Moss Vale Plastics Recycling and Reprocessing Facility

Technical Report 10 - Soils and Water

Plasrefine Recycling Pty Ltd

22 December 2021

→ The Power of Commitment

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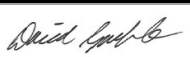
S4	0	R Towner	D Gamble		D Gamble		3/11/21
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Executive summary

The proposal

Plasrefine Recycling Pty Ltd (Plasrefine Recycling) ('the proponent') is seeking approval to construct and operate a plastics recycling and reprocessing facility in Moss Vale, NSW ('the proposal').

The proposal involves constructing and operating a plastics recycling and reprocessing facility with capacity to receive up to 120,000 tonnes per year of mixed plastics. The proposal also includes ancillary infrastructure to support the proposal.

The proposal would extract mixed plastics from waste, sort the plastics into different types, and convert the various plastics to flakes and pellets (in the first stage) and produce more advanced products (in the second stage). The combined outputs of both stages of the proposal would help fill the gap in local processing capacity for mixed plastics.

The proposal is State significant development and is subject to approval by the NSW Minister for Planning and Public Spaces under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This report

This Soils and Water Impact Assessment report has been prepared on behalf of Plasrefine Recycling to support the environmental impact assessment (EIS) for the proposal and responds to the Secretary's Environmental Assessment Requirements (SEARs) for soils and water. In particular, this report addresses surface water management and construction phase erosion and sediment control.

The report outlines the existing environmental factors influencing surface water management and erosion and sediment control, as well as assessment methodologies undertaken to analyse riparian management, flooding, water quality, water sourcing, wastewater management and erosion and sediment control practices during operation and construction. The assessment informed and assessed soil and water management measures in-built to the proposal as well as specifying mitigation measures where residual risk exists.

Existing environment

The topography is undulating and falls from the southern-central portion of the proposal site to the north. Four ponds are located in the low points of the proposal site and watercourses are located along both the western and eastern boundaries.

In accordance with the Strahler stream ordering system, the western watercourse is a 2nd order stream. The stream flows in a north-westerly direction and crossing multiple constructed farm dams when flowing along the western boundary of the proposal site. The western watercourse then passes into a concrete channel.

The eastern watercourse, as per the Strahler stream ordering system, is a 1st order stream. The watercourse passes the eastern boundary of the proposal site, through a large dam shared with the neighbouring site, and enters the same concrete channel as the western watercourse. The combined flow passes an industrial site and flows in a north-easterly direction, under Collins Road, until it reaches the Wingecarribee River. Wingecarribee River eventually outflows to Wingecarribee Reservoir.

The proposal site is located within the Sydney drinking water catchment.

Proposed soil and water management

A critical component of the proposed soil and water management strategy for the proposal was the principle of providing important water management measures in-built into the proposal design. These included:

– Provision of appropriate riparian preservation and management in accordance with the *Water Management Act 2000* (WM Act). Including retaining the realignment of the western watercourse, and providing appropriate Vegetated Riparian Zone offsets in accordance with the WM Act
– Location of the proposed infrastructure above the 1 in 100 AEP flood level plus freeboard, without any significant flood impacts offsite

– On the basis of the MUSIC modelling results, and the location of all plastics recycling and reprocessing being inside, the proposal was developed providing in-built management to achieve a neutral or beneficial impact on water quality during operation
– Reusing site runoff for water demands as much as practicable, whilst securing an appropriate external potable supply to cover up to the full site demands during dry periods
– Securing a sewer disposal capability with Wingecarribee Shire Council to accommodate the full wastewater demands from both the process and administration activities.

Impact assessment and mitigation

While the proposal has included important water management measures in-built into the proposal design, the assessment identified the following areas requiring additional mitigation:

– A key basis of the water quality approach is that runoff generated would be similar to that of a typical industrial catchment. An operational water management plan is required, with a particular focus on ensuring that materials are never stored outside and appropriate housekeeping is implemented.
– There would be a relatively large area of disturbance during construction, located adjacent to a waterway, and significant erosion and sediment control measures would be required to manage the disturbance associated with site clearing and construction works, which are unavoidable.

Corresponding mitigation measures to address the above two items have been specified in this report. On the basis of the proposed soil and water management strategy with in-built measures and with implementation of the proposed additional mitigation measures, the proposal is not anticipated to result in significant impact in relation to soils and water.

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1. Introduction

1.1 Overview

1.1.1 Plasrefine Recycling and the proposal

For many years, recyclable plastics have been recovered from kerbside collections and it has been profitable to export mixed plastics to China and other countries. With the advent of the China National Sword policy (a policy in China which banned the importation of certain types of waste and set strict contamination limits on recyclable materials), as well as issues with contaminated loads of recyclables being sent to China and other countries, opportunities to send mixed plastics overseas for processing have diminished. Recently, the Council of Australian Governments (COAG) decided to ban exports of recyclable waste from Australia from July 2021.

Despite these difficulties, export markets still exist for clean, separated, pelletised plastics and resins. However, there is very little local capacity in NSW and within Australia to sort recovered plastics into different types and convert them into valuable products.

To help address this issue, Plasrefine Recycling Pty Ltd (Plasrefine Recycling) ('the proponent') proposes to construct and operate a plastics recycling and reprocessing facility in Moss Vale ('the proposal').

The proposal would sort the plastics into different types and convert the various plastics to plastic flakes and pellets (in the first stage) and produce more advanced products such as resins and other plastic products (in the second stage). The combined outputs of both stages of the proposal would help fill the gap in local processing capacity for mixed plastics.

The proposal would have an ultimate capacity to receive up to 120,000 tonnes per year of mixed waste plastics.

1.1.2 Approval and assessment requirements

The proposal is State significant development and is subject to approval by the NSW Minister for Planning and Public Spaces under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This report has been prepared by GHD Pty Ltd (GHD) as part of the environmental impact statement (EIS) for the proposal. The EIS has been prepared to support the application for approval of the proposal and address the environmental assessment requirements of the Secretary of the NSW Department of Planning, Industry and Environment (SSD-9409987) dated 15 October 2020 (the SEARs).

1.2 The proposal

1.2.1 Location

The proposal would be located about 140 kilometres south west of the Sydney central business district and approximately 2.8 kilometres north west of the Moss Vale town centre within the Wingecarribee local government area.

The proposed plastics recycling and reprocessing facility and ancillary infrastructure would be located on the northern parcel of land in Lot 11 DP 1084421, with a current street address of 74-76 Beaconsfield Road, Moss Vale. This parcel of land is referred to as 'the plastics recycling and reprocessing facility site' for the purpose of the EIS. It has a total site area of about 7.7 hectares. The proposal would occupy a portion of the plastics recycling and reprocessing facility site.

The new access road which would extend from the plastics recycling and reprocessing facility to Lackey Road via:

– the currently unformed Braddon Road
– Lot 1 DP 26490 and Lot 10 DP 1084421 (the 'Braddon Road east extension').

The area that would be occupied by the proposal's permanent operational infrastructure, and/or directly disturbed during construction, is referred to as 'the proposal site' for the purposes of the EIS. The proposal site therefore comprises:

– The plastics recycling and reprocessing facility site (7.7 hectares)
– The new access road corridor (about 1.8 hectares)

It is noted that the areas that would be disturbed for construction of buildings, roads and water management would comprise about six hectares of the total 7.7 hectare plastics recycling and reprocessing facility site. Disturbance of the remaining 1.7 hectares would be limited to plantings as part of riparian vegetation management and landscaping.

The proposal site is also included within the Moss Vale Enterprise Corridor (MVEC) catchment. The MVEC is a significant area of land between Moss Vale and New Berrima set aside for employment generating development under the Wingecarribee Shire Local Environmental Plan 2010.

The location of the proposal site is shown in Figure 1.1.

1.2.2 Key features

The proposal is defined as the construction and operation of a plastics recycling and reprocessing facility with capacity to receive up to 120,000 tonnes per year of mixed plastics, comprising:

– Two main buildings for waste receival, recycling and reprocessing and finished product storage
– Wastewater treatment plant
– Ancillary infrastructure including an office building, workshop, truck parking, staff and visitor parking, internal roadways, weighbridges, water management, fire management, landscaping, fencing, signage and utility connection
– A new access road from the plastics recycling and reprocessing facility to Lackey Road via part of Braddon Road (currently unformed) and Lot 1 DP 26490 and Lot 10 DP 1084421 (the Braddon Road east extension).

The proposal would extract mixed plastics from waste, sort the plastics into different types, and convert the various plastics to flakes and pellets (in the first stage) and produce more advanced products such as resins and other plastic products (in the second stage). The combined outputs of both stages of the proposal would help fill the gap in local processing capacity for mixed plastics. Further information on the proposal is provided in the EIS.

The key features of the proposal are shown in Figure 1.2.

Key features of the proposal with particular respect to the management of surface water include:

– Roadways
– Hardstand and parking areas
– Administrative building and amenity facilities
– Large roofed buildings for the recycling processes
– A demand for water for the processing activities, with no significant process water discharge
– A site office building with associated ablutions water demand with small quantities of wastewater, and
– Cut and fill pad to provide an appropriate surface for the proposal activities and infrastructure.

1.2.3 Construction overview

An indicative construction strategy has been developed, based on the current design, to be used as a basis for the environmental assessment process. Detailed construction planning, including programming, work methodologies and work sequencing would be undertaken once construction contractor(s) have been engaged and during detailed design.

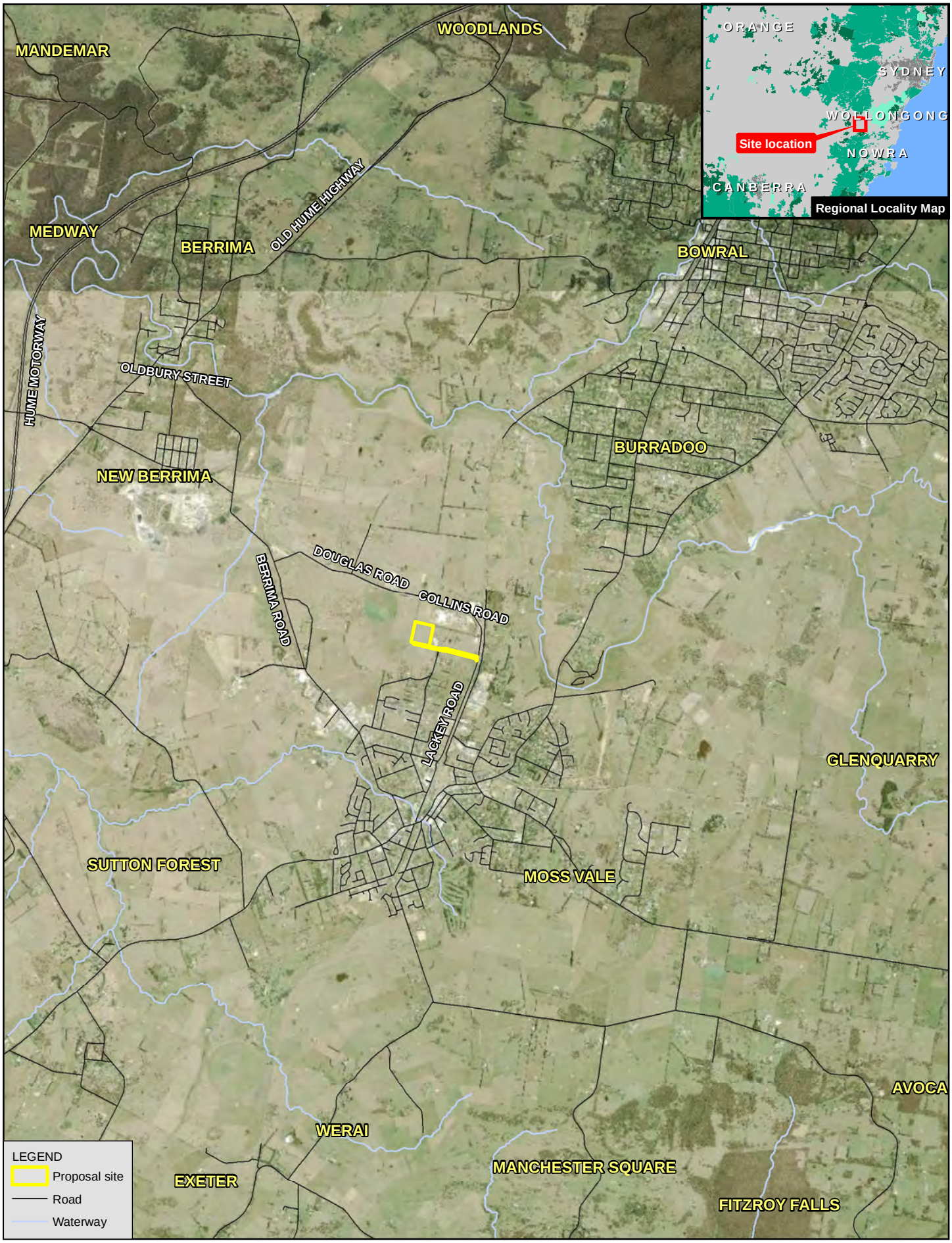
It is estimated that the proposal would take about 15 months to construct and commission and consist of three key stages:

– Early works and site establishment (1 month):

- Construction of site access road
- Utilities connection
- Establishment of construction compound including construction staff amenities
- Installation of temporary fencing

– Main site works (11 months):
  - Clearance of vegetation within the construction footprint, stripping and stockpiling of topsoil for reuse
  - Bulk earthworks for site shaping and surface water drainage and the bioretention pond
  - Pouring concrete foundation slab, footings, hardstand and slabs for the buildings
  - Construction of pavement areas for the truck and car park, internal roads and the site entrance/egress points
  - Installation of steel truss framework for structures
  - Erection of pre-cast concrete panels for external and internal partition walls and metal roof sheets for site buildings
  - Installation of processing equipment
  - Building finishing works including fit out
  - Installation of firewater and other tanks
  - Installation of weighbridges
  - Installation of permanent fencing and signage
  - Restoration works including removal of temporary construction compound, general site clean up and landscaping following construction
– Testing and commissioning (3 months)

Further information on how the proposal would be constructed is provided in the EIS.



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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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GHD

Plasrefine Recycling Pty Ltd
Moss Vale Plastics Recycling and Reprocessing Facility

Project No. 12524108
Revision No. A
Date 22 Dec 2021

Proposal site location

FIGURE 1.1

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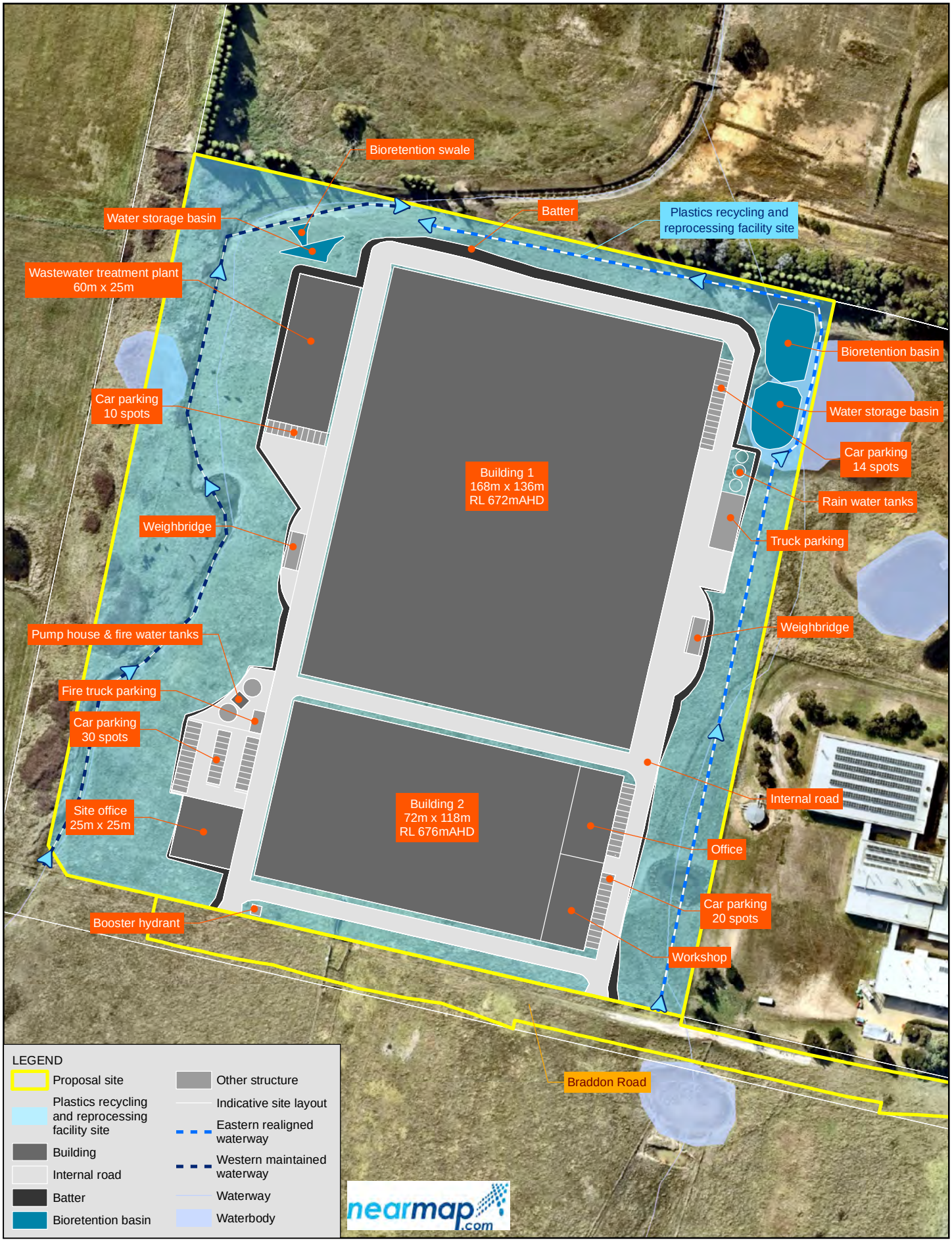

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Map Projection: Transverse Mercator
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Grid: GDA 1994 MGA Zone 56

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GHD

Plasrefine Recycling Pty Ltd
Moss Vale Plastics Recycling and Reprocessing Facility

Project No. 12524108
Revision No. A
Date 06 Oct 2021

Proposed site layout

FIGURE 1.2

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Data source: Aerial imagery - nearmap 2021 (image date 24/04/2021, image extracted 30/06/2021); General topo - NSW LPI DTDB 2020, 2015. Created by: jrprice

1.3 Secretary's Environmental Assessment Requirements

The specific SEARs addressed in this report are summarised in Table 1.1.

Table 1.1 SEARs relevant to this assessment

Requirement	Where addressed in this report
Details of the proposed watercourse diversion including riparian restoration works.	Section 3.1
An assessment of potential surface and groundwater impacts associated with the development, including potential impacts on watercourses, riparian areas, groundwater, and groundwater-dependent communities nearby.	Section 4
A detailed site water balance including a description of the water demands and breakdown of water supplies, including during construction, and any water licensing requirements.	Section 3.4 Section 3.3
Details of stormwater/wastewater management system including the capacity of onsite detention system(s), onsite sewage management and measures to treat, reuse or dispose of water.	Section 3.3 Section 3.5
Description of the measures to minimise water use.	Section 3.4
Detailed flooding assessment.	Section 3.2
Description of the proposed erosion and sediment controls and wastewater management during construction.	Section 3.5 Section 5.2
Characterisation of water quality at the point of discharge to surface and/or groundwater against the relevant water quality criteria (including details of the contaminants of concern that may leach from the waste into the wastewater and proposed mitigation measures to manage any impacts to receiving waters and monitoring activities and methodologies).	Section 3.3

1.4 Purpose and scope of this report

The purpose of this report is to assess the potential surface water and erosion and sediment impacts from constructing and operating the proposal. The report:

- Addresses the SEARs listed in Table 1.1
- Describes the existing environment with respect to surface water and erosion and sediment control
- Assesses the impacts of constructing and operating the proposal on surface water and erosion and sediment control
- Recommends measures to mitigate and manage the impacts identified

1.5 Structure of this report

The structure of the report is outlined below.

- Chapter 1 – provides an introduction to the report
- Chapter 2 – describes the existing environment with respect to soils and water management
- Chapter 3 – describes the proposed soil and water management, noting a focus on the in-built measures in the proposal
- Chapter 4 – provides an assessment of impact, including consideration of the in-built measures
- Chapter 5 – specifies required mitigation measures based on the impact assessment
- Chapter 6 – concludes the report.

2. Existing environment

This section summarises the key features of the existing environment with respect to soil and water management.

2.1 Climate

Under the Koppen Climate Classification, the proposal site is located in a temperate oceanic climate characterised by mild/warm summers and cold winters. Using data from 1871 to 2020 at a nearby Bureau of Meteorology weather station (Station ID: 068045 Hoskins Street, Moss Vale), the mean annual rainfall is approximately 957.3 mm. The mean monthly temperature and rainfall patterns at this station are shown in Table 2.1.

Table 2.1 Climate statistics (Station 068045, Hoskins Street, Moss Vale – approximately 1.7 km away from the proposal site)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean 9 am temperature (°C)	18.5	18.4	16.8	13.1	9.2	6.5	5.5	7.1	10.7	13.7	16.0	18.2
Mean 3 pm temperature (°C)	22.9	22.6	20.8	17.9	13.7	11.2	10.5	11.5	14.6	17.0	19.4	21.6
Mean rainfall (mm)	87.6	96.9	92.6	79.3	82.6	100.5	74.7	65.5	58.8	73.3	72.7	76.8

2.2 Hydrology and land use

The topography is undulating and falls from the southern-central portion of the proposal site to the north and north-east. Four ponds are located in the low points of the proposal site and two watercourses run along the western and eastern boundaries.

In accordance with the Strahler stream ordering system, the western watercourse is a 2nd order stream. The stream travels in a north-westerly direction and crossing multiple constructed farm dams when travelling along the western boundary of the proposal site. The western watercourse then passes into a concrete channel where it joins the eastern watercourse.

The eastern watercourse, as per the Strahler stream ordering system, is a 1st order stream. The watercourse passes the eastern boundary of the proposal site, through a large dam shared with the neighbouring site, and enters the concrete channel. The combined flow passes an industrial site and flows in a north-easterly direction, under Collins Road, until it reaches the Wingecarribee River. Wingecarribee River eventually outflows to Wingecarribee Reservoir.

The proposal site is located within the Sydney drinking water catchment. This catchment covers 16,000 square kilometres and services more than four million people in Sydney, Wollongong, Goulburn, Lithgow, the Blue Mountains, Bowral and Nowra (NSW DPIE, 2020). As the proposal is located within the Sydney drinking water catchment, the development must demonstrate a neutral or beneficial effect on water quality as required by the State Environmental Planning Policy (Sydney Drink Water Catchment) 2011 (WaterNSW, 2019).

The proposal site is relatively elevated from regional waterways and as such not in a floodplain location. However, due to its proximity to local drainage lines there is potential for short duration overland flow inundation, which is considered further in this assessment.

There are a number of industrial businesses located within the vicinity of the proposal. However, aerial imagery indicates the land has been and currently is used predominantly for grazing. This is indicated by the abundance of grazed land at the proposal site and surrounding locations and minimal vegetation around the proposal site. There is minimal existing riparian vegetation along the banks of the western and eastern watercourses and aerial imagery shows evidence of channel erosion and modification of the channel from its natural condition, mainly through the removal of vegetation.

2.3 Soils

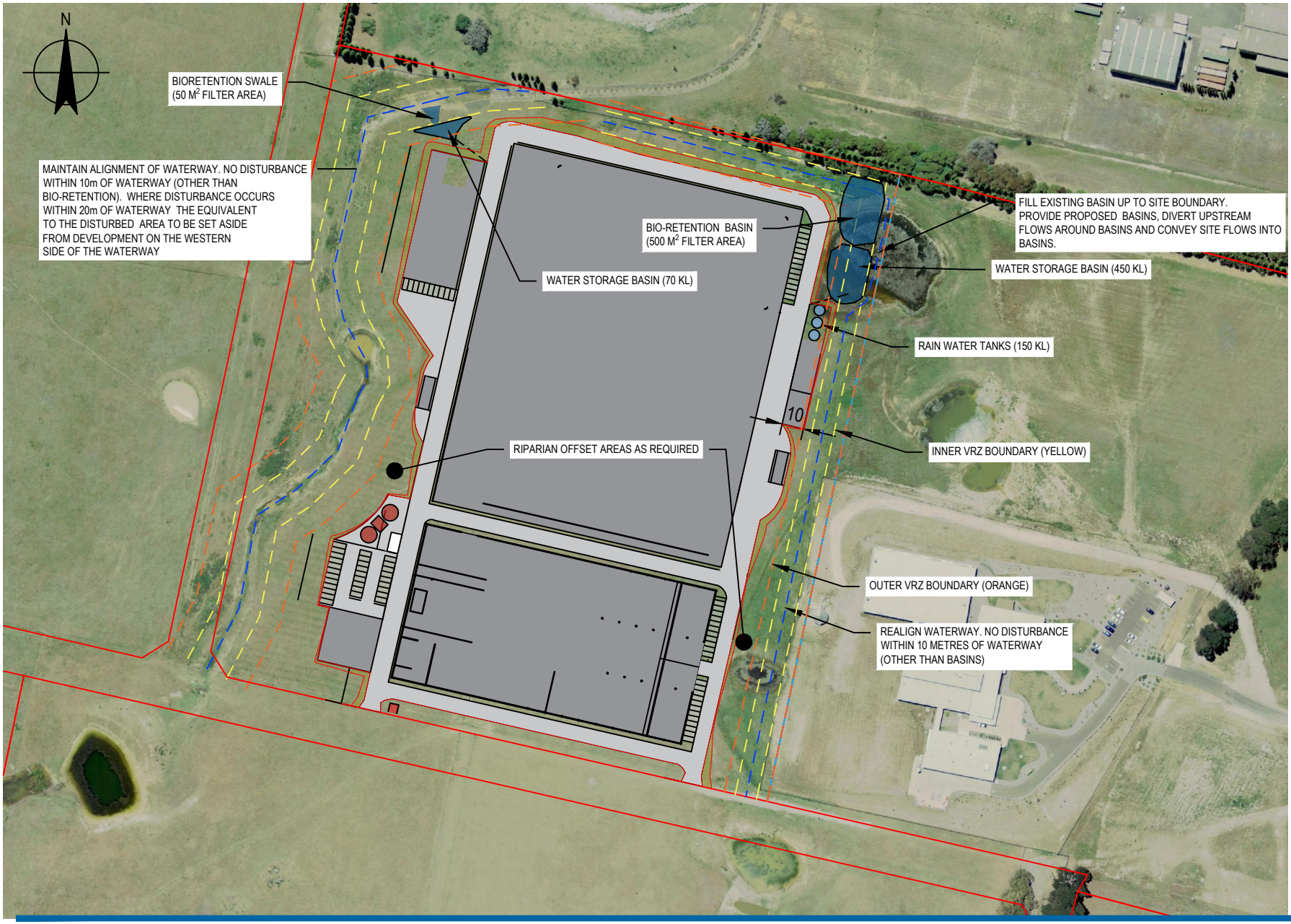
Site inspections undertaken by GHD in March 2021 identified several soil profiles exposed by the western watercourse. The soil is generally comprised of about 50 mm of topsoil underlain by residual light-brown sandy clay (stiff, medium-plasticity and dry). No odours, no staining and no anthropogenic material was found in the soil profiles.

3. Proposed soil and water management

A critical component of the proposed soil and water management strategy for the proposal is the principle of providing important water management measures in-built into the proposal. This section provides details on the method adopted to assess relevant issues, and develops and documents these appropriate measures in response.

The in-built measures have been developed in accordance with the SEARs (Section 1.3) as well as relevant clauses from the Wingecarribee Local Environment Plan including Clause 5.21 (Flood planning) and Clause 7.5 (Natural resources sensitivity – water).

Figure 3.1 presents the key measures relevant to all of the following sections.



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PLASREFINE RECYCLING PTY LTD
MOSS VALE PLASTICS RECYCLING AND REPROCESSING FACILITY

IN-BUILT WATER MANAGEMENT MEASURES

Job Number	12524108
Revision	A
Date	AUG 2021

Figure 3.1

Plot Date: 11 August 2021 - 11:33 AM Plotted by: Rod Towner

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3.1 Riparian

There are two key relevant waterways identified on NSW Land and Property Information mapping for the proposal site and shown on Figure 3.1:

– A western watercourse flowing in a south to north direction along the western perimeter of the plastics recycling and reprocessing facility site before discharging to a concrete channel at the northwest corner of the site. The western watercourse is a second order stream and flows through an on-line farm dam within the plastics recycling and reprocessing facility site.
– An eastern watercourse flowing in a south to north direction into an existing dam at the northeast corner of the plastics recycling and reprocessing facility site. This existing dam is located both over the proposal site and the adjacent lot. The dam spills in a westerly direction before combining with the eastern watercourse at the concrete lined drain. The eastern watercourse is a first order stream.

Therefore, riparian requirements, and in particular realignment and offsetting requirements are a key consideration in developing the proposal.

A review of the *Guidelines for Riparian Corridors on Waterfront Land* (NSW Office of Water, 2012) highlighted key constraints for controlled activities occurring on waterfront land. This guideline is regulated by the *Water Management Act 2000* (WM Act). The following key points were identified and assessed relative to the proposal:

– Vegetated riparian zone (VRZ) width limitations for controlled activities
– Allowance for stream realignment depending on stream order
– Whether basins can be located within the VRZ and whether they can be located online to the stream
– Whether the stream can be realigned.

Based on this, Table 3.1 summarises requirements with relation to these.

Table 3.1 Riparian requirements

Watercourse	Stream order	Vegetated Riparian Zone (VRZ) (m)	Detention basins		Stream realignment
			Only within 50% outer VRZ	Online	
Western	2nd	20	Yes	Yes	No
Eastern	1st	10	Yes	Yes	Yes

The requirements of the guideline with relation to the averaging rule were also reviewed. This allows for encroachment of the outer 50% of the VRZ on the basis that the equivalent area is offset through provision of additional equivalent area of VRZ along the same waterway alignment.

Based on the above, the proposal has been developed to include the following:

– Realignment of the eastern watercourse to allow development of the proposal site, but retention of the existing western watercourse alignment
– Provision of basins within any portion of the VRZ on the basis that online basins are permissible
– Other than basins, not locating any site infrastructure within the inner VRZ
– Where infrastructure is provided within the outer VRZ provision of the appropriate corresponding offsetting area.

Currently, it is noted that the north-eastern dam is co-located within the neighbouring site. It is proposed that the portion of the dam within the proposal site would be filled so that each site can individually manage and verify water management performance. Therefore, after the dam portion on the proposal is filled, the area would be repurposed as a realigned watercourse alongside the proposed basins at this location.

Further information with relation to riparian management is provided in the Concept Riparian Vegetation Management Plan, provided for the assessment for this proposal.

3.1.1 Consultation with Natural Resources Access Regulator

The Natural Resources Access Regulator (NRAR) was consulted on the proposed water management strategy, particularly with relation to riparian zone requirements.

NRAR noted that the permissibility of detention basins within the VRZs within published guidelines is partially in consideration of basins not permanently holding water. In particular, they noted the risk associated with holding water for longer periods of time should embankment failure and subsequent downstream scour/impact occur.

It was noted that the proposed water storage basins (refer Section 3.3) are intended to hold water for longer periods of time. In response to this and in consideration of the NRAR feedback, embankment engineering during the detailed design phase would be undertaken to confirm the ongoing stability of the basins. The proposed basin in the northeast section of the site would be particularly focused on due to the limited area and interaction with the existing water storage (to be partially decommissioned).

NRAR also suggested consideration shifting the entire proposal to the west slightly to allow for more space for the constrained north-eastern portion, and noted that a reduction of the standard VRZ widths on the western side may be possible based on the current (limited) state of riparian vegetation. Final adjustments to the position of the buildings and platform that would not change the assessed impacts maybe considered during the detailed design phase..

3.2 Flooding

The significant catchment area of the western watercourse was noted, along with the location of the proposed infrastructure adjacent to the waterway. Based on this it was identified that the proposal is to be developed to appropriately manage:

– Potential impacts on the site infrastructure from local flooding in the watercourse
– If the proposed infrastructure pad is located on fill in the watercourse within (but above) flood extents, then potential impacts on flood conditions external to the site would need to be considered

Therefore, a one-dimensional hydraulic model was produced for the watercourse in where it flows adjacent to the plastics recycling and reprocessing facility site. This was undertaken as follows:

– Estimation of the 1 in 100-year AEP peak flows adjacent to the plastics recycling and reprocessing facility site according to the Regional Flood Frequency Estimation (RFFE) method. The RFFE technique uses data from 853 gauged catchments across Australia to transfer flood characteristics from a group of gauged catchments to ungauged locations of interest i.e. where design floods need to estimated (Ball, et al., Australian Rainfall and Runoff: A Guide to Flood Estimation, 2019). The catchment area was delineated which formed the key input into the RFFE
– Extraction of watercourse and floodplain geometry information from publicly available aerial survey information
– Inputting of the above information into a HECRAS flood model to indicate the 1 in 100 year AEP flood levels along the creek adjacent to the proposal site
– Mapping of the above flood levels to a flood extent based on aerial survey information
– Inputting the proposed pad surface into the flood model and confirming:
    - That the infrastructure is located above the 1 in 100 AEP peak flood level plus freeboard
    - That there are no significant offsite impacts due to locating the fill pad in the flooded area.

The results of the flood modelling are shown in Figure 3.2 and Figure 3.3.

Figure 3.2 Existing flood extent

Figure 3.3 Design flood extent

The existing flooding condition highlights an encroachment of the proposal site and adjacent lots west of the proposal site. When inputting the design pad to the 1D HEC-RAS model, the following two outcomes were identified:

– The 1 in 100 AEP plus 500 millimetres freeboard would not encroach on the proposal building areas, and
– In the 1 in 100 AEP event, the proposal site would not significantly impact the flood conditions of the surrounding areas outside of the proposal site boundary.

Furthermore, it was noted that in the proposed scenario the flow depth in the 1 in 100 AEP adjacent to the fill pad was approximately 500 mm compared to a pad height of 4000 mm. Based on this, even with any realistic increase in rainfall intensity due to climate change the flood immunity of the proposed works would be adequate.

3.3 Water quality

A water quality treatment train was inbuilt into the proposal with key features shown on Figure 3.1.

A key aspect that was considered in developing the treatment train was the fact that all mixed plastics recycling and reprocessing would be undertaken within buildings. Furthermore, there would be no stockpiling or storage of incoming or outgoing materials outside. Therefore, the nature of the risks posed by the proposal is equivalent to those posed for a typical industrial development. That is, those associated with the provision and utilisation of urban impervious surface areas.

Noting that the proposal site is located within the Sydney drinking water catchment, a best-practice method of assessing stormwater quality impacts (and therefore developing an appropriate treatment train) due to typical industrial urbanisation activities was adopted. This included the development of a MUSIC stormwater quality model in accordance with WaterNSW guidelines *Using MUSIC in the Sydney Drinking Water Catchment (2019)*.

These were used to prepare a MUSIC stormwater quality model to develop stormwater treatment train that could achieve a predicted neutral or beneficial effect (NorBE) on water quality.

Details of the modelling methodology are therefore described as follows.

The meteorological template with the climate data was obtained from the WaterNSW database[1]. This template consists of relevant climatic information including rainfall, evapotranspiration data and a range of climatic conditions for the climatic zone the proposal is located in. 6-minute rainfall data was sourced for the “Zone 3” sub-catchment for the period 1997 to 2001.

The existing site was adopted as an “Agricultural” node due to the current state of the proposal site which predominantly consists of grazing lands. During a site inspection in March 2021, GHD observed several soil profiles exposed by watercourse erosion in the western channel. The soil generally comprised of about 50 millimetres of topsoil underlain by residual light brown sandy clay that was stiff and dry with medium plasticity. These soil characteristics were used to characterise existing site runoff in accordance with WaterNSW (2019).

The proposal site was modelled as impervious urban industrial nodes consisting of sealed roads and a roof catchment.

A stormwater quality treatment train was developed with the following items:

– Roof water would be captured in rainwater tanks (150 kL) and reused for toilet flushing in the administration building as well as for the plastics recycling
– Runoff from impervious ground surface water would be conveyed to gross pollutant traps for primary treatment
– Roof-water tank overflow and gross pollutant trap outflow would flow to water storage basins for reuse within the plastics recycling process (after treatment). All roof overflow would be conveyed to an eastern basin (450 kL) along with ground surface runoff from the east of the plastics recycling and reprocessing facility site. Runoff from the ground surface of the western portion of the plastics recycling and reprocessing facility site would be conveyed to a western basin (70 kL). The basins would be lined with a compacted clay liner or other lining method of similar performance

[1] MUSIC - Climate Zone Key Maps - WaterNSW

– Overflow from the basins would be conveyed to bio-retention systems. For the eastern basin this would be a bioretention basin (filter area 500 m^2) located immediately downstream of the storage basin. For the western basin it would consist of a bio-retention swale (filter area 50 m^2).

Reuse demands represented are represented as outlined in Section 3.4.

The eastern storage and bio-retention basins would be constructed by filling the portion of the existing dam on the proposal site and repurposing for the stormwater treatment train.

Numerous parameters for the modelling were adopted from WaterNSW, 2019, including source node pollutant generation and runoff parameters, as well as treatment node parameters. Gross pollutant trap performance was adopted from the guidelines. The sizing of bio-retention basins was then iterated until satisfaction of the NorBE criteria was achieved. That is, a 10 percent reduction from the pre-development case of mean annual pollutant loads for total suspended solids, total phosphorus, and total nitrogen.

Table 3.2 shows the results of the MUSIC modelling with the above treatment train implemented.

Table 3.2 MUSIC modelling pollutant load results

Scenario	Annual pollutant load (kg/yr)		
	Total suspended solids	Total phosphorus	Total nitrogen
Pre-development	1110	4.443	24.72
Post-development	172.2	1.98	22.55
Neutral or beneficial effect? (Y/N)	Y	Y	Y

The MUSIC model demonstrates conceptually that NorBE criteria would be achieved for the proposal. The modelled post-development total suspended solids, total phosphorus, total nitrogen show a minimum of approximately a 10 percent improvement from the pre-development scenario.

Based on the above, and on the basis that all mixed plastics receival and processing activities would be undertaken indoors, the proposal has been developed to result in a neutral or beneficial effect on water quality.

The MUSIC model also allowed for quantification of the range of potential discharge rates and volumes from the site. This corresponded to the discharge from the two bio-retention basins combined which form the two outlets from the site..

As shown in Figure 3.4, approximately 90 percent of the time, flows are very small (less than 0.1 L/s) and likely to be effectively zero within the range of error of the modelling. Where discharges occur they fluctuate broadly to over 1000 L/s. The fluctuation observed is consistent with the fluctuating rate of rainfall and the intermittent characteristics of bioretention overflow/bypass, which would form the primary component of outflows during large rainfall events. The annual discharge is predicted at approximately 25 ML/year.

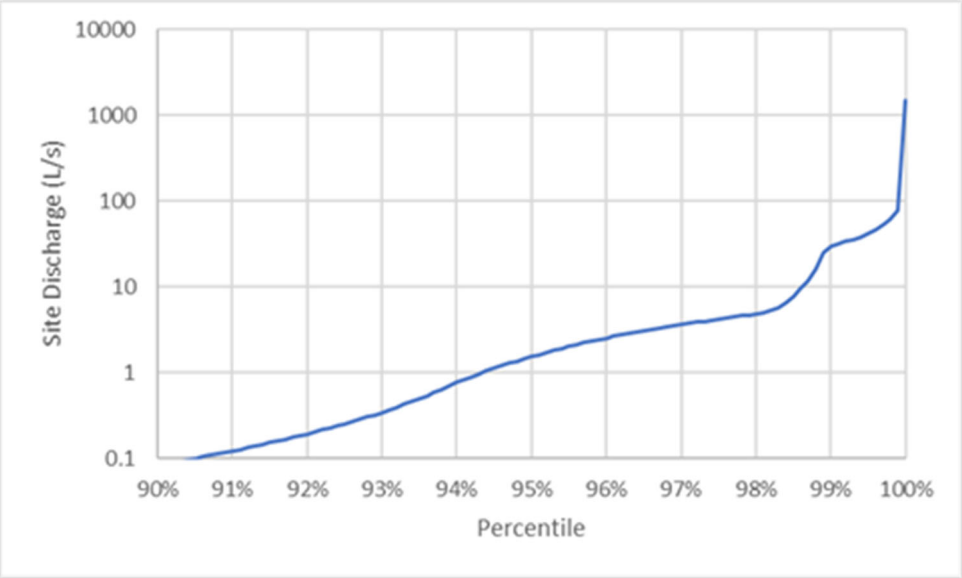

Figure 3.4 *Site Discharge Rates*

3.4 Water sourcing

Water demand information was provided by the proponent such that the appropriate sourcing of water could be included in the development of the proposal.

It is estimated that the following demands would be required:

– Approximately 40 kL/day net average water input for the plastics recycling process, based on an anticipated 30 kL/day of evaporation, and 10 kL/day of wastewater discharged to sewer.
– 5.8 kL/day for activities associated with administration and ablutions with 1.7 kL/day of this associated with toilet flushing and therefore able to be sourced from roofwater.

Water supply modelling was undertaken as outlined in (GHD, 2021). This found that the operation of the facility could be accommodated by Council's water supply network. This was determined by conservatively assuming all demands are sourced from the potable supply and excluding the portion of demands sourced by on-site reuse.

However, assessment was undertaken through the MUSIC modelling (refer Section 3.3) confirming that by providing the reuse associated with the stormwater treatment train (tanks and storage basins) reliance on potable demand was significantly reduced. The modelling predicted that over the longer term average approximately 80% of water demands could be sourced from on-site water collection. However, during dry periods the potable supply would need to provide fully for site demands.

Storage volumes of water onsite have been confirmed to not exceed harvestable rights capacities under the *Water Management Act 2000*. Therefore, it is not anticipated that water access licencing requirements under the act would be required. Furthermore, it is anticipated that the storage of water is exempt from licencing based on the purpose of the storages being largely the capture and reuse of water to minimise the pollutant load discharged. Accordingly, the exemption outlined in Clause 3 of Schedule 1 of the *Water Management Act, General Regulation* is anticipated to apply.

During construction, water demands would be limited primarily to dust suppression activities and would be sourced by the potable connection (when available) or otherwise by water trucked in via trucks used for applying the dust suppression water.

3.5 Wastewater management

Information provided by the proponent provided the following estimates of wastewater disposal requirements.

– 5.8 kL/day for activities associated with administration and ablutions
– Up to 10 kL/day of process water discharged from the wastewater treatment plant.

Wastewater modelling was undertaken as outlined in (GHD, 2021) This found that a new DN225 gravity main is required to connect the facility to the existing wastewater network and that the inclusion of the facilities are unlikely to adversely impact the Council's wastewater network for the relevant planning horizon.

4. Impact assessment

The potential soil and water impacts of the proposal were assessed, noting the following key in-built measures to the proposal:

– Provision of appropriate riparian preservation and management in accordance with the WM Act (refer Section 3.1). Including retaining the alignment of the western watercourse, and providing appropriate Vegetated Riparian Zone offsets in accordance with the WM Act (refer section 3.1)
– Location of the proposed infrastructure above the 1 in 100 AEP flood level plus freeboard, without any significant flood impacts offsite (refer Section 3.2)
– On the basis of the MUSIC modelling results, and the location of all plastics recycling and reprocessing being inside, the proposal was developed providing in-built management to achieve a neutral or beneficial impact on water quality during operation (refer Section 3.3)
– The appropriate sourcing of water demands has been confirmed as outlined in Section 3.4
– The appropriate management of wastewater has been confirmed as outlined in Section 3.5.

The assessment identified the following areas requiring additional mitigation:

– A key basis of the water quality approach is that runoff generated would be similar to that of a typical industrial catchment. An operational water management plan is required, with a particular focus on ensuring that materials are never stored outside and appropriate housekeeping is implemented.
– There would be a relatively large area of disturbance during construction, located adjacent to a waterway, and significant erosion and sediment control measures would be required to manage the disturbance associated with site clearing and construction works, which are unavoidable.

On the basis of the above in-built measures and with implementation of the identified additional mitigation measures, the proposal is not anticipated to result in significant impact in relation to soils and water.

5. Mitigation

Mitigation measures, as required based on the assessment outlined in Section 4, are outlined below.

5.1 Operational water management plan

As noted in Section 4, A key basis of the water quality approach is that runoff generated would be similar to that of a typical industrial catchment. An operational water management plan is therefore required, with a particular focus on ensuring that materials are never stored outside and appropriate housekeeping is implemented.

This detailed operational management plan would be prepared before operations commence, and updated yearly. It would be based on specifying and maintaining the following key features of the proposed activities:

– Truckloads of incoming material are not to be removed from their packaging until the truck is fully inside the indoor receiving area
– Fast action roller doors will be installed so they can be closed promptly after trucks have entered the building
– Where product is transferred offsite or between buildings it is to be fully repackaged before leaving an indoor environment.

By maintaining the above the risk of litter falling outside and being conveyed in stormwater is minimal. However, as an additional line of protection, daily visual inspection would be specified in the plan with any plastics located outside to be collected. This inspection is to be undertaken by specified person(s) with a clearly mandated responsibility. They would also be required to log incidents of plastic from the process being found outside.

It is proposed that the implementation and updating of the plan be stipulated in the facility's Environment Protection License. On the basis of the prediction of neutral or beneficial impact on water quality, no licensed discharge points are proposed to be included in the license.

With implementation of the plan the proposal is not anticipated to result in a neutral or beneficial effect on water quality.

In addition, based on WaterNSW input into the SEARs for the proposal, a Concept Operational Environmental Management Plan has been prepared, along with a Concept Stormwater Management Plan and Concept Riparian Vegetation Management Plan. These plans have been attached to this report and would be updated by the detailed plan (described above) but would form an initial basis, and allow assessment of operational activities for the proposal determination.

5.2 Construction phase erosion and sediment control

As outlined in Section 4, there would be a relatively large area of disturbance during construction, located adjacent to a waterway, and significant erosion and sediment control measures would be required. Realistically, control of this risk cannot be in-built into the proposal because disturbance of a relatively large footprint is unavoidable.

Therefore, a detailed Soil and Water Management Plan would be developed prior construction, dealing with erosion and sediment control. It is to be prepared in accordance with *Managing Urban Stormwater: Soils and Construction – Volume 1 (Landcom,2005),* more commonly known as the 'Blue Book'. The plan would be developed when details of the construction approach and methodology are confirmed, however key principles to be adopted in the plan development are presented in Section 5.2.1. With appropriate implementation of this plan, the performance of the proposal is anticipated to be acceptable with relation to construction phase erosion and sediment control.

In addition, based on WaterNSW input into the SEARs a Concept Soil and Water Management Plan has been prepared for this proposal. This plan is attached to this report and would be updated by the detailed plan (described above) but would form an initial basis, and allow assessment of operational activities for the proposal determination.

5.2.1 Soil and Water Management Plan

Managing Urban Stormwater: Soils and Construction – Volume 1, more commonly known as the 'Blue Book' is the primary resource for the design and construction of stormwater management, particularly, erosion and sediment control of urban developments (Landcom, 2004). It would be used as the primary source in the development of the plan. The guidelines are supported by the NSW Environment Protection Authority (EPA), as well as throughout other NSW government agencies, local government and industry. The Blue Book sets out management procedures, operations and controls as well as monitoring and maintenance processes to ensure compliance requirements are satisfied.

A key component of the plan would be integration with the final water management configuration and appropriate staging of the work. Key activities in the staging, in chronological order, are listed below:

– Install the proposed western and eastern basins initially as unlined sediment basins
– Undertake the eastern watercourse realignment, with the watercourse temporarily conveyed into the eastern sediment basin
– When realignment is complete divert the watercourse to its final direction, flowing around the eastern basin
– Convey upstream run-on around the site disturbance area and into the eastern and western watercourses
– Convey the site disturbance areas to the western and eastern basins via dirty water drains
– Undertake the main site construction activities
– Once disturbance activities are complete, convert the basins into their final operational phase form.

Final sediment basin sizing requirements would be undertaken in the development of the plan, with the basins operating as Type D/F 'wet' basins based on the soil conditions of the proposal site. It is anticipated that the operational phase requirements for the basins will govern the sizing, in which case a greater volume will be provided than required strictly for construction phase sediment control.

The plan would include construction phase water quality monitoring of the sediment basins, as well as any discharge during construction hours. A daily rainfall record would also be kept. Where a discharge of greater than 50 mg/L of suspended solids occurs when the design rainfall event has not been exceeded this would be considered a non-compliance and remedial action taken.

The Blue Book specifies numerous general requirements that would apply to the plan. This would be in areas including:

– Minimising the extent and duration of disturbance
– Handling of soils
– Stockpiling
– Site access and egress
– Management of drainage
– Water quality monitoring
– Roles, responsibilities and incident reporting
– Fuel storage
– Inspection requirements.

6. Conclusions

The soils and water impact assessment has been prepared to address the soils and water requirements of the Secretary of the NSW Department of Planning, Industry and Environment (Secretary's Environmental Assessment Requirements) (SSD-9409987). It addresses surface water management and construction phase erosion and sediment control.

The report outlines the existing environmental factors influencing surface water management and erosion and sediment control, as well as assessment methodologies undertaken to analyse riparian management, flooding, water quality, water sourcing, wastewater management and erosion and sediment control practices during operation and construction. The assessment informed and assessed soil and water management measures in-built to the proposal as well as specifying mitigation measures where residual risk exists.

A critical component of the proposed soil and water management strategy for the proposal was the principle of providing important water management measures in-built into the proposal. These included:

– Provision of appropriate riparian preservation and management in accordance with the WM Act. Including retaining the realignment of the western watercourse, and providing appropriate Vegetated Riparian Zone offsets in accordance with the WM Act
– Location of the proposed infrastructure above the 1 in 100 AEP flood level plus freeboard, without any significant flood impacts offsite
– On the basis of the MUSIC modelling results, and the location of mixed plastics recycling and reprocessing being inside, the proposal was developed providing in-built management to achieve neutral or beneficial impact on water quality during operation
– Reusing site runoff for water demands as much as practicable, whilst securing an external potable supply to cover up to the full site demands during dry periods
– Securing a sewer disposal capability with Wingecarribee Shire Council to accommodate the full wastewater demands from both the process and administration activitiesOn the basis of the proposed soil and water management system, the proposal is not anticipated to result in significant impact with relation to soils and water, and to address the relevant SEARs, other than with relation to the operational stage management practices for water and construction phase erosion and sediment control.

Corresponding mitigation measures in relation to the above two items have been specified in this report. With the implementation of these measures the proposal is not anticipated to result in significant soil and water impacts.

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Appendix A

Concept Riparian Vegetation Management Plan

Moss Vale Plastics Recycling and Reprocessing Facility

Concept Riparian Vegetation Management Plan

Plasrefine Recycling Pty Ltd

3 November 2021

→ The Power of Commitment

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1. Introduction

1.1 Overview

1.1.1 Plasrefine Recycling and the proposal

For many years, recyclable plastics have been recovered from kerbside collections and it has been profitable to export mixed plastics to China and other countries. With the advent of the China National Sword policy (a policy in China which banned the importation of certain types of waste and set strict contamination limits on recyclable materials), as well as issues with contaminated loads of recyclables being sent to China and other countries, opportunities to send mixed plastics overseas for processing have diminished. Recently, the Council of Australian Governments (COAG) decided to ban exports of recyclable waste from Australia from July 2021.

Despite these difficulties, export markets still exist for clean, separated, pelletised plastics and resins. However, there is very little local capacity in NSW and within Australia to sort recovered plastics into different types and convert them into valuable products.

To help address this issue, Plasrefine Recycling Pty Ltd (Plasrefine Recycling) ('the proponent') proposes to construct and operate a plastics recycling and reprocessing facility in Moss Vale ('the proposal').

The proposal would extract mixed plastics from waste, sort the plastics into different types, and convert the various plastics to plastic flakes and pellets (in the first stage) and produce more advanced products (in the second stage). The combined outputs of both stages of the proposal would help fill the gap in local processing capacity for mixed plastics.

The proposal would have an ultimate capacity to receive up to 120,000 tonnes per year of mixed waste plastics.

1.1.2 Approval and assessment requirements

The proposal is State Significant Development (SSD) and is subject to approval by the NSW Minister for Planning and Public Spaces under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This report has been prepared by GHD Pty Ltd (GHD) as part of the environmental impact statement (EIS) for the proposal. The EIS has been prepared to support the application for approval of the proposal and address the environmental assessment requirements of the Secretary of the NSW Department of Planning, Industry and Environment (SSD-9409987) dated 15 October 2020 (the SEARs) (see section 1.3).

1.2 The proposal

1.2.1 Location

The proposal would be located about 140 kilometres south west of the Sydney central business district and approximately 2.8 kilometres north west of the Moss Vale town centre within the Wingecarribee local government area.

The proposed plastics recycling and reprocessing facility and ancillary infrastructure would be located on the northern parcel of land in Lot 11 DP 1084421, with a current street address of 74-76 Beaconsfield Road, Moss Vale. This parcel of land is referred to as 'the plastics recycling and reprocessing facility site' for the purpose of the EIS. It has a total site area of about 7.7 hectares. The proposal would occupy a portion of the plastics recycling and reprocessing facility site.

The new access road which would extend from the plastics recycling and reprocessing facility to Lackey Road via:

– the currently unformed Braddon Road
– Lot 1 DP 26490 and Lot 10 DP 1084421 (the 'Braddon Road east extension').

The area that would be occupied by the proposal's permanent operational infrastructure, and/or directly disturbed during construction, is referred to as 'the proposal site' for the purposes of the EIS. The proposal site therefore comprises:

– The plastics recycling and reprocessing facility site (7.7 hectares)
– The new access road corridor (about 1.8 hectares)

It is noted that the areas that would be disturbed for construction of buildings, roads and water management would comprise about six hectares of the total 7.7 hectare plastics recycling and reprocessing facility site. Disturbance of the remaining 1.7 hectares would be limited to plantings as part of riparian vegetation management and landscaping.

The proposal would be located within the Moss Vale Enterprise Corridor (MVEC) catchment. The MVEC is a significant area of land between Moss Vale and New Berrima set aside for employment generating development under the Wingecarribee Shire Local Environmental Plan 2010.

The location of the proposal site is shown in Figure 1.1.

1.2.2 Key features

The proposal is defined as the construction and operation of a plastics recycling and reprocessing facility with capacity to receive up to 120,000 tonnes per year of mixed plastics, comprising:

– Two main buildings for waste receival, recycling and reprocessing and finished product storage
– Wastewater treatment plant
– Ancillary infrastructure including an office building, workshop, truck parking, staff and visitor parking, internal roadways, weighbridges, water management, fire management, landscaping, fencing, signage and utility connection
– A new access road from the plastics recycling and reprocessing facility to Lackey Road via part of Braddon Road (currently unformed) and Lot 1 DP 26490 and Lot 10 DP 1084421 (the Braddon Road east extension).

The proposal would sort the plastics into different types and convert the various plastics to flakes and pellets (in the first stage) and produce more advanced products (in the second stage). The combined outputs of both stages of the proposal would help fill the gap in local processing capacity for mixed plastics.

Further information on the proposal is provided in the EIS.

Key features of the proposal with particular respect to the management of surface water include:

– Roadways
– Hardstand and parking areas
– Administrative building and amenity facilities
– Large roofed buildings for the recycling processes
– A demand for water for the processing activities, with no significant process water discharge
– A site office building with associated ablutions water demand with small quantities of wastewater, and
– Cut and fill pad to provide an appropriate surface for the proposal activities and infrastructure.

The proposed site layout is shown in Figure 1.2.

1.2.3 Construction overview

An indicative construction strategy has been developed, based on the current design, to be used as a basis for the environmental assessment process. Detailed construction planning, including programming, work methodologies and work sequencing would be undertaken once construction contractor(s) have been engaged and during detailed design.

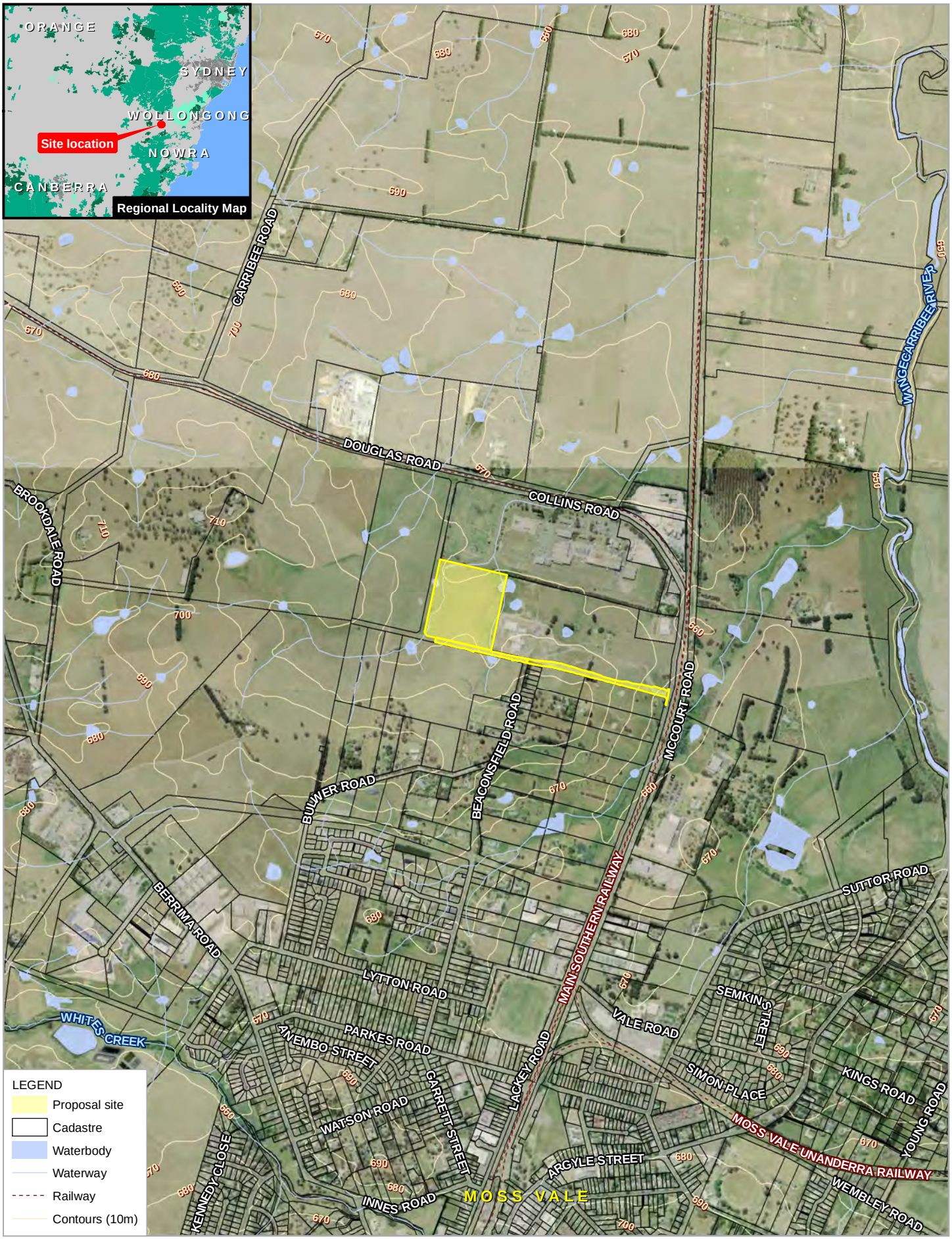
It is estimated that the proposal would take about 15 months to construct and commission and consist of three key stages:

– Early works and site establishment (1 month):

- Construction of site access road
- Utilities connection
- Establishment of construction compound including construction staff amenities
- Installation of temporary fencing

– Main site works (11 months):
  - Clearance of vegetation within the construction footprint, stripping and stockpiling of topsoil for reuse
  - Bulk earthworks for site shaping and surface water drainage and the bioretention pond
  - Pouring concrete foundation slab, footings, hardstand and slabs for the buildings
  - Construction of pavement areas for the truck and car park, internal roads and the site entrance/egress points
  - Installation of steel truss framework for structures
  - Erection of pre-cast concrete panels for external and internal partition walls and metal roof sheets for site buildings
  - Installation of processing equipment
  - Building finishing works including fit out
  - Installation of firewater and other tanks
  - Installation of weighbridges
  - Installation of permanent fencing and signage
  - Restoration works including removal of temporary construction compound, general site clean up and landscaping following construction
– Testing and commissioning (3 months)

Further information on how the proposal would be constructed is provided in the EIS (GHD 2021a).



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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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Plasrefine Pty Ltd
Moss Vale Plastics Recycling Facility
Concept RVMP

Site map

Project No.	12524108
Revision No.	A
Date	01 Nov 2021

FIGURE 1.1

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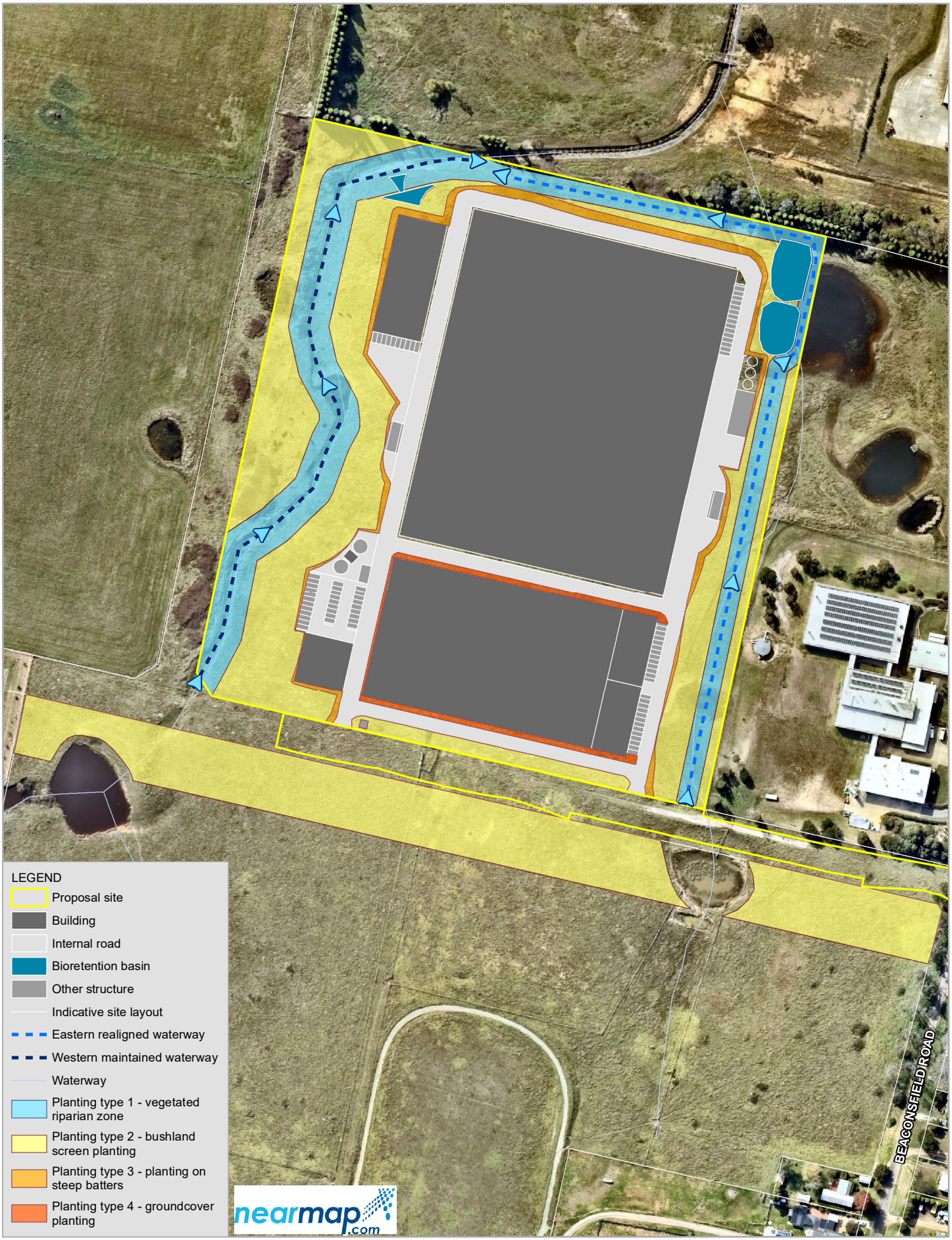
Data source: Aerial imagery - Sixmaps 2021 © Department of Customer Service 2020; General topo - NSW LPI DTDB 2020, 2015; Inset map - Geoscience Australia. Created by: jrprice



Paper Size ISO A4

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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GHD

Plasrefine Pty Ltd
Moss Vale Plastics Recycling Facility
Concept RVMP

Project No. **12524108**
Revision No. **A**
Date **22 Oct 2021**

Proposal Site Layout

FIGURE 1.2

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Data source: Aerial imagery - nearmap 2021 (image date 24/04/2021, image extracted 30/06/2021); General topo - NSW LPI DTDB 2020, 2015. Created by: jrprice

1.3 Secretary's Environmental Assessment Requirements

The specific SEAR addressed through the provision of this report is as follows:

– Provision of the plans requested by WaterNSW in its letter dated 7 October 2020 including, [a] Concept Riparian Vegetation Management Plan.

1.4 Purpose and scope of this report

The purpose of this report is to provide a conceptual Riparian Vegetation Management Plan (RVMP) for the watercourses on the proposal site to address the SEARs. The Concept RVMP aims to provide a preliminary framework and approach for the revegetation, management and maintenance of the riparian corridors on the proposal site with reference to the requirements outlined in DPI (2002) and NSW Office of Water (2012).

This report should be read in conjunction with the Soils and Water Impact Assessment (GHD 2021c) and Soils and Water Management Plan (GHD 2021d) and the Landscape and Visual Impact Assessment Plan (GHD 2021e) prepared for the proposal. The Soils and Water impact assessment assesses water management more broadly, as well as assessing the impact of the proposal with relation to riparian areas, therefore it sets out riparian management measures in-built into the proposal.

This report is conceptual and would be updated prior to construction as a Detailed Riparian Vegetation Management Plan in consultation with the relevant Water NSW regulatory officer.

2. Statutory framework

This section outlines legislation and guidelines applicable to this Concept VMP.

2.1 NSW Biodiversity Conservation Act

The *Biodiversity Conservation Act 2016* (BC Act) provides legal status for biota of conservation significance in NSW. The Act, amongst other things, provides for the listing of threatened species and communities, establishes a framework to avoid, minimise and offset the impacts of proposed development, known as the Biodiversity Offsets Scheme (BOS), and establishes the Biodiversity Assessment Method (BAM), which is a scientific method for assessing the likely impacts on biodiversity values and calculating measures to offset those impacts, required if a significant impact on threatened biota is likely.

A Biodiversity Development Assessment Report (BDAR) has been prepared for the proposal that identifies threatened biota of relevance to the proposal and quantifies impacts and offset requirements in accordance with the BAM (GHD 2021b). There are no threatened ecological communities or threatened plants that occur at the proposal site and only marginal habitat for threatened fauna.

A key threatening process (KTP) is defined under the BC Act (DEC 2005) as an action, activity or proposal that:

– Adversely affects two or more threatened species, populations or ecological communities
– Could cause species, populations or ecological communities that are not currently threatened to become threatened.

A number of KTPs are listed under more than one Act. Those potentially relevant to this proposal are listed below.

– Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands
– Infection of native plants by *Phytophthora cinnamomi*
– Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae;
– Invasion and establishment of exotic vines and scramblers
– Invasion, establishment and spread of *Lantana camara*
– Competition and grazing by the feral European rabbit (*Oryctolagus cuniculus*)
– Infection of frogs by amphibian chytrid causing the disease chytridiomycosis.

Vegetation management measures as detailed in section 5 this RVMP will be implemented to address the KTPs of relevance to the proposal site.

2.2 Fisheries Management Act

The *Fisheries Management Act 1994* (FM Act) aims to conserve, develop and share the fishery resources of the State for the benefit of present and future generations. One of the objectives of the FM Act is to 'conserve key fish habitats' which includes aquatic habitats that are important to the maintenance of fish populations generally and the survival and recovery of threatened aquatic species. The Act provides amongst other things for the listing of threatened species, populations and ecological communities, key threatening processes and requirements for the assessment of significance of impacts on threatened aquatic biota.

The watercourses on the proposal site are not classified as Key Fish Habitat and do not provide potential habitat for threatened fish or threatened aquatic plants or ecological communities listed under the FM Act (GHD 2021b). The proposed revegetation and management of the riparian corridors through the implementation of this RVMP will aim to address impacts

The riparian corridors will be managed according to the requirements outlined in DPI (2002) and NSW Office of Water (2012) and rehabilitated to restore the integrity and function of the watercourse and its riparian corridor via the implementation of the RVMP in conjunction with the Soil and Water Management Plan.

2.3 NSW Water Management Act and guidelines

The *Water Management Act 2000* (WM Act) regulates controlled activities carried out in, on or under waterfront land through a requirement for a permit; clause 89J of the EP&A Act provides an exemption for these permits for SSD assessed under Part 4, Division 4.1 of the EP&A Act (under which approval of the proposal is sought).

When a proposed controlled activity disturbs or substantially modifies the riparian corridor, a VMP detailing how restoration or rehabilitation of the corridor will be carried out is required. Although a controlled activity permit is not required for the proposal, management of riparian corridor values would maintain consistency with the Guidelines for Controlled activities on Waterfront Land – Riparian Corridors (NRAR 2018) and the Guidelines for Vegetation Management Plans on Waterfront Land (NOW 2012).

2.4 NSW Biosecurity Act

The *Biosecurity Act 2015* provides for risk-based management of biosecurity in NSW. It provides a statutory framework to protect the NSW economy, environment and community from the negative impact of pests, diseases and weeds.

The primary object of the Act is to provide a framework for the prevention, elimination and minimisation of biosecurity risks posed by biosecurity matter, dealing with biosecurity matter, carriers and potential carriers, and other activities that involve biosecurity matter, carriers or potential carriers.

In NSW, all plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.

Weeds that occur at the proposal site are discussed in Section 3.6.2 and weed management measures are discussed in Section 5.3.

3. Existing environment

This section summarises the key features of the existing environment with respect to riparian areas.

More detailed descriptions of the existing site conditions and biodiversity values are provided in the following reports that have been prepared to support the application for approval of the proposal:

– Moss Vale Plastics Recycling and Reprocessing Facility Environmental Impact Assessment (GHD 2021a)
– Moss Vale Plastics Recycling and Reprocessing Facility Biodiversity Development Assessment Report (GHD 2021b)
– Moss Vale Plastics Recycling and Reprocessing Facility Soils and Water Impact Assessment (GHD 2021c).

3.1 Land use

There are a number of industrial businesses located within the vicinity of the proposal. However, the proposal site has been and currently is used predominantly for grazing. This is indicated by the abundance of grazed land at the proposal site and surrounding locations and minimal vegetation around the proposal site. There is minimal existing riparian vegetation along the banks of the western and eastern watercourses and aerial imagery shows evidence of channel erosion and modification of the channel from its natural condition, mainly through the removal of vegetation. The proposal site does not contain any buildings.

3.2 Climate

The proposal site has a temperate climate. Based on data from the Moss Vale AWS (068239) weather station, the site has a mean annual rainfall of 713 mm. The site can reach mean daily maximum temperatures of 23.6 degrees and mean daily minimum temperature of 13.2 degrees Celsius (BOM 2021).

3.3 Topography

The topography is undulating and falls from the southern-central portion of the proposal site to the north and north-east.

3.4 Soils

3.4.1 Soil landscapes

The majority of the proposal site is mapped as occurring on the Moss Vale soil landscape which comprises rises on Wianamatta Group Shale in the Moss Vale Tablelands and Woronora Plateau (OEH 2021). This soil landscape has a local relief of 5-30 m with slopes between 0-5%. Soils in this landscape comprise Yellow Kurosols (Yellow Podzolic Soils), Red Kurosols (Red Podzolic Soils), Brown Kurosols (Yellow Podzolic Soils) and Yellow Kandosols (Yellow Earths).

The southeast corner of the proposal site and adjoining land is mapped as Lower Mittagong soil landscape. This landscape comprises rises and low hills on Wianamatta Group Shale (shale) in the Moss Vale Tablelands, Wanganderry Tablelands and Woronora Plateau. Local relief is 5–90 m with slopes generally 0-25%. Soils in this landscape comprise Brown Kurosols (Yellow and Brown Podzolic Soils), Red Kurosols (red Podzolic Soils), Brown Dermosols (Yellow Earths) and Red and Brown Kandosols (Red Earths and Brown Earths), with Yellow Natric Kurosols (Soloths) in drainage lines.

3.4.2 Soil hazards

Soil landscapes for the proposal site and surrounding buffer area indicate that soils associated with the Moss Vale soil landscape have a minor to moderate risk of gully erosion in cleared drainage plains. Due to intensive farming potassium (K) deficiency commonly occurs in the soils of this landscape.

Soils associated with the Lower Mittagong soil landscape have a minor to moderate risk of gully erosion in cleared drainage plains. Minor sheet erosion is common.

There is minimal risk of acid sulfate soils as the proposal site is not in a coastal location and has an elevation ranging from about 670-680 m AHD. Acid sulfate soil risk mapping indicates that there are no known occurrences at the proposal site (OEH 2021).

3.5 Hydrology

There are two waterways identified on NSW Land and Property Information mapping for the proposal site and shown on Figure 1.2.

– A western watercourse flowing in a south to north direction along the western perimeter of the site before discharging to a concrete channel at the northwestern corner of the site where it joins the eastern watercourse. The western watercourse is a second order stream in accordance with the Strahler stream ordering system and flows through an on-line farm dam within the site.
– An eastern watercourse flowing in a south to north direction into an existing dam at the northeastern corner of the site. This existing dam is located both over the proposal site and the adjacent lot. The dam spills in a westerly direction before combining with the eastern watercourse at the concrete lined drain. The eastern watercourse is a first order stream in accordance with the Strahler stream ordering system.

Both watercourses traverse the concrete channel, pass an industrial site and flow in a north-easterly direction, under Collins Road, until reaching the Wingecarribee River. The Wingecarribe River eventually outflows to Wingecarribee Reservoir.

3.6 Vegetation

3.6.1 Vegetation types

The proposal site has been cleared of nearly all native vegetation. It contains largely exotic pasture, with a small occurrence of indigenous grass species and an absence of trees and shrubs (GHD 2021b) (Figure 3.1). There are several planted windbreaks nearby or adjacent to the site which contain the only midstorey or overstorey vegetation close to the proposal site. These windbreaks support a mixture of mature exotic species, as well as sub-mature, generally native species, that are not locally indigenous. GHD (2021b) recorded 73 flora species, of which 37 species are not native to Australia and at least three species (which) are indigenous to Australia, but not indigenous to the Wingecarribee LGA.

The dams were colonised by native aquatic species, including Water couch (*Paspalum distichum*), Floating pondweed (*Potamogeton tricarinatus*), Tall spike rush (*Eleocharis sphacelate*), Juncus usitatus, Water primrose (*Ludwigia peploides* subsp. *Montevidensis*), *Juncus continuus, Juncus prismatocarpus* and *Schoenoplectus* spp. Exotic aquatic species within the dam included *Cyperus congestus*, Phalaris (*Phalaris aquatica*) and *Cyperus brevifolius*. Exotic species that have colonised the banks of the dam included *Paspalum dilatatum*, Kikuyu grass (*Cenchrus clandestinus*), Tall fleabane (*Conyza sumatrensis*), Catsear (*Hypochaeris radicata*), and African lovegrass (*Eragrostis curvula*). (GHD 2021b).

Based on the soil types which occur on the proposal site, the original (pre-European) vegetation would have contained components of WSF p268 Southern Highlands Shale Woodland (see Tozer *et al.* 2010 and Ecological 2003). Canopy species would have included *Eucalyptus cypellocarpa, Eucalyptus radiata* subsp*. radiata, Eucalyptus quadrangulata* and *Eucalyptus globoidea.* A sparse shrub mid-storey to 7 m would have included occurrences of *Acacia binervata, Acacia melanoxylon, Olearia viscidula, Leucopogon lanceolatus* var. *lanceolatus, Ozothamnus diosmifolius* and *Persoonia linearis. Groundcover species would have included Austrostipa rudis, Hardenbergia violacea, Hibbertia scandens, Opercularis diphylla* and *Lomandra multiflora* subsp. *multiflora*.

It is possible that the vegetation along the creeklines would have included specimens of *Casuarina cunninghamiana* subsp. *cunninghamia*, *Eucalyptus ovata, Eucalyptus pauciflora, Eucalyptus viminalis* and the now threatened *Eucalyptus macarthurii*. Wetland species in the creeklines and banks would have included *Lomandra longifolia, Eleocharis acuta, Baloskion fimbriatum, Centella asiatica, Viola betonicifolia, Schoenus apogon, Hydrocotyle peduncularis, Poa sieberiana var. sieberiana, Haloragis heterophylla, Persicaria decipiens,*

Schoenoplectus validus, Persicaria hydropiper and *Gonocarpus tetragynus.* Shrub species which may have occurred along the upper banks include *Leptospermum polygalifolium* subsp*. polygalifolium, Leptospermum obovatum, Leptospermum myrtifolium, Leptospermum continentale* and *Epacris microphylla (*see description of FOW p54: Tableland Swamp Woodland in Tozer *et al.* 2010 and Riparian Casuarina Forest in Ecological Australia 2003*).*

3.6.2 Weeds

Weed species which are listed as Priority Weeds for the Wingecarribee Shire LGA that were recorded at the proposal site (GHD 2021b) are presented in Table 3.1.

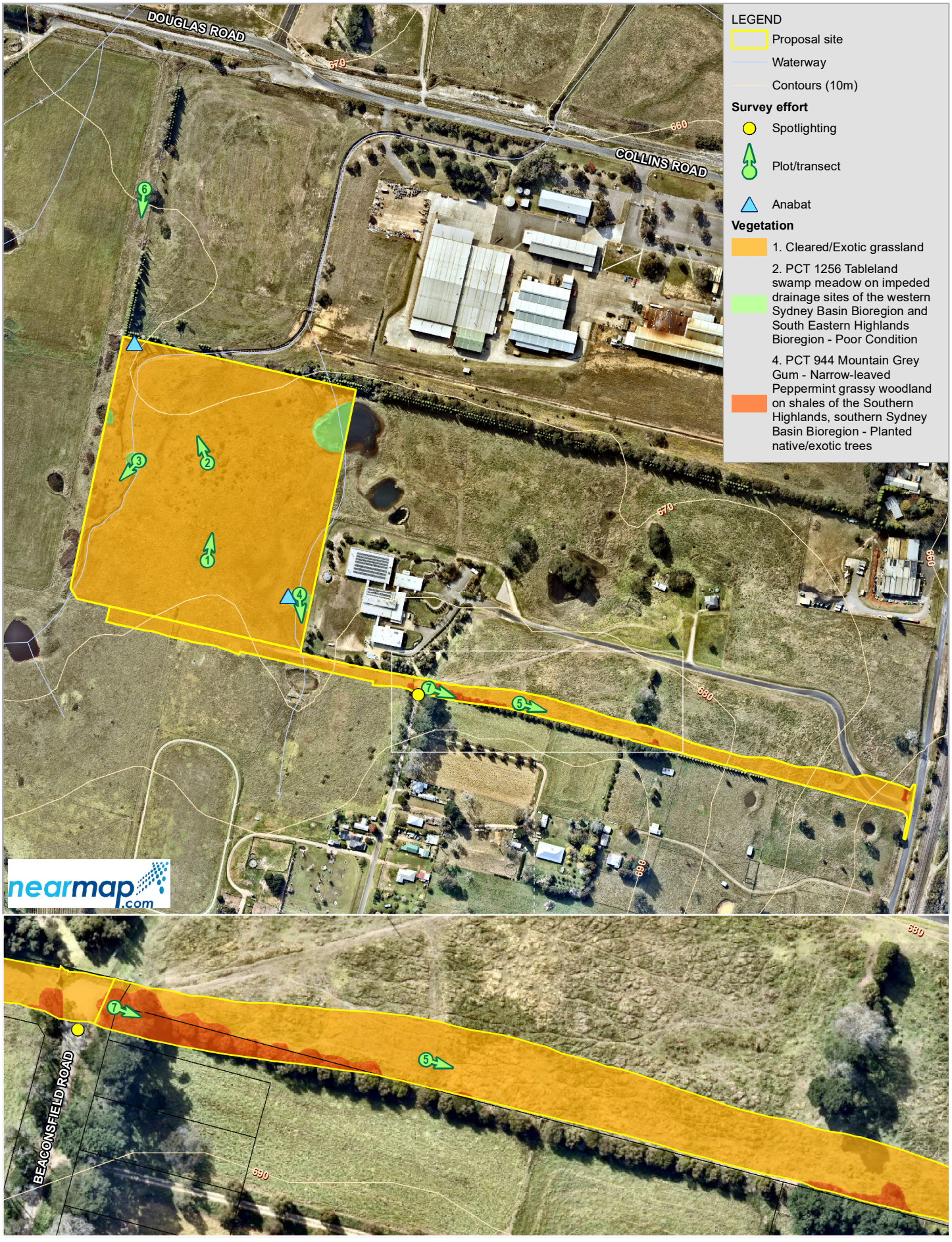
Table 3.1 Priority Weeds recorded in the proposal site.

Scientific name	Common name	Regional requirement
Lycium ferocissimum	African Boxthorn	Whole region: Land managers reduce impacts from the plant on priority assets
Eragrostis curvula	African Lovegrass	Whole region: Land managers reduce impacts from the plant on priority assets
Nasella trichotoma	Serrated Tussock	Whole region: Land managers should mitigate the risk of new weeds being introduced to their land. The plant should not be bought, sold, grown, carried or released into the environment. Exclusion zone: Land managers should mitigate spread from their land. Core area: Land managers reduce impacts from the plant on priority assets.
Rubus fruticosus sp. complex	Blackberry	Whole region: Land managers should mitigate the risk of new weeds being introduced to their land
Senecio madagascariensis	Fireweed	Whole region: Land managers should mitigate the risk of new weeds being introduced to their land. Exclusion zone: The plant should be eradicated from the land and the land kept free of the plant.

High threat weeds (DPIE 2020) recorded at the proposal site around the farm dams and watercourses included Paspalum (*Paspalum dilatatum),* Kikuyu Grass (*Cenchrus clandestinus*), Phalaris (*Phalaris aquatica*), Serrated Tussock (*Nassella trichotoma*), African Lovegrass (*Eragrostis curvula*) and Blackberry (*Rubus fruticosus* sp. complex).

Other exotic plant species which were recorded at the proposal site, and which are potentially invasive include:

– Capeweed *(Arctotheca calendula)*
– Panic Veldtgrass (*Ehrharta erecta)*
– Parramatta Grass *(Sporobolus africanus)*.



Paper Size ISO A4

0 100 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

Plasrefine Pty Ltd
Moss Vale Plastics Recycling Facility
Concept RVMP

Project No. **12524108**
Revision No. **A**
Date **22 Oct 2021**

Vegetation Map

FIGURE 3.1

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Data source: Aerial imagery - nearmap 2021 (image date 24/04/2021, image extracted 30/06/2021); General topo - NSW LPI DTDB 2020, 2015. Created by: jrprice

4. Riparian corridor requirements

Given the occurrence of two watercourses on the proposal site, riparian requirements, and in particular realignment and offsetting requirements in accordance with the *Guidelines for Riparian Corridors on Waterfront Land* (NSW Office of Water, 2012) were a key consideration in developing the proposal.

The following key points were identified and assessed relative to the proposal (GHD 2021c):

– Vegetated riparian zone (VRZ) width limitations for controlled activities
– Allowance for stream realignment depending on stream order
– Whether basins can be located within the VRZ and whether they can be located online
– Whether the stream can be realigned.

Table 4.1 summarises requirements with relation to watercourses on the proposal site.

Table 4.1 Riparian requirements

Watercourse	Stream order	Vegetated Riparian Zone (VRZ) (m)	Detention basins		Stream realignment permitted
			Only within 50% outer VRZ	Online	
Western	2nd	20	Yes	Yes	No
Eastern	1st	10	Yes	Yes	Yes

The requirements of the guideline with relation to the averaging rule were also reviewed (GHD 2021c). This allows for encroachment of the outer 50% of the VRZ on the basis that the equivalent area is offset through provision of additional equivalent area of VRZ along the same waterway alignment.

Based on consideration of the above the proposal has been developed to include the following:

– Realignment of the eastern watercourse to allow development of the site, but retention of the existing western watercourse alignment
– Provision of basins within any portion of the VRZ on the basis that online basins are permissible
– Other than basins, not locating any site infrastructure within the inner VRZ
– Where infrastructure is provided within the outer VRZ provision of the appropriate corresponding offsetting area.

Vegetation management measures for the VRZs are outlined below.

5. Vegetation management measures

The aim of the proposed vegetation planting and maintenance will be to establish a vegetation riparian zone along the banks of the watercourses on the site.

More detailed vegetation management measures will be provided in the final Riparian Vegetation Management Plan.

5.1 Site establishment

GHD (2021a) list the following early works and site establishment actions that are relevant to the Riparian Vegetation Management Plan:

– Construction of site access road
– Utilities connection
– Establishment of construction compound, including construction staff amenities
– Installation of temporary fencing
– Clearance of vegetation within the construction footprint, stripping and stockpiling of topsoil for reuse
– Bulk earthworks for site shaping and surface water drainage and the bioretention pond.

Vegetation management actions, including those relevant to site establishment as specified in this Concept RVMP, will be refined and updated in the detailed RVMP once design and construction methods are confirmed.

5.2 Riparian Zone management

The Riparian Zones (i.e. the western and eastern creeklines and associated dams) should be managed according to the requirements outlined in DPI (2002) and NSW Office of Water (2012): "…The design and construction of works or activities within a watercourse or adjoining waterfront land should protect and enhance water flow, water quality, stream ecology and existing riparian vegetation.

Impacts on the hydrologic, hydraulic and geomorphic functions of a watercourse should also be minimised…All waterfront land disturbed by the construction or installation of a controlled activity should be rehabilitated in such a way that the integrity of the watercourse and its riparian corridor is restored or rehabilitated…." (DPI 2002).

GHD (2021a) list, in chronological order, the following activities in the context of development and management of the Riparian Zones:

– Install the proposed western and eastern basins initially as unlined sediment basins
– Undertake the eastern watercourse realignment, with the watercourse temporarily conveyed into the eastern sediment basin
– When realignment is complete divert the watercourse to its final direction, flowing around the eastern basin
– Convey upstream run-on around the site disturbance area and into the eastern and western watercourses
– Convey the site disturbance areas to the western and eastern basins via dirty water drains
– Undertake the main site construction activities
– Once disturbance activities are complete, convert the basins into their final operational phase form.

In the context of the vegetation within the two riparian corridors at the proposal site, the main requirements include:

– Removal of all weed species, especially aquatic species
– Revegetation of the riparian corridors and bioretention basins and offset areas with native vegetation through planting;
– Plantings should take into consideration an appropriate 'Mannings n coefficient of roughness': *i.e*. trees should be well-spaced, with even greater separation of shrubs

– Rehabilitate the natural landform and vegetation after installation of stormwater pipes. If required, stabilise with topsoiling, revegetation, mulching and rip-rap
– Monitor and maintain the riparian zones until suitably stabilised and self-maintaining
– Only plant appropriate species (see section 5.4).

5.3 Weed control

Under the Biosecurity Act, priority weeds in NSW are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.

It is noted in GHD (2021a) that the development proposals include "…Clearance of vegetation within the construction footprint, stripping and stockpiling of topsoil for reuse…" As most of the vegetation requiring clearing consists of a large proportion of exotic forbs and grasses (including several priority weed species), the importance of management of weed propagules is stressed and will be described in detail in the Riparian Vegetation Management Plan. The presence of seeds and vegetative propagules in the stockpiled topsoil will also require management and possible treatment.

After revegetation works have been carried out, weed species will need to be controlled when they are actively growing and before they set seed, wherever possible. Given that different weeds will germinate at varying times throughout the year, the revegetation areas may require regular monitoring in order to schedule weed control works. Where appropriate, a maximum of two herbicide applications will be applied in autumn and spring where applicable, although manual removal of weeds should be used in preference to herbicide use.

Weed management measures will be included in the detailed RVMP and will be implemented throughout the riparian zones to limit the current extent of priority and environmental weeds and to limit the spread and colonisation of existing or new weeds.

The weed types, description and location of weed infestations existing at the commencement date will be listed in the weed management section of the RVMP. The methods of weed control (management actions), monitoring and inspections will also be listed.

Any chemical spraying will be carried by a qualified operator out in accordance with the *Pesticides Act 1999*.

The timing of all weed management is to be determined by the schedules for weed management in the detailed RVMP.

5.3.1 Methods

The detailed RVMP will provide recommended techniques according to weed species and extent of infestation. Because improving water quality is an aim of this project, the use of herbicides will only be recommended as a last resort. Methods of weed management outlined by Bradley (2002), Buchanan (2000) and AABR (2010) will be described and recommended where appropriate.

5.3.2 Secondary weed control

Secondary weed control methods and timing will be recommended in the detailed RVMP. Secondary weed control will relate especially to the planted riparian areas, where weed encroachment may contribute to flooding as well as to suppression of planted native species. Monitoring protocols for assessing weed encroachment will be outlined in the detailed RVMP along with recommendations for weed management actions according to the season, weather conditions and weed species.

5.4 Revegetation

Revegetation of the riparian zones and offset areas will be undertaken using plant species indigenous to the Wingecaribee LGA. Planting stock and seed should be of local provenance, sourced from local plant suppliers where possible. Seed collection, if undertaken, will be from within a 5 km radius of the site and collected and

managed in accordance with Florabank Guidelines by an experienced and appropriately licenced Bushland Regenerator.

An indicative species list for revegetation works is provided in Table 5.1.

Table 5.1 Indicative species for revegetation works

Botanical Name	Common Name	Riparian zone	Aquatic/basin	Steep batters	Screening
Eucalyptus ovata	Swamp Gum	X	X		
Eucalyptus dives	Broad-leaved Peppermint				X
Eucalyptus cinerea subsp. *cinerea*	Argyle Apple				X
Eucalyptus radiata subsp. *radiata*	Narrow-leaved Peppermint				X
Eucalyptus globoidea	White Stringybark				X
Eucalyptus cypellocarpa	Monkey Grey Gum				X
Eucalyptus pauciflora	Snow Gum				X
Eucalyptus quadrangulata	Coast White Box	X	X		
Eucalyptus viminalis	Manna Gum	X	X		
Eucalyptus elata	River Peppermint	X	X		
Eucalyptus mannifera subsp. *mannifera*	Brittle Gum	X	X		
Eucalyptus macarthurii	Paddy's River Box				X
Allocasuarina littoralis	Black Oak				X
Casuarina cunninghamiana subsp. *cunninghamiana*	River Oak		X		
Acacia binervata	Two-veined Hickory				X
Acacia melanoxylon	Blackwood				X
Acacia longifolia subsp. *longifolia*	Sydney Golden Wattle			X	
Acacia elata	Mountain Cedar Wattle		X		
Leptospermum polygalifolium subsp. *polygalifolium*	Tantoon				X
Leptospermum obovatum				X	
Leptospermum continentale	Prickly Tea-tree			X	
Leptospermum myrtifolium	Grey Tea-tree			X	
Persoonia linearis	Narrow-leaved Geebung				X
Epacris microphylla	Coral Heath			X	

Botanical Name	Common Name	Riparian zone	Aquatic/basin	Steep batters	Screening
Leucopogon lanceolatus var. *lanceolatus*				X	X
Olearia viscidula	Wallaby Weed			X	X
Ozothamnus diosmifolius	White Dogwood			X	X
Lomandra longifolia	Spiny-headed Mat-rush			X	X
Lomandra multiflora subsp. *multiflora*	Many-flowered mat-rush			X	X
Carex longebrachiata	Drooping Sedge				X
Austrostipa rudis subsp. nervosa				X	X
Microlaena stipoides var. *stipoides*	Weeping Grass			X	X
Themeda triandra	Kangaroo Grass			X	X
Opercularia diphylla	stinkweed				X
Hibbertia scandens	Climbing Guinea Flower			X	X
Centella asiatica	Gotu Cola	X	X	X	
Lobelia purpurascens	Whiteroot			X	X
Lepidosperma laterale	Sword-sedge			X	X
Lepidosperma urophorum	Sword-sedge			X	X
Dianella caerulea	Paroo Lily			X	X
Glycine clandestina	Glycine			X	X
Hardenbergia violacea	Waraburra			X	X
Kennedia rubicunda	Dusky Coral-pea			X	X
Aquatic species					
Persicaria decipiens	Slender Knotweed	X	X		
Persicaria hydropiper	Water Peppers	X	X		
Baloskion fimbriatum		X	X		
Schoenus apogon	Common Bog-rush	X	X		
Schoenoplectus validus		X	X		
Eleocharis acuta		X	X		

Planting spacing of trees and shrubs will be influenced by the Mannings n Coefficient of Roughness calculated in response to flood modelling and provided in the detailed RVMP.

Spacing and species selection will be recommended with reference to the conflicting aims of reducing siltation and erosion and avoiding flooding.

Trees will be planted as tubestock that have a higher survival and growth rate. Grassland and wetland plants will be installed as plugs rather than tubestock.

The detailed RVMP will provide guidelines for maintenance and monitoring of all plantings.

5.5 Soil erosion control

Given there will be a relatively large area of disturbance during construction located adjacent to waterways, and that significant erosion and sediment control measures would be required, a detailed Soil and Water Management Plan will be prepared prior to construction.

The Soil and Water Management Plan will be prepared in accordance with *Managing Urban Stormwater: Soils and Construction – Volume 1 (Landcom,2005),* more commonly known as the 'Blue Book' and detail erosion and sediment control measures. A Concept Soil and Water Management Plan has been prepared for this proposal (GHD 2021c). The detailed plan would be finalised when details of the construction approach and methodology are confirmed.

Erosion measures which are relevant to planting and revegetation will be provided in the detailed RVMP.

5.6 Maintenance

Maintenance operations will be recommended in detail in the detailed RVMP. Maintenance will mainly relate to weed removal, remedial pruning of trees, replacement planting and monitoring for disease, insect attack and weed encroachment.

5.7 Protective measures

Fencing will ideally be installed to restrict access to the planted areas, especially as there are rabbits and other exotic grazing animals in the area. The fencing should also restrict pedestrian and vehicular access to the planting areas during establishment. Fencing for protection of planted areas will be described in the detailed RVMP. Location and type of fencing will comply with fencing recommendations in GHD (2021a).

5.8 Summary of vegetation management

Table 5.2 summarises indicative vegetation management actions, outcomes and responsibilities. Vegetation management actions, as well as information on timing, frequency, expected outcomes and responsibilities will be refined and updated for the detailed RVMP.

Table 5.2 Vegetation management actions

Action	Timing	Frequency	Location	Outcome	Responsibility
Source local provenance tubestock or plugs from a local provider	12 months prior to commencement of works	Once, and follow-up propagation if required to provide appropriate numbers	Local approved Bush Regeneration nursery	Provide healthy disease-free indigenous plants ready for planting.	Bush Regenerator (with appropriate licences)
Implement hygiene measures to prevent introduction of weeds and pathogens	Prior to any plant or machinery being brought onto the site	Throughout construction	Prior to entering the site.	Prevent introduction of weeds and pathogens	Construction contractor
Clearing of existing groundcover	Commencement of works	Once	Zones 1, 2 and Biodiversity Offset areas	All invasive propagules removed to appropriate disposal site.	Construction contractor and Bush Regenerator

Action	Timing	Frequency	Location	Outcome	Responsibility
Installation of protective fencing	After completion of groundcover clearing	Install fencing and retain until completion of revegetation	Zones 1, 2 and Biodiversity Offset areas	Fencing should restrict access to planting areas by pedestrians, vehicles and grazing animals.	Construction contractor
Instream works: disturbance to aquatic vegetation – removal of exotic species and retention of indigenous species	Commencement of works	Initial clearing; followed by follow-up removal of exotic species	Creek lines in Zones 1 and 2	Removal of all exotic vegetation.	Bush Regenerator
Primary weed control	Growing season following clearing of groundcover	Once, over whole site	Zones 1, 2 and Biodiversity Offset areas	Removal of regrowth exotic species after initial clearing.	Bush Regenerator
Follow-up weed control and inspection	six months after initial vegetation clearing; repeat every six months	Every six months over next three years	Zones 1, 2 and Biodiversity Offset areas		Bush Regenerator
Planting of trees, shrubs and groundcovers (including aquatic species)	Ideal planting time is late Autumn	Once, with replacement planting as required	Zones 1, 2 and Biodiversity Offset areas	Revegetation of cleared areas and reconstructed creeklines and retention basins.	Bush Regenerator
Replacement planting	Six months after initial planting	Six months after initial planting' repeat after each inspection	Zones 1, 2 and Biodiversity Offset areas	Ensure that all planted areas have adequate cover of trees, shrubs and ground-cover.	Bush Regenerator
Monitoring and Reports	First report to be completed three months after commencement of works	Quarterly for first 12 months then annually for next two years	Zones 1, 2 and Biodiversity Offset areas	Report should indicate whether all performance criteria have been met.	Bush Regenerator

5.9 Monitoring, review and reporting

The detailed RVMP will provide detail on annual monitoring procedures which are designed to assess the adequacy of the management strategies to be undertaken within the revegetation areas in order to achieve their stated conservation objectives. This requires the design and implementation of a monitoring programme that includes a feedback loop, to allow for the adaptive management of all aspects of the monitoring program.

The aims of the biodiversity monitoring programme are to:

– record and document changes in retained vegetation through comparison with baseline data
– record and document changes in the structure, composition and condition of revegetation or regeneration areas, over time
– assess progressive changes (if any) to flora assemblages
– ensure the ecological integrity/function of retained areas of remnant vegetation are maintained or improved
– Monitor flood risk by monitoring densities of riparian vegetation.

The monitoring process and its results will be documented in an annual report providing the outcomes of the monitoring, including progress of management actions and assessment of these against their stated objectives. Ameliorative methods and management recommendations will be provided, where necessary to enable continual improvement.

All monitoring should be undertaken quarterly over the first year, then annually for the following two years so that there is a collection of comparable seasonal data for analysis. Monitoring should occur until such time that a suitable data set has been collected to allow patterns to be identified. If management actions are deemed to be successfully progressing towards their targets, the frequency of subsequent monitoring may be reviewed to a lesser frequency.

5.10 Monitoring of retained vegetation

The condition of retained vegetation will be monitored quarterly for first 12 months then annually for next two years to identify any deterioration or improvement in habitat quality.

The monitoring approach will utilise semi-quantitative, techniques, to compare cover and diversity/abundance of flora species over time with as little observer bias as possible. At least two photo monitoring points should be established at each revegetation area to enable a visual assessment of changes over time.

The monitoring surveys will assess and systematically record the following vegetation characteristics:

– floristic composition (including cover and abundance of species) and structure
– general health of vegetation
– evidence of natural regeneration
– occurrence and abundance of weed species
– signs of disturbance/evidence of feral animals.

5.11 Performance criteria

Table 5.3 outlines indicative Performance Criteria that will be refined and updated in the detailed RVMP.

Table 5.3 Performance criteria

Treatment Zones	Year 1	Year 2	Year 3
Zones 1 and 2 and offset areas	Commencement of all tasks outlined in the RVMP or evidence of planning for their implementation		
	Certification that all plant stock and seed used for revegetation are indigenous species of local provenance		
	A demonstrated increase in native cover and diversity and a demonstrated decrease in exotic cover and diversity by the end of Year 3.		
	Less than 20% of original woody weeds remaining.	Less than 10% of original woody weeds remaining.	No mature woody weeds remaining. No woody weeds capable of producing seeds present.
	Proportion of exotic groundcover covers no greater than 80%.	Proportion of exotic groundcover covers no greater than 40%.	Proportion of exotic groundcover covers no greater than 5%.
	Minimum native vegetation groundcover no less than 30% of zone.	Minimum native vegetation groundcover no less than 50% of zone.	Minimum native vegetation groundcover no less than 90% of zone.
	A minimum of 85% survival rate of all revegetation.		
	Maintenance replanting is to replicate the original native vegetation, within the constraints of flooding requirements		

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→ The Power of Commitment

Appendix B

Concept Soil and Water Management Plan

Moss Vale Plastics Recycling and Reprocessing Facility

Concept Soil and Water Management Plan

Plasrefine Recycling Pty Ltd

3 November 2021

→ The Power of Commitment

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Client name	Plasrefine Recycling Pty Ltd
Project name	Moss Vale Plastics Recycling and Reprocessing Facility
Document title	Moss Vale Plastics Recycling and Reprocessing Facility | Concept Soil and Water Management Plan
Revision version	Rev 0
Project number	12524108

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
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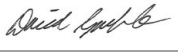
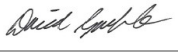
S4	0	R Towner	D Gamble		D Gamble		3/11/21

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1. Introduction

1.1 Overview

1.1.1 Plasrefine Recycling and the proposal

For many years, recyclable plastics have been recovered from kerbside collections and it has been profitable to export mixed plastics to China and other countries. With the advent of the China National Sword policy (a policy in China which banned the importation of certain types of waste and set strict contamination limits on recyclable materials), as well as issues with contaminated loads of recyclables being sent to China and other countries, opportunities to send mixed plastics overseas for processing have diminished. Recently, the Council of Australian Governments (COAG) decided to ban exports of recyclable waste from Australia from July 2021.

Despite these difficulties, export markets still exist for clean, separated, pelletised plastics and resins. However, there is very little local capacity in NSW and within Australia to sort recovered plastics into different types and convert them into valuable products.

To help address this issue, Plasrefine Recycling Pty Ltd (Plasrefine Recycling) ('the proponent') proposes to construct and operate a plastics recycling and reprocessing facility in Moss Vale ('the proposal').

The proposal would sort the plastics into different types and convert the various plastics to plastic flakes and pellets (in the first stage) and produce more advanced products such as resins and other plastic products (in the second stage). The combined outputs of both stages of the proposal would help fill the gap in local processing capacity for mixed plastics.

The proposal would have an ultimate capacity to receive up to 120,000 tonnes per year of mixed waste plastics.

1.1.2 Approval and assessment requirements

The proposal is State significant development and is subject to approval by the NSW Minister for Planning and Public Spaces under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This report has been prepared by GHD Pty Ltd (GHD) as part of the environmental impact statement (EIS) for the proposal. The EIS has been prepared to support the application for approval of the proposal and address the environmental assessment requirements of the Secretary of the NSW Department of Planning, Industry and Environment (SSD-9409987) dated 15 October 2020 (the SEARs).

1.2 The proposal

1.2.1 Location

The proposal would be located about 140 kilometres south west of the Sydney central business district and approximately 2.8 kilometres north west of the Moss Vale town centre within the Wingecarribee local government area.

The proposed plastics recycling and reprocessing facility and ancillary infrastructure would be located on the northern parcel of land in Lot 11 DP 1084421, with a current street address of 74-76 Beaconsfield Road, Moss Vale. This parcel of land is referred to as 'the plastics recycling and reprocessing facility site' for the purpose of the EIS. It has a total site area of about 7.7 hectares. The proposal would occupy a portion of the plastics recycling and reprocessing facility site.

The new access road which would extend from the plastics recycling and reprocessing facility to Lackey Road via:

– the currently unformed Braddon Road
– Lot 1 DP 26490 and Lot 10 DP 1084421 (the 'Braddon Road east extension').

The area that would be occupied by the proposal's permanent operational infrastructure, and/or directly disturbed during construction, is referred to as 'the proposal site' for the purposes of the EIS. The proposal site therefore comprises:

– The plastics recycling and reprocessing facility site (7.7 hectares)
– The new access road corridor (about 1.8 hectares)

It is noted that the areas that would be disturbed for construction of buildings, roads and water management would comprise about six hectares of the total 7.7 hectare plastics recycling and reprocessing facility site. Disturbance of the remaining 1.7 hectares would be limited to plantings as part of riparian vegetation management and landscaping.

The proposal site is also included within the Moss Vale Enterprise Corridor (MVEC) catchment. The MVEC is a significant area of land between Moss Vale and New Berrima set aside for employment generating development under the Wingecarribee Shire Local Environmental Plan 2010.

The location of the proposal site is shown in Figure 1.1.

1.2.2 Key features

The proposal is defined as the construction and operation of a plastics recycling and reprocessing facility with capacity to receive up to 120,000 tonnes per year of mixed plastics, comprising:

– Two main buildings for waste receival, recycling and reprocessing and finished product storage
– Wastewater treatment plant
– Ancillary infrastructure including an office building, workshop, truck parking, staff and visitor parking, internal roadways, weighbridges, water management, fire management, landscaping, fencing, signage and utility connection
– A new access road from the plastics recycling and reprocessing facility to Lackey Road via part of Braddon Road (currently unformed) and Lot 1 DP 26490 and Lot 10 DP 1084421 (the Braddon Road east extension).

The proposal would extract mixed plastics from waste, sort the plastics into different types, and convert the various plastics to flakes and pellets (in the first stage) and produce more advanced products (in the second stage). The combined outputs of both stages of the proposal would help fill the gap in local processing capacity for mixed plastics. Further information on the proposal is provided in the EIS.

The proposed site layout is shown in Figure 1.2.

Key features of the proposal with particular respect to the management of surface water include:

– Roadways
– Hardstand and parking areas
– Administrative building and amenity facilities
– Large roofed buildings for the recycling processes
– A demand for water for the processing activities, with no significant process water discharge
– A site office building with associated ablutions water demand with small quantities of wastewater, and
– Cut and fill pad to provide an appropriate surface for the proposal activities and infrastructure.

1.2.3 Construction overview

An indicative construction strategy has been developed, based on the current design, to be used as a basis for the environmental assessment process. Detailed construction planning, including programming, work methodologies and work sequencing would be undertaken once construction contractor(s) have been engaged and during detailed design.

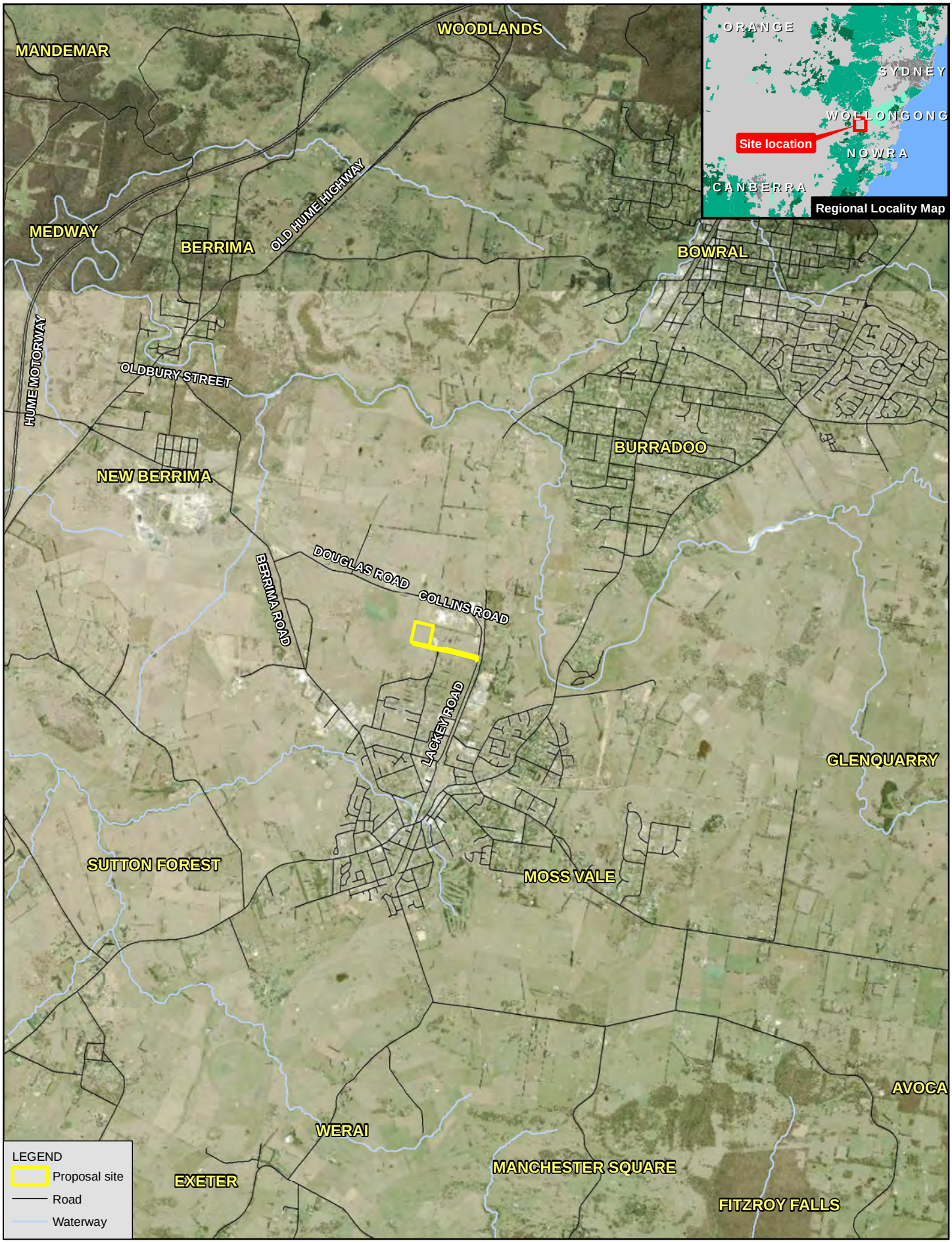
It is estimated that the proposal would take about 15 months to construct and commission and consist of three key stages:

– Early works and site establishment (1 month):

- Construction of site access road
- Utilities connection
- Establishment of construction compound including construction staff amenities
- Installation of temporary fencing

– Main site works (11 months):
  - Clearance of vegetation within the construction footprint, stripping and stockpiling of topsoil for reuse
  - Bulk earthworks for site shaping and surface water drainage and the bioretention pond
  - Pouring concrete foundation slab, footings, hardstand and slabs for the buildings
  - Construction of pavement areas for the truck and car park, internal roads and the site entrance/egress points
  - Installation of steel truss framework for structures
  - Erection of pre-cast concrete panels for external and internal partition walls and metal roof sheets for site buildings
  - Installation of processing equipment
  - Building finishing works including fit out
  - Installation of firewater and other tanks
  - Installation of weighbridges
  - Installation of permanent fencing and signage
  - Restoration works including removal of temporary construction compound, general site clean up and landscaping following construction
– Testing and commissioning (3 months)

Further information on how the proposal would be constructed is provided in the EIS.



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Kilometres

Map Projection: Transverse Mercator
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Grid: GDA 1994 MGA Zone 56

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GHD

Plasrefine Recycling Pty Ltd
Moss Vale Plastics Recycling and Reprocessing Facility

Project No. 12524108
Revision No. A
Date 22 Dec 2021

Proposal site location

FIGURE 1.1

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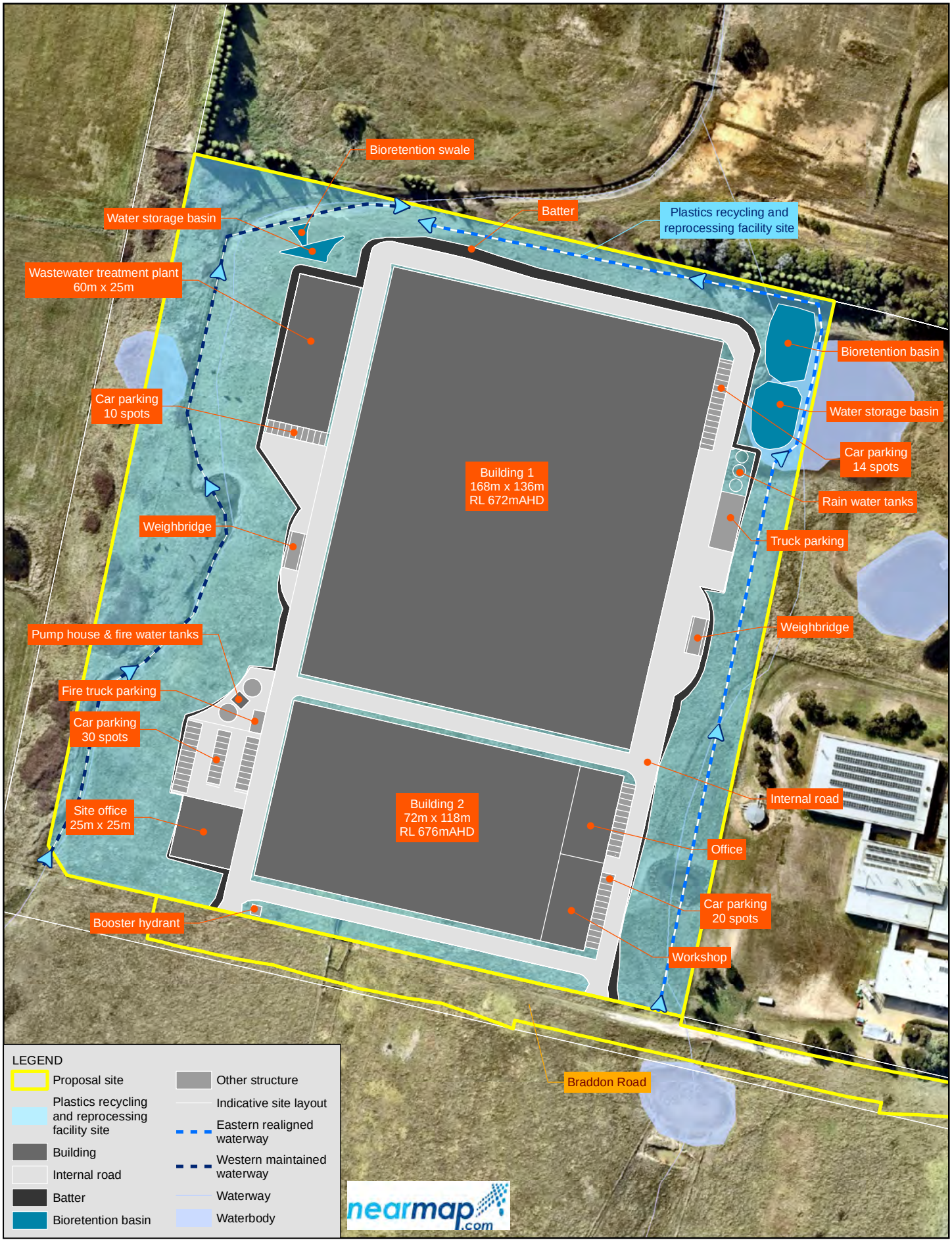

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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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GHD

Plasrefine Recycling Pty Ltd
Moss Vale Plastics Recycling and Reprocessing Facility

Project No. 12524108
Revision No. A
Date 06 Oct 2021

Proposed site layout

FIGURE 1.2

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Data source: Aerial imagery - nearmap 2021 (image date 24/04/2021, image extracted 30/06/2021); General topo - NSW LPI DTDB 2020, 2015. Created by: jrprice

1.3 Secretary's Environmental Assessment Requirements

The specific SEAR addressed through the development of this report is as follows:

– Provision of the plans requested by WaterNSW in its letter dated 7 October 2020 including ….. [a] Concept Soil and Water Management Plan

1.4 Purpose and scope of this report

The purpose of this report is to provide a Soil and Water Management Plan with respect to management of erosion and sediment control during the construction phase. This report should be read in conjunction with the Soils and Water Impact Assessment prepared for the proposal.

The impact assessment assesses water management more broadly, as well as assessing the impact of the proposal with relation to the erosion and sediment control during construction phase at the proposal site. As such, it sets out the soils and water management measures in-built into the proposal as well as those specified as mitigation through the impact assessment process.

This report, based on the approach outlined in the impact assessment, outlines further details on the management of erosion and sediment at the proposal site during the construction phase. This report is conceptual and would be updated prior to construction with Detailed Soil and Water Management Plan.

2. Existing environment

This section summarises the key features of the existing environment with respect to the stormwater runoff at the proposal site.

The topography is undulating and falls from the southern-central portion of the proposal site to the north and north-east. Four ponds are located in the low points of the proposal site and two watercourses run along the western and eastern boundaries.

Stormwater runoff enters the proposal site from the southern, eastern and western boundaries, with the majority of the flow collecting into the four ponds along the eastern and western boundaries.

In accordance with the Strahler stream ordering system, the western watercourse is a 2nd order stream. The stream flows in a north-westerly direction and crossing multiple constructed farm dams when flowing along the western boundary of the proposal site. The western watercourse then passes into a concrete channel.

The eastern watercourse, as per the Strahler stream ordering system, is a 1st order stream. The watercourse passes the eastern boundary of the proposal site, through a large dam shared with the neighbouring site, and enters the same concrete channel as the western watercourse. The combined flow passes an industrial site and flows in a north-easterly direction, under Collins Road, until it reaches the Wingecarribee River which forms part of the Sydney drinking water catchment. Wingecarribee River eventually outflows to Wingecarribee Reservoir.

There are a number of industrial businesses located within the vicinity of the proposal. However, aerial imagery indicates the land has been and currently is used predominantly for grazing. This is indicated by the dominance of grazed land at the proposal site and surrounding locations and minimal vegetation around the proposal site. There is minimal existing riparian vegetation along the banks of the western and eastern watercourses and aerial imagery shows evidence of channel erosion and modification of the channel from its natural condition, mainly through the removal of vegetation.

Site inspections undertaken by GHD in March 2021 identified several soil profiles exposed by the western watercourse. The soil is generally comprised of about 50 mm of topsoil underlain by residual light-brown sandy clay (stiff, medium-plasticity and dry). No odours, no staining and no anthropogenic material was found in the soil profiles. In accordance with the assessment of erosion hazard outlined Blue Book, with a rainfall erosivity value of 2,250 and a general slope of approximately 5% at the site, the erosion hazard is anticipated to be low.

3. Concept soils and water management plan

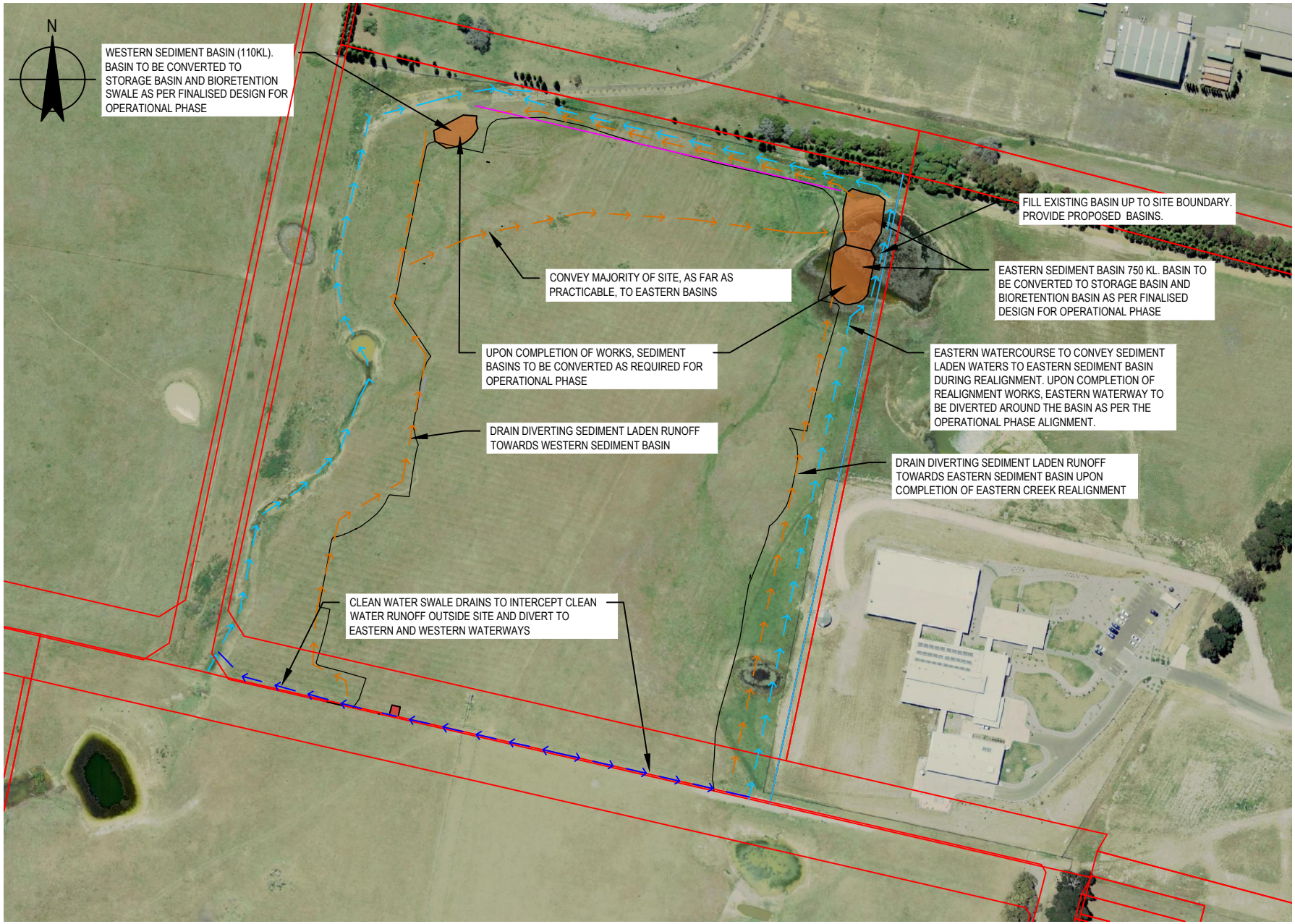
Managing Urban Stormwater: Soils and Construction – Volume 1, more commonly known as the 'Blue Book' is the primary resource for the design and construction of stormwater management, particularly, erosion and sediment control of urban developments (Landcom, 2004). It has been used as the primary source in the development of the plan as outlined in the following sections. The guidelines are supported by the NSW Environment Protection Authority (EPA), as well as throughout other NSW government agencies, local government and industry. The Blue Book sets out management procedures, operations and controls as well as monitoring and maintenance processes to ensure compliance requirements are satisfied.

3.1 Works staging

A key component of the plan would be integration with the final water management configuration and appropriate staging of the work. Key activities in the staging with respect to erosion and sediment control, in chronological order, are listed below and shown on Figure 3.1:

- Install the proposed western and eastern basins initially as unlined sediment basins
- The eastern sediment basins are to have a total construction phase combined capacity of 750 kL. This is to be comprised of the volume required for the proposed eastern basin during the operational phase (450 kL) plus provision of sediment basin storage above the proposed operational phase bioretention area (500 m^2 filter area)
- The western sediment basin is to have a capacity of 110 kL during the construction phase. This is marginally greater than the operational phase sizing requirement (70 kL) and may be achieved through a temporarily larger construction phase footprint than during operation
- Basins are to be removed of sediment after every significant rainfall event
- Undertake the eastern watercourse realignment, with the watercourse temporarily conveyed into the eastern sediment basins
- When realignment is complete, revegetate and place temporary erosion control matting then divert the watercourse to its final direction, flowing around the eastern basins. This allows for the basins to be utilised for the main site disturbance activities to be undertaken subsequently
- Convey local upstream run-on from the south around the site disturbance area and into the eastern and western watercourses through a clean-water swale drain at the southern boundary of the site
- Convey the site disturbance areas to the western and eastern basins via dirty water drains along the eastern, western and northern boundaries of the site. As shown on Figure 3.1 as much of the disturbed area as practicable is to be conveyed to the eastern basins based on their larger capacity
- Undertake the main site construction activities
- Enhanced erosion control measures including sediment fencing to be utilised in minor areas which temporarily cannot be drained to a sediment basin, such as the lowest portions of the site at the north-west
- Once disturbance activities are complete, convert the basins into their final operational phase purpose.

Final sediment basin sizing requirements would be undertaken in the development of the plan, with the basins operating as Type D/F 'wet' basins based on the soil conditions at the site. Preliminary calculations have been undertaken for this plan, which have determined the sizing requirements specified above. It can therefore be confirmed that the footprint of the basins required for the operational phase, is generally suitable to provide for the required construction phase erosion and sediment control.



LEGEND

- NATURAL WATERCOURSES
- CLEAN WATER DRAINS
- LOT BOUNDARY
- SEDIMENT-LADEN RUNOFF DRAIN
- SEDIMENT BASIN
- SITE BOUNDARY

0 25 50 75 100 125m

SCALE 1:2500 AT ORIGINAL SIZE

Paper Size ISO A4
Scale 1:2,500m

PLASREFINE RECYCLING PTY LTD MOSS VALE PLASTICS RECYCLING AND REPROCESSING FACILITY

SOIL AND WATER MANAGEMENT CONCEPT PLAN

Job Number 12524108
Revision A
Date AUG 2021

FIGURE 3.1

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3.2 Erosion control measures

The Blue Book specifies numerous general requirements that would apply to the plan. This includes the following areas:

3.2.1 Soil and stockpile management

Where possible, slope lengths in disturbed areas are not to not exceed 80 metres immediately before forecast rainfall or during shutdown periods.

Other specific requirements for soil and stockpile management are set out below:

- Runoff from the stockpile areas will be directed to the sediment basin prior to discharge, preventing untreated, sediment laden runoff from leaving the site.
- Stockpiles will be placed at a minimum of 5 m from concentrated flow paths and any soils stockpiled for further use will be vegetated to stabilise the surface and reduce erosion risks.
- Stockpiles be limited in height, wetted down and/or covered during windy conditions and be turned regularly.
- Stockpiled material will be bunded or inwardly drained and kept away from waterways to avoid sediment entering the waterways.
- Stockpiles of fill and/or vegetation will be located within existing cleared areas (and not within areas of adjoining native vegetation).

3.2.2 Vehicle management and access roads

Temporary access and haulage roads will be maintained to provide effective access between different areas of works.

To minimise generation and transport of sediment, the appropriate management of vehicle movements through measures such as traffic management personnel, signage and temporary barriers will be established where necessary. Speed restrictions on access roads will apply to vehicles to minimise dust generation. Additionally, access roads shall incorporate a physical barrier adjacent to slopes or embankments to ensure vehicles will not leave the road and deviate down any embankment.

Access roads are to be properly formed, drained, surface treated and maintained. Heavy vehicles and plant to be avoided during and immediately after rainfall where practicable events to minimise soil erosion.

3.2.3 Management of drainage

Temporary drainage channels are to be established onsite to convey runoff to onsite sediment basins as described in Section 3.1.

The modification of the eastern watercourse is to be based on designs that resemble the natural forms of the existing watercourse.

Works undertaken on site during construction phase are to be arranged to cause the least impact possible to riparian zones within the site. Construction and maintenance activities should be designed to avoid erosion of natural waterways through removal of vegetation or sediment from beds or banks Suitable spill control materials are to be stored in easily accessible locations within the site.

3.2.4 Responsibilities and incident reporting

Environmental matters will be highlighted in the site induction for all personnel including subcontractors. The site induction will include issues relating to site operational procedures, environmental management and water quality. Staff will be made aware of their responsibilities for all relevant environmental legislation as well as the mitigation measures outlined in the Soil and Water Management Plan.

If a pollution incident has been observed at this site, the Environmental Protection Authority (EPA) is to be notified in accordance with Part 5.7 of the *Protection of the Environment Operations Act 1997*.

3.2.5 Fuel storage

Fuel storage areas should be covered and spills should be prevented with proper containment areas established. Equipment leaks should be eliminated as part of a regular equipment maintenance program.

3.3 Construction phase water quality monitoring

The plan would include construction phase water quality monitoring of the sediment basins, as well as any discharge during construction hours. A daily rainfall record would also be kept. Where a discharge of greater than 50 mg/L of suspended solids occurs when the design rainfall event has not been exceeded this would be considered a non-compliance and remedial action taken.

A detailed water quality monitoring plan would be included in the detailed Soil and Water Management Plan prepared prior to construction. It would include monitoring for the following two purposes:

– To inform management of sediment basins such that controlled discharged occur at a suspended solids concentration of less than 50 mg/L. This would involve:
  - For the first several rainfall events sampling water in the basin for turbidity and suspended solids. This would allow for development of a relationship between the two, such that turbidity (which can be measured in the field) can be used as an indicator of whether water is at a suitable quality for discharge).
  - For all rainfall events following, turbidity would be monitored so that a rapid decision on discharge can be made and actioned if appropriate. Deliberate discharge would not be actioned if an oil sheen is observable.
– To assess the sediment management performance of the site. This would involve:
  - A suspended solids sample would also be taken for each controlled discharge.
  - Where a basin overflow occurs during construction hours a total suspended solids observation would be taken for the overflow (max one per rainfall event). It is noted that exceedance of 50 mg/L in this instance is not a non-conformance with best practice, however the sample would still be taken for information. When this occurs a sample would also be taken in the downstream channel as the combined eastern and western watercourses discharge from the site.

4. Conclusions

The purpose of this report is to provide a conceptual Soil and Water Management Plan as requested by WaterNSW. This report should be read in conjunction with the Soils and Water Impact Assessment (Technical Report 10) prepared for the proposal.

Key features of the plan include:

- Install the proposed western and eastern basins initially as unlined sediment basins
- The eastern sediment basins are to have a total construction phase combined capacity of 750 kL and the western sediment basin is to have a capacity of 110 kL during the construction phase
- Basins are to be removed of sediment after every significant rainfall event
- Undertake the eastern watercourse realignment, with the watercourse temporarily conveyed into the eastern sediment basins during realignment
- Convey local upstream run-on from the south around the site disturbance area
- Convey the site disturbance areas to the western and eastern basins via dirty water drains along the eastern, western and northern boundaries of the site
- Enhanced erosion control measures including sediment fencing to be utilised in minor areas which temporarily cannot be drained to a sediment basin
- Once disturbance activities are complete, convert the basins into their final operational phase purpose
- General water quality control measures are to be applied in relation soil and stockpile management, vehicle management, drainage management, fuel storage and reporting of incidents.

6. References

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Appendix C

Concept Environmental Operation Plan

Moss Vale Plastics Recycling and Reprocessing Facility

Concept Operational Environmental Management Plan

Plasrefine Recycling Pty Ltd

3 November 2021

→ The Power of Commitment

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Author	Rod Towner
Project manager	Anna Montgomery
Client name	Plasrefine Recycling Pty Ltd
Project name	Moss Vale Plastics Recycling and Reprocessing Facility
Document title	Moss Vale Plastics Recycling and Reprocessing Facility | Concept Operational Environmental Management Plan
Revision version	Rev 0
Project number	12524108

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
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1. Introduction

1.1 Overview

1.1.1 Plasrefine Recycling and the proposal

For many years, recyclable plastics have been recovered from kerbside collections and it has been profitable to export mixed plastics to China and other countries. With the advent of the China National Sword policy (a policy in China which banned the importation of certain types of waste and set strict contamination limits on recyclable materials), as well as issues with contaminated loads of recyclables being sent to China and other countries, opportunities to send mixed plastics overseas for processing have diminished. Recently, the Council of Australian Governments (COAG) decided to ban exports of recyclable waste from Australia from July 2021.

Despite these difficulties, export markets still exist for clean, separated, pelletised plastics and resins. However, there is very little local capacity in NSW and within Australia to sort recovered plastics into different types and convert them into valuable products.

To help address this issue, Plasrefine Recycling Pty Ltd (Plasrefine Recycling) ('the proponent') proposes to construct and operate a plastics recycling and reprocessing facility in Moss Vale ('the proposal').

The proposal would sort the plastics into different types, and convert the various plastics to plastic flakes and pellets (in the first stage) and produce more advanced products (in the second stage). The combined outputs of both stages of the proposal would help fill the gap in local processing capacity for mixed plastics.

The proposal would have an ultimate capacity to receive up to 120,000 tonnes per year of mixed waste plastics.

1.1.2 Approval and assessment requirements

The proposal is State significant development and is subject to approval by the NSW Minister for Planning and Public Spaces under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This report has been prepared by GHD Pty Ltd (GHD) as part of the environmental impact statement (EIS) for the proposal. The EIS has been prepared to support the application for approval of the proposal and address the environmental assessment requirements of the Secretary of the NSW Department of Planning, Industry and Environment (SSD-9409987) dated 15 October 2020 (the SEARs).

1.2 The proposal

1.2.1 Location

The proposal would be located about 140 kilometres south west of the Sydney central business district and approximately 2.8 kilometres north west of the Moss Vale town centre within the Wingecarribee local government area.

The proposed plastics recycling and reprocessing facility and ancillary infrastructure would be located on the northern parcel of land in Lot 11 DP 1084421, with a current street address of 74-76 Beaconsfield Road, Moss Vale. This parcel of land is referred to as 'the plastics recycling and reprocessing facility site' for the purpose of the EIS. It has a total site area of about 7.7 hectares. The proposal would occupy a portion of the plastics recycling and reprocessing facility site.

The new access road which would extend from the plastics recycling and reprocessing facility to Lackey Road via:

– the currently unformed Braddon Road
– Lot 1 DP 26490 and Lot 10 DP 1084421 (the 'Braddon Road east extension').

The area that would be occupied by the proposal's permanent operational infrastructure, and/or directly disturbed during construction, is referred to as 'the proposal site' for the purposes of the EIS. The proposal site therefore comprises:

– The plastics recycling and reprocessing facility site (7.7 hectares)
– The new access road corridor (about 1.8 hectares)

It is noted that the areas that would be disturbed for construction of buildings, roads and water management would comprise about six hectares of the total 7.7 hectare plastics recycling and reprocessing facility site. Disturbance of the remaining 1.7 hectares would be limited to plantings as part of riparian vegetation management and landscaping.

The proposal site is also included within the Moss Vale Enterprise Corridor (MVEC) catchment. The MVEC is a significant area of land between Moss Vale and New Berrima set aside for employment generating development under the Wingecarribee Shire Local Environmental Plan 2010.

The location of the proposal site is shown in Figure 1.1.

1.2.2 Key features

The proposal is defined as the construction and operation of a plastics recycling and reprocessing facility with capacity to receive up to 120,000 tonnes per year of mixed plastics, comprising:

– Two main buildings for waste receival, recycling and reprocessing and finished product storage
– Wastewater treatment plant
– Ancillary infrastructure including an office building, workshop, truck parking, staff and visitor parking, internal roadways, weighbridges, water management, fire management, landscaping, fencing, signage and utility connection
– A new access road from the plastics recycling and reprocessing facility to Lackey Road via part of Braddon Road (currently unformed) and Lot 1 DP 26490 and Lot 10 DP 1084421 (the Braddon Road east extension).

The proposal would sort the plastics into different types and convert the various plastics to flakes and pellets (in the first stage) and produce more advanced products (in the second stage). The combined outputs of both stages of the proposal would help fill the gap in local processing capacity for mixed plastics.

Further information on the proposal is provided in the EIS.

The proposed site layout is shown in Figure 1.2.

Key features of the proposal with particular respect to the management of surface water include:

– Roadways
– Hardstand and parking areas
– Administrative building and amenity facilities
– Large roofed buildings for the recycling processes
– A demand for water for the processing activities, with no significant process water discharge
– A site office building with associated ablutions water demand with small quantities of wastewater, and
– Cut and fill pad to provide an appropriate surface for the proposal activities and infrastructure.

1.2.3 Construction overview

An indicative construction strategy has been developed, based on the current design, to be used as a basis for the environmental assessment process. Detailed construction planning, including programming, work methodologies and work sequencing would be undertaken once construction contractor(s) have been engaged and during detailed design.

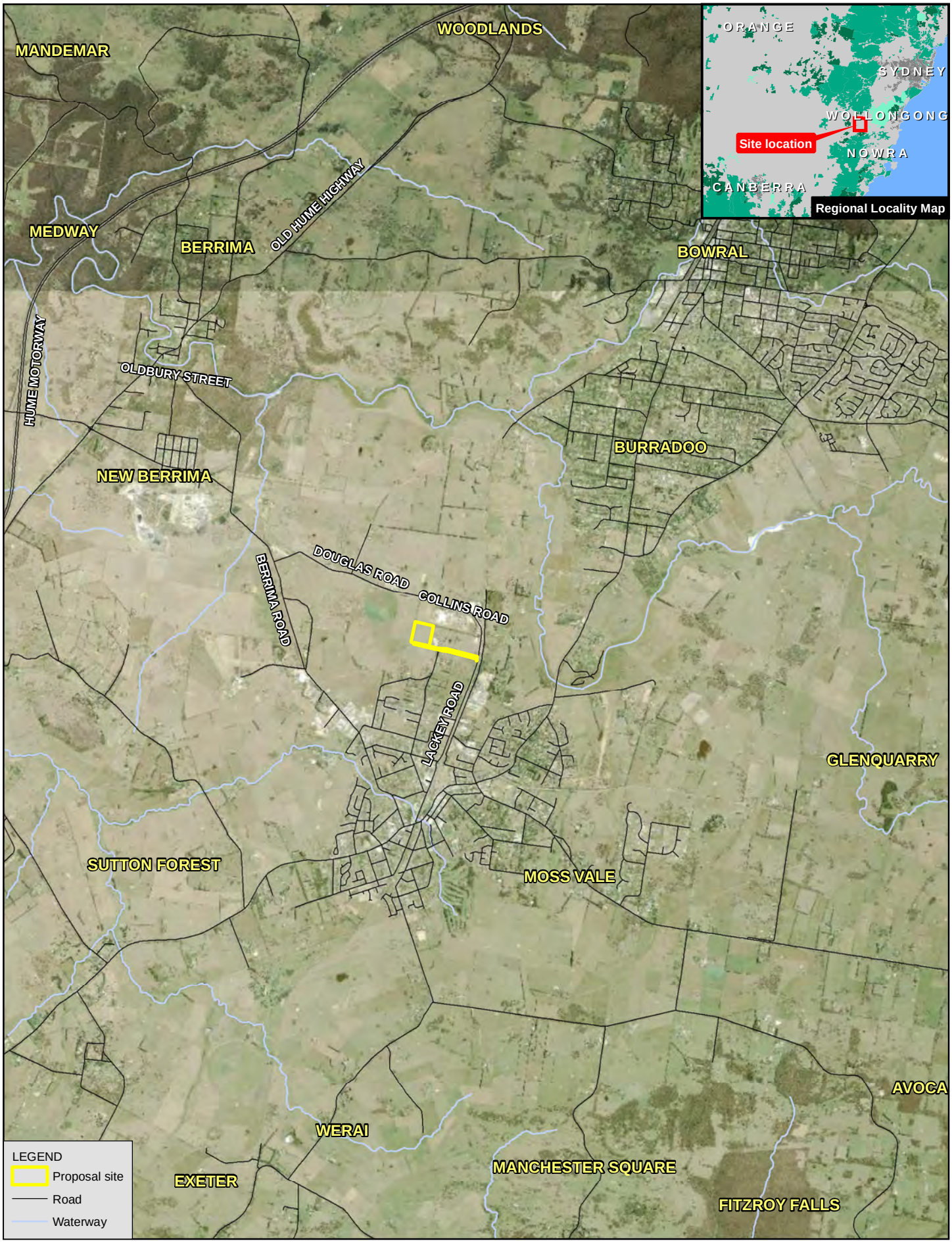
It is estimated that the proposal would take about 15 months to construct and commission and consist of three key stages:

– Early works and site establishment (1 month):
    - Construction of site access road
    - Utilities connection

- Establishment of construction compound including construction staff amenities
- Installation of temporary fencing

– Main site works (11 months):
  - Clearance of vegetation within the construction footprint, stripping and stockpiling of topsoil for reuse
  - Bulk earthworks for site shaping and surface water drainage and the bioretention pond
  - Pouring concrete foundation slab, footings, hardstand and slabs for the buildings
  - Construction of pavement areas for the truck and car park, internal roads and the site entrance/egress points
  - Installation of steel truss framework for structures
  - Erection of pre-cast concrete panels for external and internal partition walls and metal roof sheets for site buildings
  - Installation of processing equipment
  - Building finishing works including fit out
  - Installation of firewater and other tanks
  - Installation of weighbridges
  - Installation of permanent fencing and signage
  - Restoration works including removal of temporary construction compound, general site clean up and landscaping following construction
– Testing and commissioning (3 months)

Further information on how the proposal would be constructed is provided in the EIS.



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Kilometres

Map Projection: Transverse Mercator
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Grid: GDA 1994 MGA Zone 56

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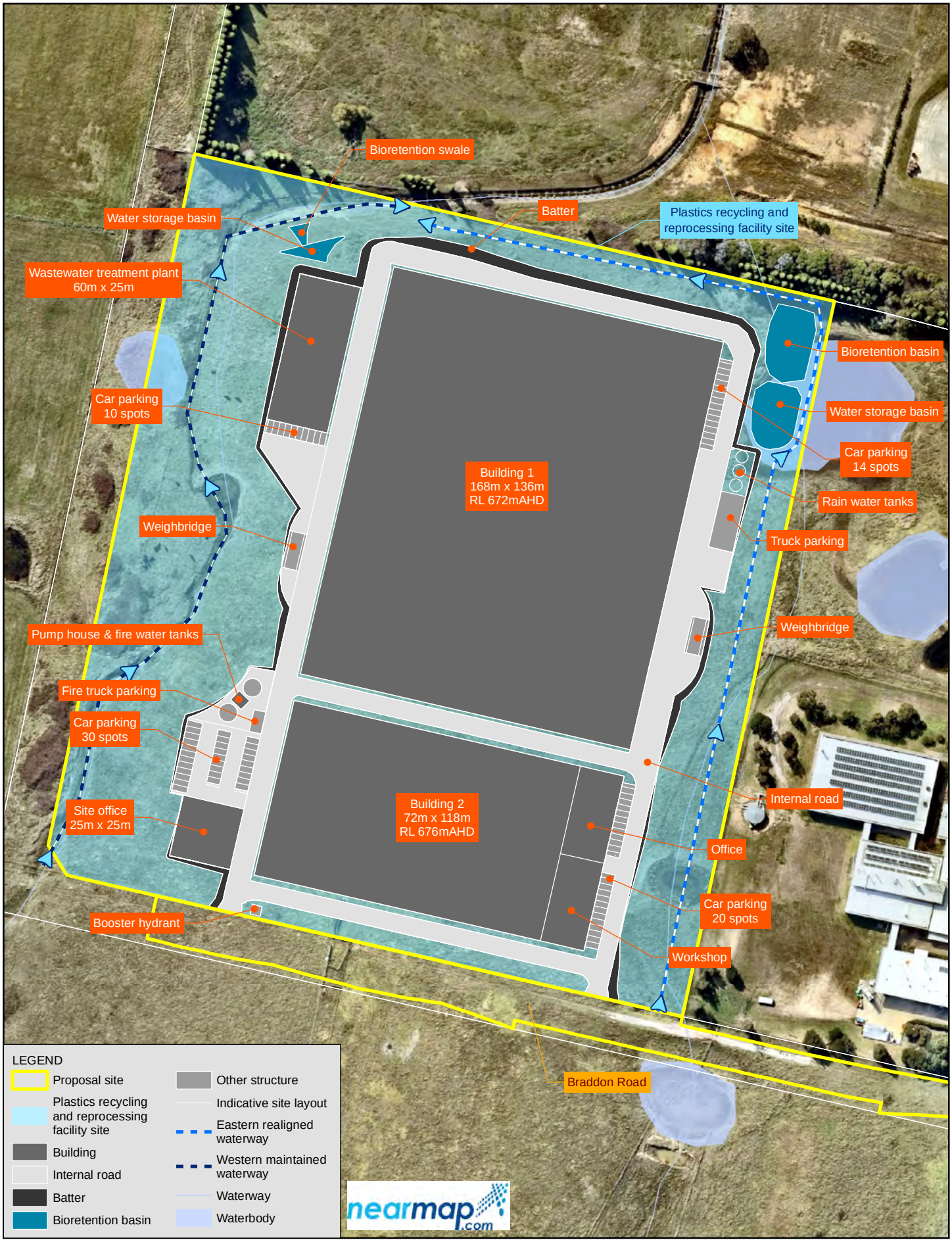
Plasrefine Recycling Pty Ltd
Moss Vale Plastics Recycling and Reprocessing Facility

Project No. 12524108
Revision No. A
Date 22 Dec 2021

Proposal site location

FIGURE 1.1

N:\AU\Sydney\Projects\21\12524108\GIS\Maps\Deliverables\SpecialistReports_StandardFigures\12524108_SRSF001_ProposalSiteLocation.mxd Data source: Aerial imagery - sixmaps 2021 © Department of Customer Service 2020; General topo - NSW LPI DTDB 2020, 2015; Inset map - Geoscience Australia. Created by: jrprice



Paper Size ISO A4

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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GHD

Plasrefine Recycling Pty Ltd
Moss Vale Plastics Recycling and Reprocessing Facility

Project No. 12524108
Revision No. A
Date 06 Oct 2021

Proposed site layout

FIGURE 1.2

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Data source: Aerial imagery - nearmap 2021 (image date 24/04/2021, image extracted 30/06/2021); General topo - NSW LPI DTDB 2020, 2015. Created by: jrprice

1.3 Secretary's Environmental Assessment Requirements

The specific SEAR addressed through the development of this report is as follows:

– Provision of the plans requested by WaterNSW in its letter dated 7 October 2020 including ….. [a] Concept Operational Environmental Management Plan

1.4 Purpose and scope of this report

The purpose of this report is to provide a water-focused Operational Environmental Management Plan. This report should be read in conjunction with the Soils and Water Impact Assessment prepared for the proposal (Technical Report 10). The impact assessment assesses water management more broadly, as well as assessing the impact of the proposal with relation to the collection and conveyance of stormwater runoff. As such, it sets out operational environmental management measures in-built into the proposal as well as those specified as mitigation through the impact assessment process.

This report, based on the operational environmental management approach outlined in the impact assessment, outlines further details on environmental management of runoff generated at the proposal site during the operational phase. Based on it being WaterNSW who has requested the plans preparation, it is therefore focussed on water management.

The plan is conceptual and is to be later integrated into a Detailed Operational Environmental Management Plan. This detailed plan would include all disciplines (not only water) covering relevant environmental areas. It would be prepared prior to construction.

2. Existing environment

This section summarises the key features of the existing environment with respect to the stormwater runoff at the proposal site.

The topography is undulating and falls from the southern-central portion of the proposal site to the north and north-east. Four ponds are located in the low points of the proposal site and two watercourses run along the western and eastern boundaries.

Stormwater runoff enters the proposal site from the southern, eastern and western boundaries, with the majority of the flow collecting into the four ponds along the eastern and western boundaries.

In accordance with the Strahler stream ordering system, the western watercourse is a 2nd order stream. The stream flows in a north-westerly direction and crossing multiple constructed farm dams when flowing along the western boundary of the proposal site. The western watercourse then passes into a concrete channel.

The eastern watercourse, as per the Strahler stream ordering system, is a 1st order stream. The watercourse passes the eastern boundary of the proposal site, through a large dam shared with the neighbouring site, and enters the same concrete channel as the western watercourse. The combined flow passes an industrial site and flows in a north-easterly direction, under Collins Road, until it reaches the Wingecarribee River which forms part of the Sydney drinking water catchment. Wingecarribee River eventually outflows to Wingecarribee Reservoir.

There are a number of industrial businesses located within the vicinity of the proposal. However, aerial imagery indicates the land has been and currently is used predominantly for grazing. This is indicated by the dominance of grazed land at the proposal site and surrounding locations and minimal vegetation around the proposal site. There is minimal existing riparian vegetation along the banks of the western and eastern watercourses and aerial imagery shows evidence of channel erosion and modification of the channel from its natural condition, mainly through the removal of vegetation.

3. Concept operational environmental management plan

A key basis of the water quality approach in-built to the proposal is that runoff generated would be similar to that of a typical industrial catchment. This is on the basis that all mixed plastics receival and processing activities would be undertaken indoors. An operational water management plan is therefore required as was identified in the proposal impact assessment as a required mitigation measure. The plan is required to have a particular focus on ensuring that higher risk runoff, such as runoff that has come into contact with waste or product materials, is not generated.

The plan outlined herein this report, is a conceptual Operational Environmental Management Plan, which would be incorporated, prior to construction, into a detailed plan. The following sections outline this conceptual plan.

3.1 Operational rules, constraints, or engineered mitigation

A key basis of the plan is providing operational rules or enforcing engineering mitigation to minimise the risk of higher risk runoff. These include measures as follows:

– Truckloads of incoming material are not to be removed from their packaging until the truck is fully inside the indoor receiving area.
– Fast action roller doors will be installed so they can be closed promptly after trucks have entered the building.
– Where product is transferred offsite or between buildings it is to be fully repackaged before leaving an indoor environment.

3.2 Inspection and monitoring

Based on the previous Section 3.1, it is not anticipated that product or waste materials will be located outside. However, to demonstrate ongoing compliance with this, inspection and monitoring will be undertaken.

During the first six months of operation, a daily visual inspection is to be undertaken across the site perimeter and all roadways within the site. Any product and waste materials observed in these areas are to be logged daily into a site database with photos and information regarding to the location and quantity of observed materials. This inspection is to be undertaken by specified person(s) with a clearly mandated responsibility.

After six months, should observance of product or waste material be infrequent (i.e. less than once per month), this inspection would be reduced to weekly.

The gross pollutant traps are to be inspected monthly for litter build up and blockages. The clay lining system of the water storage basins is to also be inspected monthly for cracking.

Further to this, the bioretention media is to be inspected monthly to monitor the following:

– Identification of any areas of obvious increased sediment deposition
– Erosion and scouring relating to storm flows
– Clogging of bioretention basin media, and
– Invasive weeds

It is not anticipated that water quality monitoring will be required during the operational phase on the basis that the impact assessment has demonstrated a neutral or beneficial effect on water quality with the appropriate implementation of this plan.

3.3 Incident management

During inspections, if issues as noted in Section 3.2 have been observed, the incident is to be recorded and rectification measures are to be arranged at the earliest opportunity. This may include measures such as:

– Cleaning out the gross pollutant trap if it is noted to be approaching capacity in collected litter
– Removal of weeds or tilling of the bioretention basin surface if there is evidence of clogging, and
– Repairing of the water storage basin clay liner if it is observed to exhibit cracking

If a pollution incident has been observed at this site, the Environmental Protection Authority (EPA) is to be notified in accordance with Part 5.7 of the *Protection of the Environment Operations Act 1997*.

3.4 Responsibilities and training

There is to be a prescribed group of staff to undertake inspections at the site. A list of this group is to be maintained onsite and a record outlining the status of training amongst staff members is to be maintained. A suitably qualified senior member of staff is to be appointed to oversee and manage inspection activities.

Environmental matters will be highlighted in the site induction for all personnel including subcontractors. The site induction will include issues relating to site operational procedures, environmental management and water quality. Staff will be made aware of their responsibilities for all relevant environmental legislation as well as the mitigation measures outlined in the Operational Environment Management Plan.

4. Conclusion

The purpose of this report is to provide a conceptual Stormwater Management Plan as requested by WaterNSW, noting that two marked watercourses traverse the proposal site. This report should be read in conjunction with the Soils and Water Impact Assessment (Technical Report 10) prepared for the proposal.

Key features of the plan include:

– All mixed plastics receival, storage and processing activities to be undertaken indoors
– Operational rules and enforcement of engineering mitigation to minimise the risk of higher risk runoff
– Daily visual inspections at the site to ensure no outdoor storage of product and waste materials, with inspections being reduced to weekly should observations of non-compliances be infrequent
– Monthly inspection of onsite drainage infrastructure including gross pollutant traps, bioretention media and water storage basins
– Recording of environmental issues observed during inspections and arrangement of rectification measures at earliest opportunity
– Training of all staff undertaking inspections and monitoring, with inspections to be overseen by a suitably qualified senior member of staff.

5. References

NSW DPIE. (2020, 08 10). *Sydney's Drinking Water*. Retrieved from NWS Department of Planning, Industry and Environment: https://www.planning.nsw.gov.au/Policy-and-Legislation/Environment-and-Heritage/Sydneys-Drinking-Water

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Appendix D

Concept Stormwater Management Plan

Moss Vale Plastics Recycling and Reprocessing Facility

Concept Stormwater Management Plan

Plasrefine Recycling Pty Ltd

3 November 2021

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Author	Rod Towner
Project manager	Anna Montgomery
Client name	Plasrefine Recycling Pty Ltd
Project name	Moss Vale Plastics Recycling and Reprocessing Facility
Document title	Moss Vale Plastics Recycling and Reprocessing Facility | Concept Stormwater Management Plan
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Project number	12524108

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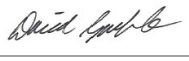
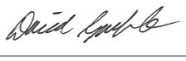
Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S4	0	R Towner	D Gamble		D Gamble		3/11/21

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1. Introduction

1.1 Overview

1.1.1 Plasrefine Recycling and the proposal

For many years, recyclable plastics have been recovered from kerbside collections and it has been profitable to export mixed plastics to China and other countries. With the advent of the China National Sword policy (a policy in China which banned the importation of certain types of waste and set strict contamination limits on recyclable materials), as well as issues with contaminated loads of recyclables being sent to China and other countries, opportunities to send mixed plastics overseas for processing have diminished. Recently, the Council of Australian Governments (COAG) decided to ban exports of recyclable waste from Australia from July 2021.

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The proposal would sort the plastics into different types and convert the various plastics to plastic flakes and pellets (in the first stage) and produce more advanced products such as resins and other plastic products (in the second stage). The combined outputs of both stages of the proposal would help fill the gap in local processing capacity for mixed plastics.

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The proposal site is also included within the Moss Vale Enterprise Corridor (MVEC) catchment. The MVEC is a significant area of land between Moss Vale and New Berrima set aside for employment generating development under the Wingecarribee Shire Local Environmental Plan 2010.

The location of the proposal site is shown in Figure 1.1.

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The proposal is defined as the construction and operation of a plastics recycling and reprocessing facility with capacity to receive up to 120,000 tonnes per year of mixed plastics, comprising:

– Two main buildings for waste receival, recycling and reprocessing and finished product storage
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– Ancillary infrastructure including an office building, workshop, truck parking, staff and visitor parking, internal roadways, weighbridges, water management, fire management, landscaping, fencing, signage and utility connection
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The proposal would sort the plastics into different types and convert the various plastics to flakes and pellets (in the first stage) and produce more advanced products (in the second stage). The combined outputs of both stages of the proposal would help fill the gap in local processing capacity for mixed plastics.

Further information on the proposal is provided in the EIS.

The proposed site layout is shown in Figure 1.2.

Key features of the proposal with particular respect to the management of surface water include:

– Roadways
– Hardstand and parking areas
– Administrative building and amenity facilities
– Large roofed buildings for the recycling processes
– A demand for water for the processing activities, with no significant process water discharge
– A site office building with associated ablutions water demand with small quantities of wastewater, and
– Cut and fill pad to provide an appropriate surface for the proposal activities and infrastructure.

1.2.3 Construction overview

An indicative construction strategy has been developed, based on the current design, to be used as a basis for the environmental assessment process. Detailed construction planning, including programming, work methodologies and work sequencing would be undertaken once construction contractor(s) have been engaged and during detailed design.

It is estimated that the proposal would take about 15 months to construct and commission and consist of three key stages:

– Early works and site establishment (1 month):

- Construction of site access road
- Utilities connection
- Establishment of construction compound including construction staff amenities
- Installation of temporary fencing

– Main site works (11 months):
  - Clearance of vegetation within the construction footprint, stripping and stockpiling of topsoil for reuse
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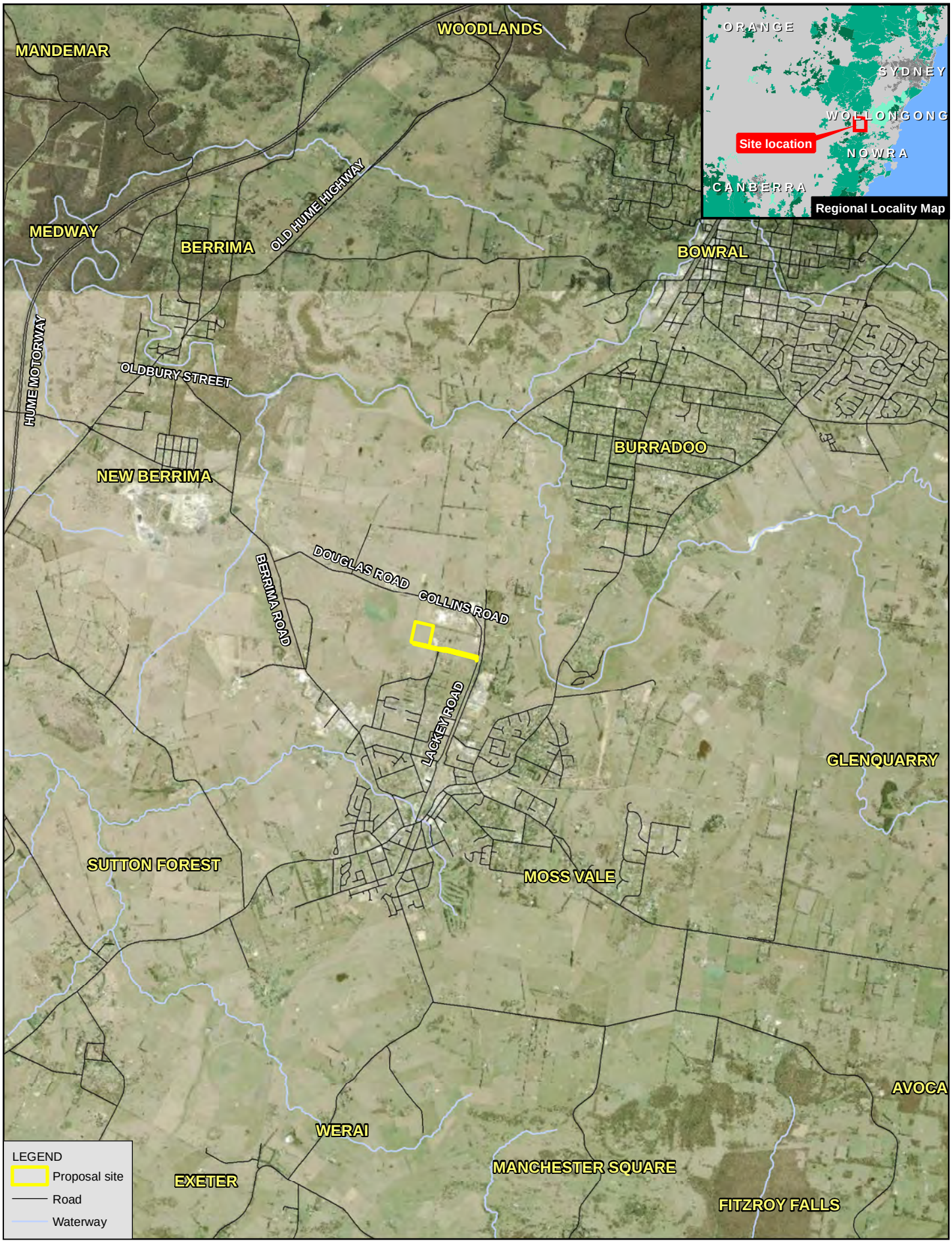
  - Construction of pavement areas for the truck and car park, internal roads and the site entrance/egress points
  - Installation of steel truss framework for structures
  - Erection of pre-cast concrete panels for external and internal partition walls and metal roof sheets for site buildings
  - Installation of processing equipment
  - Building finishing works including fit out
  - Installation of firewater and other tanks
  - Installation of weighbridges
  - Installation of permanent fencing and signage
  - Restoration works including removal of temporary construction compound, general site clean up and landscaping following construction
– Testing and commissioning (3 months)

Further information on how the proposal would be constructed is provided in the EIS.



Paper Size ISO A4

0 1 2

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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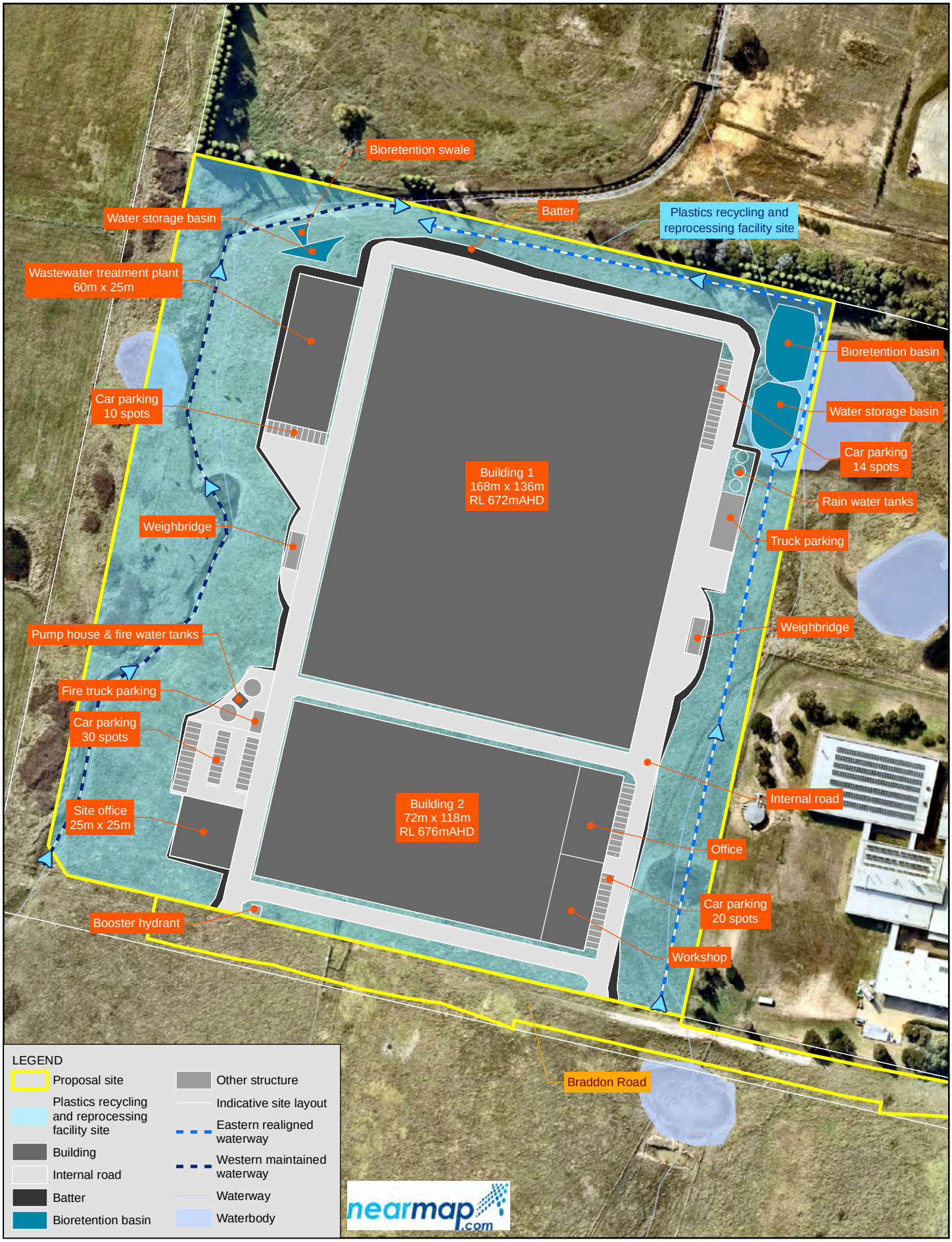
Plasrefine Recycling Pty Ltd
Moss Vale Plastics Recycling and Reprocessing Facility

Project No. 12524108
Revision No. A
Date 22 Dec 2021

Proposal site location

FIGURE 1.1

N:\AU\Sydney\Projects\21\12524108\GIS\Maps\Deliverables\SpecialistReports_StandardFigures\12524108_SRSF001_ProposalSiteLocation.mxd Data source: Aerial imagery - sixmaps 2021 © Department of Customer Service 2020; General topo - NSW LPI DTDB 2020, 2015; Inset map - Geoscience Australia. Created by: jrprice



Paper Size ISO A4

0 20 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Plasrefine Recycling Pty Ltd
Moss Vale Plastics Recycling and Reprocessing Facility

Project No. 12524108
Revision No. A
Date 06 Oct 2021

Proposed site layout

FIGURE 1.2

N:\AU\Sydney\Projects\21\12524108\GIS\Maps\Deliverables\SpecialistReports_StandardFigures\12524108_SRSF002_ProposedSiteLayout.mxd

Data source: Aerial imagery - nearmap 2021 (image date 24/04/2021, image extracted 30/06/2021); General topo - NSW LPI DTDB 2020, 2015. Created by: jrprice

1.3 Secretary's Environmental Assessment Requirements

The specific SEAR addressed through the development of this report is as follows:

– Provision of the plans requested by WaterNSW in its letter dated 7 October 2020 including [a] Concept Stormwater Management Plan

1.4 Purpose and scope of this report

The purpose of this report is to provide a conceptual Stormwater Management Plan. This report should be read in conjunction with the Soils and Water Impact Assessment (Technical Report 10) prepared for the proposal. The impact assessment assesses water management more broadly, as well as assessing the impact of the proposal with relation to the collection and conveyance of stormwater runoff. As such, it sets out stormwater management measures in-built into the proposal.

This report, based on the stormwater management approach outlined in the impact assessment, outlines further details on the appropriate collection and conveyance of stormwater runoff at the proposal site during the operational phase.

2. Existing conditions

This section summarises the key features of the existing environment with respect to the stormwater runoff at the proposal site.

The topography is undulating and falls from the southern-central portion of the proposal site to the north and north-east. Four ponds are located in the low points of the proposal site and two watercourses run along the western and eastern boundaries.

Stormwater runoff enters the proposal site from the southern, eastern and western boundaries, with the majority of the flow collecting into the four ponds along the eastern and western boundaries.

In accordance with the Strahler stream ordering system, the western watercourse is a 2nd order stream. The stream flows in a north-westerly direction and crossing multiple constructed farm dams when flowing along the western boundary of the proposal site. The western watercourse then passes into a concrete channel.

The eastern watercourse, as per the Strahler stream ordering system, is a 1st order stream. The watercourse passes the eastern boundary of the proposal site, through a large dam shared with the neighbouring site, and enters the same concrete channel as the western watercourse. The combined flow passes an industrial site and flows in a north-easterly direction, under Collins Road, until it reaches the Wingecarribee River. Wingecarribee River eventually outflows to Wingecarribee Reservoir.

There are a number of industrial businesses located within the vicinity of the proposal. However, aerial imagery indicates the land has been and currently is used predominantly for grazing. This is indicated by the dominance of grazed land at the proposal site and surrounding locations and minimal vegetation around the proposal site. There is minimal existing riparian vegetation along the banks of the western and eastern watercourses and aerial imagery shows evidence of channel erosion and modification of the channel from its natural condition, mainly through the removal of vegetation.

3. Concept stormwater management plan

This section gives an overview of the proposed management measures for collection and conveyance and management of stormwater during the operational phase of the proposal. This plan focusses on the collection and conveyance of stormwater during the operational phase and provides further detail with respect to this compared to the Soil and Water Impact Assessment (Technical Report 10) prepared for the proposal. The impact assessment provides justification and assessment of the water management system proposed and should be referred to as required in conjunction with this report.

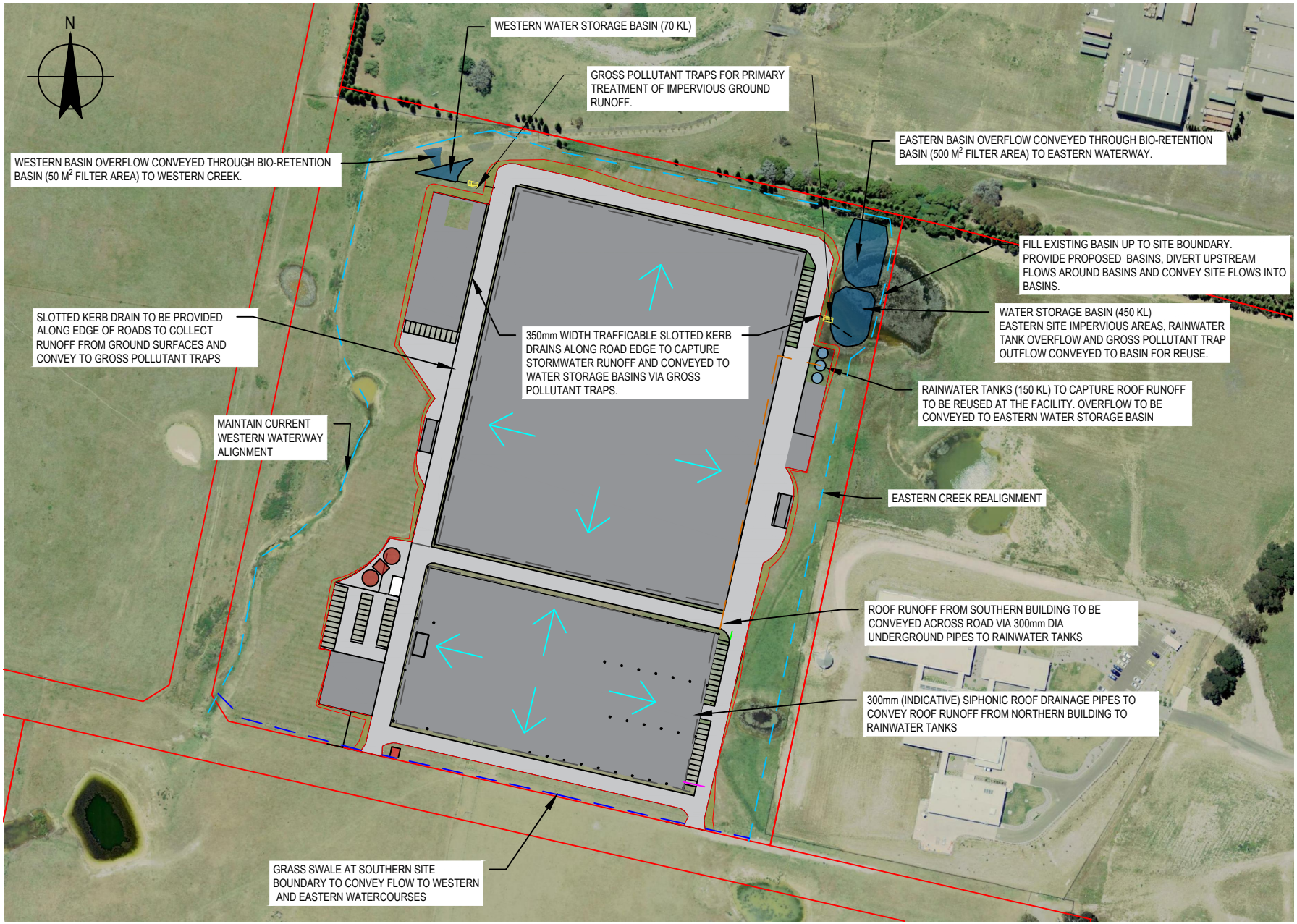
A stormwater collection and quality treatment train is proposed as shown on Figure 3.1, including the following:

– Upstream runoff from south of the proposal site would be diverted around the site activities and into the eastern and western waterways. This would be achieved through provision of an open channel grass swale
– Stormwater runoff from ground surfaces (e.g. roads) for the western portion of the site would be collected by proposed slotted drains at the edge of roadways. These drains would then discharge to a gross pollutant trap, which in turn would discharge into a western water storage basin (70 kL)
– Stormwater runoff from ground surfaces (e.g. roads) for the eastern portion of the site would be collected also in slotted drains and discharged to an eastern water storage basin (450 kL) via a gross pollutant trap
– Both basins would be lined with a compacted clay liner or other lining method of similar performance
– Roof water from the northern building would be captured in a siphonic collection system and conveyed to rainwater tanks (150 kL). Roof water from the southern building would be collected likewise in a siphonic system and transferred to an underground network to allow for conveyance under roadways and discharged to the rainwater tanks
– Water collected in rainwater tanks would be reused for toilet flushing in the administration building as well as for the plastics recycling process
– Rainwater tank overflow would flow to the eastern basin for reuse within the plastics recycling process (after treatment) and
– Overflow from the basins would be conveyed to bio-retention systems. For the eastern basin this would be a bioretention basin (filter area 500 m^2) located immediately downstream of the storage basin. For the western basin it would consist of a bio-retention swale (filter area 50 m^2).

The eastern storage and bio-retention basins would be constructed by filling the portion of the existing dam on the proposal site and repurposing for the stormwater treatment train.

The configuration of the drainage conveyance system would be confirmed during detailed design, based on industry as well as Council standards. As a minimum the drains would be designed to convey the 1 in 20 Annual Exceedance Probability (AEP) event in accordance with Australian Rainfall and Runoff, 2019. Overland flow paths down roadways would be provided to accommodate flows up to the 1 in 100 AEP event. The detailed drainage design would also consider:

– Engineering Design Specification D09 – Stormwater Drainage Design – Wingecaribee Shire Council
– Australian/New Zealand Standard 3500.3:2003 Plumbing and drainage – Stormwater drainage
– Austroads Guide to Road Design Part 5A: Drainage- Road Surface, Networks, Basins and Subsurface



LEGEND

- WATERCOURSES
- UPSTREAM DIVERSION SWALE DRAINS
- SINOPHIC ROOFWATER DRAINS
- UNDERGROUND ROOFWATER DRAINS
- GROSS POLLUTANT TRAP
- LOT BOUNDARY
- ROOFWATER RUNOFF FLOW DIRECTION

0 25 50 75 100 125m

SCALE 1:2500 AT ORIGINAL SIZE

Paper Size ISO A4
Scale 1:2,500m

GHD

PLASREFINE RECYCLING PTY LTD MOSS VALE PLASTICS RECYCLING AND REPROCESSING FACILITY

CONCEPT STORMWATER MANAGEMENT PLAN

Job Number	12524108
Revision	A
Date	AUG 2021

FIGURE 3.1

Plot Date: 23 August 2021 - 1:15 AM Plotted by: Kavi Karunaratne Cad File No: \\ghdnet\ghd\AU\Sydney\Projects\21\12524108\CADD\Drawings\12524108-Figure_StormwaterMgmtPlan.dwg

4. Conclusions

The purpose of this report is to provide a conceptual Stormwater Management Plan. This report should be read in conjunction with the Soils and Water Impact Assessment (Technical Report 10) prepared for the proposal. The impact assessment assesses water management more broadly, as well as assessing the impact of the proposal with relation to the collection and conveyance of stormwater runoff. As such, it sets out stormwater management measures in-built into the proposal.

This report, based on the stormwater management approach outlined in the impact assessment, outlines further details on the appropriate collection and conveyance of stormwater runoff at the proposal site during the operational phase.

Key features of the plan include:

– Upstream runoff from south of the proposal site would be diverted around the site activities
– Stormwater runoff from ground surfaces are to be collected by proposed slotted drains at the edge of roadways and conveyed to a water storage basins via a gross pollutant trap
– Both basins would be lined with a compacted clay liner or other lining method of similar performance
– Roof water from the northern building would be captured in a siphonic collection system and conveyed to rainwater tanks. Roof water from the southern building is to be collected likewise in a siphonic system to allow for conveyance under roadways and discharged to the rainwater tanks
– Water collected in rainwater tanks is to be reused on-site
– Rainwater tank overflow would flow to the eastern basin for reuse (after treatment)
– Overflow from the basins would be conveyed to bio-retention systems.

5. References

NSW DPIE. (2020, 08 10). *Sydney's Drinking Water*. Retrieved from NWS Department of Planning, Industry and Environment: https://www.planning.nsw.gov.au/Policy-and-Legislation/Environment-and-Heritage/Sydneys-Drinking-Water

NSW Office of Water. (2012). *Controlled Activities on Waterfront Land: Guidelines for riparian corridors on waterfront land.* NSW Department of Industry, Planning and Environment.

WaterNSW. (2019, June). Using MUSIC in the Sydney Drinking Water Catchment. Parramatta, NSW, Australia.

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