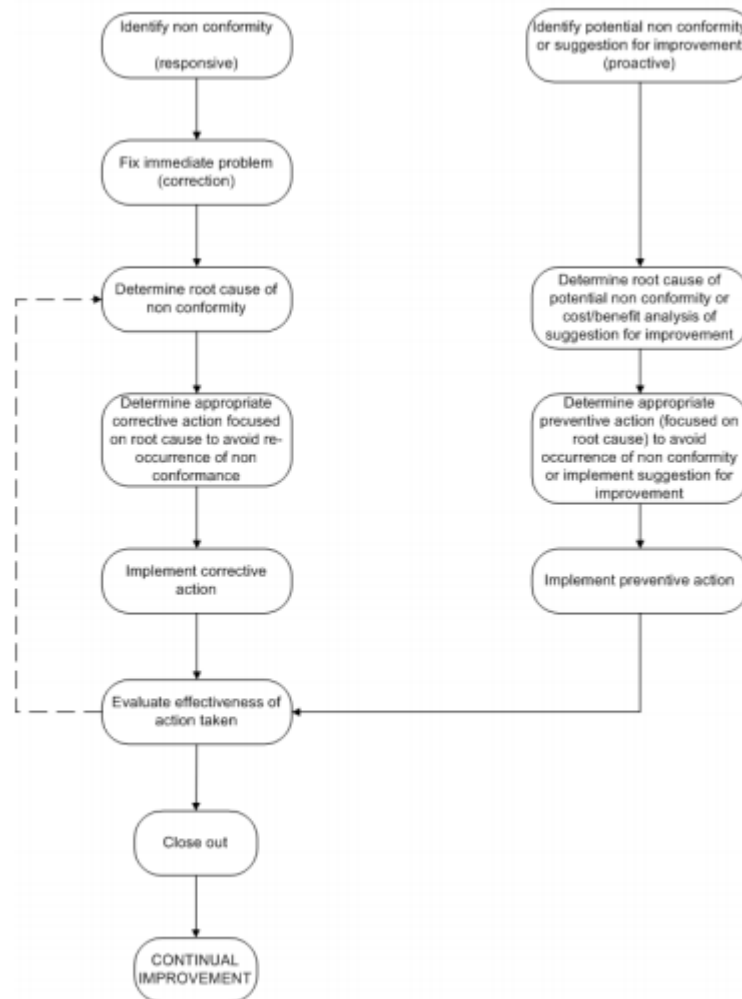
Environmental performance reporting is a key decision support tool that provides management with the information to make meaningful and positive change. Reporting requirements will be details in the EMPs for the relevant implementation phases.

The identification of actual and potential non-conformities contributes to continual improvement of the environmental management system through corrective action and preventive action, respectively. If the reports identify any shortcomings in the way that the construction activities or the operations are being conducted, or in the performance of environmental control structures, the necessary changes will be made to the EMPs to reflect these changes. The NSW EPA will receive all relevant reports and prompt notification of any incidents or deviations in performance as well as updated EMPs as required.

17.7 Environmental Auditing and Continual Improvement

Environmental system audits will be conducted in accordance with a schedule nominated in the EMP. This will include a schedule of independent audits by accredited external auditors. Quantified and unquantified information contained in the EIS will be assessed to ensure that the construction and operational phases of the Project meet acceptable environmental standards. Audits will be based on available information and observations. Environmental audits will also assess the Project against any Conditions of Approval imposed by statutory authorities. The register that is completed during compliance audits become a record of the evaluation of compliance. All detected non-compliances will be followed up with corrective actions as per the flow chart below.

Figure 13.1. Non-compliance corrective actions flow chart



Actual and potential non-conformities identified and suggestions for improvement are made by the following means:

- Internal audit;
- External audit;
- Site inspections;
- Feedback from external parties;
- Complaints from customers or other stakeholders;
- Suggestions for improvement from staff and contractors;
- Occurrence of environmental emergencies and accidents;
- Testing of emergency preparedness and response; and
- Management review.

The above flowchart illustrates the organisation’s process for non-conformity, corrective action and preventive action, through:

- Identifying actual and potential environmental nonconformities;
- Recording suggestions for improvement;
- Taking appropriate action to correct non-conformities and mitigate environmental impacts;
- Taking corrective action to avoid recurrence of non- conformities; and
- Taking preventive action to avoid occurrence of non-conformity.

KSSS or their environmental representative will be responsible for maintaining a register of environmental nonconformity and suggestions for improvement to environmental management. Each record is associated with a corrective and/or preventive action. Corrective and preventive action will require a change environmental management documentation in a continual process for document control.

This process has the ultimate goal of driving continual improvement.

17.8 Conclusion

The objective of this Section of the EIS is to outline how the recommended environmental protection measures will be implemented and managed in an integrated manner to demonstrate that the proposal is capable of complying with statutory obligations under EPA licenses or approvals.

This Chapter described the mitigation measures to be implemented for potential impacts of the proposal that have been identified throughout this EIS. The Chapter provides an outline of the proposed environmental management measures, and additional strategies, including cleaner production principles, which will be followed when planning, designing, establishing and operating the proposal. These measures and processes will be incorporated into EMPs and monitoring programs to ensure a commitment to implementing the requirements of relevant legislation outlined in this EIS. Monitoring the efficacy of those measures will inform a process to drive continual improvement.

18 Cumulative Impact Assessment

18.1 Introduction

This cumulative impact assessment addresses the cumulative environmental impacts of the proposed sand, soil and building materials recycling facility at 90 Gindurra Rd, Somersby, as well as to address the Secretary's Environmental Assessment Requirements (SEARs).

The proposed development involves establishing a sand, soil and building materials recycling facility (the Facility), a site formerly operating as a building and landscape supplies business at 90 Gindurra Rd, Somersby. The Facility will utilise state-of-art C&D processing equipment to process up to 200,000 tonnes of sand, soil and building materials per annum.

The Facility will be upgraded to include a sealed internal access road within the Site to provide all weather access in addition to landscaping along the front and northern boundaries of the Site to improve visual amenity.

A cumulative impacts assessment is an environmental assessment that examines both the positive and negative environmental impacts of a proposal where there is a clustering of a land use type. A cumulative impact on the environment results from the incremental impact of human activities with consideration to the historic, current and foreseeable planned activities for a particular area. Cumulative impacts from a cluster of premises will vary between locations but typically cumulative impacts are a product of the location, the number and type of facilities present in the vicinity, the way they are managed, and the capacity of the local environment to accommodate these facilities.

The proposed development is not considered to make a significant contribution to cumulative impacts due to the mitigation measures that will be put in place to manage environmental impacts, which is in addition to the numerous long-term cumulative benefits of the proposed development, including a contribution to the attainment of waste management objectives including the aims and objectives of relevant legislation around the management of problem wastes, illegal dumping and waste to landfill targets.

18.2 Objective

This cumulative impacts assessment aims to achieve the following objectives:

- Identify the extent that the receiving environment is already stressed by existing development and background levels of emissions to which this proposal will contribute;
- Assess the impact of the proposal against the long-term air, noise and water quality objectives for the area;
- Identified infrastructure requirements flowing from the proposal; and
- Assess the likely impacts from such additional infrastructure and measures reasonably available to the proponent to contain such requirements or mitigate their impacts.

18.3 Assessment of stress level of existing environment

The facility is to be located at 90 Gindurra Rd, Somersby (Lot 4/DP227279), which is zoned IN1 General Industrial under the *Gosford Local Environmental Plan 2014*. The lot has a total area of 10.8 hectares, most of which is currently undeveloped. The lot is located at the eastern edge of the Somersby Industrial Park, near to the Pacific Motorway (M1).

The site has a number of environmental issues that need to be managed. Most of the site is covered in vegetation, with significant areas of native vegetation. Eastern Pygmy Possums were found at the site. According to the Gosford Local Environmental Plan 2014, the site is bushfire prone land, being surrounded by rural properties and undeveloped sites.

Noise and dust are considered to be the priority issues for the site. Although located in an industrial park, and close to the Pacific Motorway and a quarry, the surrounding land uses are relatively quiet. Neighbouring industrial properties are enclosed factories and warehouses.

The south-west corner boundary of the site is 1.1km away from the nearest Residential zone R2 (Kariong township), the proposed processing area being 1.5km from the nearest residential zone. However, there are several residential dwellings on rural properties (RU1 and RU2) within 250m of the site.

There are no major sources of water, protected zones and/or Environmentally Sensitive Areas (ESAs) that can be directly affected by an incident at the facility. The subject site is located at significant distance to riparian areas or a nearby waterway. No sensitive riparian areas or waterways exist on the site. The site drains via overland flow towards the south west of the site, following the gently sloping topography of the landscape. The landscape drains towards a drainage line to the south, commencing ≈130 m from the site. This drainage line then terminates in a dam on the Mt Penang Parklands, located 480m to the south of the site. The outline from the dam discharges into a minor tributary of Piles Creek, which then discharges into Mooney Mooney Creek, some 5.3km south west of the subject site. Mooney Mooney Creek then flows into the Hawkesbury River.

The site is surrounded by undeveloped land and rural lots. Therefore, it is anticipated that there would be little stormwater run-off from surrounding properties. The stormwater on-site will be collected in a dam on the south-western boundary of the site, with the water used for dust control.

Consequently, the potential cumulative impacts associated with the proposal, with respect to historic and current land use is considered minor. Furthermore, as the existing facility provides an important service to domestic and commercial markets with respect to resource recovery activities, should the proposal not be approved, resource recovery would be restricted into the future and likely result in recoverable materials being sent to landfill.

18.4 Assessment of the long-term impacts of the proposal

As identified within the respective Sections and technical studies, the proposals environmental impacts, such air, noise and water quality meet all relevant environmental legislation, policies and objectives. The following Sections provide a summary of the key long-term environmental impacts of the proposal.

18.4.1 Traffic

It is proposed to develop the site over the next seven years to receive, process and store up to 200,000 tonnes per annum of soil, sand and building materials with all materials then being exported from the site.

This level of operation, by 2025, is estimated to generate up to 164 vehicle trips per day consisting of staff operational vehicles, 12 tonne tippers, 32 tonne truck and dog or semis and 40 tonne B-Doubles. Over an average 8 hour working day this equates to 21 trips per hour.

The site operator is anticipating that 25% of materials entering the site will come from Sydney while the remainder will be sourced locally on the Central Coast. It is expected that 100% of the products leaving the site will be used in the local area. These will be bulk loads transported in the various heavy vehicle classes listed above. There will be no sales direct to the public.

The existing road network and major intersections are currently operating at a good level of service with spare capacity and the traffic generated by the proposed development will be distributed to the road network over an 8 hour working day. The additional traffic is expected to have only a minor impact on the LoS of each of these roads and they will still be operating within their existing capacity.

From the route nominated it is also clear that these additional trips will not have any significant impact on the operational performance of the intersections at Central Coast Highway / Kangoo Road. The intersections of the Central Coast Highway / Wisemans Ferry Road and Wisemans Ferry Road / Gindurra Road have been assessed and as each of these intersections is currently operating at acceptable levels of service with sufficient spare capacity to cater for the additional traffic generated by this proposed development the impact on the future development is acceptable.

The existing access has been reviewed on site and given the 90 degree bend at Debenham Road reducing vehicle speeds to less than 40km/hr sight lines at this location are appropriate.

To facilitate the right turn movement into the site it is recommended that the existing centre line marking in Gindurra Road be relocated a minimum of 3 metres south (towards the site) to provide sufficient width for a right turn lane into the site. The right turn lane shall provide sufficient storage for two B-Doubles (60 metres) with No Stopping signs installed.

18.4.2 Noise and vibration

A noise and vibration assessment, including noise modelling, was conducted for the proposed development. The assessment found that the predicted noise emissions from the site to the surrounding environment are low. The proposed development satisfies the Project Noise Trigger Levels (PNTLs) of the NSW Noise Policy for Industry (NPI) of the NSW Environment Protection Authority during all the time periods, providing the following noise mitigation measures are included:

- 5m high noise barriers along the eastern site boundary;
- 3m high noise barriers inside the site – one adjacent to the processing zone and another adjacent to the landscaping storage zone;
- Office/processing building façade construction to provide sound insulation
- Processing building to have all doors and openings completely closed during noisy activities
- Processing building mechanical equipment (AC units, etc.) should have a maximum aggregate sound power level of 80dB L_{WA} .

The study concluded that the proposed materials processing facility is a complying development with respect to noise and vibration impacts and is, therefore, suitable for construction and operation.

A full Noise and Vibration Impact Assessment is provided at Appendix N.

18.4.3 Flora and fauna

The proposed development is restricted to the northern sections of 90 Gindurra Road, Somersby NSW (Lot 4 / DP 227279). The total area of the Subject Property is 10.75 ha, with the Subject Site (area proposed for development) totalling 6.6 ha. Total impacts to native vegetation total 2.50 ha, with the remainder of the Subject Site consisting of already cleared land, or dominated by exotic vegetation.

For the purposes of this assessment all lands within the Subject Site were assessed for complete clearing, except for a 10 m buffer surrounding the *Melaleuca biconvexa* individuals recorded on site. Assuming complete clearing will provide the proponent with maximum flexibility during the development of the site. The final project impact is provided in Table 18.1.

Table 18.1.Total impact on native vegetation.

Vegetation zone ID	PCT ID	PCT name	Condition	Area impacted (ha) - clearing
Zone 1: PCT 1783 – Low Condition Zone 2: PCT 1783 – Moderate to Good Condition Zone 3: PCT 1776 – Moderate to Good Condition	PCT1783	Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast	Low	0.78
	PCT1783	Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast	Moderate to Good	1.41
	PCT1776	Smooth-barked Apple - Red Bloodwood open forest on enriched sandstone slopes around Sydney and the Central Coast	Moderate to Good	0.31
Total				2.50

Two species credit species have been confirmed on site:

1. Eastern Pygmy-possum, and
2. *Melaleuca biconvexa*

Impacts to Eastern Pygmy-possum are anticipated within vegetation zone 2 (*Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast in moderate to good condition*). A total impact of 1.41 ha to Eastern Pygmy-possum is calculated. Figure 12.6 contains the species polygon.

Fifteen (15) individuals of *Melaleuca biconvexa* have been identified on site. The population is restricted to the western edge of the Subject Site. As this area is to be excluded from development and will be protected within a 10 m buffer. (Figure 12.7)

The assessment found that no impacts are anticipated to this species as a result of the proposed development.

The proposed development has been assessed consistent with the FBA, including the preparation of a site scale vegetation map and completion of the six Biometric plots and transects. The results of the assessment found that:

- 116 ecosystem credits area required; and
- 28 Eastern Pygmy-Possum credits are required.

The proponent will now explore the generation of credits from an on-site Biodiversity Stewardship site, before considering other options such as the purchase of credits from the market or payment to the BCT.

18.4.4 Air Quality

Northstar Air Quality Pty Ltd conducted an air quality impact assessment (AQIA) for the proposed development of the Kariong Sand and Soil Supplies site (the project) located at 90 Gindurra Road, Somersby NSW (the project site). The full investigation is given in Appendix H and a summary is presented in the EIS report.

This AQIA forms part of the Environmental Impact Statement (EIS) prepared to accompany the development application for the project under Part 4 of the *Environmental Planning and Assessment Act 1979*.

The AQIA presents an assessment of the impacts of the proposed operations at the project site, associated with both the construction phase and operational phase of the development. The incremental change in air quality in the area surrounding the project site is presented in addition to an assessment of compliance with relevant air quality criteria associated with cumulative impacts.

The assessment has been presented to provide confidence that the operations can be performed with no exceedances of the relevant air quality criteria.

A risk-based assessment of the potential construction phase air quality impacts indicates that the implementation of a range of mitigation measures would be required to ensure that the risks (both health and amenity) to the surrounding community would be low or not significant.

The dispersion model predictions associated with the operational phase of the project indicate that the existing and proposed operations can be performed without additional exceedances of the air quality criteria at any residential or non-residential receptor location surrounding the project site.

To adequately account for a potential uncertainty in the modelled meteorological conditions, a second meteorological file was used as input to the dispersion model. The results of that sensitivity assessment indicate that the existing and proposed operations can be performed without additional exceedances of the air quality criteria at any residential or non-residential receptor location surrounding the project site.

One exceedance of the 24 hr PM₁₀ criterion is noted, although this was due to an 'exceptional' event (a dust storm which affected PM10 concentrations at the Wyong site and in a wider area, from Albury to Sydney and to Tamworth). Significantly, the project is demonstrated not to contribute to any additional exceedances of the air quality criteria.

A range of emissions control measures would be implemented as part of the project operation and these are discussed in detail in the main body of the report. It is considered that the measures adopted represent best practice dust control, and although additional measures may be available (such as full enclosure), these have been respectfully considered to not be appropriate for use as part of the project. The measures which are adopted have been demonstrated to ensure that the environmental objectives are achieved.

It is further recommended that a campaign of fence-line air quality monitoring is performed to provide the EPA with assurance that the site can be operated with the best practice measures outlined in the report and without giving rise to unacceptable air quality impacts.

The results of the air quality impact assessment indicate that the granting of Development Consent for the project should not be rejected on the grounds of air quality.

18.4.5 Soil

A site investigation was conducted that included a review of site history, site inspection and soil sampling.

The information obtained from the review of available site history materials and site inspection identified three (3) potential Areas of Environmental Concern (AEC):

1. AEC 1 - Fill Materials of Unknown Origin - Fill materials and natural soils within the site were tested for a range of potential contaminants of concern. The samples tested reported results below the adopted criteria for the proposed development excluding 20-8613/TP3 - 0.5m, which reported a zinc concentration of 575 mg/kg which slightly exceeded the adopted ecological investigation levels. Results from three neighbouring test pits (<20m away) and all other test pits from across the site were analysed to be below the adopted criteria. The Zinc result for this sample appears to be an outlier and is considerably lower than Health Investigation Levels. Therefore no significant risk of chemical contamination is expected across the site.
2. AEC 2 - Asbestos Containing Material - During the sampling, multiple fragments of non-friable asbestos cement (AC) were identified on ground surfaces within the north-eastern section of the site adjacent the buildings as well as in the central section of site.
3. AEC 3 - Hazardous Building Materials - Due to the age of the onsite buildings and structures, it is likely that hazardous building materials including but not limited to asbestos containing materials and lead paint may be present within these structures.

Based on the scope and limitations of the investigation, in consideration of the site observations and sample analytical results, it is considered that the site is unlikely to pose a significant contamination risk with regards to chemical contamination, however ACM was identified on ground surfaces within the north-eastern and central sections of site. A series of recommended mitigation measures will be implemented to reduce the risk at the site.

A full copy of the Contaminated Site Assessment is provided at Appendix J.

18.4.6 Water Quality

A range of water quality and water cycle management measures will be installed. The measures will include a grassed swale to pre-treat runoff from the working areas of the site. This is a critical component in the capture of sediment from the working areas of the site. Furthermore, an OSD basin in the south-west corner of the site will capture on-site stormwater and erosion sediment. The design will include sediment inlet ponds to enhance the capture of sediment. Sediment will be regularly removed from the OSD basin, and any overflows will be directed to a Stormwater 360® Jellyfish™ device to further remove sediment prior to discharge to the vegetated areas to the south of the site. Captured water will be re-used on site, mainly for dust suppression on roads and stockpiles, and in the crushing and screening operations.

The cumulative impact will be an overall improvement of water management on the site. Cleared operational areas will be paved or compacted. All stormwater will be channeled into an on-site detention basin, which will remove the sediment and other pollutants. Furthermore, access roads will be sealed with concrete, with asphalt pavements beneath waste storage and landscaping supply areas. A concrete hardstand will be installed for the waste tipping and inspection area, with bunding and run-off directed to a pump out tank for periodic removal. All other operational areas will receive a compacted recycled aggregate hardstand, with an underlying bentonite geotextile membrane to protect groundwater.

Captured water will be utilised on site for dust suppression. In the event of an overflow from the OSD basin, the overflow will be further treated through a Stormwater 360® Jellyfish™ device (or similar), then distributed to the uncleared area at the southern end of the site via a level rock spreader.

18.4.7 Fire

The proposed development has been assessed against the potential threat of bushfire. The three storage bays are assessed as follows. The aggregate storage bay will receive a maximum predicted radiant heat load of BAL-40 (40 kW/m²). The landscape storage bay and waste receival bay both will receive a maximum predicted radiant heat load

of BAL-29 (29 kW/m²). The proposed 5m high acoustic barrier on the eastern boundary and the two 3m high acoustic barriers in the proposed blending and processing areas are non-combustible structures. The proposed blending and processing areas are not defined by any building works.

All proposed built structures are non-combustible and suitably located. In the event of a bushfire it is our view that the proposed development will not influence bushfire behaviour and will not increase bushfire risk for any adjoining properties.

The nominated BAL-ratings which correspond to the Australian Standard AS3959 (The Australian Standard for the Construction of a Building in a Bushfire Prone Area) are provided for reference and can be adopted for the construction of the proposed works. The Class 7 development is not required to comply with AS3959. The general fire safety construction provisions of the NCC (2017) are taken as acceptable solutions, but the aims and objectives of PBP apply in relation to other matters such as access, water and services, emergency planning and landscaping/vegetation management.

All proposed works are to be constructed from non-combustible materials. The asset protection zones nominated in figure 1 are deemed to be adequate. Site access, including access via the public road system is suitable for emergency response vehicles. The development complies with *Planning for Bushfire Protection* (2006) with regards to the provision of water. The requirements for electricity and gas (if applicable) can also be complied with.

Any firewater generated by the premises will be detained within the site's OSD storage system.

The full Bushfire Hazard Assessment, with recommended mitigation actions, is provided at Appendix P of this EIS.

18.4.8 Heritage

18.4.8.1 Historical heritage

The assessment has identified that the study area likely contains the archaeological remains of the 1920s cottage and associated buildings in the north eastern section. The significance assessment has identified that these archaeological remains do not contain any significant fabric or research potential and therefore does not require any management. The southern border of the study area is adjacent to a state listed conservation area, Mount Penang Parklands and as such required an assessment of possible impacts resulting from the proposed development. The works are confined to the northern section of the study area with no plans to use the southern section. The significance of the Mount Penang Parklands includes the visual relationship of the conservation area with its surrounds. Therefore the southern portion of the study area should remain undeveloped to minimise any visual impacts. Built infrastructure within the study area should not exceed the height of extant buildings. It should also be mentioned that cumulative impacts of any future developments within the surrounds of Mount Penang Parklands will contribute the loss of the Parklands significance and should therefore be managed appropriately.

18.4.8.2 Aboriginal heritage

As part of the Aboriginal archaeological assessment, background research was undertaken for the study area, including a search of the Aboriginal Heritage Information Management System (AHIMS) database and a review of regional and local archaeological survey reports. The AHIMS search identified 35 Aboriginal archaeological sites within a 5 x 5 kilometre search area that encompassed the study area. None of these recorded sites were located within the study area. Previous surveys within the local and regional areas and their findings have been assessed in association with the geology and soil landscape characteristics of the study area to provide a series of predictive statements of the study area's archaeological potential. From the results of the desktop assessment the study area was assessed to possess low to moderate archaeological potential, as it did not possess landscape features that were closely associated with site distribution patterns for the region.

An archaeological survey of the study area was undertaken on the 2 February 2018, with two representatives of the Darkinjung Local Aboriginal Land Council, Anthony Freeman and Timothy Oliver. The field investigation was conducted in accordance with requirements 5 to 10 of the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW 'the code' (DECCW 2010). The field investigation involved the recording of the disturbances within the study area, and focussed on the identification of areas that may possess potential for Aboriginal archaeological sites and objects. The exposure and ground surface visibility (GSV) within the study area was also noted. Areas of exposure were investigated in order to identify any Aboriginal objects/sites that might be present upon the surface. The study area was observed to be highly disturbed by human activity within the area. Poor levels of ground surface visibility and the lack of appropriate sandstone exposures and overhangs suitable for rock engravings, shelters and grinding grooves within the area also contributed to the low potential for identifying these dominant site types within the study area.

The results of the assessment (Appendix R) indicated that the study area possessed low archaeological potential.

18.4.1 Visual impact

The existing landscape character is a mix of industrial development, rural properties and bushland ridgelines and corridors. The scale of the built form in the proposal is small compared to existing industrial developments in the Somersby Industrial Area and is more in keeping with adjacent rural residential developments.

The implemented design principles of this report seek to avoid, reduce and where possible, remedy adverse effects on the environment arising from the proposed development. Implementation of the mitigation measures, which propose a combination of primary mitigation measures (site planning principles) and secondary measures (landscaping, street trees, colour and material selections) are proposed to reduce localised negative impacts.

With the implementation of the recommended mitigation measures, the proposed development could be undertaken whilst maintaining the core landscape character of the area, and have a negligible visual impact on the surrounding visual landscape.

The full Visual Impact Assessment is provided at Appendix S of this EIS.

19 Conclusions

This EIS has been prepared for Kariong Sand and Soil Supplies. It presents the findings of a comprehensive environmental evaluation of planned development of 90 Gindurra Rd, Somersby (Lot 4 DP 227279) to establish a sand, soil and building materials and a building and landscape supplies business.

The EIS study evaluates the social, environmental and economic impacts and benefits of the project. The EIS defines the context of the proposed development, and examines those issues considered to be relevant. This EIS considers the potential environmental effects of the proposal during construction and operation, and proposes mitigation measures to prevent, reduce or offset significant adverse impacts on the environment.

All statutory planning assessments, including the preliminary hazard analysis and environmental risk assessment, including stakeholder consultation. Consultation with neighbours, Central Coast Council, NSW Department of Planning and Environment, the NSW Environment Protection Authority, Roads and Maritime Services, Ausgrid, Office of Environment and Heritage, NSW Rural Fire Service, NSW Department of Primary Industries, NSW Fire and Rescue have been undertaken to inform the EIS.

This EIS has been prepared in accordance with the requirements of the *Environmental Planning and Assessment Act 1979*, and Clause 6 and 7 of the *Environmental Planning and Assessment Regulation 2000*. The EIS has also been delivered to meet the Secretary's Environmental Assessment Requirements, which were issued on 23/08/2017 (SSD 8660).

This EIS includes an assessment of the potential environmental impacts associated with the proposed development. The EIS has considered a range of social, environment and economic factors of the project, with a focus on Ecologically Sustainable Development principles. The assessment found that there were no significant environmental impacts that could not be mitigated by appropriate mitigation measures and management strategies.

The environmental assessment process has been used to inform the upgrade to the site and ensure operations will be sustainable and create minimal disruption to neighbours and the local community. Waste receipt, processing and recycling operations have been designed to minimise traffic impact on local roads, avoid noise and dust emissions, effective management of wastes, protection of soils, surface and ground water quality, and minimisation of risk of fire at the site.

The facility will provide additional C&D recycling in the Central Coast region. It will also be a source of high quality recycled products for construction and landscaping industries across the region.

The facility will help achieve a significant reduction in solid waste to landfill and assist the NSW Government to reach its recycling target of 80% for construction and demolition waste by 2021. The proposal will have positive flow on effects throughout the local economy through the creation of 11 new direct jobs. An economic analysis of the project also suggests that development will inject \$73.8M into the Central Coast economy over the next 20 years (comprising capital and operating expenditure from the plant, and product revenue).

Consent is now sought for the proposal under the *Environmental Planning and Assessment Act 1979*.

Appendix A: Development consents operating on the property

Appendix B: Section 10.7 Certificates

Appendix C: Secretary's Environmental Assessment Requirements (SEARs)

Appendix D: Site survey

Appendix E: Site, civil design and stormwater plans

Appendix F: Landscape design plans

Appendix G: Quantity Surveyor's report

Appendix H: Waste Management Plan

Appendix I: Water Cycle Management Plan and Soil and Water Plan

Appendix J: Soils and Contamination Impact Assessment

Appendix K: Air Quality Impact Assessment

Appendix L: Traffic Impact Assessment

Appendix M: Proposed amendment to Gindurra Rd near site entrance

Appendix N: Noise and Vibration Impact Assessment

Appendix O: Flora and Fauna Impact Assessment

Appendix P: Bushfire Hazard Assessment

Appendix Q: Historical Heritage Assessment

Appendix R: Aboriginal Heritage Assessment

Appendix S: Visual Impact Assessment

Appendix T: Pollution Incident Response Management Plan

Appendix U: Consultation Report and Responses

Appendix V: Owner's Consent