APPENDIX A

Lot 5 Wellesley Road, Wellesley Extraction Industry Licence Environmental Management Plan (EIL EMP)

Extractive Industries Licence Application and Environmental Management Plan

LOT 5 WELLESLEY ROAD, WELLESLEY, SHIRE OF HARVEY

REPORT PREPARED BY

LUNDSTROM ENVIRONMENTAL CONSULTANTS PTY LTD

Lot 5 Wellesley Road, Wellesley

Shire of Harvey

Extractive Industries Licence Application and Environmental Management Plan (EMP)

Version Reference: 3.0

Date: November 2023

Prepared by Lundstrom Environmental Consultants Pty Ltd for Carbone Bros. Pty Ltd

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Version Register

Version No.	Description	Author	Reviewed by	Date
1.0	Original EMP submission	PM	ML	Aug 2020
2.0	Updated to reflect amended disturbance footprint	AB	ML	May 22
3.0	Updated to reflect amended disturbance footprint	ST	ML	November 23

Front cover image: *Nearmaps Image of the extraction area, 20 Aug 2020*

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1 INTRODUCTION

1.1 GENERAL DESCRIPTION OF THE PROPOSAL

Lot 5 Wellesley Road comprises an established sand mining operation managed by the proponent Carbone Bros Pty Ltd. The proponent has had a series of extractive industry licences (EIL) for the existing mine since the 1990s, and much of the resource within this footprint has now been exhausted.

In Aug 2020 the proponent applied to expand the mining footprint by an additional 5 ha of land, however due to the vegetation type occurring within the expansion site, the Shire of Harvey refused the license application as it would impact a threatened ecological community (Banksia Woodland) and threatened species habitat (Black cockatoo). The proponent lodged an appeal of this decision with the State Administrative Tribunal. In April 2022 it was resolved with the Shire of Harvey that the expansion footprint should be amended to:

- Avoid all Banksia Woodland and black cockatoo habitat; and
- Allow for a 20m vegetated buffer between the extraction area and the Banksia woodland

This report has been amended to reflect these requirements. The new disturbance footprint results in a reduced area of land requiring clearing, that comprises degraded *Agonis flexuosa* woodland vegetation, as agreed with the Shire (Figure 3). The clearing permit application and offset proposal previously submitted to the Department of Water and Environmental Regulation (DWER) will be amended to reflect the new disturbance footprint. Vegetation deemed as offset for the clearing activities will be subject to lodgement as a conservation covenant.

The report sets out the details of the proposed future sand mining on the property together with maps and aerial photographs. It also provides an environmental assessment of the proposal and environmental management plans.

Development Application and Extractive Industry Licence forms are included as Appendix 1.

1.2 PROPERTY OWNERSHIP AND LOCALITY

1.2.1 Ownership and Locality

Table 1. Property description

Property Description	Lot 5 on Plan 5888 Wellesley Road, Wellesley, Shire of Harvey
Volume	1826
Folio	663
Area	103.1 ha
Ownership	Lyndon Mervyn Edwards

Figure 1 shows the regional location of the property.

1.2.2 Registered Conservation Covenant

A restricted conservation covenant (K526740) is registered on the property for protection of 13.49 ha of bushland in the northwest of Lot 5. This has no connection in regard to the extraction of sand on the property.

1.2.3 Exploration Licences

An Exploration licence E 70/5793 is held by Painted Spire Resources Pty Ltd, but there is no further information on what interest the company may have on this property. The tenement excludes private land except that below 30 metres from the natural surface of the land. The landowner is not aware of the purpose of the exploration, and it is not likely that this exploration licence will affect the extraction of sand to 30m AHD.

2 PRESENT LAND USE

The majority of the property comprises bushland, whilst smaller areas are used for sand quarrying, pastures and a tree plantation. Areas of different land uses are listed below:

Bushland:	71.5ha
Sand quarry (active and rehabilitated):	13.8ha
Parkland/scattered bush:	9.0ha
Tree plantation	3.5ha
Cleared pastures	5.2ha
TOTAL:	103.0ha

Figure 2 contains a recent aerial photograph showing the land use within the property and its immediate surrounds.

3 EXISTING ENVIRONMENT

3.1 TOPOGRAPHY AND DRAINAGE

The entire property is situated on a hill of sand reaching an elevation of 46mAHD. This forms part of a belt of ancient dune sand hills which have a north south trend along the Swan Coastal Plain. Due to the sandy nature of the terrain, no streams or drainage channels exist within the property. Drainage occurs by infiltration into the sandy substrate.

No EPP wetlands exist within Lot 5 or within 1,000 metres of the proposed extractive operations.

3.2 GEOLOGY AND SOILS

Tamala Formation sands cover the entire property and reach a thickness of over 40 metres. Several metres below the surface, particularly on the higher ground, pinnacles of limestone occur sporadically. Sandy clays of the Guildford Formation underlie these materials (Commander, D.C. 1988).

3.3 GROUNDWATER AND HYDROLOGY

Information relating to the elevation of the superficial groundwater table has been sourced from the DWER bores closest to the pit and from a regional groundwater study undertaken by Rockwater in 2008. Also work undertaken in the general area by Lundstrom Environmental and from monitoring well records sourced from the Main Roads WA Dept and from the Catalano quarries Lots 4 and 7 Runnymede Rd. These data show that the water table occurs at between 8m AHD and 15m AHD in the extraction area. Since the lowest level proposed in the current EIL application is 30m AHD, there will be a separation of at between 22 and 15 metres between the quarry floor and the water table.

3.4 WETLANDS

This property does not have any classified wetlands occurring within or adjacent to it.

3.5 VEGETATION

The currently approved extraction area was primarily cleared of vegetation prior to commencement of the current EIL, with the exception of 10 trees, which were cleared with permission of Clearing Permit CPS 5321/1. The proposed 3.4ha extension to the extraction area will require the removal of 2.33 ha of significantly degraded *Agonis flexuosa* woodland. The surrounding vegetation is classified as Bassendean Central and South complex and comprises mainly Marri, Peppermint, Jarrah, Banksia, and Spearwood-type vegetation.

3.6 FAUNA

The fauna habitat values within the proposed disturbance location are compromised significantly due to an absence of shrubs and groundcover most likely due to historical disturbance. Threatened fauna species including the Western Ringtail Possum and several Black Cockatoo species are known to occur in the general area and targeted survey of the sites significance to these species was conducted within and surrounding the disturbance footprint as part of the Level 1 Fauna Survey (Harewood, 2018).

No Black Cockatoo habitat or roosting trees were identified within the disturbance footprint and as the vegetation is comprised of *Agonis flexuosa* woodland it does not represent Black Cockatoo foraging habitat.

The *Agonis flexuosa* woodland does provide suitable habitat for Western Ringtail Possum, however the day and night surveys only identified evidence of Brushtail Possum scats and sightings, suggesting the Western Ringtail Possums are either absent from the area surveyed or present in very low densities and may not utilise the site except on rare occasions.

The site is surrounded on three sides by areas of continuous native remnant vegetation and therefore it does not specifically represent a key corridor for wildlife movement and is not likely to create any significant barriers to fauna movement on a local or regional scale.

3.7 DIEBACK DISEASE

The status of dieback (*Phytophthora sp.*) on and surrounding the property has not been ascertained, and due to the historical degradation of the remnant vegetation within the proposed disturbance footprint the area would be considered "uninterpretable" (Dieback Working Group, 2010).

3.8 BUSHFIRE PRONE AREAS

The property / EIL area falls within a bushfire prone area as designated by the Fire and Emergency Services (FES) Commissioner on 11th December 2021 (Government of Western Australia, 2021). However, the threat of bushfire from this operation is considered low and no habitable building, or any other structure, is to be developed as a result of this operation.

In the case of wildfire, sufficient access to the remnant native vegetation north proposed extraction area is available via the accessway that runs along the south and east of the extraction site.

3.9 CURRENT ZONING

The area is located within Kemerton Strategic Industry zone as defined by the Shire of Harvey Town Planning Scheme No. 1.

3.10 EXISTING INFRASTRUCTURE ON THE SITE

There is no infrastructure existing on this site.

3.11 CLOSEST RESIDENCES

The closest residences to the outer boundaries of the extraction areas are identified in Table 2 and mapped on Figure 2.

There is one rural residence located within 1 000m of the proposed extraction area. This is the residence of the landowner of the extraction sites at Lot 5.

Table 2. Residential Dwellings within 1km of the Extraction Areas

Reference No. on Figure 2	Lot (Street) No. & Name	Occupants Name	Distance to closest area of pit (metres)
Res 1	Lot 6 (335) Wellesley Road North	Lyndon Edwards	391 m

4 THE DEVELOPMENT PROPOSAL

4.1 EXISTING DEVELOPMENT

The current planning consent and EIL permit for the property allows removal of stockpiles and access over an area of 5.8ha, as shown in Figure 3. The area has had the available sand resource extracted and in parts has been rehabilitated.

4.2 PROPOSED EXTRACTION ACTIVITIES

General description of proposed mining actions:

- The new proposed extraction area will add 3.4ha to the extraction footprint.
- The area will be stripped of topsoil which will be placed in stockpiles within the extraction license footprint.
- Within the cell a bulldozer will rip and blade material to a stockpile. Trucks will enter the pit from Wellesley to be loaded from the stockpile by a front-end loader.
- Excavation will proceed until a level of 30m AHD has been reached.
- Where possible, topsoil will be replaced and seeded on a progressive basis, in worked out areas, just prior to the wet season.
- The final land surface will have batters with a gradient no greater than 1:3.
- The existing approved extraction area (Stages 7-9) will be rehabilitated to pasture grasses after mining has been completed.
- The proposed new extraction (Stage 10) will also require rehabilitation with pasture grasses.

Table 3. Proposed Stages of Extraction

Stage	Action	2023	2024	2025	2026	2027	2028
7-9	Current EIL rehabilitation						
10	Strip 3.4ha block						
10	Excavate and load out sand						
10	Progressive rehabilitation of 3.4ha						
All	Monitoring and remediation of rehabilitated areas						

4.3 SITE ACCESS AND EGRESS ROADS

Access to the site will continue to be obtained from Wellesley Road, as shown on Figure 3.

4.4 ESTIMATED TRAFFIC TO BE GENERATED

Operating times will be Monday to Saturday 6:30 am to 5:00 pm, excluding public holidays.

The following estimates are made:

Total annual sand removal:	60,000 cubic meters
Number of working days per month:	24 days
Vehicle payloads (GAV's[1]):	Standard rigid truck (14 tonnes)
	Single Semi-loader (24 tonnes)
Proportional use:	14 tonners (50%), 24 tonners (50%)

The above estimates suggest an average of 13 truck movements (in total) per day, but this will be dependent on demand.

[1] General Access Vehicle (in terms of Road Traffic Rules and Regulations 2002)

5 POTENTIAL ENVIRONMENTAL IMPACTS AND PROPOSED MANAGEMENT

Short term negative environmental impacts are to be expected in the process of all mining actions. However, these can largely be mitigated over the medium to long term provided that operating procedures are in accordance with acceptable standards and that rehabilitation measures are implemented as proposed. The following listed potential impacts are used as a check list to ensure that all potential major impacts are addressed.

5.1 FLORA AND FAUNA

5.1.1 Flora

The proposed extension of the extraction area will require the removal of approximately 2.33 ha of native vegetation. Results from the detailed flora and vegetation survey of the proposed extraction area identified the presence significantly degraded *Agonis flexuosa* woodland (Plant Ecology, 2020). No threatened or priority flora was recorded within the proposed extraction area during the spring survey.

5.1.2 Fauna

The original fauna survey conducted in 2018 described the proposed extraction area as unsuitable or marginal for some fauna species. There was no sign of Western Ringtail Possum during the day or night. (Harewood, 2018). The original survey has since been revised to include a more detailed assessment of the southern portion of the proposed disturbance footprint and this has confirmed that Western Ringtail Possum are unlikely to be actively utilising this area.

No Black Cockatoo habitat trees were found to occur within this region.

5.1.3 Clearing Permit Application

A Clearing Permit application has been submitted to the Department of Water and Environmental Regulation and the outcome of the Department's assessment of this proposal will direct the requirements associated with managing the impacts of the clearing. It is proposed to covenant an area, still to be determined, as an offset to counterbalance the overall impact of clearing the native vegetation for the extraction activity.

5.2 WEEDS

Whilst no declared weeds have been observed on the site, potential for the emergence of Apple of Sodom (*Solanum linnaeanum*) and Narrow-Leaf Cotton Bush (*Gomphocarpus fruticosus)*, exists. Increased weed cover is a potential negative environmental impact of the proposed operations and ongoing management within the excavated area will be necessary. A Weed Management Plan will be implemented as described in Appendix 2 of this report.

5.3 ALTERATION OF THE LAND SURFACE

The land will be altered by extraction to approximately 15m deep with batters of 1:3 on the northern and eastern sides. The proposed final land surface has been illustrated in Figure 4.

5.4 VISUAL IMPACT

The proposed extraction is not in a visually sensitive area and it is unlikely that problems will be encountered from this source. In addition, several belts of trees exist between the roads to the west and the proposed extraction area and these will screen views of the operation. Once the extraction has taken place, the disturbed area will be rehabilitated with pasture grasses.

5.5 WATER

5.5.1 Potential Impacts

In all mining operations the potential exists for impacts to be incurred on surrounding water resources, or by storm water erosion of exposed areas. This is dependent on the slopes associated with the site, the nature of the ground materials and the proximity of the site to sensitive receptors such as productive aquifers, wetlands, lakes or rivers.

5.5.2 Water Management

5.5.2.1 Surface Water/stormwater Management

Due to the very high permeability of the sand being excavated, it is unlikely that significant damage from storm water runoff will occur and nor will expressions of surface water exist, even after heavy rainfall.

5.5.2.2 Groundwater Management

The project does not involve abstracting ground water for operational purposes. No groundwater will be exposed as the floor of the pit will be approximately 20 metres above the water table. A Water Management Plan is included as Appendix 5.

Due to the low scale nature of the operations, no groundwater contamination is anticipated. No fuel or lubricant storage will occur on the site. Refuelling will take place using a mobile refuelling vehicle which is equipped with a "snap-on snap-off, fast-fill and auto shut-off" facility. Plant will be refuelled each morning, leaving the vehicles almost empty overnight. No major servicing, which could lead to fuel and oil spills, will take place on the site. Minor spills which may occur occasionally will be neutralised by soil processes.

5.6 NOISE

5.6.1 Noise Management

The majority of the noise related to the operations will be generated by a bulldozer, loader and the haulage trucks.

Other than the owner of Lot 5, situated on adjoining Lot 6 directly south, no houses exist within 1000 metres of the proposed pit. The next closest residence to this operation is situated 1084 metres to the south on Lot 26, 22 Papalia Court. In addition, there is dense vegetation which surrounds the proposed pit area, and this will also serve to buffer any noise generated.

A contact number for noise complaints will be advertised on the site notice board at the entrance to the property.

5.7 DUST

Winds are strongest in the afternoon and data extracted for this time from the Bunbury climate statistics show that prevailing winds are from the west, with other wind directions blowing for less than 10% of the time. It can be seen from the wind rose chart for Bunbury that the prevailing winds largely blow in a direction that will not impact the closest properties and thus impacts from this source will be minimal.

5.7.1 Dust Management

The proposed sand extraction may emit dust to the atmosphere from the following activities:

- Removing topsoil.
- Excavation of sand
- Loading of haulage trucks.
- Truck movement on unsealed surfaces.

Uncontrolled dust emissions have the potential to result in visual and health related impacts on the closest residences. The dust management measures that will be implemented on site are outlined in the Dust Management Plan attached as Appendix 3.

5.8 DIEBACK

5.8.1 Potential Impacts

Since the site is largely disturbed/cleared, it is not possible to ascertain the dieback status. The site should thus be classified as “uninterpretable” and managed as per the guidelines applicable for this classification (Dieback Working Group, 2010).

5.8.2 Dieback Management

The following management measures will be put in place to minimise future spread of dieback:

- The property will be fenced
- Access to the property will be via a single entrance gate.
- All machinery, trucks and other vehicles will arrive in a clean condition free of soil and organic matter that may contain dieback fungus.
- Any soil and plant material brought to the site for rehabilitation purposes should be from dieback free sources.
- Employees and contractors working on the site will be informed of the purpose of the above measures and their responsibilities in relation to dieback prevention.
- All customers will be provided with a dieback information brochure which describes the dieback status of the material and the caution that should be exercised when using this sand in sensitive environments. The Dieback brochure is attached in Appendix 4.

5.9 HERITAGE SITES

A search of the Department of Indigenous Affairs Aboriginal Heritage Inquiry System (accessed July 2020 from: https://maps.daa.wa.gov.au/ahis/) shows no specific sites of aboriginal significance on Lot 5. In the event that during the course of mining an Aboriginal cultural heritage site is discovered, the

Proponent will immediately advise the Department of Indigenous Affairs and abide by the *Aboriginal Heritage Act 1972*.

5.10 ACID SULPHATE SOILS

The material to be excavated is deep Bassendean sands with rapid drainage characteristics. There are no remnant swampy sediments within the extraction area, or within the surrounding areas where acid sulphate soils might be exposed or activated as a result of the proposed extraction activities. The extraction area is not located in an acid sulphate risk area (ASRIS, 2022)

6 REHABILITATION

6.1 PROPOSED REHABILITATION MEASURES

The proposed new extraction area covering an additional 3.4 ha will be progressively rehabilitated with pastures. All areas will have the final land surface contoured so that the batters on all portions of the extraction will be 1:3 or flatter. The objective of rehabilitation for this project is to establish a stable landform and a self-sustaining pasture grass cover with a minimal amount of weed species.

Rehabilitation will be undertaken as follows:

- All slopes behind the active working face will be contoured to achieve a slope of no more than 1:3 vertical to horizontal. In so doing, care will be taken not to impact fringing vegetation. Proposed final contours are illustrated in Figure 4.
- Stockpiled topsoil/overburden will be re-spread to create a land surface which is aesthetically pleasing and trafficable by agricultural machinery.
- The quarry floor will be ripped along contour to remove potential compaction and to establish low mounds to facilitate stormwater penetration and create a seedbed.
- Any mulch produced on site will be incorporated into the topsoil layer.
- Rehabilitation work will only be carried out just prior to or during the wet winter season.
- Weed management will be implemented as described in Appendix 2.
- Monitoring and maintenance will be implemented as described in Section 6.2.

6.2 MONITORING AND MAINTENANCE

Monitoring of rehabilitated areas will ensure that any areas requiring remedial work are identified. Monitoring will be carried out on an annual basis to assess:

- The physical stability of the landform in the rehabilitated areas.
- The success of the sown pasture grasses.
- The emergence of weeds.

Monitoring will continue until the completion criteria presented in 6.3 have been fulfilled. Maintenance procedures will be carried out where necessary and may include:

- Repair of any erosion damage.
- Seeding areas that may not have regenerated.
- Weed control.

6.3 COMPLETION CRITERIA

Completion criteria must be sufficiently stringent to ensure that the overall objectives of the rehabilitation have been met. These criteria must also be designed to allow effective reporting and auditing to define an endpoint for the rehabilitation activities.

The completion criteria proposed for extractive operations on Lot 5 are presented in Table 4.

Table 4. Closure Criteria, Objectives and Interim Targets

Criteria	Objective	Interim Targets
a) Safety	The site is safe to humans.	• Site is safe to humans during operations.
b) Sustainability	The site is sustainable in the long term without additional management inputs.	• Monitoring of the slope stability and grass cover to improve stability over time.
c) Suitability	The site is suitable for the agreed land uses.	• Monitoring of the slope stability and grass cover to improve stability over time
d) Visual amenity and heritage	The rehabilitated extraction area blends into the surrounding environment.	• Monitoring of the slope stability and grass cover to improve stability over time
e) Off-site impacts	Significant adverse off-site impacts are prevented.	• Significant adverse off-site impacts are prevented.
f) Hydrology	a. Site hydrology does not prevent the establishment of desired vegetation. b. Site hydrology does not reduce the stability of the landform. c. Stormwater is contained within the site.	• Stormwater is contained within the site during operations. • Identification and mitigation of any hydrology related issues during operations.
g) Soils and stability	a. Soil profiles and structures are sufficient to ensure vegetation establishment. b. The landform is stable.	• Topsoil is respread in all rehabilitation areas. • Identification and mitigation of potential erosion scars and scours during operations.
h) Vegetation	a. Pasture grasses cover the entire Stage 10 area after completion of the extraction phase. b. If native vegetation planting is required, at least 60% of the planted native species become fully established.	• Annual inspections after pasture grass seeding to asses survival rates and grass condition. • After one-year pasture grasses cover 30% of target area increasing by 20% per annum thereafter. • If native vegetation planting is required, 80% survival rate of planted native species per annum
i) Weeds	a. Declared pest weeds are absent. b. The level of weed species should not be detrimental to the planted vegetation.	• Declared weed species removed systematically during operations.

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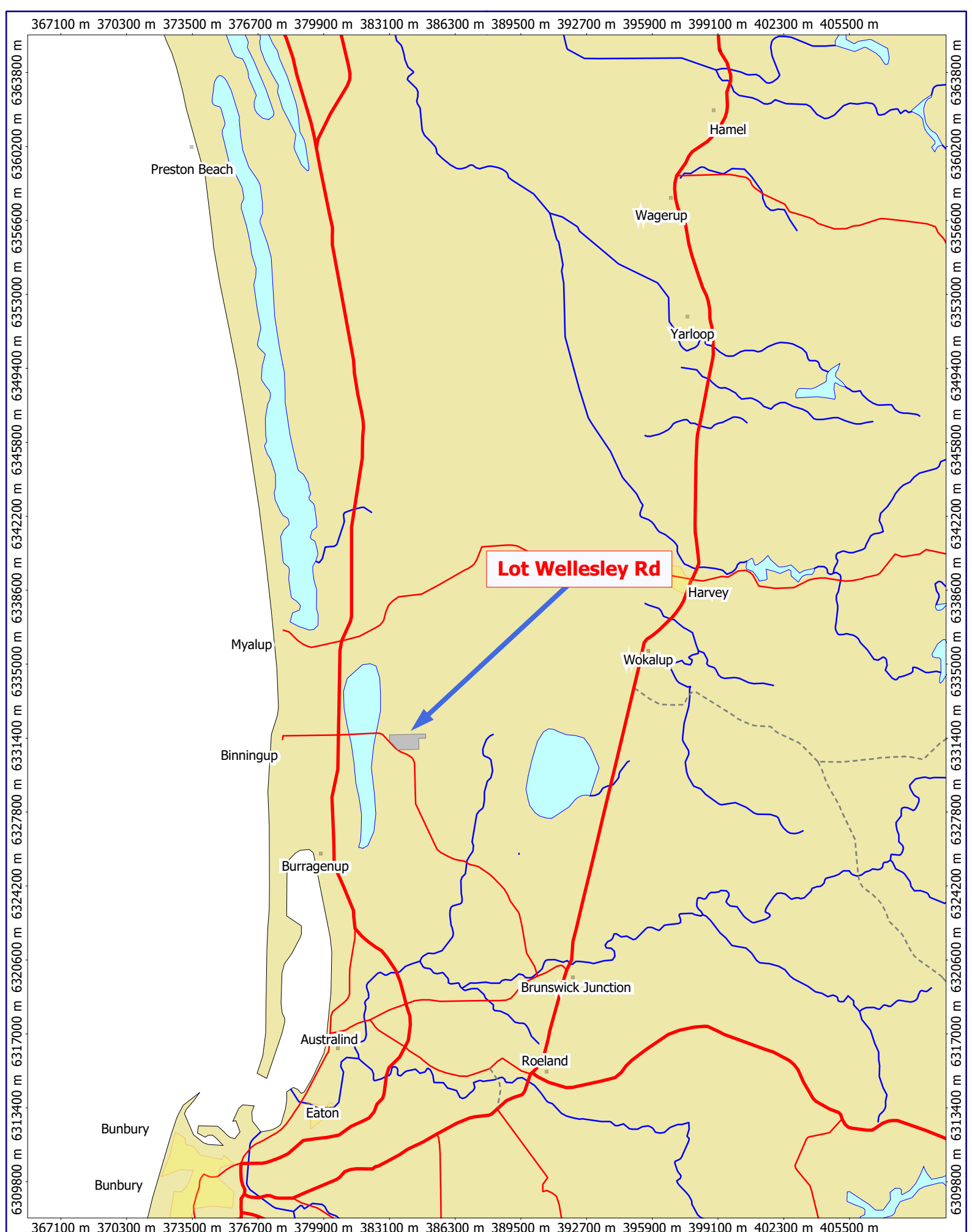
FIGURES



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Datum: GDA94
Projection: Australia MGA94 (50)

Client: Carbone Bros
Project: Sand Extraction
Location: Lot 5 Wellesley Rd Wellesley

Figure 1:

Locality Plan

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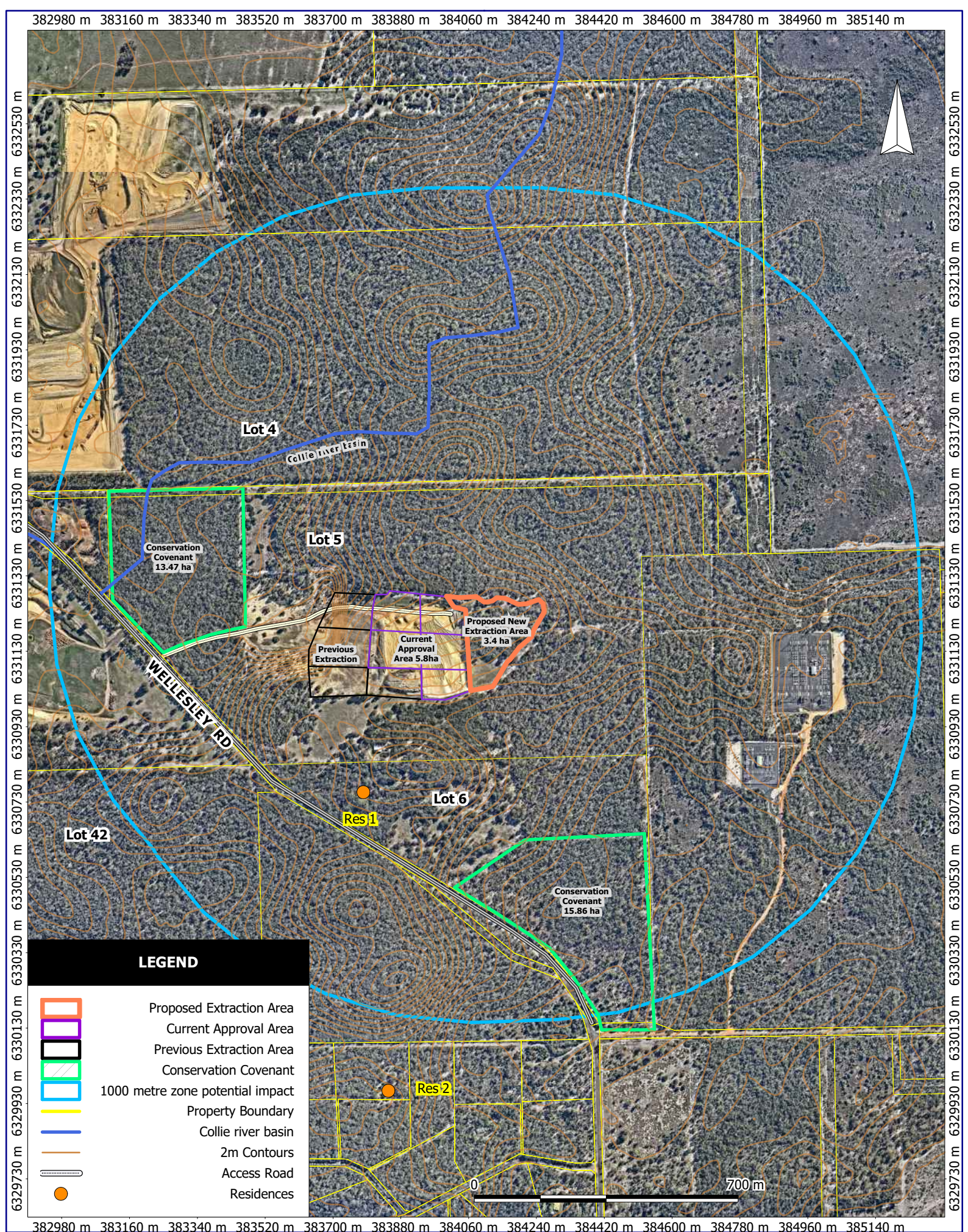

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Projection: Australia MGA94 (50)

Client: Carbone Bros
Project: Sand Extraction
Location: Lot 5 Wellesley Road Wellesley

Figure 2:
Site and Surrounds

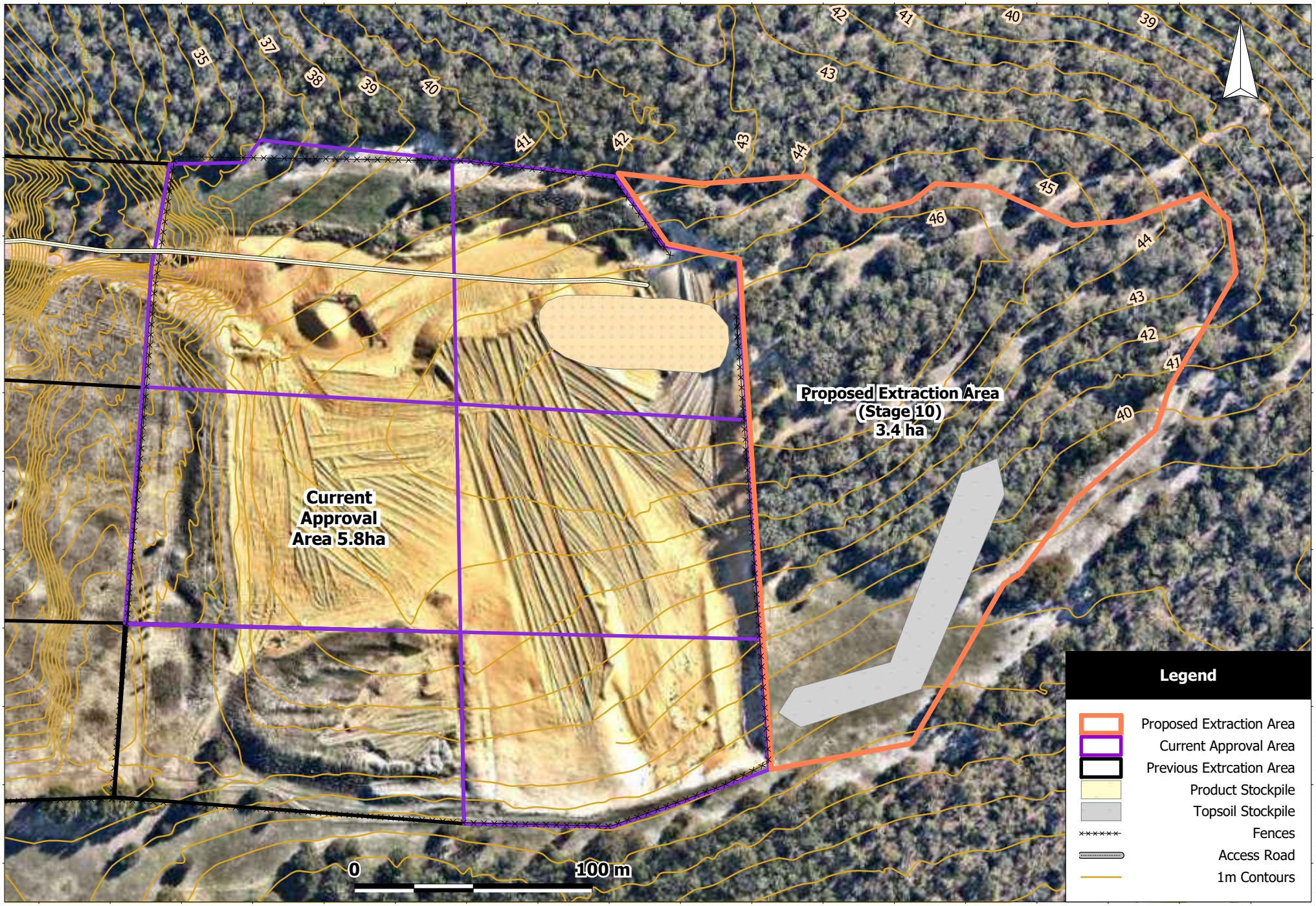

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Figure 3:
Proposed Operations

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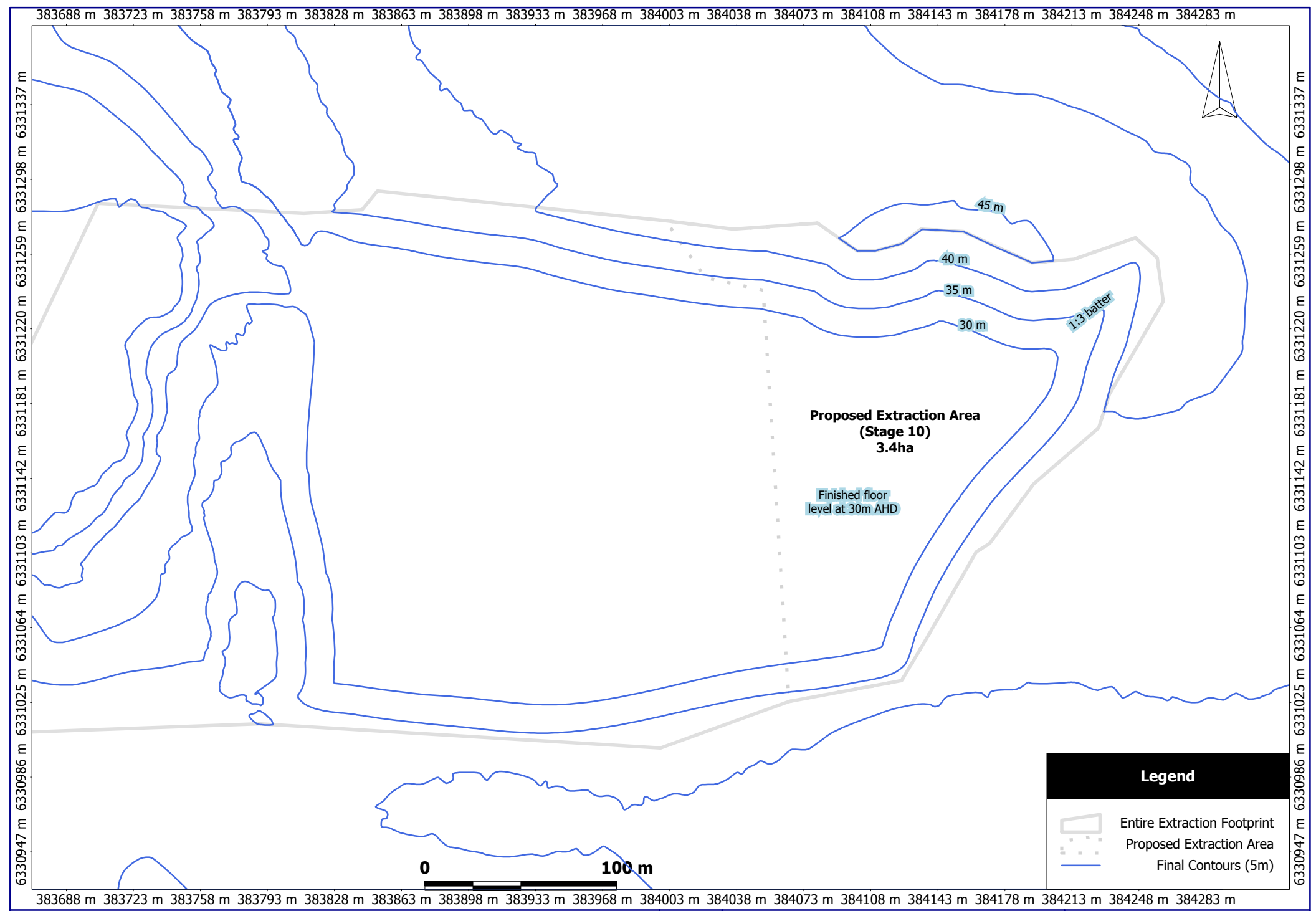

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Projection: Australia MGA94 (50)

Client: Carbone Bros
Project: Sand Extraction
Location: Lot 5 Wellesley Road, Wellesley

Figure 4:
Final Land Surface

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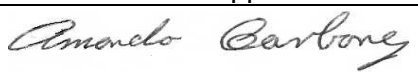
Shire of Harvey
District Planning Scheme No. 1

s.77 Application for Amending or Cancelling a Development Approval

Office Use only
Registration No.: _____
Assessment No.: _____
Synergy No.: _____
Application Type: _____

Owner/s Details and Consent			
Name/s	Lyndon Mervyn Edwards		
ABN (if applicable)			
Address	335 Wellesley Road		
Suburb	Wellesley	Post Code	6233
Phone Home	8720 1063	Mobile	
Work		Fax	
Email	lyndon@people.net.au		
Contact Person:			
Signature:		Signature:	
Date:	06/11/2023	Date:	

Note: The signature of the owner/s is required on all applications. This application will not proceed without that signature. For the purposes of signing this application an owner includes the persons referred to in the Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 Clause 62(2).

Applicant's Details (if different from owner)			
Name/s	Carbone Brothers Pty Ltd		
Address	PO Box 61		
Suburb	Brunswick Junction	Post Code	6224
Phone Home	9726 1178	Mobile	
Work		Fax	
Email	admin@carbonebros.com.au		
Contact Person for Correspondence:	Fred Carbone		
The information and plans provided with this application may be made available by the Shire for public viewing in connection with the application. ■ Yes ☐ No			
Signature:		Date:	06/11/2023

Property Details					
Lot No:	5	House/Street No:		Location No:	Wellington 1
Diagram or Plan No.	5888	Certificate of title Vol. No:	1826	Folio:	663
Title encumbrances (e.g. easements, restrictive convenants):					
1. E258081 - Electricity Easement; 2. K526740 - Restricted Covenant (Conservation);					
3. L522127 - Electricity Easement; 4. L522118 - Caveat by the National Trust of Australia					
Street name	Wellesley Road	Suburb	Wellesley		
Nearest Street Intersection	Runnymede Road/ Wellesley Road				

Development Approval	
Nature of Development/Use Approved :	Sand Extraction
Date of Development Approval:	05/07/2022

Reason for Amendment or Cancellation	
☐ Extension of time for the development/use approved to be substantially commenced	
Period of additional time requested:	
■ Amend or delete any condition to which the Approval is subject	
Applicable conditions:	7, 15, 16, 17, 18
☐ Amend an aspect of the development/use	
Will these amendments substantially change the development/use approved? ■ No ☐ Yes (if Yes, a new Application for Development Approval is required)	
Details of amendments:	
Adjustment of the relevant conditions, adjusted to reference the amended documents.	
☐ Cancel the approval	
Reasons for cancellation:	

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WEED MANAGEMENT PLAN

Prepared for Carbone Bros
On Lot 5 Wellesley Road, Wellesley,
Shire of Harvey

1. INTRODUCTION

This Weed Management Plan (WMP) has been prepared in accordance with guidelines published by the Department of Agriculture and Food (DAF) (DAF, 2014). This WMP should be read in conjunction with the report entitled **"**Extractive Industries Licence Application Lot 5 Wellesley Road" November 2023, prepared for Carbone Bros Pty Ltd by Lundstrom Environmental Consultants Pty Ltd.

2. LOCALITY AND OWNERSHIP

Locality: Lot 5 Wellesley Road, Wellesley, Shire of Harvey
Ownership: Lyndon Edwards

Figure 1 is a recent aerial photograph showing the property and its surrounds.

3. THE DEVELOPMENT PROPOSAL

Carbone Bros intend to extract sand from the proposed extension to the extraction area (Stage 10) on Figure 1 over a period of 5 years. The proposed new extraction area will be rehabilitated with pasture grasses.

4. RESPONSIBILITIES

Carbone Bros Pty Ltd accepts responsibility for weed management within all areas on the property impacted by extraction activities and any areas identified within the conditions of approval set by the Shire of Harvey. All other areas on the property will remain the responsibility of the landowner.

5. CURRENT WEED STATUS OF THE PROPERTY

No declared weeds or weeds of local or regional significance have been observed during site visits to this operation. It is acknowledged that the proposed ground disturbance might result in the germination of certain weeds, but the species will not be known until emergence.

6. PROPOSED WEED MANAGEMENT ACTIONS

The following is a general description of the actions that will be implemented by Carbone Bros for weed management:

6.1 Weed Management Zones on the Subject Land

For the purpose of this WMP, the subject land has been allocated zones as follows (Figure 1):

Zone A: This is all the land within the quarry and includes the base of the excavation, roadways and stockpiles of topsoil, overburden and all product stockpiles.

Zone B: This is all land that is at natural level and which extends 100 meters beyond the perimeter of the quarry and includes any stockpiles of soil or overburden created by the excavation.

6.2 Weed Emergence Monitoring

Monitoring of the emergence of weeds in Zones A and B will be undertaken by an experienced and licenced weed management contractor on a 6 monthly basis i.e. after the first seasonal rains and at the end of spring. In addition, Carbone Bros personnel on the site will be instructed to report any infestations that may occur on other occasions. Based on the type of weed that emerges, a control plan will be formulated by the licenced weed management contractor.

6.3 Import and Export of Weeds

Carbone Bros will ensure that all plant and equipment is clean and free of any soil when moving any equipment to or from the site. Carbone Bros will also ensure that any quarry products imported to the site will be free of weeds.

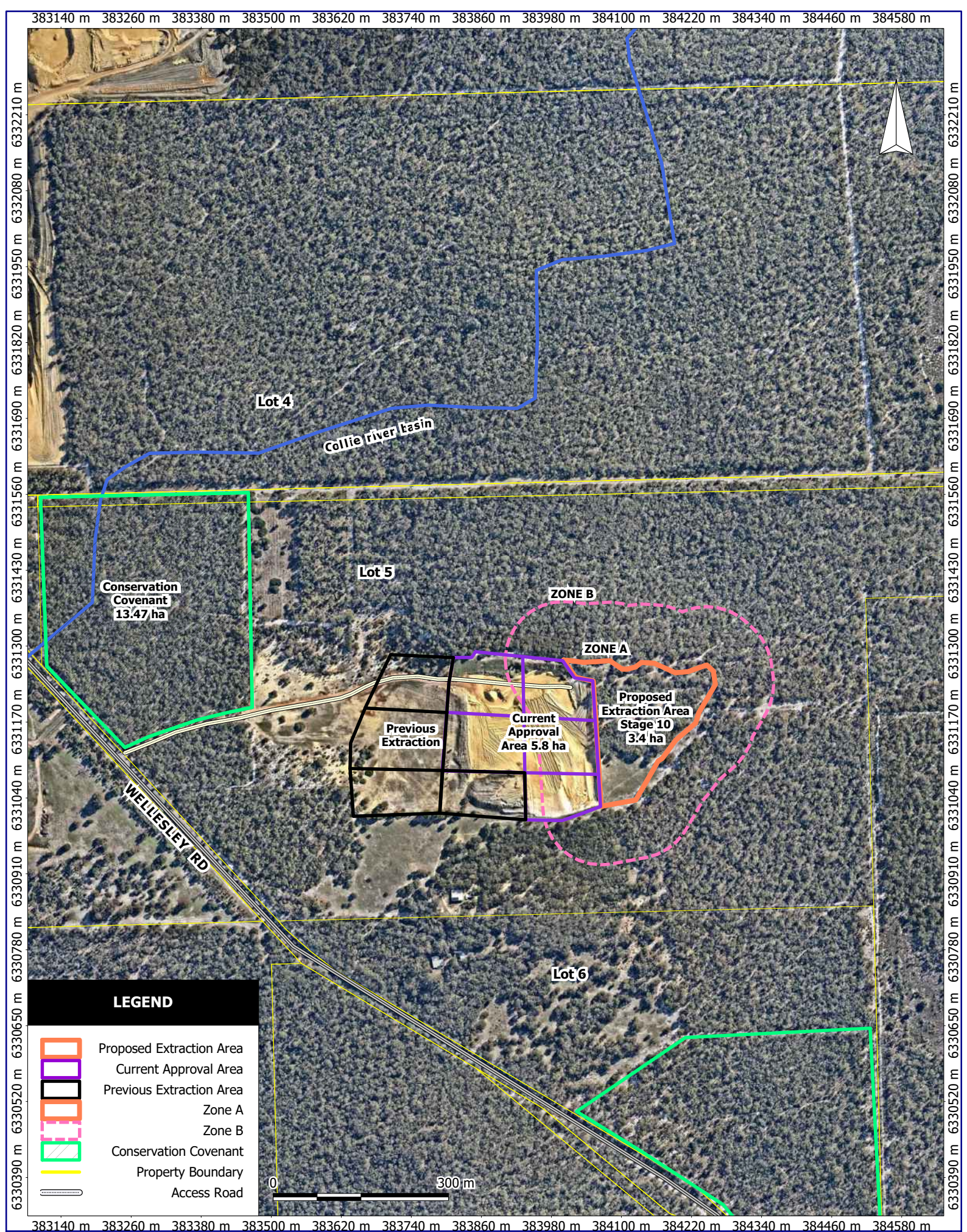
6.4 Weed Control Program

If a weed infestation occurs within Zones A or B, the licensed weed management contractor will apply the appropriate method of control, in accordance with the guidelines published by DAF, whether chemical or mechanical, at the appropriate time. The weed management contractor will keep a record of all treatments.

7. REFERENCES

DAF 2014. Department of Agriculture and Food guidelines for weed control procedures for extractive industries licences.

Figure



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Scale: 1:7900
Original Size: A4
Air Photo Source: Nearmap April 2023
Datum: GDA94
Projection: Australia MGA94 (50)

Client: Carbone Bros
Project: Sand Extraction
Location: Lot 5 Wellesley Road Wellesley

Figure 1:
Weed Management Plan

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DUST MANAGEMENT PLAN

Prepared for Carbone Bros
On Lot 5 Wellesley Road, Wellesley,
Shire of Harvey

1. INTRODUCTION

This Dust Management Plan (DMP) has been prepared in accordance with guidelines published by the former Department of Environment and Conservation (DEC) (Jan. 2011). This DMP should be read in conjunction with the report entitled "Extractive Industries Licence Application Lot 5 Wellesley Road" November 2023, prepared for Carbone Bros Pty Ltd by Lundstrom Environmental Consultants.

2. LOCALITY AND OWNERSHIP

Locality: Lot 5 Wellesley Road, Wellesley, Shire of Harvey
Ownership: Lyndon Edwards

Figure 1 shows the property and its surrounds and Figure 2 is the proposed extraction area pit layout.

3. GEOLOGY AND SOILS

Bassendean Formation sands cover the entire property and reach a depth of approximately 40m before the underlying sandy clays of the Guildford Formation occur. The sands have an average fines (silt and sand) content of 10%. A shallow 5cm layer of topsoil overlies the sands and is removed and stockpiled before mining.

4. PREVAILING WINDS

Winds are strongest in this area in the afternoon and data has been extracted for this time from the Bunbury climate statistics. These data show that prevailing winds are from the west, with other wind directions blowing for less than 10% of the time. The wind rose chart for Bunbury has been included in Annexure 1 (Bureau of Meteorology 2020). It can be seen from the wind rose chart that the prevailing winds largely blow in a direction that will not impact upon the closest properties and thus impacts from this source will be minimal.

5. POTENTIAL FOR DUST GENERATION FROM THE SITE

The sand that is excavated is moist and exhibits a very low dust generation capacity when being mined and loaded into trucks. Although there will be some uplift of the finer particle component of this soil during stripping and stockpiling operations, this will be limited due to the low proportion of fines. During strong winds the potential exists for fine particles to become airborne, especially when they are disturbed by excavation activities and further discussion on mitigation measures in this regard is contained in section 8 below.

Average grain size distribution of the material is as follows:

Sand (1.18>0.0135mm)	90%
Fines (<0.0135mm)	10%

Whilst the analysis presented above does not determine the quantity of PM50 particles, it is estimated that the potential for total suspended particles (TSP) less than PM50 is approximately 1%. Mitigation measures are discussed in section 8 below.

6. POTENTIALLY SENSITIVE RECEPTORS

6.1 Residential Dwellings

Other than the owner of Lot 5, situated on adjoining Lot 6 directly south, no houses exist within 1000m of the proposed pit. The next closest residence to this operation is situated 1084 m to the south east on Lot 26, 22 Papalia Court. Figure 1 show the location of these two residential dwellings.

7. PROPOSED WORKS AND POTENTIAL IMPACTS

Carbone Bros intend to extract sand from the proposed extension to the extraction area (Stage 10) on Figure 1 over a period of 5 years. The proposed new extraction area will be rehabilitated with pasture grasses. It is located further from the nearest residences and therefore should not pose additional risk of impacts from windblown dust.

7.1 Plant and Equipment to be used

The list of Equipment to be used is as follows:

- D9 Bulldozer
- Caterpillar 980 and 950 front end loaders
- Finlay Screen 4030

7.2 Summary of Mining Actions

Proposed mining actions are as follows:

- Within each active Stage a combination of dozing and loader operations will prepare the sand for loading or screening.

- At the completion of each stage of extraction the land surface will be ripped and topsoil replaced.
- Vegetation will be cleared and topsoil will be stripped prior to the commencement of extraction.
- Rehabilitation of Stage 10 with pasture grasses will commence once extraction is complete.

7.3 Potential Sources of Dust

The proposed sand extraction may emit dust to the atmosphere from the following activities:

- Removing topsoil;
- Excavation of sand;
- Loading of haulage trucks;
- Clearing of native vegetation; and
- Truck movement on unsealed surfaces.

Uncontrolled dust emissions have the potential to result in visual and health related impacts on the closest residences.

7.4 Site Risk Assessment and Classification

The site risk assessment is based on the format provided in the Addendum of the DEC guideline document referred to in this DMP. Based on the risk assessment conducted (Annexure 2), the classification derived is “low risk”. Measures for managing dust impacts are discussed in Section 8 below.

8. Measures Proposed for Managing Dust

This report has identified the potential dust generating activities associated with the proposed development and has also identified the potentially sensitive receptors. The measures that are proposed to manage dust impacts are listed below:

- If the wind is blowing strongly from the from the north or from the east in the direction of the closest residences to the south and conditions are dusty, then operations will be stopped until such time as adequate wetting down has occurred.
- A polymer based spray-on soil stabilizer will be applied to topsoil and overburden stockpiles if they do not stabilize by crusting and grass regrowth.
- Internal roads will be surfaced with limestone.
- Truck loads will always be covered so that no dust is generated in transit
- Employees and contractors working on site will be provided with information on how to minimise dust emissions.
- A complaints system will be put in place and these will be recorded by the Quarry Manager and acted on promptly.

- A notice will be erected at the front gate and this will provide emergency contact details for the Quarry Manager.

The presented dust management measures have been summarised in Table 1.

Table 1: Summary of Dust Control Actions

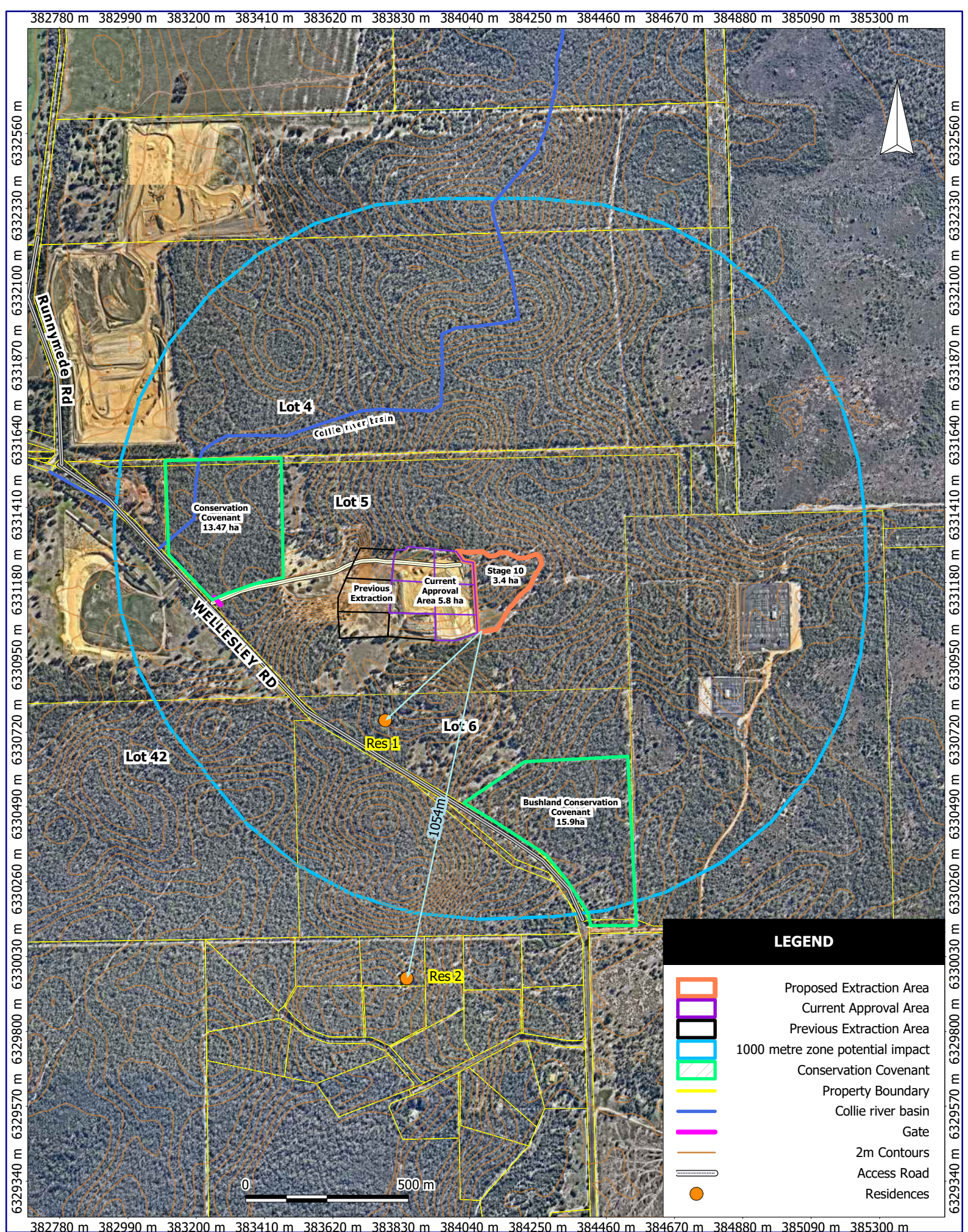
Activity	Action	Control measure	Result
Daily			
Sand extraction and product loading.	Visual inspection of site and access road for dust generation that is moving off site.	Water cart application over dust prone areas to reduce dust lift off.	Reduced dust generation. No dust leaving the property.
Product transport.	All loads covered before leaving the property.	Cover loads.	Reduced dust generation from product transport.
As Required			
Training.	Induct all employees and contractors working on site.	Site induction includes awareness of dust generation and management measures to be utilised by all personnel on site.	Activities undertaken to minimise dust generation on site.
Dust complaints.	Provide a contact number for dust complaints.	Undertake review of potential complaints and implement appropriate action to reduce dust generation from site.	Reduced dust generation from the property.

9. REFERENCES

Bureau of Meteorology 2020. Wind rose for Bunbury. (Accessed from http://www.bom.gov.au/clim_data/cdio/tables/pdf/windrose/IDCJCM0021.009965.3pm.pdf)

Department of Environment and Conservation, 2011. A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities.

Figures



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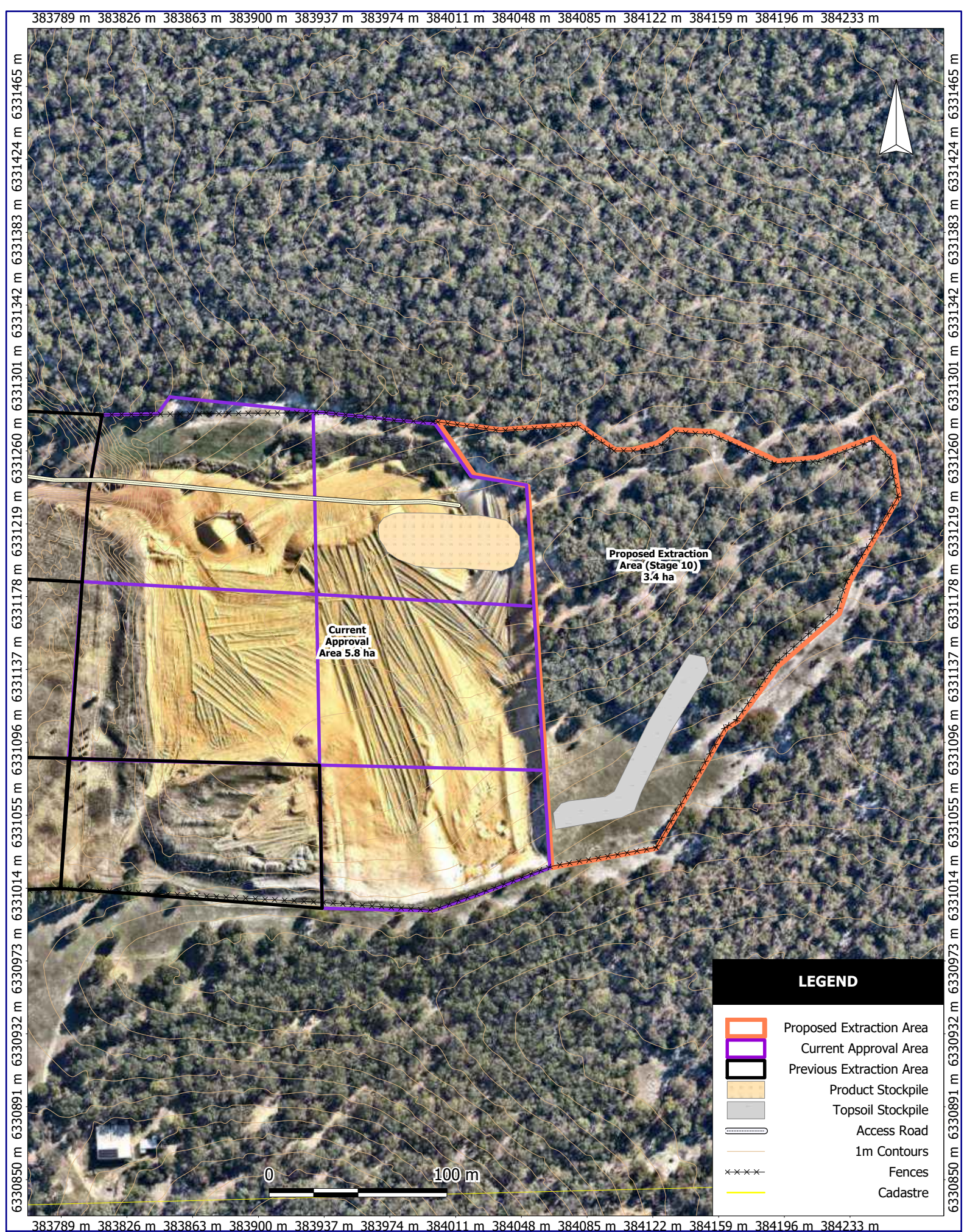
Scale: 1:14000
Original Size: A4
Air Photo Source: Nearmap April 2023
Datum: GDA94
Projection: Australia MGA94 (50)

Client: Carbone Bros
Project: Sand Extraction
Location: Lot 5 Wellesley Road Wellesley

Figure 1:
Site and Surrounds



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Original Size: A4
Air Photo Source: Nearmap April 2023
Datum: GDA94
Projection: Australia MGA94 (50)

Client: Carbone Bros
Project: Sand Extraction
Location: Lot 5 Wellesley Road Wellesley

Figure 2:

Extraction Area

Annexure 1

9am and 3pm wind roses

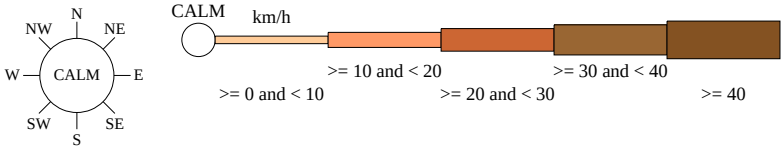
Rose of Wind direction versus Wind speed in km/h (22 Nov 1995 to 11 Aug 2019)

Custom times selected, refer to attached note for details

BUNBURY

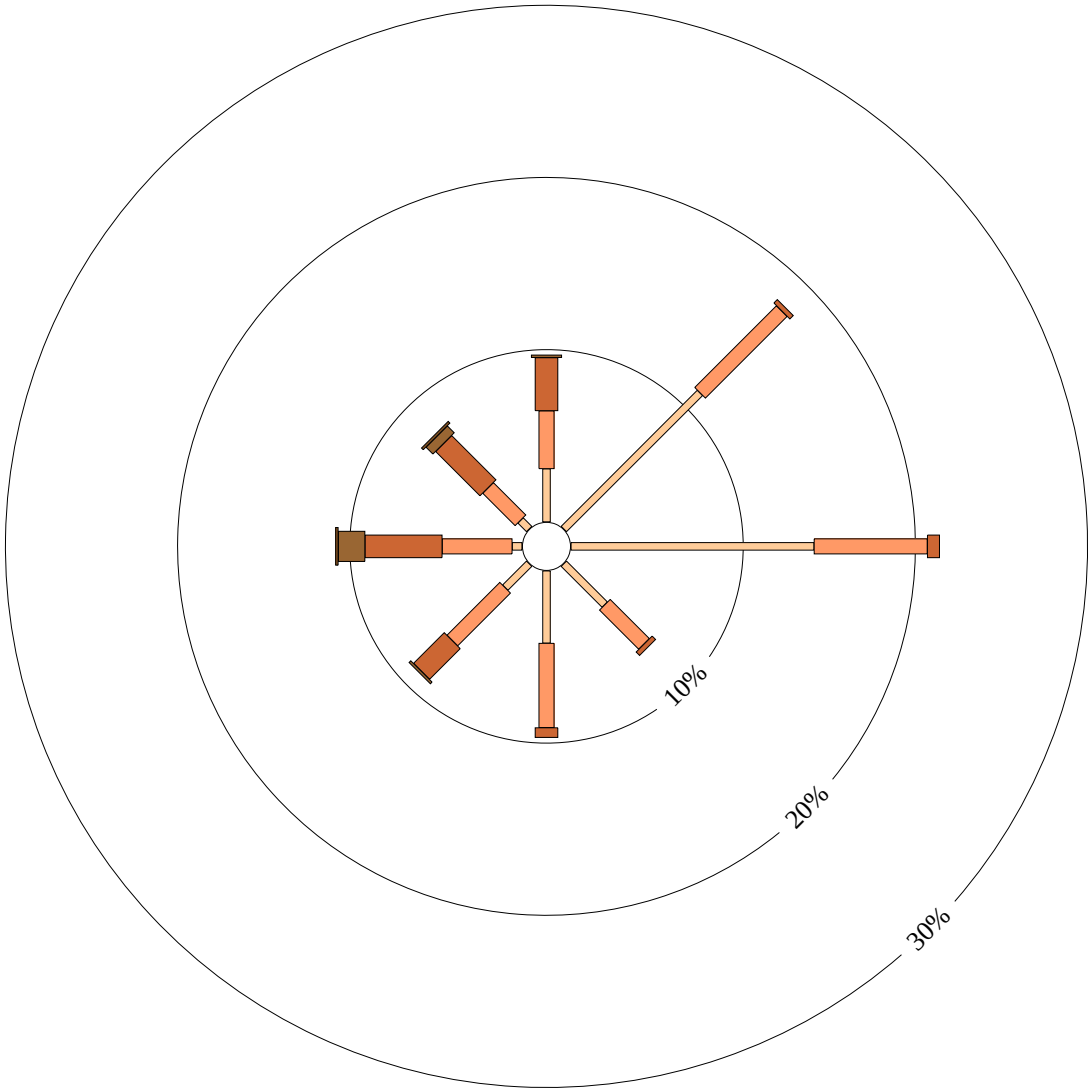
Site No: 009965 • Opened Nov 1995 • Still Open • Latitude: -33.3567° • Longitude: 115.6447° • Elevation 5.m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.



9 am Aug
716 Total Observations

Calm 7%



Rose of Wind direction versus Wind speed in km/h (22 Nov 1995 to 11 Aug 2019)

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BUNBURY

Site No: 009965 • Opened Nov 1995 • Still Open • Latitude: -33.3567° • Longitude: 115.6447° • Elevation 5.m

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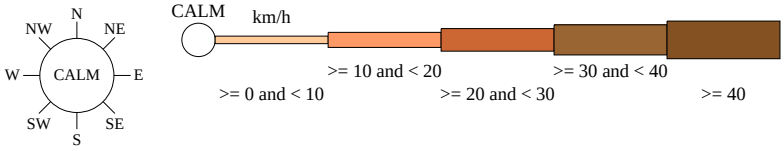
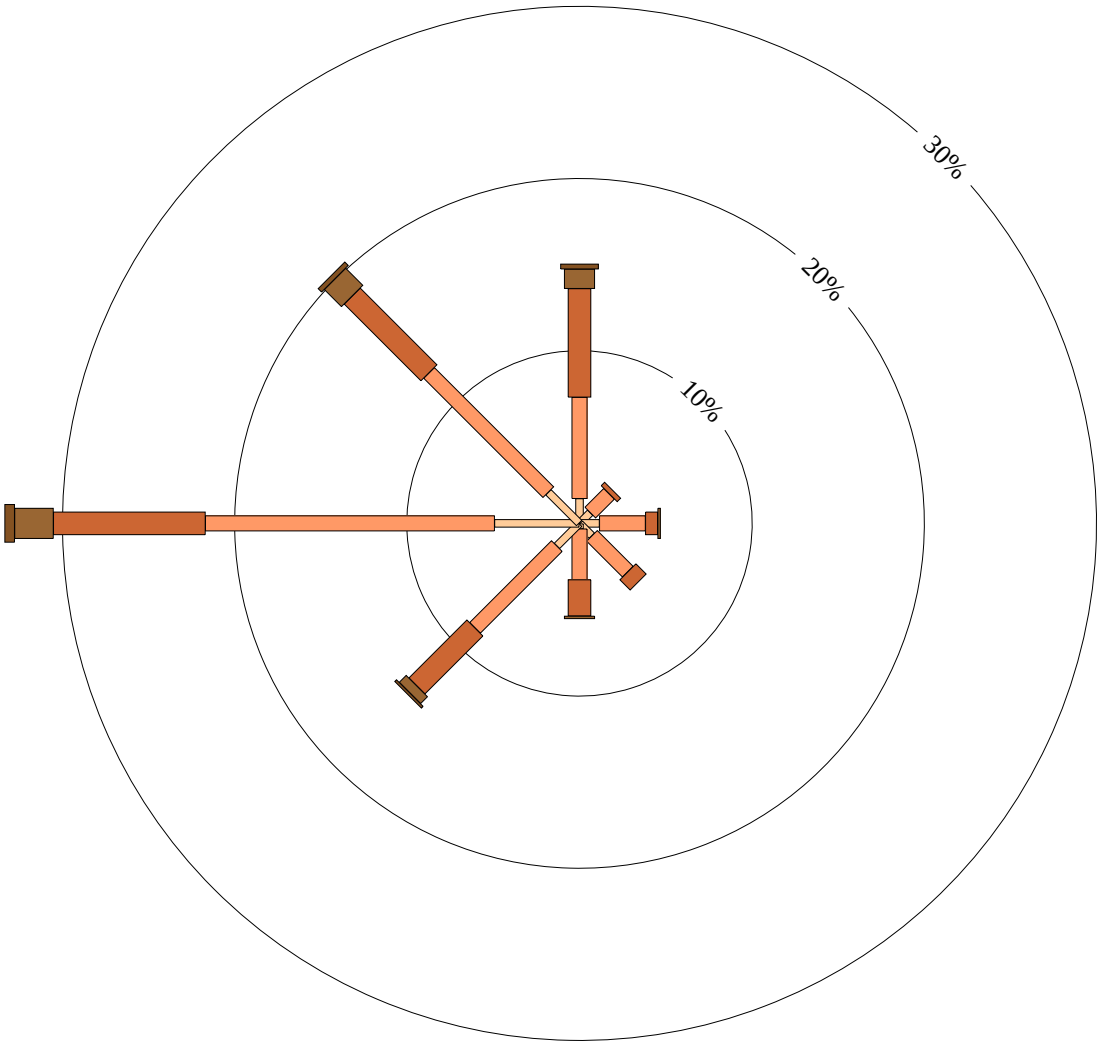


3 pm Aug
715 Total Observations

Calm *



Annexure 2

Risk Assessment

ADDENDUM

The Department of Environment and Conservation (DEC) released an updated dust guideline in January 2011, "*A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities, January 2011*". An error was identified in Appendix 1 on page 35. This error has since been corrected (See below). This document is the corrected version published in March 2011.

Appendix 1: Site risk assessment/classification for activities generating uncontaminated dust

Sheet 1: Site classification assessment chart

Part A. Nature of site

Item	Score options				Allocated score
1. Nuisance potential of soil, when disturbed	Very low……..**1**	Low…….(**2**)	Medium……..**4**	High……**6**	**2**
2. Topography and protection provided by undisturbed vegetation	Sheltered and screened.....**1**	Medium screening…(**6**)	Little screening……**12**	Exposed and wind prone……**18**	**6**
3. Area of site disturbed by the works	Less than 1ha……..**1**	Between 1 and 5ha.(**3**)	Between 5 and 10ha.....**6**	More than 10ha…….**9**	**3**
4. Type of work being done	roads or shallow trenches……..**1**	roads, drains and medium depth sewers…..**3**	Roads, drains, sewers and partial earthworks……**6**	Bulk earthworks and deep trenches…….(**9**)	**9**
				TOTAL score for Part A	**20**

Part B. Proximity of site to other land uses

Item	Score options				Allocated score
1. D istance of other land uses from site	More than 1km……..(**1**)	Between 1km and 500m…….....**6**	Between 100m and 500m……..**12**	Less than 100m.....**18**	**1**
2. Effect of prevailing wind direction (at time of construction) on other land uses	Not affected……..…..**1**	Isolated land uses affected by one wind direction……..(**6**)	Dense land uses affected by one wind direction……..**9**	Dense/sensitive land uses highly affected by prevailing winds……**12**	**6**
				TOTAL score for Part B	**7**

SITE CLASSIFICATION SCORE (A X B) = 140

APPENDIX 4

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DIEBACK MANAGEMENT PLAN

Prepared for Carbone Bros
On Lot 5 Wellesley Road, Wellesley,
Shire of Harvey

1. INTRODUCTION

The purpose of this Dieback Management Plan (DBMP) is to describe the measures that will be taken to limit the risk of the spread of Dieback disease as a result of sand quarrying on Lot 5 Wellesley Road, Wellesley, Shire of Harvey. This document should be read in conjunction with the report entitled **"**Extractive Industries Licence Application Lot 5 Wellesley Road" November 2023, prepared for Carbone Bros Pty Ltd by Lundstrom Environmental Consultants.

1.1 Locality and Ownership

Locality: Lot 5 Wellesley Road, Wellesley, Shire of Harvey
Ownership: Lyndon Edwards

Figure 1 shows the property, its surrounds and the proposed extraction area.

1.2 The Proposed Development

Carbone Bros intend to extract sand from the proposed 3.4 ha extension to the extraction area (Stages 10) on Figure 1 over a period of 5 years. Extraction will be carried out using a front-end loader and bulldozer. It is anticipated that 60,000 cubic meters of sand will be extracted annually but this will be dependent upon demand.

General description of proposed mining actions:

- The area will be stripped of topsoil which will be placed in stockpiles within the extraction license footprint.
- Within the cell a bulldozer will rip and blade material to a stockpile. Trucks will enter the pit from Wellesley to be loaded from the stockpile by a front-end loader.
- Excavation will proceed until a level of 30m AHD has been reached.
- Where possible, topsoil will be replaced and seeded on a progressive basis, in worked out areas, just prior to the wet season.
- The final land surface will have batters with a gradient no greater than 1:3.
- The existing approved extraction area (Stages 7-9) will be rehabilitated to pasture grasses after mining has been completed.
- The proposed new extraction (Stage 10) will also require rehabilitation with pasture grasses.

1.3. Geology And Soils

Bassendean Formation sands cover the entire property and reach a depth of approximately 4m before the underlying sandy clays of the Guildford Formation occur. The sands have an average fines (silt and sand) content of 10%. A shallow 5cm layer of topsoil overlies the sands.

1.4 Groundwater Hydrology

Within the area of the pit the unconfined water table level is between 8m AHD and 11m AHD and therefore lies well below the proposed base of the new extraction area of 31m AHD.

1.5 Vegetation

A Clearing Permit application has been submitted for the clearing of 2.8 ha of native vegetation within the proposed new extraction area. The surrounding vegetation is classified as Bassendean Central and South complex and comprises mainly marri, peppermint, jarrah, Banksia and spearwood type vegetation.

2. DIEBACK STATUS OF THE AREA

As part of the previous application in 2012/2013 a sampling strategy was employed to assess the dieback status within the proposed extraction area. South West Chemical Services collected the samples which were analysed by Bioscience. None of the samples were shown to contain dieback (*Phytophthora cinnamomi*) and the results of this report are attached as Annexure 1. No further references could be found which describe the Dieback status of the area and no obvious signs of Dieback have been seen within the surrounding vegetation. As the dieback status of the resource areas has not been ascertained, the area should be classified as "uninterpretable" and managed as per the guidelines applicable for this classification (Dieback Working Group, 2010).

3. PROPOSED MANAGEMENT MEASURES

The following management measures are proposed to mitigate the potential for spread of Dieback to or from this site:

- The site will be fenced at all times.
- Access to the site will be via a single entrance gate.
- All machinery, trucks and other vehicles will arrive in a clean condition free of soil and organic matter that may contain dieback.
- Any soil and plant material brought to the site for rehabilitation purposes will be from dieback free sources.
- Employees and contractors working on the site will be informed of the purpose of the above measures and their responsibilities in relation to dieback prevention.

In addition, the following management practices will be put in place to minimise potential spread of dieback:

3.1 Limestone Paved Access Road

The road that accesses the pit off Wellesley Road shall be paved with 300mm of limestone to a width of 5 meters. A parking area shall also be constructed in close proximity to the pit. Since the highly alkaline environment that is created by limestone acts as an inhibitor to *Phytophthora cinnamomi* (Dieback Working Group 2010), any remaining soil that may be infected will accumulate on this material and lose viability. The road should be sign posted stating that vehicles should only use designated roadways and parking areas. Figure 1 shows the proposed access road.

3.2 Clean on Entry

At the entrance to the property a gate shall be installed that remains locked and is sign-posted: “CLEAN ON ENTRY, NO UNAUTHORISED ENTRY, Vehicles must be free of soil before passing beyond this point”. All Carbone Bros vehicles will be cleaned down at their depot in Brunswick Junction prior to entering this property for the first time after leaving another pit. Any outside contractors coming in will have to ensure that their vehicles are cleaned off-site.

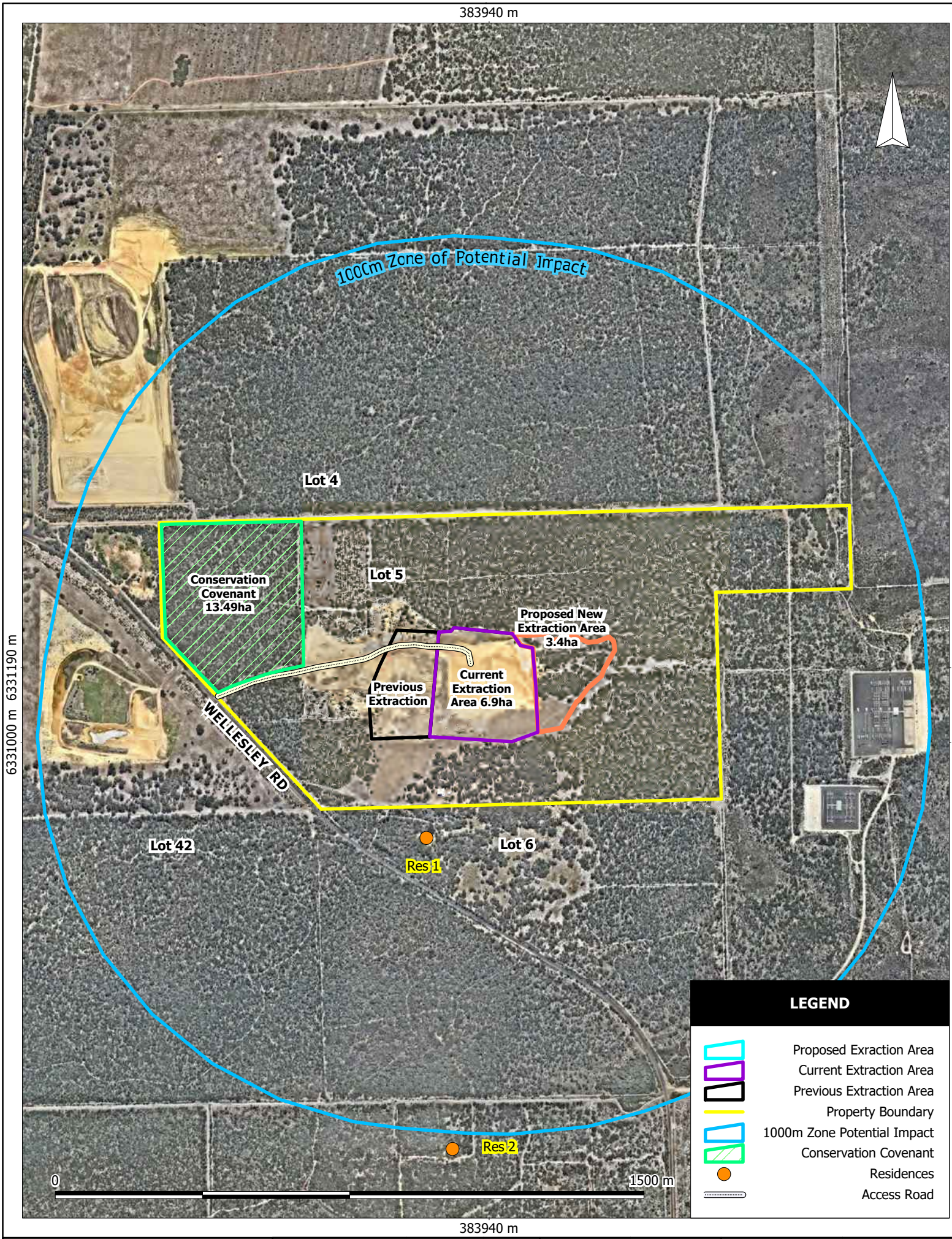
3.3 Wheel Cleaning

Just prior to the pit entrance, a wheel cleaning strip shall be installed that all vehicles entering or exiting the pit will have to ride over. This strip comprises a 30m blue metal layer (100mm thick) over the limestone base of the existing access road. The action of the blue metal will be to grind off any residual sand from the tyres prior to leaving the site.

4. REFERENCES

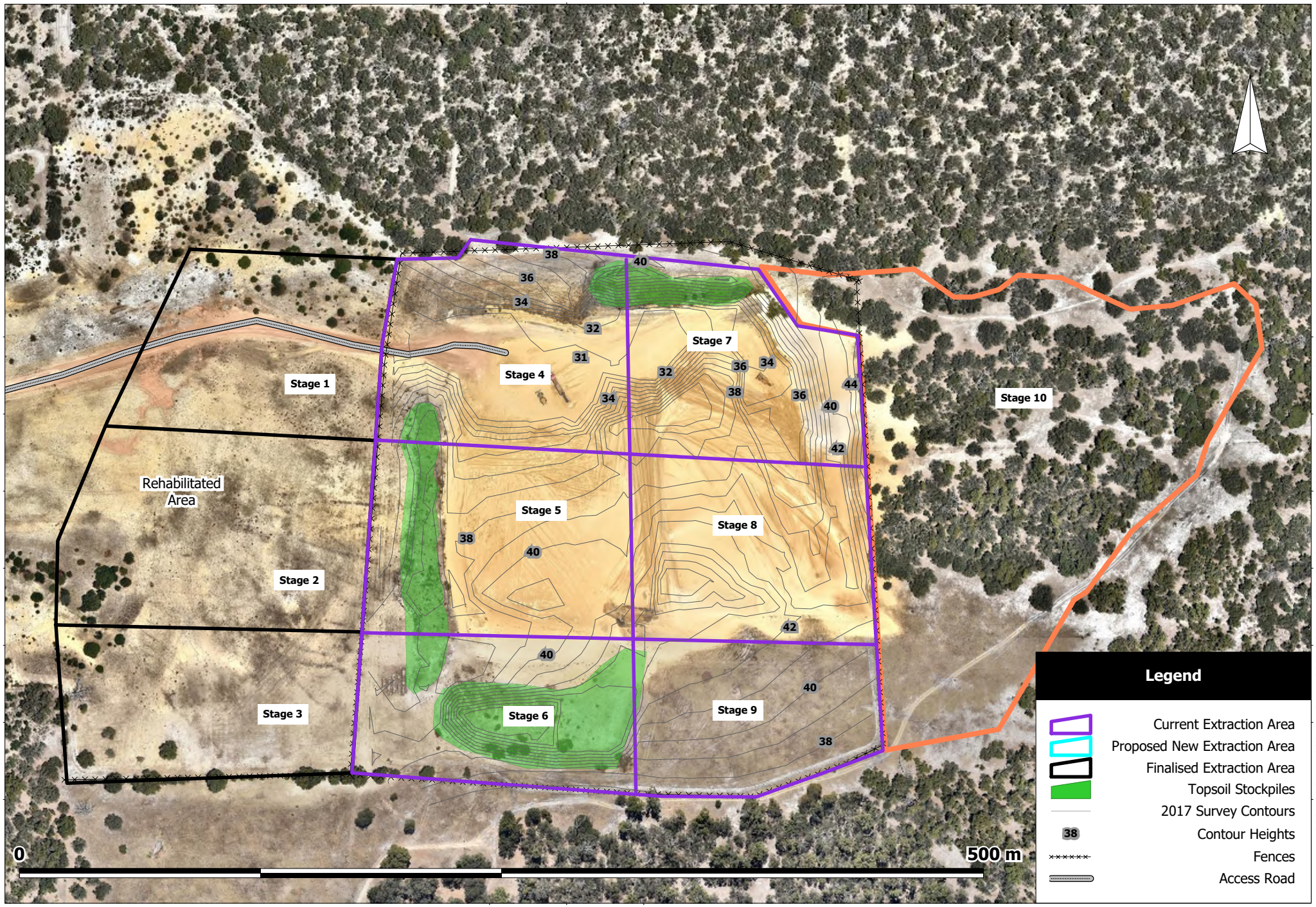
Dieback Working Group (2010). Management of Phytophthora Dieback in Extractive Industries. Best Practice Guidelines. Available on http://www.dec.wa.gov.au

Figures



Lundstrom Environmental Consultants Pty Ltd **21 Sellen Ct, Leeming 6149** **Mobile 0417934863** **mikelund1@bigpond.com**	Scale: 1:12000 Original Size: A4 Air Photo Date: Nearmap Oct 2017 Datum: Australian Geocentric 1994 (GDA94)	**Carbone Bros Pty Ltd** **Lot 5 Wellesley Road** **Wellesley** **Sand Extraction**	**Property and Surrounds** **Figure 1**

Z:\Carbone\Wellesley Rd Lot 5_Wellesley_SoH_Sand\EIL\EIL Applications\2018 Renewal Application\Drawings\F2 Property and Surrounds -



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Scale: 1:2500
Original Size: A4
Air Photo Date: Nearmap Dec 2017
Datum: Australian Geocentric 1994 (GDA94)

Carbone Bros Pty Ltd
Lot 5 Wellesley Road, Wellesley
Sand Extraction

Extraction Area

Figure 2

Z:\Carbone\Wellesley Rd Lot 5_Wellesley_SoH_Sand\EIL\EIL Applications\2018 Renewal Application\Drawings\F3 Site and Surrounds Closeup - version 3.map 3/09/2024

ANNEXURE 1

Dieback Sample Analyses

SWCS
Environmental & Analytical Consulting

Unit 5 4 Mummery Cres
Bunbury, WA. 6230
ABN 71 111 052 218
Phone/Fax 08 9721 7170
Mobile 0417 149 645
Email admin@swchemservices.com.au

Certificate of Analysis

Client Name:	Carbone Bros. Attn: Tony Carbone		
Address:	PO Box 61, Brunswick Junction, WA, 6224		
Phone No:	0419 913 652	Email	carbon1@bigpond.com
Lab No:	5098		
Date samples received:	23/08/10	Report date:	24/09/10

Sample details: 10 soil samples were collected at a depth of 200 mm – 300 mm from Lot 5, Wellesley Rd, Myalup, Shire of Harvey. The site is pasture land.
Sample sites were as prescribed by Lundstrom Environmental shown on attached aerial view
Sample 1 - 50H 383885E 6331195N
Sample 2 - 50H 383895E 6331185N
Sample 3 - 50H 383855E 6331175N
Sample 4 - 50H 383925E 6331145N
Sample 5 - 50H 383876E 6331115N
Sample 6 - 50H 383916E 6331115N
Sample 7 - 50H 383886E 6331104N
Sample 8 - 50H 383894E 6331104N
Sample 9 - 50H 383855E 6331044N
Sample 6 - 50H 383914E 6331024N

Scope of Work: Presence of *Phytophthora cinnamomi* (Jarrah dieback)

Test Methods: Samples sub contracted to Bioscience . Samples tested on an as received basis.

Test Results:

Sample Name	Soil Description	Phytophthora cinnamomi presence
1	yellow sand	negative
2	dark grey sand	negative
3	yellow brown sand	negative
4	grey/brown sand	negative
5	yellow sand	negative
6	brown sand	negative
7	brown sand	negative
8	brown sand	negative
9	brown sand	negative
10	brown sand	negative

Comments:

1. Soils were tested using a lupin hypocotyl baiting assay. Surface sterilised lupins seed was grown for 6 days in pots of the soil samples under saturating conditions which promote zoospore production. 4 samples showed lesions on the roots. Sections of the lesions from each affected plant were cultured onto Potato Dextrose Agar plates and incubated for 4 days. No Phytophthora cinnamomi colonies emerged.
2. We conclude that none of the soils tested contained viable Phytophthora.

David Dodds
Dip.App.Chem. A.G.Inst.Tech.

Bioscience

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ANALYSIS REPORT: 24 September 2010
CLIENT: South West Chemical Service
SAMPLES: 10 soil samples, Lab Number 5098
ANALYSIS REQUEST: Test soils for the presence of Phytophthora

Method used: Soils were tested for Phytophthora using a lupin hypocotyl assay. Lupin (*Lupinus augustifolius)* were surface sterilised with hypochlorite, then germinated in sterile water before being placed in pots with the soil samples and maintained saturated for one week. Plants were then removed, gently washed of soil and hypocotyls were examined under a microscope. Any areas which showed lesions were dissected out and placed onto Petri dishes containing PDA amended with PCNB, and incubated for sufficient time for fungi to be identified.

Result: Of the 10 samples received, seven showed no lesions on any of the 10 hypocotyls. Two samples showed dark brown, wet lesions and one showed dry tan lesions. The dark brow, wet lesions grow fungi consistent with the morphology of Fusarium. The remaining sample grew bacteria. Note that Fusarium is a ubiquitous soil fungi, and although some cause root disease, this assay could not determine whether the strains which grew were pathogenic.

We conclude that none of the 10 soil samples received showed any evidence of infestation with Phytophthora.

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WATER MANAGEMENT PLAN

Prepared for Carbone Bros
On Lot 5 Wellesley Road, Wellesley, Shire of Harvey

1. INTRODUCTION

This Water Management Plan (WMP) relates to the sand extraction operation on Lot 5 Wellesley Road, Wellesley, Shire of Harvey and should be read in conjunction with the report entitled "Extractive Industries Licence Application and Environmental Management Plan (EMP) November 2023 on Lot 5 Wellesley Road, Wellesley Shire of Harvey", prepared for Carbone Bros Pty Ltd by Lundstrom Environmental Consultants.

This report provides the following information:

- A map of the property and surrounds indicating the current contours
- A description of the proposed extraction program
- Storm water and erosion management measures
- A description of the groundwater regime in the area.
- A description of the proposed final land use after extraction has been completed
- A description of the potential for acid sulphate soil impacts

2. PROPERTY DESCRIPTION, OWNERSHIP AND LOCALITY

Property Description:	Lot 5 Wellesley Rd Wellesley Shire of Harvey
Area:	103.0830 hectares

Ownership: Lyndon Edwards

The property is situated on Wellesley Road approximately 3km east of Old Coast Road.

3. BACKGROUND

3.1 Present Land Use

The majority of the property comprises bushland, whilst smaller areas are used for sand quarrying, pastures and a tree plantation. Areas of different land uses are listed below:

Bushland:	71.5ha
Sand quarry (active and rehabilitated):	13.8ha
Parkland/scattered bush:	9.0ha
Tree plantation	3.5ha
Cleared pastures	5.2ha
TOTAL:	103.0ha

Figure 1 contains a recent aerial photograph showing the land use within the property and its immediate surrounds.

3.2 Topography and Drainage

The entire property is situated on a hill of sand reaching an elevation of 46mAHD. This forms part of a belt of ancient dune sand hills which have a north south trend along the Swan Coastal Plain. Due to the sandy nature of the terrain, no streams or drainage channels exist within the property. Drainage occurs by infiltration into the sandy substrate.

No EPP wetlands exist within Lot 5 or within 1,000 metres of the proposed extractive operations.

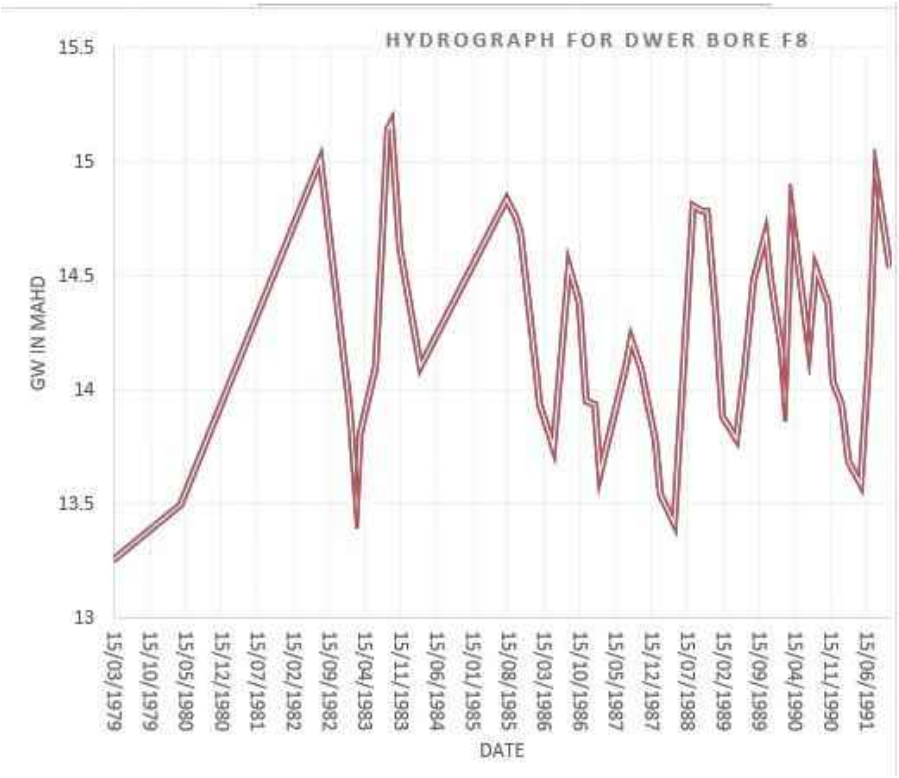
3.3 Geology and Soils

Tamala Formation sands cover the entire property and reach a thickness of over 40 metres. Several metres below the surface, particularly on the higher ground, pinnacles of limestone occur sporadically. Sandy clays of the Guildford Formation underlie these materials (Commander, D.C. 1988).

3.4 Groundwater Hydrology

Information relating to the elevation of the superficial groundwater table has been sourced from the DWER bores closest to the pit (see hydrograph from the monitoring bore with the longest Record F8 as Insert 1 below) and from a regional groundwater study undertaken by Rockwater in 2008. Also work undertaken in the general area by Lundstrom Environmental and from monitoring well records sourced from the Main

Roads WA Dept and from the Catalano quarries Lots 4 and 7 Runnymede Rd. These data show that the water table occurs at between 8m AHD and 15m AHD in the extraction area. Since the lowest level proposed in the current EIL application is 30m AHD, there will be a separation of at between 22 and 15 metres between the quarry floor and the water table.



3.5 Rainfall

The closest rainfall recording station is Brunswick Junction approximately 9.6km from the extraction site. The mean annual rainfall measured between 1909 and 2023 is 985.3 mm. The wettest months are June, July and August and the driest months are December, January and February. The highest recorded annual rainfall was 1443.2mm in 1917 and the lowest was 609.2 in 1940. Table 1 shows the average monthly and annual rainfall for Brunswick.

Table 1: Mean Rainfall Data for Brunswick 9513 for Period 1909 to 2023

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
11.9	13.4	23.9	50.5	137.6	194.2	189.9	145.2	97.3	59.9	31.7	14.8	985.3

Source: Bureau of Meteorology 2023

4. THE DEVELOPMENT PROPOSAL

4.1 Sand Extraction

Carbone Bros Pty Ltd will commence sand extraction in the new proposed Stage 10 in 2024 and will continue for at least 5 years (Figure 2).

The excavation will proceed until a level of 30m AHD has been reached with 1:3 batters.

4.2 Rehabilitation and Final Land surface levels

No groundwater will be exposed by this development as the base of the pit is at least 15 metres above the water table. No dewatering activities will be required.

Where possible, topsoil will be replaced and seeded on a progressive basis, in worked out areas, just prior to the wet season. The proposed new extraction (Stage 10) will also be rehabilitated with pasture grasses after mining has been completed.

The final land surface will have batters with a gradient no greater than 1:3.

Proposed final landsurface is shown in Figure 3 of the Extractive Industries Licence Application and Environmental Management Plan (EMP).

4.3 Water for Dust Suppression

A 15kl water cart will be on site during all periods when earth is being moved. If and when dust is caused to occur during these periods, the water cart will be employed to damp down the areas of concern. Filling of the water cart will be done from a commercial water source situated within the surrounding area.

5. STORMWATER MANAGEMENT

The existing pit as well as the final landsurface will be internally draining, being approximately 6m below natural ground level. Stormwater arising from the pit area will not impact the surrounding areas as it will all drain internally.

5.1 Surface Water Management

Due to the very permeable nature of the sand within the operational area, it is unlikely that significant damage from storm water runoff will occur. No expression of surface water will exist, even after heavy rainfall.

5.2 Ground Water Management

The project does not involve abstracting ground water for operational purposes. No groundwater will be exposed as the floor of the pit will be at least 15 metres above the water table.

A cross section of the site indicating the approximate water table elevation is shown in Figure 4.

Due to the low scale nature of the operations, no groundwater contamination is anticipated. No fuel or lubricant storage will occur on the site. Refuelling will take place using a mobile refuelling vehicle which is equipped with a "snap-on snap-off, fast-fill and auto shut-off" facility. Plant will be refuelled each morning, leaving the vehicles almost empty overnight. No major servicing, which could lead to fuel and oil spills, will take place on the site. Minor spills which may occur occasionally will be neutralised by soil processes.

5.3 Monitoring and Management Measures

During the extraction and early rehabilitation phase, the pit will be inspected after every significant rainfall event to check erosion damage. If any repairs are required, this will be attended to immediately.

After pit closure and rehabilitation, monitoring of rehabilitated areas will ensure that any areas requiring remedial work are identified. Monitoring will be carried out on an annual basis to assess:

- The physical stability of the landform in the rehabilitated areas.
- The success of the sown pasture grasses.
- The emergence of weeds.

Monitoring will continue until the completion criteria have been fulfilled. Maintenance procedures will be carried out where necessary and may include:

- Repair of any erosion damage.
- Replanting/seeding areas that may not have regenerated.
- Weed control.

6. ACID SULPHATE SOILS

The material to be excavated is deep Tamala sands with rapid drainage characteristics. There are no remnant swampy sediments within the extraction area, or within the surrounding areas where acid sulphate soils might be exposed or activated as a result of the proposed extraction activities. The extraction area is not located in an acid sulphate risk area (ASRIS, 2022).

7. REFERENCES

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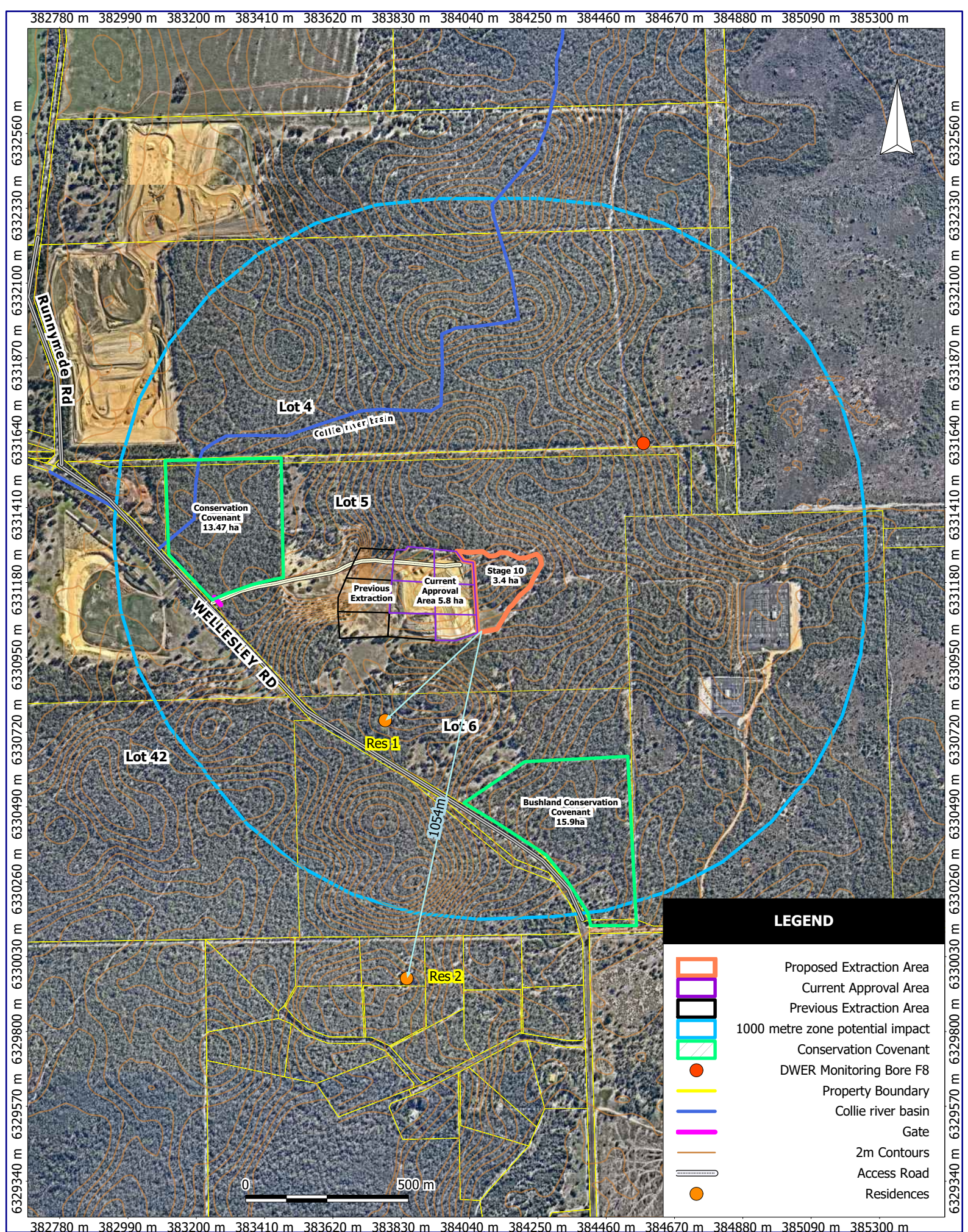

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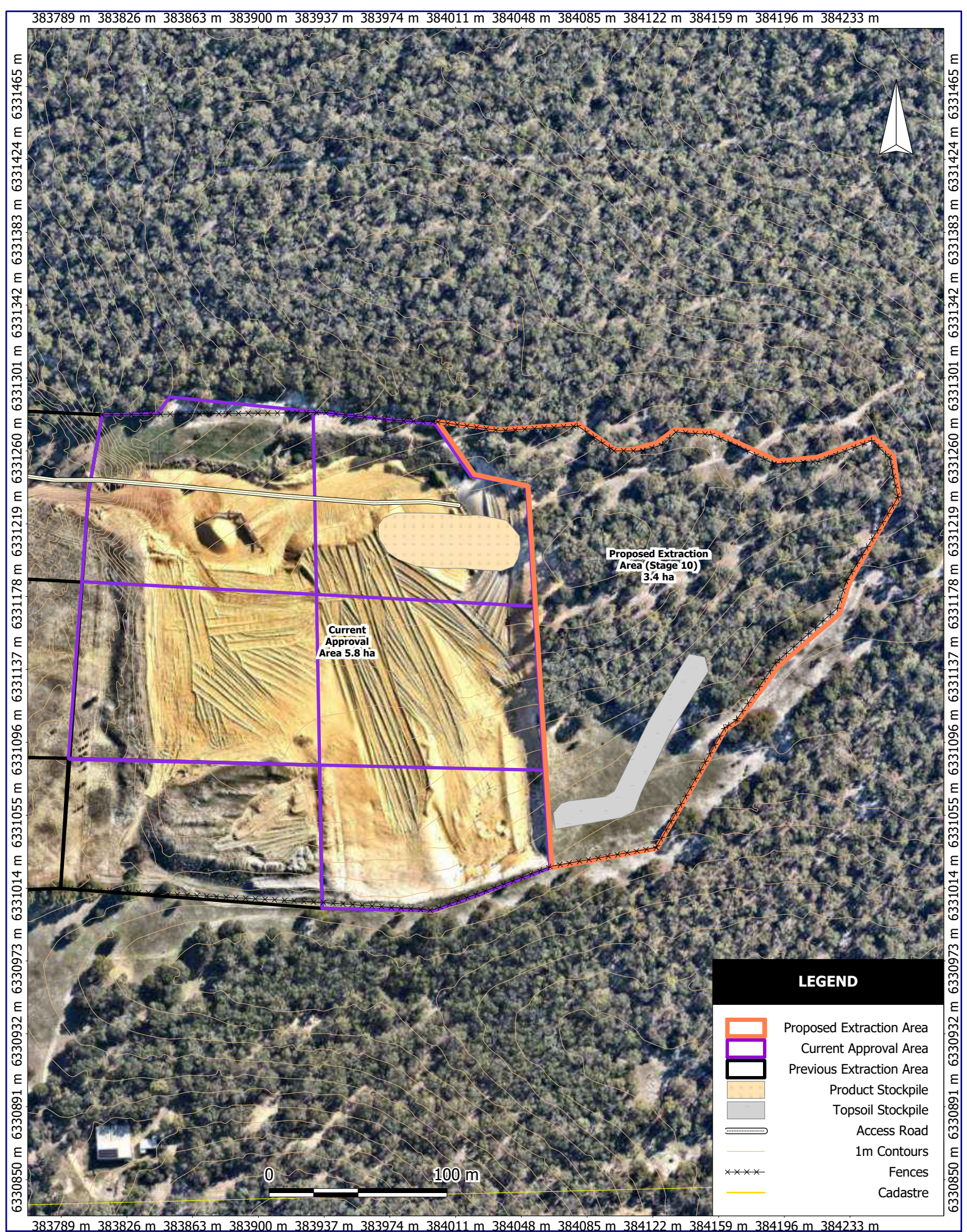
Air Photo Source: Nearmap April 2023
Datum: GDA94
Projection: Australia MGA94 (50)

Client: Carbone Bros
Project: Sand Extraction
Location: Lot 5 Wellesley Road Wellesley

Figure 1:
Site and Surrounds



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Air Photo Source: Nearmap April 2023
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Projection: Australia MGA94 (50)

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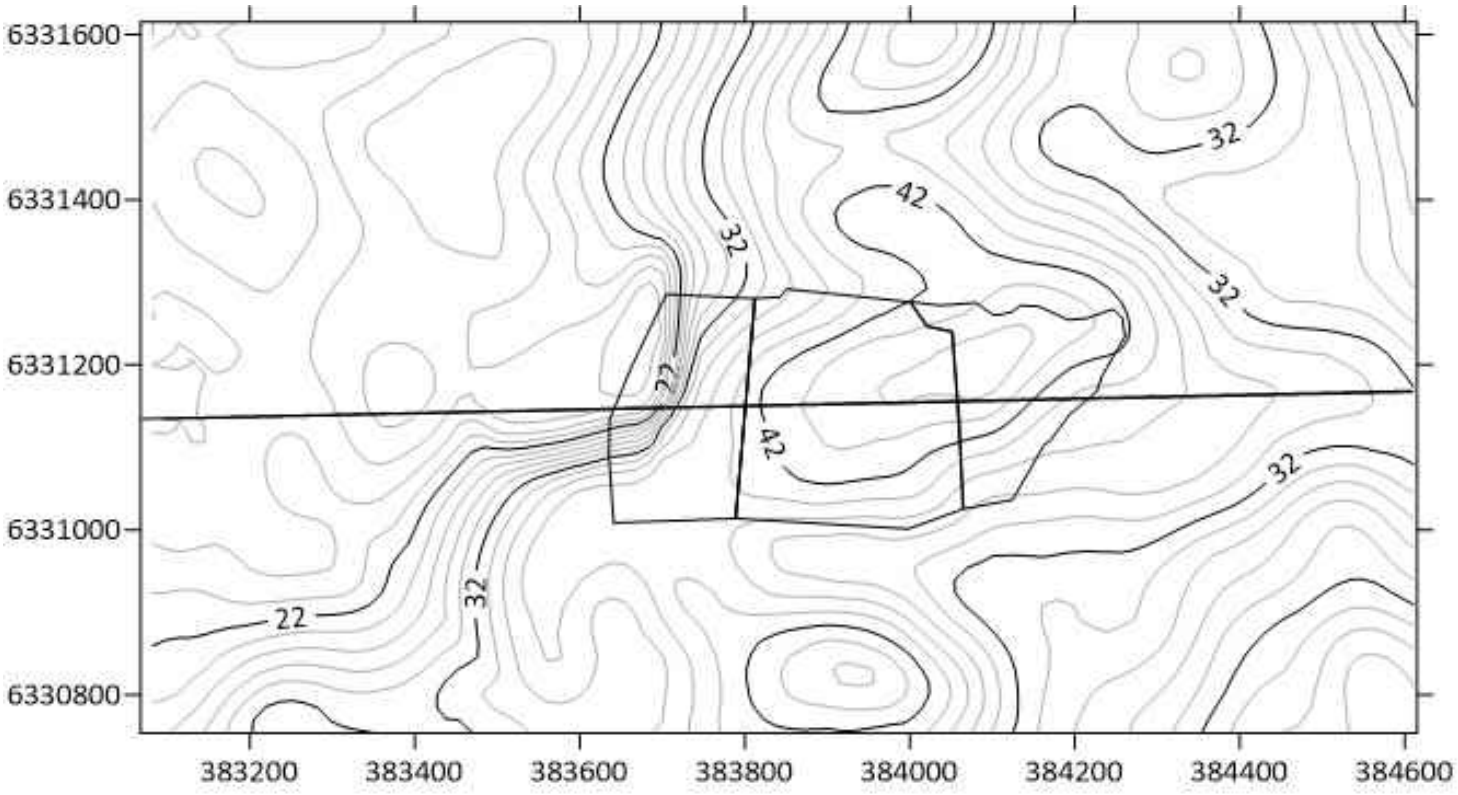
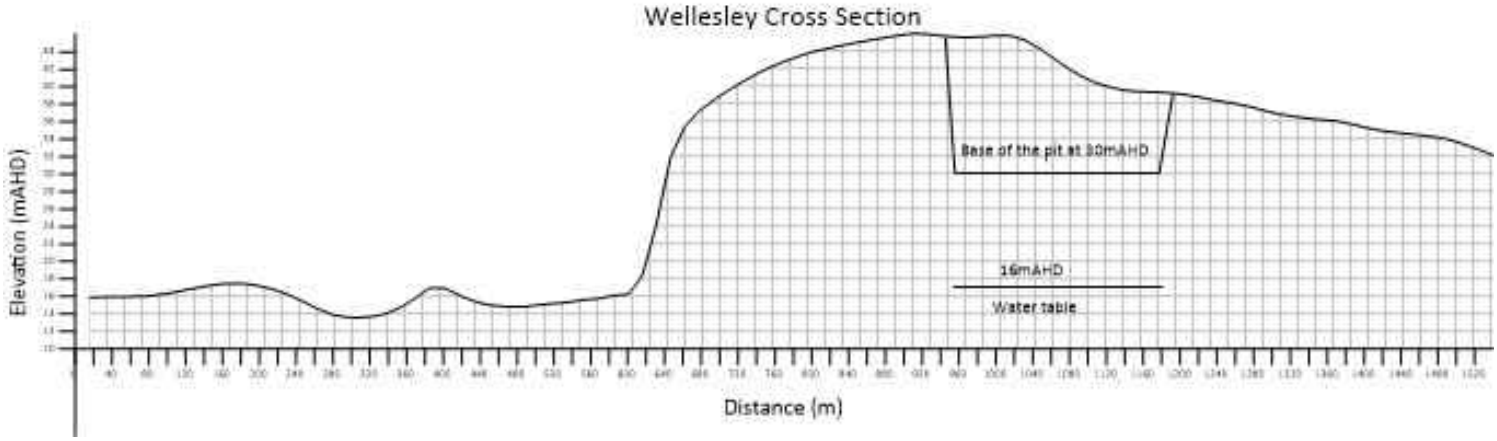
Figure 2:

Extraction Area





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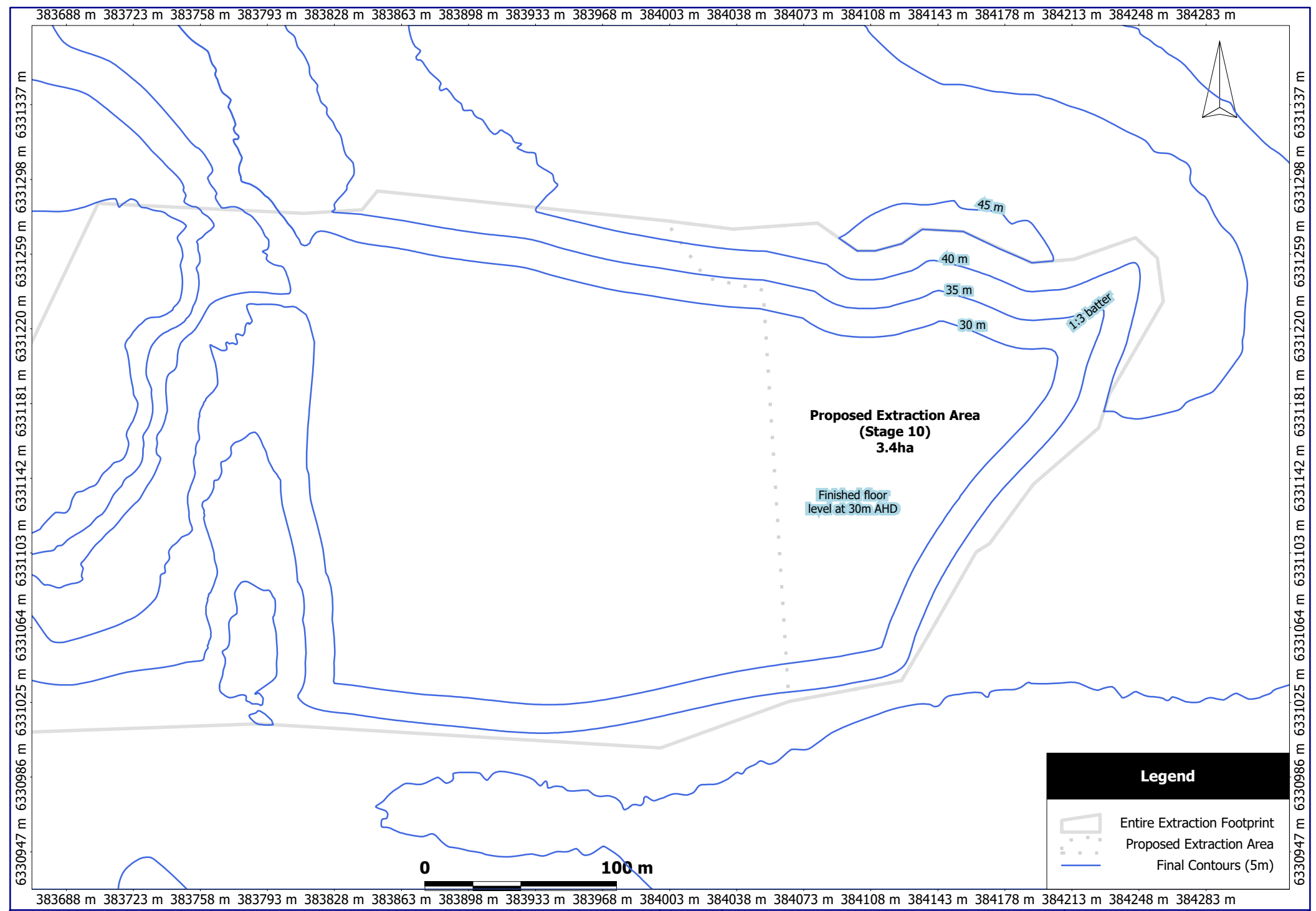
Original Size: A4
Datum: GDA94
Projection: Orthographic

Client: Carbone Bros
Project: Sand Extraction
Location: Lot 5 Wellesley Road, Wellesley

Figure 3:

Cross Section of the site



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Original Size: A4
Datum: GDA94
Projection: Australia MGA94 (50)

Client: Carbone Bros
Project: Sand Extraction
Location: Lot 5 Wellesley Road, Wellesley

Figure 4:
Final Land Surface

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