



Air Quality Management Plan

Menangle Quarry Extension | 15 Menangle Road, Menangle

Prepared for Menangle Sand and Soil Pty Limited | April 2021



Menangle Sand and Soil Quarry

Air Quality Management Plan

Report Number

J190166 RP30

Client

Menangle Sand and Soils

Date

12 April 2021

Version

Final

Prepared by



Scott Fishwick

Associate, National Technical Leader, Air Quality

12 April 2021

Approved by



Francine Manansala

Associate, Air Quality

12 April 2021

This report has been prepared in accordance with the brief provided by the client and has relied upon the information collected at the time and under the conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the aforementioned circumstances. The report is for the use of the client and no responsibility will be taken for its use by other parties. The client may, at its discretion, use the report to inform regulators and the public.

© Reproduction of this report for educational or other non-commercial purposes is authorised without prior written permission from EMM provided the source is fully acknowledged. Reproduction of this report for resale or other commercial purposes is prohibited without EMM's prior written permission.

Table of Contents

1	Introduction	1
1.1	Background	1
1.2	Project overview	1
1.3	Operations	5
1.4	Quarry life	6
1.5	Operating hours	6
1.6	Access	6
1.7	Purpose and objectives	7
1.8	Report preparation	7
1.9	Consultation	7
2	Environmental requirements	8
2.1	Legislation	8
2.2	Project consent conditions	8
3	Air quality criteria	11
4	Quarry emission sources	12
4.1	Dust emissions sources	12
4.2	Source significance	12
4.3	Odour emissions sources	13
5	Mitigation measures	14
5.1	Dust mitigation measures	14
5.2	Risk of adverse impacts	14
6	Monitoring and incident reporting	15
6.1	Dust mitigation performance monitoring and responsibilities	15
6.2	Ambient air quality monitoring	15
6.3	Actions during adverse weather conditions	19
6.4	Complaints reporting	19
6.5	Air quality incident and non-compliance definitions and response	20
6.6	Key performance indicators	21
6.7	Review of AQMP	21
	References	22

Appendices

Appendix A Letter to NSW EPA (October 2020)

Appendix B NSW EPA Letter in response to consultation

Tables

Table 1.1	Stage 8 phases	1
Table 2.1	Quarry development consent conditions and relevant section of the report	9
Table 3.1	Development consent air quality criteria	11

Figures

Figure 1.1	Regional context	2
Figure 1.2	Site layout	3
Figure 1.3	Stage 8 substages	4
Figure 4.1	Emission source significance by particle size – AQIA inventory	13
Figure 6.1	Preliminary siting options for the dust deposition gauges	18

1 Introduction

1.1 Background

Menangle Sand and Soil Pty Ltd (Menangle Sand and Soil) operates the Menangle Sand and Soil Quarry at 15 Menangle Road, Menangle (Figure 1.1). Quarrying has been undertaken in the location for over 40 years by a number of operators and at varying rates of production. Extraction, processing and rehabilitation activities have been undertaken by Menangle Sand and Soil since 1978.

The quarry, located in the Wollondilly local government area (LGA), extracts sand and soil along the Nepean River as approved by Development Consent 85/2865, granted by the Minister for Planning on 15 November 1989.

To date, sand and soil has been extracted from Stages 1 to 2 and 4 to 7 (Figure 1.2). While previously approved, sand and soil will not be extracted from Stage 3.

In September 2020, the NSW Land and Environment Court (LEC) approved the Menangle Quarry Extension – Modification 1 (MOD1) to Development Consent 85/2865. Approval conditions are provided in the Notice of Orders for LEC 2018/342158 (the Approval).

The Approval allows the extraction of sand and soil in a new area, the Stage 8 area, that is about 13 ha, and extends about 2 kilometres (km) along the Nepean River south of the Stage 7 area. The quarry is approved to extract 760,000 tonnes of sand and soil from the Stage 8 area at a rate of up to 150,000 tpa.

The extracted material will be transported to the existing processing area where it will be stockpiled, processed and blended with materials imported to the site, prior to being dispatched from the quarry.

This air quality management plan (AQMP) has been prepared to address the requirements of the Approval.

1.2 Project overview

The Approval increases the quarry life by 15 years (to 2035) by extracting the sand and soil resource in the Stage 8 area. Stage 8 has been split up into 15 sub-stages (Figure 1.3) which have been further categorised into seven extraction phases (Table 1.1).

Table 1.1 Stage 8 phases

Phase	Substage
1	8A–8B
2	8C
3	8D–8E
4	8F–8G
5	8H–8I
6	8J–8K
7	8L–8M



KEY

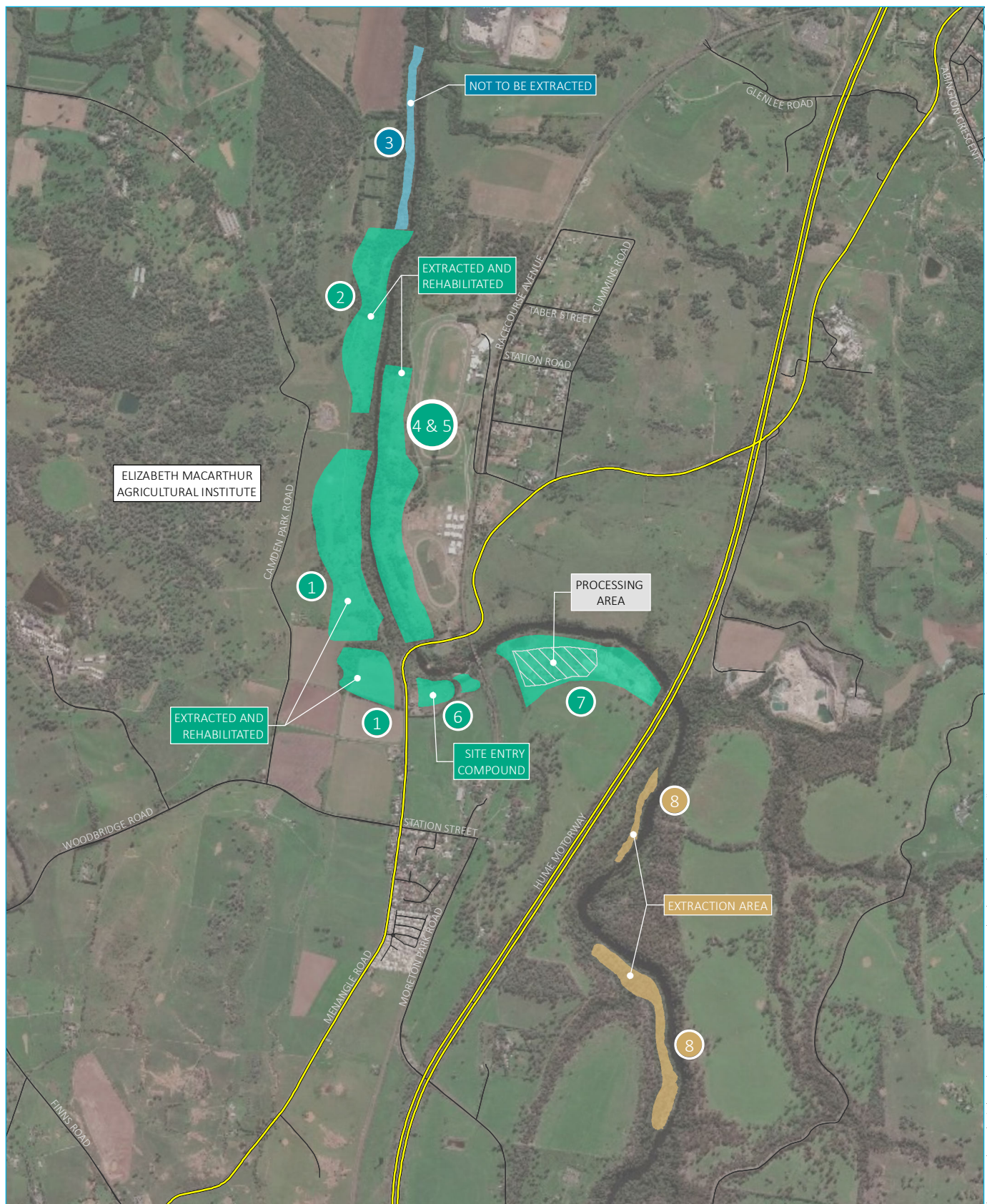
- Rail line
- Major road
- Named watercourse
- Named waterbody
- Local government area
- NPWS reserve

INSET KEY

- Main road
- State forest

Regional context

Menangle Sand and Soil
Air quality management plan
Figure 1.1

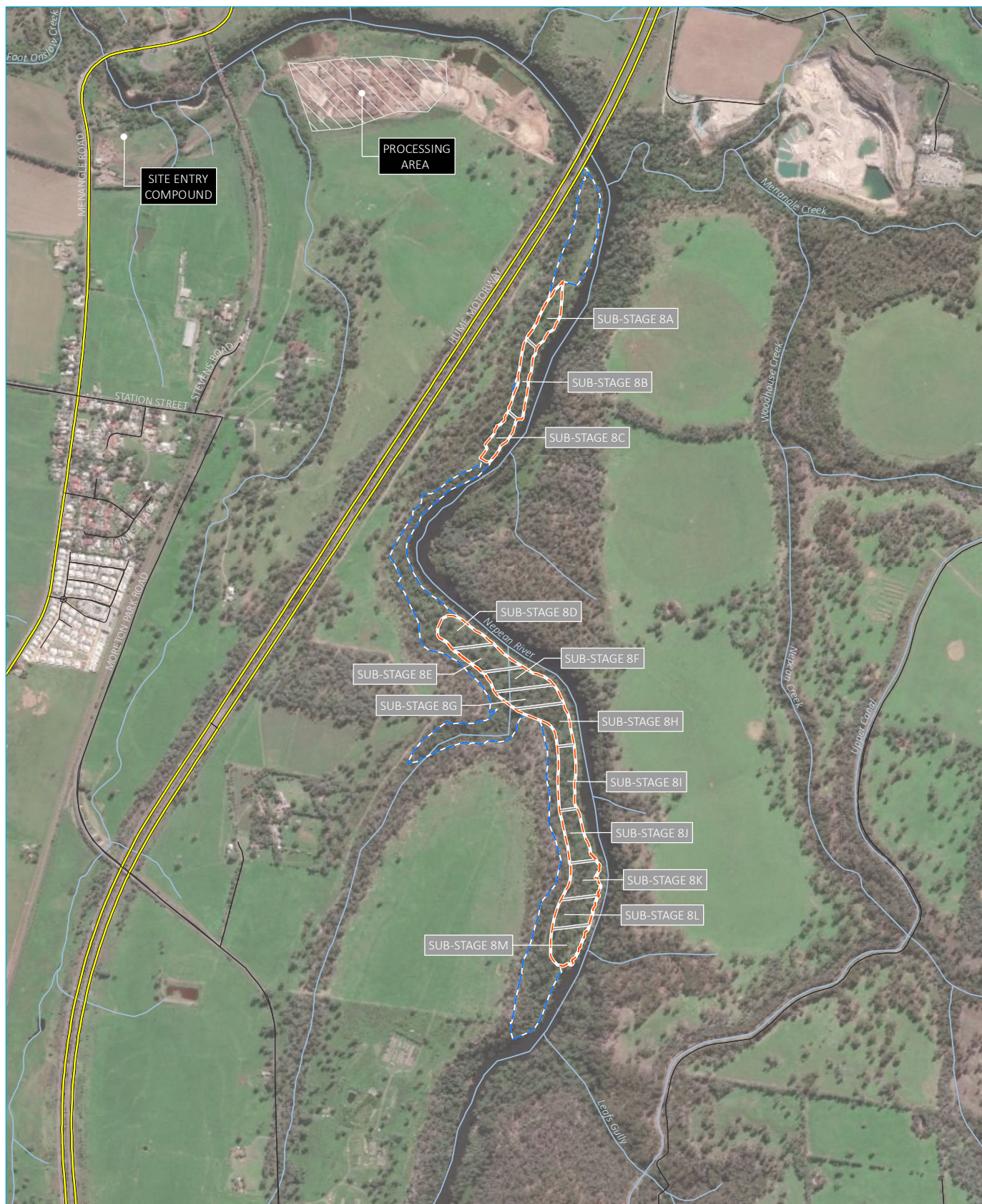


KEY

- Main road
- Local road
- Processing area
- Stages 1-2 and 4-7
- Stage 3 (not to be extracted)
- Stage 8 - extraction/rehabilitation area

Menangle Quarry Stages 1 to 8

Menangle Quarry
Figure 1.2

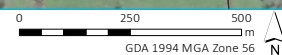


Source: EMM (2021); DFSI (2017); GA (2011)

KEY

- Processing area (to be retained)
- Stage 8 - extraction/rehabilitation area
- Stage 8 - restoration area (no extraction)
- Main road
- Local road
- Watercourse/drainage line

- Substage boundary
- Phase 1 Sub-stages 8A - 8B
- Phase 2 Sub-stage 8C
- Phase 3 Sub-stages 8D - 8E
- Phase 4 Sub-stages 8F - 8G
- Phase 5 Sub-stages 8H - 8I
- Phase 6 Sub-stages 8J - 8K
- Phase 7 Sub-stages 8L - 8M



Stage 8 area

Menangle Quarry
Figure 1.3

As well as the extraction areas, key components of the quarry include:

- a wheel wash and weighbridge;
- a site office and amenity building;
- a workshop west of the site office;
- fuel supply tanks north of the storage shed;
- materials stockpiling and processing area; and
- other minor infrastructure.

These components will be used to support activities in the Stage 8 area which include:

- extraction in the Stage 8 extraction area followed by rehabilitation;
- restoration of areas adjacent to the extraction areas;
- a conveyor (if required); and
- internal haul roads.

1.3 Operations

1.3.1 Activities

Operations at the quarry comprises the following activities:

- vegetation management and clearance;
- sand and soil excavation;
- material transport by off-road haul truck and/or conveyor;
- sorting and screening of excavated material;
- processing of excavated material;
- blending of excavated material with imported materials;
- stockpiling;
- loading of product into trucks; and
- product dispatch via trucks.

1.3.2 Plant and equipment

Condition A33 of the development consent states:

All plant and equipment used on site, or to monitor the performance of the development must be:

- (a) maintained in a proper and efficient condition; and
- (b) operated in a proper and efficient manner.

Regular maintenance of all plant and equipment will be logged and stored on site available for review at any time.

1.4 Quarry life

The approved quarry life is for 15 years to 2035.

1.5 Operating hours

The quarry will operate during the approved hours in accordance with development consent Table 1, Condition A26 (see Table 1.2 below).

Table 1.2 Operating hours

Activity	Permissible hours
Construction work	<ul style="list-style-type: none">• 7 am to 5 pm Monday to Friday• 7 am to 1 pm Saturday• At no time on Sundays or public holidays
Quarrying operations including loading and dispatch of laden trucks	<ul style="list-style-type: none">• 6 am to 5 pm Monday to Friday• 6 am to 12 noon Saturday• At no time on Sundays or public holidays
Maintenance, security, office work, cleaning, etc	<ul style="list-style-type: none">• May be conducted at any time, provided that these activities are not audible at any residence on privately-owned land

Condition A27 of the development consent states that where police or other public authorities request that deliveries or dispatching of materials are to be carried out outside operating hours and emergency work to avoid the loss of lives, property or to prevent environmental harm is required, then these activities are permitted outside the normal operating hours. In such circumstances, the Applicant must notify the Department and affected residents prior to undertaking the activities, or as soon as is practical thereafter.

1.6 Access

1.6.1 Site access

The main access to the site is from Menangle Road. Menangle Road is an arterial road which provides sub-regional access.

1.6.2 Access to the Stage 8 area

Light vehicles accessing to the Stage 8 area will use the existing access under the Hume Motorway. The existing access was retained when the Road Transport Authority (now Transport for NSW, TfNSW) bisected the lands when acquiring the corridor for the original Hume Highway in 1969. The existing access road under the bridge will be sealed and will comply with TfNSW drainage and pavements standards.

Material will be transported beneath the Hume Motorway Menangle Bridge by conveyor or by haul truck. The latter has in principle support from TfNSW and will be subject to a modification application.

The earthmoving equipment, off-road haul truck and other plant to service the Stage 8 area may also access the area via Moreton Park Road. However, no loaded trucks will use this access point. Major plant is expected to remain onsite through-out the duration of the quarrying operations except for major servicing or replacement.

1.6.3 Product dispatch

Truck movements at the site (ie combined inbound and outbound movements) will not exceed an average of:

- 147 per day on Monday to Friday; and
- 80 per day on Saturday.

1.7 Purpose and objectives

EMM Consulting Pty Limited (EMM) has been engaged by Menangle Sand and Soil to prepare an air quality management plan (AQMP) as required by development consent conditions (DA 85/2865) prior to commencing Stage 8 quarrying operations.

This AQMP addresses operations across the quarry for phases 1–7 (see Table 1.1).

1.8 Report preparation

This AQMP has been prepared by EMM's National Technical Leader for air quality, Scott Fishwick. Scott has over 15 years' experience as a senior air quality consultant, specialising in atmospheric dispersion modelling, air quality impact assessments, meteorological processes, ambient air quality and meteorological monitoring.

1.9 Consultation

There is a requirement of the Approval that this AQMP be prepared in consultation with the EPA.

A letter was sent via email to the NSW Environmental Protection Authority (EPA) on 14 October 2020 inviting input to the contents of this AQMP (Appendix A). The EPA responded via a letter on 26 November that the documents appear appropriate to manage activities at the site and that the EPA supports the development of Environmental Management Plans (EMPs) as part of good environmental management but does not generally approve specific EMPs for industry operations. The letter is attached in Appendix B.

This draft AQMP has been provided to the EPA for their review.

2 Environmental requirements

2.1 Legislation

The AQMP provides recommended air quality emission management measures for the quarry. The AQMP has been prepared to address the requirements of the development consent conditions, guided by the following guidelines and policies:

- Australian Standard AS 3580.14-2011 *Methods for sampling and analysis of ambient air Part 14: Meteorological monitoring for ambient air quality monitoring applications*;
- NSW Land and Environment Court 2020, Development Consent DA 85/2865 (approved 10 September 2020);
- NSW Department of Environment and Conservation (DEC) 2007, *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales*; and
- NSW Environment Protection Authority (EPA) 2016, *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*.

2.2 Project consent conditions

Table 2.1 lists the requirements of the development consent conditions and references the section of the report where each of these requirements has been addressed.

Table 2.1 Quarry development consent conditions and relevant section of the report

Condition Number	Condition	Relevant report section
A26	The Applicant must comply with the operating hours set out in Table 1.	1.4
A27	The following activities may be carried out outside the hours specified in Table 1. a) delivery or dispatch of materials as requested by Police or other public authorities; and b) emergency work to avoid the loss of lives, property or to prevent environmental harm. In such circumstances, the Applicant must notify the Department and affected residents prior to undertaking the activities, or as soon as is practical thereafter.	1.4
A33	All plant and equipment used on site, or to monitor the performance of the development must be: a) maintained in a proper and efficient condition; and b) operated in a proper and efficient manner.	5.1
B10	The Applicant must ensure that no offensive odours (as defined under the POEO Act) are emitted by the development.	4.3
B11	The Applicant must ensure that particulate matter emissions generated by the development do not cause exceedances of the criteria in Table 3 at any residence on privately-owned land.	3 and 5.2
B12	The air quality criteria in Table 3 do not apply if the Applicant has an agreement with the owner/s of the relevant residence to exceed the air quality criteria, and the Applicant has advised the Department in writing of the terms of this agreement.	3
B13	The Applicant must: a) take all reasonable steps to: i. minimise odour, fume, greenhouse gas and dust (including PM ₁₀ and PM _{2.5}) emissions of the development; ii. minimise any visible off-site air pollution generated by the development; and iii. minimise the extent of potential dust generating surfaces exposed in the Stage 8 Area at any given point in time; b) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see Note c to Table 3 above); c) carry out regular air quality monitoring to determine whether the development is complying with the relevant conditions of Schedule 2; and d) regularly assess meteorological and air quality monitoring data and relocate, modify or stop operations on the site to ensure compliance with the relevant conditions of Schedule 2.	- 5.1 6.3 6.2 6.2
B14	The Applicant must prepare an Air Quality Management Plan for the development to the satisfaction of the Planning Secretary. This plan must: a) be prepared by a suitably qualified and experienced person/s; b) be prepared in consultation with the EPA; c) describe the measures to be implemented to ensure: i. compliance with the air quality criteria and operating conditions in this Schedule; ii. best practice air quality management is being employed; and iii. air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events; and	This document 1.6 1.7 5.1

Table 2.1 Quarry development consent conditions and relevant section of the report

Condition Number	Condition	Relevant report section
	<ul style="list-style-type: none"> d) include an air quality monitoring program that: <ul style="list-style-type: none"> i. is capable of evaluating the performance of the development against the air quality criteria; and ii. includes a protocol for identifying any air quality-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of these events. 	6.2
B15	The Applicant must not commence Quarrying Operations in the Stage 8 Area until the Air Quality Management Plan is approved by the Planning Secretary.	n/a
B16	The Applicant must implement the Air Quality Management Plan as approved by the Planning Secretary.	n/a
B17	<p>Prior to the commencement of Quarrying Operations in the Stage 8 Area, and for the life of the development, the Applicant must ensure that there is a suitable meteorological station operating in close proximity to the site that:</p> <ul style="list-style-type: none"> a) complies with the requirements in the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007); and b) is capable of measuring meteorological conditions in accordance with the NSW Industrial Noise Policy (EPA, 2000), <p>unless a suitable alternative is approved by the Planning Secretary following consultation with the EPA</p>	6.2
C1	As soon as practicable and no longer than 7 days after obtaining monitoring results showing an exceedance of any noise or air quality criterion in PART B of Schedule 2 following the date of commencement of Quarrying Operations in the Stage 8 Area, the Applicant must provide details of the exceedance to any affected landowners/tenants if the Applicant has not otherwise reached an agreement to exceed the relevant criteria with the affected landowner pursuant to condition B5 or B12. For any exceedance of any air quality criterion in PART B of this consent, the Applicant must also provide to any affected land owners and tenants a copy of the fact sheet entitled "Mine Dust and You" (NSW Health, 2017).	EMS Section 8.3.2
C2	If, at any time following the date of commencement of Quarrying Operations in the Stage 8 Area, a landowner considers the development to be exceeding any noise or air quality criterion in PART B of Schedule 2, they may ask the Planning Secretary in writing for an independent review of the impacts of the development on their land.	EMS Section 8.3.3

n/a – not applicable

EMS – see Environmental Management System

3 Air quality criteria

The primary air pollutants generated by the quarry are particulate matter, including the following:

- total suspended particulate matter (TSP);
- particulate matter less than 10 microns in aerodynamic diameter (PM₁₀); and
- particulate matter less than 2.5 microns in aerodynamic diameter (PM_{2.5}).

Condition B11 of the development consent conditions states:

The Applicant must ensure that particulate matter emissions generated by the development do not cause exceedances of the criteria Table 3 at any residence on privately-owned land.

The specific criteria from Table 3 of the development consent conditions are listed in Table 3.1.

Table 3.1 Development consent air quality criteria

PM metric	Averaging period	Impact assessment criteria
TSP	Annual	90 µg/m ³ ^{a,c}
PM ₁₀	24 hour	50 µg/m ³ ^b
	Annual	25 µg/m ³ ^{a,c}
PM _{2.5}	24 hour	25 µg/m ³ ^b
	Annual	8 µg/m ³ ^{a,c}
Dust deposition ^d	Annual	2 g/m ² /month ^b
		4 g/m ² /month ^a

Notes: µg/m³: micrograms per cubic meter; g/m²/month: grams per square metre per month

a - total impact (ie incremental increase in concentrations due to the development plus background concentrations due to all other sources).

b - incremental impact (ie incremental increase in concentrations due to the development on its own).

c - excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Planning Secretary.

d - deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter – Gravimetric Method

In accordance with condition B12 of the development consent conditions, the air quality criteria in Table 3.1 do not apply if the Menangle Sand and Soil has an agreement with the owner/s of the relevant residence to exceed the air quality criteria, and the Menangle Sand and Soil has advised DPIE in writing of the terms of this agreement.

4 Quarry emission sources

4.1 Dust emissions sources

A detailed air quality impact assessment (AQIA) for the quarry including the operation of the proposed Stage 8 area was completed by Ramboll Environ (2016). The AQIA quantified annual emissions from the quarry and identified the following sources of air pollutant emissions:

- removal of topsoil and overburden material;
- extraction of raw material from quarrying areas and loading to trucks;
- unloading of raw material to conveyor hopper;
- overland conveying of raw material to stockpiling area;
- loading of raw material to haul trucks;
- transfer of raw material by haul trucks to processing plant area;
- unloading of material to the processing plant area (raw material and imported material);
- screening and conveying of material;
- final product stockpile loading;
- loading to product dispatch trucks;
- haulage of product material to quarry exit;
- wind erosion of exposed areas and stockpiles; and
- diesel combustion by trucks and quarrying equipment.

4.2 Source significance

Based on the emissions inventory presented in the AQIA (Ramboll Environ 2016), a summary of the significance of emission source type by particle size is presented in Figure 4.1.

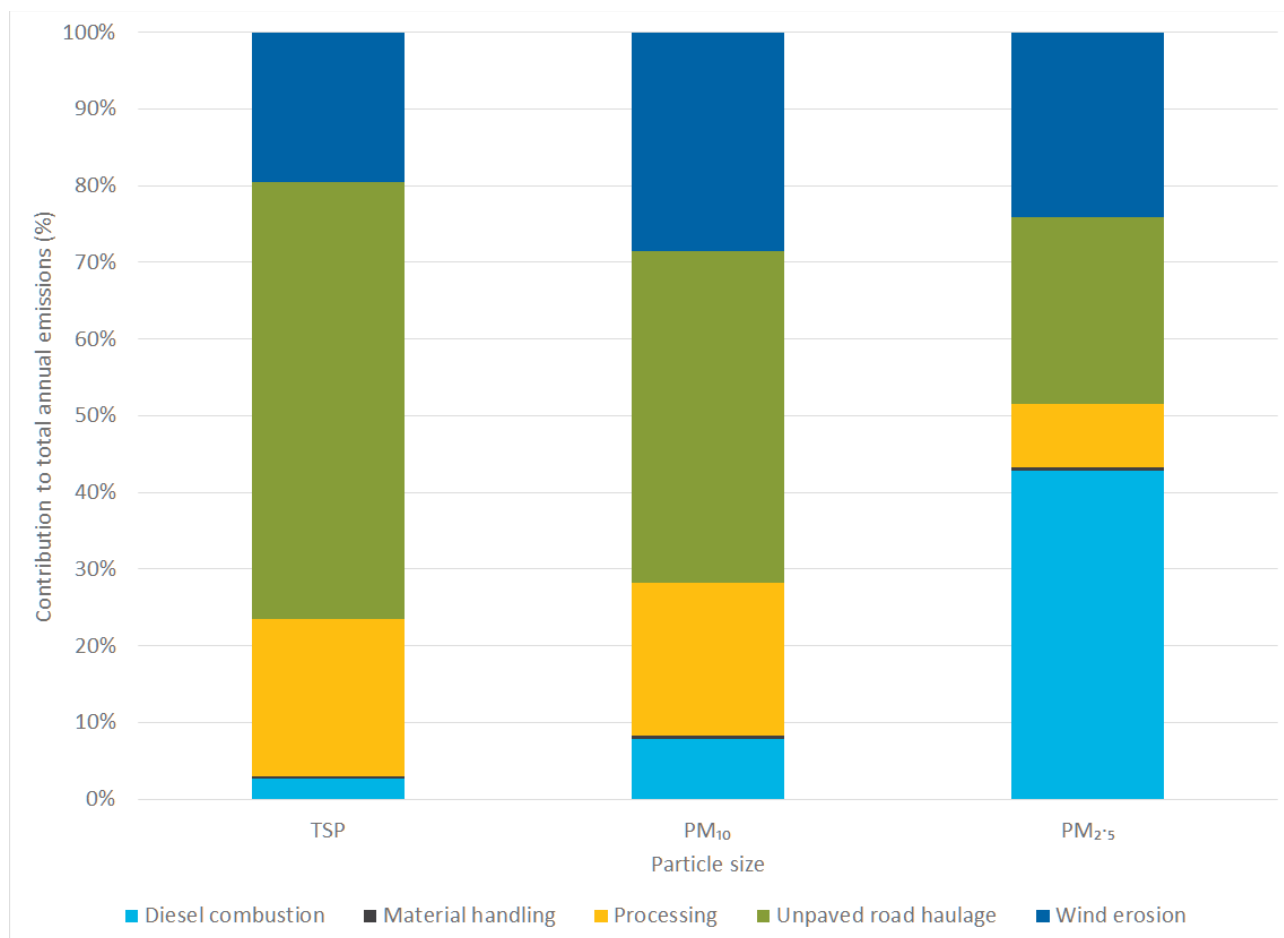


Figure 4.1 Emission source significance by particle size – AQIA inventory

The following notes are made in relation to site emissions presented in Figure 4.1:

- the movement of trucks along unpaved haul routes is the primary contributor to emissions of TSP and PM₁₀;
- material processing and wind erosion emissions are moderate contributors to annual emissions of all size fractions; and
- the significance of diesel combustion emissions increases with decreasing particle size.

4.3 Odour emissions sources

The quarry does not feature significant odour generating emission sources.

5 Mitigation measures

5.1 Dust mitigation measures

Condition B13 of the development consent conditions (listed in Table 2.1) relates to the management of dust emissions from the quarry.

To meet the requirements of condition B13(a), the following mitigation measures are currently implemented at the quarry and will be continued for Stage 8 operations:

- the use of wet suppression by water cart along all unpaved transport routes on site;
- the use of water sprays to exposed surfaces and material storage stockpiles during periods of hot, dry and windy conditions;
- the use of water sprays along the haul road between the site entrance and the processing area;
- ongoing active rehabilitation of completed quarrying areas;
- application of water sprays at all screens at the processing plant;
- application of water sprays at conveyor transfer points at the processing plant; and
- use of amenity bunds at the processing plant and quarrying areas to reduce the potential for wind-blown dust generation.

For diesel combustion emissions, the following measures will be implemented:

- any new equipment purchased for site will meet the US-EPA Tier 2 emission standards;
- all plant and equipment will be regularly serviced and maintained to meet manufacturers emissions specifications, with all maintenance to be logged and stored on site available for review at any time; and
- idling of trucks, plant and equipment on site will be minimised wherever practicable to do so.

5.2 Risk of adverse impacts

The AQIA (Ramboll Environ 2016) presented the results of atmospheric dispersion modelling conducted for particulate matter emissions generated from proposed Stage 8 operations at the quarry, including processing within the Stage 7 area. The dispersion modelling accounted for the mitigation measures detailed in Section 5.1.

The results of the dispersion modelling presented in the AQIA indicated that the proposed Stage 8 operations at the quarry would not result in exceedances of applicable NSW EPA assessment criteria at any of the surrounding sensitive receptors.

The risk of adverse air quality impacts in the surrounding environment from the quarry with the documented dust mitigation measures in place, is considered to be low.

6 Monitoring and incident reporting

6.1 Dust mitigation performance monitoring and responsibilities

Quarry personnel are responsible for monitoring the performance of onsite air pollution mitigation measures on a day-to-day basis. Responsibilities for air pollutant emission management are as set as follows:

The quarry foreman is responsible for:

- regular visual monitoring of the dust levels at the quarry;
- managing vehicle speed movements;
- restricting operations during periods of strong wind;
- utilising spray systems where applicable;
- cleaning of the material storage/processing areas;
- completion of a complaint form if dust complaint is received; and
- coordinating with the Quarry Manager to ensure the complaint is investigated.

The Quarry Manager is responsible for:

- implementing this procedure;
- auditing the site on a regular basis to ensure compliance with condition B13 for air pollutant emissions;
- coordinating investigation of the dust with the quarry foreman;
- documenting the results of the investigation and actions taken;
- maintaining the records of any dust complaints;
- liaison with the complainant regarding the steps to be taken to minimise further air pollution emissions where appropriate; and
- ensuring that the nominated personnel have been trained in the requirements of this procedure.

6.2 Ambient air quality monitoring

The development consent conditions do not feature any specific requirement for routine ambient air quality monitoring at the quarry (ie location, method or frequency). Condition B14d of the development consent conditions states the AQMP must:

B14d - include an air quality monitoring program that:

- is capable of evaluating the performance of the development against the air quality criteria; and
- includes a protocol for identifying any air quality-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of these events.

As identified in Section 5.2, the risk of adverse air quality impacts in the surrounding environment from the quarry is predicted to be low. In order to provide a measure of environmental management performance, Menangle Sand and Soil propose to install three dust deposition gauges (DDG) in the vicinity of the quarry. The proposed DDG locations, illustrated in Figure 6.1, are as follows:

- DDG1 – to the east of the site entry compound;
- DDG2 – near groundwater monitoring location BH2; and
- DDG3 – near groundwater monitoring location BH4.

Dust deposition monitoring will be conducted in accordance with AS/NZS 3580.10.1:2016: Methods for sampling and analysis of ambient air - Method 10.1: Determination of particulate matter - Deposited matter - Gravimetric method. As far as practicable and taking site constraints into consideration, the siting of dust deposition gauges will be conducted in accordance with AS/NZS 3580.1.1:2016: Methods for sampling and analysis of ambient air - Part 1.1: Guide to siting air monitoring equipment.

Monthly samples will be collected and sent to a laboratory for analysis. Results from the sampling will be reviewed as they are received from the laboratory with results compared against the applicable NSW EPA assessment criterion of 4 g/m²/month.

As highlighted in Section 5.2, the risk of dust impacts from the operation of the quarry is low. The dust deposition gauges will be used to track the performance of dust mitigation practices at the quarry.

At the end of a 12-month period, demonstrated compliance with the development consent criterion of 4 g/m²/month (Table 3.1) will represent a dust control key performance indicator for the quarry.

Following a completed period of 12 months of monitoring, the need to continue the dust deposition monitoring will be reviewed in conjunction with DPIE.

Condition B17 of the development consent conditions relates to the establishment of a meteorological monitoring station in the vicinity of the quarry and states the following:

Prior to the commencement of Quarrying Operations in the Stage 8 Area, and for the life of the development, the Applicant must ensure that there is a suitable meteorological station operating in close proximity to the site that:

(a) complies with the requirements in the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007); and

(b) is capable of measuring meteorological conditions in accordance with the NSW Industrial Noise Policy (EPA, 2000),

unless a suitable alternative is approved by the Planning Secretary following consultation with the EPA.

To supplement the DDG monitoring network, Menangle Sand and Soil will use two real-time particulate matter monitoring units at the quarry, initially for two separate four-week campaigns. Each monitoring unit will feature the following specifications:

- laser particle counter style continuous monitoring;
- ability to record multiple particulate matter size fractions (ie PM₁₀ and PM_{2.5}) at the same time;
- powered by solar panels to accommodate limited mains power supply; and
- have the ability to be relocated as required.

It is envisaged that the real-time particulate matter monitoring will be completed at the site of DDG1 and DDG2 (Figure 6.1), however the monitoring locations will be finalised following confirmation of the monitoring unit and land access.

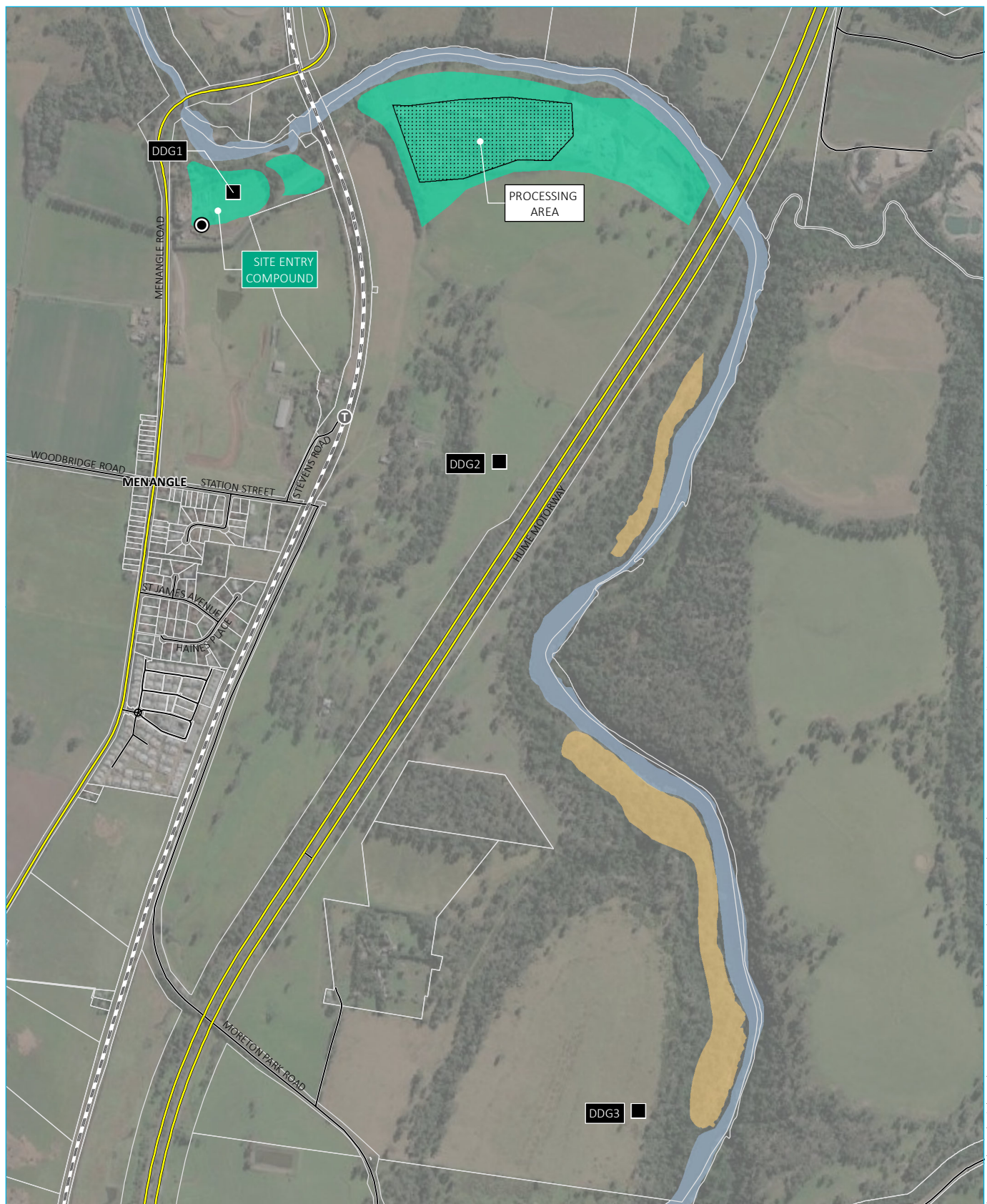
The closest sensitive residential properties are located to the west of the quarry and would therefore be downwind of quarry emission sources during periods of easterly winds. As illustrated in Appendix A (Figure A1.2) of the AQIA (Ramboll Environ 2016), winds from the east typically only occur at the quarry during spring and summer months. Real-time monitoring would therefore initially be conducted on two separate four-week campaigns between September and November and between December and February.

Data from the real-time particulate matter monitoring equipment will be compared with concurrent real-time meteorological monitoring data from the quarry (see below) to assist to determine the source of recorded concentrations. Further, real-time particulate matter monitoring data will be compared with regional resources (DPIE air quality monitoring stations at Campbelltown West and Camden) to determine if regional scale events (eg bush fires, dust storms) are influencing ambient concentration.

The need to continue the real-time particulate matter monitoring campaigns will be reviewed in conjunction with DPIE after the completion of two monitoring campaigns.

The meteorological station at the quarry will be located to the east of the site entry compound (see Figure 6.1) and will be in compliance with the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC 2007), specifically;

- AS/NZS 3580.1.1:2016: *Methods for sampling and analysis of ambient air - Part 1.1: Guide to siting air monitoring equipment*; and
- Australian Standard AS 3580.14-2014 *Methods for sampling and analysis of ambient air Part 14: Meteorological monitoring for ambient air quality monitoring applications*.



KEY

- Meteorological station
- Dust deposition gauge
- Ⓜ Train station
- Rail line
- Main road
- Local road
- Nepean River
- Cadastral boundary
- ▨ Processing area
- Extractive operations
- Stage 8

Dust deposition gauge and meteorological station locations

Menangle Sand and Soil
Air quality management plan
Figure 6.1

6.3 Actions during adverse weather conditions

From the perspective of dust emissions from the quarry, adverse meteorological conditions are considered to be sustained periods of hot and dry weather and/or high wind speeds. A key environmental management responsibility of quarry personnel is the visual monitoring of dust emissions.

In the event of adverse weather conditions, the Quarry Manager is required to maintain vigilance for visual dust emissions leaving quarry boundary and implement appropriate additional mitigation strategies. Additional mitigation measures will include the targeted use of water sprays at the quarry to the identified contributing dust emissions sources or the temporary restriction and/or cessation of the activity until adverse weather conditions have eased.

6.4 Complaints reporting

A complaint management system to engage in active community consultation and maintain positive relations with local residents will be implemented for the site. The purpose of this system is to minimise complaints by addressing their concerns upfront and monitor the environmental performance of the site.

6.4.1 Registering complaints

Any enquiries or complaints made by members of the public to site personnel will be directed to the Quarry Manager.

Complaints may be made to the quarry's direct line during business hours (02 4633 8239) or to the Quarry Manager's mobile phone (up-to-date number provided at www.benedict.com.au/locations/menangle) outside of business hours or for emergencies. These numbers will be provided on a sign at the site entrance.

6.4.2 Complaint response

Any complaint received by Menangle Sand and Soil regarding air quality impacts from the quarry will be acted on within 24-hours in the following manner:

- details of the complaint (date, time, specifics, complainants contact details) will be recorded;
- activities occurring during the complaint period will be investigated;
- findings of operations during the complaint period will be recorded in the complaints register;
- relevant management practices will be reviewed as necessary; and
- findings of the review will be communicated to the complainant.

6.4.3 Complaints register

The details of any complaint will be logged in the complaints register, with investigation findings and actions noted. The record of a complaint will be kept for at least 4 years after the complaint was made. The record will be produced to any authorised officer of the EPA who asks to see them.

The complaints register will be available on the project website and will be updated monthly.

Should the complaint be relevant to any of the conditions of the Approval, it will be handled as per the Approval conditions relevant to that environmental aspect.

6.5 Air quality incident and non-compliance definitions and response

For the purpose of this AQMP, a verified complaint that is deemed to be the direct result of operational emissions from the quarry will be classified as an air quality incident. As soon as Benedict becomes aware of an air quality incident, notification must be made to DPIE and any other relevant agencies.

Further, a non-compliance is defined as an exceedance of applicable assessment criterion detected by the proposed air quality monitoring network (see Section 6.2) that is attributable to quarry operations.

6.5.1 Incident notification

On becoming aware of an air quality incident, Benedict will notify DPIE in writing to compliance@planning.nsw.gov.au immediately after the Applicant becomes aware of an incident. Notification requirements are outlined in the EMS in the incident notification section.

Within 24-hours of an air quality incident, an initial letter report outlining basic details of the incident will be sent to the EPA's Regional Manager Planning Section. Within 14 days of an incident, a detailed report will be prepared and submitted to the EPA's Regional Manager Planning Section documenting incident investigation findings, causes of the incident and additional mitigation measures proposed to prevent a reoccurrence.

A register of verified incidents will be maintained by Menangle Sand and Soil and made available for review on request.

6.5.2 Non-compliance notification

Within seven days of becoming aware of a non-compliance, the Applicant will notify DPIE in writing to compliance@planning.nsw.gov.au. The Application will identify the non-compliance, the reasons for non-compliance and what actions that will be undertaken to address the non-compliance.

As soon as practicable, and no longer than 7 days after obtaining monitoring results showing an exceedance of any air quality criterion in Part B of Schedule 2 (listed in Table 3.1) following the date of commencement of Quarrying Operations in the Stage 8 Area, the Applicant will provide details of the exceedance to any affected landowners/tenants if the Applicant has not otherwise reached an agreement to exceed the relevant criteria with the affected landowner pursuant to condition B12.

For any exceedance of any air quality criterion presented in Table 3.1, the Applicant will provide a copy of the fact sheet entitled "Mine Dust and You" (NSW Health 2017) to any affected landowners and tenants.

6.5.3 Independent review

If, at any time following the date of commencement of Quarrying Operations in the Stage 8 Area, a landowner considers the development to be exceeding any air quality criterion in Part B of Schedule 2 (listed in Table 3.1), they may ask the Planning Secretary in writing for an independent review of the impacts of the development on their land.

If the Planning Secretary is satisfied that an independent review is warranted, then within 3 months of the Planning Secretary's decision, or as otherwise agreed by the Planning Secretary and the landowner, the Applicant will:

- a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to:
 - i) consult with the landowner to determine their concerns;

- ii) conduct monitoring to determine whether the development is complying with the relevant criteria in Part B of Schedule 2;
 - iii) if the development is not complying with that criteria, identify measures that could be implemented to ensure compliance with the relevant criteria; and
- b) give the Planning Secretary and landowner a copy of the independent review; and
- c) comply with any written requests made by the Planning Secretary to implement any findings of the review.

6.6 Key performance indicators

Menangle Sand and Soil commits to the following key performance indicators (KPIs) to demonstrate the performance of ongoing dust control management practices at the quarry:

- successful implementation of the control measures in accordance with B13 of the development consent conditions (see Table 2.1);
- no exceedance due to quarry operations of the annual dust deposition criterion of 4 g/m²/month at the end of a 12-month period at any of the three DDG locations (see Section 6.2); and
- no exceedance due to quarry operations of the 24-hour average PM₁₀ criterion of 50 µg/m³ or 24-hour average PM_{2.5} criterion of 25 µg/m³; and
- no confirmed air quality-related complaints from the operation of the quarry.

In the event that KPIs are not met, dust mitigation measures and maintenance practices will be reviewed and amended as necessary.

6.7 Review of AQMP

A comprehensive review of the complaint and incident records will be completed as part of the project annual review of operations, and each year thereafter, and will be provided to DPIE.

The air quality monitoring program will be reviewed at least every three years, when updates to the plan are required, or as directed by the Secretary in consultation with other agencies. The review process is to reflect changes in environmental legislation and guidelines, and changes in technology or operational procedures.

Review of this AQMP will also take place if monitoring records indicate that it is warranted or in the event of any significant change to air quality management procedures at the facility. Any modifications to the AQMP will be undertaken in consultation with the appropriate government agencies.

The EMS addresses all the development approval related requirements for plan reviews.

References

Australian Standard 2011, *AS 3580.14-2014 Methods for sampling and analysis of ambient air Part 14: Meteorological monitoring for ambient air quality monitoring applications*.

NSW Department of Environment and Conservation 2007, *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales*.

NSW Land and Environment Court 2020, *Development Consent DA 85/2865* (approved 10 September 2020).

NSW Environment Protection Authority 2016, *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*.

Ramboll Environ 2016, *Menangle Quarry Extension Project - Air Quality Impact Assessment*.

Appendix A

Letter to NSW EPA (October 2020)



DOC20/987285

Mr Jeremy Slattery
EMM Consulting Pty Limited
PO Box 21
ST LEONARDS NSW 1590

Email: jslattery@emmconsulting.com.au

Dear Mr Slattery

**Modification 1 - Update of Environmental Management Plans
Menangle Sand and Soil Quarry - Menangle Rd, Menangle**

I am writing in response to the information submitted to the Environment Protection Authority (EPA) on 13 October 2020 regarding the recently approved (NSW Land and Environment Court) Modification 1 of the above Menangle Sand & Soil Pty Ltd (MSS) sand quarry operation. Your correspondence advises that the updated approval conditions require that the Soil and Water (SWMP), Air Quality (AQMP) and Noise Management Plans (NMP) are prepared in consultation with the EPA.

Following a review of the updated draft management plans, the EPA advises that the documents appear appropriate to manage the activities undertaken at the site. EMM Consulting Pty Limited should advise the proponent that they should review and update the management plans as necessary as the development progresses into the newly approved Stage 8.

The EPA supports the development of Environmental Management Plans (EMPs) as part of good environmental management but does not generally approve specific EMPs for industry operations. The preparation and implementation of any EMP for the above works is ultimately the responsibility of the proponent. MSS may wish to have the NMP, AQMP & SWMP audited to an industry standard or certified to the ISO 14001 Standard as part of an overall Environmental Management System.

If you have questions regarding the above, please phone Matt Fuller on (02) 4224 4100.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Greg Newman', written over a light blue horizontal line.

26/11/2020

GREG NEWMAN
Unit Head Regulation

Phone 131 555
Phone 02 4224 4100
(from outside NSW)

Fax 02 4224 4110
TTY 131 677
ABN 43 692 285 758

PO Box 513
WOLLONGONG
NSW 2520

Level 3
84 Crown Street
WOLLONGONG
NSW 2500
AUSTRALIA

info@epa.nsw.gov.au
www.epa.nsw.gov.au

Appendix B

NSW EPA Letter in response to consultation

12 October 2020

Mr Chris Kelly
NSW Environment Protection Authority
planning.matters@epa.nsw.gov.au

Ground floor, 20 Chandos Street
St Leonards NSW 2065
PO Box 21
St Leonards NSW 1590
T 02 9493 9500
E info@emmconsulting.com.au
www.emmconsulting.com.au

Re: Menangle Sand and Soil Quarry - Air Quality and Noise Management Plans

Dear Chris,

Menangle Sand and Soil Pty Ltd operates the Menangle Sand and Soil Quarry (the 'Quarry') at 15 Menangle Road Menangle. A modification to the Quarry's approval has recently been approved. The updated approval requires that air quality and noise management plans are prepared in consultation with the Environment Protection Authority (EPA).

This letter seeks the EPA's input to these plans.

1 Quarry overview

Menangle Sand and Soil Pty Ltd operates the Menangle Sand and Soil Quarry at 15 Menangle Road Menangle. Quarrying has been undertaken in the location for over 40 years by a number of operators and at varying rates of production. Extraction, processing and rehabilitation activities have been undertaken by Menangle Sand and Soil since 1978.

Current extractive activities were approved in 1989 (DA 85/2865) and have involved the construction and operation of the quarry in seven stages. Sand and soil has been extracted from Stages 1 to 2 and 4 to 6 and is currently being extracted from Stage 7. While previously approved, sand and soil will not be extracted from Stage 3.

In September 2020, the NSW Land and Environment Court approved 'Menangle Quarry Extension – Modification 1' (MOD1). This allows the extraction of sand and soil in a new area, the Stage 8 area, that is about 13 ha, and extends about 2 kilometres along the Nepean River south of the Stage 7 area. The extension will increase the life of the quarry by 15 years. The extracted material will be transported to the existing processing area where it will be stockpiled, processed and blended with materials imported to the site, prior to being dispatched from the quarry.

A description of the quarry, including MOD1, is provided in Appendix A. The Notice of Orders Made by the Land and Environment Court (the 'consent') is provided in Appendix B.

2 Previous assessments

The preparation of the environmental assessment for the modification application included the preparation of air quality and noise assessments addressing the matters the NSW Environment Protection Agency (EPA) requested be considered in the Environmental Assessment (EMM 2017).

In summary, the assessment found that the proposed modified operations at the Quarry are unlikely to result in exceedances of the applicable NSW EPA assessment criteria or NEPM assessment goals for any of the assessed pollutants at the surrounding sensitive receptors and that cumulative noise is predicted to satisfy the relevant amenity criteria.

These reports are available on the Major Projects website:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8531

3 Management plans

EMM Consulting Pty Limited (EMM) is preparing:

- a Noise Management Plan (NMP) in accordance with Part B, Condition B7 (b) of the consent.
- an Air Quality Management Plan (AQMP) in accordance with Part B, Condition B14 (b) of the consent.

The NMP and AQMP will address the matters raised in the conditions and Menangle Sand and Soil's Summary of Commitments provided in Table 3.1 of Appendix A.

3.1 Noise Management Plan

The NMP will include the following:

- overview of noise mitigation and management;
- relevant noise criteria;
- monitoring method(s);
- location, frequency and duration of monitoring;
- record keeping;
- response mechanisms;
- compliance reporting; and
- review and improvement.

3.2 Air Quality Management Plan

The AQMP will include the following:

- overview of emission sources and ranking by emissions magnitude;
- review of mitigation measures;
- key performance indicator(s);
- monitoring method(s);
- location, frequency and duration of monitoring;
- record keeping;

- response mechanisms; and
- compliance reporting.

This letter seeks your input on the contents and preparation of the NMP and AQMP. We will also provide the draft management plans to you for your review and comment. We would welcome the opportunity to meet, via teleconference, to discuss the plan.

It is requested that any comments you may have are provided by 26 October 2020 to allow them to be considered during preparation of the plan.

Should you wish to discuss anything specific please call me on the below number.

Please do not hesitate to contact me if you have any questions.

Yours sincerely



Jeremy Slattery

Associate, Environmental Management

Phone: 0421 827 231

jslattery@emmconsulting.com.au

Appendix A

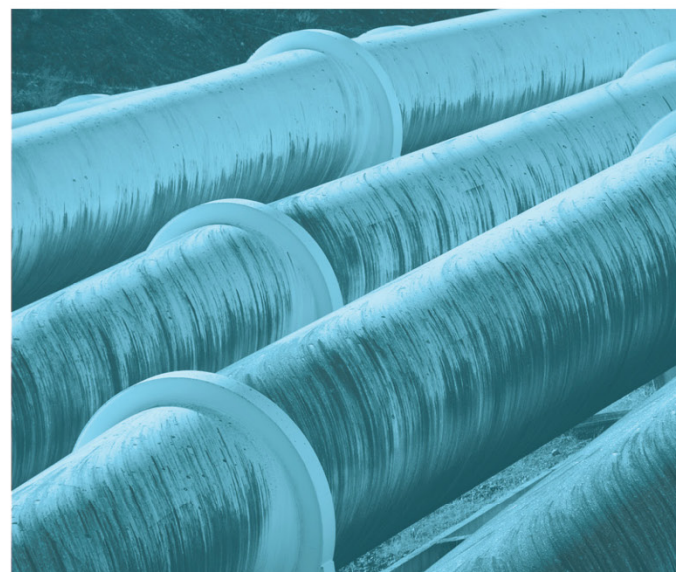
Project description



Land and Environment Court Proceedings 342158 of 2018

Applicant's Description of Amended Project

Menangle Sand & Soil Pty Limited v Minister for Planning
24 August 2020





Servicing projects throughout Australia and internationally

SYDNEY

Ground floor, 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500

NEWCASTLE

Level 3, 175 Scott Street
Newcastle NSW 2300
T 02 4907 4800

BRISBANE

Level 1, 87 Wickham Terrace
Spring Hill QLD 4000
T 07 3648 1200

ADELAIDE

Level 1, 70 Pirie Street
Adelaide SA 5000
T 08 8232 2253

MELBOURNE

Ground floor, 188 Normanby Road
Southbank VIC 3006
T 03 9993 1900

PERTH

Level 9, Suite 2, 109 St Georges Terrace
Perth WA 6000

CANBERRA

PO Box 9148
Deakin ACT 2600

Land and Environment Court Proceedings 342158 of 2018

Applicant's Description of Amended Project

Prepared for Menangle Sand & Soil Pty Limited v Minister for Planning
24 August 2020

EMM Sydney
Ground floor, 20 Chandos Street
St Leonards NSW 2065

T 02 9493 9500
E info@emmconsulting.com.au

www.emmconsulting.com.au

Land and Environment Court Proceedings 342158 of 2018

Applicant's Description of Amended Project

Report Number

J190166 RP#4

Menangle Sand & Soil Pty Limited v Minister for Planning

Date

24 August 2020

Version

v7 Final

Approved by



Dr P. Towler
Associate Director
24 August 2020

This report has been prepared in accordance with the brief provided by the client and has relied upon the information collected at the time and under the conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the aforementioned circumstances. The report is for the use of the client and no responsibility will be taken for its use by other parties. The client may, at its discretion, use the report to inform regulators and the public.

© Reproduction of this report for educational or other non-commercial purposes is authorised without prior written permission from EMM provided the source is fully acknowledged. Reproduction of this report for resale or other commercial purposes is prohibited without EMM's prior written permission.

Table of Contents

1	Introduction	1
2	Approved and proposed operations	2
2.1	Introduction	2
2.2	Resource	2
2.3	Quarrying	4
2.3.1	Quarry progression	4
2.3.2	Stage 8 area quarry design	9
2.3.3	Pre-extraction surveys	15
2.3.4	Vegetation clearing	15
2.3.5	Topsoil removal	15
2.3.6	Resource extraction	15
2.3.7	Dredging	16
2.4	Onsite material transport and processing	16
2.4.1	Stage 8 area material transport	16
2.4.2	Processing	16
2.4.3	Blending	16
2.4.4	Stockpiling	16
2.5	Access	17
2.5.1	Site access	17
2.5.2	Access to the Stage 8 area	17
2.5.3	Product dispatch	17
2.6	Quarry life	17
2.7	Biodiversity protection	17
2.8	Rehabilitation and closure	18
2.8.1	Progressive rehabilitation of the Stage 8 area	18
2.8.2	Final landform	18
2.9	Site infrastructure and services	19
2.9.1	Site buildings	19
2.9.2	Lighting	19

2.10	Hours of operation	19
2.11	Employment	24
3	Statement of commitments	25
3.1	Introduction	25
3.2	Summary of commitments	25
	References	30

Appendices

Appendix A	Development Application Land	A.1
------------	------------------------------	-----

Tables

Table 2.1	Maximum area of each substage	4
Table 3.1	Summary of commitments	25
Table A.1	Development application land	A.2

Figures

Figure 2.1	Menangle Quarry Stages 1 to 8	3
Figure 2.2	Stage 8 overall staging plan	5
Figure 2.3	Stage 8 extraction and restoration areas – Stages 8A–8C	6
Figure 2.4	Stage 8 extraction and restoration areas – Stages 8D–8I	7
Figure 2.5	Stage 8 extraction and restoration areas – Stages 8I–8M	8
Figure 2.6	Quarry progression schematic	10
Figure 2.7	Quarry progression cross-section	11
Figure 2.8	Indicative cross-section	12
Figure 2.9	Indicative cross-section – close-up	13
Figure 2.10	Conceptual final landform 10 m setback – Northern extraction/rehabilitation area	20
Figure 2.11	Conceptual final landform 10 m setback – Southern extraction/rehabilitation area	21
Figure 2.12	Conceptual final landform 17.5 m setback – Northern extraction/rehabilitation area	22
Figure 2.13	Conceptual final landform 17.5 m setback – Southern extraction/rehabilitation area	23
Figure A.1	Development application land	A.3

1 Introduction

Menangle Sand and Soil Pty Ltd (Menangle Sand and Soil) seek a modification to Development Consent 85/2865 to extend the life of the quarry by 15 years while removing the need to re-establish quarrying activities, clear vegetation, and extract sand and soil from the approved Stage 3 area (the Menangle Sand and Soil Quarry Extension Project, the 'extension project'). It is proposed to forego approved land extraction (as well as dredging rights to another 200,000 tonnes) of 500,000 tonnes of sand and soil in the Stage 3 area and instead extend their current operations to extract sand and soil from an additional stage of the quarry (Stage 8). The Stage 8 area will extend approximately 2.8 km along the Nepean River on Company-controlled lands, within Lot 203//Deposited Plan 590247 on the eastern side of the Hume Highway. Approximately 760,000 tonnes of sand and soil will be extracted from the Stage 8 area land over about 15 years. Extraction will be in sequential substages so the active extraction area will be a small proportion of the total Stage 8 extraction area at any given time. No riverine extraction is proposed.

A modification application and accompanying environmental assessment (EA) report for the extension project was lodged in May 2017 and subsequently refused by the Department of Planning and Environment on 25 October 2018. The application is before the NSW Land and Environment Court (2018/342158).

An amended application was placed on public exhibition between 19 February 2020 and 4 March 2020. Amendments to the proposed modification are summarised in *NSW Land and Environment Court (2018/342158) Menangle Quarry - Project Amendments and Information Summary* (EMM [Towler] 2019a).

Given the application's history, the currently proposed modification is described in a range of documents.

This consolidated project description report provides a description of the currently approved quarry, based on Chapter 2 of the *Menangle Quarry Extension Environmental Assessment* (EA) (EMM 2017a), and the currently proposed modification (as amended) as described in Chapter 3 of the EA and subsequently amended in:

- *Supplementary Biodiversity Assessment* (EMM [Ward] 2019b);
- *Menangle Quarry - Amended Extraction Area and Setback* (EMM [Towler] 2019c);
- *Restoration Area Weed Strategy* (EMM [Grant] 2019d);
- *Groundwater Management* (EMM [Webb] 2019e); and
- *Flood Mitigation* (EMM [Towler] 2019f).

No modification amendments were proposed in the *Menangle Quarry Extension Response to Submissions* (RTS) (EMM 2017b).

The allotments subject to the development application modification, 'the site', are provided in Appendix A.

This consolidated project description report outlines the current proposal incorporating all of the changes to the project made since the Refusal and presents an updated statement of commitments.

2 Approved and proposed operations

2.1 Introduction

The extension project will increase the quarry life by 15 years (to 2035) by extracting the sand and soil resource in the Stage 8 area. The Stage 8 area extends approximately 2.8 km upstream of the currently active Stage 7 area. The project will require installation and operation of a conveyor between the existing processing area and the Stage 8 area. Menangle Sand and Soil will relinquish the approved extraction of resource (as well as its perpetual right to the resource located on the Elizabeth Macarthur Agricultural Institute land) from the approved Stage 3 area as part of the extension project.

The layout of the approved and proposed quarry is presented in Figure 2.1.

As well as the extraction areas, key components of the quarry include:

- an existing wheel wash and weighbridge;
- an existing site office and amenity building;
- an existing workshop west of the site office;
- existing fuel supply tanks north of the storage shed;
- existing sand and soils storage and processing area; and
- other existing minor infrastructure.

These components will be used to support activities in the Stage 8 area which will also include:

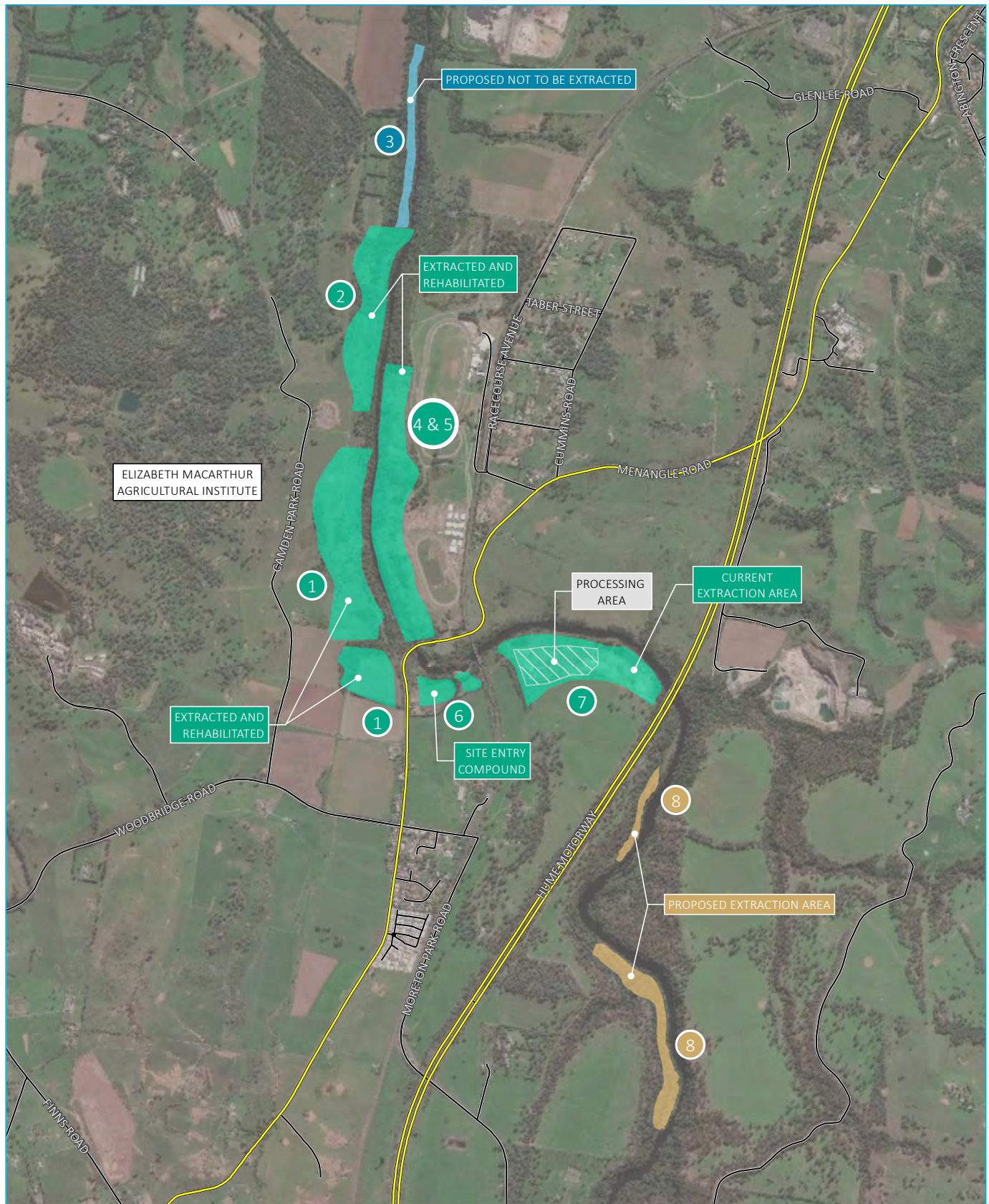
- extraction in the Stage 8 extraction area followed by rehabilitation;
- restoration of areas adjacent to the extraction areas;
- a conveyor; and
- a haul road.

These are described below.

2.2 Resource

The total resource in the 1989-approved quarry is approximately 7.7 million tonnes, made up of approximately 5.9 million tonnes of soil and 1.8 million tonnes of sand. The approved extraction area is approximately 123 ha. An extraction rate of up to 350,000–400,000 tonnes per annum (tpa) of soil and sand is approved. To date, the resource has been extracted in all but the Stage 3 (approximately 300,000 tonnes soil and 400,000 tonnes sand) and the remaining part of the of Stage 7 area.

It is proposed to extract 760,000 tonnes of sand and soil from the Stage 8 area at a rate of no more than 150,000 tpa.



KEY

- Main road
- Local road
- Existing processing area (to be retained)
- Extractive operations (approved)
- Extractive operations (approved but not extracted)
- Stage 8 - extraction/rehabilitation area

Menangle Quarry Stages 1 to 8

Menangle Quarry Extension
Figure 2.1

It is proposed to extract sand and soil from the Stage 8 extraction area (Figure 2.2) which has a total area of 13.22 ha.

Given that the width of horizontal setback area (see Section 2.3.2i) is variable and to ensure that any biodiversity impacts are fully compensated for, the 'extraction area' is defined as including the horizontal setback area, although extraction will not occur within this setback. This also reflects the previous intent to grade parts of the horizontal setback area where there are no trees. However, it is now proposed to leave the entire horizontal setback area undisturbed, save for hand weeding of the extensive existing noxious weeds.

The 'active extraction area' is the area where the overlying vegetation will be cleared (removing extensive understory weeds and mature native trees) and the sand and soil resource extracted.

2.3 Quarrying

2.3.1 Quarry progression

Historically, quarrying has progressed from south to north (Stages 1–2) and from west to east (Stages 4–7). Quarrying activities in the Stage 7 area are progressing from west to east. Extraction in the Stage 8 area will occur in sub-stages such that only a small portion of the overall Stage 8 area will be the active excavation area at any one time. Extraction will progressively move upstream in thirteen sub-stages, with each sub-stage each covering about 1 ha (Figures 2.2 to 2.4). Each of these sub-stages will be a basic operating cell and will take approximately 1 year to complete, depending on demand for product. Each sub-stage will be progressively rehabilitated using similar methods to those as implemented in the Stage 1–2 and Stage 4–5 areas but with a more intensively managed native planting regime implemented.

The maximum area of each substage is provided in Table 2.1.

Table 2.1 Maximum area of each substage

Substage	Area (ha)
8a	0.93
8b	0.93
8c	0.69
8d	1.07
8e	1.07
8f	1.07
8g	1.07
8h	1.07
8i	1.07
8j	1.07
8k	1.07
8l	1.07
8m	1.07
Total	13.25



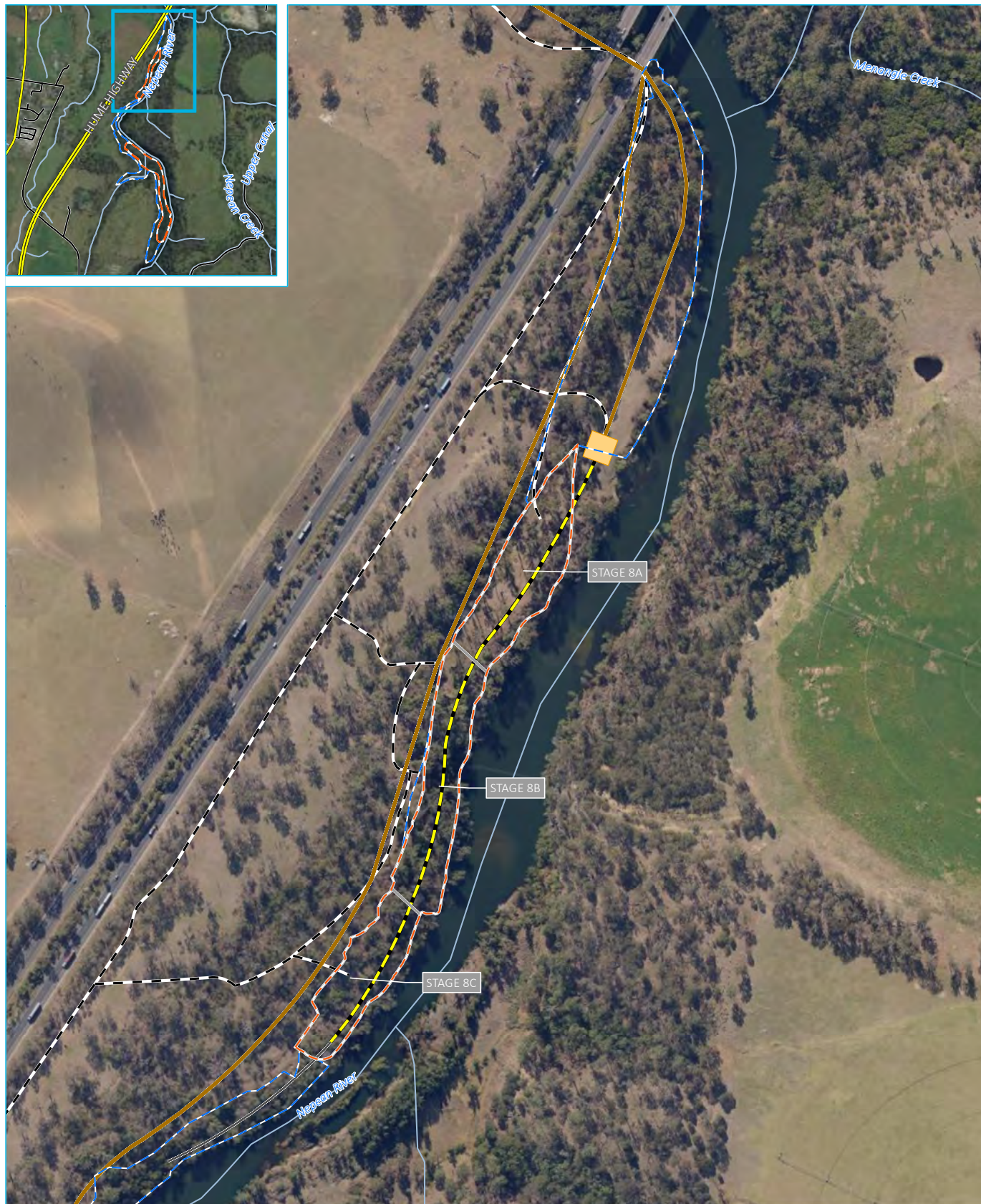
Source: EMM (2019); DFSI (2017); GA (2011)

KEY

- Processing area (to be retained)
- Stage 7 - current extractive operations
- Stage 8 - extraction/rehabilitation area
- Stage 8 - restoration area (no extraction)
- Main road
- Local road
- Watercourse/drainage line

Overall staging plan

Menangle Quarry Extension
Figure 2.2



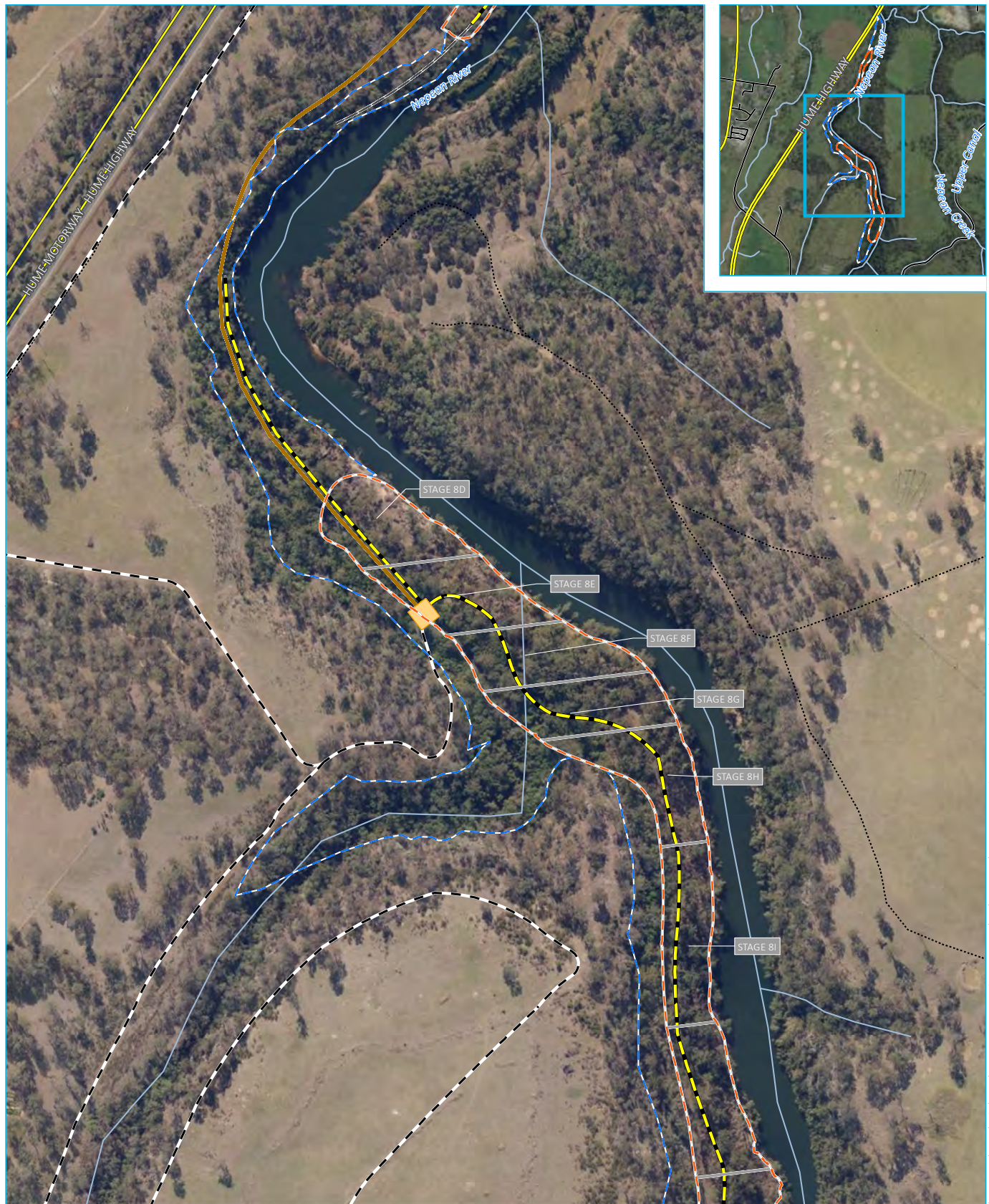
Source: EMM (2019); DFSI (2017); GA (2011)

KEY

- ▬ Stage 8 - extraction/rehabilitation area
- ▬ Stage 8 - restoration area (no extraction) boundary
- ▬ Substage boundary
- Conveyor head
- ▬ Indicative conveyor location
- ▬ Haul road
- ▬ Access road
- ▬ Existing access track
- ▬ Watercourse/drainage line

Stage 8 Extraction and restoration areas Stage 8A to 8C

Menangle Quarry Extension
Figure 2.3



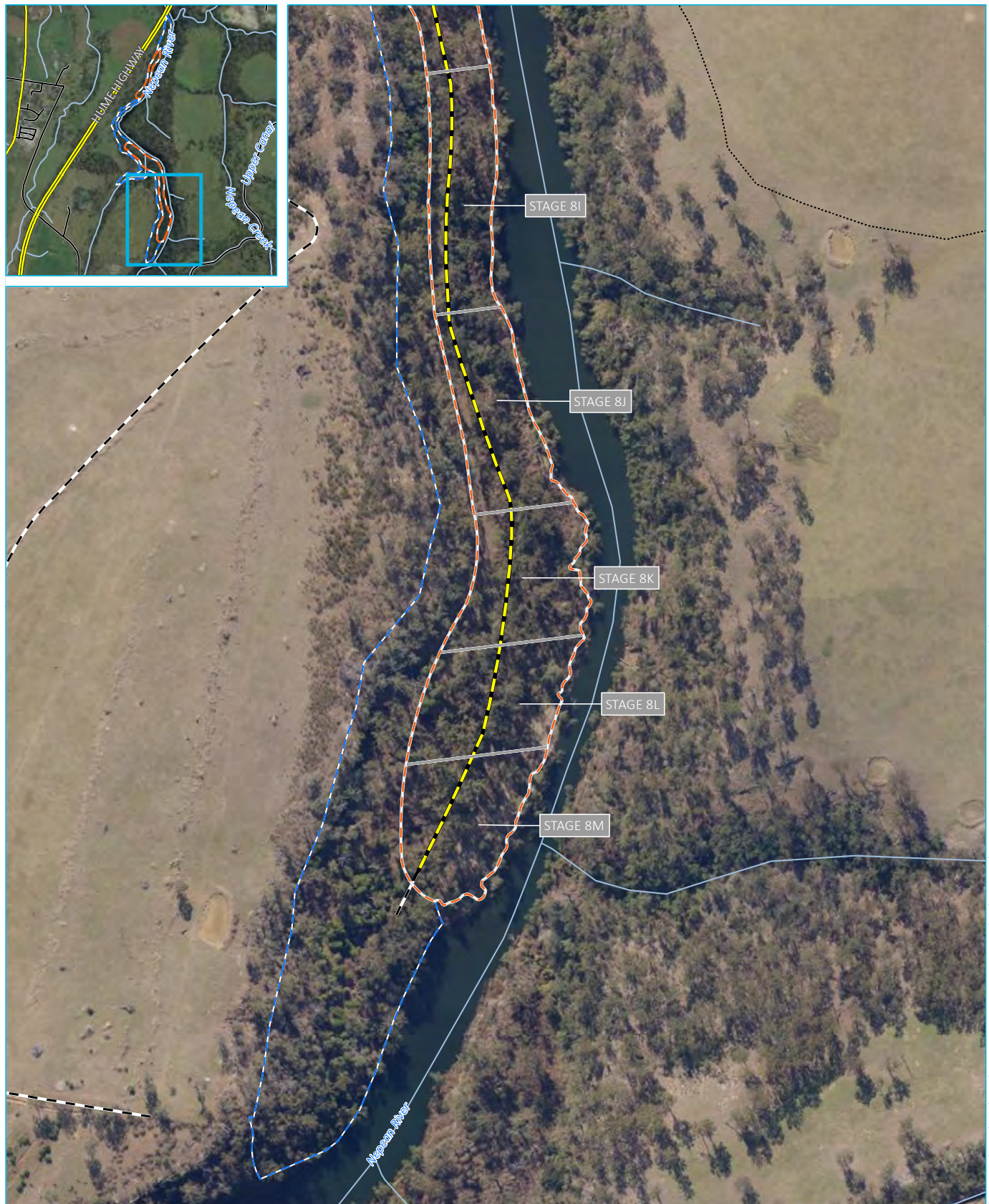
Source: EMM (2019); DFSI (2017); GA (2011)

KEY

- Stage 8 - extraction/rehabilitation area
- Stage 8 - restoration area (no extraction) boundary
- Substage boundary
- Conveyor head
- Indicative conveyor location
- Haul road
- Access road
- Existing access track
- Main road
- Vehicular track
- Watercourse/drainage line

Stage 8 extraction and
restoration areas –
Stages 8D–8I

Menangle Quarry Extension
Figure 2.4



KEY

- ▬ Stage 8 - extraction/rehabilitation area
- ▬ Stage 8 - restoration area (no extraction) boundary
- ▬ Substage boundary
- ▬ Haul road
- ▬ Existing access track
- ▬ Local road
- ⋯ Vehicular track
- ▬ Watercourse/drainage line

Stage 8 extraction and restoration areas – Stages 8I–8M

Menangle Quarry Extension
Figure 2.5

2.3.2 Stage 8 area quarry design

The Stage 8 quarry design is presented in Chapter 3 of the EA. Subsequently, the design has been amended to incorporate changes made since the Refusal. The amended proposed quarry design is summarised below.

Schematics showing the quarry progression in plan-view and in cross-section are presented in Figure 2.6 and Figure 2.7 respectively. An indicative cross-section perpendicular to the bank is presented in Figure 2.8 and Figure 2.9.

i Lower riverbank and horizontal setback retention

The level of the Nepean River adjacent to the Stage 8 area is controlled by the downstream Menangle Weir so as to be about 61 mAHD during normal low flow.

During extraction of the resource from the previous quarry stages, the lower riverbank was retained and a horizontal setback from a contour approximately 3 m above the normal river level was provided. For example, in the Stage 7 area, the lower riverbank (below 64 mAHD) was retained and a horizontal setback of 10 m from the 64 mAHD contour on the natural riverbank (ie 3 m above the normal level of the Nepean River) was provided.

A similar setback was proposed for the Stage 8 area. However, the proposed setback method has since been amended to protect all native trees in the 10-m wide horizontal setback area as follows:

- The lower riverbank will be retained below the 64 mAHD contour and remain untouched (except for hand removal of weeds, felling of non-native trees leaving the roots in place, and very selective herbicide application).
- The riverbank will also be retained in a horizontal setback that extends at least 10 m (measured horizontally) inland from the 64 mAHD contour up the bank (referred to as the '10-m-wide horizontal setback area')¹.
- Where there are native trees² within the 10-m-wide horizontal setback area, the width of the setback will be increased so that edge of the setback area/start of extraction area is at least 7.5 m (measured horizontally) from the trunk of these trees.

Therefore, the active extraction area will be separated from the river by the lower riverbank (ie between 61 mAHD and 64 mAHD) and additionally by the horizontal setback that will be between 10 and 17.5 m wide. The undisturbed bank (ie the combined lower riverbank and horizontal setback) will vary in height but will be at least 3 m above the low-flow river level where the bank slope is shallow but will be higher where the bank slope is steeper.

¹ It was previously proposed to grade the horizontal setback to a slope of 1:50 where there are no native trees within the horizontal setback area. This is no longer proposed and the existing landform within the horizontal setback area will be retained, including where there are no trees.

² Native trees with a trunk diameter of >0.1 m diameter at breast height (DBH).

KEY

~64 mAHD Typical spot height

64 mAHD contour

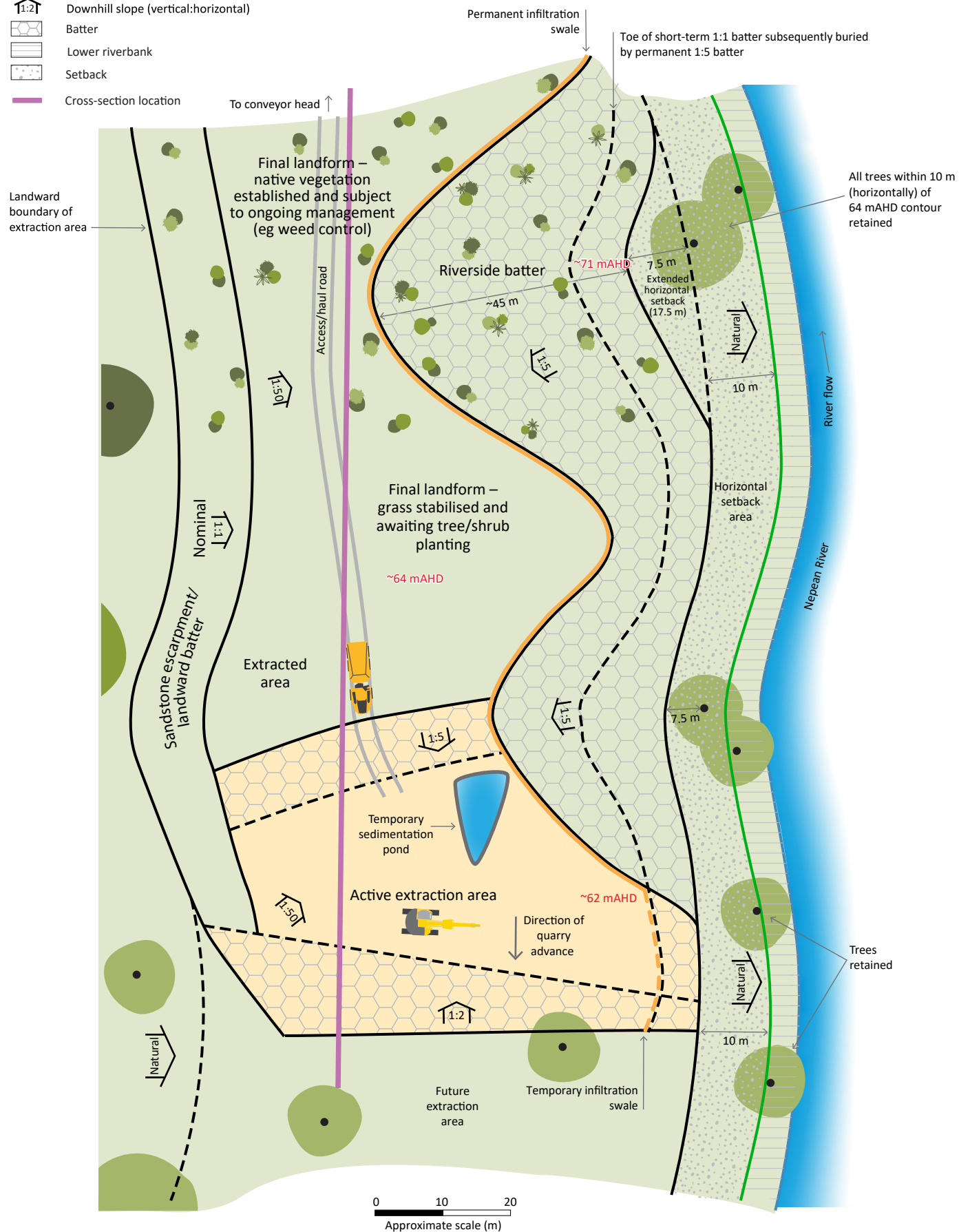
1:2 Downhill slope (vertical:horizontal)

Batter

Lower riverbank

Setback

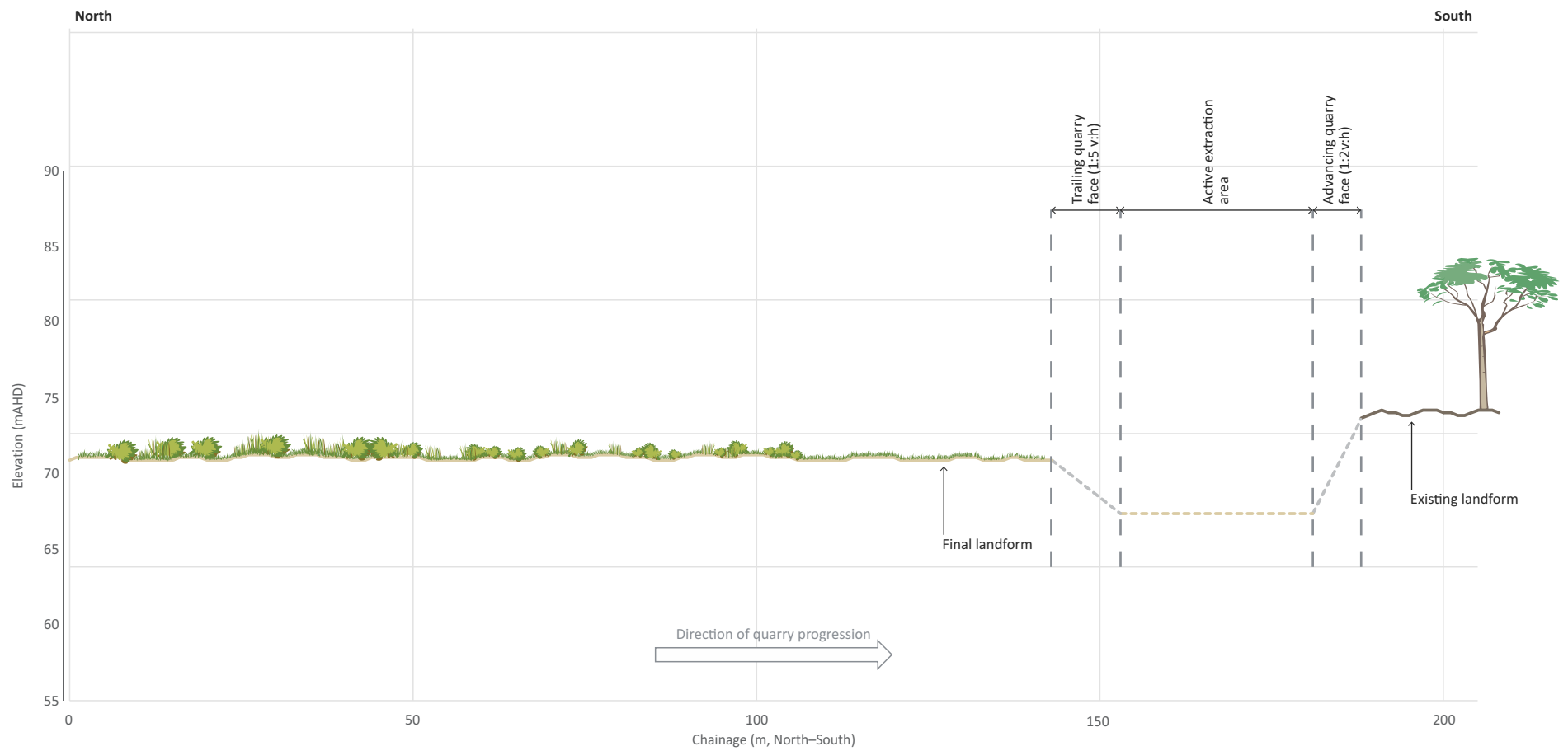
Cross-section location



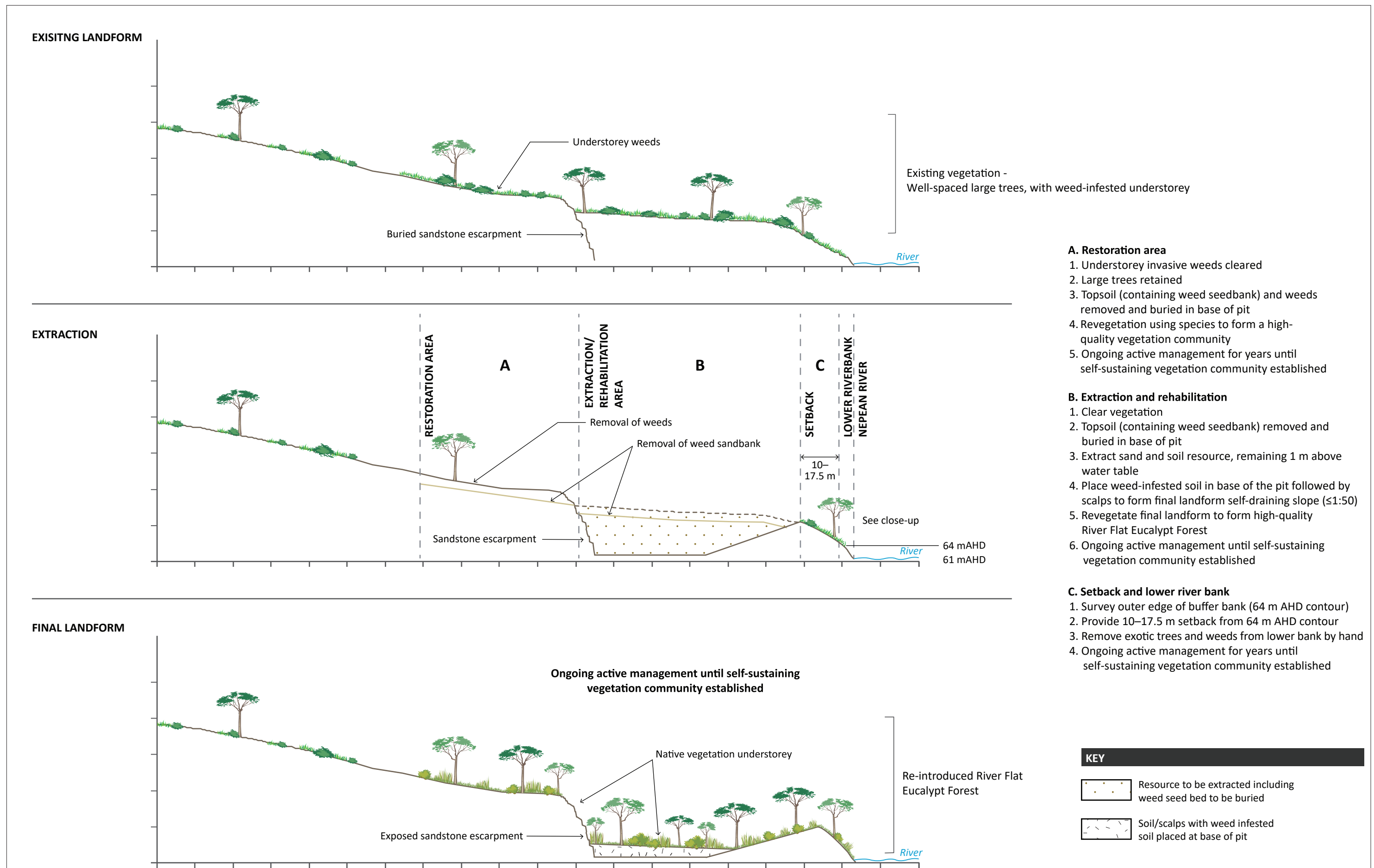
Quarry progression schematic

Menangle Quarry Extension

Figure 2.6



Quarry progression cross-section
Menangle Quarry Extension
Figure 2.7



A. Restoration area

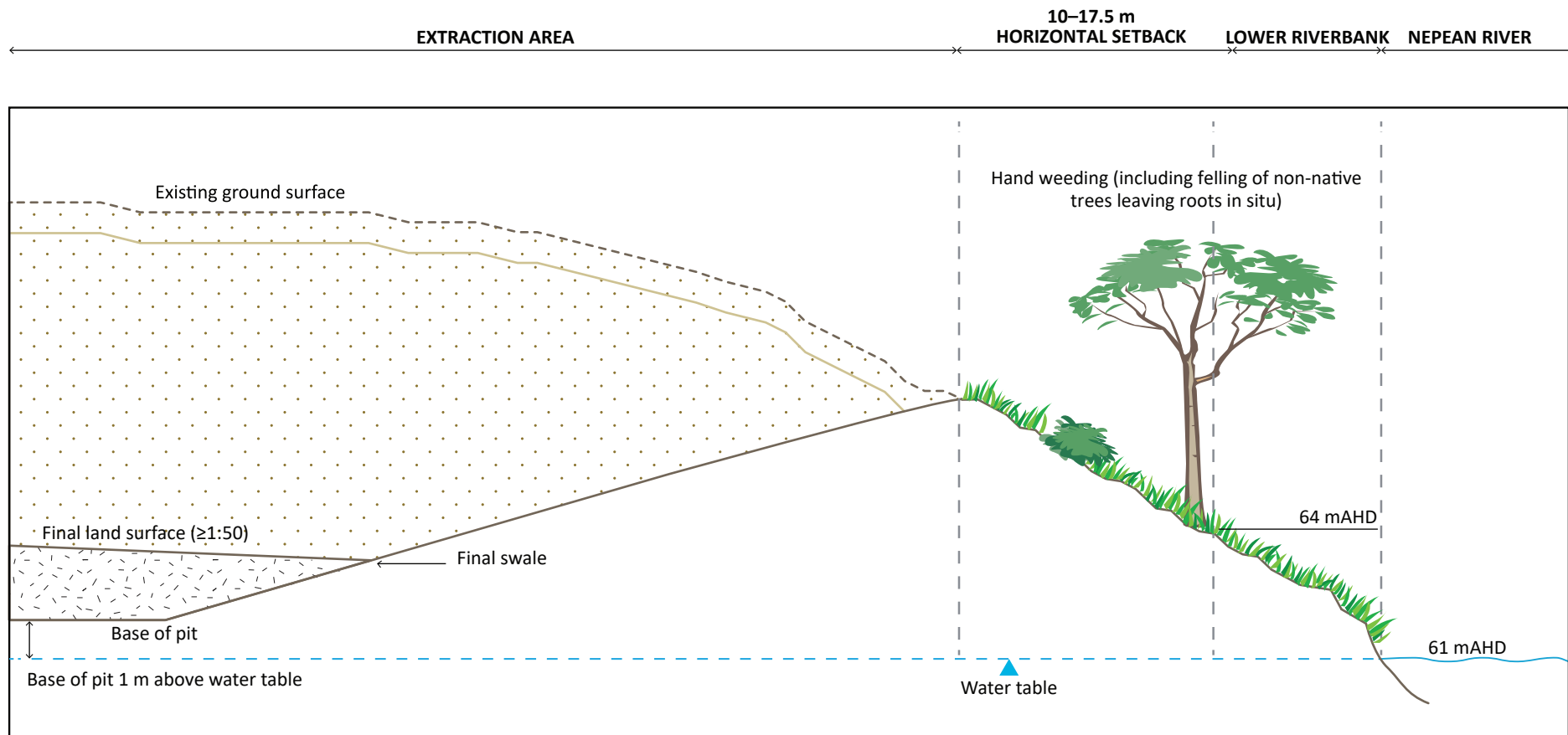
1. Understorey invasive weeds cleared
2. Large trees retained
3. Topsoil (containing weed seedbank) and weeds removed and buried in base of pit
4. Revegetation using species to form a high-quality vegetation community
5. Ongoing active management for years until self-sustaining vegetation community established

B. Extraction and rehabilitation

1. Clear vegetation
2. Topsoil (containing weed seedbank) removed and buried in base of pit
3. Extract sand and soil resource, remaining 1 m above water table
4. Place weed-infested soil in base of the pit followed by scalps to form final landform self-draining slope ($\leq 1:50$)
5. Revegetate final landform to form high-quality River Flat Eucalypt Forest
6. Ongoing active management until self-sustaining vegetation community established

C. Setback and lower river bank

1. Survey outer edge of buffer bank (64 m AHD contour)
2. Provide 10–17.5 m setback from 64 m AHD contour
3. Remove exotic trees and weeds from lower bank by hand
4. Ongoing active management for years until self-sustaining vegetation community established



KEY	
	Extracted sand and soil (including the surface weed bank to be buried)
	Soil/scalps, with weed-infested soil placed at the base of the pit

Indicative cross-section – close-up
Menangle Quarry Extension
Figure 2.9

ii Riverside batter

The riverside batter will be inland of the horizontal setback area (Figure 2.6).

It is proposed that:

- a temporary riverside batter with a maximum slope of 1:1 m (vertical: horizontal)³, will be used during sand and soil extraction – this will allow the efficient extraction of the resource;
- following extraction of the resource above this batter, the batter will be then built up with suitable site material to give a permanent slope of 1:5 – this will provide additional assurance that the bank will be stable if the active extraction area is flooded during extraction;
- the maximum length of the riverside batter that has a slope between 1:1 and 1:5 will be restricted to 30-m long so that it can be returned to a 1:5 batter within 12 hours if flooding is predicted;
- regardless of the amount of material required, the maximum length of the riverside batter that has a slope between 1:1 and 1:5 will be restricted to 30 m, measured parallel along the river;
- in the final landform, the riverside batter will have a permanent slope of 1:5 – this will provide additional assurance that the bank will be stable in the long term; and
- if over the life of the quarry, activities temporarily cease in the extraction area such that the excavator is relocated from the Stage 8 area, the riverside batter will be always left as a 1:5 batter.

iii Advancing quarry face

The quarry will progressively advance upstream at an average rate of about 150 m/year. The advancing quarry face will face downstream.

During large floods, river water may overtop the lower riverbank and horizontal setback area and flow into the active extraction area or may overtop the riverbank upstream of the active extraction area and flow along the bank to enter the active extraction area over the advancing face. A maximum batter angle of 1:2 will be applied to the advancing face so as to minimise any scour occurring as the water initially flows down the batter, until the water level in the extraction area is at the same level as the river.

iv Trailing quarry face

The trailing quarry face, between the active extraction area and backfilled extracted area, will face upstream.

A maximum landward batter angle of 1:5 is proposed for this face as it will face upstream in a flood. As for the riverside batter, this will mitigate the scour risk.

v Landward batter

The landward, or inland, batter is on the side of the extraction area furthest from the river (Figure 2.6).

A maximum landward batter angle of 1:1 is proposed as it will be exposed to far lower flood current speeds and peak shear stress than the riverside batter. There may be a steeper angle on the landward side of the extraction area where it is formed by the natural sandstone rock escarpment, which in places, may be vertical.

³ All slopes in this report are expressed as vertical:horizontal.

vi Base of the extraction area

Bores will be installed in the base of the active extraction area prior to the commencement of extraction in each successive substage and the water level will be recorded daily during active operations. The resource will be extracted in a manner that ensures that the base of the extraction area is always at least 1 m above alluvial water table resulting from the normal low flow water level in the Nepean River.

2.3.3 Pre-extraction surveys

Prior to any extraction occurring in each substage area, a qualified surveyor will:

- mark the boundary of the extraction area closest to the river as defined by the 64 m AHD contour;
- mark the extent of the 10-m-wide horizontal setback area;
- mark all living native trees with their trunk within the 10-m-wide horizontal setback area;
- place a peg 7.5 m horizontally landward of each tree within the 10-m-wide horizontal setback area – marking the extent to which the existing bank will be retained, ie forming the 10-m to 17.5-m-wide horizontal setback area;
- mark all other boundaries of the extraction area such that the area of each substage does not exceed the area in Table 2.1; and
- mark the boundaries of the adjacent restoration (no resource extraction) area.

2.3.4 Vegetation clearing

Vegetation will be cleared in campaigns ahead of sand and soil extraction. The area cleared at any one time will be minimised but will provide sufficient area to allow safe operations in the extraction area (allowing for the height of standing trees). The maximum extent of the cleared, but un-rehabilitated, extraction area will be 1 ha, but it is expected that a smaller portion will actually be cleared at any one time.

The timber will be stored onsite, prior to being periodically milled onsite using a portable mill. The milled timber will be used for fencing and other construction in the local area. Through a related entity, Menangle Sand and Soil control about 600 hectares in the local area where this milled timber will be used.

2.3.5 Topsoil removal

Topsoil will be stripped to a depth of approximately 0.2–0.3 m. Given that the topsoil in the Stage 8 area contains the seedbank for the noxious weeds infesting the area, this weed-infested material will be placed in the bottom of the preceding extraction area, following resource extraction, and will be covered by material returned as part of creating the final landform (see Section 2.8.1). It is important to bury these weed-infested soils deeply to prevent weed re-emergence.

2.3.6 Resource extraction

The sand and soil resource in the Stage 8 area will be extracted using an excavator and off-road haul truck. It will only be extracted to within 1 m above the water table (see Section 2.3.1). The excavator will load the haul truck, which will then transport the sand and soil to the conveyor head (see Section 2.4.1).

2.3.7 Dredging

Historically dredging has been used to extract sand from the Nepean River and is permitted in the existing Consent. Dredging is not proposed as part of the extension project (Stage 8).

2.4 Onsite material transport and processing

2.4.1 Stage 8 area material transport

Proposed Stage 8 works include the progressive construction of a haul road within the proposed Stage 8 area (see Figures 2.3 to 2.5). This haul road will follow existing cleared tracks.

An off-road haul truck will be used to transport excavated sand and soil from the active extraction area to the start of the conveyor, where it will be tipped.

At the conveyor head, sand and soil will be loaded into a self-powered screen which will remove the oversized material (>4 mm scalps). These scalps will be hauled back to the open excavation for use in rehabilitation. The screen will discharge sand and soil onto a conveyor.

The conveyor will be progressively extended south as the extraction moves south (see Figures 2.3 to 2.5). The conveyor will be a temporary structure (approximately 1.5-m high and 1-m wide) that will be removed upon completion of the project.

2.4.2 Processing

Mobile screens within the processing area are used to remove roots and coarse material (>4 mm) 'scalps'. The mobile stacker attached to the screen discharges screened soil into a stockpile for sale or blending. Some material is further screened to create specific blended soil products using mobile screening plants and a washing plant.

The wastes from the washing plant consist of organics such as pebbles, roots and fines (very fine sand, silt, and clay particles) in water. These wet fines are gravity fed to the settling pond in the processing area and are mostly recovered from the pond and blended into products. The remaining silts are used to rehabilitate the site.

No changes to material processing are proposed.

2.4.3 Blending

Environment Protection Licence (EPL) 3991 lists the type of wastes that can be accepted by the facility and the limits and conditions imposed on the acceptance and stockpiling of this waste. Extracted material is currently blended with these imported materials, where necessary.

No changes to material blending are proposed.

2.4.4 Stockpiling

Very little material is stockpiled in the extraction areas. Stockpiles are mainly kept in the processing area.

No changes to material stockpiling are proposed.

2.5 Access

2.5.1 Site access

The main access to the site is from Menangle Road. Menangle Road is an arterial road which provides sub-regional access. It is not proposed to change the site access for inbound materials or outbound materials.

2.5.2 Access to the Stage 8 area

Light vehicles accessing to the Stage 8 area will use the existing access under the Hume Motorway. The existing access was retained when the RMS bisected the lands when acquiring the corridor for the original Hume Highway in 1969. The existing access road under the bridge will be sealed and will comply with RMS drainage and pavements standards.

The earthmoving equipment, off-road haul truck and other plant to service the Stage 8 area will access the area via Moreton Park Road. Major plant is expected to remain onsite through-out the duration of the quarrying operations except for major servicing or replacement.

2.5.3 Product dispatch

No changes to product dispatch are proposed. Truck movements at the site (ie combined inbound and outbound movements) will not exceed an average of:

- 147 per day on Monday to Friday; and
- 80 per day on Saturday.

2.6 Quarry life

The proposed modification to the existing consent for the quarry would extend the approved life of the quarry for 15 years, from 2020 to 2035.

2.7 Biodiversity protection

A land 'swap' is proposed, surrendering the approval to extract sand and soil from the Stage 3 area (5.68 ha) for the same area (in hectares) of the Stage 8 extraction area on a 1:1 basis.

In addition, it is proposed to restore areas upstream, downstream and upslope of the extraction areas. These restoration areas are shown in Figures 2.3 to 2.5 and will form biodiversity offsets to compensate for the clearing of vegetation in the Stage 8 area that is not part of the land swap. Management of the restoration areas will include the removal of the extensive exotic vegetation in the restoration area, allowing restoration of the entire bank, back to a sustainable, high-quality, native ecosystem.

A Stage 8 area vegetation management plan will be prepared that:

- provides details of the conceptual final landform, soil stripping and vegetation clearing protocols, erosion and sediment control measures, rehabilitation of the extraction area and adjacent restoration activities;
- describes how the implementation of the biodiversity offset strategy will be integrated with the overall rehabilitation of the site; and
- details how connectivity will be managed during the rehabilitation program.

A full-time rehabilitation specialist will be employed as part of the Stage 8 area operations.

2.8 Rehabilitation and closure

2.8.1 Progressive rehabilitation of the Stage 8 area

Following completion of resource extraction, any weed-infested topsoil will be placed in the base of the extracted area followed by scalps and fines. These will be used to build up the base of the extracted area to about 64 mAHD. Following construction of the final landform, the area will be immediately planted with grasses to stabilise the surface. Native vegetation will then be established through planting and seeding. There will be ongoing active management of the rehabilitated extraction area, including weed control.

2.8.2 Final landform

The extraction area design (see Section 2.3.2), as amended to incorporate changes made since the Refusal, will result in the following final landform:

- the lower riverbank (below 64 mAHD) landform will be unchanged;
- the landform in the 10-m to 17.5-m wide horizontal setback will be unchanged;
- the land will slope down at 1:5 from the landward edge of the horizontal setback to 64 mAHD (the riverside batter);
- the infiltration swale along the toe of the riverside batter will be retained to prevent runoff from the final landform flowing overland to the river;
- a nearly-level area at about 64 mAHD gently sloping (1:50) down to the infiltration swale at the toe of the riverside batter;
- a 1:1 slope, or the exposed sandstone escarpment, down to the western edge of the extracted area; and
- the landform in the restoration area and outside of the extraction area will be unchanged.

The rate and volume of extraction will be monitored to ensure that a final landform can meet these design parameters.

Conceptual final landforms are provided in Figures 2.10 to 2.13.

As described in Section 2.3.2i, the horizontal setback area will vary between 10-m and 17.5-m wide along the length of the extraction areas, depending on the exact locations of trees within the 10-m wide horizontal setback. Conceptual final landforms are presented for a 10-m wide horizontal setback and a 17.5-m wide horizontal setback. The actual final landform will be a mixture between these two conceptual final landforms.

The accuracy of the existing contours is limited by the digital elevation model accuracy. It is not currently possible to improve this accuracy through a detailed topographic survey of the entire Stage 8 area given the density of woody weeds in much of the area. These weeds need to be cleared prior to a detailed survey which would compromise the stability of the land surface if undertaken in a single campaign across the entire Stage 8 extraction area. A qualified surveyor will survey each substage area prior to any extraction occurring in the substage and a detailed final landform for the substage will be prepared.

The base of the ephemeral creek in the southern part of the extraction area will be left at its present elevation below 64 mAHd.

The inland batter of the extraction area will be a 1:1 (vertical:horizontal) sand and soil slope or the currently buried sandstone escarpment. The exact location and slope of the buried sandstone escarpment will vary along the extraction areas. A nominal, 1:1 (vertical:horizontal) has been assumed in the conceptual final landform. Some of this area may be low exposed sandstone cliffs as currently occur upslope of the extraction area.

Over the coming decades, ongoing sand and soil deposition from the river's floods will fill the low areas, eventually recreating the current terraced benches.

2.9 Site infrastructure and services

2.9.1 Site buildings

There is a compound containing the administrative offices and allied buildings immediately at the site entrance on Menangle Road. The compound comprises:

- an existing site office and amenities building, housing offices, kitchen amenities and soil laboratory;
- an existing wheel wash and weighbridge are located at the top of an elevated bank, level with the floor level of the main building;
- an existing large workshop housing equipment and machinery as well as a storage area for ancillary machinery; and
- existing fuel supply tanks.

No changes to site buildings and infrastructure are proposed.

2.9.2 Lighting

There will be no changes to lighting in the processing and site entry areas.

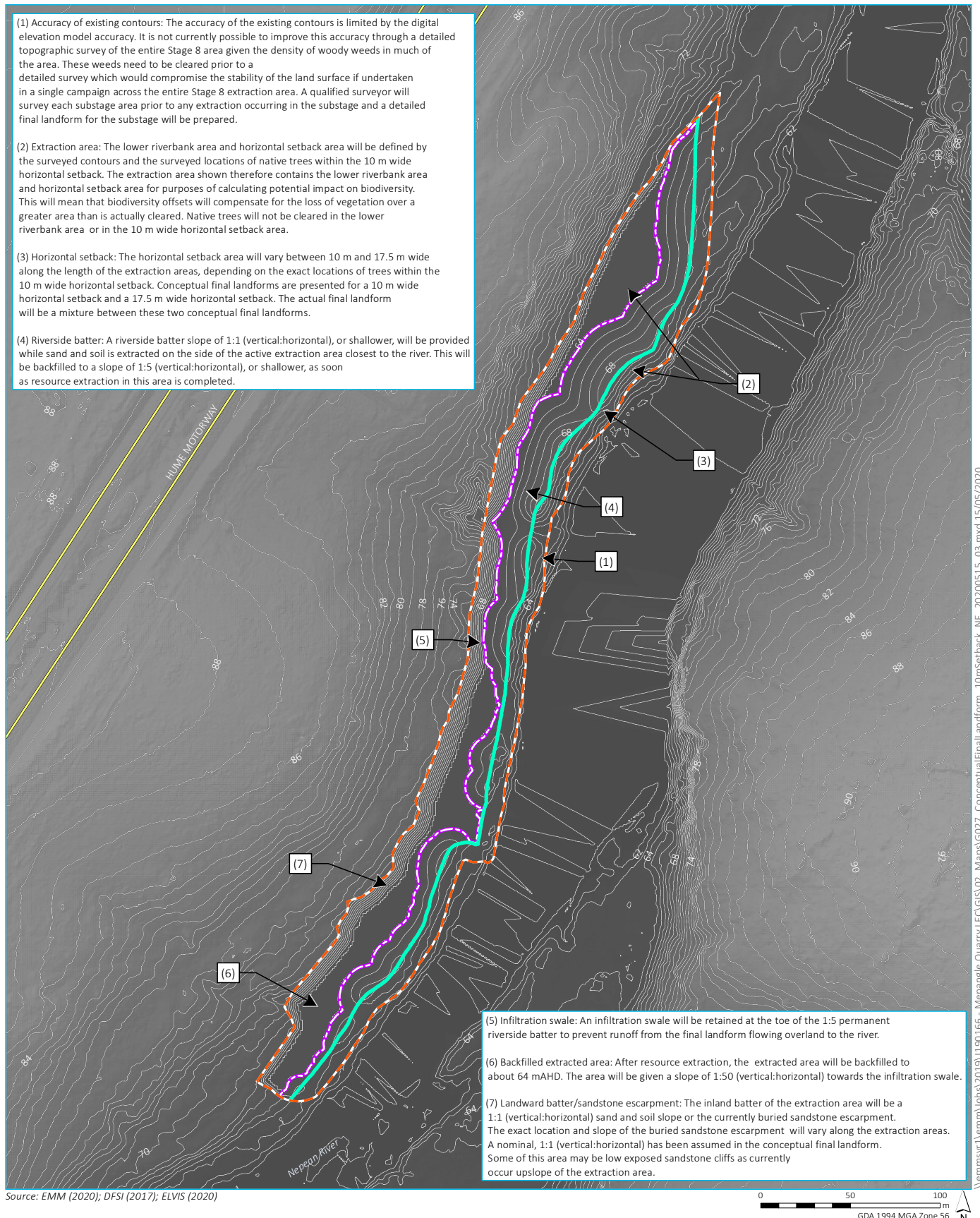
No fixed lighting will be required in the Stage 8 area as extraction will only occur in daylight hours.

2.10 Hours of operation

The existing development consent allows the quarry to operate over the following hours:

- 6 am to 5 pm Monday to Friday;
- 6 am to 12 pm Saturday; and
- with no operations on Sundays or public holidays.

No changes to the approved hours of operation are proposed.

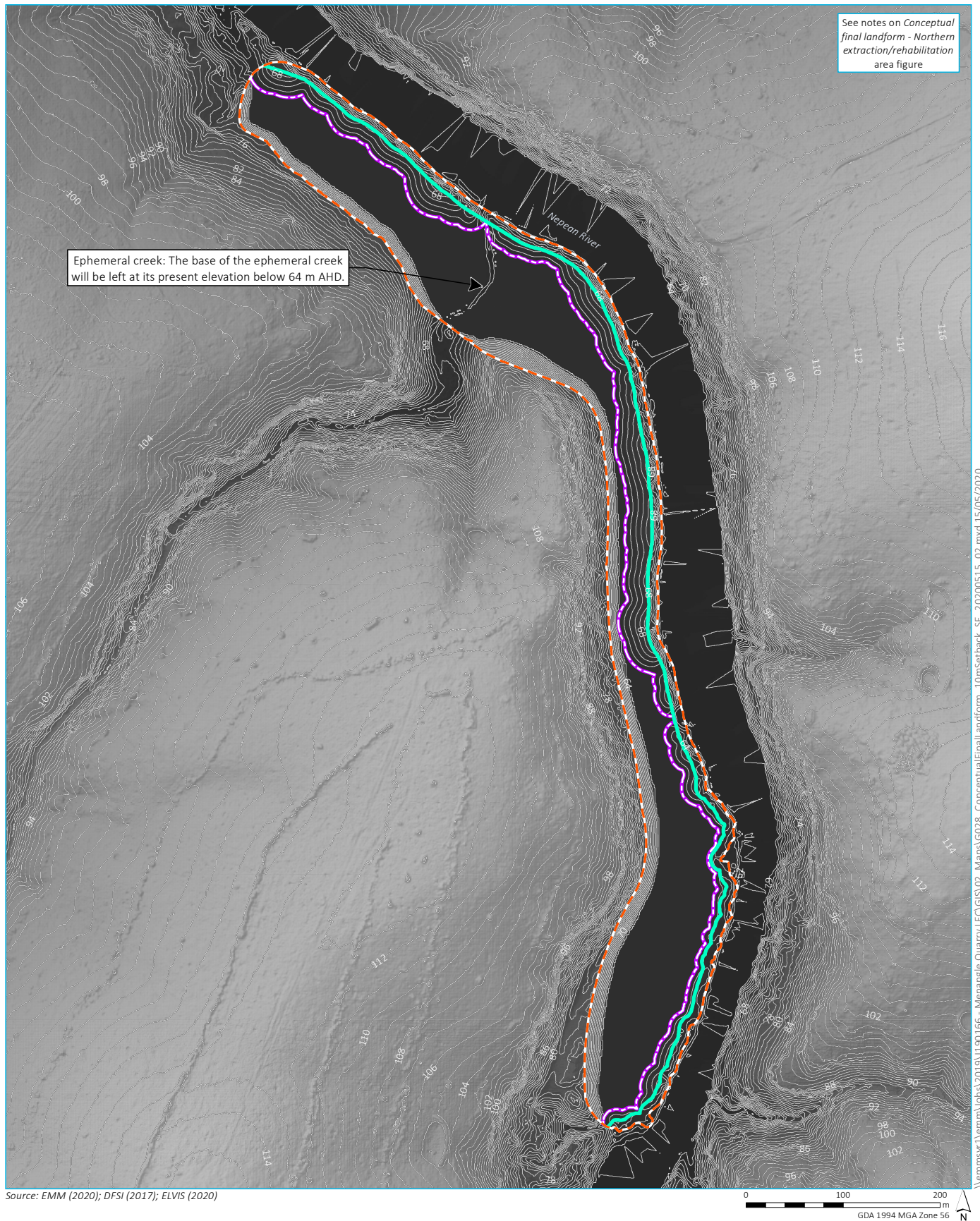


KEY

- ▬ Stage 8 - extraction/rehabilitation area
- ▬ Inland extent of horizontal setback (10 m)
- ▬ Infiltration swale/toe of riverside 1:5 permanent batter
- ▬ Contour (1 m)
- ▬ Major road

Conceptual final landform 10 m setback
Northern extraction/rehabilitation area

Menangle Quarry Extension
Figure 2.10

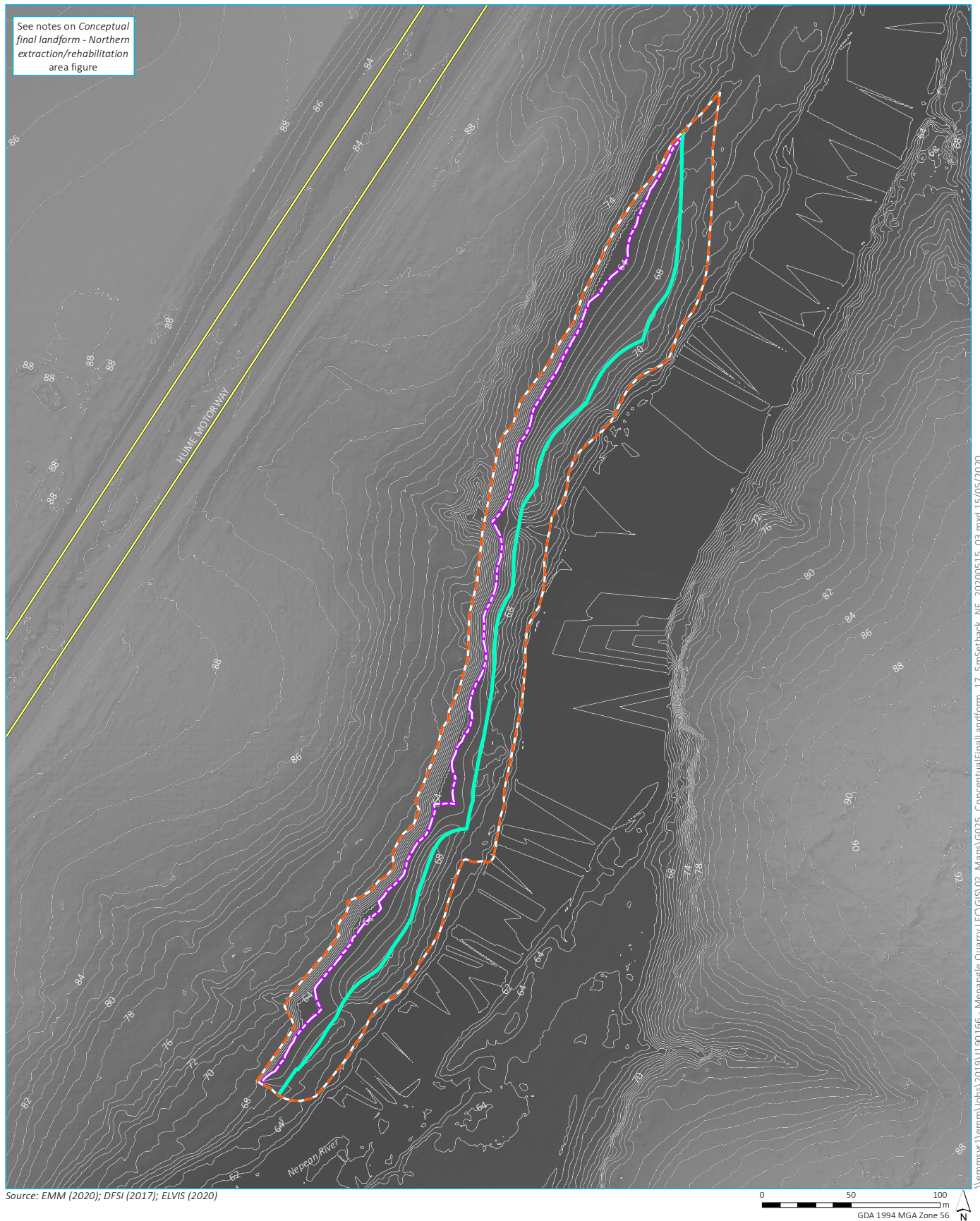


KEY

- Stage 8 - extraction/rehabilitation area
- Inland extent of horizontal setback (10 m)
- Infiltration swale/toe of riverside 1:5 permanent batter
- Contour (1 m)

Conceptual final landform 10 m setback
Southern extraction/rehabilitation area

Menangle Quarry Extension
Figure 2.11



KEY

- Stage 8 - extraction/rehabilitation area
- Inland extent of horizontal setback (17.5 m)
- Infiltration swale/toe of riverside 1:5 permanent batter
- Contour (1 m)
- Major road

Conceptual final landform 17.5 m setback
Northern extraction/rehabilitation area

Menangle Quarry Extension
Figure 2.12



KEY

- Stage 8 - extraction/rehabilitation area
- Inland extent of horizontal setback (17.5 m)
- Infiltration swale/toe of riverside 1:5 permanent batter
- Contour (1 m)

Conceptual final landform 17.5 m setback
Southern extraction/rehabilitation area

Menangle Quarry Extension
Figure 2.13

2.11 Employment

The quarry employs 16 people, most of whom are employees of long standing. When there is an additional production demand, staff from other Benedict sites are brought to site to assist. In addition, Benedict and contracted truck drivers deliver materials to the site and products to customers.

In addition, a full-time rehabilitation specialist will be employed as part of the Stage 8 area operations.

3 Statement of commitments

3.1 Introduction

The commitments to manage potential environmental impacts from the extension project are described in Chapter 7 of the EA (EMM 2017b). This includes a summary of commitments in EA Table 7.1. An updated statement of commitments is provided in Chapter 6 of the RTS (EMM 2017b).

3.2 Summary of commitments

A summary of the environmental management and mitigation measures, as amended to incorporate the changes made since the Refusal, is provided in Table 3.1. Additional commitments made following submission of the RTS are highlighted in bold.

Table 3.1 **Summary of commitments**

Aspect	Commitment
Air quality	Management measures to suppress dust and emissions consistent with current operations will be continued: <ul style="list-style-type: none">• level 2 water spraying for hauling on unpaved roads;• water spraying where screening occurs; and• water spraying at conveyor transfer points.
Noise and vibration	<p>The current management measures to minimise noise emissions will continue to be implemented including:</p> <ul style="list-style-type: none">• regular reinforcement of the need to minimise noise;• regular identification of noisy activities and adoption of improvement techniques;• working in shielded areas when possible (ie below the top of the bank of the Nepean River);• avoiding the use of portable radios with external speakers, public address systems or other methods of site communication that may unnecessarily impact upon nearby residents;• developing routes for the delivery of materials and parking of vehicles to minimise noise;• where possible, avoiding the use of equipment that generates impulsive noise;• minimising the need for vehicle reversing for example, by arranging for one-way site traffic routes;• minimising the movement of materials and plant and unnecessary metal-on-metal contact; and• scheduling respite periods for intensive works (such as timber milling). <p>The following measures will be taken as part of the campaign use of the portable timber mill:</p> <ul style="list-style-type: none">• campaigns will be scheduled to avoid the winter period;• a noise measurement trial will be conducted during worst case meteorological conditions at the start of the first campaign and if noise levels are above the noise criteria, mobile noise barriers and/ or noise curtains will be installed.

Table 3.1 **Summary of commitments**

Aspect	Commitment
Aboriginal heritage	<p><i>Aboriginal sites</i></p> <ul style="list-style-type: none"> • A pre-clearance survey will be undertaken to ensure that any scarred trees in the Stage 8 area are identified and recorded. • Procedures will be implemented to ensure there is no inadvertent harm to buried rock shelters. • Procedures will be implemented if human skeletal remains are discovered. • Management measures will be implemented so that the quarry machinery avoids impacting buried sandstone features. • If new Aboriginal sites are discovered during soil extraction or revegetation of the Stage 8 area, they will be assessed by an archaeologist and any new sites will be recorded on Aboriginal Heritage Information Management System (AHIMS).
Biodiversity, restoration and rehabilitation	<p>A full-time rehabilitation specialist will be employed by the quarry.</p> <p>Measures to minimise the project's biodiversity impacts will be:</p> <ul style="list-style-type: none"> • Avoid - avoidance of direct impacts on critically endangered ecological communities, namely Shale/Sandstone Transition Forest in the Sydney Basin Bioregion and Cumberland Plain Woodland in the Sydney Basin Bioregion. It is proposed that the development consent for the Stage 3 area is modified so there is no quarrying in this area, avoiding the approved clearing of 5.68 ha of an endangered ecological community, River Flat Eucalypt Forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions that would have otherwise occurred. • Minimise: <ul style="list-style-type: none"> – each substage will be less than 1.07 ha and the active extraction area will be about 0.33 ha; and – once extraction in each part of the sub-stage is complete, the area will be progressively rehabilitated so about 33% of the sub-stage will be bare sand and soil and about 66% will be a combination of existing vegetation and the area being rehabilitated. • Mitigate - measures have been proposed to mitigate the clearing of native vegetation, loss of hollow-bearing trees, fauna injury and mortality and erosion and sedimentation (Table 4.1 in EA Appendix I and Section 6.5 in the Supplementary Biodiversity Assessment (EMM [Ward] 2019b)). • Offset – biodiversity offsets will be provided in accordance with the Supplementary Biodiversity Assessment (EMM [Ward] 2019b). <p>Extraction will be setback from the river as follows:</p> <ul style="list-style-type: none"> • The lower riverbank will be retained below the 64 mAHD contour and remain untouched (except for hand removal of weeds, felling of non-native trees leaving the roots in place, and very selective herbicide application). • The riverbank will also be retained in a horizontal setback that extends at least 10 m (measured horizontally) inland from the 64 mAHD contour (the horizontal setback area). • Where there are trees within the 10-m wide setback, the width of the setback will be further increased so that edge of the setback area/start of extraction area is at least 7.5 m (measured horizontally) from the trunk of these trees.

Table 3.1 **Summary of commitments**

Aspect	Commitment
	<p>All native trees in the 10-m-wide horizontal setback will be retained.</p> <p>Restoration and rehabilitation will be undertaken in accordance with a post extractive rehabilitation and vegetation management plan similar to those contained in EA Appendix C. This plan will:</p> <ul style="list-style-type: none"> • provide details of the conceptual final landform, soil stripping and vegetation clearing protocols, erosion and sediment control measures, rehabilitation of the extraction area and adjacent restoration activities; • describe how the implementation of the biodiversity offset strategy would be integrated with the overall rehabilitation of the site; and • detail how connectivity will be managed during the vegetation management plan works program. <p>Woody debris and logs from areas to be cleared will be retained and placed in the offset area, extraction area, and lower riverbank.</p> <p>A weed-control strategy will be prepared and implemented in the Stage 8 areas.</p> <p>Menangle Sand and Soil will ensure the vegetation maintenance in the Stage 8 area is fully funded.</p>
Groundwater	<p>The following groundwater monitoring and management measures will be implemented:</p> <ul style="list-style-type: none"> • A conceptual locally-specific groundwater model will be prepared based on local site data. • A water monitoring and modelling plan will be prepared. • Install nested monitoring bores will be installed at four locations along the stage 8 area. • In-bore aquifer tests (slug tests) will be conducted. • Piezometers/loggers will be installed in each bore and water levels recorded. • The ‘water take’ in the pit predicted as a result of elevated groundwater levels during flooding will be calculated. <p>Sufficient water access licences (WALs) will be purchased to account for the ‘intercepted’ groundwater, if required.</p> <p>The existing groundwater management controls implemented on the site for the approved operations will be continued, including:</p> <ul style="list-style-type: none"> • the base of the quarry pit will be no deeper than 62 mAHD, ie 1 m above the alluvial water table; and • if groundwater enters the pit, for example during extended high flow in the Nepean River, it will be allowed to infiltrate back into the alluvial groundwater system once the alluvial water table drops and extraction not recommenced until the water subsides.

Table 3.1 **Summary of commitments**

Aspect	Commitment
Surface water	<p>The existing soil and surface water management controls implemented on the site for the approved operations will be continued. These measures include:</p> <ul style="list-style-type: none"> the extraction area will be setback from the river (see above); flow diversions and check dams will be constructed to direct clean runoff around the extraction area; a sedimentation basin (or basins), sized to trap and treat runoff, will be excavated within the pit; and the erosion and sediment control measures will be regularly maintained. <p>The sedimentation basin will be formed in the base of the pit and will be relocated as the extraction area progresses.</p> <p>Only commercially available non-toxic flocculants will be used at the site.</p> <p>Any water in the pit will not be dewatered using a pump. Rather, it will flow to a sedimentation basin or will be allowed to infiltrate to the water table under gravity.</p> <p>If the water level in the pit rises to a level where operations need to cease, operations will only recommence when the water level has dropped sufficiently to be safe (no operations within standing water are required).</p> <p>The following actions will be taken when flooding of the Nepean River above 64 m AHD in the Stage 8 area is predicted:</p> <ul style="list-style-type: none"> any riverside batter that has a batter angle of less than 1:5 will be built up so that it has a maximum 1:5 slope; exposed batters and the base of the pit will be flattened so that there are no isolated highpoints susceptible to scour; all exposed sand and soil will be smoothed such that there are no rapid changes in slopes, particularly at the intersections of different batters; and unattended earthmoving equipment will not be left within the Stage 8 area below the 1% annual exceedance probability flood level while a flood warning is current. <p>These measures will be detailed in a flood preparedness plan that will be part of the site's operational environmental management plan.</p>
Traffic and transport	<p><i>Road upgrades</i></p> <ul style="list-style-type: none"> No road upgrades will be required as a result of the extension. <p><i>Traffic management plan</i></p> <ul style="list-style-type: none"> The existing traffic management plan will be monitored and reviewed. <p><i>Access beneath the Hume Highway/Menangle Bridges</i></p> <ul style="list-style-type: none"> There will be no clearing of native vegetation, excavation or stockpiles placed within 50 m of the Hume Highway/Menangle Bridges or within 30 m of the edge of the boundary of the Hume Highway road corridor within the Stage 8 area. Menangle Sand and Soil will continue to provide Transport for NSW (TfNSW) access to the Hume Highway/Menangle Bridges structure and associated facilities at all times, including for routine and emergency maintenance. Access under the Hume Highway/Menangle Bridges will be restricted to light vehicles only. Access under the Hume Highway/Menangle Bridges will be sealed and comply with RMS drainage and pavements standards. The piers of the Hume Highway/Menangle Bridges, as well as any other part of the bridge structure and associated facilities, will be protected from any potential damage as a result of the construction or operations of the Menangle Sand and Soil Quarry.

Table 3.1 **Summary of commitments**

Aspect	Commitment
	<ul style="list-style-type: none"> The conveyor and access under the bridges will be the subject of a license agreement drawn up by TfNSW's lawyers at no cost to TfNSW. This will be in place prior to starting any works under and adjacent to the Menangle Bridges and Hume Highway. Any detritus associated with the construction and use of the access road under Hume Highway/Menangle Bridges will be removed by Menangle Sand and Soil. <p>There will be no access to or from the Hume Highway road reserve area from the Menangle Sand and Soil Quarry site (specifically between Lot 202 and Lot 203 DP 590247) other than to travel beneath the Hume Highway/Menangle Bridges.</p> <p>A Drivers Code of Conduct will be prepared that applies to all employee and contractor drivers.</p>
Social	Menangle Sand and Soil will continue to ensure that preference is given to local employees. As well, they will use local or regional contractors and suppliers where this presents a cost effective and feasible option.
Visual	Menangle Sand and Soil will continue to consult with surrounding landowners regarding the visual amenity of the quarry and will implement any reasonable additional controls to further reduce their visual impact, if necessary.
Historical heritage	Extraction in the northern-most part of the Stage 8 extraction area will avoid the storage container. The industrial equipment on the west bank of the Nepean River in the Stage 8 restoration area will not be disturbed.

References

EMM 2017a, *Menangle Quarry Extension Environmental Assessment*, prepared for Menangle Sand and Soil Pty Limited by EMM Consulting Pty Limited. 23 May 2017.

EMM 2017b, *Menangle Quarry Extension Response to Submissions*, prepared for Menangle Sand and Soil Pty Limited by EMM Consulting Pty Limited. 14 September 2017.

EMM [Towler] 2019a, NSW Land and Environment Court (2018/342158) *NSW Land and Environment Court (2018/342158) Menangle Quarry - Project Amendments and Information Summary*. Letter prepared by EMM Consulting Pty Limited for Minter Ellison. 20 December 2019.

EMM [Ward] 2019b, *Menangle Sand and Soil Pty Ltd v Minister for Planning, LEC 2018/342158 Supplementary Biodiversity Assessment*. Report prepared by EMM Consulting Pty Limited for Minter Ellison. Version 2. 6 September 2019.

EMM [Towler] 2019c, NSW Land and Environment Court (2018/342158) *Menangle Quarry - Amended Extraction Area and Setback*. Letter prepared by EMM Consulting Pty Limited for Minter Ellison. 16 August 2019.

EMM [Grant] 2019d, NSW Land and Environment Court (2018/342158) *Menangle Sand and Soil - Restoration Area Weed Strategy*. Letter prepared by EMM Consulting Pty Limited for Minter Ellison. 9 September 2019.

EMM [Webb] 2019e, NSW Land and Environment Court (2018/342158) *Menangle Sand and Soil - Groundwater Management*. Letter prepared by EMM Consulting Pty Limited for Minter Ellison. 16 August 2019.

EMM [Towler] 2019f, NSW Land and Environment Court (2018/342158) *Menangle Sand and Soil – Flood Mitigation*. Letter prepared by EMM Consulting Pty Limited for Minter Ellison. 9 September 2019.

Appendix A

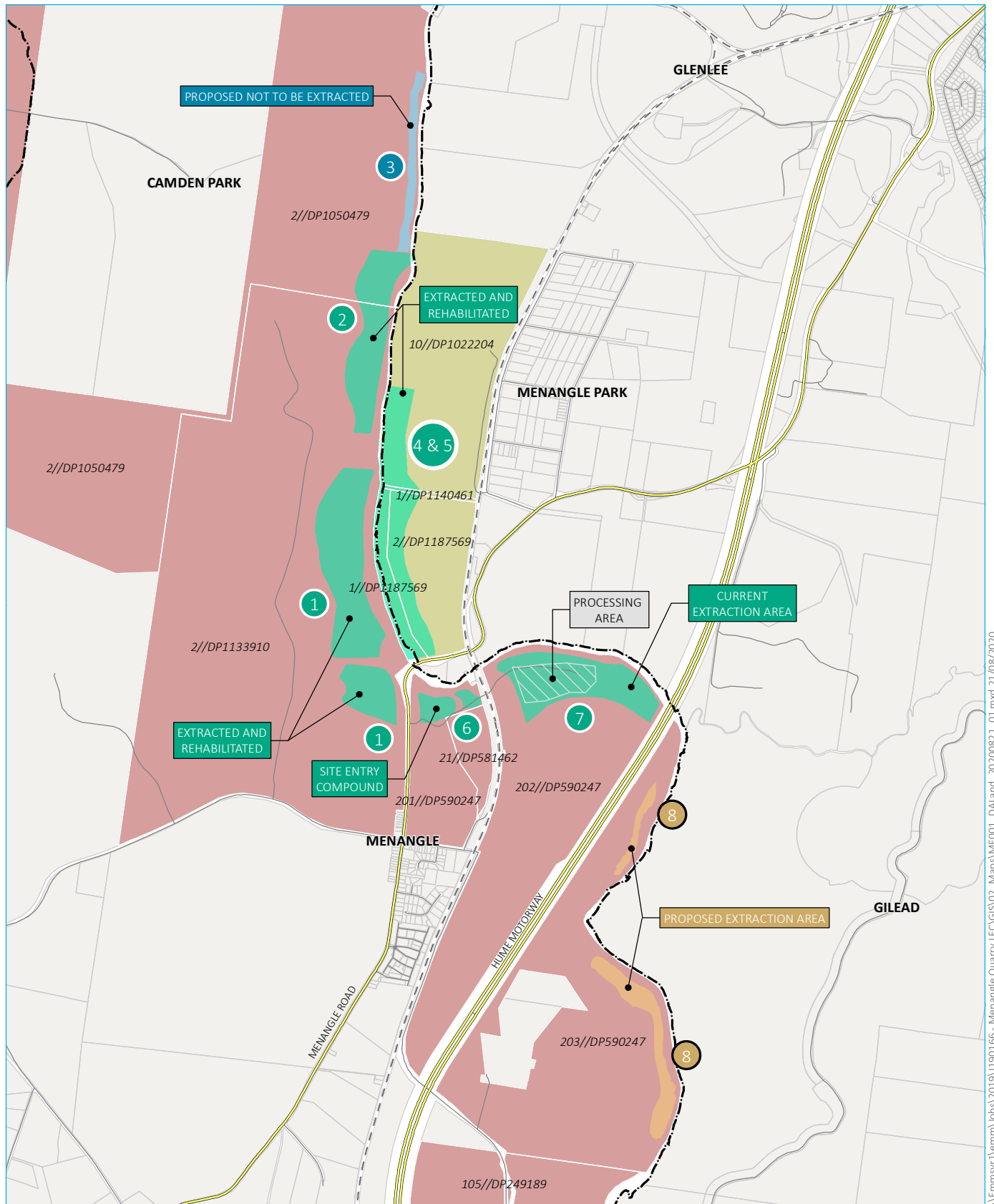
Development Application Land

A.1 Development Application Land

The allotments subject to the development application modification are listed in Table A.1 and shown in Figure A.1.

Table A.1 Development application land

Lot	Deposited plan
Lot 10	DP1022204
Lot 2	DP1050479
Lot 2	DP1133910
Lot 1	DP1140461
Lot 1	DP1187569
Lot 2	DP1187569
Lot 105	DP249189
Lot 21	DP581462
Lot 201	DP590247
Lot 202	DP590247
Lot 203	DP590247



Source: EMM (2020); DFSI (2020)

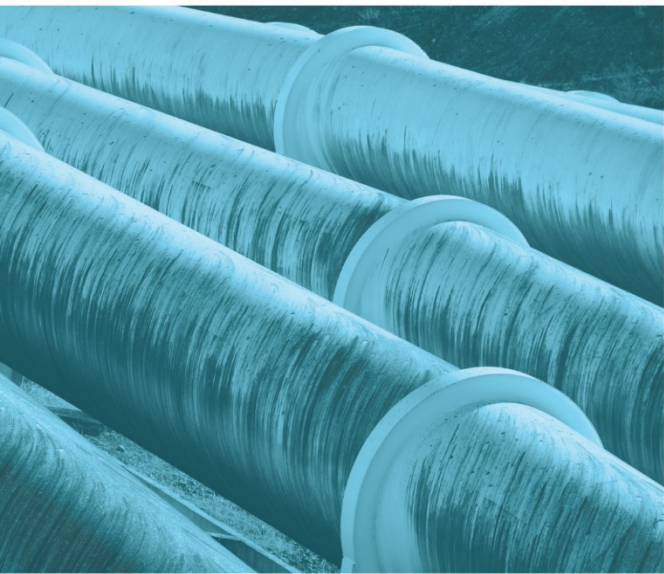
KEY

- Rail line
- Major road
- Minor road
- Cadastral boundary
- Local government area boundary
- Campbelltown impacted lots
- Wollondilly impacted lots
- Existing processing area (to be retained)
- Extractive operations (approved)
- Extractive operations (approved but not extracted)
- Stage 8 - extraction/rehabilitation area

Development Application Land

Menangle Quarry Extension
Figure A.1





Appendix B

Notice of Orders Made (LEC 2018/00342158)



**Land and Environment
Court**
of New South Wales

Level 4 225 Macquarie Street SYDNEY NSW 2000
Level 4 GPO Box 3565 SYDNEY NSW 2001
DX 264, Sydney

Telephone: 02 9113 8200
Facsimile: 02 9113 8222
02 91138208

Email: lecourt@justice.nsw.gov.au
Website: <http://www.lec.justice.nsw.gov.au>

ABN: 52 659 114 436

Luke Anthony James Walker
luke.walker@minterellison.com

Your Ref:



10 September 2020

NOTICE OF ORDERS MADE

Case number 2018/00342158
Case title Menangle Sand and Soil Pty Limited v Minister for Planning

On 10 September 2020 the following orders (and/or directions) were made:

The Court orders that:

- (1) The appeal is upheld.
- (2) Modification to development application DA 85/2865 "Menangle Quarry Extension – Modification 1" (MOD1) lodged by the Applicant on 22 May 2017 with the Minister for Planning, which includes (amongst other things) extending the life of the quarry by 15 years until 2035 by developing a new 13 ha, 2.8 kilometre (km) long southern extraction area (Stage 8) within Lot 203 DP 590247, is approved subject to the conditions set out in 'Annexure A' attached hereto.

For the Registrar

Menangle Sand and Soil Pty Limited v Minister for Planning (LEC 2018/342158)

Annexure "A"

Modifications

*Note: Amendments to existing conditions of approval are shown in tracked changes (**bold and underlined** and where relevant ~~strikeout~~ font)*

1. Amend the Schedule heading on page 2 as follows:

Schedule 1

2. Delete condition 5 and 6.

3. Add additional condition 5A. as follows:

The Applicant must not carry out any Quarrying Operations or extraction in Stage 3.

4. Amend condition 14(a) as follows:

a. ~~Stages 2-3~~ **Stage 2** (Western Bank)

5. Amend condition 28 as follows:

Breach of Consent

In the event of a breach of any of the conditions of consent by the applicant, the Campbelltown City and the Wollondilly Shire Council reserve the right to enter and rectify any such breach and recover the costs of such rectification from the amount of the guarantee **required under condition 25 of this Schedule.**

6. Amend condition 30 as follows:

Completion of Extraction

The applicant shall ensure that all extraction in Stage 1 and Stage 2 is completed by 30 June, 1995; and ~~all stages~~ **Stages 4 to 7** of the development by **31 December** 2020.

7. Amend condition 31 as follows:

Levy for Implementation of Management Plan

The applicant or its assigns shall pay the Director a levy on all sand and soil removed or carried from, the site from Stages ~~1, 2 and 3~~ **1 and 2**, within the Shire of Wollondilly, such levy being paid into a Trust Fund to be administered by the Director for the purpose of providing public facilities on the land subject to this consent in accordance with the requirements of the Camden Park Estate Management Plan which is to be prepared by the Department of Planning. The levy shall be paid at a rate of 8 cents per tonne of sand and soil and shall be adjusted annually on the Index Review Date in accordance with the formula contained in Condition 26.

Menangle Sand and Soil Pty Limited v Minister for Planning (LEC 2018/342158)

8. **Insert Schedule 2 as follows:**

*Menangle Sand and Soil Pty Limited v Minister for Planning (LEC 2018/342158)***SCHEDULE 2****TABLE OF CONTENTS**

DEFINITIONS	4
PART A ADMINISTRATIVE CONDITIONS	8
Application of this Schedule.....	8
Notification of Commencement (Stage 8).....	8
Obligation to Minimise Harm to the Environment.....	8
Terms of Consent.....	8
Limits of Consent.....	8
Evidence of Consultation	10
Staging, Combining and Updating Strategies, Plans or Programs	10
Protection of Public Infrastructure.....	11
Operation of Plant and Equipment.....	11
Compliance.....	11
Applicability of Guidelines.....	11
Production Data	11
Other Statutory Approvals, Licences and Consents	11
PART B SPECIFIC ENVIRONMENTAL CONDITIONS.....	12
Early Works	12
Noise	12
Air Quality	13
Meteorological Monitoring.....	14
Soil and Water	14
Transport	17
Heritage.....	19
Biodiversity and Rehabilitation.....	20
Visual.....	24
Waste	24
Liquid Storage	24
Dangerous Goods.....	24
Bushfire Management.....	24
PART C ADDITIONAL PROCEDURES	25
Notification of Exceedances	25
Independent Review	25
PART D ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING	26
Environmental Management.....	26
Revision of Strategies, Plans and Programs	26
Reporting and Auditing	27
Access to Information	28
APPENDIX 1 DEVELOPMENT LAYOUT	29
APPENDIX 2 EXCLUSION AREAS.....	34
APPENDIX 3 RECEIVER LOCATIONS.....	36
APPENDIX 4 NOISE COMPLIANCE ASSESSMENT	37
APPENDIX 5 MONITORING LOCATIONS.....	38
APPENDIX 6 ADDITIONAL STAGE 6 AND 7 BIODIVERSITY AND REHABILITATION REQUIREMENTS	39
APPENDIX 7 STAGE 8 OPERATIONS BIODIVERSITY AND REHABILITATION	42
APPENDIX 8 INCIDENT NOTIFICATION AND REPORTING REQUIREMENTS	45

Menangle Sand and Soil Pty Limited v Minister for Planning (LEC 2018/342158)

DEFINITIONS

Aboriginal object	Has the same meaning as the definition of the term in section 5 of the NP&W Act
Aboriginal place	Has the same meaning as the definition of the term in section 5 of the NP&W Act
Active extraction area	The area of exposed sand or soil within each Substage which is not subject to rehabilitation
AHD	Australian Height Datum
AEP	Annual Exceedance Probability
Annual Review	The review required by condition D9
Applicant	Menangle Sand and Soil Pty Ltd, or any person carrying out any development under this consent
Approved disturbance area	The area identified as such on the development layout figures in Appendix 1, as amended by the conditions of this consent
Amended Project Summary	<p>The amended project as described in:</p> <ul style="list-style-type: none"> correspondence prepared by EMM dated 20 December 2019, including: <ul style="list-style-type: none"> Amended Extraction Area and Setback Letter dated 16 August 2019, prepared by EMM Consulting; Groundwater Management Letter dated 16 August 2019, prepared by EMM Consulting; Aquatic Ecology Assessment of Significance Letter regarding Sydney Hawk Dragonfly dated 2 September 2019, prepared by Marine Pollution Research Pty Ltd; Fluvial Geomorphology Assessment for Menangle Quarry Modification to Development Consent 85/2865 dated 5 September 2019, prepared by Fluvial Systems Pty Ltd; Stage 8 Area Weed Control Strategy Letter dated 9 September 2019, prepared EMM Consulting; Flood Mitigation Letter dated 9 September 2019, prepared by EMM Consulting; Supplementary Biodiversity Assessment Report dated 16 September 2019, prepared by EMM Consulting; Menangle Quarry Extension – Flood Impact Sensitivity Assessment dated September 2019, prepared by Advisian; and Additional Flood Impact Sensitivity Assessment dated 17 December 2019, prepared by Advisian; and the Consolidated Project Description
BAM	Biodiversity Assessment Method
BC Act	<i>Biodiversity Conservation Act 2016</i>
BCD	Biodiversity and Conservation Division within the Department
BCT	NSW Biodiversity Conservation Trust
Calendar year	A period of 12 months from 1 January to 31 December
Conditions of this consent	Conditions contained in Schedules 2 and 3
Consolidated Project Description	The document titled <i>Applicant's Description of Amended Project for Case Management Conference 23 July 2020</i> prepared by EMM Consulting dated 24 August 2020
Construction	All physical works to enable Quarrying Operations to be carried out, including demolition and removal of buildings or works, and erection of buildings and other infrastructure permitted by this consent
Council	Wollondilly Shire Council

Menangle Sand and Soil Pty Limited v Minister for Planning (LEC 2018/342158)

Day	The period from 7 am to 6 pm on Monday to Saturday, and 8 am to 6 pm on Sundays and Public Holidays
DBH	Diameter at breast height
Decommissioning	The deconstruction or demolition and removal of works installed as part of the development
Demolition	The deconstruction and removal of buildings, sheds and other structures on the site
Department	NSW Department of Planning, Industry and Environment
Development	The development described in the document/s listed in condition A7(c), as modified by the conditions of this consent
Development Layout	The figures in Appendix 1, as amended by the conditions of this consent
DPIE Water	Water Group within the Department
EA (Mod 1)	The EA titled <i>Environmental Assessment Menangle Quarry Extension</i> , prepared by EMM and dated 23 May 2017, the associated Response to Submissions titled <i>Response to Submissions Menangle Quarry Extension</i> , prepared by EMM and dated 14 September 2017, and additional information provided by the Applicant in support of the application including <i>Flood Impact Assessment</i> prepared by Advisian and dated May 2018, <i>Review of Fluvial Geomorphology</i> prepared by Fluvial Systems and dated May 2018, and correspondence prepared by EMM dated 27 August 2017 and 21 February 2018
Early Works	Means clearing for and construction of the linear infrastructure (being conveyors, access roads and haul roads) located between Stage 7 and Stage 8, but does not include Quarrying Operations within the Substage 8A.
EIS	The Environmental Impact Statement titled <i>Proposed Sand & Soil Extraction Nepean River & Environs Menangle NSW</i> , prepared by Planning Workshop and dated December 1987, submitted with the application for consent for the development.
Environment	Includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings
EPA	NSW Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPL	Environment Protection Licence under the POEO Act
Exclusion Areas	Means those areas with 1% AEP peak flow velocities greater than 4 metres/second as identified in the figures in Appendix 2 and the plan required under condition A15.
Feasible	Means what is possible and practical in the circumstances
Final determination	River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions - endangered ecological community final determination (as amended in 2011)
GPS	Global Positioning System
Heritage item	An Aboriginal object, an Aboriginal place, or a place, building, work, relic, moveable object, tree or precinct of heritage significance that is listed under any of the following: <ul style="list-style-type: none"> the State Heritage Register under the <i>Heritage Act 1977</i>; a state agency heritage and conservation register under section 170 of the <i>Heritage Act 1977</i>; a Local Environmental Plan under the EP&A Act; the World Heritage List; the National Heritage List or Commonwealth Heritage List under the EPBC Act; or anything identified as a heritage item under the conditions of this consent
Heritage NSW	Heritage NSW within the Department of Premier and Cabinet

Menangle Sand and Soil Pty Limited v Minister for Planning (LEC 2018/342158)

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
Laden trucks	Trucks transporting quarry products from the site and/or trucks transporting waste and other blending material to the site
Land	Has the same meaning as the definition of the term in section 1.4 the EP&A Act, except for where the term is used in the noise and air quality conditions in PART B of Schedule 2 of this consent where it is defined to mean the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of determination of Modification 1
Material harm	<p>Is harm that:</p> <ul style="list-style-type: none"> • involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial; or • results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment) <p>This definition excludes "harm" that is authorised under either this consent or any other statutory approval'</p>
MEG	Mining, Exploration and Geoscience within Regional NSW
m	Metres
Minimise	Implement all reasonable and feasible mitigation measures to reduce the impacts of the development
Nepean River Buffer Zone	A horizontal setback area extending landward from the 64 m AHD contour of the western low bank of the Nepean River, as defined under condition A10 of Schedule 2
Non-compliance	An occurrence, set of circumstances or development that is a breach of this consent
Phase 1	Substages 8A – 8B as shown in the figures in Appendix 1
Phase 2	Substage 8C as shown in the figures in Appendix 1
Phase 3	Substages 8D – 8E as shown in the figures in Appendix 1
Phase 4	Substages 8F to 8G as shown in the figures in Appendix 1
Phase 5	Substages 8H to 8I as shown in the figures in Appendix 1
Phase 6	Substages 8J to 8K as shown in the figures in Appendix 1
Phase 7	Substages 8L to 8M as shown in the figures in Appendix 1
Planning Secretary	Planning Secretary under the EP&A Act, or nominee
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
Processing Areas	Any areas used for processing (including blending with waste material), stockpiling and transportation of extractive materials during Stage 8 Operations, including any disturbed areas within Stages 6-7 required to facilitate Quarrying Operations in the Stage 8 Area
Protected Trees	Any native trees identified as such in a native vegetation identification report prepared in accordance with condition A10(b) of Schedule 2
Public infrastructure	Linear and related infrastructure that provides services to the general public, such as roads, railways, water supply, drainage, sewerage, gas supply, electricity, telephone, telecommunications, etc
Quarrying Operations	The extraction, processing (including blending with waste material), stockpiling and transportation of extractive materials carried out on the site and the associated removal of vegetation, topsoil and overburden

Menangle Sand and Soil Pty Limited v Minister for Planning (LEC 2018/342158)

Quarry products	Includes all saleable quarry products, but excludes tailings and other wastes and rehabilitation material
Reasonable	Means applying judgement in arriving at a decision, taking into account: mitigation benefits, costs of mitigation versus benefits provided, community views, and the nature and extent of potential improvements
Registered Aboriginal Parties	As described in the <i>National Parks and Wildlife Regulation 2009</i>
Rehabilitation	The restoration of land disturbed by the development to a good condition, to ensure it is safe, stable and non-polluting
Residence	Existing or approved dwelling at the date of determination of Modification 1
Restoration Area	The area shown as “Amended stage 8 – restoration area” in the figures in Appendix 1
RFS	NSW Rural Fire Service
River-Flat Eucalypt Forest EEC	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions endangered ecological community, as listed under the <i>Biodiversity Conservation Act 2016</i> and described in the Final Determination
TfNSW	Transport for New South Wales
Site	The land identified as: Lot 10 DP1022204 Lot 2 DP1050479 Lot 2 DP1133910 Lot 1 DP1140461 Lots 1-2 DP1187569 Lot 105 DP249189 Lot 21 DP581462 Lots 201-203 DP590247
Stage 3 Area	The area labelled Stage 3 and shown in blue in Figure 1 in Appendix 1
Stage 8 Area	The area labelled Stage 8 and shown in brown in Figure 1 in Appendix 1, comprising the 13 Substages labelled Stages 8A-8M and associated infrastructure including the conveyor and haul roads, shown in Figures 2-5 of Appendix 1
Stage 8 Operations	Quarrying Operations associated with extraction within the Stage 8 Area, including the operation of the Processing Areas identified in the figures in Appendix 1 and any private access roads or haul roads necessary for the carrying out of the development
Substage	Each of the 13 extraction areas labelled Stages 8A-8M and identified in the figures in Appendix 1, as amended by conditions of this consent
V:H	Vertical to horizontal
Waste	Has the same meaning as the definition of the term in the Dictionary to the POEO Act
Weed	Any weed specified by the Department of Primary Industries as being a weed on the website NSW WeedWise (or any successor websites or policies). For the avoidance of doubt, privet and lantana are weeds for the purposes of this definition.

PART A ADMINISTRATIVE CONDITIONS

APPLICATION OF THIS SCHEDULE

- A1. The conditions in this Schedule have no effect until the Applicant provides notification of the commencement of construction activities associated with Stage 8 Operations, as required under condition A5(a) of this Schedule.
- A2. The conditions in this Schedule do not apply retrospective requirements in relation to Quarrying Operations undertaken in Stages 1 to 7 of the development that have been completed prior to 31 December 2020 (inclusive).
- A3. From the commencement date of construction activities associated with Stage 8 Operations, as notified under condition A5(a) of this Schedule, the obligations in Schedule 1 of this development consent will continue to apply in relation to Stages 1 to 7 of the development, except in so far as they are specifically amended by the conditions of this Schedule.
- A4. In the event of an inconsistency, ambiguity or conflict between the conditions in Schedules 1 and 2 of this development consent, as they relate to the Stage 8 Operations, the conditions in Schedule 2 prevail to the extent of the inconsistency, ambiguity or conflict.

NOTIFICATION OF COMMENCEMENT (STAGE 8)

- A5. The Applicant must notify the Department in writing of the date of commencement of any of the following phases of the development, at least two weeks before that date:
 - (a) construction activities associated with Stage 8 Operations;
 - (b) Quarrying Operations in each of Phases 1 to 7;
 - (c) cessation of Quarrying Operations (i.e. quarry closure); and
 - (d) any period of suspension of Quarrying Operations (i.e. care and maintenance).

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

- A6. In addition to meeting the specific performance measures and criteria in this consent, all reasonable and feasible measures must be implemented to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the operation of the development, and any rehabilitation required under this Schedule.

TERMS OF CONSENT

- A7. The development (as modified) may only be carried out:
 - (a) in compliance with the conditions of this consent;
 - (b) in accordance with all written directions of the Planning Secretary; and
 - (c) generally in accordance with the EIS, EA (Mod 1), Amended Project Summary and the Development Layout.
- A8. Consistent with the requirements in this consent, the Planning Secretary may make written directions to the Applicant in relation to:
 - (a) the content of any strategy, study, system, plan, program, review, audit, notification, report or correspondence submitted under or otherwise made in relation to this consent, including those that are required to be, and have been, approved by the Planning Secretary; and
 - (b) the implementation of any actions or measures contained in any such document referred to in condition A8(a) of Schedule 2.
- A9. The conditions of this consent and directions of the Planning Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and a document/s listed in condition A7(c) of Schedule 2. In the event of an inconsistency, ambiguity or conflict between any of the document/s listed in condition A7(c) of Schedule 2, the most recent document prevails to the extent of the inconsistency, ambiguity or conflict.

LIMITS OF CONSENT

Nepean River Buffer Zone

- A10. The Applicant must establish and maintain a Nepean River Buffer Zone during Quarrying Operations in the Stage 8 Area. This buffer zone must:
 - (a) include a minimum horizontal setback of 10 m extending landward from the 64 m AHD contour on the western side of the Nepean River;
 - (b) be informed by a native vegetation identification report, which must:
 - (i) be prepared by a suitably qualified and experienced botanist or ecologist, whose appointment has been endorsed by the Planning Secretary;
 - (ii) include detailed site surveys to identify the DBH of all native trees that occur within the 10 m horizontal setback from the 64 m AHD contour referred to in sub-paragraph (a);

- (iii) classify all native trees identified in subparagraph (b)(ii) with a DBH of greater than or equal to 0.1 m as Protected Trees and provide their GPS coordinates; and
- (iv) include a map illustrating a 7.5 m setback (measured at the outside of the native tree trunk) around each of the identified Protected Trees;
- (v) the map required under subparagraph (iv) must overlay high-resolution ortho-photographs, with supporting digital terrain data files provided in spatial format for GIS and as high-resolution JPEG files; and
- (c) be amended to include the findings of the native vegetation identification report, such that it is widened to include areas where the Protected Tree setbacks extend beyond the minimum 10 m horizontal setback referred to in subparagraph (a).

- A11. The Applicant must submit a copy of the native vegetation identification report and associated survey plans, GPS coordinates and data files required under condition A10(b) of Schedule 2 and associated final landform plans to the Planning Secretary for each of Phases 1 to 7 of the development prior to commencing any vegetation clearing or Quarrying Operations in the relevant phase.
- A12. With the written agreement of the Planning Secretary, the Applicant may seek to reduce the minimum 7.5 m horizontal setback distance for Protected Trees to an appropriate distance recommended by a consulting arborist assessment. Any variation request must be supported by an expert report prepared by the consulting arborist and will be determined by the Planning Secretary on a case by case basis.
- A13. The Applicant must retain and manage the minimum Nepean River Buffer Zone in accordance with the commitments in the documents listed in condition A7(c) of Schedule 2 (as may be amended by the conditions of this consent).

General Limits on Extraction and Processing

- A14. Prior to undertaking Quarrying Operations in Substage 8G, the Applicant must update the TUFLOW hydrodynamic model used to generate the flood sensitivity analysis in the Additional Flood Impact Sensitivity Assessment dated 17 December 2019, prepared by Advisian in the Amended Project Summary, to include the post extraction topography for Substages 8G-M, using hydraulic roughness Scenario B, and simulate the 1% AEP flood.
- A15. Prior to undertaking Quarrying Operations in Substage 8G, the Applicant must provide the Planning Secretary with a copy of the model required under condition A14 and a plan depicting any areas identified as having a post extraction 1% AEP peak flow velocity of 4 metres/second or greater.
- A16. The Applicant must not carry out construction works or Quarrying Operations or locate any ancillary infrastructure within the Exclusion Areas.
- A17. The Applicant must not:
- (a) carry out Quarrying Operations or regrading; and/or
 - (b) remove vegetation, except where necessary for Weed control,
- within the Nepean River Buffer Zone, without the prior written agreement of the Planning Secretary.
- The written agreement of the Planning Secretary may be provided in circumstances where those activities are necessary for environmental management purposes.
- A18. The Applicant must ensure that any Weed control activities undertaken within the Nepean River Buffer Zone:
- (a) are limited to Weed removal techniques that use hand-held tools; and
 - (b) minimise ground disturbance to the greatest extent practicable.
- A19. The Applicant must not undertake extraction within 7.5 m of any Protected Trees without the written agreement of the Planning Secretary under condition A12 of Schedule 2.
- A20. The Applicant must maintain a minimum 7.5 m setback between Quarrying Operations and any native trees^a located in the Restoration Area, except where a reduced setback is supported by an assessment by a suitably qualified and experienced arborist, and evidence of this assessment has been provided to the Planning Secretary.
- ^a *In this condition, the setback is to be measured from the outside of the tree trunk.*
- A21. The Applicant must not carry out any extraction:
- (a) in Stages 1, 2, 4, 5, 6 or 7 after the date specified in condition 30 of Schedule 1; or
 - (b) in Stage 3 at any time.

Identification of Approved Disturbance Area

- A22. Prior to the commencement of Quarrying Operations in each of Phases 1 to 7, the Applicant must:
- a) engage a registered surveyor to mark out the boundaries of the approved limits of extraction for the relevant Substages in each phase (as set out conceptually in the Appendix 1 and as amended by the conditions of this consent);

- b) submit a survey plan of these boundaries and their GPS coordinates to the Planning Secretary; and
- c) ensure that these boundaries are clearly marked at all times during the life of the development in a manner that allows operating staff and inspecting officers to clearly identify those limits.

Quarrying Operations

A23. Stage 8 Operations may be carried out on the site until 31 December 2035.

Note: *Under this consent, the Applicant is required to decommission and rehabilitate the site and carry out other requirements in relation to Quarrying Operations. Consequently, this consent will continue to apply in all respects other than to permit the carrying out of Quarrying Operations until the rehabilitation of the site and other requirements have been carried out to the required standard.*

A24. A maximum of 150,000 tonnes of extractive material may be extracted from the site in any calendar year.

Quarry product transport

A25. Truck movements at the site (ie inbound combined with outbound movements) must not exceed:

- (a) a maximum of 248 movements on any given weekday;
- (b) an average of 148 movements per weekday, averaged on a weekly basis; and
- (c) a maximum of 80 movements per day on Saturdays.

Hours of Operation

A26. The Applicant must comply with the operating hours set out in Table 1.

Table 1: Operating Hours

Activity	Permissible Hours
Construction work	<ul style="list-style-type: none"> • 7 am to 5 pm Monday to Friday • 7 am to 1 pm Saturday • At no time on Sundays or public holidays
Quarrying Operations including loading and dispatch of laden trucks	<ul style="list-style-type: none"> • 6 am to 5 pm Monday to Friday • 6 am to 12 noon Saturday • At no time on Sundays or public holidays
Maintenance, security, office work, cleaning, etc	<ul style="list-style-type: none"> • May be conducted at any time, provided that these activities are not audible at any residence on privately-owned land

A27. The following activities may be carried out outside the hours specified in Table 1.

- (a) delivery or dispatch of materials as requested by Police or other public authorities; and
- (b) emergency work to avoid the loss of lives, property or to prevent environmental harm.

In such circumstances, the Applicant must notify the Department and affected residents prior to undertaking the activities, or as soon as is practical thereafter.

EVIDENCE OF CONSULTATION

A28. Where conditions of this consent require consultation with an identified party, the Applicant must:

- (a) consult with the relevant party prior to submitting the subject document; and
- (b) provide details of the consultation undertaken including:
 - (i) the outcome of that consultation, matters resolved and unresolved; and
 - (ii) details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed the matters not resolved.

STAGING, COMBINING AND UPDATING STRATEGIES, PLANS OR PROGRAMS

A29. The Applicant may prepare and submit the Soil and Water Management Plan and/or Biodiversity and Rehabilitation Management Plan required under conditions B36 and B73 of Schedule 2 on a staged basis, prior to the commencement of Quarrying Operations in each of Phases 1 to 7. Quarrying Operations must not commence in any phase until a management plan has been approved by the Planning Secretary for that phase.

A30. With the approval of the Planning Secretary, the Applicant may:

- (a) prepare and submit any strategy, plan or program required by this consent on a staged basis (if a clear description is provided as to the specific stage and scope of the development to which the strategy, plan or

program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program);

- (b) combine any strategy, plan or program required by this consent (if a clear relationship is demonstrated between the strategies, plans or programs that are proposed to be combined); and
- (c) update any strategy, plan or program required by this consent (to ensure the strategies, plans and programs required under this consent are updated on a regular basis and incorporate additional measures or amendments to improve the environmental performance of the development).

A31. If the Planning Secretary agrees, a strategy, plan or program may be approved, staged or updated without consultation being undertaken with all parties required to be consulted in the relevant condition in this consent.

PROTECTION OF PUBLIC INFRASTRUCTURE

A32. Unless the Applicant and the applicable authority agree otherwise, the Applicant must:

- (a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by carrying out the development; and
- (b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development.

Note: *This condition does not apply to any damage to roads caused as a result of general road usage or otherwise addressed by contributions required by condition 26 of Schedule 1.*

OPERATION OF PLANT AND EQUIPMENT

A33. All plant and equipment used on site, or to monitor the performance of the development must be:

- (a) maintained in a proper and efficient condition; and
- (b) operated in a proper and efficient manner.

COMPLIANCE

A34. The Applicant must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this consent relevant to activities they carry out in respect of the development.

APPLICABILITY OF GUIDELINES

A35. References in the conditions of this consent to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, Standards or policies in the form they are in as at the date of this consent.

A36. However, consistent with the conditions of this consent and without altering any limits or criteria in this consent, the Planning Secretary may, when issuing directions under this consent in respect of ongoing monitoring and management obligations, require compliance with an updated or revised version of such a guideline, protocol, Standard or policy, or a replacement of them.

PRODUCTION DATA

A37. Each year, from the date of commencement of Quarrying Operations in the Stage 8 Area, the Applicant must provide calendar year quarry production data to MEG by no later than 30 January.

A38. The data must be provided using the relevant standard form and a copy of the data must be included in the Annual Review.

OTHER STATUTORY APPROVALS, LICENCES AND CONSENTS

A39. The Applicant must obtain all necessary approvals, licences and consents required for the carrying out of the development, including but not limited to, approvals under the *Roads Act 1993*, the *Water Management Act 2000* and the POEO Act.

PART B SPECIFIC ENVIRONMENTAL CONDITIONS

EARLY WORKS

- B1. The Applicant may prepare an Early Works Construction Environmental Management Plan for the Early Works, to the satisfaction of the Planning Secretary. This plan must:
- (a) describe measures to be implemented to minimise construction-related impacts on biodiversity, including:
 - (i) specific measures to minimise impacts on tree hollows, termite mounds and fauna; and
 - (ii) detailed procedures for pre-clearance surveys and supervision (by an appropriately qualified person) of the felling of habitat trees within disturbance areas associated with the Early Works;
 - (b) describe measures to be implemented to manage sediment and erosion risks, including:
 - (i) a detailed description of the surface water management measures to be implemented in relation to the Early Works; and
 - (ii) appropriate clean water diversion systems and construction of appropriate erosion and sediment controls for the management of disturbed areas associated with the Early Works;
 - (c) include a Trigger Action Response Plan which outlines actions to be undertaken to rectify impacts associated with erosion and sedimentation during the Early Works (to the extent that these actions are not addressed by other management plans required to be in place prior to the commencement of Early Works); and
 - (d) describe detailed procedures to be implemented to receive, record, handle and respond to complaints associated with the Early Works construction.
- B2. If the Applicant opts to seek approval for Early Works, the Applicant must not commence Early Works until the Early Works Construction Environmental Management Plan is approved by the Planning Secretary.
- B3. If the Planning Secretary approves an Early Works Construction Environmental Management Plan, the Applicant must implement that plan as approved by the Planning Secretary.

NOISE

Operational Noise Criteria

- B4. The Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 2 at any Residence on privately-owned land.

Table 2: Operational Noise Criteria dB(A)

Residences ^a	Day	Shoulder Period 6.00 am to 7.00 am Monday to Saturday	
	<i>L_{Aeq}</i> (15 minute)	<i>L_{Aeq}</i> (15 minute)	<i>L_A</i> (max)
2, 3, 5 ^b , 6, 7, 8, 9	45	45	55
4	54	52	62
10, 11	35	35	45
All other Residences	35	35	45

^a Residence locations are shown as "Assessment Locations" in Figure 6 in Appendix 3.

^b Receiver location 5 is representative of Residences in Menangle Village as identified in the red polygon on Figure 6 in Appendix 3.

Noise generated by the development must be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the *NSW Industrial Noise Policy* (EPA, 2000). Appendix 4 sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

- B5. The noise criteria in condition B4 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise Operating Conditions

- B6. The Applicant must:
- (a) take all reasonable steps to minimise all noise from operational activities, including low frequency noise and other audible characteristics, as well as road noise associated with the development;
 - (b) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions, particularly when the noise criteria in this consent do not apply (see Appendix 4);
 - (c) carry out regular attended noise monitoring (every three months unless otherwise agreed with the Planning Secretary) to determine whether the development is complying with the relevant conditions of Schedule 2; and

- (d) regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of Schedule 2.

Noise Management Plan

- B7. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
- (a) be prepared by a suitably qualified and experienced person/s;
 - (b) be prepared in consultation with the EPA;
 - (c) describe the measures to be implemented to ensure:
 - (i) compliance with the noise criteria and operating conditions in this consent;
 - (ii) best practice noise management is being employed; and
 - (iii) noise impacts of the development are minimised during noise-enhancing meteorological conditions; under which the noise criteria in this consent do not apply (see Appendix 4); and
 - (d) include a monitoring program that:
 - (i) is capable of evaluating the performance of the development against the noise criteria;
 - (ii) monitors noise at the nearest and/or most affected residences; and
 - (iii) includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of these events.
- B8. The Applicant must not commence Quarrying Operations in the Stage 8 Area until the Noise Management Plan is approved by the Planning Secretary.
- B9. The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.

AIR QUALITY

Odour

- B10. The Applicant must ensure that no offensive odours (as defined under the POEO Act) are emitted by the development.

Air Quality Criteria

- B11. The Applicant must ensure that particulate matter emissions generated by the development do not cause exceedances of the criteria in Table 3 at any residence on privately-owned land.

Table 3: Air Quality Criteria

<i>Pollutant</i>	<i>Averaging period</i>	<i>Criterion</i>	
Particulate matter < 10 µm (PM ₁₀)	Annual	^{a, c} 25 µg/m ³	
	24 hour	^b 50 µg/m ³	
Particulate matter < 2.5 µm (PM _{2.5})	Annual	^{a, c} 8 µg/m ³	
	24 hour	^b 25 µg/m ³	
Total suspended particulate (TSP) matter	Annual	^{a, c} 90 µg/m ³	
^d Deposited dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month

Notes:

^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).

^b Incremental impact (i.e. incremental increase in concentrations due to the development on its own).

^c Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Planning Secretary.

^d Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method

- B12. The air quality criteria in Table 3 do not apply if the Applicant has an agreement with the owner/s of the relevant residence to exceed the air quality criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Air Quality Operating Conditions

- B13. The Applicant must:

- (a) take all reasonable steps to:
 - (i) minimise odour, fume, greenhouse gas and dust (including PM₁₀ and PM_{2.5}) emissions of the development;
 - (ii) minimise any visible off-site air pollution generated by the development; and
 - (iii) minimise the extent of potential dust generating surfaces exposed in the Stage 8 Area at any given point in time;
- (b) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see Note c to Table 3 above);
- (c) carry out regular air quality monitoring to determine whether the development is complying with the relevant conditions of Schedule 2; and
- (d) regularly assess meteorological and air quality monitoring data and relocate, modify or stop operations on the site to ensure compliance with the relevant conditions of Schedule 2.

Air Quality Management Plan

- B14. The Applicant must prepare an Air Quality Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
- (a) be prepared by a suitably qualified and experienced person/s;
 - (b) be prepared in consultation with the EPA;
 - (c) describe the measures to be implemented to ensure:
 - (i) compliance with the air quality criteria and operating conditions in this Schedule;
 - (ii) best practice air quality management is being employed; and
 - (iii) air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events; and
 - (d) include an air quality monitoring program that:
 - (i) is capable of evaluating the performance of the development against the air quality criteria; and
 - (ii) includes a protocol for identifying any air quality-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of these events.
- B15. The Applicant must not commence Quarrying Operations in the Stage 8 Area until the Air Quality Management Plan is approved by the Planning Secretary.
- B16. The Applicant must implement the Air Quality Management Plan as approved by the Planning Secretary.

METEOROLOGICAL MONITORING

- B17. Prior to the commencement of Quarrying Operations in the Stage 8 Area, and for the life of the development, the Applicant must ensure that there is a suitable meteorological station operating in close proximity to the site that:
- (a) complies with the requirements in the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* (DEC, 2007); and
 - (b) is capable of measuring meteorological conditions in accordance with the *NSW Industrial Noise Policy* (EPA, 2000),
- unless a suitable alternative is approved by the Planning Secretary following consultation with the EPA.

SOIL AND WATER

- B18. The Applicant must ensure that diesel spills and the like are cleaned up immediately so as not present a risk to water quality if the relevant Substage is inundated by floodwaters.

Groundwater Monitoring and Management

- B19. The Applicant must monitor groundwater levels at Groundwater Bores BH01_S, BH01_D, BH02, BH03 and BH04 as shown in Figure 7 in Appendix 5, using continuous data loggers, for the duration of Quarrying Operations in the Stage 8 Area.
- B20. The Applicant must ensure that Quarrying Operations do not compromise the integrity of the monitoring bores identified in condition B19 of Schedule 2.
- B21. The Applicant must:
- (a) collect groundwater quality samples at each of the monitoring locations identified in condition B19; and
 - (b) analyse collected groundwater quality samples for all major anions and cations and field parameters;
- on an annual basis for the duration of Quarrying Operations in the Stage 8 Area.
- B22. The Applicant must ensure that:

- (a) temporary bores are drilled or augered progressively in each Substage to determine the local water table position immediately prior to commencing extraction in each Substage; and
- (b) the pit floor in each Substage remains at least 1 metre above the measured water table level averaged over a seven-day period following the date of drilling or augering.

Water Supply and Licensing

- B23. The Applicant must ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of the development to match its available water supply.
- B24. The Applicant must develop a groundwater model using a variant of Modflow standard software, or equivalent software, to quantify the progressive takes from water sources during Quarrying Operations in the Stage 8 Area.
- B25. The Applicant must:
- (a) initially construct the groundwater model required under condition B24 of Schedule 2 using the first three months of groundwater monitoring data collected from 17 June 2020 to 16 September 2020;
 - (b) update the groundwater model following collection of the first 12 months of data collected from 17 June 2020 to 16 June 2021; and
 - (c) incorporate the outputs of the groundwater model into the Site Water Balance as required under condition B36(c)(i) of Schedule 2.
- B26. If a potential flood event (equivalent to a level of 64 m AHD at Menangle Weir, which represents the approximate height of overtopping of the Nepean River bank) does not occur between 17 June 2020 to 16 June 2021, then the Applicant must update the groundwater model required under condition B24 of Schedule 2 following the first flood event equivalent to or greater than this level when it occurs.
- B27. The Applicant must obtain any necessary Water Access Licences for the development under the *Water Act 1912* and/or the *Water Management Act 2000*.
- B28. When making an application for any necessary Water Access Licence, the Applicant must specify the annual take of water from each affected water source, as estimated by the groundwater model required under condition B24 of Schedule 2.
- B29. Should the maximum annual water take as calculated by the groundwater model increase due to subsequent revisions of the groundwater model, as required under conditions B25 and B26 of Schedule 2, the Applicant must acquire the necessary additional licence shares to account for the maximum predicted annual volume.
- B30. The Applicant must report on any water captured, intercepted or extracted from the site each year (directly and indirectly) in the Annual Review, including water taken under each Water Access Licence as applicable.

Soil Erosion

- B31. The Applicant must install and maintain suitable erosion and sediment control measures in the Stage 8 Area. These measures must be designed and implemented having regard to the guidance series *Managing Urban Stormwater: Soils and Construction*, and be detailed in the Soil and Water Management Plan required under condition B36 of Schedule 2.

Flood Management

- B32. The Applicant must prepare a Flood Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
- (a) be prepared by suitably qualified and experienced person/s;
 - (b) identify measures to:
 - (i) proactively prepare for, and respond to, any flood event in which the active extraction area is likely to be inundated by floodwaters emanating from the Nepean River;
 - (ii) ensure the safety of site personnel;
 - (iii) minimise, to the greatest extent practicable, the areas of exposed ground on the site that would be susceptible to flood risks (including scour and erosion and potential transport of sediment to downstream waters);
 - (iv) ensure that the active extraction area in any Substage does not exceed 0.33 hectares at any one time;
 - (v) ensure that the batter adjacent to the Nepean River Buffer Zone does not exceed:
 - a maximum slope of 1:1 at any time; and
 - a maximum slope of 1:5 in preparation for flood events;
 - (vi) ensure that no more than a 30 metres length of the batter adjacent to the Nepean River Buffer Zone (measured in total) has a slope exceeding 1:5 at any one time; and
 - (vii) rectify any flood-related damage to areas undergoing rehabilitation; and

- (c) include a Trigger Action Response Plan which outlines actions to be undertaken in preparation for, and immediately following, a flood event including detailed protocols and timeframes for:
 - (i) backfilling the active extraction area to achieve a maximum batter slope of 1:5 adjacent to the Nepean River Buffer Zone in preparation for flood events;
 - (ii) avoiding the downstream movement of debris from the site;
 - (iii) recommencing Quarrying Operations following a flood event; and
 - (iv) rectifying any damage to areas undergoing rehabilitation following a flood event.
- B33. The Applicant must not commence Quarrying Operations in the Stage 8 Area until the Flood Management Plan is approved by the Planning Secretary.
- B34. The Applicant must implement the Flood Management Plan as approved by the Planning Secretary.
- B35. The Applicant must ensure that the flood storage capacity of the final rehabilitated landform is no less than the pre-existing flood storage capacity at all stages of the development, unless otherwise approved in writing by the Planning Secretary. Details of the available flood storage capacity must be reported in the Annual Review.

Soil and Water Management Plan

- B36. The Applicant must prepare a Soil and Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
 - (a) be prepared by suitably qualified and experienced person/s;
 - (b) be prepared in consultation with EPA and DPIE Water; and
 - (c) include a:
 - (i) **Site Water Balance** that:
 - includes details of:
 - sources and security of water supply;
 - water use and management on the site;
 - reporting procedures, including the annual preparation of a site water balance; and
 - minimises clean and potable water use on the site;
 - incorporates the outputs of the groundwater water model required under condition B24 of Schedule 2;
 - (ii) **Surface Water Management Plan**, that includes:
 - detailed baseline data on surface water flows and quality in watercourses and/or water bodies that could potentially be affected by the development;
 - surface water impact assessment criteria, including trigger levels for investigating any potentially adverse impacts, and surface water management performance measures;
 - a detailed description of the surface water management system on the site, including the:
 - clean water diversion system;
 - erosion and sediment controls (including the construction of bunds and swales within each Substage); and
 - water storages (including a description of measures to maintain the storage capacity of sediment basins);
 - a program to monitor and report on:
 - any surface water discharges;
 - the effectiveness of the water management system;
 - surface water quality in sediment basins; and
 - water levels and quality in the Nepean River both upstream and downstream of the site; and
 - a protocol for identifying and investigating any exceedances of the surface water impact assessment criteria and for notifying the Department and relevant stakeholders of these events;
 - (iii) **Groundwater Management Plan** that includes:
 - all available baseline data for the site;
 - groundwater performance criteria, including trigger levels for investigating any potentially adverse groundwater impacts, particularly with respect to aquatic habitat and regional groundwater systems;
 - a protocol to ensure that Quarrying Operations do not exceed the extraction depth limit specified in condition B22(b) of Schedule 2;

- measures to ensure that the integrity of the groundwater monitoring network is not compromised by Quarrying Operations;
- a clear description of the reporting processes and procedures to be adopted for the routine collation, analysis and provision of monitoring data as required under conditions B21 and B22 of Schedule 2; and
- a protocol for identifying and investigating any exceedances of the groundwater performance criteria and for notifying the Department and relevant stakeholders of these events.

- B37. Subject to condition A29, the Applicant must not commence Quarrying Operations in the Stage 8 Area until the Soil and Water Management Plan is approved by the Planning Secretary.
- B38. The Applicant must implement the Soil and Water Management Plan approved by the Planning Secretary.
- B39. The Applicant must ensure that all surface discharges from the site comply with the relevant provisions of the POEO Act.

Ephemeral Creek Management Plan

- B40. The Applicant must prepare an Ephemeral Creek Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
- be prepared by suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
 - describes the measures that would be implemented to manage and control soil erosion and bank stabilisation (if required) and limit the risk of impacts on downstream receiving environments;
 - provide details of the methods and timing of extraction within Substages 8E, 8F or 8G that demonstrate the integrity of the ephemeral creek (shown conceptually in Figure 4 of Appendix 1) would be maintained for as long as practicable during operations;
 - provide for construction and stabilisation of appropriate diversion channels to divert surface water flows around the disturbance area, unless otherwise approved by the Planning Secretary;
 - provide final designs for the road crossing and realigned section of creek that are supported by hydrological modelling and meet the rehabilitation objectives in Table 4; and
 - describe the methods and timing for rehabilitation of the final realigned section of creek channel.
- B41. The Applicant must not undertake any construction activities or Quarrying Operations within Substages 8E, 8F or 8G until the Ephemeral Creek Management Plan is approved by the Planning Secretary.
- B42. The Applicant must implement the Ephemeral Creek Management Plan approved by the Planning Secretary.

TRANSPORT

Works within Hume Highway Motorway Road Reserve

- B43. Prior to commencing Quarrying Operations in the Stage 8 Area, the Applicant must make an application to TfNSW under Section 138 of the *Roads Act 1993* for any proposed works within the Hume Highway Motorway Road Reserve (including the area under the Menangle Bridges).
- B44. The Applicant must enter into a legally binding agreement with TfNSW (eg a licence, not a lease or an easement), for the construction, operation and decommissioning of the conveyor within the Hume Highway Motorway Road Reserve (including under the Menangle Bridges). The legally binding agreement must be executed prior to any construction within the road reserve. All TfNSW legal costs associated with drafting and executing the legally binding agreement must be borne by the Applicant.
- B45. The Applicant must:
- provide a sealed access under and adjacent to the Menangle Bridges and comply with TfNSW drainage and pavement standards;
 - restrict vehicular access under Menangle Bridge to light vehicles only;
 - provide unrestricted access to TfNSW to undertake maintenance on the Menangle Bridges and associated facilities at all times;
 - remove any detritus associated the construction and use of the access road under and adjacent to the Menangle Bridges;
 - protect the piers of the Menangle Bridges, as well as any other part of the bridge structure and associated facilities from any potential damage as a result of the development;
- B46. In making the application to TfNSW required under condition B43, the Applicant must provide:

- (a) details demonstrating how the requirements in condition B45 will be met during the early establishment phase of the development, including:
 - (i) sealing and drainage design details for the access road under and adjacent to the Menangle Bridges; and
 - (ii) anchoring details for any structure(s) associated with the development that may become floating debris during flood events; and
 - (b) details demonstrating how the compliance with the requirements in condition B45 will be maintained over the life of the development.
- B47. The Applicant must ensure that works undertaken within the Hume Highway Motorway Road Reserve do not in any way destabilise the foundations of the Hume Highway, including the Menangle Bridges. Should rectification works be required as a result of the development, they must be undertaken by the Applicant in accordance with TfNSW requirements and standards, and at no expense to TfNSW.
- B48. The Applicant must not undertake any works within the Hume Highway Motorway Road Reserve (including the area under the Menangle Bridges) without the consent of TfNSW under Section 138 of the *Roads Act 1993*.

Road Safety and Condition Audit

- B49. Within 12 months of commencing Quarrying Operations in the Stage 8 Area, and every five years thereafter until the conclusion of Quarrying Operations, the Applicant must undertake a Road Safety and Condition Audit for the development, to the satisfaction of the Planning Secretary. This Audit must:
- (a) be undertaken by a suitably qualified independent expert/s whose appointment has been endorsed by the Planning Secretary;
 - (b) be prepared in consultation with Council;
 - (c) assess the safety, performance and condition of the site's vehicular access onto Menangle Road, including the associated acceleration and deceleration lanes;
 - (d) identify any road works that are required to ensure compliance with relevant Austroads standards or relevant Council requirements;
 - (e) be documented in a Road Safety and Condition Audit Report which must be submitted to Council and the Planning Secretary for approval within three months of commencing the Audit.
- B50. Within 12 months of completing each Road Safety and Condition Audit required under condition B49 of this Schedule, unless otherwise agreed by the Planning Secretary, the Applicant must complete any road works recommended in the Audit, to the satisfaction of Council. If there is a dispute regarding the implementation of any recommendations contained in the Audit, the Applicant may refer the matter to the Planning Secretary for resolution.

Continuation of Rehabilitation Levy

- B51. For the duration of the Stage 8 Operations, the Applicant must continue to pay Council a rehabilitation levy on all sand and soil removed from the Stage 8 Area in accordance with the existing rates, calculation methods and indexation required under condition 26 of Schedule 1. The first instalment of these payments is to be made based on the most recent Index Review Date under Schedule 1.

Monitoring of Product Transport

- B52. The Applicant must keep accurate records of all truck movements to and from the site (including time of arrival and dispatch) and publish a summary of records on its website every 6 months.

Transport Operating Conditions

- B53. No direct access to or from the development via the Hume Highway is permitted.
- B54. The Applicant must:
- (a) ensure that all laden trucks entering or exiting the site have their loads covered;
 - (b) ensure that all laden trucks exiting the site are cleaned of material that may fall from vehicles, before leaving the site;
 - (c) take all reasonable steps to minimise traffic safety issues and disruption to local road users; and
 - (d) take all reasonable steps to ensure that appropriate signage is displayed on all trucks used to transport quarry products from the development so they can be easily identified by other road users.

Traffic Management Plan

- B55. The Applicant must prepare a Traffic Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
- (a) be prepared by suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;

- (b) be prepared in consultation with TfNSW and Wollondilly Shire and Campbelltown Councils;
- (c) include details of all transport routes and traffic types to be used for development-related traffic;
- (d) describe the processes in place for the control of truck movements entering and exiting the site;
- (e) include details of the measures to be implemented to minimise traffic safety issues and disruption to local road users;
- (f) include a Drivers' Code of Conduct that includes procedures to ensure that drivers:
 - (i) adhere to posted speed limits or other required travelling speeds;
 - (ii) adhere to designated transport routes; and
 - (iii) implement safe and quiet driving practices;
- (g) describe the measures to be put in place to ensure compliance with the Drivers' Code of Conduct; and
- (h) describe measures to minimise the transmission of dust and tracking of material onto the surface of public roads from vehicles exiting the site.

B56. The Applicant must not commence Quarrying Operations in the Stage 8 Area until the Traffic Management Plan is approved by the Planning Secretary.

B57. The Applicant must implement the Traffic Management Plan as approved by the Planning Secretary.

HERITAGE

Heritage Operating Conditions

- B58. The Applicant must ensure that the development does not cause any direct or indirect impact on any identified heritage item located outside the approved disturbance area.
- B59. If suspected human remains are discovered on site, then all work surrounding the area must cease, and the area must be secured. The Applicant must immediately notify NSW Police and Heritage NSW, and work must not recommence in the area until authorised by NSW Police and Heritage NSW.
- B60. If any previously unknown Aboriginal object or Aboriginal place is discovered in the Stage 8 Area:
- (a) all work in the immediate vicinity of the object or place must cease immediately;
 - (b) a 10 metre buffer area around the object or place must be cordoned off; and
 - (c) Heritage NSW must be contacted immediately.
- B61. Work in the immediate vicinity of an object or place subject to condition B60 may only recommence if:
- (a) the potential Aboriginal object or Aboriginal place is confirmed by Heritage NSW upon consultation with the Registered Aboriginal Parties not to be an Aboriginal object or Aboriginal Place; or
 - (b) an Aboriginal Heritage Impact Permit is obtained under section 90 of the *National Parks and Wildlife Act 1974*, and the Aboriginal Cultural Heritage Management Plan is revised to include appropriate measures in respect the Aboriginal object or Aboriginal place, to the satisfaction of the Planning Secretary.

Aboriginal Cultural Heritage Management Plan

- B62. The Applicant must prepare an Aboriginal Cultural Heritage Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
- (a) be prepared by suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
 - (b) be prepared in consultation with Heritage NSW and Registered Aboriginal Parties;
 - (c) describe the measures to be implemented within the Stage 8 Area, Nepean River Buffer Zone and Restoration Area to:
 - (i) ensure all workers on the site receive suitable Aboriginal cultural heritage inductions prior to carrying out any activities which may cause impacts to Aboriginal objects or Aboriginal places, and that suitable records are kept of these inductions;
 - (ii) protect, monitor and manage Aboriginal objects and Aboriginal places;
 - (iii) protect Aboriginal objects and Aboriginal places located outside the approved disturbance area from impacts of the development;
 - (iv) manage any new Aboriginal objects or Aboriginal places discovered during the life of the development;
 - (v) maintain and manage reasonable access for relevant Aboriginal stakeholders to Aboriginal objects and Aboriginal places (outside of the approved disturbance area); and
 - (vi) facilitate ongoing consultation and involvement of Registered Aboriginal Parties in the conservation and management of Aboriginal cultural heritage on the site.

- B63. The Applicant must not commence Quarrying Operations in the Stage 8 Area until the Aboriginal Cultural Heritage Management Plan is approved by the Planning Secretary.
- B64. The Applicant must implement the Aboriginal Cultural Heritage Management Plan approved by the Planning Secretary.

BIODIVERSITY AND REHABILITATION

Construction of Linear Infrastructure

- B65. Prior to commencing construction of any linear infrastructure required for the carrying out of the development (including conveyors, access roads and haul roads), the Applicant must:
- determine the final alignment of the linear infrastructure by survey;
 - minimise the environmental impacts of the alignment of this infrastructure, where practicable;
 - map the final vegetation clearance, excluding any vegetation within the approved disturbance area as identified under condition A22 of Schedule 2;
 - submit a survey plan of the disturbance boundaries for linear infrastructure and their respective GPS coordinates to the Planning Secretary; and
 - identify relevant ecosystem and species credits required to compensate for the clearance identified in subparagraph (c), to the satisfaction of BCD.
- B66. The Applicant must retire the ecosystem and species credits identified under condition B65(e) in accordance with the Biodiversity Offsets Scheme of the BC Act, to the satisfaction of the BCT.

Biodiversity Offset Strategy

- B67. Prior to commencing Quarrying Operations in the Stage 8 Area, or other timeframe agreed by the Planning Secretary, the Applicant must make suitable arrangements for the long-term protection of the Restoration Area as described in the documents listed in condition A7(c) of Schedule 2, to the satisfaction of the Planning Secretary.
- B68. If the Restoration Area does not meet the listing criteria of the targeted communities or the completion criteria in Table 6 in Appendix 7, within the timeframes established in the Biodiversity and Rehabilitation Management Plan, then the Applicant must retire the relevant deficient biodiversity credits in accordance with the Biodiversity Offsets Scheme of the BC Act, to the satisfaction of the BCT.
- B69. The Applicant may satisfy condition B67 of Schedule 2 by establishing a positive covenant on title under section 88E of the *NSW Conveyancing Act 1919*. If the Applicant seeks to establish a positive covenant on title:
- the positive covenant must stipulate that the Applicant will manage the Restoration Area and all rehabilitated Substages in accordance with the Biodiversity and Rehabilitation Management Plan required under condition B73 of Schedule 2; and
 - the Applicant must establish a trust with sufficient funds (calculated in accordance with the total fund deposit requirements for a biodiversity stewardship site in accordance with BC Act) to provide for the ongoing management of the Restoration Area and all rehabilitated Substages in accordance with the Biodiversity and Rehabilitation Management Plan,
- to the satisfaction of the Planning Secretary.

Rehabilitation Objectives

- B70. The Applicant must rehabilitate all areas impacted by the Stage 8 Operations to the satisfaction of the Planning Secretary. This rehabilitation must be consistent with the final rehabilitation plans submitted to the Planning Secretary under condition A11 of Schedule 2 and must comply with the objectives in Table 4, to the satisfaction of the Planning Secretary.

Table 4: Rehabilitation objectives

Feature	Objective
Stage 8 Area	<ul style="list-style-type: none"> Safe (both within the site and in relation to downstream environs, including under flood conditions) Hydraulically, geotechnically and geomorphologically stable Non-polluting Fit for the intended post-Quarrying Operations land use(s) Final landform integrated with surrounding natural landforms as far as is reasonable and feasible, and minimising visual impacts when viewed from surrounding land or the Hume Highway

<i>Surface infrastructure</i>	<ul style="list-style-type: none"> • Conveyor decommissioned and removed, unless otherwise agreed by TfNSW and the Planning Secretary • All other surface infrastructure decommissioned and removed, unless otherwise agreed by the Planning Secretary
<i>Quarry Substages</i>	<ul style="list-style-type: none"> • Pit floor partially backfilled with sufficient and appropriate material to promote establishment of River-Flat Eucalypt Forest EEC • Substages progressively landscaped and vegetated to meet the objectives, performance and completion criteria in Table 6 in Appendix 7 • Batters to be established to a maximum slope of 1:1 (V:H) along the landward edge of each Substage and 1:5 (V:H) adjacent to the Nepean River Buffer Zone
<i>Final Landform</i>	<ul style="list-style-type: none"> • No reduction in flood storage capacity, compared with pre-development conditions, unless otherwise agreed by the Planning Secretary • Designed to incorporate geomorphological features to allow for the free draining discharge of clean water from the site • Minimise sediment laden run-off into the Nepean River
<i>Water Quality</i>	<ul style="list-style-type: none"> • Water discharged from the site is suitable for receiving waters and capable of supporting existing aquatic ecology and riparian vegetation
<i>Community</i>	<ul style="list-style-type: none"> • Ensure public safety

Progressive Rehabilitation

B71. The Applicant must rehabilitate the Substages progressively, to the satisfaction of the Planning Secretary.

B72. Unless otherwise agreed by the Planning Secretary, the Applicant must ensure that:

- (a) no more than two Substages are opened, excavated or worked at any one time without the written approval of the Planning Secretary;
- (b) the active extraction area in all combined Substages does not exceed 0.33 hectares at any one time;
- (c) the area of exposed ground at any one time is minimised as far as reasonable and feasible, for the life of the development;
- (d) Quarrying Operations do not progress from one phase of the development to another unless the progressive rehabilitation performance criteria in the Biodiversity and Rehabilitation Management Plan have been met (with the exception of in the active extraction area) for the previous phase (see condition B73(d) of Schedule 2); and
- (e) the post-extraction batter along the landward edge of each Substage does not exceed a maximum slope of 1:1 (V:H) or the natural underlying sandstone profile.

Biodiversity and Rehabilitation Management Plan

B73. The Applicant must prepare a Biodiversity and Rehabilitation Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:

- (a) be prepared by suitably qualified and experienced person/s;
- (b) be prepared in consultation with BCD and Council;
- (c) describe the short, medium, and long-term measures to be undertaken to:
 - (i) ensure compliance with the biodiversity objectives outlined in Table 6 in Appendix 7;
 - (ii) ensure compliance with the rehabilitation objectives outlined in Table 4 of Schedule 2; and
 - (iii) prevent impacts on aquatic biodiversity, including through the stabilisation of riverbanks and the prevention of sediment-laden runoff;
- (d) include detailed progressive rehabilitation performance criteria that must be met for each phase of the development before extraction can progress into subsequent phases;
- (e) include detailed performance and completion criteria for the Restoration Area and the final rehabilitation of the Stage 8 Area (including timeframes for the achievement of the listing criteria of the targeted communities) based on the performance and completion criteria in Table 6 in Appendix 7;
- (f) include a program to monitor, independently audit and report on progress against the criteria in sub-paragraphs (d) and (e), including reporting in the Annual Review;
- (g) include an evaluation of the performance of the Restoration Area and the progressive rehabilitation of the Stage 8 Area against the performance and completion criteria required under paragraph (d) above;

- (h) include triggers for remedial action (including additional planting or seeding), where the performance or completion criteria required under (d) and (e) above are not met;
 - (i) describe management measures to ensure that Quarrying Operations do not encroach on the Nepean River Buffer Zone and Exclusion Areas;
 - (j) include a detailed description of the measures to be implemented to:
 - (i) demonstrate compliance with conditions B76 and B78;
 - (ii) manage the collection and propagation of seed;
 - (iii) trial methods of extraction of seed resources on site and implement the most effective method of seed recovery;
 - (iv) minimise impacts on tree hollows and termite mounds where reasonable and feasible;
 - (v) minimise impacts on fauna, including undertaking pre-clearance surveys and supervision (by an appropriately qualified person) of the felling of habitat trees;
 - (vi) protect native vegetation and fauna habitat outside the approved disturbance area, including in the Restoration Area;
 - (vii) implement the *Stage 8 Area Weed Control Strategy* in the Amended Project Summary, except where varied by condition A18 of Schedule 2;
 - (viii) control feral pests;
 - (ix) control erosion;
 - (x) control unrestricted access;
 - (xi) manage bushfire hazards;
 - (xii) rehabilitate any areas of the Nepean River that are materially harmed by the development (including indirect or incidental impacts); and
 - (xiii) progressively rehabilitate the site and reasonably and feasibly minimise disturbance areas; and
 - (xiv) ensure the successful rehabilitation and protection of Stages 6 and 7 until the completion of Quarrying Operations in the Stage 8 Area;
 - (k) include an annual program to monitor and report on:
 - (i) the effectiveness of the measures required under (j) above;
 - (ii) progress against the detailed performance and completion criteria required under (d) and (d) above;
 - (iii) any progressive improvements that could be implemented to improve biodiversity outcomes; and
 - (iv) any additional or remedial actions required over the next 12 months;
 - (l) identify the potential risks to the successful rehabilitation of the Stage 8 Area, particularly where rehabilitation is damaged or delayed by flooding, and include a detailed description of the contingency measures to be implemented to mitigate against these risks; and
 - (m) include details of who would be responsible for monitoring, reviewing, and implementing the plan.
- B74. Subject to condition A29, the Applicant must not commence Quarrying Operations in the Stage 8 Area until the Biodiversity and Rehabilitation Management Plan is approved by the Planning Secretary.
- B75. The Applicant must implement the Biodiversity and Rehabilitation Management Plan as approved by the Planning Secretary.
- B76. The Applicant must place or create a minimum of 106 nest boxes or tree hollows within the Restoration Area within 12 months of commencing Quarrying Operations in the Stage 8 Area.
- B77. The Applicant must, to the greatest extent practicable, maximise the salvage of resources within the Stage 8 Area, including retention of:
- (a) nut and seed resources from native trees; and
 - (b) leaf and small branch material for mulching,
- for beneficial reuse on the site, including in rehabilitated Substages and in the Restoration Area.
- B78. Following the conclusion of extraction in each Substage, the Applicant must actively place logs and woody debris salvaged from the approved disturbance area within the completed Substage at the following ratios:
- (a) logs and woody debris at least 10 cm in diameter and greater than 0.5 m in length are to be placed in a configuration that reflects natural systems, such that there is overall at least 400 m of this woody debris per hectare for all completed Substages; and
 - (b) large woody debris at least 50 cm in diameter and greater than 0.5 m in length, such that there is overall at least 100 m of this large woody debris per hectare for all completed Substages.

Disposal of Vegetation (Stage 8)

- B79. The Applicant may undertake timber milling in Stage 8, provided this timber milling occurs outside of the Nepean River Buffer Zone and the Exclusion Areas, and that the Applicant can demonstrate ongoing compliance with condition B78 of this Schedule.

Additional Rehabilitation Requirements for Stages 6 and 7

- B80. The Applicant must rehabilitate 1.22 ha within Stage 6 and 3.44 ha within Stage 7 of the development in accordance with the objectives and the performance and completion criteria in Table 6 in Appendix 6.
- B81. By the end of December 2020, or other timing as agreed by the Planning Secretary, the Applicant must submit a Vegetation Management Plan for Stages 6 and 7 to the Planning Secretary for approval. This plan must:
- (a) satisfy the relevant requirements of condition 13 of Schedule 1;
 - (b) clearly define the extent and scope of Stage 6 vegetated lands;
 - (c) clearly define the extent and scope of Stage 7 vegetated lands and identifies that the diversity of species established via retention of current species, tubestock planting or direct seeding is to be raised to deliver the native plant species diversity identified in Table 5 in Appendix 6;
 - (d) establish baseline data for the existing habitat in the Stage 6 and 7 areas;
 - (e) describe how the Stage 6 and 7 vegetated lands would be managed and how habitat would be established and retained; and
 - (f) include detailed biodiversity objectives and performance and completion criteria for Stages 6 and 7 of the development, based on the general objectives and performance and completion criteria in Table 5 in Appendix 6,
- to the satisfaction of the Planning Secretary.
- B82. The Applicant must implement the Vegetation Management Plan for Stages 6 and 7 to the satisfaction of the Planning Secretary.

Rehabilitation Bond

- B83. Within 6 months of the approval of the Biodiversity and Rehabilitation Management Plan, the Applicant must lodge a Rehabilitation Bond with the Department to ensure that rehabilitation of the Stage 8 Area is implemented in accordance with the performance and completion criteria set out in the plan and the relevant conditions in Schedule 2 of this consent. The sum of the bond must be an amount agreed by the Planning Secretary and determined by:
- (a) calculating the cost of rehabilitating all disturbed areas of the site at third party rates (other than land acquisition costs), taking into account the likely surface disturbance over the next 3 years of Quarrying Operations; and
 - (b) employing a suitably qualified, independent and experienced person to verify the calculated costs.
- B84. The calculation of the Rehabilitation Bond must be submitted to the Department for approval at least 2 months prior to the lodgement of the bond.
- B85. The Rehabilitation Bond must be reviewed and if required, an updated bond must be lodged with the Department within 3 months following:
- (a) any update or revision to the Biodiversity and Rehabilitation Management Plan;
 - (b) the completion of an Independent Environmental Audit in which recommendations relating to the implementation of the Biodiversity and Rehabilitation Management Plan have been made; or
 - (c) in response to a request by the Planning Secretary.
- B86. If rehabilitation is completed generally in accordance with the relevant performance and completion criteria, to the satisfaction of the Planning Secretary, the Planning Secretary will release the bond.
- B87. If rehabilitation is not completed generally in accordance with the relevant performance and completion criteria, the Planning Secretary will call in all, or part of, the bond, and arrange for the completion of the relevant works.
- B88. If the Applicant establishes a positive covenant on title under section 88E of the *NSW Conveyancing Act 1919* under condition B69, then the Planning Secretary may waive the requirement for all or part of the Rehabilitation Bond required under conditions B83 to B87.

Weed Management

- B89. The Applicant must manage noxious weeds on the site in accordance with the Biodiversity and Rehabilitation Management Plan, and subject to the restrictions in condition A18 of this Schedule, to the satisfaction of the Planning Secretary.

VISUAL

B90. The Applicant must:

- (a) take all reasonable steps to minimise the visual and off-site lighting impacts of the development, including potential lighting impacts on the Hume Highway;
- (b) ensure that the visual appearance of all new structures, facilities or works (including paint colours and specifications) is aimed at blending as far as possible with the surrounding landscape; and
- (c) take all reasonable steps to:
 - (i) shield views of Quarrying Operations and associated equipment from users of public roads and at privately-owned residences; and
 - (ii) direct any on-site lighting downwards to avoid lighting impacts on the Hume Highway.

WASTE

B91. The Applicant must:

- (a) manage on-site sewage treatment and disposal in accordance with the requirements of an applicable EPL, and to the satisfaction of EPA and Council;
- (b) minimise the waste generated by the development;
- (c) ensure that the waste generated by the development is appropriately stored, handled, and disposed of; and
- (d) report on waste minimisation and management in the Annual Review.

B92. Except as expressly permitted in an applicable EPL, specific resource recovery order or exemption under the *Protection of the Environment Operations (Waste) Regulation 2014*, the Applicant must not receive waste at the site for storage, treatment, processing, reprocessing or disposal.

LIQUID STORAGE

B93. The Applicant must ensure that all tanks and similar storage facilities (other than for water) are protected by appropriate bunding or other containment, in accordance with the relevant Australian Standards.

DANGEROUS GOODS

B94. The Applicant must ensure that the storage, handling, and transport of dangerous goods is done in accordance with the latest version of the Australian Standards, particularly *AS 1940-2004 The storage and handling of flammable and combustible liquids* (Standards Australia, 2004) and *AS/NZS 1596:2014 The storage and handling of LP Gas* (Standards Australia, 2014), and the *Australian Dangerous Goods Code*.

BUSHFIRE MANAGEMENT

B95. The Applicant must:

- (a) ensure that the development:
 - (i) provides for asset protection in accordance with the relevant requirements in *the Planning for Bushfire Protection* (RFS, 2006) guideline; and
 - (ii) ensure that there is suitable equipment to respond to any fires on the site; and
- (b) assist the RFS and emergency services to the extent practicable if there is a fire in the vicinity of the site.

PART C ADDITIONAL PROCEDURES

NOTIFICATION OF EXCEEDANCES

- C1. As soon as practicable and no longer than 7 days after obtaining monitoring results showing an exceedance of any noise or air quality criterion in PART B of Schedule 2 following the date of commencement of Quarrying Operations in the Stage 8 Area, the Applicant must provide details of the exceedance to any affected landowners/tenants if the Applicant has not otherwise reached an agreement to exceed the relevant criteria with the affected landowner pursuant to condition B5 or B12. For any exceedance of any air quality criterion in PART B of this consent, the Applicant must also provide to any affected land owners and tenants a copy of the fact sheet entitled "*Mine Dust and You*" (NSW Health, 2017).

INDEPENDENT REVIEW

- C2. If, at any time following the date of commencement of Quarrying Operations in the Stage 8 Area, a landowner considers the development to be exceeding any noise or air quality criterion in PART B of Schedule 2, they may ask the Planning Secretary in writing for an independent review of the impacts of the development on their land.
- C3. If the Planning Secretary is not satisfied that an independent review is warranted, the Planning Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 21 days of the request for a review.
- C4. If the Planning Secretary is satisfied that an independent review is warranted, then within 3 months of the Planning Secretary's decision, or as otherwise agreed by the Planning Secretary and the landowner, the Applicant must:
- (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to:
 - (i) consult with the landowner to determine their concerns;
 - (ii) conduct monitoring to determine whether the development is complying with the relevant criteria in PART B of Schedule 2; and
 - (iii) if the development is not complying with that criteria, identify measures that could be implemented to ensure compliance with the relevant criteria; and
 - (b) give the Planning Secretary and landowner a copy of the independent review; and
 - (c) comply with any written requests made by the Planning Secretary to implement any findings of the review.

PART D ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

- D1. An Environmental Management Strategy must be prepared for the development to the satisfaction of the Planning Secretary. This strategy must:
- (a) provide the strategic framework for environmental management of the development;
 - (b) identify the statutory approvals that apply to the development;
 - (c) set out the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;
 - (d) set out the procedures to be implemented to:
 - (i) keep the local community and relevant agencies informed about the operation and environmental performance of the development;
 - (ii) receive record, handle and respond to complaints;
 - (iii) resolve any disputes that may arise during the course of the development;
 - (iv) respond to any non-compliance and any incident;
 - (v) respond to emergencies; and
 - (e) include:
 - (i) references to any strategies, plans and programs approved under the conditions of this consent; and
 - (ii) a clear plan depicting all the monitoring to be carried out under the conditions of this consent.
- D2. The Applicant must not commence Quarrying Operations in the Stage 8 Area until the Environmental Management Strategy is approved by the Planning Secretary.
- D3. The Applicant must implement the Environmental Management Strategy as approved by the Planning Secretary.

Management Plan Requirements

- D4. Management plans required under this Schedule must be prepared in accordance with relevant guidelines, and include:
- (a) a summary of relevant background or baseline data;
 - (b) details of:
 - (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);
 - (ii) any relevant limits or performance measures and criteria; and
 - (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;
 - (c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;
 - (d) a program to monitor and report on the:
 - (i) impacts and environmental performance of the development; and
 - (ii) effectiveness of the management measures set out pursuant to condition D4(c);
 - (e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;
 - (f) a program to investigate and implement ways to improve the environmental performance of the development over time;
 - (g) a protocol for managing and reporting any:
 - (i) incident, non-compliance or exceedance of the impact assessment criteria or performance criteria;
 - (ii) complaint; or
 - (iii) failure to comply with statutory requirements; and
 - (h) a protocol for periodic review of the plan.

Note: *The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.*

REVISION OF STRATEGIES, PLANS AND PROGRAMS

- D5. Within three months of:
- (a) the submission of an incident report under condition D7;
 - (b) the submission of an Annual Review under condition D9;

- (c) the submission of an Independent Environmental Audit under condition D11;
- (d) the approval of any modification to the conditions of this consent; or
- (e) the issue of a direction of the Planning Secretary under condition A8 which requires a review,

the suitability of existing strategies, plans and programs required under this consent must be reviewed by the Applicant.

- D6. If necessary, to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Planning Secretary and submitted to the Planning Secretary for approval within six weeks of the review.

Note: *This is to ensure strategies, plans and programs are updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the development.*

REPORTING AND AUDITING

Incident Notification

- D7. The Applicant must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing to compliance@planning.nsw.gov.au and must comply with the requirements specified in Appendix 8.

Non-Compliance Notification

- D8. Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing to compliance@planning.nsw.gov.au and identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

Note: *A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.*

Annual Review

- D9. By the end of March in each year after the commencement of Quarrying Operations in the Stage 8 Area, or other timeframe agreed by the Planning Secretary, a report must be submitted to the Department reviewing the environmental performance of the development, to the satisfaction of the Planning Secretary. This review must:
- (a) describe the development (including any rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year;
 - (b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, including a comparison of these results against the:
 - (i) relevant statutory requirements, limits or performance measures/criteria;
 - (ii) requirements of any plan or program required under this consent;
 - (iii) monitoring results of previous years; and
 - (iv) relevant predictions in the documents listed condition A7(c).
 - (c) identify any non-compliance or incident which occurred in the previous calendar year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence;
 - (d) evaluate and report on:
 - (i) the effectiveness of the noise and air quality management systems; and
 - (ii) compliance with the performance measures, criteria and operating conditions in this consent, as they relate to the Stage 8 Area;
 - (e) identify any trends in the monitoring data over the life of the development;
 - (f) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
 - (g) describe what measures will be implemented over the next calendar year to improve the environmental performance of the development.
- D10. Copies of the Annual Review must be submitted to Council and made available to any interested person upon request.

Independent Environmental Audit

- D11. Within one year of the commencement of Quarrying Operations in the Stage 8 Area, and every three years after, unless the Planning Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. The audit must:
- (a) be led and conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Planning Secretary;

- (b) be carried out in consultation with the relevant agencies;
- (c) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent, water licences and mining leases for the development (including any assessment, strategy, plan or program required under these approvals);
- (d) review the adequacy of any approved strategy, plan or program required under the abovementioned approvals and this consent;
- (e) recommend appropriate measures or actions to improve the environmental performance of the development and any assessment, strategy, plan or program required under the abovementioned approvals and this consent; and
- (f) be conducted and reported to the satisfaction of the Planning Secretary.

D12. Within three months of commencing an Independent Environmental Audit, or within another timeframe agreed by the Planning Secretary, the Applicant must submit a copy of the audit report to the Planning Secretary, and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The recommendations must be implemented to the satisfaction of the Planning Secretary.

Note: *The audit team must be led by a suitably qualified auditor and include experts in any fields specified by the Planning Secretary.*

Monitoring and Environmental Audits

D13. Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance report and independent audit.

Note: *For the purposes of this condition, as set out in the EP&A Act, "monitoring" is monitoring of the development to provide data on compliance with the consent or on the environmental impact of the development, and an "environmental audit" is a periodic or particular documented evaluation of the development to provide information on compliance with the consent or the environmental management or impact of the development.*

D14. Noise and air quality monitoring under Part B of this Schedule is not required at all privately-owned residences and the use of representative monitoring locations can be used to demonstrate compliance with criteria.

ACCESS TO INFORMATION

D15. Prior to commencing Quarrying Operations in the Stage 8 Area, the Applicant must:

- (a) make the following information and documents (as they are obtained, approved or as otherwise stipulated within the conditions of this consent) publicly available on its website:
 - (i) the document/s listed in condition A7(c);
 - (ii) all current statutory approvals for the development;
 - (iii) all approved strategies, plans and programs required under the conditions of this consent;
 - (iv) regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent;
 - (v) a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
 - (vi) a summary of the current stage and progress of the development;
 - (vii) contact details to enquire about the development or to make a complaint;
 - (viii) a complaints register, updated monthly;
 - (ix) the Annual Reviews of the development;
 - (x) audit reports prepared as part of any Independent Environmental Audit of the development and the Applicant's response to the recommendations in any audit report;
 - (xi) any other matter required by the Planning Secretary; and
- (b) keep such information up to date for the life of the development and to the satisfaction of the Planning Secretary.

Appendix 1 Development Layout

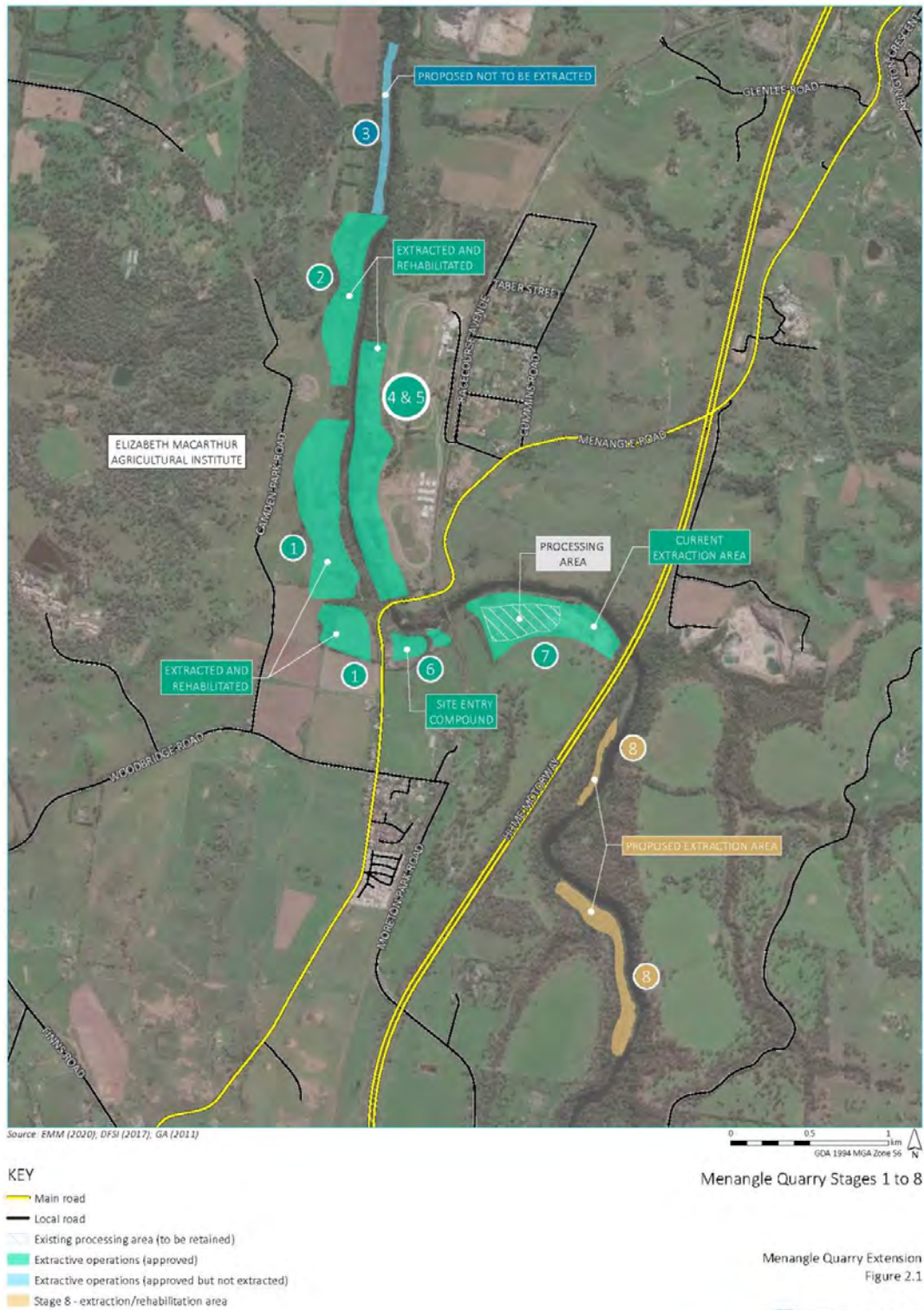


Figure 1 - Overall Development Layout Plan (Stages 1 to 8)



Figure 2 – Overall Staging Plan



Figure 3 - Substages 8A to 8C

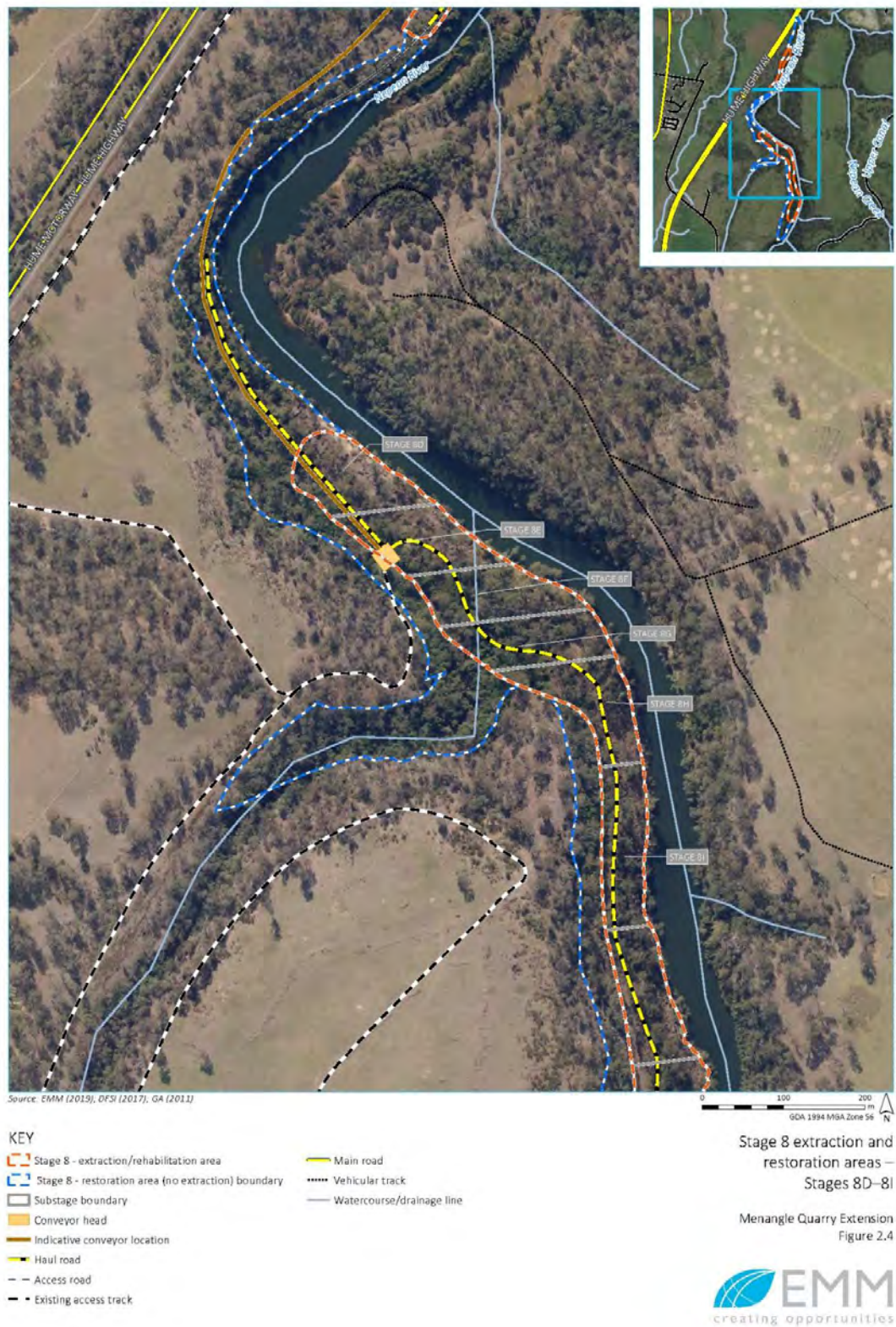


Figure 4 - Substages 8D to 8I

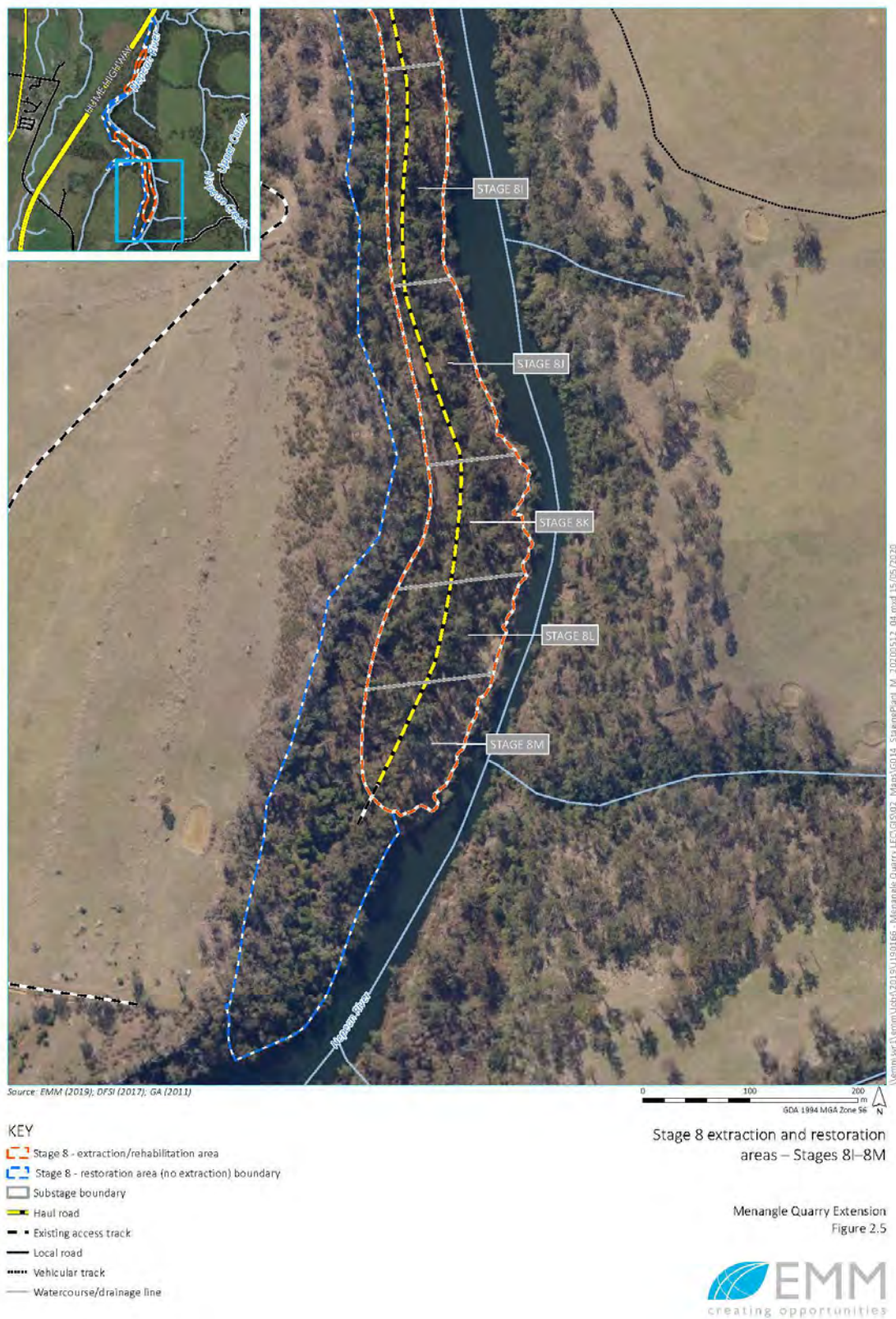


Figure 5 - Substages 8I to 8M

Appendix 2 Exclusion Areas

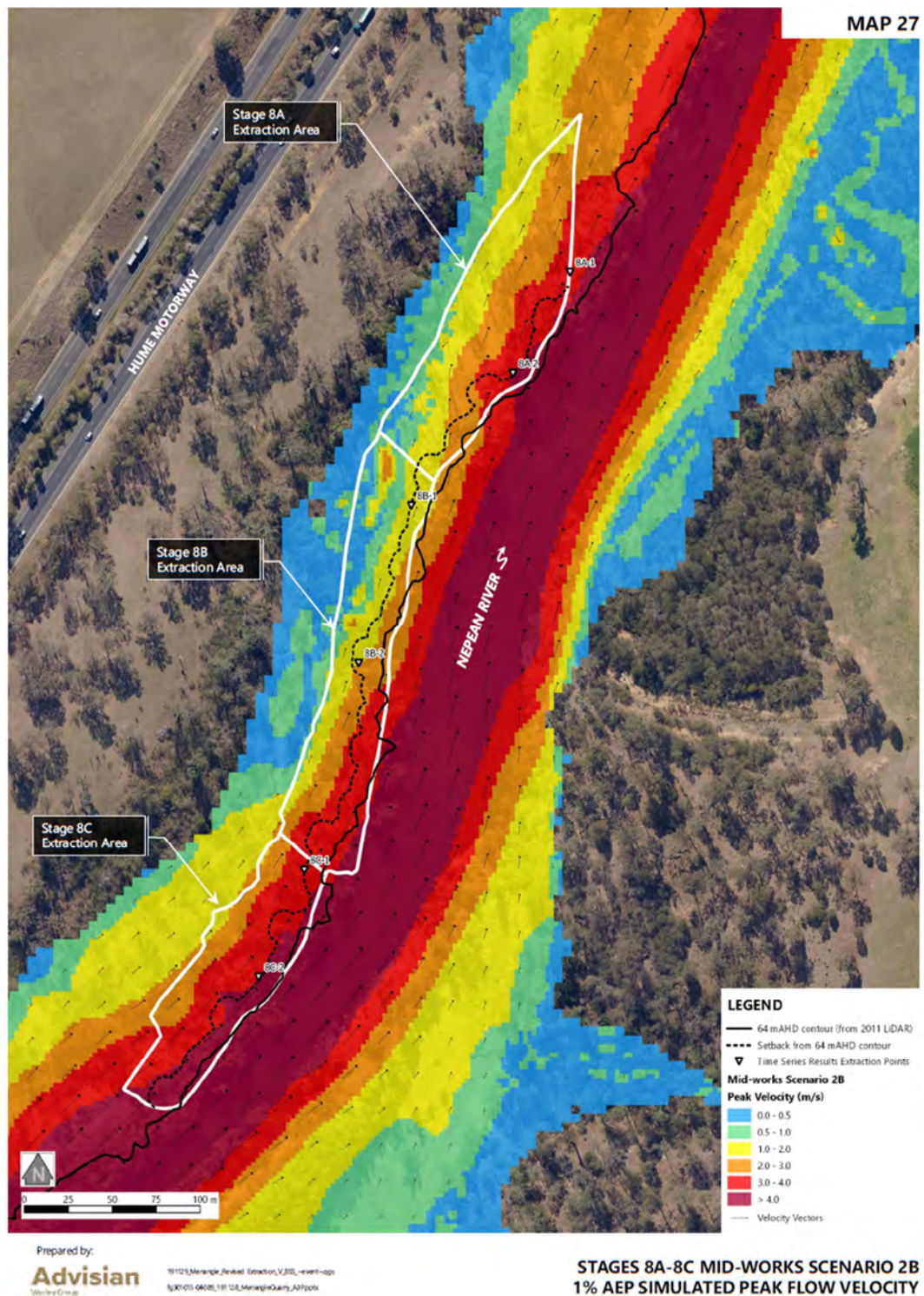


Figure 1 – Exclusion Areas Map Stages 8A-8C

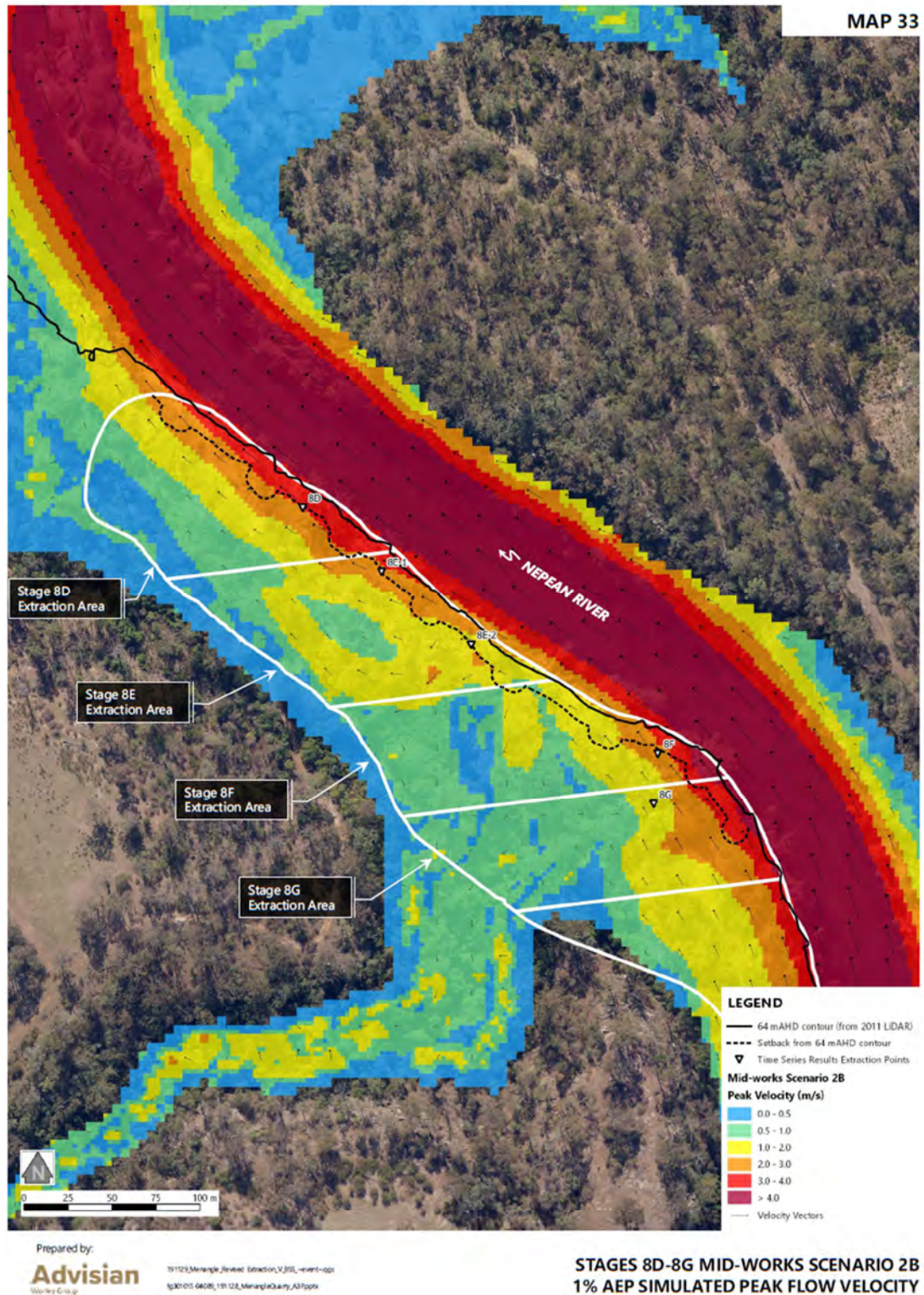


Figure 2 – Exclusion Areas Map Stages 8D-8F

Appendix 3 Receiver Locations

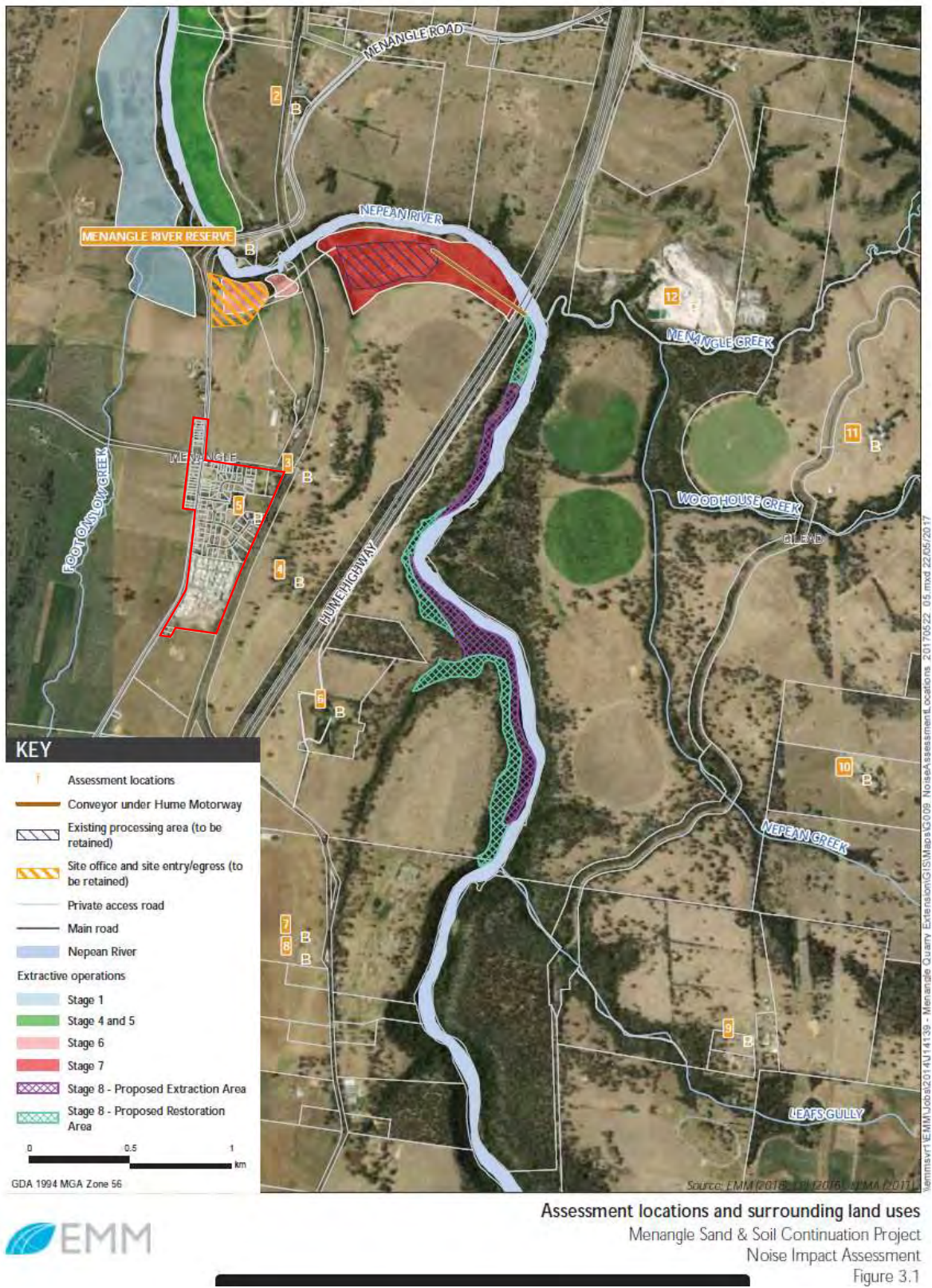


Figure 6 - Noise Receiver Locations

Appendix 4 Noise Compliance Assessment

Applicable Meteorological Conditions

1. The noise criteria in condition B4 of Schedule 2 are to apply under all meteorological conditions except the following:
 - (a) where 3°C/100 metres (m) lapse rates have been assessed, then:
 - (i) wind speeds greater than 3 metres/second (m/s) measured at 10m above ground level;
 - (ii) temperature inversion conditions between 1.5°C and 3°C/100m and wind speeds greater than 2m/s measured at 10m above ground level; or
 - (iii) temperature inversion conditions greater than 3°C/100m.
 - (b) where Pasquill Stability Classes have been assessed, then:
 - (i) wind speeds greater than 3m/s at 10m above ground level;
 - (ii) stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or
 - (iii) stability category G temperature inversion conditions.

Determination of Meteorological Conditions

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the meteorological station required under condition B17 of Schedule 2.

Compliance Monitoring

3. A noise compliance assessment must be undertaken within two months of commencement of Quarrying Operations in the Stage 8 Area. The assessment must be conducted by a suitably qualified and experienced acoustical practitioner and must assess compliance with noise criteria in this consent. A report must be provided to EPA within 1 month of the assessment.
4. Unless otherwise agreed by the Planning Secretary, attended compliance monitoring must be carried out in accordance with the relevant requirements for reviewing performance set out in the *NSW Industrial Noise Policy* (EPA, 2000), in particular the requirements relating to:
 - (a) monitoring locations for the collection of representative noise data;
 - (b) meteorological conditions during which collection of noise data is not appropriate;
 - (c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and
 - (d) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration,
 - (e) modifying factors apart from adjustments for duration,

with the exception of applying appropriate modifying factors for low frequency noise during compliance testing. This should be undertaken in accordance with Fact Sheet C of the *NSW Noise Policy for Industry* (EPA, 2017).

Appendix 5 Monitoring Locations



Figure 7 - Groundwater Monitoring Locations

Appendix 6 Additional Stage 6 and 7 Biodiversity and Rehabilitation Requirements

Table 5: Additional Biodiversity Objectives and Performance and Completion Criteria for Stage 6 and 7 Vegetated Areas

Rehabilitation Objective	Performance Indicator	Completion Criteria	Example Justification/validation methods	Performance Guidance
Composition Objective				
The vegetation composition of Stages 6 and 7 are recognisable as River-flat Eucalypt Forest EEC.	Native plant species are characteristic of River-flat Eucalypt Forest EEC as described in the Final Determination. <i>HN526 benchmark for native plant species richness is ≥ 24 species.</i> <i>It is noted that Eucalyptus botryoides x saligna is not listed in the River-flat Eucalypt Forest EEC Final Determination, but is to count as one species towards the benchmark value.</i>	Presence of a suitable number or proportion of species listed in the Final Determination. This is considered to be ≥ 24 species, across all monitoring plots, that are aligned with the species list in the Final Determination.	Use of standard 20 x 20 m floristic sampling plot(s) where all flora species present are recorded.	This criterion should be met early (i.e. at 5 years post-establishment), otherwise it is unlikely to be met in the long-term.
Structure Objectives				
The vegetation structure of Stages 6 and 7 are recognisable as, or is trending towards, the target BVT HN526, which provides a suitable surrogate for River-flat Eucalypt Forest EEC	Cover and abundance of plant growth forms are characteristic of, or are trending towards, the target BVT benchmarks, which are provided in the completion criteria.	Total foliage cover of species allocated to Tree (TG) growth form is trending towards the benchmark range of 27.5– 32.5	Use of BAM where all flora species present in a 20 x 20 m plot are recorded, with foliage cover and abundance of each species.	Foliage cover of Tree (TG) growth form is trending towards target value.
		Total foliage cover of species allocated to Shrub (SG) growth form is trending towards the benchmark range of 21-31		Foliage cover of Shrub (SG) growth form is trending towards target value.

Rehabilitation Objective	Performance Indicator	Completion Criteria	Example Justification/validation methods	Performance Guidance
		Total foliage cover of species allocated to Grass and Grass-like (GG) growth form is trending towards the benchmark range of 24.45-30.45		Foliage cover of Grass and Grass-like (GG) growth form is trending towards target value.
		Total foliage cover of species allocated to Forb (FG) growth form is trending towards the benchmark range of 24.45-30.45		Foliage cover of Forb (FG) growth form is trending towards target value.
Function Objectives				
Levels of ecosystem function have been established that demonstrate that Stages 6 and 7 are self-sustainable, or is trending towards self-sustainability	Evidence of plant reproduction and regeneration is present	The cover and species richness of the groundcover, including grasses and forbs, is stable or increasing, and is within the benchmark ranges	The ongoing persistence of groundcover species, which are relatively short lived and for which recruitment is not straightforward to measure, is regarded as evidence of reproduction and regeneration of these species	An initial decline in species richness and cover may occur, however a stabilisation in observed cover and richness should be observed by 5 to 10 years post-establishment.
		Second generation individuals of shrubs and trees are present	Presence of second-generation canopy species is evident within the rehabilitation domain (i.e. not limited to the plot, but present within rehabilitation of the same target community and age).	No performance guidance. The presence of second-generation trees and shrubs may not be evident for many years post-establishment.

Rehabilitation Objective	Performance Indicator	Completion Criteria	Example Justification/validation methods	Performance Guidance
	Cover of exotic species is low	Cover of 'high threat exotic' (HTE) and 'priority weeds' is no more than 2%.	Data collected in accordance with BAM. Sum foliage cover of species identified as 'high threat exotic' under the BAM and 'priority weeds' as identified by the Local Land Services (LLS) in the relevant strategic weed management plan for the region.	Cover of HTE and priority weed species are declining towards target value. Given the very high weed loads it is expected that it will take some time for weed growth to be brought under control and will require ongoing maintenance.
	Indicators of nutrient cycling are suitable for sustaining the target plant community type	Litter cover is within the benchmark range. There is no biometric benchmark, and thus the BAM benchmark of 40 for PCT835 is adopted	Data collected in accordance with BAM via five 1 m ² subplots within the 20 m ² floristic plot	Litter cover is increasing towards target value.
<p>Notes:</p> <p><i>Achieving biometric vegetation type (BVT) HN526 and/or plant community type (PCT) in the NSW Bionet Vegetation Information System (PCT835), can be used as a suitable surrogate for the EEC. BVT benchmarks are more specific (to vegetation type level, usually with lower and upper thresholds), whereas PCT benchmarks are to a broader vegetation class level (which is a grouping of similar vegetation types). For this reason, BVT benchmarks have generally been utilised in this table as being the best available.</i></p> <p><i>The Completion Criteria column refers to the desired end goal, with the Performance Guidance column providing broad guidance on how the completion criteria should be interpreted in terms of producing future performance criteria in relevant Vegetation Management Plan(s). It is noted that the completion criteria and performance indicators in Table 5 will need to be resolved with more specific performance criteria relevant to different areas of the site.</i></p> <p><i>It is also noted that stochastic events such as flood or fire might affect the achievement of performance standards and criteria, and whilst the intent will still be to achieve restoration and rehabilitation of the River-flat Eucalypt Forest EEC in the long-term, such events will need to be taken into account on a case by case basis for specific performance standards.</i></p>				

Appendix 7 Stage 8 Operations Biodiversity and Rehabilitation

Table 6: Biodiversity Objectives and Performance and Completion Criteria

Rehabilitation Objective	Performance Indicator	Completion Criteria	Example Justification/validation methods	Performance Guidance
Composition Objective				
The vegetation composition of the Restoration Area and rehabilitated substages are recognisable as River-flat Eucalypt Forest EEC.	Native plant species are characteristic of River-flat Eucalypt Forest EEC as described in the Final Determination. <i>HN526 benchmark for native plant species richness is ≥24 species.</i> <i>It is noted that Eucalyptus botryoides x saligna is not listed in the River-flat Eucalypt Forest EEC Final Determination, but is to count as one species towards the benchmark value.</i>	Presence of a suitable number or proportion of species listed in the Final Determination. This is considered to be ≥24 species, across all monitoring plots, that are aligned with the species list in the Final Determination.	Use of standard 20 x 20 m floristic sampling plot(s) where all flora species present are recorded.	This criterion should be met early (i.e. at 5 years post-establishment), otherwise it is unlikely to be met in the long-term.
Structure Objectives				
The vegetation structure of the Restoration Area and rehabilitated substages are recognisable as, or is trending towards, the target BVT HN526, which provides a suitable surrogate for River-flat Eucalypt Forest EEC	Cover and abundance of plant growth forms are characteristic of, or are trending towards, the target BVT benchmarks, which are provided in the completion criteria.	Total foliage cover of species allocated to Tree (TG) growth form is trending towards the benchmark range of 27.5– 32.5	Use of BAM where all flora species present in a 20 x 20 m plot are recorded, with foliage cover and abundance of each species.	Foliage cover of Tree (TG) growth form is trending towards target value.
		Total foliage cover of species allocated to Shrub (SG) growth form is trending towards the benchmark range of 21-31		Foliage cover of Shrub (SG) growth form is trending towards target value.

Rehabilitation Objective	Performance Indicator	Completion Criteria	Example Justification/validation methods	Performance Guidance
		Total foliage cover of species allocated to Grass and Grass-like (GG) growth form is trending towards the benchmark range of 24.45 - 30.45		Foliage cover of Grass and Grass-like (GG) growth form is trending towards target value.
		Total foliage cover of species allocated to Forb (FG) growth form is trending towards the benchmark range of 24.45 - 30.45		Foliage cover of Forb (FG) growth form is trending towards target value.
Function Objectives				
Levels of ecosystem function have been established that demonstrate the Restoration Area and rehabilitated substages are self-sustainable, or is trending towards self-sustainability	Evidence of plant reproduction and regeneration is present	The cover and species richness of the groundcover, including grasses and forbs, is stable or increasing, and is within the benchmark ranges	The ongoing persistence of groundcover species, which are relatively short lived and for which recruitment is not straightforward to measure, is regarded as evidence of reproduction and regeneration of these species	An initial decline in species richness and cover may occur, however a stabilisation in observed cover and richness should be observed by 5 to 10 years post-establishment.
		Second generation individuals of shrubs and trees are present	Presence of second-generation canopy species is evident within the rehabilitation domain (i.e. not limited to the plot, but present within rehabilitation of the same target community and age).	No performance guidance. The presence of second-generation trees and shrubs may not be evident for many years post-establishment.

Rehabilitation Objective	Performance Indicator	Completion Criteria	Example Justification/validation methods	Performance Guidance
	Cover of exotic species is low	Cover of 'high threat exotic' (HTE) and 'priority weeds' is no more than 2%.	Data collected in accordance with BAM. Sum foliage cover of species identified as 'high threat exotic' under the BAM and 'priority weeds' as identified by the Local Land Services (LLS) in the relevant strategic weed management plan for the region.	Cover of HTE and priority weed species are declining towards target value. Given the very high weed loads it is expected that it will take some time for weed growth to be brought under control and will require ongoing maintenance.
	Indicators of nutrient cycling are suitable for sustaining the target plant community type	Litter cover is within the benchmark range. There is no biometric benchmark, and thus the BAM benchmark of 40 for PCT835 is adopted	Data collected in accordance with BAM via five 1 m ² subplots within the 20 m ² floristic plot	Litter cover is increasing towards target value.
<p>Notes:</p> <p><i>Achieving biometric vegetation type (BVT) HN526 and/or plant community type (PCT) in the NSW Bionet Vegetation Information System (PCT835), can be used as a suitable surrogate for the EEC. BVT benchmarks are more specific (to vegetation type level, usually with lower and upper thresholds), whereas PCT benchmarks are to a broader vegetation class level (which is a grouping of similar vegetation types). For this reason, BVT benchmarks have generally been utilised in this table as being the best available.</i></p> <p><i>The Completion Criteria column refers to the desired end goal, with the Performance Guidance column providing broad guidance on how the completion criteria should be interpreted in terms of producing future performance criteria within the Biodiversity and Rehabilitation Management Plan required under condition B73 of Schedule 2 of this consent. It is noted that the completion criteria and performance indicators in Table 6 will need to be resolved with more specific performance criteria relevant to different areas of the site. For example, the Amended restoration area will contain a tree overstorey and thus the performance standard should be higher compared to the Amended extraction area where some time will be required for the tree overstorey cover to become established. Refined performance criteria are to be included in the Biodiversity and Rehabilitation Management Plan.</i></p> <p><i>It is also noted that stochastic events such as flood or fire might affect the achievement of performance standards and criteria, and whilst the intent will still be to achieve restoration and rehabilitation of the River-flat Eucalypt Forest EEC in the long-term, such events will need to be taken into account on a case by case basis for specific performance standards.</i></p>				

Appendix 8 INCIDENT NOTIFICATION AND REPORTING REQUIREMENTS

WRITTEN INCIDENT NOTIFICATION REQUIREMENTS

1. A written incident notification addressing the requirements set out below must be emailed to the Department at the following address: compliance@planning.nsw.gov.au within seven days after the Applicant becomes aware of an incident. Notification is required to be given under this condition even if the Applicant fails to give the notification required under condition D7 of Schedule 2 or, having given such notification, subsequently forms the view that an incident has not occurred.
2. Written notification of an incident must:
 - a. identify the development and application number;
 - b. provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
 - c. identify how the incident was detected;
 - d. identify when the applicant became aware of the incident;
 - e. identify any actual or potential non-compliance with conditions of consent;
 - f. describe what immediate steps were taken in relation to the incident;
 - g. identify further action(s) that will be taken in relation to the incident; and
 - h. identify a project contact for further communication regarding the incident.
3. Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Planning Secretary, the Applicant must provide the Planning Secretary and any relevant public authorities (as determined by the Planning Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.
4. The Incident Report must include:
 - a. a summary of the incident;
 - b. outcomes of an incident investigation, including identification of the cause of the incident;
 - c. details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and

details of any communication with other stakeholders regarding the incident.

