at&l

Dam Decommissioning Management Plan

Aldington and Abbotts Road Upgrade & Mamre and Abbotts Road Intersection Upgrade

Kemps Creek

ASPECT

October 2024

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Revisions

Revision	Date	Description	Prepared by	Approved by
Rev 01	14/05/2024	Draft issued to client for review	J. Highman-Smith	M. Williams
Rev 02	07/08/2024	Updated post client review of draft	J. Highman-Smith	M. Williams
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Glossary

AARU	Aldington and Abbotts Road Upgrade
Aspect	Aspect Environmental Pty Ltd
AT&L	AT&L Australia Pty Ltd
CEMP	Construction Environmental Management Plan
CoC	Condition(s) of Consent
DDMP	Dam Decommissioning Management Plan
DP	Deposited Plan
ENM	Excavated natural material
Environmental Incident	An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance.
ER	Environmental Representative
MAIU	Mamre and Abbotts Road Intersection Upgrade
NHMRC	National Health and Medical Research Council
NEPM	National Environmental Protection Measure
NSW EPA	NSW Environment Protection Agency
POEO Act	*Protection of the Environment Operations Act 1997*
Project, the	Road upgrades to Aldington and Abbotts Road and Mamre and Abbotts Road intersection Kemps Creek, under SSD 9138102 and SSD 10479
Site, the	Public road reserves and private land across multiple residential properties located at Abbotts and Aldington Road, Kemps Creek, NSW
SSD	State significant development
VENM	Virgin excavated natural material

1 INTRODUCTION

1.1 Background

This Dam Decommissioning Management Plan (DDMP) has been prepared by Aspect Environmental Pty Ltd (Aspect) on behalf of AT&L Australia Pty Ltd (AT&L), to support the development of road and intersection upgrades along Aldington Road and Abbotts Road, Kemps Creek. The works aim to upgrade Aldington Road and Abbotts Road, Mamre and Abbotts Road intersection and to provide for the development of land within the Mamre Road Precinct (the Project).

This DDMP has been prepared with reference to:

- State significant development (SSD) consent 9138102, dated 21 April 2023
- Westlink Stage 1 Modification 5 Final Modification Report (SSD 9138102) (Ethos Urban 21 March 2024)
- SSD consent 10479, dated 5 May 2023
- Development Control Plan (DCP) Penrith, Penrith City Council, 2014
- Development Control Plan: Mamre Road Precinct – Western Sydney Employment Area, NSW Department of Planning, Industry and Environment, November 2021
- State Environmental Planning Policy (SEPP) Western Sydney Aerotropolis 2020.

This DDMP is a sub-plan of the Construction Environmental Management Plan (CEMP).

1.2 Project Description

The Project is located at Mamre, within the Penrith Local Government Area and is zoned as 'IN1 – General Industrial' under the Penrith City Planning Certificate under section 10.7(2) of the *Environmental Planning and Assessment Act 1979*. The Project forms part of the Mamre Road Precinct which sits within both the Western Sydney Employment Area and the Western Sydney Aerotropolis.

The Project site is located at Abbotts and Aldington Road, Kemps Creek, NSW and has an approximate length of 4 km (the Site). The Site comprises the existing road corridor and the frontage of the adjacent private lots including:

- Mamre Road and Abbotts Road intersection
- Abbotts Road
- part of Aldington Road
- frontage of private lots adjacent to the road corridor.

Land surrounding the Site is generally rural in nature comprising a variety of rural dwellings, rural land, farm dams and scattered vegetation.

The Project involves:

- widening the road beyond the existing road reserve either side on Aldington Road, Abbotts Road and Mamre Road

- signalised intersections
- earthworks including raising and lowering the road
- stormwater including new and larger culverts under and adjacent to road
- relocation of services above and underground
- new services including water, power, communications
- site sheds, material storage as required for road construction
- temporary works as necessary to facilitate construction.

The road and intersection upgrades are being delivered under SSD 9138102 and SSD 10479. An aerial showing the location of the works is shown on Figure 1-1.

1.3 Purpose of this Plan

This DDMP has been prepared to address the conditions of the SSD 9138102 and SSD 10479 Development Consents related to dam decommissioning. The purpose of this DDMP is to set out the environmental processes for managing the decommissioning of the four farm dams during the construction phase of the Project.

Construction is to be undertaken in accordance with the most recent, approved version of this DDMP.

Roles and responsibilities for environmental management of the Project are outlined in Section 3.2 of the CEMP.

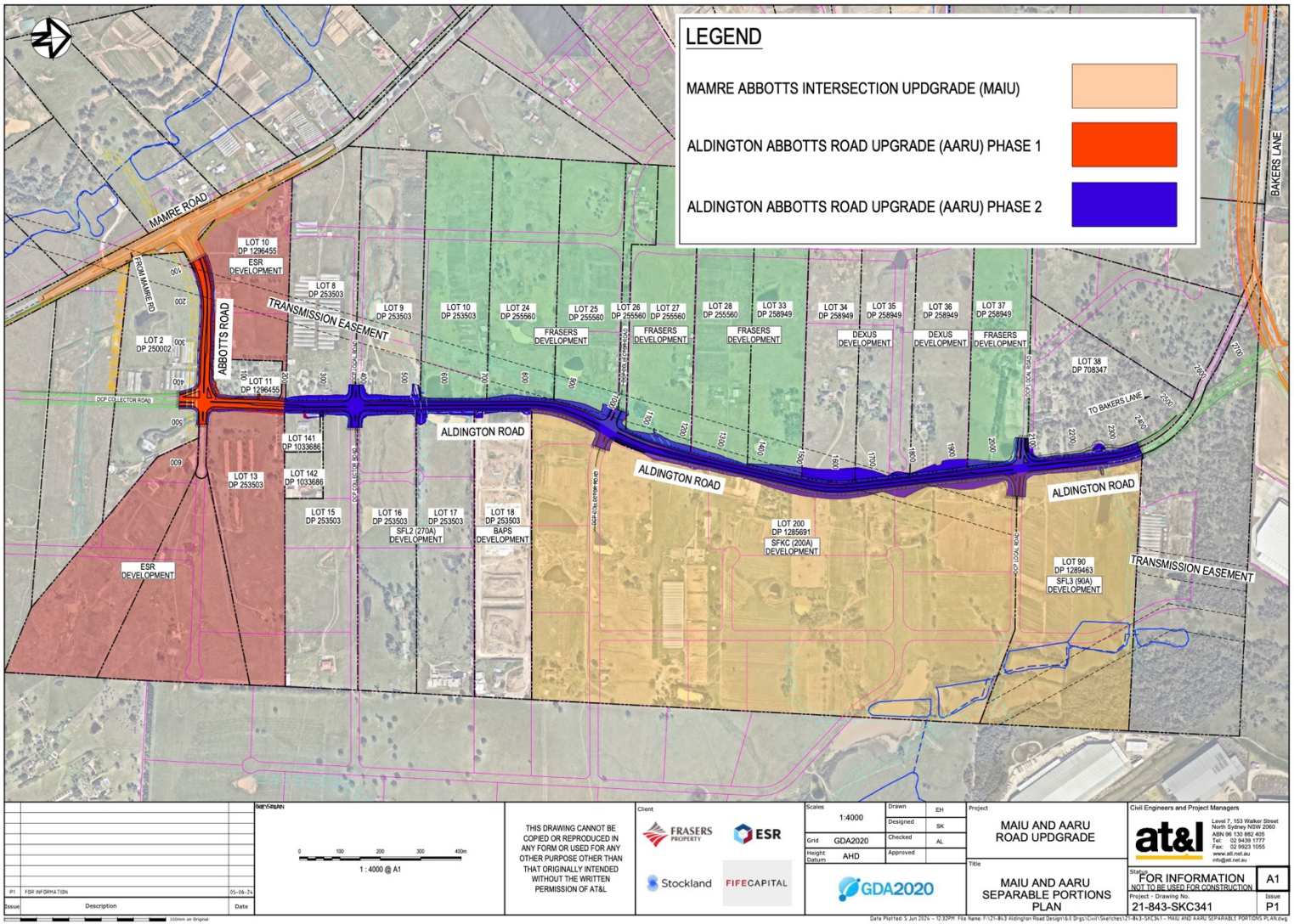


Figure 1-1 Location of road and intersection upgrades

2 SITE DESCRIPTION

2.1 General

The Project is located on gently undulating terrain within a rural setting, in the Penrith Local Government Area and is approximately 38km west of the Sydney central business district and approximately 5km north-east of the Western Sydney Airport, which is currently under construction.

2.2 Topography

The Project has a moderate to steep sloping surface ranging from 44-74m Australian Height Datum (ADE, 2024, *Abbotts Road and Aldington Road Upgrade)*. The lowest point on-site is in the south-western portion of the Site, with the highest point found at the northern part of the Site. As such, the Site is considered to have a moderate to steep gradient towards the south-west."

2.3 Geology and Soils

The site is a mixture of Luddenham soils and potentially Blacktown soils. Section 1 is a mixture of both soils whilst Section 2 has only Blacktown soils. These soils are described in the Soil Landscapes of the Penrith 1:100,000 sheets (Bannerman and Hazelton 2011).

The Luddenham landscape is characterised by undulating to rolling hills underlain by Wianamatta Group Ashfield Shale and Bringelly Shale formations, with local relief 50-80m and slopes 5-20%. The Ashfield Shale consists of laminite and dark grey shale. Bringelly Shale consists of shale, calcareous claystone, and laminite. Between these two shale members is the Minchinbury Sandstone consisting of fine to medium-grained lithic quartz sandstone. Soils are shallow (<100cm) consisting of dark Podzolic Soils or massive Earthy Clays on crests, moderately deep (70-150cm) Red Podzolic Soils on upper slopes and moderately deep (<150cm) Yellow Podzolic Soils on lower slopes and drainage lines. These soils are typically moderately reactive, with a high soil erosion hazard, and localised impermeable highly plastic subsoil.

The Blacktown soil landscape is characterised by gently undulating rises on Wianamatta Group shales, with local relief to 30m and slopes usually >5%. The geology consists of Wianamatta Group—Ashfield Shale comprising of laminite and dark grey siltstone, Bringelly Shale which consists of shale with occasional calcareous claystone, laminite and infrequent coal, and Minchinbury Sandstone consisting of fine to medium-grained quartz lithic sandstone.

2.4 Hydrology and Hydrogeology

There is no surface water body on site. The closest surface water body is a portion of Kemps Creek located approximately 350m west of the Site.

The MAIU works area contains two 1st order watercourses and one 2nd order watercourse along with their associated riparian buffer zones (Figure 4-1). Two mapped hydro areas (dams) also overlap with the Project Area.

The AARU works area has one 2nd order watercourse, along with its associated 20 m riparian buffer zone. This watercourse was in low condition, with the only habitat present being a degraded

culvert and exotic vegetation around a soak. One mapped hydro area (dam) was also identified shown in Figure 4-2.

Most of the Project Site is not sealed, with exposed soils and landscaping areas within the residential premises on the eastern and western boundaries of the site. In these areas, surface water is presumed to infiltrate into the sub-soil profile. Groundwater is expected to emulate the Site topography and proceed relatively slowly (due to the low hydraulic gradient characteristic of the underlying clays) in an easterly direction towards Parramatta River.

3 LEGAL AND OTHER REQUIREMENTS

3.1 Legislation

Water NSW is responsible for managing dam safety for all dams across NSW, including the decommissioning of farm dams.

The Project is to be constructed in accordance with applicable legislative instruments, permits, licences and guidelines as required. The instruments relevant to the management of the dam decommissioning across the Project are outlined in Table 3-1.

Table 3-1 Legislative and related instruments relevant to the Project

Instrument	Key Project Requirements	Applicability
Environment Planning and Assessment Act 1979	Establishes a system of environmental planning and assessment of proposed developments in NSW. The Project must comply with the requirements of SSD 9138102 and SSD 10479 Development Consents	All works
Protection of the Environment Operations Act 1997 (POEO Act)	Part 5.4 of the POEO Act requires operators to: (a) maintain plant in an efficient condition, or (b) operate plant in a proper and efficient manner. The Act also creates obligations for dealing with raw materials and emissions of particulates and odours which cause air pollution outside the premises.	Dam decommissioning/ earthworks Materials management Stockpile management Operation and maintenance of plant and equipment
Water Act 1912	This Act governs water licences.	Dam dewatering and decommissioning activities
Water Management Act 2000	This Act aims to manage the State's water resources including rivers and groundwater in a sustainable way.	Dam dewatering and decommissioning activities
Commonwealth Environmental Protection and Biodiversity Conservation Act 1999	This Act promotes the protection of threatened ecological communities.	Possible threatened communities under the EPBC Act in the Project area that do not meet the minimum condition thresholds for EPBC listing

Where updated or revised versions of guidelines, protocols, standards or policies, or a replacement of them are available, the most recent versions should be applicable to this DDMP.

3.2 Water Quality Assessment Guidelines

The dam water quality is to be screened against the following guidelines as part of the dewatering and decommissioning process:

- Australian and New Zealand Guidelines for Fresh Water Quality (ANZG, 2018) – 95% species protection guidelines
- Guidelines for Managing Risks in Recreational Water (NHMRC, 2008) – Primary contact recreation guidelines.

In addition, the following criteria are consistent with industry best practice and are to be used immediately before and during dewatering to determine suitability for onsite re-use or discharge:

- pH between 6.5 and 8.5
- total suspended solids < 50 mg/L
- no visible oil and grease.

The dam sediment and embankment soil is to be screened against the following National Environmental Protection Measure (NEPM) guidelines to determine the on site reuse or off site disposal process:

- NEPM – Guideline on Investigation Levels for Soil and Groundwater (2013) – Health investigation levels for soils contaminants for commercial/industrial sites (HIL-D)
- NEPM – Guideline on Investigation Levels for Soil and Groundwater (2013) – Health screening levels commercial/industrial sites (HSL-D).

3.3 Project Consent Conditions

The Project is to be constructed in accordance with SSD 9138102 and SSD 10479 Development Consents. The conditions which apply to dam decommissioning and where they have been addressed are identified in Appendix A.

4 DAM DECOMMISSIONING STRATEGY

The decommissioning of the dams is to align with the progression of earthworks on site. The timing of the earthworks and seasonal weather conditions can influence the water levels of the dams, and this is to be taken into consideration when sequencing the decommissioning activities.

The recommended procedure for the decommissioning of the existing farm dams is summarised in the following sections. The dam decommissioning process is to be completed under appropriate supervision. Supervision is to include the implementation of a permit system whereby the Project Manager approves dam dewatering and use or discharge of water, including the adequacy of downstream controls.

4.1 Background

The four farm dams to be decommissioned as part of the Project are shown in Figure 4-1 and Figure 4-2. All four dams are located on private property adjacent to existing roads. They have generally been formed with earthen embankments and are fed by rainfall runoff.

Three of the dams are located adjacent to Aldington Road and are to be managed under SSD 10479. Parts of these three dams are located outside the construction boundary (Figure 4-1). Condition D37 of SSD 10479 Development consent allows for the decommissioning and removal of these dams as part of the construction works.

The fourth dam is adjacent to Mamre Road, north of the intersection with Abbotts Road (Figure 4-2). This dam is located entirely within the construction boundary.

4.2 Dam Water Analysis

Management of the dam waters requires an understanding of the water quality and approximate water volumes to assess reuse or disposal options. On site reuse is the preferred option and is discussed in Section 4.4.

4.2.1 Dam Water Quality

Water quality sampling of the dam water is required prior to dewatering to determine if the water is suitable for onsite reuse. The water quality is to be assessed against the relevant guidelines in Section 3.2 for the proposed reuse of the water. The number of water quality samples for analysis is to be determined by a suitably qualified specialist.

The specialist is to determine whether there is stratification within the dam. Stratification is the formation of layers of water with different properties (parameters) – oxygenation, density, temperature, pH and salinity.

Figure 4-1 Location of three farm dams to be decommissioned

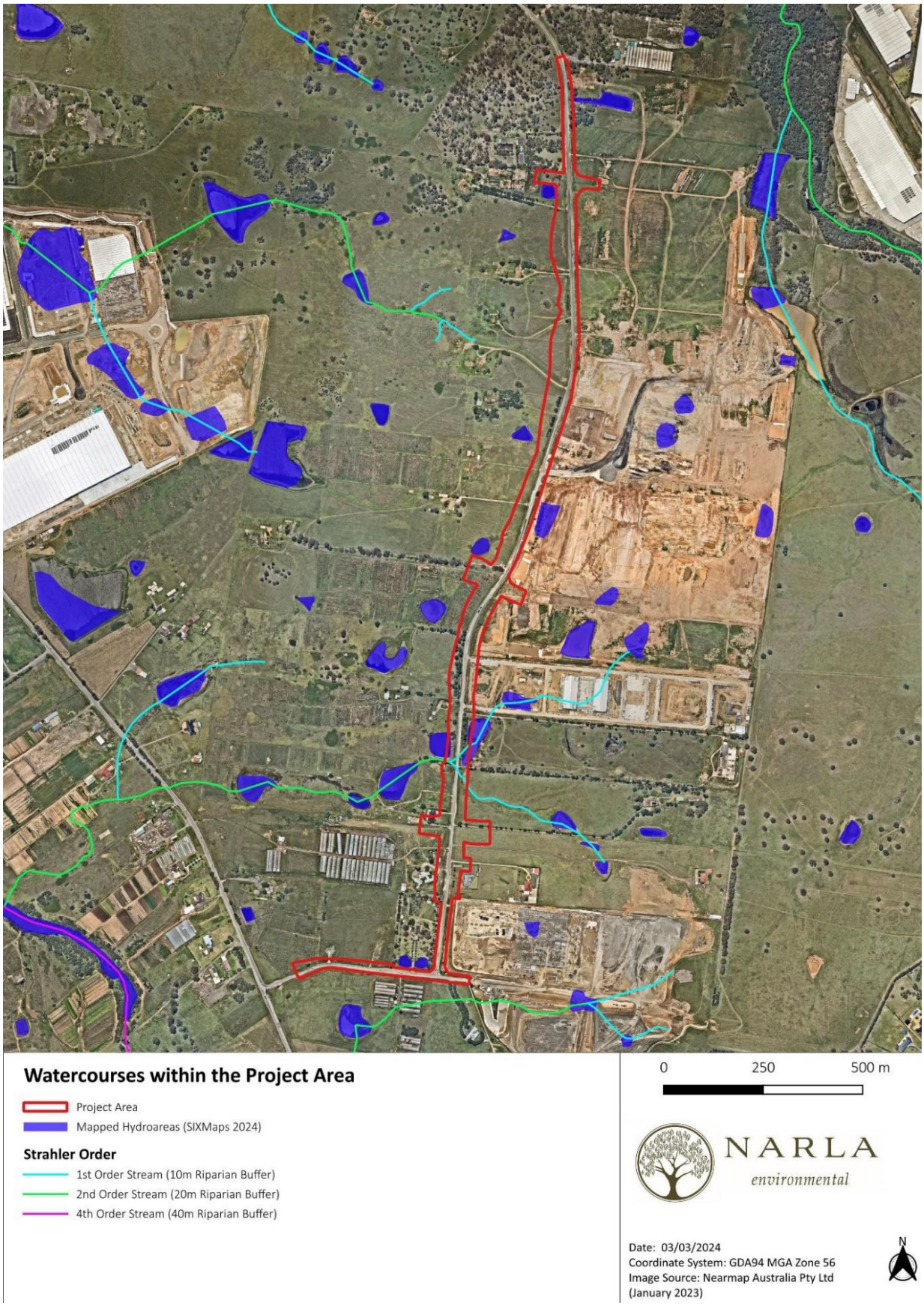
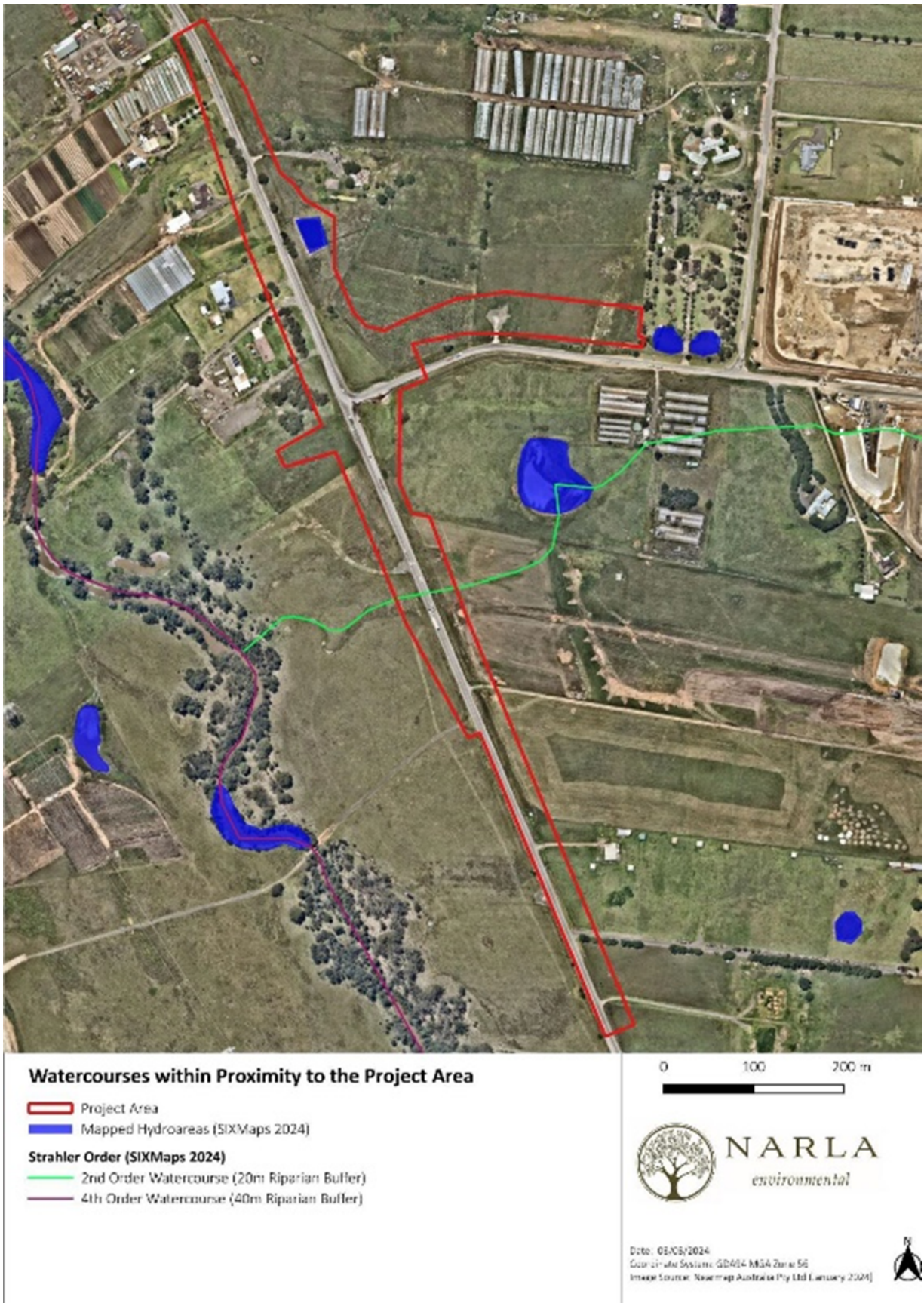


Figure 4-2 Location of one farm dam within the construction boundary to be decommissioned



Stratification

To determine stratification, in-situ testing (utilising a multi-meter) across the surface area of the dam is carried out at approximately one location every 5m^2 of water surface. This can vary based on dam characteristics such as size, depth and gradient.

At each testing location water quality measurements are recoded at the surface using the multi-meter. The multi-meter electrodes are then lowered slowly to the bottom of the dam. Whilst lowering the electrodes, if there are changes in parameters noted (5-10%), stratification might be occurring. If stratification of the dam is suspected, record the multi-meter measurements and take a water sample at the depth for comparison to the surface water sample.

Note: Stratification can result in different water quality from one layer to the next. This is more likely to occur in warmer months and in deeper dams. There may also be biological influences on water quality including algal blooms.

Visual Indicators

There may be other visual indicators of poor health of dam waters including cloudy or murky (green colour), decaying plants, organic acid sheen or algal blooms. If these indicators are observed, stratification of the dam must be determined.

No Stratification

Where it is determined that no stratification is occurring across the dam, one surface sample is required per dam.

During the dewatering process, it is recommended that the water is drawn from as close to the surface as possible to avoid turbid water on the bottom of the dam. To maintain water quality, filter through a screen on the pump inlet (or similar), to remove solids and debris.

4.2.2 Dam Water Volume

An estimate of the volume of water in each dam is needed to quantify the volume of water that requires management across the Project as part of the decommissioning process. The total volume of the dam water influences the reuse or disposal options. Where the total volume of dam water exceeds the reasonable reuse rate on site, then alternate storage or disposal may be required.

The NSW Office of Water (2010) has provided a methodology of estimating dam capacity. The following formula allows the capacity of each dam to be calculated:

- Volume (m^3) = 0.4 x surface area (m^2) x maximum depth (m)

The maximum depth of a dam can be obtained by taking a measurement from the centre of the dam using a graduated staff or a weighted rope lowered from a kayak or canoe. In the case of larger dams, multiple measurements may be required to attain an accurate depth.

The surface area of the dam can be obtained using up-to date aerial photography and confirmed by site inspection.

4.3 Ecological Clearance

Prior to dam dewatering and removal of dam structures, a suitably qualified ecologist is to inspect the dam to identify the presence or likely presence of aquatic species of flora and fauna.

The ecologist is to determine whether the dam water is suitable for the proposed water reuse option and whether additional actions are required prior to or during the dam dewatering process e.g. relocation of native aquatic species or destruction and disposal of weed or pest species.

The ecologist is to be on site to anaesthetise any fish remaining in the dam after the dewatering process.

4.4 Water Reuse Options

The reuse of dam water on site is the preferred approach. Discharging water offsite to the environment is a high-risk activity. The water reuse options are outlined in Table 4-1.

Table 4-1 Onsite water reuse options

Reuse Option	Description
Dust suppression	Water pumped from the dams can be used as dust suppression on site during earthworks and construction. This can either be via a water cart or directly from the dam via a sprinkler system or similar.
On site irrigation	Water pumped from the dams can be used for irrigation purposes where construction sequencing permits.
Vehicle wheel wash	Water pumped from dams can be used to maintain a wheel wash facility or to spray down trucks as they leave the site to reduce the tracking of mud and dirt off site.
Topping up neighbouring dams	Water pumped from the onsite dams can be pumped to dams on neighbouring properties, subject to the landowner's approval and the water quality meeting the Australian and New Zealand Guidelines for Fresh Water Quality 95% species protection.
Discharge to an onsite sediment basin	As a contingency, if there is excess dam water, water to be flocculated, and water quality would be monitored. If the water quality meets the Australian and New Zealand Guidelines for Fresh Water Quality 95% species protection the water can be discharged off site or to an onsite sediment basin.

The multiple reuse options are to be considered throughout the decommissioning process based on the progression of earthworks, seasonal conditions and the Project requirements.

4.5 Removal of Dam Structures

After dewatering each dam, the dam void is to be bunded to direct rainfall run-off around the dam and into a drainage line, directing surface water in accordance with the site erosion and sediment control plan avoiding down gradient construction areas. Bunding is to be constructed in accordance with Managing Urban Stormwater: Soils and Construction (known as the 'Blue Book', Landcom 2004).

Following ecological clearance from a suitably qualified ecologist, the dam structure can be removed and back filled. Any soil and sediments to be excavated and removed would be sampled and classified in accordance with the NSW Environment Protection Agency (EPA) Waste Classification Guidelines (2014) to guide disposal options and assess if soils are suitable for onsite reuse. The preferred approach would be to use any embankment soils to partially infill the dam voids.

4.5.1 Dam Embankment Soils

It is likely that, where present, dam embankment soils would have been sourced locally (if not from the immediate vicinity) pushed up from the void during the construction of the dam, and therefore,

would be compatible with the other soils on site. Where suitable and in accordance with the NSW Environment Protection Agency (EPA) Waste Classification Guidelines (2014) and the requirements of the Construction Waste Management Plan, embankment soils are to be reused on site to fill the dam voids following dewatering.

If the embankment soils fail to meet the relevant reuse guideline criteria, they would be classified under the NSW EPA Waste Classification Guidelines (2014) and disposed of to an appropriately licensed facility in accordance with Section 3.6 of the Construction Waste Management Plan.

4.5.2 Dam Sediments

It is anticipated that the sediments excavated from the dams would be saturated and the excess water would need to be removed. This is to be completed by spreading the saturated sediments out, either in the dam void or adjacent to the dam. Where possible, the sediments are to be located so that any runoff re-enters the excavated dam. This is to reduce the potential for the spread of any contamination at the Project site.

Once dry, the sediment is to be sampled against the relevant guidelines and if suitable, blended with embankment soils to be reused as fill material.

If the sediments fail to meet the relevant guideline criteria, they would be classified under the NSW EPA Waste Classification Guidelines (2014) and disposed of to an appropriately licensed facility.

4.5.3 Dam Voids

Following dewatering, the dam voids are to be infilled and any embankments and sediments removed in accordance with the options detailed in Table 4-2.

Table 4-2 Options for the infill of dam voids

Option	Description
Use of dam embankment soils and sediments	If the dam embankment soils and/or sediments meet the criteria for reuse on site, they can be reused in the dam voids as fill material.
Other material generated by excavation works on site – Virgin Excavated Natural Material (VENM) and/or Excavated Natural Material (ENM)	If the dam embankment soils and/or sediments are unsuitable for reuse, or insufficient in volume, then other material generated by excavation works on site can be used to infill the voids.

The voids would be infilled and integrated into the earthworks specification for the entire site.

Appendix A Consent Compliance Matrices

CoC	Instrument	DDMP Section
SSD 9138102		
B36	Prior to commencement of construction of the development, the Applicant must prepare a Dam Decommissioning Strategy to the satisfaction of the Planning Secretary. The Dam Decommissioning Strategy must form part of the CEMP required by condition C2. The Applicant must implement the most recent version of the Dam Decommissioning Strategy for the duration of construction.	This Plan
SSD 10479		
D37	Prior to commencement of construction of the Stage 1 Development, the Applicant must prepare a Dam Decommissioning Strategy to the satisfaction of the Planning Secretary. The Dam Decommissioning Strategy must form part of the CEMP required by condition E2. The Applicant must implement the most recent version of the Dam Decommissioning Strategy for the duration of construction.	This Plan