Shire of Dardanup

APPENDICES

PART 2

ORDINARY COUNCIL MEETING

To Be Held

Wednesday, 24 June 2020
Commencing at 5.00pm

At

Shire of Dardanup
ADMINISTRATION CENTRE EATON
1 Council Drive - EATON

This document is available in alternative formats such as:
~ Large Print
~ Electronic Format [disk or emailed]
Upon request.

(Appendix ORD: 12.5A)

GOVERNMENT OF WESTERN AUSTRALIA

Western Australian Planning Commission

Enquiries: Marion Dandridge (9791 0565)
Our Ref: RLS/0871 (835/06/02/0002)

Chief Executive Officer
Shire of Dardanup
PO Box 7016
EATON WA 6232

PLANNING CONTROL AREA 1, BUNBURY OUTER RING ROAD, SHIRE OF DARDANUP

The Western Australian Planning Commission (WAPC), resolved to declare the land shown on the plans numbered 1.7936; 1.7937; 1.7938; 1.7939; 1.7940; 1.7941; 1.7942; 1.7943; 1.7944; 1.7945; 1.7946; 1.7947; 1.7948; 1.7949; 1.7950; 1.7951 a planning control area under the provisions of section 112 of the *Planning and Development Act 2005* ('the Act').at its meeting 19 March 2020.

The Minister for Planning has granted approval and a declaration notice has been published in the *Government Gazette* on Friday 15 May 2020.

Please be advised that the planning control area provisions (part 7) prevail over, every other provision of the Act, the region planning scheme and the local planning scheme to the extent of any inconsistency with those provisions and schemes.

In compliance with section 115 of the Act, please ensure that any applications for development approval in this planning control area are forwarded to the WAPC for determination. Section 115 of the Act furthermore requires the local government to submit the application with its recommendation, to the Commission for determination within 30 days.

Please arrange for the attached documents to be displayed, free of charge, at a place of convenience for public inspection for the period of one (1) month and then retained for public information for the five (5) year duration of the planning control area.

I have attached a copy of the Gazette Notice and plans relevant to your Local Government area for your information.

This information can also be found online at https://www.dplh.wa.gov.au/planning-control-areas.

If you have any queries regarding the above, please contact Mrs Marion Dandridge, or Mr Ben Muller at the Department of Planning, Lands and Heritage Bunbury office on 97910577.

Yours sincerely

Fagan

Ms Sam Fagan
Secretary
Western Australian Planning Commission

19 May 2020

Street address: Bunbury Tower Sixth Floor 61 Victoria Street Bunbury WA 6230
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(Appendix ORD: 12.5A)

PLANNING

PL401

PLANNING AND DEVELOPMENT ACT 2005
DECLARATION OF PLANNING CONTROL AREA 1
Bunbury Outer Ring Road, Primary Regional Road
City of Bunbury
Shire of Capel
Shire of Dardanup
Shire of Harvey

File: RLS/0871

General description

The Minister for Planning has granted approval to the declaration of a Planning Control Area for the Bunbury Outer Ring Road between Forrest Highway and Bussell Hwy as shown on Western Australian Planning Commission plan numbers 1.7936; 1.7937; 1.7938; 1.7939; 1.7940; 1.7941; 1.7942; 1.7943; 1.7944; 1.7945; 1.7946; 1.7947; 1.7948; 1.7949; 1.7950; 1.7951.

Purpose

The purpose of the Planning Control Area is to allow the possible future reservation of the lands for regional road purposes. This is required for the construction of the northern and southern sections of the Bunbury Outer Ring Road and the upgrading of the centre section in response to future increase in traffic demand in the Greater Bunbury sub-region area. It will also promote greater traffic permeability to the remainder of the South-West Region.

The WAPC considers that the Planning Control Area is required to ensure that no development occurs on this land which may prejudice this purpose until it may be reserved for Primary Regional Roads in the Greater Bunbury Region Scheme.

Duration and effects

The declaration remains in effect for a period of five years from the date of publication of this notice in the *Government Gazette* or until revoked by the WAPC with approval by the Minister, whichever is the sooner.

A person shall not commence and carry out development in a Planning Control Area without the prior approval of the WAPC. The penalty for failure to comply with this requirement is $200,000 and, in the case of a continuing offence, a further fine of $25,000 for each day during which the offence continues.

Compensation is payable in respect of land injuriously affected by this declaration, and land so affected may be acquired by Main Roads WA in the same circumstances and in the same manner as if the land had been reserved in the Greater Bunbury Region Scheme for a public purpose.

Display locations

- Western Australian Planning Commission, 140 William Street, Perth
- Department of Planning, Lands and Heritage, Level 6 / 61 Victoria Street Bunbury
- City of Bunbury, 4 Stephen Street Bunbury
- Shire of Capel, 31 Forrest Road Capel
- Shire of Dardanup, 1 Council Drive Eaton and 3 Little Street Dardanup
- Shire of Harvey, 102 Uduc Road Harvey and 7 Mulgara Street Australind

Documents can also be viewed online at the Department of Planning, Lands and Heritage website is https://www.dplh.wa.gov.au/planning-control-areas.

Ms. SAM FAGAN, Secretary, Western Australian Planning Commission.

PUBLIC NOTICES

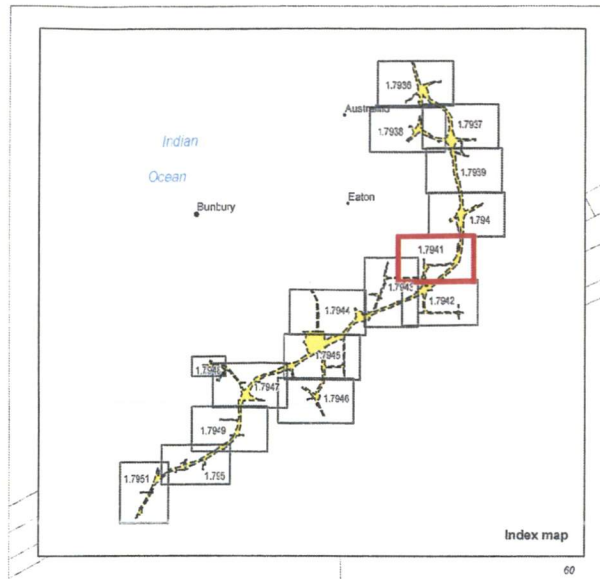
ZZ401

TRUSTEES ACT 1962
DECEASED ESTATES
Notice to Creditors and Claimants

Michael Chun Mang Chan late of Unit 6, 1A Jersey Street, Jolimont in the State of Western Australia, deceased.

Creditors and other persons having claims (to which Section 63 of the *Trustees Act 1962*, relates) in respect of the estate of the deceased, who died between 12 April 2014 and 16 April 2014 are required

1.7941



Signed for and on behalf of the Western Australian Planning Commission

An officer duly authorised by the Commission pursuant to section 24 of the Planning and Development Act 2005 for that purpose in the presence of :

Witness

9/04/2020
Date

Approved - Minister for Planning

8 April 2020
Date

Planning Control Area No: 1

Bunbury Outer Ring Road

Western Australian Planning Commission

Legend

Planning control area

Created on date: Friday, 17 April 2020
Produced by Data Analytics, Department of Planning, Lands and Heritage, Perth WA
Base information supplied by Western Australian Land Information Authority SLIP 1096-2016-1

Program Manager: B Meredith
Geospatial Officer: J Ballarotta
Examined: A Power
Revised:
Version No: 1
Date: WAPC/288.9.4 19 March 2020

N
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metres

Plan Number
1.7941
3035 Sheet 6 of 16

File number: 835-06-02-0002
Plan reference:
Greater Bunbury Region Scheme
Amending plans:
1.7936 - 1.7951

(Appendix ORD: 12.5A)

(Appendix ORD: 12.5B)

DEVELOPMENT APPLICATION

EXTRACTIVE INDUSTRY LICENCE APPLICATION

CLAY EXTRACTION MANAGEMENT PLAN

LOTS 5 AND 51 WATERLOO ROAD, WATERLOO

PREPARED FOR AUSTRAL BRICKS (WA) PTY LTD

JULY 2019

Prepared by:

Land Insights
PO Box 289
Mt Lawley WA 6929

Phone: (08) 9271 8506

Document details:

Document History:

Date	Document Name	Document Manager	Summary of Document Revision	Client Delivered
Sep-18	896 Waterloo DA and EIL – Rev1a	SR	Initial Draft	Sep-18
Nov-18	896 Waterloo DA and EIL – Rev1b	SR	Discussion with the Shire	Nov-18
Dec-18	896 Waterloo DA and EIL – Rev2a	SR	Amend extraction area	Dec-18
Dec-18	896 Waterloo DA and EIL – Rev2b	SR	Minor updates	Dec-18
May-19	896 Waterloo DA and EIL – Rev3a	SR	Incorporate Shire comment.	May-19
Jul-19	896 Waterloo DA and EIL – Rev4	SR	Final – incorporate updates	Jul-19

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Appendices

Executive summary

Land Insights act for Austral Bricks (WA) Pty Ltd and lodge this application on their behalf. The purpose of the application is to seek Development Approval and an Extractive Industry Licence to allow for clay extraction on Lots 5 and 51 Railway Road, Waterloo for a 20-year period. This report addresses the requirements of both the Development Approval under the Shire's Local Planning Scheme, and the Extractive Industry Licence application under the Shire's Extractive Industries Local Law.

The previous approval for extractive industry was issued in April 2005 and expired in 2010 for Lot 50 Waterloo Road (adjoining Lot 51 to the north). Extractive industry operations have not been required on the site since the previous approval expired as a result of a slowing housing market and subsequent decline in demand for brick products. It is now anticipated that the clay present on this site will again be required shortly as a component to the Austral Bricks overall clay brick operations. As such, fresh approvals are needed.

A summary of the proposal is outlined in the table below.

SUBJECT	DESCRIPTION
Operating times	The hours of operation will be from 07:00-18:00 hours from Monday to Saturday. No operation will occur on Sundays or Public Holidays.
Life of project	In excess of 20 years.
Volume extracted	Approximately 80,000 tonnes will be extracted annually and stockpiled. Approximately 40,000 (of the above) will be carted off site annually.

SUBJECT	DESCRIPTION
Site preparation	Site preparation will be required as the site moves through various stages. Some clearing of scattered trees will be required. Drainage systems will be established to ensure that all runoff remains on site. Drainage will be managed as the site progresses. Road access, signage, gates and fencing will be established where required. Topsoil and overburden will be removed prior to extraction of clay resources. Topsoil and overburden will be placed in bunds around the perimeter of the excavation area.
Pit Area	The approximate excavation area on each lot is below: • Lot 5 – 56.06 hectares • Lot 51 – 51.80 hectares
Staging	Lot 50 (adjoining the site to the north) has been used for extractive industry for over 60 years (since the 1950's). Early excavation has been recontoured and part of it has been filled by the Shire as a refuse/landfill site, however this area has not been used for refuse/landfill for many years. The last extractive industry approval on the site expired in 2010. This application is for the continuation of excavation to the south of the old pit throughout Lots 5 and 51 as shown on the Extraction Plan. There will be four stages across Lot 5 and six stages on Lot 51.
Depth	Depth of excavation is approximately 4-5 metres.

SUBJECT	DESCRIPTION
Excavation process	Excavation of clay takes place in a sequence of steps: • Topsoil will be removed and stockpiled for later use at the decommissioning stage. Topsoil stockpiles will be 0.5 metres in height. • Overburden will be removed from the pit area to a depth of approximately 0.3 to 0.5 metres. It will be stockpiled for later use in site recontouring. The overburden stockpiles will be located adjacent to the pit area for readiness to push into the pit as part of land recontouring. • Overburden will be placed around the perimeter of the pit created at each stage to provide visual screening. • Clay will be excavated by a bulldozer, scraper or excavator and will be moved into stockpiles. • Clay located in stockpiles will need to be dried before carting from the site. • The depth of excavation will vary depending on the availability of the resource, however the pits are expected to reach depths of approximately 4-5 metres. • Excavation will progress in a staged manner across each lot. • As excavation progresses through the stages, the previous stage will remain open temporarily for drainage management before it is recontoured. • Excavation will commence at the north-western corner of Lot 5 and will progress in a southerly direction before moving across to extract at the eastern side of Lot 51. • Approximately 80,000 tonnes of clay will be excavated and stockpiled annually. Approximately 40,000 tonnes will be transported per annum, although this figure may vary depending on demand.
Stockpiling	Clay will be stockpiled on site adjacent to each stage. The material will need to be laid out in low-lying stockpiles and allowed to dry before being stockpiled and carted from the site.
Access	Site access and traffic is addressed in the attached Traffic Impact Statement (Appendix E).
Vehicle movements	There will be approximately 1000 truck loads (2000 truck movements in and out of the site) annually. This figure may vary depending on demand.
Refuelling	The operation will use mobile refuelling. There will be no storage of fuel on site.
Structures	A small transportable lunchroom and portaloo will be located on site. This structure will be located adjacent to the pit or within the pit itself and will be moved around the site as it moves through the stages.

SUBJECT	DESCRIPTION
Decommissioning	The pit areas will be recontoured to a safe and stable slope and rehabilitated into a dam surrounded by pasture.

The proposed clay extraction will comply with the dust management plan, noise management plan, water management plan, refuelling management plan, waste management plan and rehabilitation management plan contained within the following report.

A Traffic Impact Statement has been prepared for the site by Shawmac Consulting Engineers (Appendix E) and an Acoustic Assessment has been prepared by Eco-acoustics (Appendix F).

1 Introduction

1.1 Background

Land Insights act for Austral Bricks (WA) Pty Ltd and lodge this application on their behalf. The purpose of the application is to seek Development Approval and an Extractive Industry Licence to allow for clay extraction on Lots 5 and 51 Railway Road, Waterloo for a 20-year period. This report addresses the requirements of both the Development Approval under the Shire's Local Planning Scheme, and the Extractive Industry Licence application under the Shire's Extractive Industries Local Law. The Shire of Dardanup Extractive Industries Local Law allows the Shire to issue a licence for up to 21 years:

> Clause 8 (3) – '*Where the Council approves an application for a licence, it shall – (a) determine the licence period, not exceeding 21 years from the date of issue'.*

Previous approval for extractive industries was issued in April 2005 and expired in 2010 for Lot 50 Waterloo Road (adjoining Lot 51 to the north). Extractive industry operations have not been required on the site since the previous approval expired as a result of a slowing housing market and subsequent decline in demand for brick products. It is now anticipated that the clay present on Lots 5 and 51 will again be required shortly as a component to the Austral Bricks overall clay brick operations. The proposed extraction at this site will provide valuable clay resources to the community and the construction industry for many years to come. As such, fresh approvals are needed. A 20-year approval is being sought. The amount of raw materials supply located on these properties justifies the 20-year approval requested. This is in accordance with the Shire's Extractive Industries Local Law which allows for a 21-year licence (Clause 8(3)(a)).

1.2 Purpose of report

The purpose of this report is to provide supporting information for an application for Development Approval and an Extractive Industry Licence. The requirements of the Shire's Extractive Industries Local Law are addressed within this document. The prescribed application forms have been completed and are provided in Appendix A.

1.3 Importance of the resource

Clay is an essential ingredient for roof tiles, bricks and paving blocks. As such, the extraction of clay is an important process in the supply of bricks and other construction materials for the community. The continued demand for housing results in the demand for basic raw materials such as clay.

The area is identified as a priority area for basic raw materials. Austral Bricks estimates that the clay resources on their properties have enough supply for the next 200 years. As such, a 20-year approval is sought (the Shire's Extractive Industries Local Law which allows for a 21 year licence).

The importance of clay to the community is reflected in the following documents prepared by the State Government:

- *State Planning Policy 2.4 Basic Raw Materials* (WAPC, 2000)
- *Draft State Planning Policy 2.4 Basic Raw Materials* (WAPC, 2018)
- *State Planning Policy 2.5 Rural Planning* (WAPC, 2016)
- *Greater Bunbury Region Scheme* (WAPC, 2014).

1.4 Location

The site is located along Waterloo Road and Railway Road approximately 2.5 km the south-east of the Eaton townsite. It comprises Lots 5 and 51 Waterloo Road, Waterloo. The combined area of all lots is approximately 159 hectares. The site is surrounded by agricultural land uses.

1.5 Tenure

Tenure and ownership details are in the table below.

LOT #	PLAN/DIAGRAM	VOLUME	FOLIO	OWNER
5	D40245	478	17A	Bristile Operations Pty Ltd
51	P062046	2719	379	Bristile Holdings Ltd

There is a drainage lot which runs across the north-eastern corner of Lot 5 (belonging to the State of WA). However, excavation will be setback at least 20 metres from this lot.

A copy of the Certificate of Title for both lots is at Appendix C.

1.6 Previous approvals and site activity

Lot 50 (adjoining Lot 51) has been used for extractive industry purposes for over 60 years (since the 1950's). Previous excavation has been recontoured and part of it has been filled by the Shire as a refuse/landfill site. The site has not been used for refuse/landfill for many years.

The previous approval for extractive industries was issued in April 2005 and expired in 2010 for Lot 50. Extractive industry operations have ceased since the previous approval expired as a result of a slowing housing market and subsequent decline in demand for brick products. It is now anticipated that the clay present on Lots 5 and 51 will again be required shortly as a component to the Austral Bricks overall clay brick operations.

1.7 Summary of proposed development

Proposed development comprises the continuation of clay extraction from the broader area. An old pit is located within the central portion of Lot 50 and an old brickworks factory is located close to the eastern boundary. Extraction is proposed to continue on Lots 5 and 51 Waterloo Road.

Plans associated with the proposed development are at Appendix B. They include an Excavation Plan showing the proposed excavation extent across the site, a Concept Plan which provides an indication as to how excavation within each stage will typically take place and a Rehabilitation Plan.

A 20-year approval is being sought. There is a significant amount of material at the site, with an estimated lifespan in excess of the 20-year approval currently being sought (subject to changes in demand). The provision of a 20-year licence provides Austral Bricks with approval security and therefore confidence to allow for investment into the development of the site. It also secures a key source of a required clay material to feed the manufacturing plants, thus assisting in securing their future viability.

It should be noted that the approval being sought is permissible under the Shire's Extractive Industries Local Law, which allows for a 21-year licence (Clause 8(3)(a)).

2 Site description

2.1 Topography and landform

The topography is relatively flat at approximately 15 metres Australian Height Datum (AHD), rising to approximately 20m AHD at the south-eastern side of Lot 5. The land is slightly undulating, but variations are not generally greater than 1 metre AHD.

2.2 Geology and soils

Geological information has been mapped by the Department of Mines, Industry Regulation and Safety (DMIRS). The State interpreted bedrock geology is 'Warnbro Group' which is described as 'interbedded sandstone, siltstone and shale, minor conglomerate'. The surface geology identified by the Regolith Map of WA (DMIRS 2018) as 'sandplain, mainly eolian; includes some residual deposits'.

Soils have been mapped by the Department of Primary Industries and Regional Development (DPIRD). The site lies within the Pinjarra soil-landscape system which is described as '*Clayey to sandy alluvial soils with wet areas.* (DPIRD, 2018). The soil-landscape units across the site are described in the table below.

NAME	CODE	DESCRIPTION
Pinjarra P1d Phase	213Pj_P1d	Flat to very gently undulating plain with deep acidic mottled yellow duplex soils. Shallow pale sand to sandy loam over clay; imperfect to poorly drained and moderately susceptible to salinity.
Pinjarra P3 Phase	213Pj_P3	Flat to very gently undulating plain with deep, imperfect to poorly drained acidic gradational yellow or grey-brown earths and mottled yellow duplex soils, with loam to clay loam surface horizons.

NAME	CODE	DESCRIPTION
Pinjarra P1b Phase	213Pj_P1b	Flat to very gently undulating plain with deep acidic mottled yellow duplex (or effective duplex) soils. Moderately deep pale sand to loamy sand over clay: imperfectly drained and moderately susceptible to salinity in limited areas.

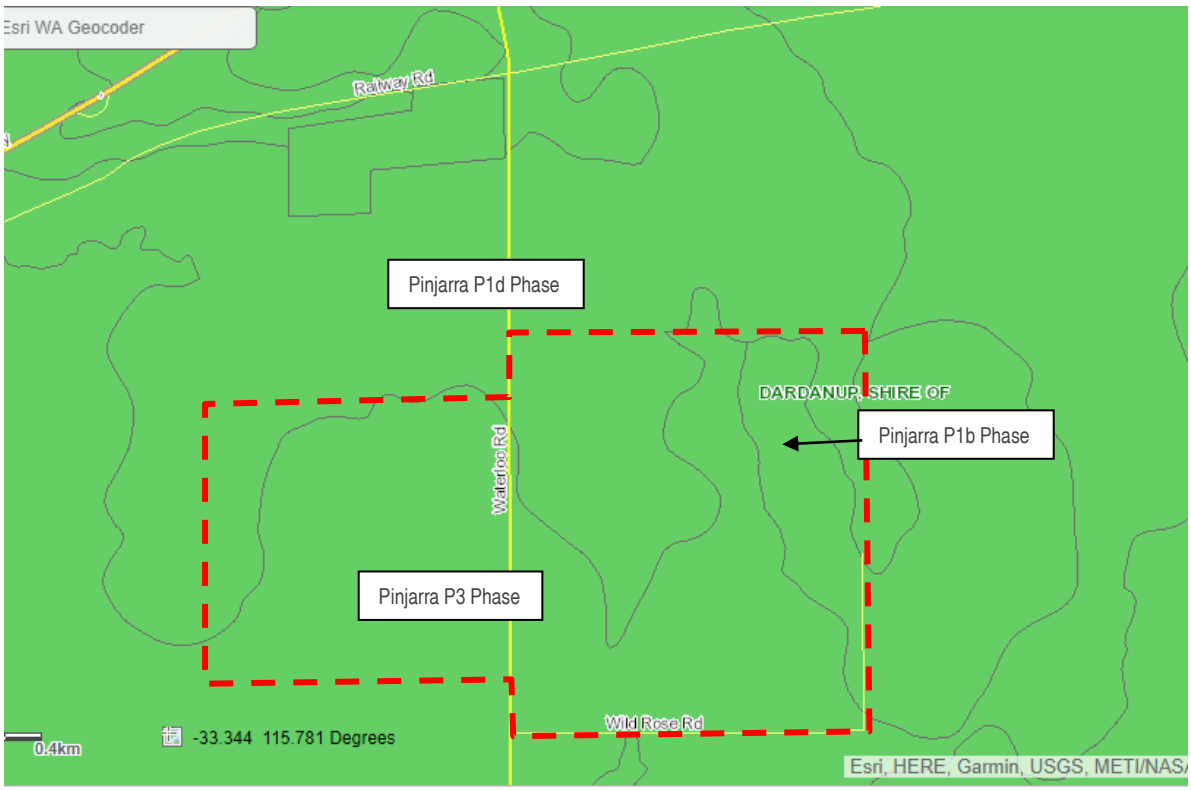
Source: DPIRD, 2018

Soil qualities are described in the table below.

NAME	WIND EROSION	WATER EROSION	FLOOD	LAND INSTABILITY
Pinjarra P1d Phase	Moderate risk	Low risk	Low risk	Low risk
Pinjarra P3 Phase	Low risk	Low risk	Low risk	Low risk
Pinjarra P1b Phase	Moderate risk	Low risk	Low risk	Low risk

Source: DPIRD, 2018

Soil-Landscape Units



Source: SLIP

2.3 Vegetation and fauna

The site has been largely cleared of vegetation in the past for agricultural purposes. A majority of the site remains cleared of vegetation except for some scattered trees throughout, as is common on rural properties. The extraction site will be located on previously cleared farm land. Only a few scattered trees are located within the proposed extraction site. No 'native vegetation' is located across the site as mapped by the DPIRD.

The study area lies on the Swan Coastal Plain Subregion of the Drummond Botanical Subdistrict within the southwest Botanical Province as described by Beard (1990). It is located on the Fluviatile Deposits of the Guildford landform and Pinjarra soil type, which directly influence the vegetation types likely to be present on the site. The Guildford landform directly supports the Guildford vegetation complex that is found in the area (Heddle et al, 1978). The vegetation of the Guildford Complex is typically a mixture of

open forest of tall *Corymbia calophylla* (Marri), *Eucalyptus wandoo* (Wandoo) and *E. marginata* (Jarrah) with rare occurrences of *E.lane-poolei* (Salmon White-Gum). Minor components of *E.rudis* (Flooded Gum) and *Melaleuca rhaphiophylla* also occur in this location on wetter, poorly drained soils. The structural formation is 'open forest to tall open forest and woodland'.

No Threatened Ecological Communities are mapped within or adjacent to the site.

2.4 Hydrology

There are no major watercourses located on the property or close to the extraction site. The Collie River is located approximately 3 kilometres to the north of the site. A minor watercourse is approximately 1.2 kilometres to the north of the site. This watercourse flows north-west towards the Collie River. A drain runs along the eastern side of Waterloo Road (within Lot 44 Waterloo Road). This drain runs under Railway Road and the trainline and eventually drains into the minor watercourse.

The site lies within an extensive Palusplain wetland which occupies an area of over 10,000 hectares. This wetland is classified as a 'Multiple Use' wetland (ID 15 223). Palusplain wetlands are described as seasonally waterlogged flat wetlands.

Information sourced from DWER regarding management of the area includes:

- Surface water catchment area (proclaimed under the *Rights in Water and Irrigation (RIWI) Act 1914* – 'Collie River Irrigation District'
- RIWA Act Groundwater Area – 'Bunbury Groundwater Area'
- Hydrographic Catchment (Basin) – 'South West'
- Hydrographic Catchments (Catchments) – 'Leschenault Estuary – Lower Collie'
- Surface Water Management Area – Collie
- Surface Water Management Subarea – Lower Collie Tribs
- No Public Drinking Water Source Areas (PDWSA's) are located on or surrounding the property.

All stormwater which falls on the extraction area will be retained onsite and will not be not permitted to flow into the surrounding drainage network. The lowest part of the pit area is used as a stormwater detention basin. All water is drained and directed into the basin. Further information is contained within the Water Management Plan.

Excavations will be above the water table and groundwater will not be intercepted. No excavation has occurred below the water table during the course of the operation to date.

2.5 Surrounding land use

The properties surrounding the site are largely used for agricultural purposes and are zoned *General Farming*.

Lot 50 (adjoining Lot 51) is zoned *Restricted Use* and comprises an old clay excavation pit and Shire landfill and an old brickworks and sales office. A number of rural dwellings are scattered around the site. Separation distances are discussed further below.

2.6 Contaminated sites

There are no contaminated sites on the subject site.

2.7 Heritage

A search of the Aboriginal Heritage Database indicated that there are no Registered Heritage Sites on or directly adjoining the site. The wetland to the north of Railway Parade is listed as an 'Other Heritage Site' (ID 17775). The site is listed as 'Waterloo Brickworks Camp and Hunting Grounds'.

No European heritage sites are located within or directly adjoining the property.

3 Statutory framework

3.1 State Planning Policy 1 – State Planning Framework

The State Planning Framework including all current planning policies, strategies and guidelines of the Commission to provide a contact for decision-making for land use and development in the State.

Basic raw materials are recognised in the Framework in the following Principle:

- *Conserve the State's natural assets through sustainable development.*

State Planning Policy 2.4 – Basic Raw Materials is recognised under this principle.

3.2 State Planning Policy 2 – Environment and Natural Resources Policy

State Planning Policy 2 aims to integrate environment and natural resource management with broader land use planning and to protect, conserve and enhance the natural environment.

Basic Raw Materials is included within Policy Measure 5.7 which states that '*mineral resources, petroleum resources and basic raw materials are important natural resource assets and are a vital part of the economy'*. The importance of basic raw materials located in close proximity to the metropolitan area is also recognised in the Policy. It states that '*A ready supply of basic raw materials close to developing areas is required in order to keep down the cost of land development and the price of housing*.'

The Policy sets out a list of principles which should be considered by decision-makers including

- the identification and protection of *important and economic mineral resources to enable mineral exploration and mining in accordance with acceptable environmental standards*
- the identification and protection of *important basic raw material resources and provide for their extraction and use*
- *Support sequencing of uses where appropriate to maximise options and resultant benefits to community and the environment*
- *Support, where possible, improved efficiencies in the production and consumption of mineral and basic raw material resources to ensure their availability for future environmental and human uses.*

SPP 2 supports the identification, protection and extraction of basic raw materials.

3.3 State Planning Policy 2.4 – Basic Raw Materials

State Planning Policy (SPP) 2.4 *sets out the matters which are to be taken into account and given effect to by the Commission and local governments in considering zoning, subdivision and development applications for extractive industries (for the extraction of basic raw materials) and zoning, subdivision and development applications in the vicinity of identified basic raw material resource areas*.

The policy objectives are to:

- *identify the location and extent of known basic raw material resources;*
- *protect Priority Resource Locations, Key Extraction Areas and Extraction Areas from being developed for incompatible land uses which could limit future exploitation;*
- *ensure that the use and development of land for the extraction of basic raw materials does not adversely affect the environment or amenity in the locality of the operation during or after extraction;*
- *provide a consistent planning approval process for extractive industry proposals including the early consideration of sequential land uses.*

The site is not identified in SPP 2.4 (the mapping does not extend into the Shire of Dardanup), however the general principles of basic raw material extraction are still relevant to the site.

This Clay Extraction Management Plan has been prepared in accordance with the requirements of SPP 2.4.

3.4 Draft State Planning Policy 2.4 – Basic Raw Materials

Draft State Planning Policy 2.4 – Basic Raw Materials was released for public comment in October 2018. It 'enables the responsible extraction of BRM, while ensuring the protection of people and the environment.' The updated mapping identifies 'Extraction Sites' and areas of 'Significant Geological Supplies'. The Policy provides guidance to operators and decision makers regarding applications for BRM

extraction, as well as other types of planning applications that can potentially impact on extraction sites or significant geological supplies.

The draft SPP 2.4 mapping indicates that 'Significant Geological Supplies' are located across Lot 51 and into the western side of Lot 5 (and also on adjoining Lots 4, 23, 24 and 32). This application for extractive industry is consistent with this draft Policy.

3.5 State Planning Policy 2.5 – Rural Planning

State Planning Policy (SPP) 2.5 aims to protect and preserve Western Australia's rural land assets. It states that *rural land accommodates significant environmental assets and natural landscapes values, and areas with mineral, petroleum, geothermal energy and basic raw materials resources, which need to be factored into planning for rural areas.*

The importance of basic raw materials is reflected in the following Policy objective:

- *Outside of the Perth and Peel planning regions, secure significant basic raw material resources and provide for their extraction*.

And is also reflected in Policy Measure which states:

- *The WAPC seeks to protect and preserve rural land for rural purposes including primary production, basic raw materials, regional facilities and protection of biodiversity and landscape*.

Policy Measure 5.9 addresses 'basic raw materials outside the Perth and Peel Planning Regions'. As the site is located within the Shire of Dardanup, this Policy measure applies. It states that *Basic raw materials are essential for the construction of buildings, roads and other infrastructure, and also for the sustainability of agricultural production*.

The Policy Measures are addressed in the table below.

POLICY MEASURE	COMMENT
Significant Geological Supplies and their buffers are not to be developed for other purposes until the resource is extracted, or unless development is compatible with the future extraction of the resource.	This principle is supported by Austral Bricks. A sufficient buffer or separation distance will be established around the pit area, as is supported by the attached technical studies.
Significant Geological Supplies and significant basic raw material resources, and an indicative separation distance or buffer, should be identified in subregional and/or local planning strategies.	Basic raw materials are mapped in the Shire of Dardanup Local Planning Strategy (as shown in the GBRS Draft Strategic Minerals and Basic Raw Materials Policy 2016). Lots 5 and 51 (and adjoining lots) are included within the basic raw materials area.
Region and local planning schemes should identify Significant Geological Supplies and significant basic raw material resources, and include provisions for their protection, access and use.	The clay resources on the site and in the local area are identified in the Shire of Dardanup Local Planning Strategy and should be included in any updates to the Local Planning Scheme.
Basic raw material resources and sites should be identified in local planning strategies and schemes as required.	The clay resources on the site and in the local area are identified in the Shire of Dardanup Local Planning Strategy and should be included in any updates to the Local Planning Scheme.
Region and local planning schemes should not generally prohibit the extraction of basic raw material resources.	This policy measure is supported.
Sequential land use planning is encouraged whereby extraction and appropriate rehabilitation can take place on a programmed basis in advance of longer-term use and development.	The previous pit on Lot 51 has undergone sequential land use planning whereby previous excavation areas have been recontoured and have been used as a refuse/landfill site by the Shire (although this no longer occurs). As extraction progresses the previous stages are used for water storage and drainage management and are recontoured once the next stage has been excavated enough to fulfil its own drainage management.
Sensitive zones and/or land uses may be approved where it can be demonstrated they will not limit the existing or potential extraction of basic raw materials.	No sensitive land uses are proposed near the site.

POLICY MEASURE	COMMENT
Where a basic raw material resource is located with native vegetation or significant biodiversity values, extraction of the resource may require referral under Part IV or Part V of the Environmental Protection Act 1986. Environmental regulation of the proposal may require vegetation retention and/or protection of other environmental assets.	The site is not located within an area of significant biodiversity value. Only limited clearing of some scattered trees may be required to facilitate extraction.
Planning decision-makers are to have due regard to advice from environmental agencies and consider potential impacts on fragmentation and connectivity of remnant vegetation.	Noted. Only limited clearing of some scattered trees may be required to facilitate extraction and, as a result, there will be no fragmentation or impact to connectivity.
Where a basic raw material resource is located in a public drinking water source area, extraction of the resource may be subject to achieving separation distances to the groundwater table to protect water quality. Separation distances from water supply infrastructure, and other management measures to protect water quality, should be applied in planning decision-making	There are no PDWSA's within or surrounding the site. An appropriate separation distance of approximately 3 kilometres exists between the excavation area and Collie River and the site is located approximately 1.2 kilometres from the minor watercourse to the north. This is adequate separation distance. The extraction will retain at least 2 metres separation to the groundwater table.

Basic Raw Materials Fact Sheet

The Fact Sheet was prepared to assist planners implement SPP 2.5. It provides an overview of basic raw material operations, planning context and management of operations. The Fact Sheet refers to other policies and reports such as SPP 2.5, BRM Applicant's Manual and Water Quality Protection Note 15 which provide more detailed guidelines on what a BRM application should address and how operations should be managed.

This application addresses the points in the BRM Fact Sheet, including a detailed description of the site and the operation, how the planning context relates and detailed management plans to address potential impacts such as noise, dust, visual amenity and drainage.

3.6 State Planning Policy 3.7 – Planning in Bushfire Prone Areas

State Planning Policy 3.7 provides the foundation for land use planning to address bushfire risk management in Western Australia and to inform and guide decision-makers, referral agencies and landowners to help achieve acceptable bushfire protection outcomes. It applies to development in designated bushfire prone areas.

No 'Bushfire Prone Areas' are mapped on the property by the DPLH online mapping database (2018). Fire risk associated with extractive industries is generally less than the risk from general farming as the open area of excavation forms a natural firebreak. Fire safety is incorporated into safety management for the site.

3.7 Greater Bunbury Region Scheme

The Greater Bunbury Region Scheme (GBRS) indicates that the site is zoned *Rural.*

GBRS Zones

Source: DPLH

The purpose of this zone is below:

PURPOSE	COMMENT
Rural — to provide for the sustainable use of land for agriculture, assist in the conservation and wise use of natural resources including water, flora, fauna and minerals, provide a distinctive rural landscape setting for the urban areas and accommodate carefully planned rural living developments	Proposed extraction on Lots 5 and 51 can be permitted subject to Council approval, and the remainder of the property can continue to be used for agriculture.

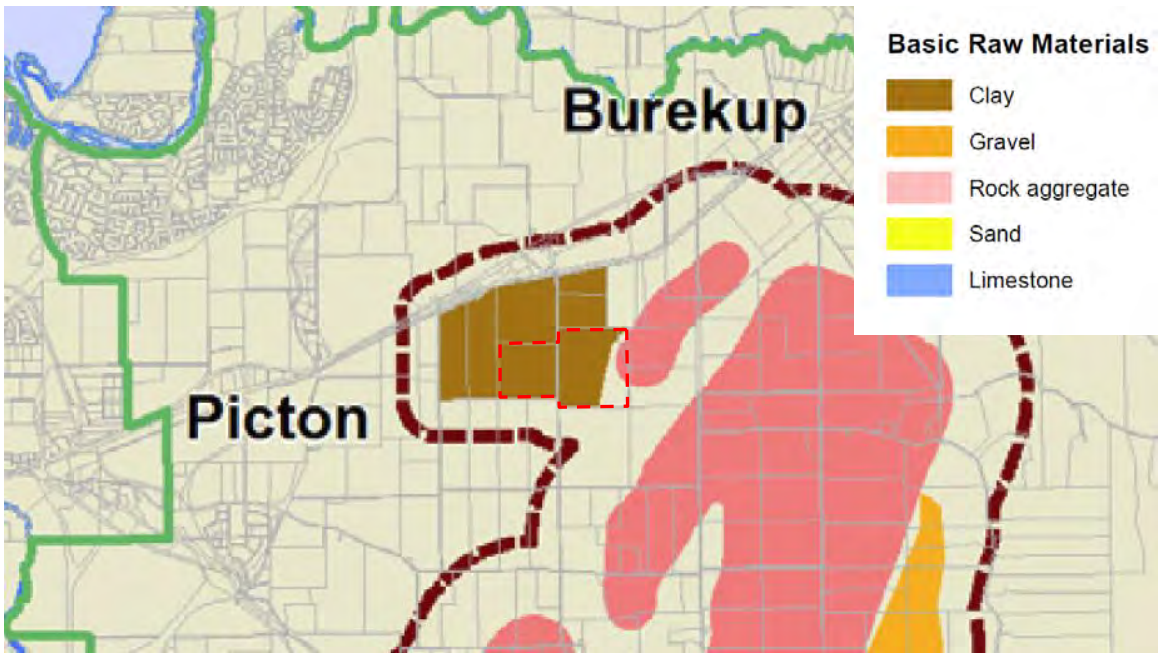
One of the aims of the GBRS is to *protect strategic minerals and basic raw materials of State and regional importance and provide for the efficient and timely extraction of minerals and raw materials and subsequent rehabilitation of affected land*. The site is located within the basic raw materials resource policy area (as discussed below) and continued extraction on the site complies with this aim.

3.8 GBRS Draft Strategic Minerals and Basic Raw Materials Resource Policy 2016

The Draft Strategic Minerals and Basic Raw Materials Resource Policy was prepared in 2016 to identify areas of minerals and basic raw materials in the GBRS. The purpose of the Policy is to *ensure long-term security of access for minerals and basic raw materials and to achieve this through appropriate land use planning and control of development*.

Lots 5 and 51 are located within the mapped 'Basic Raw Materials – Clay' area. A 500m buffer area is included around the perimeter of the clay resource. These Policy Areas should be taken into account by local governments in preparing local planning schemes and amendments, and in making decisions in regard to the use or development of land within the policy areas. This application for extractive industry is consistent with the GBRS Policy.

GBRS Draft Strategic Minerals and Basic Raw Materials Resource Policy

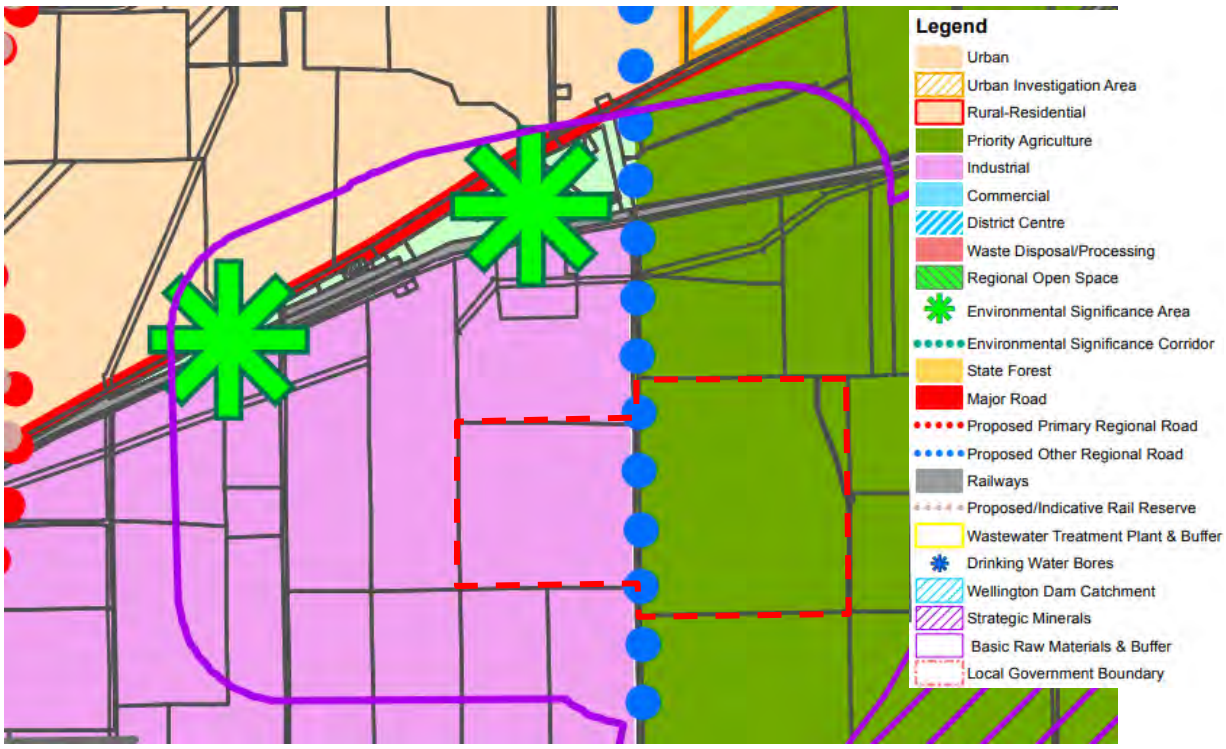


Source: DPLH

3.9 Shire of Dardanup Local Planning Strategy

The Shire of Dardanup Local Planning Strategy was adopted by Council on the 12th March 2014. The Strategy identifies Lot 51 as being within the *Industrial* area and Lot 5 within the *Priority Agriculture* area.

Shire of Dardanup Local Planning Strategy



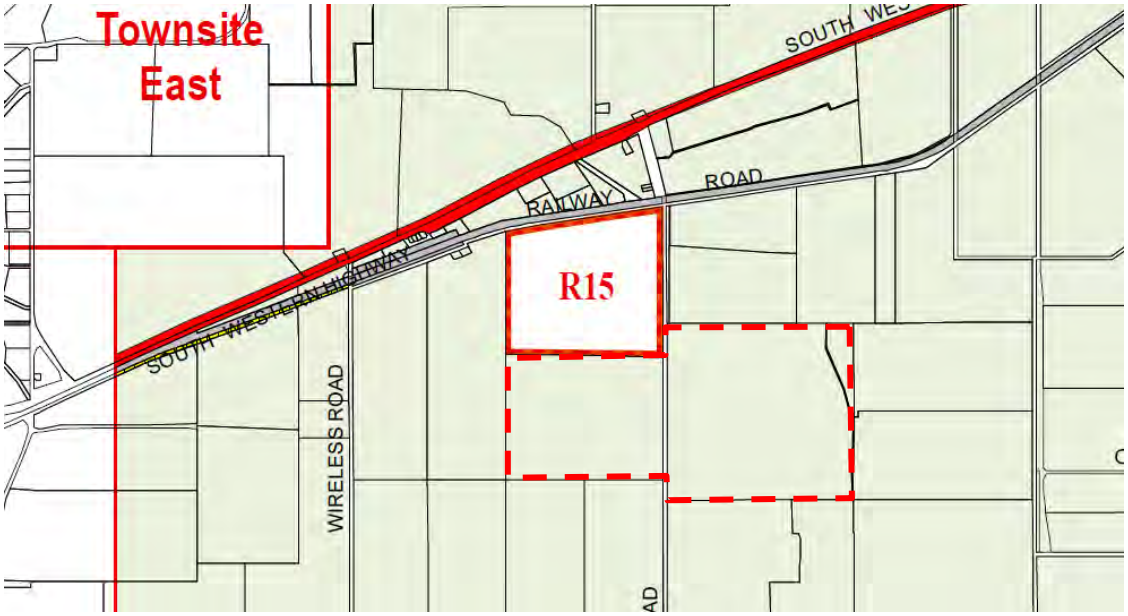
Source: DPLH

The site is also within the *Basic Raw Materials & Buffer* as identified in the GBRS. The Strategy acknowledges the importance of these areas by stating that provisions for this area will be included in the future Local Planning Scheme and that it will be identified as a *Special Control Area*.

3.10 Shire of Dardanup Local Planning Scheme No. 3

The Shire of Dardanup Local Planning Scheme No. 3 was gazetted in March 1979. Lots 5 and 51 are located within the *General Farming* zone.

Shire of Dardanup Local Planning Scheme No. 3



Source: DPLH

The objectives of the *General Farming* zone are as follows:

SITE SELECTION CONSIDERATIONS	COMMENT
To provide for a wide variety of productive farming activities, ranging from broadacre grazing to horticulture, which are compatible with the capability of the land and retain the rural character and amenity of the locality.	Proposed extraction on Lots 5 and 51 can be permitted subject to Council approval, and the remainder of the property can continue to be used for agriculture.
To protect areas of significant agricultural value, particularly those in irrigation districts, from conflicting land uses.	N/A – no areas of significant agricultural value are located within the proposed excavation area.
To facilitate low-key tourist development where it is incidental to the use of the land for farming purposes and where land use conflict can be minimised.	N/a – No tourist development is proposed.

The land use 'Industry – Extractive' is an 'A' use in the *General Farming* zone which means that Planning Approval is required to allow the use to occur.

3.11 Shire of Dardanup Extractive Industries Local Law

The Shire of Dardanup Extractive Industries Local Law was endorsed by the Shire under the *Local Government Act 1995* in April 2014. It sets out the licensing requirements for extraction of basic raw materials in the Shire. This application has been prepared in accordance with the requirements of this Local Law by providing detailed information on the operation under Section 7 'Application for Licence'. The Shire of Dardanup Extractive Industries Local Law allows the Shire to issue a licence for up to 21 years:

> Clause 8 (3) – '*Where the Council approves an application for a licence, it shall – (a) determine the licence period, not exceeding 21 years from the date of issue'.*

This application is for Planning Approval and an Extractive Industry Licence for a 20 year period.

3.12 EPA Guidance Statement 3 – Separation Distances between Industrial and Sensitive Land Uses

The EPA's Guidance Statement No. 3 provides a guideline on the separation distances and buffers for a range of industrial land uses to sensitive land uses (such as residential dwellings). It should be noted that the distances in the policy assume the land use is not managed and, should best practice environmental management take place, these distances can be reduced.

The operations on site fit into the category *clay extraction or processing.* The potential impacts are listed as 'noise' and 'dust'. The separation distance is *500-1000 metres, depending on size and processing*, however this can be less with appropriate environmental management. It should be noted that in the EPA's *Draft Environmental Assessment Guideline for Separation distances between industrial and sensitive land uses* the separation distance is 300-500 metres. Appropriate environmental management to support a reduced separation distance is contained within the Environmental Management Plan for the site. The scale of operation and the lack of processing on site also supports a reduced distance.

The nearest rural dwelling is located on Lot 19 which is approximately 327 metres to Stage 4 (Lot 51) and 254 metres to Stage 3 (Lot 5). All other rural dwellings are located at least 500 metres from the proposed excavation area (which is within the generic 500-1,000 metre buffer distance recommended by EPA Guidance Statement No. 3).

One rural dwelling is located on Lot 51 and a dwelling and outbuildings are located on Lot 5. Another rural dwelling is located on Lot 50. All three properties are owned by Austral Bricks. These dwellings are currently rented by tenants. Tenants will be moved out and the dwellings removed before excavation is within 500 metres of the dwellings.

It should also be noted that the site is over 3 kilometers away from the nearest residential area.

3.13 BRM Applicants Manual

The BRM Applicants Manual was prepared by the DPLH in 2009 to provide a guide on the approvals process and the information required in an application. It provides a checklist for local government and applicants to make sure that all required information has been considered including site conditions, legal considerations, details of the operation and management. The checklist provided in Chapter 3.4 of the Manual is addressed below.

SITE SELECTION CONSIDERATIONS	COMMENT
The site has safe access to major roads, and existing roads are in good condition. The access roads proposed are suitable for the volume of traffic and type of heavy vehicles.	Complied. Waterloo Road is a bitumen road classified as a 'Regional Distributer Road' by MRWA. Waterloo Road has previously been used by trucks for site access to Lot 50.
The site is not in a visually significant location, such as on a ridge, or visible from major roads.	Complied. The extraction area is not located in a visually significant location. The extraction area will primarily be screened from the road through the use of overburden bunds and vegetation along the roads.
The site is not situated within 500 metres to 1000 metres of any sensitive land uses, such as residential development, schools, and hospitals.	Although the proposed excavation area will be under 500 metres from the nearest rural dwelling, it will be over 500 metres from residential development, school and hospitals.

SITE SELECTION CONSIDERATIONS	COMMENT
The site is not considered priority agricultural land.	Lot 5 is located in the *Priority Agriculture* area in the Shire of Dardanup Local Planning Strategy, within the *General Farming* zone in the Scheme.
The proposal will not involve major disturbance of acid sulphate soils.	The Perth Groundwater Map (DWER, 2018) indicates that there is a 'moderate to low acid sulphate soil disturbance risk'.
The proposal will not involve significant clearing of native vegetation, that is, the site is bare of vegetation from previous uses or does not contain good quality bushland of significant quantity.	Complied. Only limited clearing of scattered trees may be required. No areas of 'good quality bushland' will be disturbed.
The site provides adequate setback to existing wetlands, water courses and drainage lines.	Complied. The pit is 3 kilometres from Collie River and approximately 1.2 kilometres from the nearest minor watercourse.
The site is not listed as a Bush Forever area.	Complied. There are no Bush Forever areas on the property.
The nature of the proposed activity is consistent with the current zoning, and any proposed zoning.	Complied. Extractive industries is a permitted use with Council approval.
The timeframe for the proposed activity takes into account the long-term impact on the local community.	Complied. The pit is located in a rural area with low population density and complies with separation distances as recommended by Guidance Statement 3 except for one dwelling which is located 254 metres from the proposed extraction area on Lot 5 (Stage 3). It is considered that there will be minimal impact to the local community.
The proposed activity is compatible with surrounding land uses.	Complied. The surrounding land uses are other extractive industries and rural use which is compatible.
The proposed activity will not cause disturbance to the amenity of the area.	The excavation site is located in a rural area and only a few rural residences are located nearby. Dust and noise management plans are in place to reduce potential impact of operations. This all contributes to ensuring the amenity of the area is well protected.
The site will not have a negative visual impact on major roads, scenic areas or adjoining properties.	Complied. Vegetation screening around the perimeter of the site and along the roads provide screening from the public realm.

SITE SELECTION CONSIDERATIONS	COMMENT
The site provides an adequate separation distance to any residential or special rural area, or existing dwelling in a rural area. Typically separation distances should be 500 metres to 1000 metres.	Complied. The site is over 3 kilometers from the nearest residential area. The excavation site is located in a rural area and only a few rural residences are located nearby. The proposed operation complies with separation distances as recommended by Guidance Statement 3 except for one dwelling on Lot 19 which is located approximately 254 metres from Stage 3 (Lot 5) and 327 metres from Stage 4 (Lot 51). Dust and noise management plans are in place to reduce potential impact of operations. This all contributes to ensuring the amenity of the area is well protected.
Operational issues such as hours of operation, noise and dust monitoring and site access are addressed with the view to minimising any potential noise or dust issues for surrounding sites.	Complied. There are prescribed hours of operation as well as noise and dust management plans in place. Site access is already established and well-maintained.
Other relevant state and local planning policies and strategies, including but not limited to the following have been addressed: • State Planning Policy 2.4 Basic Raw Materials • State Planning Policy 4.1 State Industrial Buffer Policy • extractive industry local laws • local planning scheme provisions • region scheme planning provisions.	Complied. Other relevant local and state planning policies have been addressed in this chapter.

The submission checklist from the Manual is included below.

SUBMISSION CHECKLIST	COMMENT
Written consent from owners of site.	Complied. The owners have signed the application forms.
DEC approval – clearing permit (where applicable).	Complied. A clearing permit will be obtained if required.
Extractive industry licence.	An extractive industry licence is being applied for.
Local government submission form and fees.	Complied. Forms are attached to this report.
WAPC submission form and fees (where applicable).	N/A – No WAPC approval is required.
Certificate of title.	Complied. A certificate of title is attached.
Existing and proposed land contours.	Complied. The attached plans show existing contours. Proposed depth is detailed in this report.

SUBMISSION CHECKLIST	COMMENT
Description of land – roads, boundaries, fences, existing buildings, waterways, ridge lines, existing vegetation etc.	Complied. A detailed description of the site including vegetation, topography, hydrology, access and buildings is provided in this report.
Location, total area and depth of proposed excavation.	Complied. The details of the operation are provided in this report.
Location and proposed maximum height of stockpiles.	Complied. The details of the operation are provided in this report.
How much material is proposed to be extracted (on an annual and total basis).	Complied. The details of the operation are provided in this report.
Method and route(s) of proposed vehicle access to and from the site.	Complied. Transport is addressed in this report and in the attached Traffic Impact Assessment.
Location of proposed buildings, treatment plants, tanks etc.	Complied. The details of the operation are provided in this report.
Noise attenuation – hours of operation, types of vehicles to be used, maximum number of truck movements per day, earth bunding.	Complied. The details of the operation are provided in this report.
Screening – location of screening and species to be planted, staging of operations.	Complied. Additional vegetation screening will be established if required, and overburden bunds are located around the perimeter of the pit.
Dust management plan.	Complied. A Dust Management Plan exists for the site in accordance with the Shire of Dardanup Dust Control Local Law 2011.
Environmental management - measures to protect existing vegetation, acid sulphate soil management, dieback control, fire management, water quality management, drainage details, and treatment of wastes.	Complied. Various environmental management plans exist for the site and are contained in this report.
Rehabilitation plan.	Complied. A Rehabilitation Management Plan exists for the site.

4 Works and excavation program

4.1 Excavation procedure

This application is for the extraction of clay on Lots 5 and 51 Waterloo Road, Waterloo. Excavation of clay takes place in a sequence of steps which can be broadly broken down into the Earthworks Campaign (i.e. removal of topsoil and overburden, excavation of clay to stockpile) and Carting Campaign (transport of clay from the pit or stockpiles to the factories).

Earthworks campaigns

An earthworks campaign refers to the excavation and stockpiling of material. No processing will take place on the site. This operational procedure has been determined to help minimise disturbance to the neighbouring residents and other locals. An Earthworks campaign will take place for 4-6 weeks each year during the summer months, over this time overburden will be removed and clay excavated and moved to a drying ground and stockpile area. Clay will be stockpiled on the property to allow it to dry before being transported (carted) from the site. Excavation activities last only for a short period of time overall, and for a majority of the year there will be no extraction taking place.

Cartage campaigns

Clay will be carted from the site as required. This will generally be over a 4-6 week 'carting campaign' There will be approximately 1000 truck loads (which equates to 2000 truck movements in and out of the site) annually. This number may vary depending on market demand for clay products. Clay will be transported north to the Austral Bricks brickmaking factory in Perth.

Summary

In general the steps will involve the following:

- Topsoil will be removed and stockpiled for later use at the decommissioning stage. Topsoil stockpiles will be 0.5 metres in height.

- Overburden will be removed from the pit area to a depth of approximately 0.3 to 0.5 metres. It will be stockpiled for later use in site recontouring. The overburden stockpiles will be located adjacent to the pit area for readiness to push into the pit as part of land recontouring.
- Clay will be excavated by a bulldozer, scraper or excavator and will be pushed into stockpiles.
- Clay will be placed onto a drying ground for drying and then will be placed into stockpiles for later carting from the site.
- The depth of excavation will vary depending on the availability of the resource, however the pits are expected to reach depths of approximately 4-5 metres.
- Excavation will commence at the north-western corner of Lot 5 and will progress in a southerly direction before moving across to extract at the eastern side of Lot 51.
- Approximately 80,000 tonnes of clay will be excavated and stockpiled annually. Approximately 40,000 tonnes will be transported per annum, although this figure may vary depending on demand.

Hours of operation

The hours of operation will be from 07:00-18:00 hours from Monday to Saturday. No operation will occur on Sundays or Public Holidays.

4.2 Stages and timing

The proposed stages are shown on the attached plan. There are 10 stages in total – six stages proposed on Lot 51 and four stages proposed on Lot 5. Excavation will largely occur within each of these discrete phases over the course of the project, however some flexibility is requested if commercial or operational conditions require. An indicative indication of staging is provided on the plan in Appendix B.

Excavation will commence at stage 1 on Lot 5 and will proceed in a southerly direction to stage 3. Stage 4 will commence at the south-east corner of Lot 51 and will proceed in a northerly direction to stage 6. Stage 7 will commence at the north-west corner and proceed south to stage 9. Stage 10 will be on the eastern side of Lot 5.

4.3 Depths and extent of excavation

The excavation area is shown on the plan at Appendix B. Approximate areas are below:

- Lot 5 – 56.06 hectares
- Lot 51 – 51.80 hectares

Excavation will be to a depth of approximately 4-5 metres. The pit areas will be contoured to ensure that all internal drainage runs to the detention basins.

4.4 Overburden

Overburden will be removed prior to excavation commencing in new areas. The depth of overburden is approximately 0.3 to 0.5 metres. Overburden is used to create bunds along the perimeter of each stage and around the excavation to assist is drainage management (i.e. to prevent water runoff from the site) and ready to be pushed back into the excavation area for future recontouring.

Topsoil is stored in accordance with Agriculture WA soil conservation guidelines.

4.5 Site preparation

Site preparation will be required as the site moves through various stages.

The site has already been previously cleared for agriculture and only scattered trees remain on the site. If native plants require clearing a Clearing Permit will be obtained from the Department of Water and Environmental Regulation.

Drainage systems will be established to ensure that all runoff remains on site. Drainage will be managed as the site progresses.

Road access, signage, gates and fencing will be established where required.

Topsoil and overburden will be removed prior to extraction of clay resources. Topsoil and overburden will be placed in bunds around the perimeter of the excavation area.

4.6 Access arrangements

The site adjoins Waterloo Road which is a gazetted road. Waterloo Road runs in a north-south orientation between Lots 5 and 51 and provides access north to South Western Highway. It is classified as a 'Regional Distributer Road'.

Access to the extraction areas on Lots 5 and 51 will be from Waterloo Road. An existing crossover is located at the northern end of Lot 51. A new crossover will need to be created at Lot 5.

Clay material will be dried and stockpiled within Lots 5 and 51. Carting trucks will enter the site from Waterloo Road. They will exit the site by turning onto Waterloo Road and travel to the South West Highway intersection. Trucks will turn right at the South West Highway and will continue in a northerly direction towards the Austral Bricks factories. Unauthorised access to the site will be restricted by a locked gate at the entrances to the properties.

Trucks used for the extraction are 8 wheel truck and dog combinations with gross weight of 64 tons and payload of 42 tons.

Further information on traffic movements is contained within the Traffic Impact Statement at Appendix E. The assessment concluded the following:

- The estimated site traffic generation for development year (2019) and 10 years after operation (2029) can be accommodated within the predicted capacity of road network at mid-block and intersection locations;
- The additional traffic generated by the site is not considered to increase the likelihood of crashes to unacceptable levels;
- It is recommended that 'Truck Entering' signs are placed on the approaches to the access on Waterloo Road to advise other drivers;

- The existing sight distances at the site access and Waterloo Road / South Western Highway intersection are deemed satisfactory;
- Based on the predicted traffic volume, the Waterloo Road / South Western Highway intersection is required to have Auxiliary Left Turn (AUL) treatment. In this instance, the existing intersection is constructed with auxiliary left turn lane and additional treatment is not required;
- Based on the predicted traffic volume, the site access to Lot 5 and Lot 51 is required to have Basic Left Turn (BAL) and Basic Right Turn (BAR) treatment. In this instance, it is recommended to design the crossovers to accommodate the swept path of RAV 3 vehicles; and
- Accelerations lane are not considered required east of Waterloo Road / South Western Highway intersection and north of the proposed access location.

4.7 Truck movements

There will be approximately 1000 truck loads over a 4-6 week 'carting campaign' (which equates to 2000 truck movements in and out of the site) annually. This number may vary depending on market demand for clay products. Clay will be transported north to the Austral Bricks brickmaking factory in Perth.

4.8 Plant and on-site equipment

No permanent structures associated with the clay pit will be situated on the site. Temporary facilities such as a small office/lunchroom and portaloo will be located onsite during each extraction and carting campaign. The transportable building will be placed behind the overburden bunds and will be setback over 20 metres from the property boundary (most likely at a greater distance when taking into account the width of the bunds. The closest residence is approximately 254 metres from the extraction area (Stage 3) and, considering the transportable will be located behind a bund wall and is not a large size (substantially smaller than a typical house or shed) this should have no visual impact on surrounding residences.

The equipment required for excavation will be brought in on a seasonal basis and will include scrapers, a bulldozer, a front-end loader, a water cart and a grader. This equipment is removed at the end of each 'earthworks campaign'.

No storage of fuel and oil is required on site. Vehicles are refuelled on the floor of the excavation or operational area, as currently occurs. No chemicals are stored on site. A Refuelling Management Plan is at Chapter 5.5.

No processing, crushing, screening or blasting will occur as part of the extraction activities.

All supplies will be delivered and rubbish will be stored in large bins which will be emptied at an appropriate rubbish tip.

4.9 Controls

Excavation activities on site will be conducted in accordance with the *Mines Safety and Inspection Act (1994) and Regulations (1995).* Operations are managed by a licenced Quarry Manager and inspections occur on a daily basis during the excavation campaign.

Operation inspections are regularly carried out by the Resources Safety division of the Department of Mines, Industry Regulation and Safety (DMIRS) who inspect safety, operational procedures and workplace health such as dust and noise.

Austral Bricks has procedures in place to manage safety, health, environmental impact, site completion and rehabilitation. Full personal protection is required for all persons on site at all times. All workers are required to wear full protective safety and high visibility gear when on site. All vehicles have two-way radio capability. All light vehicles will be required to register on site. The site is within mobile phone contact and all vehicles are equipped with two-way radios.

Fences and warning signs required by the Department of Mines, Industry Regulation and Safety and the Shire of Dardanup will be maintained.

4.10 Public Safety

Public access to the site will be restricted through the use of fences and locked gates. The site will be fenced around the entire perimeter and locked gates will be place at the entrance to each lot. Appropriate warning signs will be placed at the entrance and around the perimeter of the site regarding quarrying and restricted entrance.

Work on site (excavation and cartage) will be discontinuous for most of the year and there will be periods of time throughout the year when no activity will take place on site.

4.11 Workforce

Workers associated with the excavation will be on site primarily during the earthworks campaign. At such times the workforce will vary from 1-6 workers.

4.12 Bushfire management

The site is not located within a Bushfire Prone Area as mapped by the DPLH. Fire risk associated with extractive industries is generally less than the risk from general farming as the open area of excavation forms a natural firebreak. The excavation area can be used for the emergency muster area. Fire safety is incorporated into safety management for the site.

Water contained within the detention basin can be available for firefighting if required. Earth moving equipment and the water tanker are also available for firefighting (if located on site).

5 Environmental management plan

5.1 Introduction

Environmental management is achieved through implementation of a variety of management plans throughout the duration of the operation. Compliance with these environmental management commitments can also be monitored by Local Government through the Planning Approval and Licence.

The primary aim of this Environmental Management Plan is to ensure the clay extraction activities have minimal environmental impacts and to help return the land to an appropriate end use. This chapter includes the following individual management plans:

- Dust Management Plan
- Noise and Vibration Management Plan
- Drainage Management Plan
- Separation distances and buffers
- Visual management
- Waste management
- Rehabilitation Management Plan
- Final Site Clean-up.

5.2 Risk Matrix

Management of the clay extraction operation is summarised in the risk matrix below. The matrix is based on the criteria in the Department of Water and Environmental Regulation's *Guidance Statement: Risk Assessments (2017)*. In general, given the site is already being used for extractive industries on rural land, there is minimal impact to the natural environment, and due to its relatively isolated nature, is adequately separated from sensitive land uses. There are existing management plans in place to address potential impacts such as dust, noise, water and waste. As a result, the risk matrix identifies all potential risks as 'Low'.

FEATURE	ISSUE	UNMANAGED RISK			MANAGEMENT	MANAGED RISK		
		Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Native Vegetation (Maintain vegetation values, diversity and ecological functions).	Vegetation and flora may be significantly impacted.	Rare	Slight	Low	Only some scattered trees may need to be cleared and no management is required.	Rare	Slight	Low
	Threatened Communities may be impacted.	Rare	Slight	Low	Only some scattered trees may need to be cleared and no management is required.	Rare	Slight	Low
	Priority species may be impacted.	Rare	Slight	Low	Only some scattered trees may need to be cleared and no management is required.	Rare	Slight	Low
	Threatened Species may be Impacted.	Rare	Slight	Low	Only some scattered trees may need to be cleared and no management is required.	Rare	Slight	Low
	Weeds may be introduced to areas of native vegetation, become established and impact on the local environment.	Possible	Slight	Low	Machinery and personnel will not be permitted to enter areas of native vegetation on the property.	Rare	Slight	Low
	Dieback may be introduced or become present and impact on the local and onsite vegetation.	Rare	Minor	Low	No native vegetation is located within the operation/pit area.	Rare	Slight	Low
	Fragmentation to vegetation and ecological linkages.	Rare	Slight	Low	Only some scattered trees may need to be cleared and no management is required.	Rare	Slight	Low

FEATURE	ISSUE	UNMANAGED RISK			MANAGEMENT	MANAGED RISK		
		Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Fauna (Maintain habitat and fauna communities).	Native fauna (individuals and communities) significantly impacted by the operation through land clearing, introduction of weeds and disease and activities on site.	Rare	Slight	Low	No habitat will be removed and no fauna management is required.	Rare	Slight	Low
	Threatened and Priority Fauna disturbed and impacted by the operation (predominantly through clearing).	Rare	Slight	Low	No habitat will be removed and no fauna management is required.	Rare	Slight	Low
Water (Avoid impact to surface and ground water features and maintain hydrological regimes and water quality).	Hydrological impact to surface water features (watercourses and/or wetlands) through draining/flooding or changes to water regimes.	Rare	Slight	Low	There will be no impact to local watercourses, all stormwater will be retained on site and an adequate separation distance exists between the site and watercourses.	Rare	Slight	Low
	Impact to ecological functions and biodiversity of wetlands and watercourses.	Rare	Slight	Low	There will be no impact to local watercourses and an adequate separation distance exists.	Rare	Slight	Low

FEATURE	ISSUE	UNMANAGED RISK			MANAGEMENT	MANAGED RISK		
		Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
	Water quality impact caused from hydrocarbons, fuels and chemicals being incorrectly stored.	Possible	Moderate	Med	Fuel and hydrocarbon management in place. Refuelling Management Plan for the operation.	Rare	Slight	Low
	Water quality of surface impacted from runoff and introduction of sediment and any other materials.	Possible	Moderate	Med	Water Management Plan prepared for the operation which ensures that all run-off is contained on site.	Rare	Slight	Low
	Impact to groundwater through changes to hydrology (changes to recharge, pumping, alterations to flow etc).	Rare	Slight	Low	The operation lies above the groundwater table and does not intersect groundwater.	Rare	Slight	Low
Land (Maintain the integrity, safety of landform and soils).	Soils subject to significant water and wind erosion.	Unlikely	Slight	Low	Soils have low wind erosion risk and low to moderate water erosion risk. Wind erosion can also be managed through the Dust Management Plan.	Unlikely	Slight	Low
	Risk of acid sulphate soils forming.	Rare	Slight	Low	There is no evidence of acid sulphate soil conditions.	Rare	Slight	Low
	Local landform not being recontoured to be compatible with the surrounding landscape.	Possible	Minor	Med	Excavation is only to a depth of 4-5 metres which will not have a significant impact on local landform. Decommissioned excavation areas will be recontoured to a safe and stable slope.	Rare	Slight	Low

FEATURE	ISSUE	UNMANAGED RISK			MANAGEMENT	MANAGED RISK		
		Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
	The final landform creating visual impact.	Possible	Minor	Med	The site will be screened from the road and the public realm with perimeter vegetation and the site is adequately setback from sensitive residences. A Rehabilitation Management Plan is in place for the site.	Rare	Slight	Low
Heritage (Protection of known heritage sites).	Impact to Aboriginal Heritage Sites.	Rare	Minor	Low	No Aboriginal Heritage sites are located on or adjoining the site.	Rare	Slight	Low
	Impact to sites of European heritage.	Rare	Slight	Low	No European heritage sites are located on site.	Rare	Slight	Low
Off-site impacts (Ensure that operations have minimal off-site impact from noise, dust and traffic and minimise impact to the local community)	Noise levels cause impact to sensitive land uses (such as residential properties).	Possible	Minor	Med	Noise management in place. A Noise Management Plan has been prepared, supported by an Acoustic Assessment (Appendix F).	Rare	Slight	Low
	Dust emissions cause impact to sensitive land uses (such as residential properties) and cause impact off-site.	Possible	Minor	Med	Dust management procedures are in place. A Dust Management Plan has been prepared in accordance with the DWER Guidelines and the Shire Dust Control Local Law.	Rare	Slight	Low
	Buffers and separation distances are not adequate enough to reduce impact on sensitive land uses.	Possible	Minor	Med	Rural dwellings are located around the proposed pit area (all dwellings except one are at least 500m from the extraction area). Existing management plans will reduce impact to nearby sensitive land uses.	Rare	Slight	Low

FEATURE	ISSUE	UNMANAGED RISK			MANAGEMENT	MANAGED RISK		
		Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
	Impact of truck use on local and regional roads and traffic.	Possible	Minor	Med	There will be approximately 1000 truck loads each year over a 4-6 week carting campaign. During the remainder of the year there will be very few truck movements. Traffic impact is address in the Traffic Impact Statement (Appendix E).	Rare	Minor	Low
	Impact of the operation on visual amenity and that the pit area can be seen from the public realm.	Possible	Minor	Med	The site will be screened from the road and the public realm with perimeter vegetation and is adequately separated from residential areas.	Rare	Slight	Low

The risk matrix is defined below.

Likelihood	Consequence				
	Slight	Minor	Moderate	Major	Severe
Almost certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

The following criteria has been used to determine the likelihood of the risk occurring.

Likelihood				
Almost certain	**Likely**	**Possible**	**Unlikely**	**Rare**
The risk event is expected to occur in most circumstances.	The risk event will probably occur in most circumstances.	The risk event could occur at some time.	The risk event will probably not occur in most circumstances.	The risk event may only occur in exceptional circumstances.

The consequence criteria are described in the table below.

Criteria	Consequence				
	Slight	**Minor**	**Moderate**	**Major**	**Severe**
Environment	• On-site impact: minimal (No discernible adverse impact).	• On-site impacts: low level (discernible effect on the environment but no adverse impact) • Off-site impacts local scale: minimal • Off-site impacts wider scale: not detectable • Minor number of individuals of species may be affected locally.	• On-site impacts: mid level (Minor adverse affect to the environment) • Off-site impacts local scale: low level • Off-site impacts wider scale: minimal • Moderate loss of individuals of species locally.	• On-site impacts: high level (moderate impact to the environment) • Off-site impacts local scale: mid level • Off-site impacts wider scale: low level • Short term impact to an area of high conservation value or special significance^ • Moderate damage to ecosystem function and major loss of individuals of species locally.	• On-site impacts: catastrophic (significant impact to the environment) • Off-site impacts local scale: high level or above • Off-site impacts wider scale: mid level or above • Mid to long term or permanent impact to an area of high conservation value or special significance^ • Significant long-term damage/loss of ecosystem function and loss of individuals of species locally.

Criteria	Consequence				
	Slight	Minor	Moderate	Major	Severe
Public Health and Amenity	• Local scale: minimal to amenity.	• Local scale impacts: low level impact to amenity.	• Adverse health effects: low level or occasional medical treatment • Local scale impacts: mid level impact to amenity.	• Adverse health effects: mid level or frequent medical treatment • Local scale impacts: high level impact to amenity.	• Loss of life • Adverse health effects: high level or ongoing medical treatment • Local scale impacts: permanent loss of amenity.

^ Determination of areas of high conservation value or special significance should be informed by the Guidance Statement: Environmental Siting.

*'onsite' means within the Lot boundary.

5.3 Dust management plan

Introduction

This Dust Management Plan aims to describe the measures that will be used by Austral Bricks to reduce the creation and effect of dust. These actions are described further below. It has been prepared in accordance with the *Guidelines for Managing the Impacts of Dust and Associated Contaminants from land Development Sites, Contaminated Sites, Remediation and Other Related Activities* (Department of Environment and Conservation, 2011) and the *Shire of Dardanup Dust Control Local Law 2011*.

Dust is solid airborne particles that are dispersed into the air from soil disturbance (referred to as 'Total Suspended Particles' (TSP) in the *Guidelines for Managing the Impacts of Dust and Associated Contaminants from land Development Sites, Contaminated Sites, Remediation and Other Related Activities* (Department of Environment and Conservation, 2011). TSP is defined in the Guidelines as *all particles entrained/suspended in the atmosphere and includes the fine, respirable particles (PM10 and PM2.5) and larger size particles that may settle out of the air causing nuisance impacts, usually measured as those particles having an equivalent aerodynamic diameter of 50 micrometres or less*. This Dust Management Plan therefore provides for the control of TSP including Particulate Matter 10 Microns or less in diameter (PM10).

Soil disturbance can be caused by activities such as traffic moving across the pit and along gravel access tracks, excavation of material and movement of material from stockpiles onto trucks. The potential for dust generation is generally only during the excavation and carting programs which will only be for a few months of the year. The potential for dust generation during the wetter months is low due to the moisture content of the soil.

There are a number of factors that need to be considered when preparing a Dust Management Plan for a particular site/operation, including the potential for dust generation, the course of dust, and the types of activities that might generate dust.

Excessive dust has the potential to impact on both the on-site workers and adjoining landowners by travelling off-site. Potential impacts are addressed by reducing the dust generation from quarrying, transporting around the site and onto trucks. Experience with the existing operation is that dust can be managed through implementation of appropriate dust management procedures.

The objectives of the Dust Management Plan are:

- To manage the potential for dust generation
- To ensure dust does not disperse past the lot boundaries
- To reduce the potential for dust to impact of the local area.

Site Conditions

The physical characteristics of the site are described in Chapter 2 above. Some of the key points that relate to the Dust Management Plan are outlined below:

- The site is relatively isolated and is surrounded by reserves and rural land uses
- The nearest sensitive receptor (rural dwelling) located off-site is located on Lot 19 which is approximately 254 metres from Stage 3 (Lot 5) and 327 metres from Stage 4 (Lot 51) All other residences are at least 500 metres from the proposed extraction area.
- The local area (Lot 50 to the north) has historically been used for extractive industry for over 60 years
- The soil is described as duplex and loam soils with low wind erosion risk.
- The local area experiences a Mediterranean climate which experiences cool, wet winters and hot dry summer. A majority of rain occurs in the Winter months (May-August) and summer months can be typically dry.

Impact analysis

Site features and characteristics

The plans at Appendix B display the features of the site and the operation such as:

- Aerial photo
- Topography
- Surrounding land uses
- Cadastre (property boundaries) and the extraction area boundary
- Access tracks, roads and site entrance/exit
- Extraction area, direction of extraction, detention basin, internal tracks, pit face, bund walls/overburden etc.
- Surrounding natural features such as vegetation and watercourses.

Nature and extent of operation

The nature and extent of the proposed development is discussed in detail in Chapter 4 (as required by Clause 3.3 (a) of the *Shire of Dardanup Dust Control Local Law*). Detailed information is also shown on the attached plans.

Aspect and Impact Assessment and Dust Exposure Risks

An Aspect and Impact Assessment is provided below (in accordance with the Department's Guidelines, 2011) and provides a description of the potential for dust impact at each step of the operation. It also specifies the dust exposure risks as required by Clause 3.3 (b) of the *Shire of Dardanup Dust Control Local Law*.

ACTIVITY	DURATION	ASPECT	IMPACT
Site preparation – vegetation clearing	2 weeks	Removal of vegetation disturbs the soil by ripping up roots of plants and creates a potential for particles to be released to the air.	Sensitive receptors adjacent to the site could be exposed to dust. The closest sensitive receptor is located approximately 254 metres from Stage 3 (Lot 5) and 327 metres from Stage 4 (Lot 51) .
Stripping topsoil and overburden and stockpiling	2 weeks	Stripping topsoil disturbs and creates a potential for particles to be released to the air.	Sensitive receptors adjacent to the site could be exposed to dust. The closest sensitive receptor is located approximately 254 metres from Stage 3 (Lot 5) and 327 metres from Stage 4 (Lot 51)
		Stockpiling topsoil releases dust particles to the air.	
Excavation of clay	4-6 weeks	Excavation of clay can release dust particles to the air.	
Loading onto trucks and carting from site	4-6 weeks	Loading of clay onto trucks can release dust particles to the air.	
		Truck movements through the pit floor and along access tracks can release dust into the air.	

Site classification

The site risk assessment/classification has been prepared for the site in accordance with the Department's Guidelines (2011). The site is classified as 'medium risk'. The classification determines the level of dust management and monitoring required for the site.

This classification requires that a dust management system and a complaints system is in place (contained in this document). It also requires a 'contingency plan' which includes allowance for a water cart and a notice placed on site with contact details of the site supervisor.

Management Plan

Purpose

The purpose of the Dust Management Plan is to help Austral Brick to achieve the objectives of the Plan and to meet the requirements of the *Guidelines for Managing the Impacts of Dust and Associated Contaminants from land Development Sites, Contaminated Sites, Remediation and Other Related Activities* (Department of Environment and Conservation, 2011) and Clause 3.3 (c), (d) and (e) of the *Shire of Dardanup Dust Control Local Law 2011*. It includes actions such as dust control measures, corrective action and complaints protocol.

Separation distances

As is discussed earlier, the clay pit is relatively isolated and all rural dwellings are at least 500 metres from the extraction area except for one dwelling on Lot 19 which is 327 metres from Stage 4 (Lot 51) and 254 metres from Stage 3 (Lot 5). The actions contained in this Management Plan will help control the occurrence of dust off-site and provides justification for the reduced separation distance from the generic distances provided in Guidance Statement No. 3.

Complaints Procedure

The complaints procedure is described below. It is also important that all complaints are recorded. The following activities will be conducted:

- Complaints made to the operator will be documented and dealt with expeditiously.
- Complaints received either directly from the complainant or via the Shire of Dardanup will be reviewed by the operator and interested parties to assess:
    (i) the legitimacy of the complaint;
    (ii) the aspects of the operation that triggered the complaint;
    (iii) management actions required to address the issues raised to bring operations into line with conditions imposed on the extractive operation by the Shire of Dardanup under the Extractive Industries Licence.
- Actions deemed necessary to bring operations into line with relevant legislation, regulation and license conditions will be undertaken immediately and before works are recommenced.
- Summaries of complaints and actions taken to address each specific issue will be recorded in the Complaints Register (See Appendix D).

Complainants and the Shire of Dardanup will be notified in writing of the date, time and nature of the complaint received, results of the investigation, remedial actions undertaken and date and time of recommencement of works. If any complaints are received, necessary action will take place to help rectify the issue.

The above complaints procedure applies to the site at all times (including times when the site is not in operation).

Should a dust-related complaint be received when operations are not occurring, this will be reported to the Quarry Manager who will respond by visiting the site to investigate the issue and will implement dust control (if required). Response times are relatively quick and a representative from Austral Bricks can visit the site on the day that they are notified of the complaint.

Dust Control Measures to Address Risk

1. Dust suppression

   Dust suppression is generally achieved through the use of a 'dust suppression agent', most commonly water. The application of water over areas prone to the generation of dust helps to reduce the likelihood that small dust particles which will be picked up by the wind. Water will be available from the detention basin located at the base of the pit area. Watering will be undertaken as required utilising a water cart. The frequency and amount of water applied will be dependent upon local conditions and observable dust generation. The quantity of water to be used will vary as conditions will change from day to day.

   The amount of water available will depend on the size of the detention basin. The application of water from a water cart is likely to only be required during truck movements for a few weeks a year. If there is not enough water in the detention basins it can also be obtained from a water cart transported from another Austral Bricks site.

2. Covering loads

   All trucks will be covered by Enviro-tarp if they need to leave the site to control dust generation during transport. The Resource Manager will also make random checks at the site to ensure that dust suppression is adequate.

3. Monitor Weather Conditions

   If weather conditions are adverse (i.e. particularly strong winds are making dust management difficult), then operations will stop until the weather improves. Activities such as removal of top soil and overburden will be scheduled during suitable wind conditions or at times when materials are less likely to blow.

4. Physical Barriers and Separation

   Overburden will be removed from each stage and will be used to create bunds around the outside of the pit area. The bunds will provide a physical barrier to the movement of dust across the

landscape. As excavation moves through each stage the overburden from the new stage will be used to create new bunds around the pit area.

Vegetation will also be planted around the perimeter of the proposed excavation area to provide visual screening and to provide an additional physical barrier to the movement of dust. Vegetation will be established early on in the site preparation phase to give it some time to grow.

5. Targets for Atmospheric Concentrations

The targets for atmospheric concentrations of dust are stated below (as required by Clause 3.3 (d) of the *Shire of Dardanup Dust Control Local Law*). The targetswill be in accordance with the *National Environment Protection (Ambient Air Quality) Measure* (as amended). The standard which will apply to this development is set out in the table below.

POLLUTANT	AVERAGING PERIOD	MAX CONCENTRATION	MAX ALLOWABLE EXCEEDENCES
Particles as PM_{10}	1 day	$50ug/m^3$	5 days a year

6. Dust Monitoring

Dust monitoring will be undertaken as required by Clause 3.3 (e) of the *Shire of Dardanup Dust Control Local Law*. In accordance with *Guidelines for Managing the Impacts of Dust and Associated Contaminants from land Development Sites, Contaminated Sites, Remediation and Other Related Activities* (Department of Environment and Conservation, 2011), the monitoring equipment options will include either be a BAM (Beta Attenuation Monitor) or TEOM (Tapered Element Oscillating Microbalance) monitor. The placement will change depending on the stage of excavation. Equipment will be placed at the cadastral boundary of each stage being worked as this is the extent of the internal buffer. Equipment can also be moved if any complaints are received. It will be placed on site throughout the life of the excavation in order to capture background dust levels when activities on site are not occurring.

The equipment usually includes real-time monitoring which would be used to determine any exceedances of the *National Environment Protection (Ambient Air Quality) Measure* and further management actions required.

Triggers can be set which can prompt further actions. For example, if the trigger is set during operations, all work will case to prevent exceeding the standard for atmospheric concentrations. If operations are not occurring at the time and the trigger is set, the Operations Manager will be informed who will promptly visit the site to further investigate and undertake dust control (if required). Trigger levels can be set once the background monitoring occurs prior to excavation commencing. They are likely to be set at below the maximum concentration permitted on a 1 day average (as specified above), to facilitate the investigation of elevated particulate levels before a breach of the maximum allowable values occurs.

Summary

POTENTIAL IMPACT	MANAGEMENT/ACTION	COMMITTMENT	TIMING
Potential impact on adjoining sensitive land uses.	1. Maintain separation distances to sensitive land uses on adjoining properties as shown on the attached plan.	Impact to surrounding areas from dust will be minimised by complying with the Excavation Management Plan and the requirements of the Shire of Dardanup Dust Control Local Law.	Ongoing
	2. All non-conformances and dust related complaints immediately reported to the Quarry Manager.		Ongoing
	3. Following complaints, the source of any excessive dust will be identified and work practices will be modified or re-scheduled to reduce or eliminate the risk of future events.		Ongoing
	4. Should a dust-related complaint be received when operations are not occurring, this will be reported to the Quarry Manager who will respond by visiting the site to investigate the issue and will implement dust control (if required.)		Ongoing
	5. Wet down access roads and pit areas with water as required using a water cart and the water from the basins in the pit area.		Ongoing
	6. Wet down and cover loads on trucks as required.		Ongoing

POTENTIAL IMPACT	MANAGEMENT/ACTION	COMMITTMENT	TIMING
	7. Schedule activities such as removal of top soil and overburden at times when materials are less likely to blow or during suitable wind conditions.		Ongoing
	8. When winds are sufficiently strong to negate the effects of dust management, operations will cease until conditions improve and compliance can be achieved.		Ongoing
	9. Create and maintain screening barriers with overburden where possible.		Ongoing
	10. Maintain all equipment in good condition.		Ongoing
	11. Maintain internal access roads in good condition.		Ongoing
	12. The targets for atmospheric concentrations of dust (Clause 3.3 (d) of the Shire of Dardanup Dust Control Local Law) will be in accordance with the National Environment Protection (Ambient Air Quality) Measure (as amended).		Ongoing
	13. Dust monitoring will be undertaken using either a BAM (Beta Attenuation Monitor) or TEOM (Tapered Element Oscillating Microbalance) monitor located at the cadastral boundary.		Ongoing
	14. Continue training programmes on dust control requirements to all workers and contractors.		Ongoing

5.4 Noise and vibration management plan

Introduction

Noise can potentially generate from vehicle movements within the operation area and when transporting clay from the site. There will be no blasting or other on-site processing. Noise-generating activities are of particular importance to sensitive land uses, such as residential dwellings.

The objectives of the Noise Management Plan are:

- To manage the potential for noise generation
- To reduce the potential for noise to impact of the local area
- To provide a process in the event of a noise-related complaint.

To meet the objectives the operator of the site makes the following commitments in relation to noise:

1. Manage noise levels in accordance with the *Environmental Protection (Noise) Regulations 1997*.
2. Manage vibration in accordance with *Australian Standard AS 2670.2 – Evaluation of Human Exposure to Whole Body Vibration (1990)*
3. Manage noise levels to workers on site in accordance with the *Mines Safety and Inspection Act 1994 and Regulations 1995*.

EPA Guidance Statement No. 3 and Separation Distances

As is discussed earlier, the clay pit is relatively isolated and all rural dwellings are at least 500 metres from the extraction area except for one dwelling on Lot 19 which is 327 metres from Stage 4 (Lot 51) and 254 metres from Stage 3 (Lot 5).

Noise mitigation and management

Commitment 1 – Environmental Protection (Noise) Regulations 1997

Normal clay excavation is a relatively quiet operation (as no blasting or processing takes place on site). Excavation will be below the natural ground level and the site is surrounded by overburden to provide additional noise buffers. As extraction progresses the ground level will lower, resulting in the operation of machinery at levels below the surrounding ground level. This will act as a noise insulator and significantly

reduce any residual noise associated with the operation of machinery on site. Occasionally an excavator or bulldozer may be required to work from natural ground level to increase efficiency or safety. Ripping or pushing by a bulldozer on the natural ground level has the potential to be the noisiest part of the operation.

All equipment used for excavation is relatively new and well maintained which aims to minimise noise generation. All vehicles use broadband reversing beepers to reduce noise emissions.

Operations will only take place during the approved hours of operation, which reflect more general operating hours as stipulated by the regulations.

Commitment 2 – Australian Standard AS 2670.2 – Evaluation of Human Exposure to Whole Body Vibration (1990)

The operator will comply with the Australian Standard AS 2670.2 – Evaluation of Human Exposure to Whole Body Vibration (1990) and vibration management as required by the Department of Mines, Industry Regulation and Safety.

Commitment 3 – Mines Safety and Inspection Act 1994 and Regulations 1995

All workers will be supplied with noise protection equipment and noise management will be in accordance with the *Mines Safety and Inspection Act 1994 and Regulations 1995.* Regular site audits are undertaken by the Department of Mines, Industry Regulation and Safety.

Complaints Procedure

The complaints procedure is described below. It is essential that any complaints relating to the creation of excessive noise are recorded, further investigated and acted on. The following activities will be conducted:

- Complaints made to the operator will be documented and dealt with expeditiously.
- Complaints received either directly from the complainant or via the Shire of Dardanup will be reviewed by the operator and interested parties to assess:

(i) the legitimacy of the complaint;

(ii) the aspects of the operation that triggered the complaint;

(iii) management actions required to address the issues raised to bring operations into line with conditions imposed on the extractive operation by the Shire of Dardanup under the Extractive Industries Licence.

- Actions deemed necessary to bring operations into line with relevant legislation, regulation and license conditions will be undertaken immediately and before works are recommenced.
- Summaries of complaints and actions taken to address each specific issue will be recorded in the Complaints Register (See Appendix D).

Complainants and the Shire of Dardanup will be notified in writing of the date, time and nature of the complaint received, results of the investigation, remedial actions undertaken and date and time of recommencement of works. If any complaints are received, necessary action will take place to help rectify the issue.

Summary

POTENTIAL IMPACT	MANAGEMENT/ACTION	COMMITMENT	TIMING
Noise may impact on adjoining sensitive land uses.	1. Maintain separation distances to sensitive land uses on adjoining properties as shown on the attached plan.	Impact to surrounding areas from noise will be minimised by complying with the Excavation Management Plan. Comply with the *Environmental*	Ongoing
	2. Excavate from the floor of the pit which will generally be below natural ground level.		Ongoing
	3. Create and maintain screening barriers (bund walls) with overburden and vegetation.		Ongoing
	4. Adhering to the hours of normal operation, with work conducted in the hours identified in the application.		Ongoing
	5. All plant equipment and vehicles being fitted with appropriate noise suppression equipment to reduce noise levels so far as is practicable, with machines the quietest reasonably available.		Ongoing
	6. Maintain all equipment in good condition.		Ongoing

POTENTIAL IMPACT	MANAGEMENT/ACTION	COMMITMENT	TIMING
	7. All non-conformances and noise and vibration related complaints immediately reported to the Quarry Manager.	*Protection (Noise) Regulations 1997* and the *Mines Safety and Inspection Act 1994 and Regulations 1995.*	Ongoing
	8. Following complaints, the source of any excessive noise or vibration will be identified and work practices will be modified or re-scheduled to reduce or eliminate the risk of future events.		Ongoing
	9. Continue training programmes on noise control requirements to all workers and contractors.		Ongoing

5.5 Water Management Plan

Introduction

The aim of the Water Management Plan is to ensure that extractive industry activities do not have an adverse impact on water resources. It sets out the drainage management procedures and the guidelines in the event of a storm or emergency. It has been prepared in accordance with the Department of Water's *Water Quality Protection Note 15 Extractive Industries Near Sensitive Water Resources*. Relevant recommendations are included in the management plan below. The below water management procedures aim to ensure proper protection of surrounding water resources from the extractive industries operation.

Proposed water management is also illustrated on the Concept Plan at Appendix B. This provides an indicative description of how drainage management will typically be undertaken within each stage.

Recommendation 1 in the Protection Note states that '*extractive industries should be an accepted land use near most sensitive water resources provided the operator adheres to regulatory conditions designed to meet local planning, environmental and water source protection objectives'*.

Site conditions

Hydrology of the site is discussed in detail in Chapter 2. In summary, the site has the following features:

- No Public Drinking Water Source Areas
- Classified as a palusplain 'Multiple Use' wetland
- Closest watercourses are Collie River 3 kilometres to the north and a minor watercourse 1.2 kilometres to the north
- Water on site is retained and collected in a detention basin at the base of the pit.

The local area receives a majority of rainfall between the months of May to August. The existing pit area has the capacity to retain water from high rainfall/storm events.

Management Actions

Water management procedures are based on the Department of Water's *Water Quality Protection Note 15 Extractive Industries Near Sensitive Water Resources*. The recommendations from the Protection Note and management actions are set out in the table below.

Recommendation	Management Action/Comment
Recommendation 7 'Quarries should not be established on land subject to seasonal flooding, within defined flood plains or within waterway foreshore areas'.	The quarry is not located within land subject to seasonal flooding or in a flood plain or flood prone area.
Recommendation 8 'An adequate separation distance should be maintained between land disturbed by any extractive industry and waterways (including foreshore areas) to protect their ecological and social values and prevent degradation to water quality.'	As is described in Chapter 2.4, there are no major surface water features (watercourses or wetlands) within or directly adjoining the extraction area. The Collie River is 3 kilometres away and a minor watercourse is located approximately 1.2 kilometres north of the site. This is adequate separation distance from the excavation area. A vegetated reserve is located north of Railway Road providing further buffer to the watercourse. Maintenance of an adequate separation distance and vegetated buffer complies with Recommendations 8 and 19 of *Water Quality Protection Note No. 15*. The separation distance from all watercourses is more than adequate in accordance with *Operational Policy 4.3 – Identifying and Establishing Waterways Foreshore Areas.*

Recommendation	Management Action/Comment
Recommendation 9 'Natural vegetation buffers improve water quality by filtering potentially contaminated water before it enters a water body. Vegetation density and landform are important considerations when determining appropriate separation distances between land uses and waterways.'	A vegetated reserve is located north of Railway Road providing further buffer to the watercourse. In addition, there is adequate separation of approximately 1.2 kilometres.
Recommendation 15 'Extractive industries should not harm native vegetation (unless permitted by a clearing licence or permit).'	No clearing of vegetation is proposed, however if any clearing is required, a Clearing Permit will be applied for with the Department.
Recommendation 24 'Quarries near wetlands and waterways should not disturb peat land, floodways or the groundwater table, unless the development proposal has undergone an Environmental Impact Assessment and is approved by the Minister for the Environment.'	N/A – The extraction site is not located near a wetland or waterway.
Recommendation 27 'Quarry operators should use existing roads and tracks where practical. New access ways onto major roads should not be created.'	Access tracks are already established and will continue to be utilised.
Recommendation 28 'Quarries should have security fencing and locked gates to prevent public access outside of operating hours.'	Appropriate security including fences, locked gates and signage will be established.

Recommendation	Management Action/Comment
Recommendation 30 Small-scale extractive industry sites may not have toilet and washroom facilities or an on-site wastewater treatment system. For these sites, a chemical toilet should be provided for staff. The toilet facility should be maintained in good working order and waste disposed of at a facility authorised under the Health Act 1911.	A small transportable lunchroom/office and portaloo will be provided on site for workers. It will be regularly serviced.
Recommendation 37 'All vehicle and plant fuelling facilities (including mobile power generators) should be placed and operated within low-permeability (less than 10-9 m/s) bunded compounds designed to allow effective recovery of any fuel spill without fluid loss to the environment.'	Fuel and chemical management is set out in the Refuelling Management Plan. No fuel facilities are provided and no chemical or pesticide storage takes place on site. Mobile fuel trucks visit the site to refuel vehicles.
Recommendation 45 'All stormwater run-off from disturbed land should be contained on-site initially to achieve effective removal of sediment and turbidity. Over-land stormwater flows from outside the quarry area should be diverted via bypass drains or earthen bunds around disturbed surfaces and any stockpiles.'	All stormwater is retained within the pit area and is not permitted to flow into surrounding areas. A water detention basin is created at the lowest point in the pit area and water is diverted and drained into this basin. Water from the basin can be used during the summer months for dust suppression as required.
Recommendation 46 'Any surface water flowing from disturbed areas should pass through effective settling pits to minimise turbidity.'	N/A – Surface water is not permitted to drain outside of the disturbed area.
Recommendation 49 'All stockpiled materials (including topsoil overburden) awaiting transport or held for rehabilitation should be located upstream in the catchment of turbidity control facilities.'	All overburden stockpiles are located adjacent to the pit area.

Recommendation	Management Action/Comment
Recommendation 53 'Employees should be trained, assigned specific environmental management roles, and reminded via signs or symbols of the contamination risks to water resources posed by chemicals released to the local environment.'	All employees and contractor are educated and trained as appropriate.
Recommendation 54 'An environmental response program should be in place for accidental chemical spills.'	Austral Bricks has an emergency response plan in place as required by the Department of Mines, Industry Regulation and Safety.
Recommendation 55 'A fuel management plan that meets the requirements of the DMP should be put in place.'	A Refuelling Management Plan is contained within this document, and Austral Bricks follows the procedures as required by the Department of Mines, Industry Regulation and Safety.

Summary

Drainage management procedures are set out in the table below.

POTENTIAL IMPACT	MANAGEMENT/ACTION	COMMITMENT	TIMING
Impact on surface and groundwater.	1. Ensure groundwater table is not intercepted throughout excavation.	Compliance with the Drainage Management Plan.	Ongoing
	2. Maintain the final land surface at least 2 metres above the groundwater table.		Ongoing
	3. Ensure that there is capacity in the detention basins for high rainfall events.		Ongoing
	4. Maintain all machinery in good condition to minimise risk of leaks and spills.		Ongoing
	5. Maintain the internal access road in good condition.		Ongoing
	6. Avoid spillages on roads and clean up promptly.		Ongoing
	7. Ensure rubbish is disposed of appropriately.		Ongoing

POTENTIAL IMPACT	MANAGEMENT/ACTION	COMMITMENT	TIMING
	8. Remove any illegal rubbish promptly.		Ongoing
	9. Provide an appropriately serviced portable toilet for on-site workers.		Ongoing
	10. Continue training programmes on water management requirements to all workers and contractors.		Ongoing
	11. Any significant adverse impacts to be recorded, investigated and remediated.		Ongoing
	12. Water retained on site can be used for dust suppression and tree watering if required (particularly during the summer months). Water is also likely to be lost through evaporation during summer.		Ongoing

5.6 Refuelling management plan

Protection of water resources from fuels and other chemicals will be managed through the Refuelling Management Plan.

Refuelling from mobile tankers will take place. This method is used on most mine and construction sites and used at other Austral Bricks operations. Refuelling will be undertaken in the active extraction area to allow for containment if a spill does occur. Loaders and bulldozers will be refuelled on site to the Department of Mines, Industry Regulation and Safety and Department of Water and Environmental Regulation's standards. No fuel or chemicals or lubricants will be stored within the extraction area.

The main risk of contamination is the minor drips that occur during removal of the hoses etc. These minor spills are quickly degraded by soil microbial matter. Soil and resource should quickly be placed around a spill to contain it. Any drips or minor spills should be scooped up with the clay resource and sent to the works site where they are burnt with the clay during the firing process. Large spills should be removed from the site to an approved disposal area. Impermeable liners will be used for any top-up oils.

The clay extraction process is a chemically free operation.

POTENTIAL IMPACT	MANAGEMENT/ACTION	COMMITMENT	TIMING
Impact on surface and groundwater	1. No fuels, lubricants or chemicals will be stored on site. They are brought to the site as required.	Compliance with DWER and DMIRS regulations and this Excavation Management Plan.	Ongoing
	2. Major servicing of all machinery is to be done off site.		Ongoing
	3. Service all machinery and equipment in accordance with the maintenance schedule prescribed.		Ongoing
	4. Use an accidental spill containment and cleanup protocol.		Ongoing
	5. Regularly inspect fuel, oil and hydraulic fluids on machinery for wear or faults.		Ongoing

POTENTIAL IMPACT	MANAGEMENT/ACTION	COMMITMENT	TIMING
	6. Ensure refuelling and lubricating occurs in designated areas and equipment for the containment and clean-up of spills is provided.		Ongoing
	7. Contain spillages in working areas by shutting down equipment.		Ongoing
	8. Transport chemicals in accordance with the 'Australian Code for the Transport of Dangerous Goods by Road and Rail'.		Ongoing
	9. Any drips or minor spills should be scooped up with the clay resource and sent to the works site and burnt with the clay during the firing process.		Ongoing
	10. Any large spills should be removed from the site to an approved disposal area.		Ongoing
	11. Maintain the site in a tidy manner.		Ongoing
	12. All significant incidents are to be recorded, investigated and remediated.		Ongoing

5.7 Separation distances and visual management

Separation distances and buffers serve the function of providing distance to sensitive land uses (such as residential dwellings). Implementation of separation distances and buffers should be used in conjunction with other management procedures (such as noise, dust and visual management). Visual impact can occur if the operation is set too high in the landscape, has insufficient visual protection or is too close to dwellings.

'EPA Guidance Statement No. 3' provides guidance on the separation distances and buffers for a range of industrial land uses to sensitive land uses. The distances stated in the policy assume the land use is not managed and, should best practice environmental management take place, these distances can be reduced.

The operations on site fit into the category *Clay extraction or processing.* The separation distance is given *as 500-1000 metres, depending on size and processing*, however this can be less with appropriate environmental management. For example, no processing takes place on site which reduces the potential for impact. It should be noted that in the EPA's *Draft Environmental Assessment Guideline for Separation distances between industrial and sensitive land uses* the separation distance is 300-500 metres.

The potential impacts listed in the Guidance Statement are noise and dust. These are managed through the Noise Management Plan and Dust Management Plan contained in this report. Austral Bricks adheres to best management practices to reduce the potential for noise and dust impact. The potential for noise and dust impacts can come from either extraction in the pit area or the transport of clay from the stockpile area.

The clay pit is relatively isolated and all rural dwellings are at least 500 metres from the extraction area except for one dwelling on Lot 19 which is 327 metres from Stage 4 (Lot 51) and 254 metres from Stage 3 (Lot 5).

One rural dwelling is located on Lot 51 and a dwelling and outbuildings are located on Lot 5. Another rural dwelling is located on the adjoining Lot 50. All three properties are owned by Austral Bricks. These dwellings are currently rented by tenants. Tenants will be moved out and the dwellings removed before excavation is within 500 metres of the dwellings.

It should also be noted that the site is over 3 kilometers away from the nearest residential area.

The separation distances in GS3 are to be used by decision makers as a guide when determining potential impacts to sensitive land uses. The distance of 500m-1000m assumes that no management takes place. Austral Bricks ensures that dust and noise management plans are in place to reduce potential impact of operations. Vegetation screening is also provided along the roads. This all contributes to ensuring the amenity of the area is well protected.

The management actions in place to address separation distances are outlined below.

POTENTIAL IMPACT	MANAGEMENT/ACTION	COMMITMENT	TIMING
Dust and noise impacts on sensitive land uses.	1. Establish and maintain screening bunds using overburden where possible.	Impact to surrounding areas from noise, dust or visual amenity will be minimised by complying with the Excavation Management Plan.	Ongoing
	2. No processing of clay occurs on site which greatly reduces the potential for impact. Noise will generally be limited to sound made by trucks and machinery (which aren't generally much louder than farm vehicles).		Ongoing
	3. Excavations for most of the time will be below ground level. The walls of the pit will help screen it from surrounding properties.		Ongoing
	4. Locate transportable buildings, plant and stockpiles in areas of low visual impact.		Ongoing
	5. The operation complies with all Shire and State Government planning policies.		Ongoing

5.8 Waste management plan

Unauthorised access dumping of rubbish

The potential for illegal dumping of rubbish occurs from trespassers entering the site illegally. The site is currently fenced around the perimeter, gates are locked and signs are present which warn the public that the site is an open pit. This is to prevent and deter trespassers from entering the site.

Any illegally dumped material will be removed promptly and removed to an approved landfill site.

Solid domestic waste and light industrial waste

The site will only be operational intermittingly throughout the year so the potential for creating waste is small. Solid waste and light industrial waste will be stored in appropriate containers and removed from the site frequently to an approved landfill site.

Wastewater disposal

The site has been used for brickmaking and clay extraction for many years and has wastewater procedures in place.

POTENTIAL IMPACT	MANAGEMENT/ACTION	COMMITMENT	TIMING
Inappropriate disposal of waste	1. Keep the site tidy and remove rubbish from the site to an approved waste disposal facility as required.	Compliance with this Excavation Management Plan	Ongoing
	2. Recycle waste where possible.		Ongoing
	3. Gates will be locked at all times when the site is not being operated on.		Ongoing
	4. Fences will be maintained around the site.		Ongoing
	5. Maintain the toilet facilities as required.		Ongoing

5.9 Rehabilitation management plan

Introduction

The purpose of Rehabilitation Management Plan is to set out the rehabilitation of the clay quarry as required by the *Shire of Dardanup Extractive Industry Local Law* and the *Shire of Dardanup Policy No CP055 Extractive Industries – Site Rehabilitation*.

Rehabilitation objectives

The historical use of the site is agriculture and the site has already been largely cleared of native vegetation. Only scattered trees remain throughout the site. The site is zoned *General Farming* in the Shire of Dardanup Local Planning Scheme. Therefore, rehabilitation of the site is to be consistent with the zone and permitted uses and is not to return the site to pre-European condition. As such, it is expected that after extraction activities have ceased the land will be re-contoured to a gentle slope using overburden, with some portions of the site recontoured into farm dams surrounded by pasture. Slopes will be recontoured to a safe and stable condition as required by the *Mines Safety and Inspection Act 1994* and the Department of Mines, Industry Regulation and Safety (DMIRS).

The aims of the Rehabilitation Management Plan are to:

1. Re-contour the pit areas to a safe and stable condition using overburden, with some portions of the site recontoured into farm dams surrounded by pasture.
2. Rehabilitate by placing topsoil over the re-contoured area and planting with pasture species (e.g. grasses and legumes).

A Rehabilitation Concept Plan is provided at Appendix B. This plan provides an indicative illustration of how the site could look following rehabilitation.

Project Objective and Targets

Rehabilitation objectives and targets are set out in the table below.

OBJECTIVE	TARGET	PERFORMANCE INDICATOR
Return the quarry area to pasture surrounding a farm dam.	Slopes are recontoured to a safe and stable condition.	Quarry manager ensures that slopes are safe and stable.
	The remaining voids are used as a farm dams.	Farm dams are created from the voids.
	Recontoured slopes surrounding the dams are replanted with pasture species.	Pasture is growing along the recontoured areas around the dams.

Recontouring

Following site decommissioning, Austral Bricks are required to complete a *Mine Closure Plan* as required by the Department of Mines, Industry Regulation and Safety (DMIRS). The Department requires that slopes are recontoured to a safe and stable condition prior to leaving the site.

It is therefore proposed that site recontouring will involve the following actions:

1. Use overburden to re-contour slopes to a safe and stable condition and overlay with topsoil.
2. Maintain water drainage throughout the site – direct water from the disturbed areas into the dam located within the pit area.

Indicative final contours are provided on the plan at Appendix B. This plan is a concept only and the final product is likely to vary depending on the exact location of the pit areas and the remaining farm dams.

Planting

Land surrounding the farm dams will be re-planted with pasture species. This will provide groundcover on recontoured and decommissioned surfaces to help manage erosion.

Pasture will be planted as soon as possible following recontouring to provide groundcover to manage soil erosion. The exact timing will depend on the season and the desirable month for planting.

The species of pasture to be planted may vary, however is likely to include the usual varieties planted in the local area including grasses or legumes.

Biodiversity planting is not proposed as part of rehabilitation as the site is currently already cleared and used for farming. Therefore, it is the intent to return the land to pasture where possible.

Timing

Rehabilitation will be progressive across the site as the excavation moves through the stages. Further information on timing is provided in the 'rehabilitation summary' section below.

Each indicative stage has been identified on the plan at Appendix B. It is anticipated that as the excavation moves through each stage, the previous stage will be rehabilitated when possible. The exact timing will depend on the timing of excavation of the next stage as a depression of sufficient depth will need to be excavated in a new stage before the previous stage is recontoured. This is to provide a pit area for drainage and to ensure that water is retained on site.

Recontouring of old pit areas will be undertaken during the summer months as the soil will be too wet during winter.

Weed control will take place during autumn when weeds are more likely to flourish. This is typically just after the first autumn rains.

Pasture will be planted at the appropriate time of the year for the species, typically around the winter months and following weed control.

Weed management

A 'weed' is *a 'plant that requires some form of action to reduce its effect on the economy, environment, human health and amenity'* (Department of the Environment and Energy, 2018). In this case, a 'weed' needs to be considered in context of the site and the rehabilitation objectives. As the end use of the quarry is to recontour slopes and reseed with pasture, weed species are also likely to be present. Considering the site is already cleared and has been used for agriculture previously, it would be impossible and irrational to try to eradicate all weeds on the site.

Weeds will generally not be cause for concern from an environmental perspective unless they are a 'Declared Plant' as listed by the Department of Primary Industries and Regional Development (DPIRD) or a 'Weed of National Significance' as listed by the Federal Department of the Environment and Energy. A list of Declared Plants is at the following link https://www.agric.wa.gov.au/declared-plants/declared-plant-control-table and Weeds of National Significance is at http://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html.

Nevertheless, in order to help manage the spread of weeds, particularly weeds which pose significant environmental risk, the following management actions should be adhered to:

1. Undertake weed control prior to planting, such as spraying for weeds.
2. No weed contaminated or suspect soil or plant particles will be brought on site.
3. Weed affected soils are not used for rehabilitation.
4. Vehicles are to keep to tracks and operational areas to reduce the risk of spreading weeds around the property.
5. The site is kept secure with perimeter fencing, signs and locked gates to avoid rubbish dumping from trespassers.
6. The site is monitored for the presence of weeds that pose a significant environmental risk.
7. Weeds that pose a significant environmental risk will be removed as appropriate.
8. Weed management will be integrated with usual rural weed management practices.

Completion Criteria

The completion criteria for the rehabilitation management plan are as follows:

- Slopes are in stable condition.
- Farm dams are created within the void.
- Pasture cover is self-sustaining.

Monitoring

The progress and success of rehabilitation will be monitored for three years following site decommissioning.

Monitoring of the site will be achieved through site inspection (to observe the survival of pasture growth, weed occurrence and erosion). While it is expected that some weeds will be present on the site, monitoring will target environmental weeds and, should any be observed, these will be removed.

Monitoring of the site through use of photos (on ground and aerial photos) will also be undertaken. Photos of the rehabilitation progress can be taken on the ground from various points throughout the site. These photos can be taken twice a year for a period of three years to review the progress of rehabilitation in winter and summer. Aerial/oblique photos can be taken using a UAV.

Monitoring actions will include the following

1. Monitor the rehabilitated areas for a period of three years (with the possibility of reducing to two years) to ensure the completion criteria are met.

Reporting

Austral Bricks can provide an annual report to the Shire of Dardanup on the progress of rehabilitation. The annual report will provide information relating to site activities, including any rehabilitation undertaken across the site. It should be noted that progressive rehabilitation will not occur, therefore the annual reports will not contain much detail relating to rehabilitation while the quarry is operating.

Rehabilitation summary

Rehabilitation procedures are summarised in the table below.

POTENTIAL IMPACT	MANAGEMENT/ACTION	RESPONSIBILITY	TIMING
Unsuccessful rehabilitation	1. Use overburden to re-contour decommissioned excavation areas and overlay with topsoil.	Supervisor/Quarry Manager	Summer months following decommissioning.
	2. Maintain water drainage throughout the site – direct water from the disturbed areas into the dam located within the pit area.	Supervisor/Quarry Manager	Ongoing
	3. Create gentle sloping banks to reduce the risk of water erosion.	Supervisor/Quarry Manager	During rehabilitation
	4. Undertake weed control prior to planting, such as spraying for weeds.	Supervisor/Quarry Manager	Autumn, a few weeks before planting commences.
	5. Undertake planting during early winter to allow seedlings to benefit from natural rainfall.	Supervisor/Quarry Manager	Early winter
	6. Vehicles are to keep to tracks and the operational areas.	Supervisor/Quarry Manager	Ongoing
	7. No weed contaminated or suspect soil or plant particles will be brought on site	Supervisor/Quarry Manager	Ongoing
	8. The site is kept secure with perimeter fencing, signs and locked gates to avoid rubbish dumping from trespassers.	Supervisor/Quarry Manager	Ongoing
	9. All rubbish is removed promptly from the site.	Supervisor/Quarry Manager	Ongoing
	10. Weed affected soils are not used for rehabilitation.	Supervisor/Quarry Manager	Ongoing

POTENTIAL IMPACT	MANAGEMENT/ACTION	RESPONSIBILITY	TIMING
	11. The site is monitored for the presence of weeds that pose a significant environmental risk.	Supervisor/Quarry Manager	Ongoing
	12. Weeds that pose a significant environmental risk will be removed as appropriate.	Supervisor/Quarry Manager	
	13. Weed management will be integrated with usual rural weed management practices.	Supervisor/Quarry Manager	Ongoing
	14. Assess the success of revegetation and undertake additional planting the following year if necessary.	Supervisor/Quarry Manager	The year following rehabilitation
	15. Monitor the rehabilitated areas for a period of three years (with the possibility of reducing to two years) to ensure the completion criteria are met.	Supervisor/Quarry Manager	Annually after rehabilitation for three years.

5.10 Final site clean up

All wastes on site will be appropriately managed during and after operation of the site in order to avoid environmental degradation. They will either be recycled or taken to an approved waste disposal site. Rubbish will be stored in large bins, which will be emptied at an appropriate rubbish tip. Clay excavation activities do not require the use of chemicals apart from lubrication materials and fuel.

After clay extraction activities have ceased, all equipment will be removed from the site and the final stages of rehabilitation will occur.

APPENDIX A

Application Forms

(Appendix ORD: 12.5B)

Shire of Dardanup

APPLICATION FOR DEVELOPMENT APPROVAL

Town Planning Scheme No. 3

FORM 110

Date stamp

Part 1 Owner Details

Full Name

Bristile Holdings Pty Ltd (Lot 51); Austral Bricks (WA) Pty Ltd (ACN 079 711 803) formerly Bristile Operations Pty Ltd (Lot 5)

ABN (if applicable)

32 008 668 540

Postal Address

Locked Bag 100 Midland WA 6936

Phone

[redacted]

Contact person for correspondence

Matthew Gordon – Resources and Transport Manager

Signature

ROBERT BLAKEWELL, DIRECTOR

Date

18/03/14

Signature

SUSAN LEPANUS COMPANY SECRETARY

Date

18/03/19

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).

Part 2 Applicant Details (if different from owner)

Full Name

Postal Address

Phone

Mobile

Phone A/H

Fax

Email

Contact person for correspondence

Signature

Date

(Appendix ORD: 12.5B)

Part 3 Property Details

Lot No	Street No	Street Name
5, 51		Railway Road and Waterloo Road

Suburb: Waterloo

Post Code:

Nearest street intersection: Waterloo Road and Railway Road

Plan or Diagram Number: Lot 5 (D40245), Lot 51 (P062046)

Certificate of Title – Vol/Fol: Lot 5 (478, 17A), Lot 51 (2719, 379)

Title encumbrances (e.g. easements, restrictive covenants): Lot 5 – easement burden

Part 4 Proposed Development

Nature of development: [ ] Works [X] Use [ ] Works and Use

Is an exemption from approval claimed for part of the development? [ ] Yes [X] No

If yes, is the exemption for: [ ] Works [ ] Use

Description of proposed works and/or land use: Extractive industries – clay extraction

Description of exemption claimed (if relevant):

Nature of existing buildings and/or land use: Rural use, rural dwellings

Approximate cost of proposed development: N/A Approx. $200,000

Estimated time of completion: N/A

Part 5 OFFICE USE ONLY

Acceptance Officer's initials:

Date received:

Local Government Reference No:

Part 6 Return form to

Shire of Dardanup
Planning Department
1 Council Drive/PO Box 7016
EATON WA 6232

Phone: (08) 9724 0300 Fax: (08) 9724 0091
Email: records@dardanup.wa.gov.au

Shire of Dardanup

SCHEDULE 3
SHIRE OF DARDANUP

Clause 7

APPLICATION FOR AN EXTRACTIVE INDUSTRY LICENCE

1. Name Austral Bricks (WA) Pty Ltd (ACN 079 711 603) formerly Bristile Operations Pty. Ltd. (the "applicant")
2. Address Locked Bag 100 Midland, WA 6936
3. Telephone ..... Fax : .....
4. Address and locality of proposed excavation site
   687 Waterloo Road, Waterloo
5. Lot No
   Lots 5 and 51
6. Location No .....
7. Plan or Diagram No Lot 5 - D040245, Lot 51 - P062046
8. Certificate of Title Volume: Lot 5 - 478, Lot 51 - 2719 Folio : Lot 5 - 17A, Lot 51 - 379
9. Owner of the land
   Lot 5 - Austral Bricks (WA) Pty Ltd (ACN 079 711 603) formerly Bristile Operations Pty Ltd
   Lot 51 - Bristile Holdings Ltd
10. Address of owner of the land
    Locked Bag 100 Midland, WA 6936
11. Material to be excavated
    Clay
12. If the application covers land that is the subject of an existing licence:
    Date of issue of that licence .....
    Date of expiration of that licence .....
    Conditions applicable to that licence .....
13. Term of licence sought
    20 years
14. Submitted with this application are :
    (a)3 copies of excavation site plan (cl.7(1)(a))
    (b)3 copies of works and excavation programme (cl.7(1)(b))
    (c)3 copies of rehabilitation and decommissioning programme (cl.7(1)(c))
    (d)datum peg evidence (cl.7(1)(d))
    (e)licensed surveyor's certificate (cl.7(1)(e))
    (f)evidence of compliance with cl.6(1) and (2) (cl.7(1)(f))
    (g)copies of all land use planning approvals (cl.7(1)(g))

(h)written consent of the owner of the excavation site (cl.7(1)(h))
(i)any other information that the Council has required (cl.7(1)(i))
(j)licence application fee of $250 (cl.7(1)(j)).

The applicant applies for a licence in respect of the proposed excavation site in accordance with and subject to the Shire of Dardanup Extractive Industries Local Law.

Dated this ....18th.... day of .....March..... ~~19~~ 2019

.....

Signature of Applicant

X.....

Signature of Owner of the land ROBERT BLAKEWELL DIRECTOR

Susan Leppinus SUSAN LEPPINUS COMPANY SECRETARY

.....

Signature of existing licensee

(if applicable)

SCHEDULE 4

SHIRE OF DARDANUP

Clause 8(3)(b)

EXTRACTIVE INDUSTRY LICENCE

Licensee

.....

Address

.....

.....

...

.....

...

Land Description

.....

.....

...

Material to be Excavated

.....

Term of Licence .....

Date of Expiry .....

This licence is issued in accordance with the Shire of Dardanup Extractive Industries Local Law subject to the following conditions :

.....

...

.....

...

.....

...

Dates this ..... day of 19

.....

.....

APPENDIX B

Plans

- Cadastre
- Easements
- Site Boundary
- 2m Contours
- Transmission Power Line
- Overhead Distribution Line
- House
- 500m Buffer from House
- Proposed Stages
- 20m Setback
- 10m Vegetated Bund
- Internal Access
- Topsoil

landinsights
PLANNING DESIGN ENVIRONMENT

0 50 100 150 200 m

1:7,500

Aerial Imagery: Landgate/LocateWA
Base Data: Landgate/SLIP

Disclaimer:
This plan has been prepared for a Development Application/Extractive Industry Application only.
All information is subject to survey.
Land Insights does not warrant that this plan is without flaw of any kind and disclaims liability for any errors, loss or other consequence which may arise from relying on the information depicted.

PO Box 289 Mt Lawley WA 6929
Ph: 9271 8506
admin@landinsights.com.au
landinsights.com.au

Extraction Plan

PROPOSED EXTRACTIVE INDUSTRY
WATERLOO

AUSTRAL BRICKS

(Appendix ORD: 12.5B)

(Appendix ORD: 12.5B)

Base data provided by SLIP.

Cadastre
Site Boundary
20m Setback
10m Vegetated Bund
Proposed Stages
Indicative Internal Access
Indicative Direction of Excavation
Direction of Internal Water Flow
Detention Basin
Transportable (6x3)
Indicative Stockpile
Topsoil

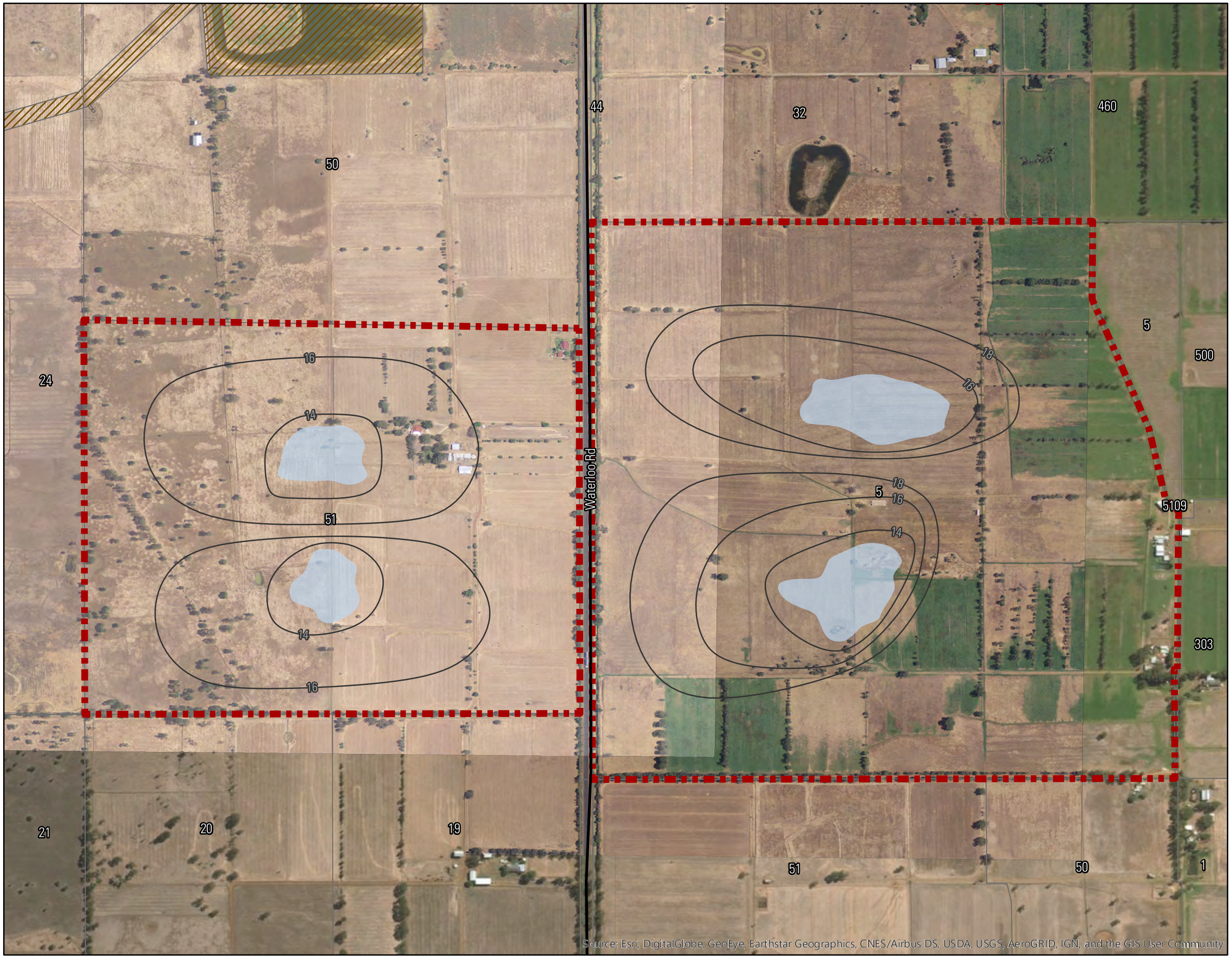
landinsights

N

0 50 100 150 200 m

Scale: 1:4,000

Lots 51, 4 & 5 Waterloo Road, Waterloo
Stage 1 Extraction Plan Schematic Concept
(indicative only)



landinsights
PLANNING DESIGN ENVIRONMENT

PO Box 289 Mt Lawley WA 6929
Ph: 9271 8506
admin@landinsights.com.au
landinsights.com.au

0 40 80 120 160 200 m

1:7,500

Indicative Rehabilitation Plan

PROPOSED EXTRACTIVE INDUSTRY

WATERLOO

AUSTRAL BRICKS

(Appendix ORD: 12.5B)

APPENDIX C

Certificate of Title

WESTERN AUSTRALIA

REGISTER NUMBER	
5/D40245	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
1	**26/2/2007**

VOLUME **478** FOLIO **17A**

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 5 ON DIAGRAM 40245

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

BRISTILE OPERATIONS PTY LTD OF WALLGROVE ROAD, HORSLEY PARK, NEW SOUTH WALES
(T K040820) REGISTERED 29/12/2006

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. D286873 EASEMENT BURDEN SEE SKETCH ON VOL 478 FOL 17A. REGISTERED 17/7/1986.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	478-17A (5/D40245)
PREVIOUS TITLE:	1121-63
PROPERTY STREET ADDRESS:	618 WATERLOO RD, WATERLOO.
LOCAL GOVERNMENT AUTHORITY:	SHIRE OF DARDANUP

(Appendix ORD: 12.5B)

WESTERN AUSTRALIA

REGISTER NUMBER	
51/DP62046	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
1	12/6/2009

VOLUME 2719 FOLIO 379

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 51 ON DEPOSITED PLAN 62046

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

BRISTILE HOLDINGS LTD OF HARPER STREET, CAVERSHAM

(AF K951616) REGISTERED 25/5/2009

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	DP62046
PREVIOUS TITLE:	1117-304, 1186-474
PROPERTY STREET ADDRESS:	687 WATERLOO RD, WATERLOO.
LOCAL GOVERNMENT AUTHORITY:	SHIRE OF DARDANUP

APPENDIX D

Complaints Register

ENVIRONMENTAL COMPLAINTS FORM – Complaint No XX

PLAINTIFF:	**POSITION:**
COMPANY	**ADDRESS**
PHONE NO:	**MOBILE NO:**
DATE:	**TIME:**
PLANT:	**KILN SPEED:**
WIND SPEED:	**WIND DIR:**
PRODUCT IN DRYER:	**PRODUCT IN KILN:**
EXTERNAL TEMP:	

COMPLAINT

INVESTIGATION

OUTCOMES & RECOMMENDATIONS

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APPENDIX E

Traffic Impact Statement

(Appendix ORD: 12.5B)

Traffic Impact Statement

Project:	Proposed Clay Extraction Sites
	Lot 5 and Lot 51 Waterloo Road, Waterloo
Client:	Austral Bricks
	c/o Land Insights
Author:	Keli Li
Doc No:	1904015-TIS-001
Revision:	A

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Document Status

Revision	Prepared By	Reviewed By	Approved By	Issue	Date
A	Keli Li	Paul Nguyen	Paul Nguyen	Client Review	18/04/19
B	Keli Li	Paul Nguyen	Paul Nguyen	Client Review	03/05/19

File Reference: Y:\Jobs Active 2019\T&T - Traffic & Parking\Austral Bricks_Lot 5 and 51 Railway Road TIS_1904015\Reports\Lot 5 and Lot 51 Waterloo Road_TIS_REV B.docx

Contents

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Tables

Glossary of Terms

Abbreviations

AADT	Annual Average Daily Traffic
ASD	Approach Sight Distance
AWT	Average Weekly Traffic
BAL	Basic Left Turn Treatment
BAR	Basic Right Turn Treatment
AUL	Auxiliary Left Turn Treatment
AUR	Auxiliary Right Turn Treatment
CHL	Channelised Left Turn Treatment
CHR	Channelised Right Turn Treatment
ESD	Entering Sight Distance
Km	Kilometre
Km/h	Kilometres per Hour
MRWA	Main Roads Western Australia
RAV	Restricted Access Vehicle
SISD	Safe Intersection Sight Distance
SLK	Straight Line Kilometre
TIA	Traffic Impact Assessment
Vpd	Vehicles per Day
Vph	Vehicles per Hour

1. Introduction

1.1. Background

Shawmac has been engaged by Land Insights on behalf of Austral Bricks to prepare a Transport Impact Statement for the proposed clay extraction site located at Lots 5 and 51 Waterloo Road, Waterloo in the Shire of Dardanup.

The site location is shown in Figure 1. An indicative site plan is included in Appendix A.

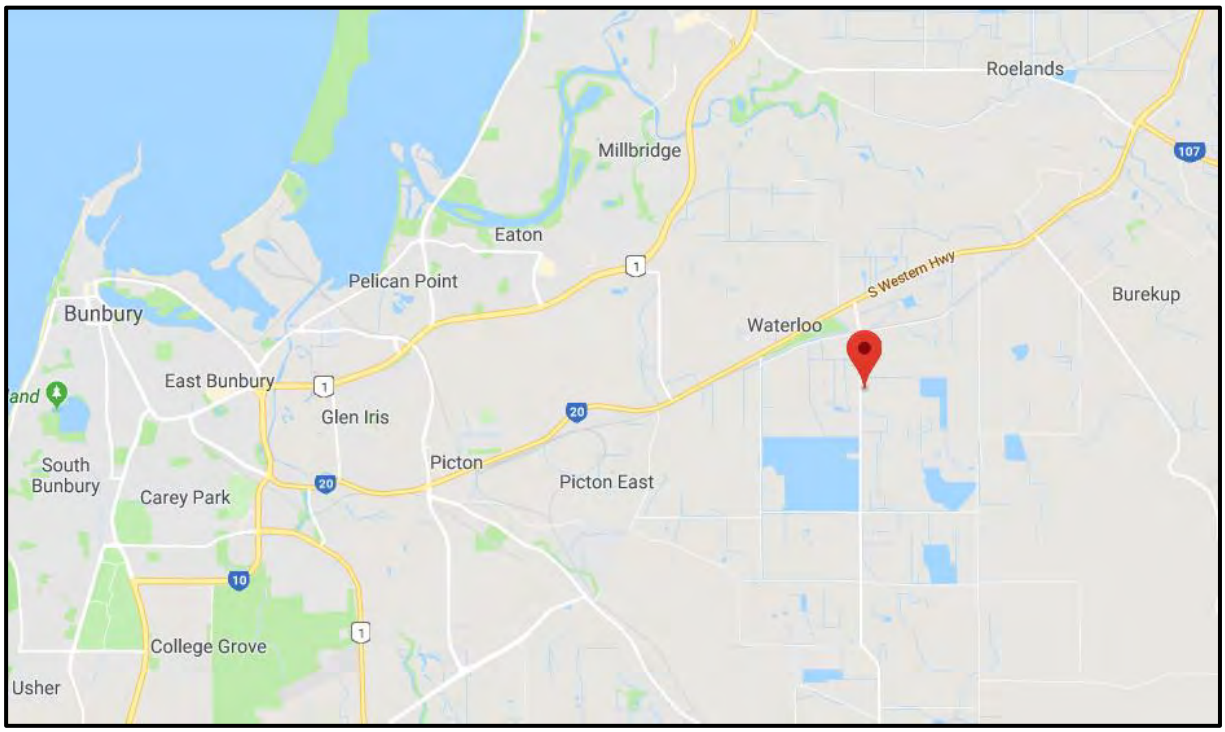


Figure 1 – Site Location

The site has been largely cleared of vegetation in the past for agricultural purposes. A majority of the site remains cleared of vegetation except for some scattered trees. The extraction site will be located on previously cleared farm land. An aerial view of the subject site is shown in Figure 2.

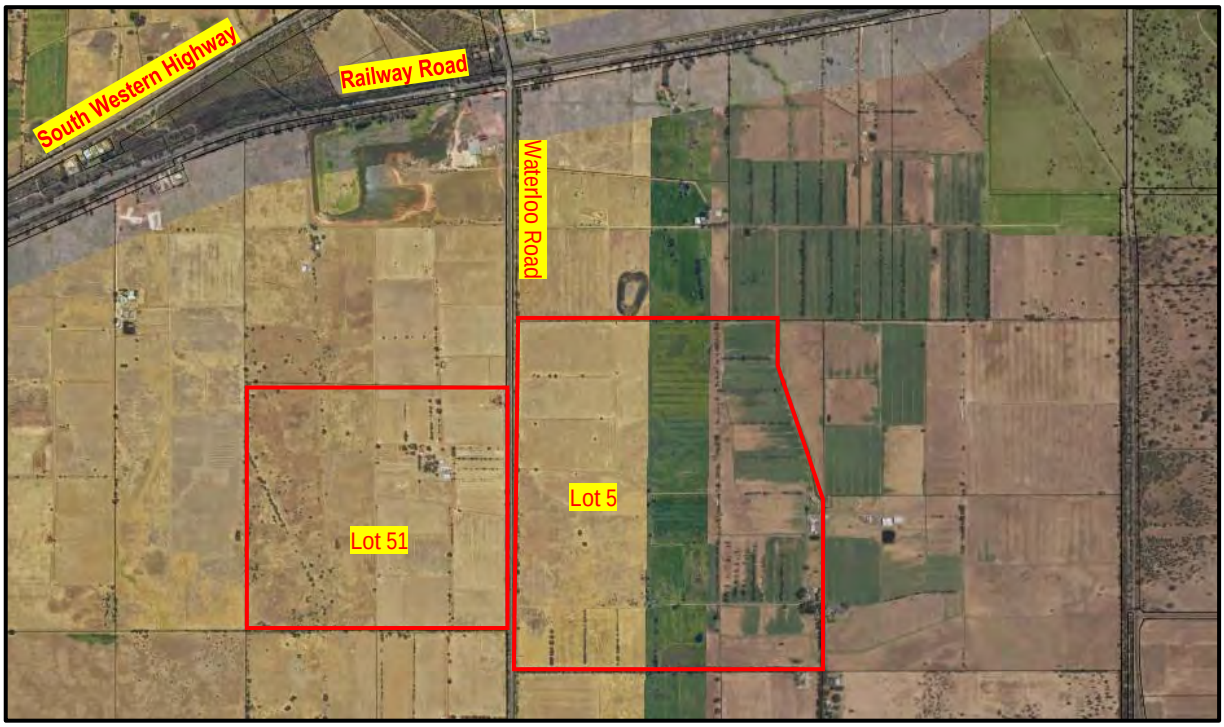


Figure 2 - Aerial Imagery

It is understood that Lot 50 Waterloo Road (adjoining Lot 51 to the north) previously held an Extractive Industry Licence in 2005 which then expired 2010. Extractive operations have stopped on the site since the previous approval expired as a result of a slowing housing market and subsequent decline in demand for brick products. It is now anticipated that the clay present on Lots 5 and 51 will again be required and Austral Bricks proposes to apply for a new Extractive Industry Licence to allow for clay extraction on these two lots for a 20-year period.

The Transport Impact Assessment has been undertaken in accordance with the Western Australian Planning Commission's (WAPC) Transport Impact Assessment Guidelines for Developments: Volume 4 – Individual Developments (2016). The assessment includes:

- Collection of background data including traffic counts and crash data;
- Details of the proposed operation as provided by the client;
- Assessment of traffic generation and distribution from the site;
- Assessment of the Waterloo Road / South Western Highway intersection in accordance with MRWA and Austroads guidelines with regards to capacity, safety, sight distance requirements, geometry and interaction with non-site traffic;
- Assessment of the development impact on the adjacent road network including any relevant mid-block locations and at nearby intersections; and
- Identification of any required management measures to ensure acceptability of the proposal.

2. Existing Situation

2.1. Land Use

According to the Shire of Dardanup *Local Planning Scheme No 3 (*LPS 3), the subject site is zoned as "General Farming" refer Figure 3 below.

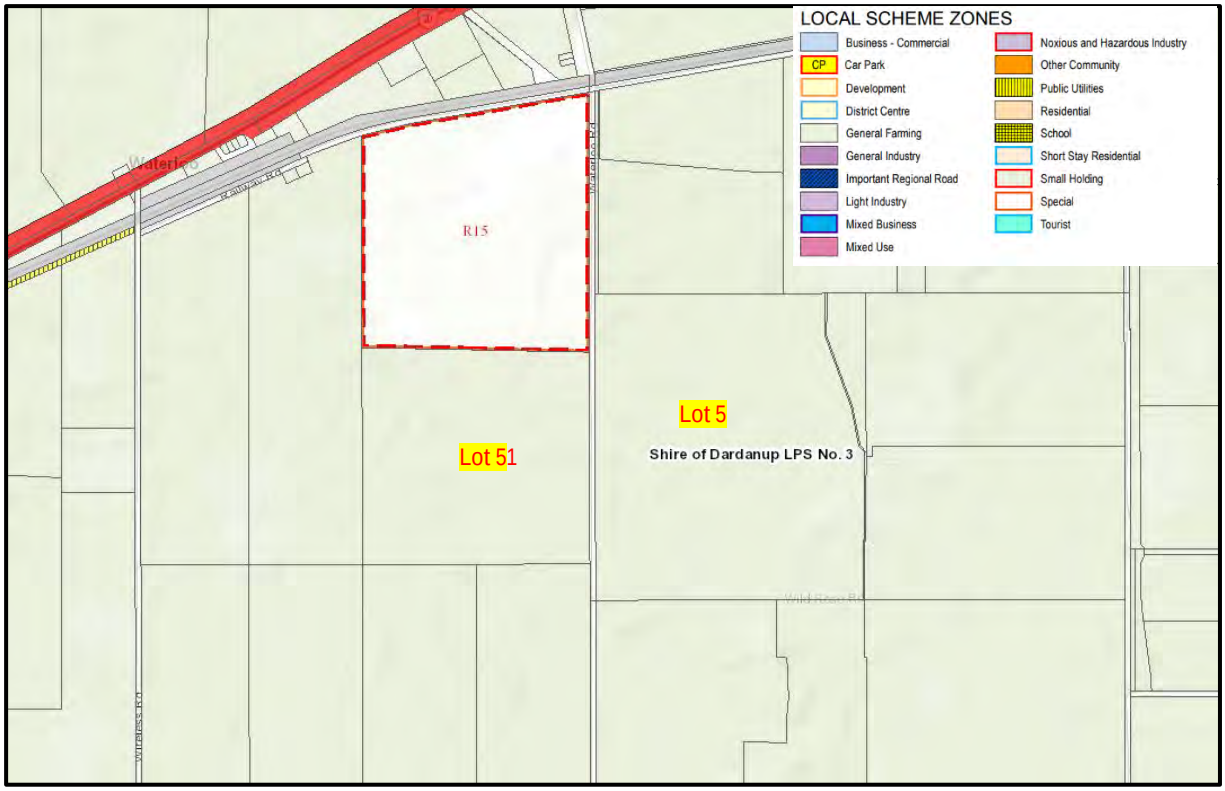


Figure 3 - Zoning - Extract from the Shire of Dardanup LPS 3

2.2. Road Network

An extract of the Main Roads *Road Information Mapping* web tool shown in Figure 4 outlines the road hierarchy surrounding the site.

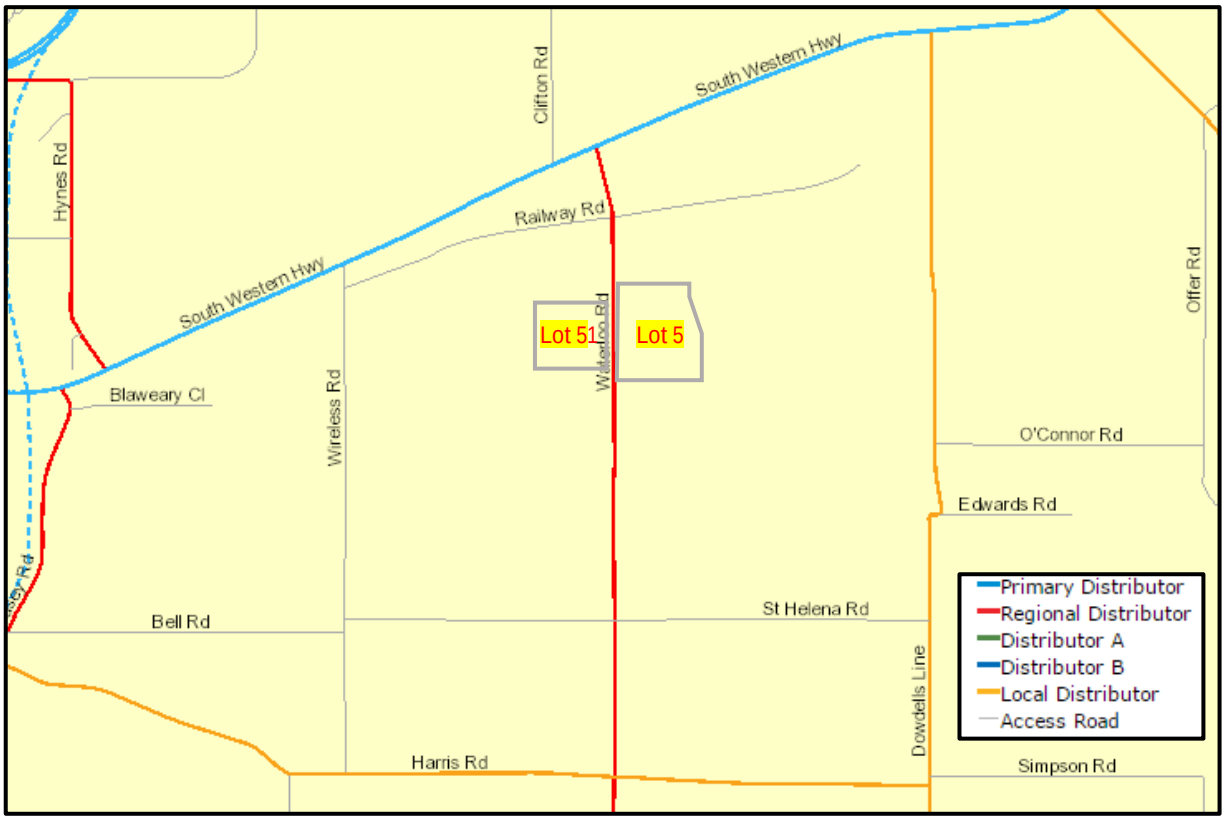


Figure 4 - Road Hierarchy

Waterloo Road

Waterloo Road is a north-south aligned road and provides frontage access to both Lot 5 and Lot 51. Waterloo Road is a Regional Distributor road under the care and control of the Shire of Dardanup. It is a two-lane rural road with an approximate 8.5m sealed width including 0.75m wide sealed shoulders on both sides. The cross-section of Waterloo Road in the vicinity of the site is shown in Figure 5.

Figure 5 - Waterloo Road Typical Cross-section

South Western Highway

South Western Highway is located approximately 1.5km north of the proposed sites, it forms a T-intersection with Waterloo Road. South Western Highway is a Primary Distributor road under the care and control of the MRWA. In the vicinity of Waterloo Road intersection, South Western Highway is a two-lane road with an approximate 10.6m sealed width including 1.5m wide sealed shoulders on both sides. The typical cross-section of South Western Highway is shown in Figure 6.

Figure 6 - South Western Highway Typical Cross-section

Railway Road

Railway Road is a northeast-southwest aligned Access Road, located approximately 900m north of the site. it intersects Waterloo Road via a four-way priority-controlled intersection with priorities given to Waterloo Road. Railway Road does not provide frontage access to the proposed lots and the proposed cartage of clay will not use Railway Road.

2.3. Traffic Volumes

Average Weekday Traffic (AWT) volumes and peak Hour volumes for Waterloo Road and South Western Highway were sourced from MRWA Trafficmap. Detailed traffic count data is attached in Appendix B. They are also summarised in Table 1 and Table 2.

Table 1 - Daily Traffic Volumes

Road	Location	AWT	% HV	Data Source
Waterloo Road - Northbound	South of SW Hwy	438	24.20	MRWA 2015
Waterloo Road - Southbound	South of SW Hwy	460	27.39	MRWA 2015
South Western Highway - Eastbound	East of Waterloo Rd	3,536	18.32	MRWA 2017
South Western Highway - Westbound	East of Waterloo Rd	3,656	19.15	MRWA 2017

Table 2 - Peak Hour Traffic Volumes

Road / Direction	Location	AM Peak	PM Peak	Data Source
Waterloo Road - Northbound	South of SW Hwy	35	36	MRWA 2015
Waterloo Road - Southbound	South of SW Hwy	37	33	MRWA 2015
South Western Highway - Eastbound	East of Waterloo Rd	257	308	MRWA 2017
South Western Highway - Westbound	East of Waterloo Rd	319	369	MRWA 2017

Considering the site is proposed to operate for more than 10 years, to represent the development year traffic conditions, the growth rates summarised in Table 3 have been applied to Waterloo Road and South Western Highway (assuming the operated will start by the year 2019). These growth rates were derived from the following historical traffic counts.

- MRWA traffic count for Waterloo Road (South of South Western Highway) recorded a volume increase from 797 vpd in 2013 to 897 vpd in 2015, which indicates a 6.09% compounded annual growth over the 2-year period; and
- MRWA traffic count for South Western Highway (East of Waterloo Road) recorded a volume increase from 6,135 vpd in 2013 to 6,285 vpd in 2017, which indicates a 6.09% compounded annual growth over the 4-year period;

Table 3 - Annual Growth Rates

Road Name	Annual Growth Rate	
	Latest Traffic Count Year to 2019	2019-2029
Waterloo Road	6%	2%
South Western Highway	1%	1%

The projected traffic volumes are shown in Table 4.

Table 4 - Projected Traffic Volumes

Road	Direction	Traffic Count			2019			2029		
		Daily	AM Peak	PM Peak	Daily	AM Peak	PM Peak	Daily	AM Peak	PM Peak
Waterloo Road South of SW Hwy (2015)	Both	898			1134			1382		
	NB	438	35	36	553	44	45	674	54	55
	SB	460	37	33	581	47	42	708	57	51
South Western Highway East of Waterloo Road (2017)	Both	7192			7337			8104		
	EB	3536	257	308	3607	262	314	3984	290	347
	WB	3656	319	369	3729	325	376	4120	359	416

2.4. RAV Status

As per MRWA RAV network mapping tool, Waterloo Road allows vehicles up to RAV Category 3 (up to concessional loading level 3) and South Western Highway allows vehicles up to RAV Category 7 (with up to concessional loading level 3). There are conditions imposed for the use of RAV Category 3 vehicles on Waterloo Road.

Figure 7 shows the Restricted Access Vehicle categories for the road network in the local vicinity.

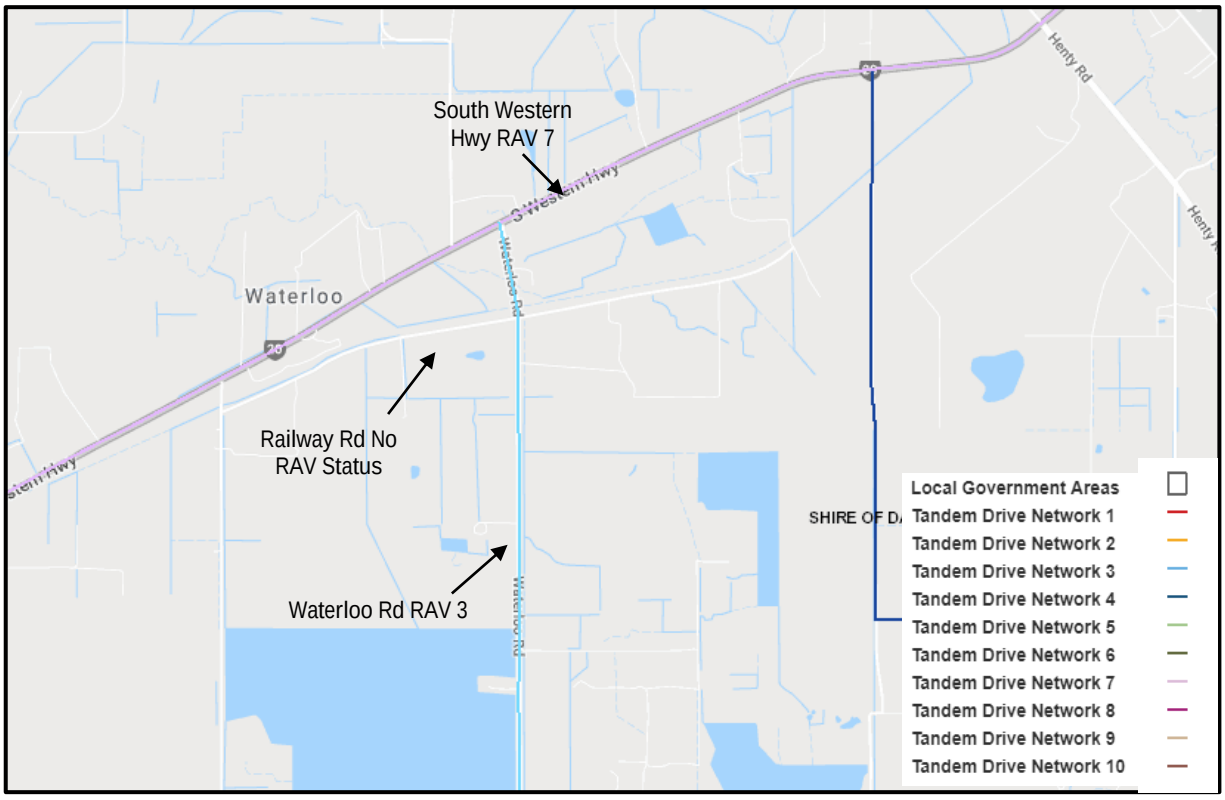


Figure 7 - Restricted Access Vehicle Network

2.5. Speed Limit

As per MRWA Road Information Mapping System, both South Western Highway and Waterloo Road are operating with a 100 km/hr speed limit.

2.6. Crash History

Crash data for Waterloo Road, from SLK 6.49 (south boundary of Lot 5 Railway Road) to SLK 8.49 (South Western Highway) and Waterloo Road / South Western Highway intersection, were sourced from MRWA for the 5-year period ending 31/12/2017. The report is summarised in Table 5.

Table 5 - Crash History

Location	Number of Crashes	MR Nature	Severity
Waterloo Road / South Western Highway intersection	2	1 “Rear End” 1 “Right Angle”	2 “Property Damage - Major”
Waterloo Road, SLK 6.49 to SLK 8.49	1	1 “Rear End”	1 “Hospital”

2.7. Changes to Surrounding Transport Networks

There are no known changes to the adjacent network that have the potential to affect the assessment.

3. Proposed Development

3.1. Land Use

The proposal is to develop the site as a clay extraction site. Approximately 80,000 tonnes will be extracted annually and stockpiled. Approximately 40,000 (of the above) will be carted off site annually. As estimated by the client, the extraction amount will generate 1,000 truckloads over a 4-6 week 'carting campaign' (which equates to 2000 truck movements in and out of the site) annually. This number may vary depending on market demand for clay products.

3.2. Proposed Haulage Route

Clay will be transported north to the Austral Bricks brickmaking factory in Perth via Waterloo Road and South Western Highway east of Waterloo Road intersection. Empty trucks will access the site via the same route but in the opposite direction. The proposed haulage route is shown in Figure 8.

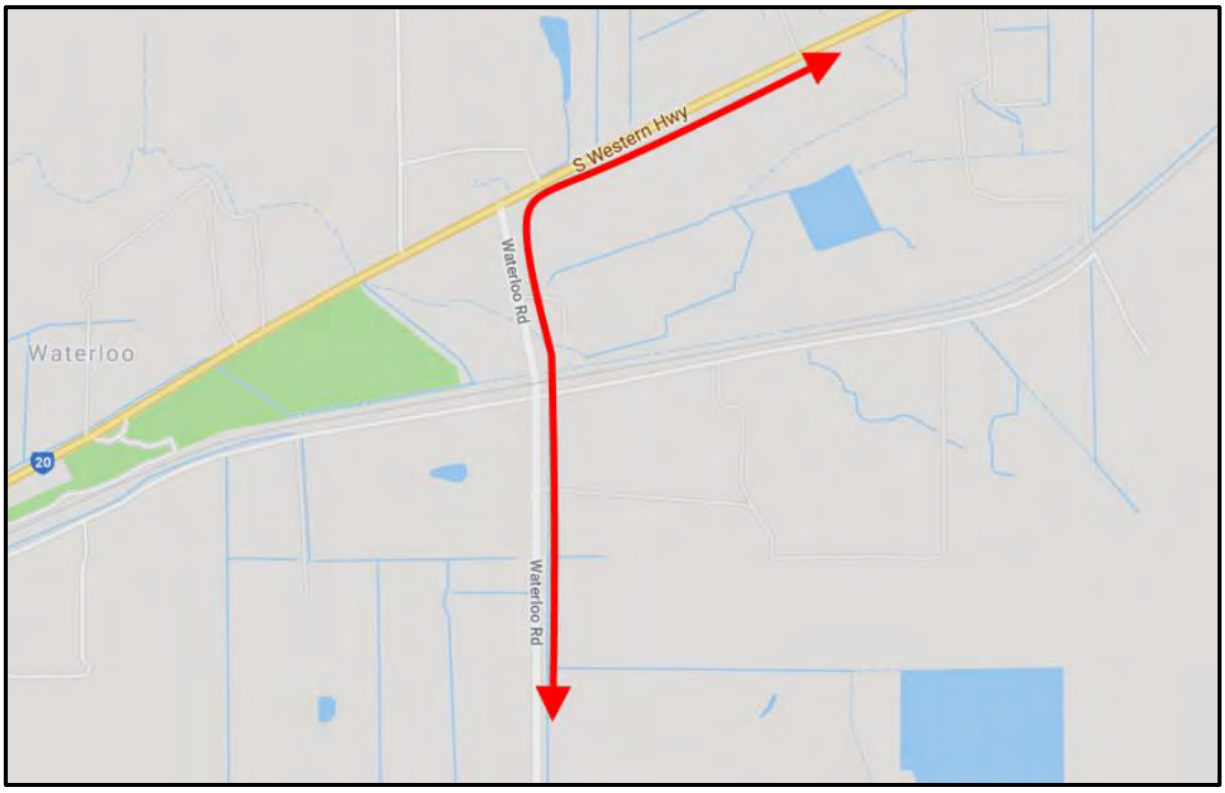


Figure 8 - Haulage Route

3.3. Operating Hours

The hours of operation will be from 07:00-18:00 hours from Monday to Saturday. No operation will occur on Sundays or Public Holidays.

3.4. Proposed Haulage Vehicle

It is proposed to use RAV 2 Eight-Wheel truck-and-dog combination for cartage of extracted clay (loaded outbound and unloaded inbound). The maximum gross weight of the truck combination is 64 tonnes with a 42-tonne payload. The typical configuration of Truck and Dog combination is as shown in Figure 9.

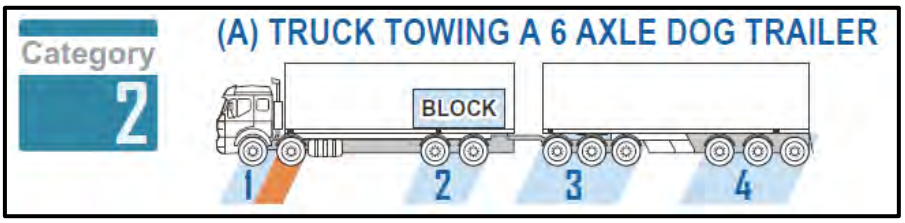


Figure 9 -Typical RAV 2 Truck and Dog

3.5. Proposed Traffic Generation and Distribution

Based on the proposed haulage amount over the shortest campaign period as outlined in Section 3.1, there will be maximum 42 truckloads per day (84 truck movements). Assuming traffic generated from the site will be spread out evenly throughout the day (11 hours), the peak hour vehicle movement would be 8 (4 trucks inbound and 4 trucks outbound.

In addition to the heavy haulage, the operation of the site will require a small number of light vehicle movements commuting to and from the site. The daily light vehicle traffic is assumed to be 10 vpd for the purpose of this assessment. As the commuting traffic are likely to occur outside of the peak hours, these have been excluded from the peak hour assessment.

The traffic generation profile is outlined in Table 6.

Table 6 - Traffic Generation

Vehicle Type	Maximum No. of movements per day	No. of movements during peak hours (vph)
RAV 3 Truck and Dog	84	8 (4 inbound and 4 outbound)
Light Vehicles – Commuting Traffic	10	0
Total	94	8 (4 inbound and 4 outbound)

As shown, the proposed site will generate 94 vehicle movements per day with 8 vehicle movements during the AM and PM peak hours.

4. Methodology and Inputs

4.1. Assessment Methodology

The safety and capacity assessment of the intersection was undertaken in accordance with the following documents:

- *Austroads Guide to Road Design Part 4A - Unsignalised and Signalised Intersections (*Austroads Part 4A*);*
- *MRWA Standard Restricted Access Vehicle (RAV) Route Assessment Guidelines (*MRWA RAV Guidelines*);*
- *Austroads Guide to Road Design Part 3 - Geometric Design (*Austroads Part 3*); and*
- *MRWA Supplement to Austroads Guide to Road Design - Part 3.*

The Waterloo Road / South Western Highway Intersection has been assessed for:

- Capacity;
- Safe Intersection Sight Distance (SISD);
    - The Safe Intersection Sight Distance (SISD) is the minimum distance which should be provided on the major road at any intersection. SISD provides sufficient distance for a driver of a vehicle on the major road to observe a vehicle on a minor road approach moving into a collision situation (e.g. in the worst case, stalling across the traffic lanes) and to decelerate to a stop before reaching the collision point.
- Approach Sight Distances (ASD);
    - The Approach Sight Distance (ASD) is required to ensure that drivers of trucks and light vehicles approaching the intersection from Minor Road at the 85th percentile operating speed are able to see the intersection and stop at the holding line.
- Entering Sight Distances (ESD);
    - Entering Sight Distance (ESD) is the sight distance that drivers require when undertaking a crossing or turning manoeuvre at intersections. This sight distance is dependent of the gradient of the road at the intersection and the size, weight and acceleration of the vehicle.
- Acceleration Lanes; and
- Auxiliary Lanes.

The Site Access has been assessed for:

- Safe Intersection Sight Distance (SISD);
- Entering Sight Distances (ESD);
- Acceleration Lanes; and
- Auxiliary Lanes.

Capacity analysis for the site access has been excluded as the site is only predicted to generate 8 vehicle movements during peak hours as discussed in Section 3.5, which does not meet the warrant for a capacity analysis as per WAPC Transport Impact Assessment Guidelines.

4.2. Reaction Times and Deceleration and Drivers Eye Height

In accordance with Section 3.2 of Austroads Part 4A and MRWA RAV Guidelines the available and required Approach Sight Distance (ASD), Entering Sight Distance (ESD) and Safe Intersection Sight Distance (SISD) have been assessed for the existing intersection based on a reaction time of 2.5s for light vehicles and 4.0s for heavy vehicles.

Deceleration coefficients for the purpose of SISD, ESD and ASD calculations are 0.362 for light vehicles and 0.28 for heavy vehicles.

Driver eye height is 2.4m for trucks and 1.1m for cars for the purpose of SISD and ASD measurement. The SISD is measured from the driver's eye height to the top of the opposing vehicle. The ASD is measured from the driver's eye height to the pavement level at intersection holding line. The ESD is measured from the driver's eye height to the top of the opposing vehicle.

5. Traffic Impact Assessment

5.1. Assessment Years

The development is assessed based on the year of operation, assumed as 2019, as well as 10 years after opening (2029).

5.2. Time Periods for Assessment

This assessment assumes that the haulage traffic distributes evenly throughout the opening hours of each "campaign" day and therefore the AM and PM peak hours of the general road network were assessed as the worst-case scenarios.

5.3. Impact on Roads

5.3.1. Austroads Guidelines

Austroads *Guide to Traffic Management Part 3: Traffic Studies and Analysis* (AGTM06) provides the following advice on the typical lane capacity of different road types:

- Two-lane two-way rural roads and highways — 1,700 passenger cars / hour
- Urban roads with interrupted flow — 900 - 1,000 passenger cars / hour

Based on the calculated traffic generation (shown previously in Section 3.5), the post-development traffic volumes are calculated as shown in Table 7.

Table 7 - Predicted Traffic Volumes

Road	Time Period	Traffic Count	Projected 2019 Volume	2019 Volume with Development	Projected 2029 Volume	Projected 2029 Volume with Development
Waterloo Road South of SW Hwy	Daily (vpd)	898	1,134	1,228 (+94)	1,496	1,590 (+94)
	AM Peak (Vph) Northbound	35	44	48 (+4)	58	62 (+4)
	AM Peak (Vph) Southbound	37	47	51 (+4)	62	66 (+4)
	PM Peak (vph) Northbound	36	45	49 (+4)	60	64 (+4)
	PM Peak (vph) Southbound	33	42	46 (+4)	55	59 (+4)
South Western Highway East of Waterloo Road	Daily (vpd)	7,192	7,337	7,431 (+94)	8,267	8,361 (+94)
	AM Peak (Vph) Northbound	257	262	266 (+4)	295	299 (+4)
	AM Peak (Vph) Southbound	319	325	329 (+4)	367	371 (+4)
	PM Peak (vph) Northbound	308	314	318 (+4)	354	358 (+4)
	PM Peak (vph) Southbound	369	376	380 (+4)	424	428 (+4)

As shown in Table 7, the resulting traffic volumes are shown to be well within the practical capacity of the existing roads and the proposed development is considered to have minimal impact on the capacity of the road network at mid-block locations.

5.3.2. MRWA RAV Guidelines

Waterloo Road (RAV 3) and South Western Highway (RAV 7) both currently carry the appropriate RAV network status for the proposed Truck and dog combination (RAV 2).

5.3.3. Road Safety

The crash history of the adjacent road network (as previously outlined in Section 2.6) does not suggest any particular safety issues in the existing road network. The volume of traffic movements generated by the site is not considered to increase the likelihood of crashes to unacceptable levels. It is recommended however, that 'Truck Entering' signs are implemented on the approaches to the site access to advice other drivers on Waterloo Road.

5.4. Impact on Waterloo Road / South Western Highway Intersection

5.4.1. Intersection Capacity

SIDRA Intersection 8 has been used to assess the peak hour capacity and performance of the Waterloo Road / South Western Highway Intersection.

SIDRA is a commonly used intersection modelling tool used by traffic engineers for all types of intersections. Outputs for four standard measures of operational performance can be obtained, being Degree of Saturation (DoS), Average Delay, Queue Length, and Level of Service (LoS).

- Degree of Saturation is a measure of how much physical capacity is being used with reference to the full capability of the particular movement, approach, or overall intersection. A DoS of 1.0 equates to full theoretical capacity although in some instances this level is exceeded in practice. Design engineers typically set a maximum DoS threshold of 0.95 for new intersection layouts or modifications.
- Average Delay reports the average delay per vehicle in seconds experienced by all vehicles in a particular lane, approach, or for the intersection as a whole. For severely congested intersections the average delay begins to climb exponentially.
- Queue Length measures the length of approach queues. In this document we have reported queue length in terms of the length of queue at the 95th percentile (the maximum queue length that will not be exceeded for 95 percent of the time). Queue lengths provide a useful indication of the impact of signals on network performance. It also enables the traffic engineer to consider the likely impact of queues blocking back and impacting on upstream intersections and accesses.
- Level of Service is a combined appreciation of queuing incidence and delay time incurred, producing an alphanumeric ranking of A through F. A LoS of A indicates an excellent level of service whereby drivers delay is at a minimum and they clear the intersection at each change of signals or soon after arrival with little if any queuing. Values of B through D are acceptable in normal traffic conditions. Whilst values of E and F are typically considered undesirable, within central business district areas with significant vehicular and pedestrian numbers, delays/queues are unavoidable and hence, are generally accepted by road users.

The peak hour volumes for this intersection are assumed as shown in Figure 10.

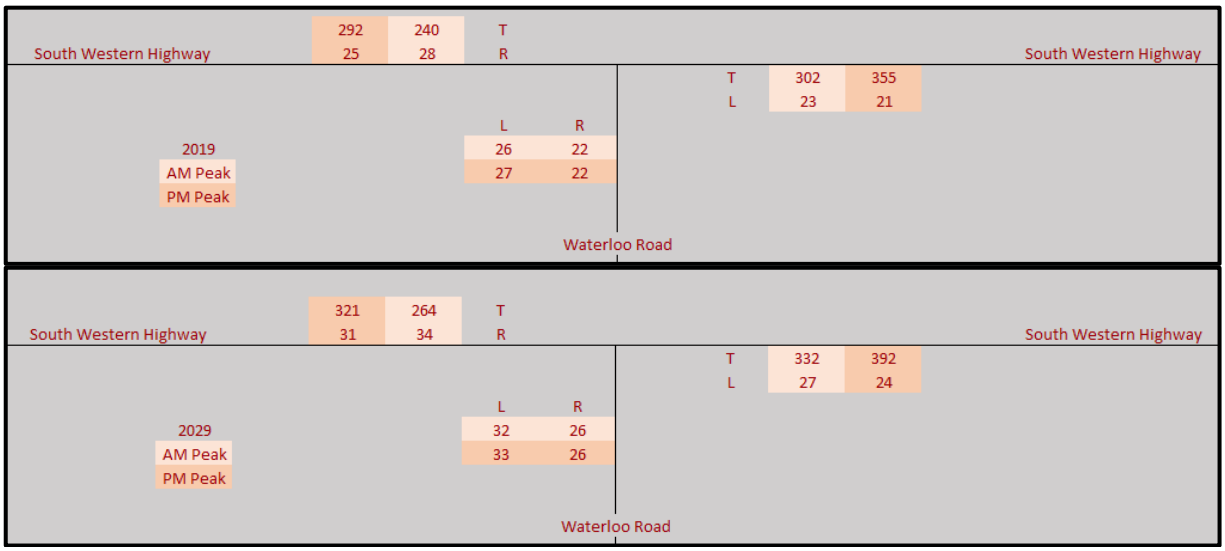


Figure 10 - Waterloo Road / South Western Highway Intersection Volumes

The results of the assessment are summarised in Table 8 and included as Appendix C.

Table 8 - SIDRA Outputs

Intersection	Scenario	Assessment Period	Worst DoS	Queue Distance (m)	Average Delay (s)	Worst Delay (s)	Average LoS	Worst LoS
Waterloo Road / South Western Highway Intersection	2019 with Development	AM Peak	0.188	4.3	2.1	21.6	A	C
		PM Peak	0.221	4.5	2.0	26.3	B	D
	2029 with Development	AM Peak	0.207	5.6	2.4	24.4	A	C
		PM Peak	0.244	6.2	2.5	30.8	B	D

The results indicate the intersection would perform with acceptable degree of saturation, queue distance and delay under all scenarios.

5.4.2. Safe Intersection Sight Distance

The Safe Intersection Sight Distance (SISD) has been assessed in accordance with Austroads Guide to Road Design Part 4A Equation 2 and the results are summarised in Table 9. The Google Street views shown below in Figure 11 and Figure 12 indicate the line of sight at the intersection.

Figure 11 - Waterloo Road / South Western Highway Intersection Looking West

Figure 12 - Waterloo Road / South Western Highway Intersection Looking East

Table 9 - SISD Estimate at Waterloo Road / South Western Highway Intersection

Vehicle Type	Design Speed (km/h)	Coefficient of Deceleration	Decision Time (s)	Longitudinal Grade (East / West)	Required SISD from East / West (m)	Available SISD (m)	
						East	West
Trucks	100	0.28	3+2.5	0% / 0%	335 / 335	500+	500+
Cars	110	0.362	3+4.0	0% / 0%	300 / 300	500+	500+

The SISD from the both directions are sufficient to achieve minimum SISD in accordance with the Austroads minimum requirements.

5.4.3. Entering Sight Distance

The required and available ESD at the intersection has been determined from Appendix D of the MRWA RAV Assessment Guidelines and the results are summarised in Table 10. The ESD is measured from the driver's eye height to the top of the opposing vehicle.

Table 10 - ESD Estimate at Waterloo Road / South Western Highway Intersection

Vehicle Type	Direction	Design Speed (km/h)	Approach Grade	Required ESD (m)	Available ESD (m)
Heavy Vehicles	East	100	0%	252	500+
Heavy Vehicles	West	100	0%	252	500+

As shown, the available ESD towards both directions are sufficient to achieve minimum ESD in accordance with RAV Assessment Guidelines.

5.4.4. Approach Sight Distances

Based the Google street view as shown in Figure 13 , sight line towards the intersection is unobstructed for more than 400m and there are warning signs available when drivers approaching the intersection. The required and available ASD at the intersection has been determined from Austroads Part 4A Equation 2 as summarised in Table 11.

Figure 13 - Approach Sight Line from Waterloo Road

Table 11 - ASD at Waterloo Road towards South Western Highway Intersection

Vehicle Type	Design Speed (km/h)	Coefficient of Deceleration	Reaction Time (s)	Longitudinal Grade	Required ASD (m)	Available ASD (m)
Trucks	100	0.28	4.0	0%	252	400+
Cars	110	0.362	2.5	0%	208	400+

The assessment indicates the ASD are above the requirements.

5.4.5. Acceleration Lanes

To avoid an undue hazard or obstruction to traffic, acceleration lanes should be considered to allow RAVs, when fully loaded, to accelerate close to operating traffic speed at the point where the lane merges with the through road.

South Western Highway is operating with 100km/hr speed limit and with the existing and projected traffic volumes, an acceleration lane is considered warranted for vehicles turning from Waterloo Road to South Western Highway. However, as an overtaking lane is already available 350m east of the intersection, additional upgrades are not considered necessary towards east of the intersection.

The development does not generate haulage traffic towards the west and therefore assessment of acceleration lane towards the west has been excluded.

5.4.6. Auxiliary Lanes

The traffic turning movements at intersections was calculated using the turning warrants calculator in accordance with MRWA Supplement to Austroads Guide to Road Design - Part 4 A.8. The through and turning volumes were calculated as per Austroad GTM Part 6 – 2017 as shown in Figure 14 and are summarised in Table 12. Note: For conservatism, the volumes used for the assessment were 2029 volumes from Figure 10.

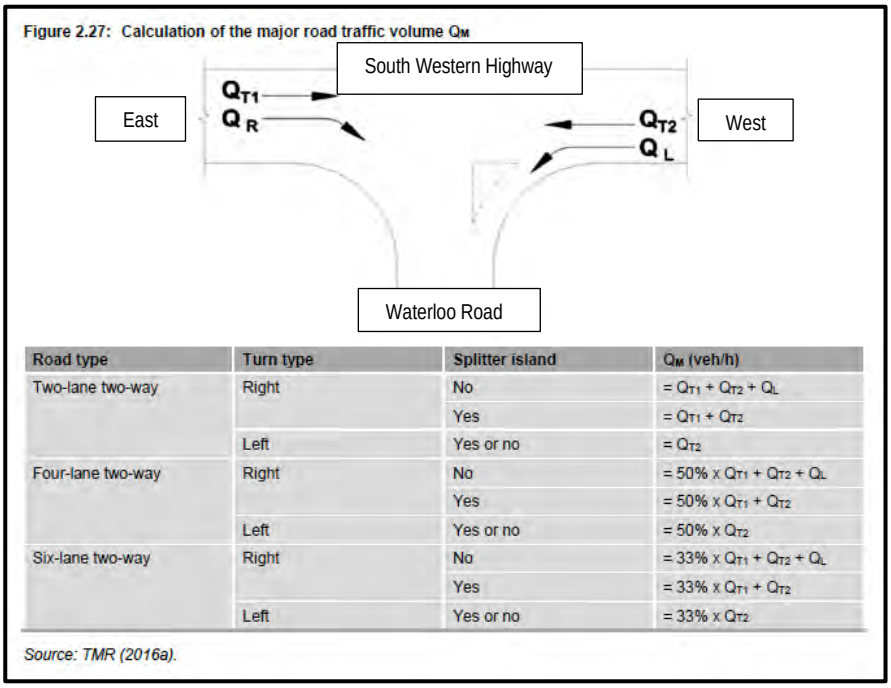


Figure 2.27: Calculation of the major road traffic volume Q_M

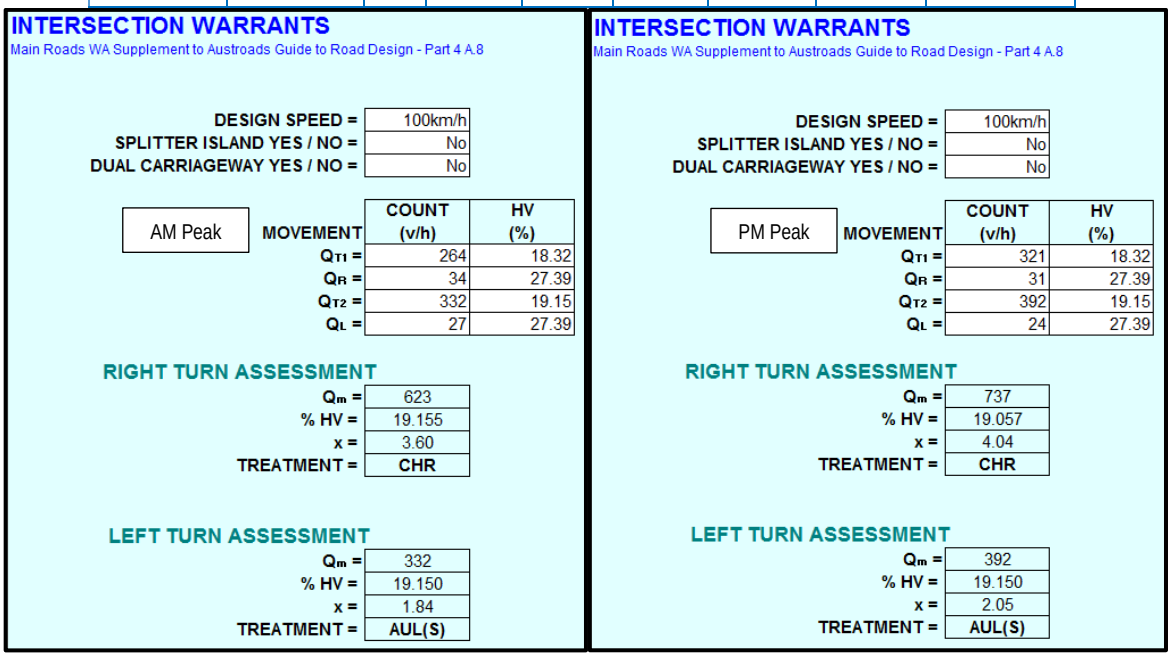
Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	$= Q_{T1} + Q_{T2} + Q_L$
		Yes	$= Q_{T1} + Q_{T2}$
	Left	Yes or no	$= Q_{T2}$
Four-lane two-way	Right	No	$= 50\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 50\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 50\% \times Q_{T2}$
Six-lane two-way	Right	No	$= 33\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 33\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 33\% \times Q_{T2}$

Source: TMR (2016a).

Figure 14 - Calculation of the Major Road Traffic Volume Q_m

Table 12 - Major Road Turning and Through Volumes at Intersection

Peak Hour	Direction	Q_{T1}	QT1 HV%	Q_{T2}	QT2 HV%	Q_R or Q_L	Q_R or Q_L HV%	Calculated Treatment
AM Peak	Left-turn	264	18.32%	332	19.15%	27	27.39%	AUL(S)
	Right-Turn					34	27.39%	CHR
PM Peak	Left-turn	321	18.32%	392	19.15%	24	27.39%	AUL or CHL
	Right-Turn					31	27.39%	CHR



INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	100km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

AM Peak

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	264	18.32
Q_R =	34	27.39
Q_{T2} =	332	19.15
Q_L =	27	27.39

RIGHT TURN ASSESSMENT

Q_m =	623
% HV =	19.155
x =	3.60
TREATMENT =	CHR

LEFT TURN ASSESSMENT

Q_m =	332
% HV =	19.150
x =	1.84
TREATMENT =	AUL(S)

INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	100km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

PM Peak

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	321	18.32
Q_R =	31	27.39
Q_{T2} =	392	19.15
Q_L =	24	27.39

RIGHT TURN ASSESSMENT

Q_m =	737
% HV =	19.057
x =	4.04
TREATMENT =	CHR

LEFT TURN ASSESSMENT

Q_m =	392
% HV =	19.150
x =	2.05
TREATMENT =	AUL(S)

Figure 15 - Warrants for Turn Treatments on Major Roads at Unsignalised Intersections

As per Figure 15, the required left-turn and right turn treatments from South Western Highway to Waterloo Road is an Auxilliary Left Turn (AUL) and a Channelised Right Turn (CHR) treatment, respectively.

The AUL and CHR treatment (refer to Figure 8.6 and Figure 7.8 of Austroad Guide to Road Design Part 4A) on the major road both feature construction of indented left/right turn lane minimising the impact of the slowed turning vehicles on through traffic.

In this instance, the existing left turn auxiliary lane is considered acceptable. The development will not generate haulage traffic turning right into Waterloo Road from South Western Highway. It is recommended for the Shire to further assessing the necessity of right turn auxiliary lane.

As both Waterloo Road and South Western Highway are within RAV 3 network, manoeuvring of RAV 2 truck and dog at the intersection is deemed acceptable.

5.5. Site Access

5.5.1. Location

The location of the crossovers to Lot 5 and Lot 51 have not been finalised at the time this report is prepared. An indicative location of both crossovers is shown on the Site plan in Appendix A, which indicates the two crossovers will form a four-way intersection with Waterloo Road just to the north of existing gravel driveway to Lot 51. Discussion with the client indicates that the extraction activity will be divided into 10 stages and Stage 1-3 and 10 will only occur on Lot 5 and Stage 6-9 will only occur on Lot 51 and this means vehicles and machineries will not cross Waterloo Road from one Lot to the other. This arrangement will not create unacceptable interaction with traffic on Waterloo Road, and the indicative crossover location is considered acceptable.

5.5.2. Safe Intersection Sight Distance

The Google Street views shown below in Figure 16 and Figure 17 indicate the sight distance along Waterloo Road in the vicinity of the proposed crossover location.

Figure 16 - Waterloo Road Looking North

Figure 17 - Waterloo Road Looking South

Table 13 - SISD Estimate for the Proposed Crossover Location

Vehicle Type	Design Speed (km/h)	Coefficient of Deceleration	Decision Time (s)	Longitudinal Grade (North / South)	Required SISD from East North / South (m)	Available SISD (m)	
						North	South
Trucks	100	0.28	3+2.5	0% / 0%	335 / 335	500+	500+
Cars	110	0.362	3+4.0	0% / 0%	300 / 300	500+	500+

The SISD from the both directions are sufficient to achieve minimum SISD in accordance with the Austroads minimum requirements.

5.5.3. Entering Sight Distance

The required and available ESD from the proposed crossover location are summarised in Table 10.

Table 14 - ESD Estimate at the Proposed Crossover Location

Vehicle Type	Direction	Design Speed (km/h)	Approach Grade	Required ESD (m)	Available ESD (m)
Heavy Vehicles	East	100	0%	252	500+
Heavy Vehicles	West	100	0%	252	500+

As shown, the available ESD towards both directions are sufficient to achieve minimum ESD in accordance with RAV Assessment Guidelines.

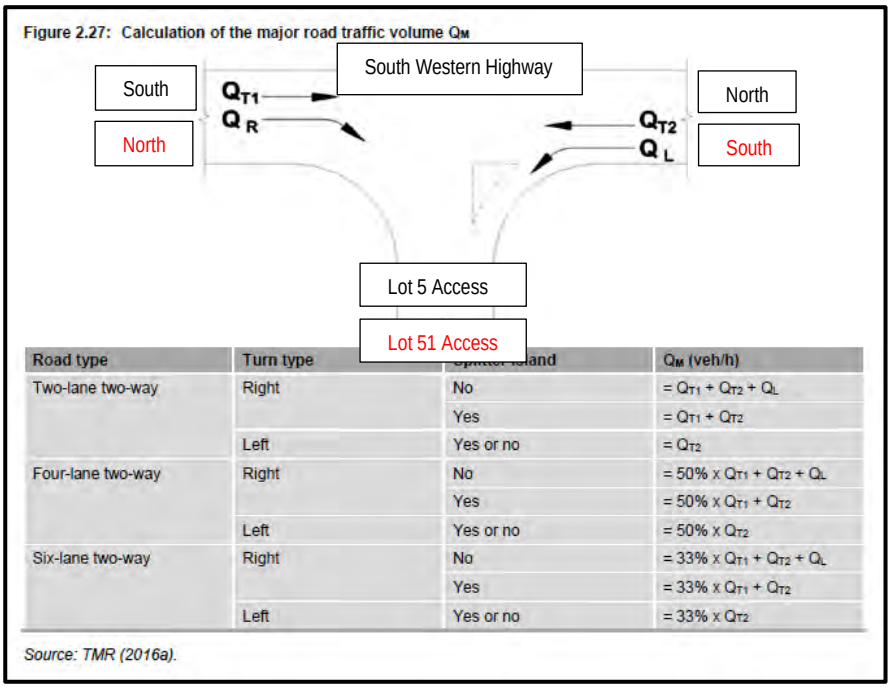
5.5.4. Acceleration Lanes

Waterloo Road is operating with 100km/hr speed limit and there are no overtaking lanes available north of the proposed access. With the assumed traffic growth from Table 3 the projected traffic volumes in 2019 and 2029 may trigger the need for an acceleration lane, however an acceleration lane is not recommended based on the following considerations:

- There is a stop line at the railway crossing located approximately 1.1 km north of the proposed access location. Having vehicles to accelerate north of the site access and decelerate to a stop condition within the 1.1 km distance is not considered feasible and will pose safety risks along the road;
- Heavy haulage will only operate during the campaign periods;
- There is adequate sight distance available towards both directions; and
- Overtaking opportunities exist (broken separation lines) frequently between site access and South Western Highway for northbound traffic.

5.5.5. Auxiliary Lanes

The traffic turning movements at access location was calculated using the turning warrants calculator in accordance with MRWA Supplement to Austroads Guide to Road Design - Part 4 A.8. The through and turning volumes were calculated as per Austroad GTM Part 6 – 2017 as shown in Figure 18 and are summarised in Table 15 and Table 16. For conservatism, the volumes used for the assessment were 2029 volumes from Figure 10.



Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	$= Q_{T1} + Q_{T2} + Q_L$
		Yes	$= Q_{T1} + Q_{T2}$
	Left	Yes or no	$= Q_{T2}$
Four-lane two-way	Right	No	$= 50\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 50\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 50\% \times Q_{T2}$
Six-lane two-way	Right	No	$= 33\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 33\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 33\% \times Q_{T2}$

Source: TMR (2016a).

Figure 18 - Calculation of the Major Road Traffic Volume Q_m

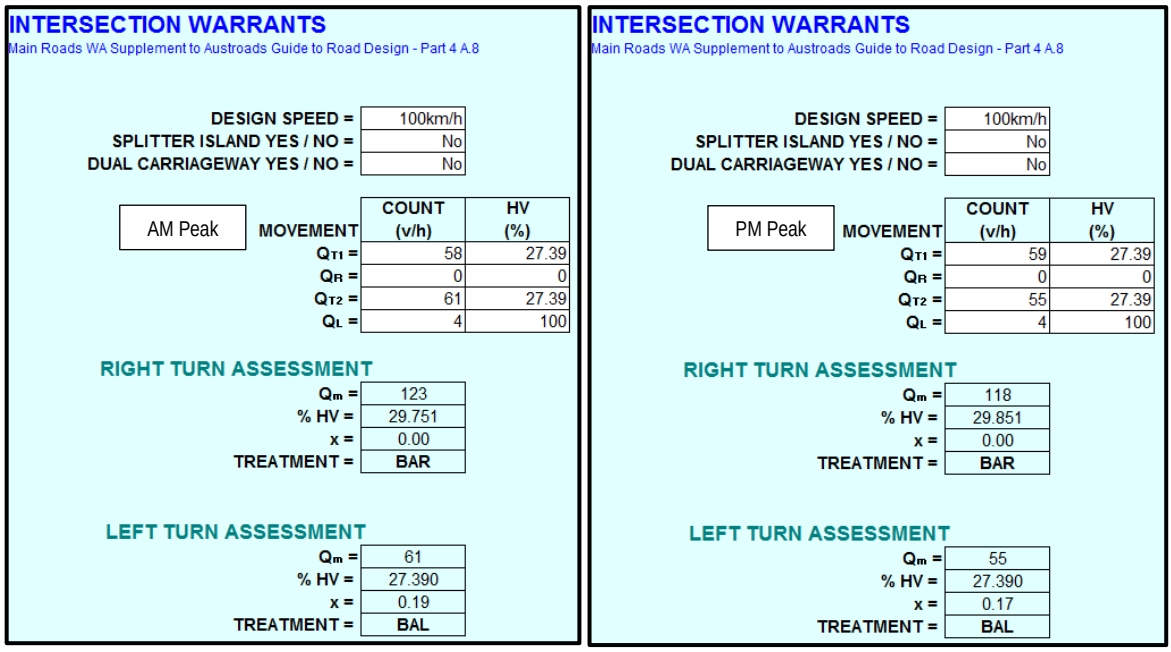
Table 15 - Major Road Turning and Through Volumes at Lot 5 Access

Peak Hour	Direction	Q_{T1}	QT1 HV%	Q_{T2}	QT2 HV%	Q_L	Q_R or Q_L HV%	Calculated Treatment
AM Peak	Left-turn	58	27.39%	61	27.39	4	100%	BAL
PM Peak		59	27.39%	55	27.39	4	100%	BAL

Table 16 - Major Road Turning and Through Volumes at Lot 51 Access

Peak Hour	Direction	Q_{T1}	QT1 HV%	Q_{T2}	QT2 HV%	Q_R or Q_L	Q_R	Calculated Treatment
AM Peak	Right-turn	61	27.39%	58	27.39	4	100%	BAR
PM Peak		55	27.39%	59	27.39	4	100%	BAR

The calculated warrants are shown in Figure 19 and Figure 20.



INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	100km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

AM Peak

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	58	27.39
Q_R =	0	0
Q_{T2} =	61	27.39
Q_L =	4	100

RIGHT TURN ASSESSMENT

Q_m =	123
% HV =	29.751
x =	0.00
TREATMENT =	BAR

LEFT TURN ASSESSMENT

Q_m =	61
% HV =	27.390
x =	0.19
TREATMENT =	BAL

INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	100km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

PM Peak

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	59	27.39
Q_R =	0	0
Q_{T2} =	55	27.39
Q_L =	4	100

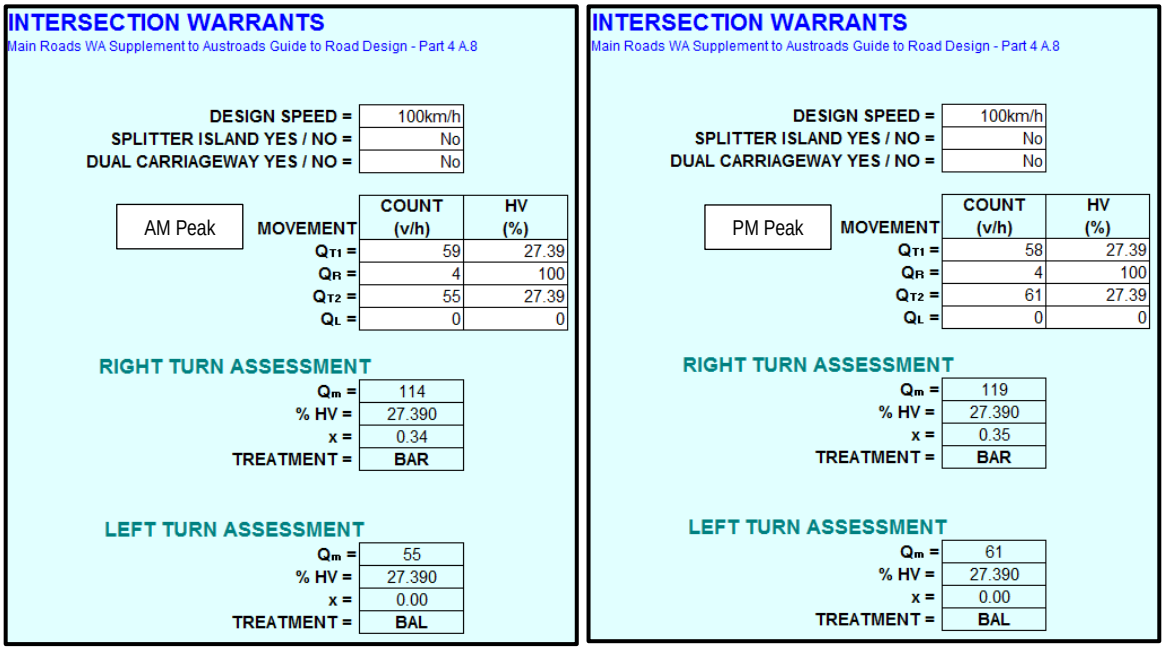
RIGHT TURN ASSESSMENT

Q_m =	118
% HV =	29.851
x =	0.00
TREATMENT =	BAR

LEFT TURN ASSESSMENT

Q_m =	55
% HV =	27.390
x =	0.17
TREATMENT =	BAL

Figure 19 - Warrants for Turn Treatments on Major Roads at Lot 5 Access



INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	100km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

AM Peak

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	59	27.39
Q_R =	4	100
Q_{T2} =	55	27.39
Q_L =	0	0

RIGHT TURN ASSESSMENT

Q_m =	114
% HV =	27.390
x =	0.34
TREATMENT =	BAR

LEFT TURN ASSESSMENT

Q_m =	55
% HV =	27.390
x =	0.00
TREATMENT =	BAL

INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	100km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

PM Peak

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	58	27.39
Q_R =	4	100
Q_{T2} =	61	27.39
Q_L =	0	0

RIGHT TURN ASSESSMENT

Q_m =	119
% HV =	27.390
x =	0.35
TREATMENT =	BAR

LEFT TURN ASSESSMENT

Q_m =	61
% HV =	27.390
x =	0.00
TREATMENT =	BAL

Figure 20 - Warrants for Turn Treatments on Major Roads at Lot 51 Access

As above, the required left-turn and right turn treatments from Waterloo Road to Lot 5 and Lot 51 is a Basic Left Turn (BAL) and a Basic Right Turn (BAR) treatment, respectively.

The BAL treatment (refer to Figure 8.2 of Austroad Guide to Road Design Part 4A) on the major road also features sealing and widening of shoulders on the major road, which assists turning vehicles to move further off the through carriageway making it easier for through vehicles to pass. The BAR treatment (refer to Figure 7.5 of Austroad

Guide to Road Design Part 4A) features sealing and widening of shoulders on the major road allowing through vehicles, having slowed, to pass to the left of the turning vehicles.

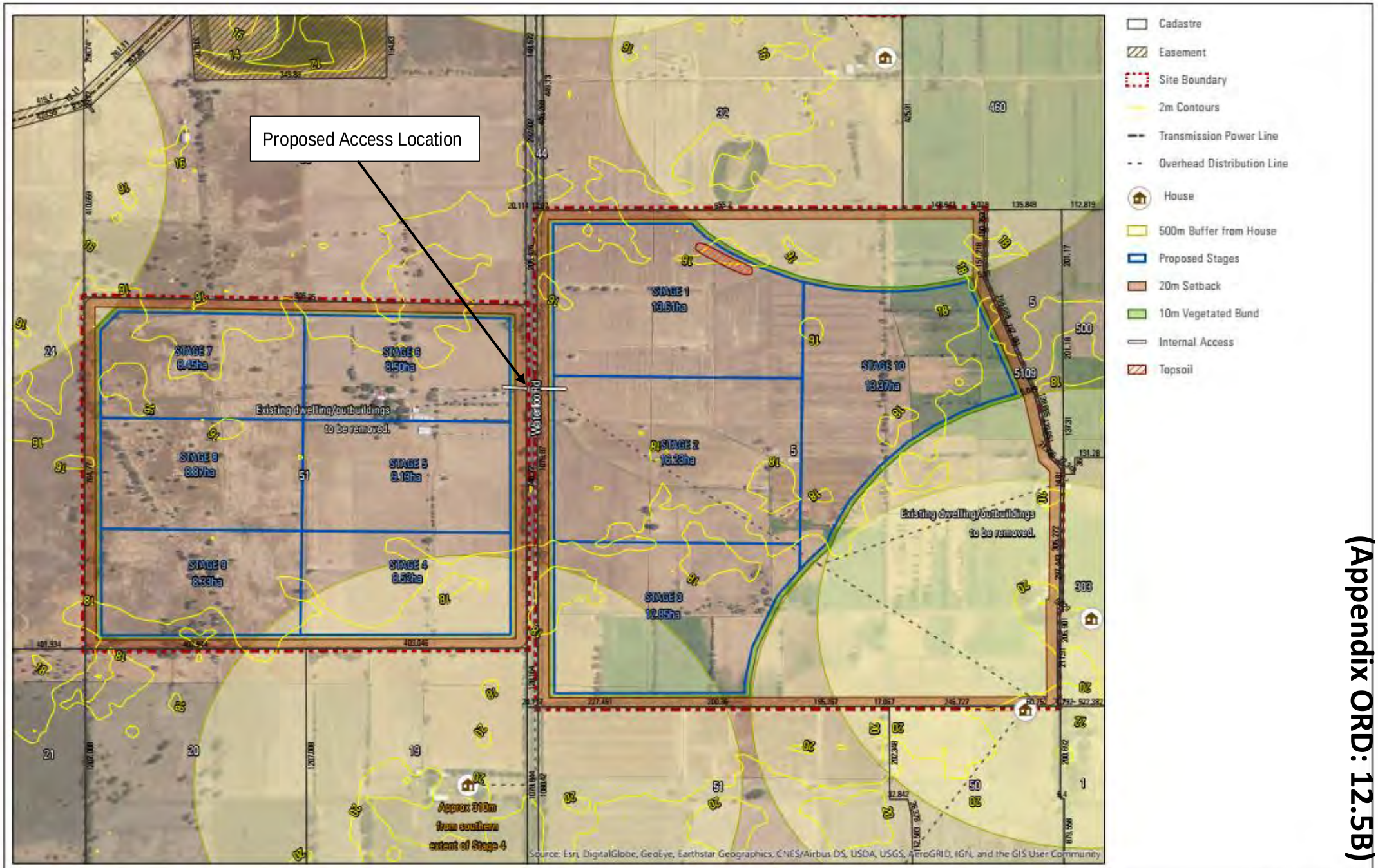
As the design of the crossovers has not been finalised, it is recommended for the client to design the crossovers with sufficient clearance to accommodate the manoeuvring of RAV 3 trucks. As per MRWA RAV assessment guideline, the turning template for completing swept path assessment for RAV 2-4 trucks is the MRWA 27.5m B-double template.

6. Conclusions

A Transport Impact Assessment for the proposed clay extraction site located at Lots 5 and 51 Railway Road, Waterloo in the Shire of Dardanup. concluded the following:

- The estimated site traffic generation for development year (2019) and 10 years after operation (2029) can be accommodated within the predicted capacity of road network at mid-block and intersection locations;
- The additional traffic generated by the site is not considered to increase the likelihood of crashes to unacceptable levels;
- It is recommended that 'Truck Entering' signs are placed on the approaches to the access on Waterloo Road to advise other drivers.
- The existing sight distances at the site access and Waterloo Road / South Western Highway intersection are deemed satisfactory;
- Based on the predicted traffic volume, the Waterloo Road / South Western Highway intersection is required to have Auxiliary Left Turn (AUL) treatment. In this instance, the existing intersection is constructed with auxiliary left turn lane and additional treatment is not required;
- Based on the predicted traffic volume, the site access to Lot 5 and Lot 51 is required to have Basic Left Turn (BAL) and Basic Right Turn (BAR) treatment. In this instance, it is recommended to design the crossovers to accommodate the swept path of RAV 3 vehicles; and
- Accelerations lane are not considered required east of Waterloo Road / South Western Highway intersection and north of the proposed access location.

Appendix A – Site Layout



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0 51 102 153 204 255 m

1:7,500

Extraction Plan

PROPOSED EXTRACTIVE INDUSTRY

WATERLOO

AUSTRAL BRICKS

(Appendix ORD: 12.5B)

Appendix B – Traffic Count

(Appendix ORD: 12.5B)

mainroads WESTERN AUSTRALIA

SITE 15173

Hourly Volume

Waterloo Rd (2080215)

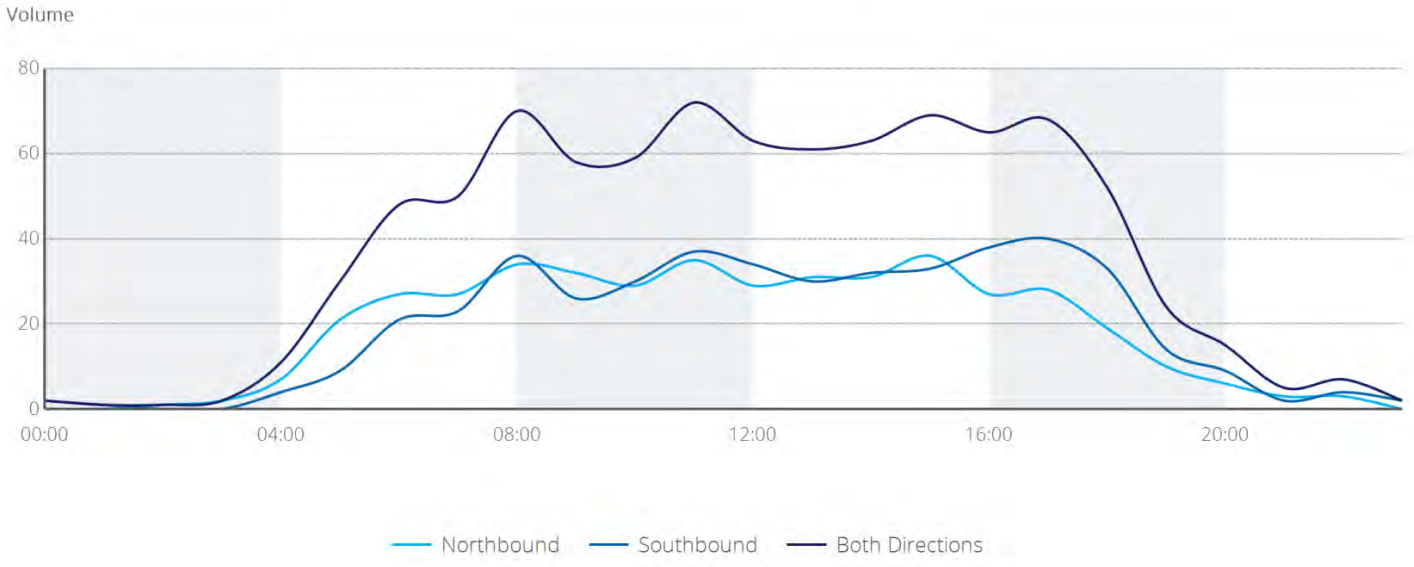
South of South Western Hwy (SLK 8.38)

2015/16
Monday to Friday

	All Vehicles			Heavy Vehicles			
	NB	SB	Both	NB	SB	Both	%
00:00	0	2	2	0	1	1	50.0
01:00	0	1	1	0	0	0	0.0
02:00	1	0	1	0	0	0	0.0
03:00	2	0	2	2	0	2	100.0
04:00	7	4	11	5	1	6	54.5
05:00	21	9	30	8	2	10	33.3
06:00	27	21	48	8	8	16	33.3
07:00	27	23	50	8	7	15	30.0
08:00	34	36	70	9	13	22	31.4
09:00	32	26	58	10	6	16	27.6
10:00	29	30	59	6	9	15	25.4
11:00	35	37	72	10	13	23	31.9
12:00	29	34	63	7	12	19	30.2
13:00	31	30	61	9	10	19	31.1
14:00	31	32	63	9	11	20	31.7
15:00	36	33	69	7	9	16	23.2
16:00	27	38	65	2	9	11	16.9
17:00	28	40	68	3	7	10	14.7
18:00	19	33	52	1	5	6	11.5
19:00	10	14	24	1	2	3	12.5
20:00	6	9	15	1	1	2	13.3
21:00	3	2	5	0	0	0	0.0
22:00	3	4	7	0	0	0	0.0
23:00	0	2	2	0	0	0	0.0
TOTAL	438	460	898	106	126	232	25.8

Peak Statistics

AM	TIME	08:15	11:45	11:00	08:15	08:00	11:00
	VOL	36	39	72	12	13	23
PM	TIME	14:45	17:30	15:30	14:45	12:15	13:30
	VOL	38	44	69	10	14	21



(Appendix ORD: 12.5B)

mainroads WESTERN AUSTRALIA

SITE 15171

Hourly Volume

South Western Hwy (H009)

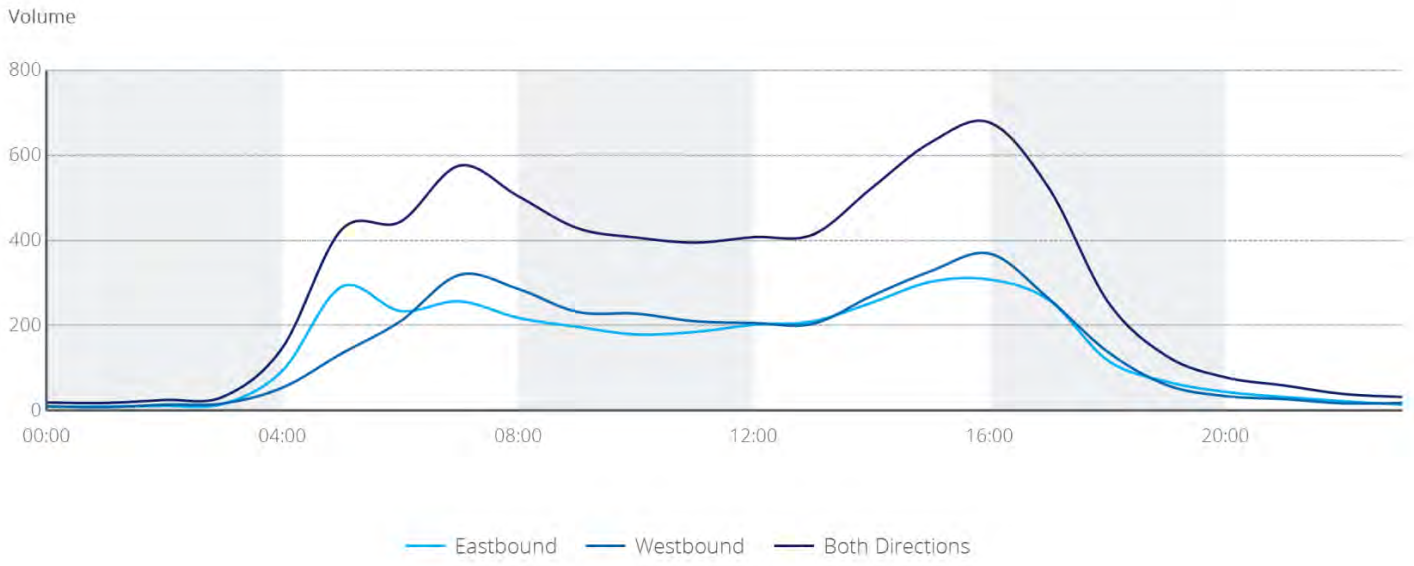
East of Waterloo Rd (SLK 142.46)

2017/18
Monday to Friday

	All Vehicles			Heavy Vehicles			
	EB	WB	Both	EB	WB	Both	%
00:00	9	10	19	2	2	4	21.1
01:00	10	8	18	2	3	5	27.8
02:00	11	14	25	1	3	4	16.0
03:00	16	17	33	5	2	7	21.2
04:00	94	54	148	18	7	25	16.9
05:00	291	134	425	41	15	56	13.2
06:00	234	210	444	50	44	94	21.2
07:00	257	319	576	58	57	115	20.0
08:00	218	286	504	57	51	108	21.4
09:00	197	232	429	47	48	95	22.1
10:00	179	228	407	48	55	103	25.3
11:00	185	210	395	41	51	92	23.3
12:00	202	206	408	39	45	84	20.6
13:00	210	204	414	41	49	90	21.7
14:00	254	270	524	48	62	110	21.0
15:00	303	328	631	46	61	107	17.0
16:00	308	369	677	38	64	102	15.1
17:00	260	263	523	33	38	71	13.6
18:00	118	138	256	12	22	34	13.3
19:00	68	60	128	7	10	17	13.3
20:00	44	34	78	7	4	11	14.1
21:00	32	27	59	5	2	7	11.9
22:00	22	17	39	1	2	3	7.7
23:00	14	18	32	1	3	4	12.5
TOTAL	3536	3656	7192	648	700	1348	18.7

Peak Statistics

AM	TIME	05:15	07:30	07:15	07:30	07:30	07:30
	VOL	307	352	611	62	65	127
PM	TIME	15:30	16:00	15:30	14:45	15:30	15:15
	VOL	313	369	678	51	68	111



Appendix C – SIDRA Output

MOVEMENT SUMMARY

Site: 101 [2021 AM Waterloo Road / South Western Highway Intersection]

New Site
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Waterloo Road												
1	L2	26	24.2	0.036	11.9	LOS B	0.1	1.3	0.47	0.91	0.47	49.4
3	R2	22	24.2	0.084	21.6	LOS C	0.3	2.9	0.72	1.02	0.72	44.1
Approach		48	24.2	0.084	16.3	LOS C	0.3	2.9	0.58	0.96	0.58	46.8
East: South Western Highway E												
4	L2	23	20.0	0.015	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.5
5	T1	302	20.0	0.188	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		325	20.0	0.188	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.4
West: South Western Highway W												
11	T1	240	20.0	0.176	0.7	LOS A	0.5	4.3	0.15	0.07	0.15	58.6
12	R2	28	20.0	0.176	9.0	LOS A	0.5	4.3	0.15	0.07	0.15	55.5
Approach		268	20.0	0.176	1.5	NA	0.5	4.3	0.15	0.07	0.15	58.2
All Vehicles		641	20.3	0.188	2.1	NA	0.5	4.3	0.11	0.12	0.11	57.7

MOVEMENT SUMMARY

Site: 101 [2021 PM Waterloo Road / South Western Highway Intersection]

New Site
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Waterloo Road												
1	L2	27	24.2	0.042	12.6	LOS B	0.2	1.5	0.51	0.93	0.51	49.0
3	R2	22	24.2	0.109	26.3	LOS D	0.4	3.6	0.79	1.01	0.79	41.8
Approach		49	24.2	0.109	18.7	LOS C	0.4	3.6	0.63	0.97	0.63	45.5
East: South Western Highway E												
4	L2	21	20.0	0.014	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.5
5	T1	355	20.0	0.221	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		376	20.0	0.221	0.4	NA	0.0	0.0	0.00	0.03	0.00	59.5
West: South Western Highway W												
11	T1	292	20.0	0.205	0.7	LOS A	0.5	4.5	0.14	0.05	0.14	58.7
12	R2	25	20.0	0.205	9.9	LOS A	0.5	4.5	0.14	0.05	0.14	55.6
Approach		317	20.0	0.205	1.4	NA	0.5	4.5	0.14	0.05	0.14	58.4
All Vehicles		742	20.3	0.221	2.0	NA	0.5	4.5	0.10	0.10	0.10	57.9

MOVEMENT SUMMARY

Site: 101 [2031 AM Waterloo Road / South Western Highway Intersection]

New Site
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Waterloo Road												
1	L2	32	24.2	0.047	12.3	LOS B	0.2	1.7	0.49	0.93	0.49	49.2
3	R2	26	24.2	0.116	24.4	LOS C	0.4	3.9	0.77	1.01	0.77	42.7
Approach		58	24.2	0.116	17.7	LOS C	0.4	3.9	0.62	0.97	0.62	46.1
East: South Western Highway E												
4	L2	27	20.0	0.018	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.5
5	T1	332	20.0	0.207	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		359	20.0	0.207	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
West: South Western Highway W												
11	T1	264	20.0	0.201	0.9	LOS A	0.6	5.6	0.18	0.08	0.18	58.2
12	R2	34	20.0	0.201	9.6	LOS A	0.6	5.6	0.18	0.08	0.18	55.2
Approach		298	20.0	0.201	1.9	NA	0.6	5.6	0.18	0.08	0.18	57.9
All Vehicles		715	20.3	0.207	2.4	NA	0.6	5.6	0.13	0.13	0.13	57.4

MOVEMENT SUMMARY

Site: 101 [2031 PM Waterloo Road / South Western Highway Intersection]

New Site
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Waterloo Road												
1	L2	33	24.2	0.055	13.1	LOS B	0.2	2.0	0.53	0.95	0.53	48.7
3	R2	26	24.2	0.157	30.8	LOS D	0.5	5.1	0.84	1.01	0.84	39.8
Approach		59	24.2	0.157	20.9	LOS C	0.5	5.1	0.67	0.98	0.67	44.3
East: South Western Highway E												
4	L2	24	20.0	0.016	5.8	LOS A	0.0	0.0	0.00	0.57	0.00	52.5
5	T1	392	20.0	0.244	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		416	20.0	0.244	0.4	NA	0.0	0.0	0.00	0.03	0.00	59.5
West: South Western Highway W												
11	T1	321	20.0	0.235	1.0	LOS A	0.7	6.2	0.17	0.06	0.17	58.3
12	R2	31	20.0	0.235	10.7	LOS B	0.7	6.2	0.17	0.06	0.17	55.2
Approach		352	20.0	0.235	1.8	NA	0.7	6.2	0.17	0.06	0.17	58.0
All Vehicles		827	20.3	0.244	2.5	NA	0.7	6.2	0.12	0.11	0.12	57.4

APPENDIX F

Acoustic Assessment

Government of **Western Australia**
Department of **Water and Environmental Regulation**

Technical (Review) Report

Advice/Report on the environmental noise assessment report for the proposed clay pit operation on Lots 5 and 51 Waterloo Road, Waterloo, prepared for the Shire of Dardanup

Department of Water and Environmental Regulation

April 2020

Department of Water and Environmental Regulation
Prime House, 8 Davison Terrace
Joondalup Western Australia 6027
Telephone +61 8 6364 7000
Facsimile +61 8 6364 7001
www.dwer.wa.gov.au

April 2020

Acknowledgements

For more information about this report, contact

Environmental Noise, Department of Water and Environmental Regulation.

Document control

Document version history

Version	Date	Description	Author	Reviewer
0.0	15/4/2020	Draft – internal review	JG	PPA
1.0	16/4/2020	Final - Issued	JG	PPA

Corporate reference

File number and/or name	File owner or custodian
DWERT50~21	Environmental Noise

Author details

Name	Dr Jingnan Guo PhD (Mechanical Engineering), MSc (Public Health), BSc (Physics), MAAS
Position title	Senior Environmental Noise Officer
Signature 	Date 16/4/2020

Reviewer details

Name	Mr Peter Popoff-Asotoff BSc (Physics), Grad Dip (Computing), MAAS
Position title	Principal Environmental Noise Officer
Signature 	Date 16/4/2020

Contents

1. Introduction

This advice was prepared for the Shire of Dardanup in response to the request for comment dated 5 March 2020 on the suitability of the acoustic assessment report for the proposed extractive operation at Lot 5 Wild Rose and Lot 51 Railway Road, Waterloo.

2. Documentation

In support of this request, the Shire of Dardanup made the following document available. This material forms the basis of this technical expert advice.

Material / document name	Author	Date
Environmental Noise Assessment – Lots 5 and 51 Waterloo Road, Waterloo – prepared for Austral Bricks (Ref: 19034903-01.docx)	Lloyd George Acoustics	27 February 2020

3. Advice

The proposed extractive operation is a clay quarry. In accordance with EPA Guidance No. 3: *Separation Distances between Industrial and Sensitive Land Uses*, a generic buffer distance of 500-1000 m is required for such an operation, depending on the size and processing activity. The proposed operation will be within 500 m of the neighbouring residences at certain stages. Therefore a detailed noise impact assessment to demonstrate that noise emissions can be managed to comply with the *Environmental Protection (Noise) Regulations 1997* (Noise Regulations) is recommended.

Environmental Noise Branch (ENB) of the Department of Water and Environmental Regulation (DWER) has reviewed the Environmental Noise Assessment report prepared by Lloyd George Acoustics (LGA). It seems LGA has identified all of the closest noise sensitive premises for the noise compliance assessment, and the assigned noise levels were correctly calculated for each of the five neighbouring residences.

The methodology of the noise modelling, the assumptions and configurations, as well as the input data seem correct and acceptable. The predicted noise levels and the assessed noise impact also seem reliable. LGA's modelling indicated that noise emissions from the proposed operation will exceed the assigned noise levels at one or

more of the neighbouring residences in all 10 operation stages, when the noise is tonal. This predicted result seems reliable.

To address the noise non-compliance issue, LGA proposed various noise mitigation measures for each of the 10 operation stages, such as building noise bunds along the edges of the pit, locating stockpiles to certain areas, using stockpiles to shield noise emissions, limiting the number of mobile equipment operating at the same time, and restricting the haulage route to follow the pit faces to maximise noise screening. ENB considers these proposed noise mitigation measures effective, and if implemented properly, noise emissions may be reduced to meet the assigned noise levels, as predicted by LGA.

ENB would like to make the following comments:

1. Based on LGA's report, the removal of topsoil to a 0.3-0.5 m depth is considered 'construction' which is regulated under regulation 13 of the Noise Regulations. While ENB agree that topsoil removal is construction work, LGA seem to extend the definition of construction work to overburden removal and the development of noise bunds (see Section 2.1 of the report). Please note that overburden removal is a part of the extractive operation, and therefore not considered as 'construction' under regulation 13 of the Noise Regulations. This also applies to the development of noise bunds using overburden as source material. Therefore, compliance with the assigned noise levels is still required for some of the initial work, as described in Section 2.1;
2. The operation will be conducted in 10 stages, which also involves the need for relocating the 5 m high earth bunds. This indicates that the construction work needs to be carried out many times during the life of the proposed project. It should be noted that construction noise can only be regulated under regulation 13 when the site is a 'construction site'. This means that the clay extractive operation cannot occur during the staged construction work. The proponent may need to develop a noise management plan to avoid this scenario. As there are a considerable number of stages with considerable restructuring of noise mitigation solutions over the lifetime of the quarry, the development of an overall noise management plan may be prudent;
3. While noise compliance may be achieved while the dozer works from behind a stockpile (3 or 4 m high) at all times, the LGA report did not indicate how to operate the dozer before the stockpile reaches the required height for acoustic shielding; and
4. It can be seen that the proposed operation site and the neighbouring noise sensitive premises are in a greenfield state. Although LGA did not conduct any ambient noise monitoring, it is likely that the ambient noise level could be very low, particularly at the three residences south and southeast of the proposed development site. The noise impact on these residences therefore can be high, if the ambient noise level is significantly increased by the proposed clay quarry operations. In that situation, the noise from the operations is likely to draw complaints, regardless whether the noise complies with the assigned noise levels or not. The noise management plan may need to address this potential risk.

4. Limitations

Technical expert advice in any field is subject to various limitations. Important limitations to the advice include:

1. No attempt has been made to verify the predicted noise levels by rerunning the noise modelling.

Rhianna Scheffner

From:	Brendan Kelly <brendan.kelly@dwer.wa.gov.au>
Sent:	Thursday, 16 January 2020 9:02 AM
To:	Suzanne Occhipinti
Cc:	Records; Krish Seewraj
Subject:	Extractive Industry and Associated Works – Lot 5 Wild Rose Road and Lot 51 Railway Road, Waterloo
Follow Up Flag:	Follow up
Flag Status:	Flagged

16 January 2020

Our Reference: PA028807, DWERT50~21

Your Reference: P143/18

To: Shire of Dardanup

From: Department of Water and Environmental Regulation

Attention: Suzanne Occhipinti

Re: Application for Development Approval – Extractive Industry and Associated Works – Lot 5 Wild Rose Road and Lot 51 Railway Road, Waterloo, WA, 6228.

Dear Suzanne,

Further to our telephone conversation on 15 January 2020 and previous communication from the Department of Water and Environmental Regulation (DWER) to the Shire of Dardanup (the Shire) on 18 September 2019.

As discussed, Michael Taylforth from the consultancy LANDINSIGHTS has contacted DWER on behalf of the proponent, in terms of progressing this development application (DA). He provided the following information as *"an addendum to the application"*, here provided verbatim:

- **On review of available water data in the area it is acknowledged water will most likely be intercepted in the excavation area and that dewatering will likely be required in order to facilitate extraction of the clay resource.**
- **The clay will be extracted from the site over several years, and thus it will not be an open pit area across the entire site at all one time. Earthworks will likely occur at the completion of each stage of the extraction project to recontour extracted pits and creating new pits.**
- **It is acknowledged that a detailed design for the earthworks and drainage will be required, and that this will be undertaken by Austral Bricks during the course of the project. This is similar to how many of their other long-term sites operate.**
- **It is acknowledge that a future application under the Rights in Water & Irrigation Act will be required**

- **To support a future application to DWER for the RIWA *sic* application, a full hydrogeological survey will be undertaken to inform groundwater levels, staging, dewatering approach, water retention/disposal along with any other matters required by the Department at the time.**

Key to the context of the LANDINSIGHTS' email is the statement: *"A staged approach to obtaining approvals is preferred".*

This means the proponent wants to secure development approval from the Shire for the project to proceed prior to the project being scoped in detail operationally. As you are aware, the initial referral of the DA was deemed inadequate by DWER, with regard to some statements and the shortage of detail in the LANDINSIGHTS' document:

'Clay Extraction Management Lots 5 & 51 Waterloo Road, Waterloo, Land Insights, July 2019'.

Although a "*staged approach"* to development is something DWER can accommodate, key to success of the project is the provision of detailed reports, including:

- 'Hydrogeological Report' detailing local groundwater conditions,
- 'Water Management Plan' with details of groundwater and surface water management, including a dewatering plan that will need to be assessed and approved under the *'Rights in Water and Irrigation Act 1914'* (RiWI),
- 'Acid Sulfate Soil Management Plan' as the area holds a moderate to low risk of ASS being encountered,
- 'Site Rehabilitation Plan' which will need to include details of final drainage systems.

All of the above may be components of an encompassing 'Environmental Management Plan', which would context site operations and also potentially address matters pertaining to the *'Environmental Protection Act 1986'* (EP Act).

Key issues that DWER would raise include:

- The hydrogeological conditions of the site are complex, with a surficial and deeper superficial aquifer. The area is underlain by the Guildford formation, which has a loamy overburden. Post extraction the landform is likely to provide an outlet for the surficial aquifer in the overburden. This has the potential to impact on the viability of rural land uses on adjacent properties, the extent of which would need to be considered.
- DWER has undertaken regional modelling to understand groundwater conditions for Greater Bunbury, 'Greater Bunbury hydrological studies land development, drainage and climate scenario report (DWER unpublished)', which provides current day and future climate scenarios, based on Intergovernmental Panel on Climate Change (IPCC) predictions of the groundwater regime. This will provide a good data source for initial consideration of groundwater in the area.
- The site is dissected by Waterloo Main Drain, which is a critical system for the drainage of upstream properties and is managed by the Water Corporation.
- The site rehabilitation plan will be crucial. Unlike mineral sand mining there is unlikely to be much 'by-product' material that can be used to backfill the pits and with clean fill becoming scarce and high demand, it is therefore likely that achieving an area suitable for rural land use is unlikely.
- The alignment of the Bunbury Outer Ring Road dissects and impacts on both properties.

As outlined above, this is a complex site and requires consideration by Main Roads WA, Department of Primary Industries and Regional Development and the Water Corporation, in addition to DWER.

The proponent appears to be aware of the requirements to undertake the range of detailed studies associated with extraction operations and the associated approvals, however views this work as subject to conditions on the planning approval.

Thank you for the conversation, please keep me informed of developments in the processing of the DA

Brendan

Brendan Kelly
Senior Natural Resource Management Officer
Department of Water & Environmental Regulation,
Planning Advice, South West Region
Telephone: 08 97264194 | Mobile: 0407219515
Email: brendan.kelly@dwer.wa.gov.au

From:	Brendan Kelly <brendan.kelly@dwer.wa.gov.au>
Sent:	Wednesday, 18 September 2019 1:07 PM
To:	Suzanne Occhipinti
Cc:	Records
Subject:	Extractive Industry and Associated Works – Lot 5 Wild Rose Road and Lot 51 Railway Road, Waterloo, WA, 6228.
Attachments:	Basic Raw Material extraction.pdf

18th September 2019

Our Reference: PA028807, DWERT50~21

Your Reference: P143/18

To: Shire of Dardanup

From: Department of Water and Environmental Regulation

Attention: Suzanne Occhipinti

Re: Application for Development Approval – Extractive Industry and Associated Works – Lot 5 Wild Rose Road and Lot 51 Railway Road, Waterloo, WA, 6228.

The Shire of Dardanup (the Shire) has referred this development application (DA) for an extractive industry (EI) and associated works to the Department of Water and Environmental Regulation (DWER) for comment.

The referral includes the report:

'Clay Extraction Management Lots 5 & 51 Waterloo Road, Waterloo, Land Insights, July 2019' (Land Insights).

The application is to seek Development Approval and an Extractive Industry Licence to allow for clay extraction on Lots 5 and 51 Railway Road, Waterloo for a 20-year period (Land Insights p.5, s.1.1).

The post land use aim is to re-contour the pit areas to a safe and stable condition for pasture, including four farm dams.

WATER RESOURCES

Lots 5 & 51 Waterloo Road (the Lots) are located within water resource areas that are proclaimed under the *'Rights in Water and Irrigation Act 1914'*, specifically:

- the Bunbury Groundwater Area, and
- the Collie River Irrigation District Surface Water Area

The principals of managing the extractive industry (EI) operations to attain protection of water resources are:

- to maintain an adequate vertical separation distance between the base of extraction and the highest groundwater, and
- to manage stormwater runoff from the site during EI operations.

With regard to these principals, Land Insights (Land Insights p.13, s.2.4) has advised:

Groundwater – "Excavations will be above the water table and groundwater will not be intercepted", and

Surface water – "All stormwater which falls on the extraction area will be retained onsite and will not be not permitted to flow into the surrounding drainage network"

- Groundwater

It is noteworthy that Land Insights does not provide details of any groundwater investigations of the Lots nor an assessment of the status of local groundwater conditions.

DWER's WQPN 15 *'Basic raw materials extraction, 2019'* requires an EI to maintain an adequate vertical separation distance between the base of extraction and the highest groundwater level (attached)

Highest groundwater level should take into account the range of seasonal groundwater conditions in the context of long-term variability and possible groundwater rise following EI operations.

The scale of investigation and analysis will depend on the presence of local water resources, the availability of existing data, the proposed EI operations and any associated risks.

Given the lack of detail provided, DWER is not in a position to assess the risk to groundwater

RECOMMENDATION: it is recommended that the proponent provides detailed information on the hydrogeology beneath the Lots, including highest groundwater level and groundwater flow and quality.

- Surface water

It is noteworthy that no water balance has been provided for the Lots, with respect to stormwater that may require management to mitigate risk from the EI operations.

Stormwater from disturbed areas, including areas for stockpiles, should be managed for up to a 2 hour, 1 in 10 (10 per cent) annual exceedance probability event.

Given the lack of detail provided, DWER is not in a position to assess to assess the risk to surface water

RECOMMENDATION: it is recommended that the proponent provides an accurate water balance for the site, related to the dimensions and locations of stormwater detention basins, drainage channels, bunds and the like.

Once the above information is provided, DWER will be in a position to assess the DA and associated EI operations.

Please contact this office for inquiries.

Brendan Kelly
Senior Natural Resource Management Officer
Department of Water & Environmental Regulation,
Planning Advice, South West Region
Telephone: 08 97264194 | Mobile: 0407219515
Email: brendan.kelly@dwer.wa.gov.au

Rhianna Scheffner

From: Gareth Webber
Sent: Tuesday, 8 October 2019 11:40 AM
To: Cecilia Muller
Subject: FW: Application for Development Approval Clay extraction Lot 5 and 51 Waterloo Rd

Hi Cecilia,

The below submission was received with regards to the DA for an Extractive Industry at Lot 5 and 51 Waterloo Road.

From: Craig Bovell <Craig.Bovell@doral.com.au>
Sent: Tuesday, 8 October 2019 8:24 AM
To: Submissions Planning <Submissions@dardanup.wa.gov.au>
Cc: Andrew Templeman <Andrew.Templeman@doral.com.au>
Subject: Re: Application for Development Approval Clay extraction Lot 5 and 51 Waterloo Rd

Hi Suzanne

Thankyou for your correspondence informing us of the proposed clay extraction on Waterloo Rd

I would like to let you know that Doral Mineral Sands has no objection nor comment to the proposal

Thanks
Craig

Craig Bovell
OSH&E Superintendent
Doral Mineral Sands Pty Ltd | Lot 7 Harris Road | PO Box 9155 | Picton Western Australia 6229 |
Phone 08 9725 5444 | Fax 08 9725 4757 | Mobile 0417 951 202 craig.bovell@doral.com.au

Doral

Rhianna Scheffner

From: Wendy Couch <Wendy.Couch@dpird.wa.gov.au>
Sent: Wednesday, 23 October 2019 11:33 AM
To: Submissions Planning
Subject: FW: LUP 697 - Shire of Dardanup - Application for Extractive Industry (Clay) - Lot 5 618 Waterloo Road and Lot 51 162 Railway Road Waterloo (A4077654)
Attachments: 20191023094851550.pdf

Good morning

Please find attached response

Kind Regards

Wendy Couch | Project Support Officer
Land and Water Development
Industry & Economic Development
Department of Primary Industries and Regional Development
1 Verschuer Place, Bunbury 6230
t +61 (0)8 9780 6123 | **w** dpird.wa.gov.au

Department of
Primary Industries and Regional Development

GOVERNMENT OF WESTERN AUSTRALIA

Your reference: P143/18
Our reference: LUP 688
Enquiries: Leon van Wyk

Chief Executive Officer
Shire of Dardanup
PO Box 7016
EATON WA, 6232
submissions@dardanup.wa.gov.au

23 October 2019

Dear Suzanne

COMMENT: APPLICATION FOR DEVELOPMENT APPROVAL AND EXTRACTIVE INDUSTRY LICENCE - LOT 5 (618) WATERLOO ROAD AND LOT 51 (162) RAILWAY ROAD, WATERLOO

Thank you for the opportunity to comment on the proposed extraction of clay at Lot 5 (618) Waterloo Road and Lot 51 (162) Railway Road, Waterloo.

The Department of Primary Industries and Regional Development (DPIRD) does not object to the proposed extraction of clay at the abovementioned lots. The management of weeds is only discussed as part of the rehabilitation phase, but weeds should also be managed during the active extraction phase of the project and DPIRD therefore recommends that the applicant develop a Weed Management Plan.

I trust these comments inform your decision on this matter. If you have any queries regarding the comments, please contact Leon van Wyk at (08) 9780 6171 or leon.vanwyk@dpird.wa.gov.au.

Please note that all future communication with DPIRD should be addressed to:

Department of Primary Industries and Regional Development
Locked Bag 4
Bentley Delivery Centre WA 6983

Or

1 Verschuer Place, Bunbury WA 6230
PO Box 1231 Bunbury WA 6231
Telephone +61 (0)8 9780 6100 Facsimile +61 (0)8 9780 6136 enquiries@dpird.wa.gov.au
dpird.wa.gov.au
ABN: 18 951 343 745

Email to:

enquiries@dpird.wa.gov.au

Yours sincerely

Kelly Hill
A/DIRECTOR
BUSINESS DEVELOPMENT

(Appendix ORD: 12.5C)

Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Your ref:
Our ref: PLH2018P0093
Doc ref:
Enquiries: Ben Müller

Shire of Dardanup
PO Box 7016
EATON WA 6232

Dear Suzanne Occhipinti

DEVELOPMENT APPLICATION – EXTRACTIVE INDUSTRY AND EXTRACTIVE INDUSTRY LICENCE – LOTS 5 & 51 WATERLOO ROAD, WATERLOO

I refer to your email dated 23 May 2019 requesting the Department of Planning, Land and Heritage (DPLH) to comment on the above proposal.

Greater Bunbury Region Scheme

Lots 5 & 51 Waterloo Road, Waterloo are zoned Rural under the Greater Bunbury Region Scheme (GBRS) and located within both areas of the Strategic Minerals and Basic Raw Materials Resource Policy and the Priority Agricultural Land Policy under the GBRS. It is further noted that the properties are affected by the proposed Bunbury Outer Ring Road (BORR) alignment.

Under Clause 24 of the GBRS, a person must not commence or carry out development of a kind or class specified in a resolution made by the Commission under Clause 27, unless that person has planning approval.

Under Clause 27 of the GBRS there are a number of scenarios under which a development application is required. This application has been assessed in accordance with the provisions of the GBRS, and in particular with reference to the Notice of Resolution made under Clause 27, Schedule 1, Paragraph 6: Development within the Priority Agricultural Land Area, Paragraph 7: Development within the Strategic Minerals and Basic Raw Materials Resource Policy Area and Paragraph 10: Development within the Rural Zone.

- Under Paragraph 6, a GBRS application can potentially be triggered due to the property's location within the GBRS Strategic Agricultural Resource Policy Area however in this case the proposed development is considered a permissible land use under the policy. A GBRS application under Paragraph 6 is therefore not required.

- Under Paragraph 7, a GBRS application can potentially be triggered due to the property's location within the GBRS Strategic Minerals and Basic Raw Materials Resource Policy Area however in this case the proposed development is

(Appendix ORD: 12.5C)

considered to be compatible with the purposes of this policy. A GBRS application under Paragraph 7 is therefore not required.

- Under Paragraph 10, a GBRS application can potentially be triggered within the Rural Zone where the WAPC or local government is of the opinion that the proposed development is not consistent with the purpose of the Rural Zone. The wise use of natural resources including minerals is however consistent with the purpose of the Rural Zone as defined in the GBRS. A GBRS application under Paragraph 10 is therefore also not required.

Due to the BORR alignment affecting the two properties, the DPLH request that the proposal also be referred to MRWA for advice – if the Shire's subsequent decision on the application is not in accordance with MRWA advice, the application could be called in for a decision by the WAPC under the Notice of Resolution made under Clause 27 of the GBRS, Schedule 1, Paragraph 1: Development of State or Regional Significance – where development in respect of which the WAPC, by notice in writing in each case, advises the local government that the development is of state or regional significance or that, in the public interest, the development should be the subject of an application determined by the WAPC.

The Shire should therefore as soon as possible after obtaining advice from MRWA inform the DPLH about their anticipated decision on the application in relation to the MRWA advice in order for the WAPC to make a decision on its position with regards to the State or Regional significance of the proposal.

No internal referral

Please note the proposed development has been reviewed in regard to other DPLH functions and no further internal referrals have been undertaken at this time.

Should you have any further queries please contact Ben Müller on 9791 0577.

Yours sincerely

Marion Dandridge
Planning Manager
Regional South West

10 June 2019

Rhianna Scheffner

From: DAVIES Paul (Con) <paul.davies@mainroads.wa.gov.au>
Sent: Thursday, 10 October 2019 8:09 AM
To: Cecilia Muller
Cc: NAUDE Daniel (On Leave); Submissions Planning
Subject: FW: Development Application - Lot 5 Wild Rose Road and Lot 51 Railway Road Waterloo - Extractive Industry and Associated Works
Attachments: 201802-0496.pdf

Hi Cecilia

I refer to your referral letter of 27 September 2019 and recent discussions regarding the above mentioned proposed development.
Please disregard my previous email of 14 August below

As discussed the subject land is impacted by the proposed alignment for the Bunbury Outer Ring Road and Main Roads is currently liaising with the property owners regarding acquisition of the required road reserve.
The attached plan shows the alignment of the BORR through the subject land for your information.

It is recommended that the proponent be required to modify the proposed development plan/ extraction areas to exclude the land area required for the Bunbury Outer Ring Road.

If you have any queries please phone Daniel Naude

Regards Paul Davies.

For Daniel Naude
ROAD CORRIDOR PLANNING MANAGER
Metropolitan and Southern Regions / South West
p: +61 9724 5724 | **m:** +61 4189 31078
w: www.mainroads.wa.gov.au

by

From: DAVIES Paul (Con) <paul.davies@mainroads.wa.gov.au>
Sent: Wednesday, 14 August 2019 9:15 AM
To: 'Kathleen Hoult' <Kathleen.Hoult@dardanup.wa.gov.au>
Cc: NAUDE Daniel (RCPM) <Daniel.Naude@mainroads.wa.gov.au>
Subject: Development Application - Lot 5 Wild Rose Road and Lot 51 Railway Road Waterloo - Extractive Industry and Associated Works

Hi Kathleen

I refer to your email below and advise that Main Roads has no objection to the proposed Extractive Industry.

If you have any queries please phone Daniel Naude

Regards Paul Davies

For Daniel Naude
ROAD CORRIDOR PLANNING MANAGER
Metropolitan and Southern Regions / South West
p: +61 9724 5724 | **m:** +61 4189 31078
w: www.mainroads.wa.gov.au


From: Kathleen Hoult <Kathleen.Hoult@dardanup.wa.gov.au>
Sent: Wednesday, 17 July 2019 9:25 AM
To: WEB South West Region <swreg@mainroads.wa.gov.au>
Cc: Suzanne Occhipinti <Suzanne.Occhipinti@dardanup.wa.gov.au>
Subject: Application for Development Approval - Extractive Industry and Associated Works - Request for Comment

To Whom it may concern,

Please see attached letter and proposal for an Application for Development Approval – Extractive Industry and Associated works for Lot 5 Wild Rose Rd and Lot 51 Railway Rd in Waterloo.

If you have any further questions about the attached please don't hesitate to contact Suzanne Occhipinti on 97240359.

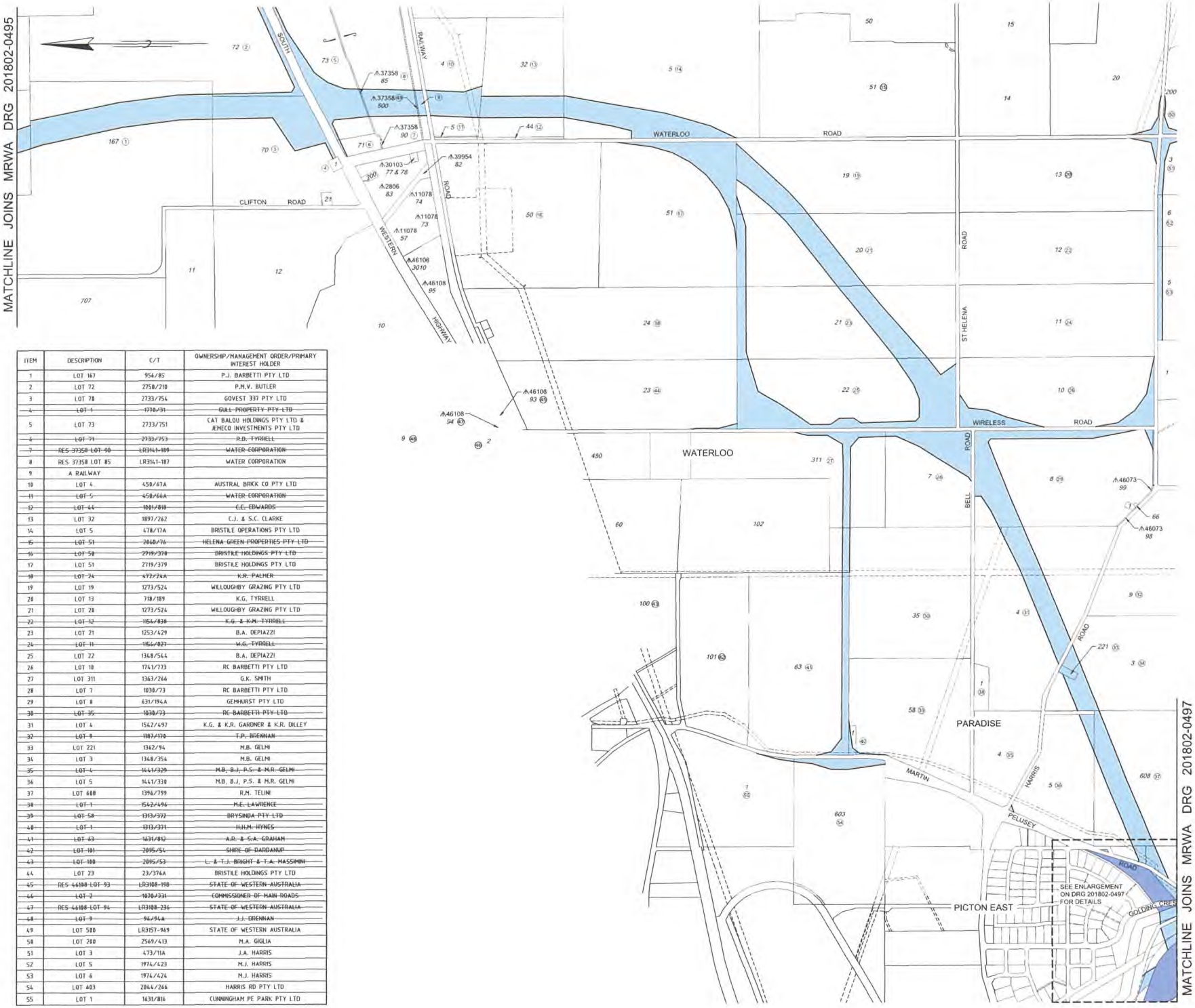
Kind regards
Kathleen

Kathleen Hoult
Governance Officer

SHIRE OF DARDANUP | 1 Council Drive | PO Box 7016 | Eaton WA 6232
p: 08 9724 0000 | f: 08 9724 0091 | e: Kathleen.Hoult@dardanup.wa.gov.au

(Appendix ORD: 12.5C)

MATCHLINE JOINS MRWA DRG 201802-0495



MATCHLINE JOINS MRWA DRG 201802-0497

ITEM	DESCRIPTION	C/T	OWNERSHIP/MANAGEMENT ORDER/PRIMARY INTEREST HOLDER
1	LOT 167	956/85	P.J. BARBETTI PTY LTD
2	LOT 72	2758/210	P.M.V. BUTLER
3	LOT 78	2733/754	GOVEST 337 PTY LTD
~~4~~	~~LOT 1~~	~~1778/31~~	~~GULL PROPERTY PTY LTD~~
5	LOT 73	2733/751	CAT BALOU HOLDINGS PTY LTD & JENECO INVESTMENTS PTY LTD
~~6~~	~~LOT 71~~	~~2733/753~~	~~R.D. TYRRELL~~
~~7~~	~~RES 37358 LOT 90~~	~~LR3141-189~~	~~WATER CORPORATION~~
8	RES 37358 LOT 85	LR3141-187	WATER CORPORATION
9	A RAILWAY		
10	LOT 4	458/67A	AUSTRAL BRICK CO PTY LTD
~~11~~	~~LOT 5~~	~~458/66A~~	~~WATER CORPORATION~~
~~12~~	~~LOT 44~~	~~1001/818~~	~~C.E. EDWARDS~~
13	LOT 32	1897/262	C.J. & S.C. CLARKE
14	LOT 5	478/17A	BRISTILE OPERATIONS PTY LTD
~~15~~	~~LOT 51~~	~~2868/76~~	~~HELENA GREEN PROPERTIES PTY LTD~~
~~16~~	~~LOT 50~~	~~2719/378~~	~~BRISTILE HOLDINGS PTY LTD~~
17	LOT 51	2719/379	BRISTILE HOLDINGS PTY LTD
~~18~~	~~LOT 24~~	~~472/24A~~	~~K.R. PALMER~~
19	LOT 19	1273/524	WILLOUGHBY GRAZING PTY LTD
20	LOT 13	718/189	K.G. TYRRELL
21	LOT 20	1273/524	WILLOUGHBY GRAZING PTY LTD
~~22~~	~~LOT 12~~	~~1154/838~~	~~K.G. & K.M. TYRRELL~~
23	LOT 21	1253/429	B.A. DEPIAZZI
~~24~~	~~LOT 11~~	~~1156/827~~	~~W.G. TYRRELL~~
25	LOT 22	1348/544	B.A. DEPIAZZI
26	LOT 10	1741/773	RC BARBETTI PTY LTD
27	LOT 311	1363/266	G.K. SMITH
28	LOT 7	1838/73	RC BARBETTI PTY LTD
29	LOT 8	631/194A	GEMHURST PTY LTD
~~30~~	~~LOT 35~~	~~1838/73~~	~~RC BARBETTI PTY LTD~~
31	LOT 4	1542/497	K.G. & K.R. GARDNER & K.R. DILLEY
~~32~~	~~LOT 9~~	~~1187/478~~	~~T.P. BRENNAN~~
33	LOT 221	1342/94	M.B. GELMI
34	LOT 3	1348/354	M.B. GELMI
~~35~~	~~LOT 4~~	~~1441/329~~	~~M.B., B.J., P.S. & M.R. GELMI~~
36	LOT 5	1441/330	M.B., B.J., P.S. & M.R. GELMI
37	LOT 608	1396/799	R.M. TELINI
~~38~~	~~LOT 1~~	~~1542/496~~	~~M.E. LAWRENCE~~
~~39~~	~~LOT 58~~	~~1313/372~~	~~BRYSINDA PTY LTD~~
~~40~~	~~LOT 1~~	~~1313/371~~	~~H.H.M. HYNES~~
~~41~~	~~LOT 63~~	~~1631/812~~	~~A.R. & S.A. GRAHAM~~
~~42~~	~~LOT 101~~	~~2095/54~~	~~SHIRE OF DARDANUP~~
~~43~~	~~LOT 100~~	~~2095/53~~	~~L. & T.J. BRIGHT & T.A. MASSIMINI~~
44	LOT 23	23/376A	BRISTILE HOLDINGS PTY LTD
~~45~~	~~RES 46108 LOT 93~~	~~LR3108-198~~	~~STATE OF WESTERN AUSTRALIA~~
~~46~~	~~LOT 2~~	~~1020/231~~	~~COMMISSIONER OF MAIN ROADS~~
~~47~~	~~RES 46108 LOT 94~~	~~LR3108-236~~	~~STATE OF WESTERN AUSTRALIA~~
~~48~~	~~LOT 9~~	~~94/94A~~	~~J.J. DRENNAN~~
49	LOT 500	LR3157-969	STATE OF WESTERN AUSTRALIA
50	LOT 200	2569/413	M.A. GIGLIA
51	LOT 3	473/11A	J.A. HARRIS
52	LOT 5	1974/423	M.J. HARRIS
53	LOT 6	1974/424	M.J. HARRIS
54	LOT 603	2844/266	HARRIS RD PTY LTD
55	LOT 1	1631/816	CUNNINGHAM PE PARK PTY LTD

AMENDMENTS

No.	DESCRIPTION	APPROVED & DATE

NOTES

1. DIMENSIONS AND AREAS ARE APPROXIMATE ONLY AND ARE SUBJECT TO SURVEY.
2. S.L.K. IS A M.R.W.A. STRAIGHT LINE KILOMETRE AND IS APPROXIMATE ONLY.

LEGEND

LAND REQUIRED FOR ROAD PURPOSES.

BOUNDARY TO BE SURVEYED.

METADATA

GROUND SURVEY STANDARD:
DATE OF CAPTURE:
MAPPING SURVEY STANDARD:
DATE OF CAPTURE:
MAIN ROADS PROJECT ZONE: PCG 94
HEIGHT DATUM:

mainroads WESTERN AUSTRALIA
METROPOLITAN & SOUTHERN REGIONS DIRECTORATE
SOUTH WEST REGION
ROBERTSON DRIVE BUNBURY 6230
Telephone (08) 9724 5600 Fax (08) 9724 5656

FILE NUMBER

DESIGNED / DRAWN: A. SZELIGA 22/05/2018

VERIFIED

APPROVED

SCALES 1:10000

A1

BUNBURY OUTER RING ROAD

FORREST HWY TO SOUTH WESTERN HWY SECTION

LAND OWNERSHIP PLAN

SHEET 2 OF 3

LOCAL AUTHORITY (211) SHIRE OF HARVEY (208) SHIRE OF DARDANUP

MRWA DRAWING NUMBER

201802-0496

(Appendix ORD: 12.5C)

Development Services
629 Newcastle Street Leederville WA 6007
PO Box 100 Leederville WA 6902
T (08) 9420 2099
F (08) 9420 3193

WATER CORPORATION

Your Ref: DAP-R0652384
Our Ref: 57125495 - DEV365635
Enquiries: Kevin Purcher
Direct Tel: 9420 2385

14 February 2020

Chief Executive Officer
Shire of Dardanup
PO Box 7016
EATON WA 6232

Attention of: Suzanne Occhipinti

Re: Extractive Industry and Associated Works – Lot 5 (624) Wild Rose Road Waterloo and Lot 51 (162) Railway Rd Waterloo

Thank you for your email dated 13 February 2020. We apologise for not replying to your previous letter and appreciate the opportunity to provide the following comments in regard to this proposal.

Water and Wastewater

Reticulated water and sewerage is currently not available to the subject land. If these services are required please contact us so we can discuss the best way to proceed.

Drainage

The subject area falls within the Collie River Drainage District, a rural drainage system. The Victoria main drain and sub drains traverses the subject site in the (please note attached plan).

It is noted that there is a crossing proposed over the Victoria main drain. A engineering consultant will need to be engaged to formally submit design drawings of any structure that is proposed near or over the Water Corporations drain in accordance to the Water Corporations Developers' Manual please follow this link: - https://www.watercorporation.com.au/-/media/files/builders-and-developers/subdividing/developers-manual.pdf.

Rural drains are not designed to give flood protection at all times and some inundation of land can be expected. Water Corporation maintains its existing drains to ensure they are capable of clearing water from adjacent rural properties within three days of a storm event, where contours and internal drainage make this physically possible.

Developments within this catchment are required to contain the flows from a one in one hundred year storm event on site. Discharge to Water Corporation drains must be compensated to pre-development levels.

No adverse discharge or runoff from the subject land would be allowed into our drainage system.

Whenever development is proposed near Water Corporation assets the applicant/owner needs to submit an Approval of Works application. For information about this application please follow this link:
https://www.watercorporation.com.au/home/builders-and-developers/working-near-our-assets/approval-for-works

General Comments
The developer may be required to fund new works or the upgrading of existing works and protection of all works.

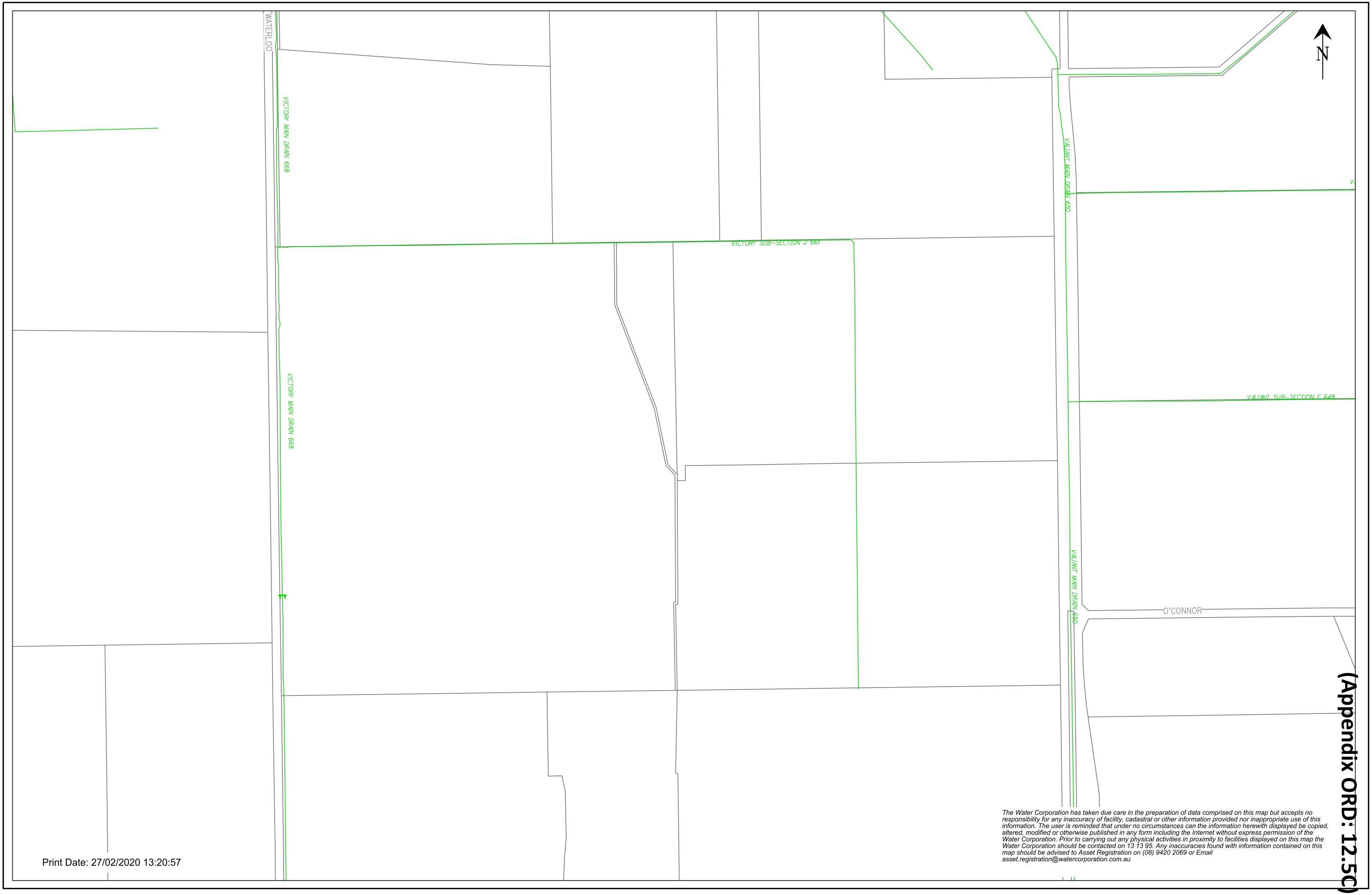
The information provided above is subject to review and may change. If the proposal has not proceeded within the next 6 months, please contact us to confirm that this information is still valid.

Please provide the above comments to the land owner, developer and/or their representative.

Should you have any queries or require further clarification on any of the above issues, please do not hesitate to contact the Enquiries Officer.

K Purcher

Kevin Purcher
Senior Planner
Development Services



Print Date: 27/02/2020 13:20:57

The Water Corporation has taken due care in the preparation of data comprised on this map but accepts no responsibility for any inaccuracy of facility, cadastral or other information provided nor inappropriate use of this information. The user is reminded that under no circumstances can the information herewith displayed be copied, altered, modified or otherwise published in any form including the Internet without express permission of the Water Corporation. Prior to carrying out any physical activities in proximity to facilities displayed on this map the Water Corporation should be contacted on 13 13 95. Any inaccuracies found with information contained on this map should be advised to Asset Registration on (08) 9420 2069 or Email asset.registration@watercorporation.com.au

(Appendix ORD: 12.5C)

Scale 1:8000

0m 90m 180m 270m 360m

Projection: MGA Zone 50 (m)

(Appendix ORD: 12.5C)

Rhianna Scheffner

From: Lisa Ryan <l >
Sent: Tuesday, 22 October 2019 2:55 PM
To: Submissions Planning
Subject: Development of Waterloo Rd

Mark and I are residents at 14411 Southwest Hwy Waterloo, and we recieved a letter regarding the proposed mining on either side of Waterloo Rd.

We have some questions that we would like to ask in reference to the reason for the mining, and the impact on surrounding properties.

1. In regards to the drainage, as it is over a 20yr period, is this going to affect the water table surrounding the mining areas?
(We are located not far from the sites as the crow flies, maybe 1km, and are reliant upon bore water for our drinking and hygiene needs.
If this affects our water supply, we need to be notified and compensated for such).

2. What is the reason for the mining?

3. Are they pits for dumping waste from other mine sites, or are they using the clay?

4. If it is for waste, what type of waste, and what environmental impacts will occur due to such waste disposal?

We are quite concerned that this mining will have environmental and physical health consequences for the surrounding areas, and us as local residents. We have a young family, and bought our property as a long term residence.

Any up to date information, and transparency would be greatly appreciated.

Kind regards,

Lisa Herdman.

(Appendix ORD: 12.5C)

Rhianna Scheffner

From: Lisa Ryan
Sent: Friday, 14 February 2020 5:02 PM
To: Submissions Planning
Subject: Re: Development of Waterloo Rd
Attachments: Screenshot_20200214-164541_Drive.jpg; Screenshot_20200214-165248_Drive.jpg

Hi Suzanne,

Thankyou for your email. In response to your answers to my questions in my submission regarding the effect on ground water for the clay mines, I would like to pass on some information that I feel is relevant.

I will attach these images below. One is regarding the recommendations within the applicants Water Management Plan 5.5; Recommendation 24, and the other is from Southwest Groundwater Areas Allocation Plan.

Kind regards,

Lisa Herdman

Recommendation	Management Action/Comment
Recommendation 9 'Natural vegetation buffers improve water quality by filtering potentially contaminated water before it enters a water body. Vegetation density and landform are important considerations when determining appropriate separation distances between land uses and waterways.'	A vegetated reserve is located north of Railway Road providing further buffer to the watercourse. In addition, there is adequate separation of approximately 1.2 kilometres.
Recommendation 15 'Extractive industries should not harm native vegetation (unless permitted by a clearing licence or permit).'	No clearing of vegetation is proposed, however if any clearing is required, a Clearing Permit will be applied for with the Department.
Recommendation 24 'Quarries near wetlands and waterways should not disturb peat land, floodways or the groundwater table, unless the development proposal has undergone an Environmental Impact Assessment and is approved by the Minister for the Environment.'	N/A – The extraction site is not located near a wetland or waterway.
Recommendation 27 'Quarry operators should use existing roads and tracks where practical. New access ways onto major roads should not be created.'	Access tracks are already established and will continue to be utilised.
Recommendation 28 'Quarries should have security fencing and locked gates to prevent public access outside of operating hours.'	Appropriate security including fences, locked gates and signage will be established.

Dardanup

Considerations for water use include, but are not limited to, the following

Ecological

Wetlands and waterways: Preston, Ferguson and Collie rivers and Henty Brook are the major water courses in the subarea. Fifteen registered environmental protection policy wetlands, with the majority located on private land and near the major rivers.

The mouth and lower reaches of the Collie River is classed as a system 6 conservation reserve under the *Environmental Protection Act 1986*.

Threatened ecological communities and declared rare flora sites: Four threatened ecological community sites located in one of the Aboriginal sites of significance on crown land (Waterloo Brickworks). Over 15 different species of declared rare flora, with most species associated with the threatened ecological community and the road reserve along the Australind Bypass.

Groundwater-dependent ecosystems and ecological water requirement sites: There is one ecological water requirement site which does not have departmental monitoring associated with it but is important and may require additional work if a licence application is submitted near it (see Hyde 2006 for more information).

Cultural

Native Title claimant: Gnaala Karla Booja.

Aboriginal Heritage sites: Over 35 registered sites including several water related sites such as hunting grounds and the Collie River Waugal.

Social

Towns and localities: Localities of Eaton, Picton, Picton East, Waterloo, Paradise, Millbridge, Pelican Point, Dardanup West and Dardanup cover this subarea with water supply for domestic purposes from rainwater tanks and exempt groundwater abstraction.

Public water supply: The Water Corporation supplies the town of Dardanup from the Leederville Aquifer with drinking water.

National parks, reserves and state forest: There is several unnamed nature reserves associated with Waterloo Brickworks site of Aboriginal heritage.

Recreational sites: The Collie, Preston and Ferguson rivers are used for recreational purposes.

Management zones that apply in this subarea

There are no management zones in the Dardanup subarea.

(Appendix ORD: 12.5C)

Rhianna Scheffner

From:
Sent: Wednesday, 23 October 2019 1:29 PM
To: Submissions Planning
Subject: Comment , Extractive industry and associated works
Attachments: RD scott Mi Nottt comment exctarctive industry licence.doc

To Whom it may concern.

Please find attached " comment " from Ryan Scott and Madeleine Nott of 122 St Helena rd Waterloo, (lot 50) , owners of adjoining land affected by "Application For Development Approval and Extractive Industry licence and Extractive industry and associated works. Lot 5 Waterloo rd and Lot 51 Railway rd Waterloo Wa 6228.

Sincerely
Ryan Scott and Madeleine Nott

Ryan Scott and Madeleine Nott

Chief Executive Officer
Shire of Dardanup
PO Box 7016
EATON WA 6232

Dear Sir/Madam

RE: SUBMISSION OF COMMENT ON THE APPLICATION FOR DEVELOPMENT APPROVAL AND EXTRACTION INDUSTRY LICENCE EXTRACTIVE INDUSTRY AND ASSOCIATED WORKS – LOT 5 (618) WATERLOO ROAD AND LOT 51 (162) RAILWAY ROAD, WATERLOO WA 6228

Thank you for your letter dated 27 September 2019 informing me about the above application.

Our property is Lot 50, Folio75, St Helena Road, Dardanup.

We make the following comments about the application:

1. From the outset, we do not oppose the need for Austral Bricks to extract clay as outlined in the Development Application (Extractive Industry Licence Application Clay Extraction Management Plan Lots 5 and 51 Waterloo Road, Waterloo prepared for Austral Bricks (WA) Pty Ltd).
2. We support the clay mining process on the expectation that both the Shire of Dardanup and Austral Bricks will respect our rights as landowners in the Shire of Dardanup and respect the health and well-being of our children and ourselves to any unacceptable impact of the clay mining process.
3. In addition to Comment 2 above, because our family is one of only a small number of residents living in a close vicinity to the proposed clay extraction mining site that our concerns, rights and health and well-being are not compromised by the commercial interests of the Dardanup Shire and the commercial interests of Austral Bricks. Information we have is that when Austral Bricks purchased the surrounding land in 2009 as a buffer zone to its then proposal to expand and modernise the Waterloo Brickworks, a comment from the Dardanup Shire ("Austral Bricks is on its lonesome out there.") suggests that the residents interests and concerns may not have been appropriately considered at that time by the Shire.
4. Even though our actual homesite is just over 500 metres from the edge of Lot 5 (nearest clay extraction site), we do not wish this to be used as a reason to exclude our concerns. A narrow road (Wild Rose Road) separates the edge of our property from Lot 5. We grow good quality hay in the paddocks adjoining Wild Rose Road and we have stock grazing in those paddocks all year round. Our stockyards which are used frequently are 200 metres from Lot 5. We also have fruit trees that are only 55 metres from Lot 5.
5. When we purchased our property at 122 St Helena Road, we were on the belief that the surrounding farmland (500 acres) purchased by Austral Bricks was a buffer zone for the intention to expand and modernise the Waterloo Brickworks. The plan to extract clay from the buffer zone was not informed to us by the Real Estate firm that we purchased our land through nor the Dardanup Shire when we made general enquiries about the property.
6. Dust emissions from the clay extraction process is a high concern of ours for our health and well-being. Strong winds do blow from the direction of the sites of the clay mining pits, and more particularly from the sites that will be located in Lot 5, Waterloo Road. Constant dust on

hay pastures can diminish the quality and monetary value of hay. We would like assurance that Austral Bricks will take preventable measures to stop any dust emission problems from arising and also monitor dust emissions to ensure quick actions are implemented if unexpected problems arise. Dust sources would include removing the topsoil, excavating the clay resource, stock piling of soil or clay, bunds that may be built and the operation of heavy machinery vehicles and truck traffic. Solutions to dust problems will need to be made quickly.

7. Rain water is collected for consumption in our house. As the water is collected from the house and shed roof, dust emissions could possibly contaminate the water.
8. Unacceptable noise emission levels are also a concern we would like Austral Bricks to monitor noise emissions and to enact solutions if problems occur.
9. Our bore water source is also a concern. The farm's bore is located about 50 metres from Lot 5. The water is used for cattle, some sheep, gardens, lawn areas and for general purposes. The Development Plan informs that the clay mining will only go to a depth of 4 to 5 metres and the water table/underground water resources will not be affected. However, the capacity of the bore will be monitored, and it is expected that Austral Bricks will be responsible for the management and cost of maintaining and rectifying any loss of the normal expected water output required for our farm.
10. Water run-off from rainfall runs through our property from neighbouring properties quickly and directly from our farm towards Lot 5. This run-off is often of a high volume when we have heavy rainfall or extended periods of rainfall. A drain runs along Wild Rose Road to Waterloo Road and another runs into Lot 5. Any blockage of these drains from lack of upkeep or by soil deposits will result in flooding of our farm including the house block and our water tank site. We will need assurance that the clay mining operations will not compromise rainfall run-off areas and that all flood drains and flood run-off areas will be maintained.
11. The Development Plan indicates that at times there will high volumes of truck traffic (at least 2000 truck movements for particular operations). Dust emissions and noise emissions are concerns. These concerns will be heightened if the trucks begin to use Wild Rose.
12. In addition to Comment 10 above, vehicle/truck traffic may be a major concern if the Bunbury Outer Ring Road (BORR) roadworks is being done at the same time as the clay mining process. Our concern is if the BORR roadworks are happening at the same time, would this require truck traffic to use St Helena Road. St Helena Road is only one of the few roads in the Shire of Dardanup that is not bitumen. Since living at 122 St Helena Road, we have been quite surprised by the amount of traffic that uses the road from and to Dowdells Line road. Dust is already an occasional problem and this will worsen if trucks connected with transporting the clay need to use St Helena Road.
13. It is also a high concern of ours that the impact of the clay extraction process may affect the financial value of our land.
14. It should be acknowledged and including financial implications, that our home, approximately 500m from extraction site, is double brick, and will be monitored by the use of photo evidence, for any cracks or movement caused by possible vibrations created during the extraction process.
15. A further comment concerns our confusion as to advice we received from the Shire of Dardanup when we looked into buying our farm. As our farm was not far from the Ferguson Valley gateway, we thought it would be an opportunity for us to start business ventures in keeping with the spirit of the now thriving tourism industry in the Shire within its picturesque and traditional farming enterprises. The advice we received was that additional vehicle traffic and the operation of a trucking business would not be suitable for the area. This advice appears to be contradictory to what is expected to happen when the clay extraction process gets underway.
16. The existing Austral Brickworks site needs attention. It has dilapidated buildings, larges piles of earth from another era, and is generally unkept. Upon entering Waterloo Road, you are met by this eyesore. Austral Bricks should demonstrate their commitment to rehabilitation, and to the community by first cleaning up and rehabilitating their existing site.

17. Rehabilitation of the site once the mining process is completed is also a concern of ours. The application indicates that the Rehabilitation Management is to be monitored for three years. We would like an assurance from Austral Bricks and the Dardanup Shire that any negative impact of the rehabilitation process on our property and our health and well-being will be taken into account and solutions found.

Yours sincerely

Ryan Scott and Madeleine Nott

23 October 2019

	Submitter	Submitter Comment	Officer Comment
1.	Department of Water and Environmental Regulation (DWER) 28.04.2020	Technical (Review) Report: Advice/Report on the environmental noise assessment report for the proposed clay pit operation on Lots 5 and 51 Waterloo Road, Waterloo, prepared for the Shire of Dardanup. Provides the following advice (in part - see (Appendix ORD:12.5C) for full review report and advice):	Noted.
		• The proposed operation will be within 500 m of the neighbouring residences at certain stages. Therefore a detailed noise impact assessment to demonstrate that noise emissions can be managed to comply with the Environmental Protection (Noise) Regulations 1997 (Noise Regulations) is recommended.	Noted. Officers recommend that the Acoustic Assessment is amended, and a corresponding, amended overall Noise Management Plan is prepared, modelling noise levels and detailing mitigation measures for all activities on the site.
		• Overburden removal is a part of the extractive operation, and therefore not considered as 'construction' under regulation 3 of the Noise Regulations. This also applies to the development of noise bunds using overburden as source material.	Noise from 'construction' work has higher permitted noise levels than the excavation does, under the Noise Regulations. DWER notes that removal of the topsoil can be considered 'construction', but not excavation of overburden or forming bunds from the overburden. Overburden lays between the topsoil and clay deposit. The Clay Extraction Management Plan (section 4.4) stats that overburden is approximately 0.3 to 0.5m deep. Officers recommend that the Acoustic Assessment is amended, and a corresponding, amended overall Noise Management Plan is prepared, modelling noise levels between 0.5m and 5m below NGL, and detailing noise mitigation measures for all activities on the site.
		• Therefore, compliance with the assigned noise levels is still required for some of the initial work, as described in Section 2.1;	Noted
		• The operation will be conducted in 10 stages, which also involves the need for relocating the 5 m high earth bunds. This indicates that the construction work needs to be carried out many times during the life of the proposed project.	To clarify reference to "5m" high bunds, it is noted that the Clay Management Plan and Acoustic Assessment suggests that bunds themselves will only be approximately 0.5m high. However, bunds will be at the edge of pits which will be excavated progressively to 4-5m deep.
		• It should be noted that construction noise can only be regulated under regulation 13 when the site is a 'construction site'.	Noted
		• This means that the clay extractive operation cannot occur during the staged construction work. The proponent may need to develop a noise management plan to avoid this scenario.	It may be impractical to require removal of topsoil and other construction work to occur separately to extraction. Therefore officers recommend that an

			overall Noise Management Plan is prepared to mitigate noise impacts for all activities on the site.
		• As there are a considerable number of stages with considerable restructuring of noise mitigation solutions over the lifetime of the quarry, the development of an overall noise management plan may be prudent.	Officers suggest an amended overall Noise Management Plan as a condition of approval if approval is granted.
		• While noise compliance may be achieved while the dozer works from behind a stockpile (3 or 4 m high) at all times, the LGA report did not indicate how to operate the dozer before the stockpile reaches the required height for acoustic shielding; and	Officers consider the Acoustic Assessment to be incomplete in this regard.
		• It can be seen that the proposed operation site and the neighbouring noise sensitive premises are in a greenfield state.	Noted
		• Although LGA did not conduct any ambient noise monitoring, it is likely that the ambient noise level could be very low, particularly at the three residences south and southeast of the proposed development site. The noise impact on these residences therefore can be high, if the ambient noise level is significantly increased by the proposed clay quarry operations.	Noted
		• In that situation, the noise from the operations is likely to draw complaints, regardless whether the noise complies with the assigned noise levels or not. The noise management plan may need to address this potential risk.	Officers recommend that the Acoustic Assessment is amended, and a corresponding, amended overall Noise Management Plan is prepared, modelling noise levels and detailing mitigation measures for all activities on the site.
2.	Department of Water and Environmental Regulation (DWER) 16.01.2020	Further to our telephone conversation on 15 January 2020 and previous communication from the Department of Water and Environmental Regulation (DWER) to the Shire of Dardanup (the Shire) on 18 September 2019.	
		As discussed, Michael Taylforth from the consultancy Landinsights has contacted DWER on behalf of the proponent, in terms of progressing this development application (DA). He provided the following information as 'an addendum to the application', here provided verbatim: • *"On review of available water data in the area it is acknowledged water will most likely be intercepted in the excavation area and that dewatering will likely be required in order to facilitate extraction of the clay resource.* • *The clay will be extracted from the site over several years, and thus it will not be an open pit area across the entire site at all one time. Earthworks will likely occur at the completion of each stage of the extraction project to recontour extracted pits and creating new pits.*	Comments are noted. The applicant appears to have advised DWER that ground water will likely be intercepted, but has still not provided supporting data or a groundwater management plan to the Shire or to DWER.

		• *It is acknowledged that a detailed design for the earthworks and drainage will be required, and that this will be undertaken by Austral Bricks during the course of the project. This is similar to how many of their other long-term sites operate.* • *It is acknowledge that a future application under the Rights in Water & Irrigation Act will be required* *To support a future application to DWER for the RIWA sic application, a full hydrogeological survey will be undertaken to inform groundwater levels, staging, dewatering approach, water retention/disposal along with any other matters required by the Department at the time".*	
		Key to the context of the Landinsights' email is the statement: "A staged approach to obtaining approvals is preferred". This means the proponent wants to secure development approval from the Shire for the project to proceed prior to the project being scoped in detail operationally.	Whilst the proponent may prefer a staged approach to approvals, officers are unable to support the application without an understanding of the risk to land, water, people and farming activities in the area. The various management plans provided are not able to be assessed as being acceptable without knowing firstly what the impacts are and what is the best way to manage them, or whether they can be managed at all to acceptable outcomes.
		As you are aware, the initial referral of the DA was deemed inadequate by DWER, with regard to some statements and the shortage of detail in the Landinsights' document: *'Clay Extraction Management Lots 5 & 51 Waterloo Road, Waterloo, Land Insights, July 2019'.*	Noted
		Although a "staged approach" to development is something DWER can accommodate, key to success of the project is the provision of detailed reports, including: • 'Hydrogeological Report' detailing local groundwater conditions, • 'Water Management Plan' with details of groundwater and surface water management, including a dewatering plan that will need to be assessed and approved under the 'Rights in Water and Irrigation Act 1914' (RiWI), • 'Acid Sulfate Soil Management Plan' as the area holds a moderate to low risk of ASS being encountered, • 'Site Rehabilitation Plan' which will need to include details of final drainage systems.	Noted. Officers have also requested ground water investigations and management plans, however none have been submitted.
		All of the above may be components of an encompassing 'Environmental Management Plan', which would context site operations and also potentially address matters pertaining to the *'Environmental Protection Act 1986'* (EP Act).	Noted

		Key issues that DWER would raise include: • The hydrogeological conditions of the site are complex, with a surficial and deeper superficial aquifer. The area is underlain by the Guildford formation, which has a loamy overburden. Post extraction the landform is likely to provide an outlet for the surficial aquifer in the overburden. This has the potential to impact on the viability of rural land uses on adjacent properties, the extent of which would need to be considered. • DWER has undertaken regional modelling to understand groundwater conditions for Greater Bunbury, 'Greater Bunbury hydrological studies land development, drainage and climate scenario report (DWER unpublished)', which provides current day and future climate scenarios, based on Intergovernmental Panel on Climate Change (IPCC) predictions of the groundwater regime. This will provide a good data source for initial consideration of groundwater in the area. • The site is dissected by Waterloo Main Drain, which is a critical system for the drainage of upstream properties and is managed by the Water Corporation. • The site rehabilitation plan will be crucial. Unlike mineral sand mining there is unlikely to be much 'by-product' material that can be used to backfill the pits and with clean fill becoming scarce and high demand, it is therefore likely that achieving an area suitable for rural land use is unlikely. • The alignment of the Bunbury Outer Ring Road dissects and impacts on both properties.	Noted. The Waterlooo main drain referred to is a Watercorp drain and runs along Waterloo Rd.
		As outlined above, this is a complex site and requires consideration by Main Roads WA, Department of Primary Industries and Regional Development and the Water Corporation, in addition to DWER.	Noted. Those agencies have also provided comments.
		The proponent appears to be aware of the requirements to undertake the range of detailed studies associated with extraction operations and the associated approvals, however views this work as subject to conditions on the planning approval.	Officers do not recommend supporting the proposal 'subject to conditions', without a basic understanding of the risks of doing so. The risks are not able to be assessed or understood as no data has been provided by the applicant, and therefore DWER is also unable to provide its expert advice in respect of the risk.
3.	Department of Water and Environmental Regulation (DWER)	Lots 5 & 51 Waterloo Road (the Lots) are located within water resource areas that are proclaimed under the *'Rights in Water and Irrigation Act 1914'*, specifically: • The Bunbury Groundwater Area, and	Noted

	18.9.2019	• The Collie River Irrigation District Surface Water Area	
		The principals of managing the extractive industry (EI) operations to attain protection of water resources are: – to maintain an adequate vertical separation distance between the base of extraction and the highest groundwater; and – to manage stormwater runoff from the site during EI operations.	Noted
		With regard to these principals, Land Insights (Land Insights p. 13, s 2.4) has advised: Groundwater – "Excavations will be above the water table and groundwater will not be intercepted", and Surface water – "All stormwater which falls on the extraction area will be retained onsite and will not be not permitted to flow into the surrounding drainage network"	DWER has since advised that the groundwater in this area is likely to be intercepted.
		• Groundwater It is noteworthy that Land Insights <u>does not provide details</u> of any groundwater investigations of the Lots nor an assessment of the status of local groundwater conditions.	Noted. Officers have requested that a ground water assessment be provided on six occasions, however it still has not been provided to date.
		DWER's WQPN 15 *'Basic raw materials extraction, 2019'* requires an EI to maintain an adequate vertical separation distance between the base of extraction and the highest groundwater level (attached)	Noted
		Highest groundwater level should take into account the range of seasonal groundwater conditions in the context of long-term variability and possible groundwater rise following EI operations.	No groundwater assessment has been provided by the applicant and therefore officers have not been able to assess compliance with this requirement.
		The scale of investigation and analysis will depend on the presence of local water resoucrses, the availability of existing data, the proposed EI operations and any associated risks.	Noted
		Given the lack of detail provided, <u>DWER is not in a position</u> to assess the risk to groundwater	Noted, and officers are also not able to assess the risk for the same reason.
		RECOMMENDATION: it is recommended that the proponent provides detailed information on the hydrogeology beneath the Lots, including highest groundwater level and groundwater flow and quality.	Noted
		• Surface water	Noted

		It is noteworthy that no water balance has been provided for the Lots, with respect to stormwater that may require management to mitigate risk from the EI operations.	
		Stormwater from disturbed areas, including areas for stockpiles, should be managed for up to a 2 hour, 1 in 10 (10 per cent) annual exceedance probability event.	A 1 in 10 year storm event, or "10% AEP", has a probability of being met or exceeded every year for 10 years. It is therefore more common than a 1% AEP (1% probability of being met each year), but also potentially a lower level flood. Watercorp requires on site detention for a 1% AEP. If Council is supports the proposal, officers recommend a condition requiring a Stowmwater Management Plan to be prepared and approved prior to works commencing, demonstrating how stormwater for a **1% AEP** event will be detained on site. Further, a condition of approval is recommended to state that all stormwater must be detained on site to pre-development flows.
		Given the lack of detail provided, DWER is not in a position to assess to assess the risk to surface water	Noted, and officers are also not able to assess the risk for the same reason.
		RECOMMENDATION: it is recommended that the proponent provides an accurate water balance for the site, related to the dimensions and locations of stormwater detention basins, drainage channels, bunds and the like.	Noted. If supported, officers are recommending a Storm Water Management plan to address this also.
		Once the above information is provided, DWER will be in a position to assess the DA and associated EI operations.	Noted
4.	Doral Mineral Sands 8.10.2019	No comment.	Noted
5.	Department of Primary Industries and Regional Development (DPIRD) 23.10.2019	The Department of Primary Industries and Regional Development (DPIRD) does not object to the proposed extraction of clay at the abovementioned lots.	Noted
		The management of weeds is only discussed as part of the rehabilitation phase, but weeds should also be managed during the active extractive phase of the project and DPIRD therefore recommends that the applicant develop a Weed Management Plan.	Noted. If supported, officers are recommending that this be included as a condition of approval.

6.	Department of Planning, Lands and Heritage (DPLD) 10.6.2019	Comment. Lots 5 & 51 Waterloo Road, Waterloo are zoned Rural under the Greater Bunbury Region Scheme (GBRS) and located within both areas of the Strategic Minerals and Basic Raw Materials Resource Policy and the Priority Agricultural Land Policy under the GBRS.	Noted
		It is further noted that the properties are affected by the proposed Bunbury Outer Ring Road (BORR) alignment.	Noted
		Under Clause 24 of the GBRS, a person must not commence or carry out development of a kind or class specified in a resolution made by the Commission under Clause 27, unless that person has planning approval.	
		This application has been assessed in accordance with the provisions of the GBRS, and in particular with reference to the Notice of Resolution made under Clause 27, Schedule 1, Paragraph 6: Development within the Priority Agricultural Land Area, Paragraph 7: Development within the Strategic Minerals and Basic Raw Materials Resource Policy Area and Paragraph 10: Development within the Rural Zone.	Noted
		Under Paragraph 6, a GBRS application can potentially be triggered due to the property's location within the GBRS Strategic Agricultural Resource Policy Area however in this case the proposed development is considered a permissible land use under the policy. A GBRS application under Paragraph 6 is therefore not required.	Noted
		Under Paragraph 7, a GBRS application can potentially be triggered due to the property's location within the GBRS Strategic Minerals and Basic Raw Materials Resource Policy Area however in this case the proposed development is considered to be compatible with the purposes of this policy. A GBRS application under Paragraph 7 is therefore not required.	Noted
		Under Paragraph 10, a GBRS application can potentially be triggered within the Rural Zone where the WAPC or local government is of the opinion that the proposed development is not consistent with the purpose of the Rural Zone. The wise use of natural resources including minerals is however consistent with the purpose of the Rural Zone as defined in the GBRS. A GBRS application under Paragraph 10 is therefore also not required.	Noted
		Due to the BORR alignment affecting the two properties, the DPLH request that the proposal also be referred to MRWA for advice.	The application was referred to MainRoads, which provided comment as detailed later in this table.

		if the Shire's subsequent decision on the application is not in accordance with MRWA advice, the application could be called in for a decision by the WAPC under the Notice of Resolution made under Clause 27 of the GBRS, Schedule 1, Paragraph 1: Development of State or Regional Significance — where development in respect of which the WAPC, by notice in writing in each case, advises the local government that the development is of state or regional significance or that, in the public interest, the development should be the subject of an application determined by the WAPC.	MRWA has requested that those areas within the proposed BORR alignment be excluded from the proposal and that this be shown on an amended proposal. No amended proposal has been received to comply with this request. The DA application will now be determined by the WAPC in any case, and it will need to consider whether a GBRS approval is also required.
		The Shire should therefore as soon as possible after obtaining advice from MRWA inform the DPLH about their anticipated decision on the application in relation to the MRWA advice in order for the WAPC to make a decision on its position with regards to the State or Regional significance of the proposal.	The DA application will now be determined by the WAPC.
		Please note the proposed development has been reviewed in regard to other DPLH functions and no further internal referrals have been undertaken at this time.	Noted
7.	Mainroads Western Australia (MRWA) 10.10.2019	Comment. The subject land is impacted by the proposed alignment for the Bunbury Outer Ring Road and Main Roads is currently liaising with the property owners regarding acquisition of the required road reserve.	Noted
		The attached plan shows the alignment of the BORR through the subject land for your information.	Noted
		It is recommended that the proponent be required to modify the proposed development plan/ extraction areas to exclude the land area required for the Bunbury Outer Ring Road.	The schedule of submissions was provided to the applicant. The applicant has not requested to amend the plans to accommodate the proposed BORR alignment.
8.	Water Corporation 14.02.2020	Reticulated water and sewerage is currently not available to the subject land. If these services are required please contact us so we can discuss the best way to proceed.	Noted
		The subject area falls within the Collie River Drainage District, a rural drainage system. The Victoria main drain and sub drains traverses the subject site (please note attached plan).	Noted
		It is noted that there is a crossing proposed over the Victoria main drain. A engineering consultant will need to be engaged to formally submit design drawings of any structure that is proposed near or over the Water Corporations drain in accordance to the Water Corporations Developers'	If Council supports the application, officers recommend a condition requiring crossovers to be constructed to the satisfaction of both the Shire, Main Roads WA and Water Corp.

		Manual please follow this link: - https://www.watercorporation.com.au/-/media/files/builders-and- developers/subdividing/developers-manual.pdf.	
		Rural drains are not designed to give flood protection at all times and some inundation of land can be expected.	Noted
		Water Corporation maintains its existing drains to ensure they are capable of clearing water from adjacent rural properties within three days of a storm event, where contours and internal drainage make this physically possible.	Noted
		Developments within this catchment are required to contain the flows from a one in one hundred year storm event on site.	A 1 in 100 year storm event is also called a "1% AEP" (Annual Exceedance Probability). It is a rainfall event that has a 1% probability of being equalled or exceed every year over the duration of 100 years, and is commonly used as the 'acceptable risk' for planning purposes. DWER requires stormwater to be detained for a 1 in 10 year storm event, or 10% AEP. This has a higher chance of being met or exceeded every year and is therefore more common, but also potentially a lower level flood. If Council supports the proposal, officers recommend a condition requiring a Stowmwater Management Plan to be prepared and approved, prior to works commencing, demonstrating how stormwater for a 1% AEP will be detained on site as required by Watercorp. Further, a condition of approval is recommended to state that all stormwater must be detained on site to pre-development flows, unless otherwise approved in writing by the Shire and Watercorp.
		Discharge to Water Corporation drains must be compensated to pre-development levels.	Note, as above
		No adverse discharge or runoff from the subject land would be allowed into our drainage system.	Noted.
		Whenever development is proposed near Water Corporation assets the applicant/owner needs to submit an Approval of Works application.	Noted. This is a matter for Watercorp to enforce.

		For information about this application please follow this link: https://www.watercorporation.com.au/home/builders-and-developers/working-near- our-assets/approval-for-works	
		The developer may be required to fund new works or the upgrading of existing works and protection of all works.	Noted. This is a matter for Watercorp to enforce.
		The information provided above is subject to review and may change. If the proposal has not proceeded within the next 6 months, please contact us to confirm that this information is still valid.	Noted
9.	L Herdman Lot 66 (14411) South Western Highway, Waterloo 22.10.2019	Comment. Mark and I are residents at 14411 Southwest Hwy Waterloo, and we received a letter regarding the proposed mining on either side of Waterloo Rd. We have some questions that we would like to ask in reference to the reason for the mining, and the impact on surrounding properties.	Noted
		In regards to drainage, as it is over a 20yr period, is this going to affect the water table surrounding the mining areas? (We are located not far from the sites as the crow flies, maybe 1km, and are reliant upon bore water for our drinking and hygiene needs. If this affects our water supply, we need to be notified and compensated for such).	The applicant has not yet provided the Shire with the groundwater investigation data requested, and therefore officers are unable to comment on likely impacts to the water table.
		What is the reason for the mining?	The proposal is for clay extraction. Further detail is provided in the attached report submitted by the applicant.
		Are they pits for dumping waste from other mine sites, or are they using the clay?	The proposal does not include any waste disposal. The clay is intended to be used in “Austral Bricks overall clay brick operations” (p.5 in the attached report).
		If it is for waste, what type of waste, and what environmental impacts will occur due to such waste disposal?	No waste disposal is proposed.
		We are quite concerned that this mining will have environmental and physical health consequences for the surrounding areas, and us as local residents. We have a young family, and bought a property as a long term residence.	Noted.

		Any up to date information, and transparency would be greatly appreciated.	The latest information submitted to the Shire is presented in the Council report and associated appendices.
10.	L Herdman Lot 66 (14411) South Western Highway, Waterloo Further submission – 14.02.2019	Further to my previous email, I would like to note that I have read some of the application submitted by Land Insights. The 'safe' distance recommendations are between 500-1000m from any residential dwellings.	Noted
		We are on a bore, which is not shown on the map key provided in their application (pge 22), and we are located between the Environmental Significance Area, green stars, next door to the Waterloo Community Hall.	Noted
		And, my son also suffers from a dust allergy that causes asthma.	Noted
11.	L Herdman Lot 66 (14411) South Western Highway, Waterloo Further submission – 14.02.2019.	In response to your answers to my questions in my submission regarding the effect on ground water for the clay mines, I would like to pass on some information that I feel is relevant. 1. Regarding the recommedations within the applicants Water Management Plan 5.5, recommendation 24.	The document attached in this submission is noted, however the submittor has not provided any comments with regard to it.
		2. The other is from the Southwest Groundwater Areas Allocation Plan.	The document attached in this submission is noted, however the submittor has not provided any comments with regard to it.
12.	R Scott and M Nott Lot 50 (122) St Helena Road, Waterloo 23.10.2019	Our property is Lot 50, Folio75, St Helena Rad, Dardanup.	Noted
		We make the following comments about the application:	
		From the outset, we do not oppose the need for Austral Bricks to extract clay as outlined in the Development Application (Extractive Industry Licence Application Clay Extraction Management Plan Lots 5 and 51 Waterloo Road Waterloo prepared for Austral Bricks (WA) Pty Ltd).	Noted
		We support the clay mining process on the expectation that both the Shire of Dardanup and Austral Bricks will respect our rights as landowners in the Shire of Dardanup and respect the health and well-being of our children and ourselves to any unacceptable impact of the clay mining process.	Noted
		In addition to comment 2 above, because our family is one of only a small number of residents living in close vicinity to the proposed clay extraction mining site, that our concerns, rights and health and well-being are not compromised by the commercial interests of the Dardanup Shire and the commercial interests of Austral Bricks.	The submittors have been given the opportunity to voice their concerns through the advertising process, and will also be notified of the Council meeting date, where they may make a presentation to Council should they wish to.
		Information we have is that when Austral Bricks purchased the surrounding land in 2009 as a buffer zone to its then proposal to expand and modernise the Waterloo Brickworks, a comment from the Dardanup	Officers belive that the 'bufffer' the submittors refer to is the land surrounding the Austral brickworks site that was rezoned from 'General Farming' to

		Shire (“Austral Bricks is on its lonesome out there.”) suggests that the residents interests and concerns may not have been appropriately considered at that time by the Shire.	‘Restricted Use’ (R15 on the Scheme maps) by Scheme Amendment 145, approved in 2010. The Restricted Use zone does not apply to the subject lots, which are zoned General Farming. Officers are also unsure where the information regarding comments from the Shire has come from, and in what context, and the submittor has not clarified this. Nevertheless, the application has been advertised widely in order for nearby residents to raise any concerns they may have, as discussed in regard to point 3 above. The proposal may be considered on the subject land. Any past decision should not prejudice a decision on this application, which will be determined on its merits.
		Even though our actual homesite is just over 500 metres from the edge of Lot 5 (nearest clay extraction site), we do not wish this to be used as a reason to exclude our concerns.	The submittors have been given the opportunity to voice their concerns through the advertising process, and will also be notified of the Council meeting date, where they may make a presentation to Council should they wish to.
		A narrow road (Wild Rose Road) separates the edge of our property from Lot 5. We grow good quality hay in the paddocks adjoining Wild Rose Road and we have stock grazing in those paddocks all year round. Our stockyards which are used frequently are 200 metres from Lot 5. We also have fruit trees that are only 55 metres from Lot 5.	Noted
		When we purchased our property at 122 St Helena Road, we were on the belief that the surrounding farmland (500 acres) purchased by Austral Bricks was a buffer zone for the intention to expand and modernise the Waterloo Brickworks.	The land the subject of this application is not zoned as a buffer or restricted use, it is zoned General Farming.
		The plan to extract clay from the buffer zone was not informed to us by the Real Estate firm that we purchased our land through nor the Dardanup Shire when we made general enquiries about the property.	As noted above, the subject land is not a buffer zone. The submittors purchased their property in 2015. The Shire received this application in December 2018.

			The application was not advertised until Septermber 2019 due to (a) information requested by officers in order to advertise not being provided (and still remains outstanding); and (b) the application being amended by the applicant in Austust 2019.
		Dust emissions from the clay extraction process is a high concern of ours for our health and well-being. Strong winds do blow from the direction of the sites of the clay mining pits, and more particularly from the site that will be located in Lot 5, Waterloo Road. Constant dust on hay pastures can diminish the quality and monetary value of hay.	Noted. The Shire's Environmental Health Department has assessed the Dust Management Plan submitted and recommended that it either is amended, or a condition of approval be added, to include the following requirements: • The operator to notify adjoining landowners a minimum of 48hrs before dust generating activities are commenced on site; • alerts on dust monitoring equipment when results are approaching the maximum 1 day average; • alerts being recorded along with investigation of the reasons for the high particulate level; • the results of particulate monitoring, alerts received, and actions taken after alerts must be available to the Shire Officers on request; and • the location of the monitoring equipment to be relocated if requested by the Shire's Environmental Health Department. Officers are recommending that these be included in a modified Dust Management Plan if the proposal is supported.
		We would like assurance that Austral Bricks will take preventable measures to stop any dust emission problems from arising and also monitor dust emissions to ensure quick actions are implemented if unexpected problems arise. Dust sources would include removing the topsoil, excavating the clay resource, stock piling of soil or clay, bunds that may be built and the operation of heavy machinery vehicles and truck traffic.	As discussed above.
		Rain water is collected for consumption in our house. As the water is collected from the hose and shed roof, dust emissions could possibly contaminate the water.	Noted. As discussed above
		Unacceptable noise emission levels are also a concern we would like Austral Bricks to monitor noise emissions and to enact solutions if problems occur.	The Acoustic Assessment does not demonstrate that noise levels will comply at nearby dwelings for the whole of the operation.

			Should Council support the application, officers recommend an amended acoustic assessment and an amended (overall) noise management plan be submitted and approved prior to works commencing.
		Our bore water source is also a concern. The farm's bore is located about 50 metres from Lot 5. The water is used for cattle, some sheep, gardens, lawn areas and for general purposes.	Noted. Officers and DWER have requested groundwater investigations and ground water management plans, however this has not been submitted.
		The Development Plan informs that the clay mining will only go to a depth of 4 to 5 metres and the water table/underground water resources will not be affected.	Noted. Officers have been advised by DWER that groundwater is almost certain to be intercepted. Officers and DWER have requested groundwater investigations and ground water management plans, however this has not been submitted.
		However, the capacity of the bore will be monitored, and it is expected that Austral Bricks will be responsible for the management.	This will be a civil matter for the submittor and Austral to resolve.
		Water run-off from rainfall runs through our property from neighbouring properties quickly and directly from our farm towards Lot 5. This run-off is often of a high volume when we have heavy rainfall or extended periods of rainfall.	Should the application be supported, officers are recommending a Stornwater Management plan that shows how all stormwater will be detained on site to pre-development flows, and with capacity to detain a 1 in 100 year storm event (1% AEP).
		A drain runs along Wild Rose to Waterloo Road and another runs into Lot 5. Any blockage of these drains from lack of upkeep or by soil deposits will result in flooding of our farm including the house block and our water tank site.	The drains referred are private drains. Wild Rose Rd is not a public road, but is actually an easement on Lot 5. Drains along Wild Rose Rd and any others within Lot 5 would need to have an easement over them in order to provide drainage from the submittors' land. Whilst there is a carriageway easement benefitting the submittors' land, Officers are unsure whether there are any easements for drainage specifically.
		We will need assurance that the clay mining operations will not compromise rainfall run-off areas and that all flood draining and flood run-off areas will be maintained.	Should the application be supported, officers are recommending a Stornwater Management plan that shows how all stormwater will be detained on site to pre-development flows, and with capacity to detain a 1 in 100 year storm event (1% AEP).

		The Development Plan indicates that at times there will be high volumes of truck traffic (at least 2000 truck movements for particular operations). Dust emissions and noise emissions are concerns.	The Traffic Impact Assessment included with the application states *"The proposed site will generate 94 vehicle movements per day with 8 vehicle movements during the AM and PM peak hours".* Hours of operation proposed are 7am to 6pm, Monday to Saturday, with no operations to occur on public hollidays The application states that there will be approximately 2000 truck movements annually, which may vary depending on demand.
		There concerns will be heightened if the trucks begin to use Wild Rose.	Officers recommend a condition if the proposal is supported, prohibiting the use of Wild Road Road in association with this proposal, given the close proximity of the submittors dwelling.
		In addition to comment above, vehicle/truck traffic may be a major concern if the Bunbury Outer Ring Road (BORR) roadworks is being done at the same time as the clay mining process. Our concern is if the BORR roadworks are happening at the same time, would this require truck traffic to use St Helena Road. St Helena Road is only one of the few roads in the Shire of Dardanup that is not bitumen. Since living at 122 St Helena Road, we have been quite surprised by the amount of traffic that uses the road from and to Dowdells Line road. Dust is already an occasional problem and this will worsen if trucks connected with transporting the clay need to use St Helena Road.	The application does not propose to use St Helena Rd however the submittors' comments are noted.
		It is also a high concern of ours that the impact of the clay extraction process may affect the financial value of our land.	Property values are not a valid planning consideration.
		It should be acknowledged and including financial implications, that our home, approximately 500m from extraction site, is double brick, and will be monitored by the use of photo evidence, for any cracks or movement caused by possible vibrations created during the extraction process.	Noted
		A further comment concerns our confusion as to advice we received from the Shire of Dardanup when we looked into buying our farm. As our farm was not far from the Ferguson Valley gateway, we thought it would be an opportunity for us to start business ventures in keeping with	The proposal for clay extraction can be considered as it is in an area identified as having a Basic Raw Material resource under state planning policy, and as Industry – Exractive is a landuse that can be

		the spirit of the now thriving tourism industry in the Shire within its picturesque and traditional farming enterprises. The advice we received was that additional vehicle traffic and the operation of a trucking business would not be suitable for the area. This advice appears to be contradictory to what is expected to happen when the clay extraction process gets underway.	considered in the General Farming zone under TPS3. it is unclear what the submittors had in mind for the trucking business mentioned. It is likely that such a business would have been classified as either 'Industry – Light', 'Storage' or 'Transport Depot' under TPS3, all of which are prohibited in the General Farming zone. TPS3 seeks to locate such land uses in industrial zones.
		The existing Austral Brickworks site needs attention. It has dilapidated buildings, larges piles of earth from another era, and is generally unkept. Upon entering Waterloo Road, you are met by this eyesore. Austral Bricks should demonstrate their commitment to rehabilitation, and to the community by first cleaning up and rehabilitating their existing site.	This is not relevant to this application.
		Rehabilitation of the site once the mining process is completed is also a concern of ours. The application indicates that the Rehabilitation Management is to be monitered for three years. We would like assurance from Austral Bricks and the Dardanup Shire that any negative impact of the rehabilitation process on our property and our health and well-being will be taken into account and solutions found.	The submittors have not detailed what negative impacts they consider likely and therefore officers are unable to comment.

RISK ASSESSMENT TOOL

OVERALL RISK EVENT: Extractive Industry – Clay extraction

RISK THEME PROFILE:

7 - Environment Management
3 - Failure to Fulfil Compliance Requirements (Statutory, Regulatory)

RISK ASSESSMENT CONTEXT: Strategic

CONSEQUENCE CATEGORY	RISK EVENT	PRIOR TO TREATMENT OR CONTROL			RISK ACTION PLAN (Treatment or controls proposed)	AFTER TREATEMENT OR CONTROL		
		CONSEQUENCE	LIKELIHOOD	INHERENT RISK RATING		CONSEQUENCE	LIKELIHOOD	RESIDUAL RISK RATING
HEALTH	Contamination of ground or surface water, fugitive dust, excessive noise, creation of unmanaged mosquito breading areas.	Major (4)	Possible (3)	High (12 - 19)	Applicant to prepare and submit ground water investigation and amended acoustic assessment, associated management plans, mosquito management plan and updated dust management plan, for the Shire and DWER to review prior to DA approval.	Minor (2)	Possible (3)	Moderate (5 - 11)
FINANCIAL IMPACT	Cost to Shire for ongoing enforcement of conditions	Minor (2)	Possible (3)	Moderate (5 - 11)	Not required	Not required.	Not required.	Not required.
SERVICE INTERRUPTION	No risk event identified for this category.	Not Required - No Risk Identified	N/A	N/A	Not required	Not required.	Not required.	Not required.
LEGAL AND COMPLIANCE	Breach of DA conditions	Moderate (3)	Unlikely (2)	Moderate (5 - 11)	Not required.	Not required.	Not required.	Not required.
REPUTATIONAL	Risk of approval without understanding health and environmental risk resulting in reputational damage	Moderate (3)	Unlikely (2)	Moderate (5 - 11)	Not required	Not required.	Not required.	Not required.
ENVIRONMENT	Contamination of ground or surface water; fugitive dust emissions.	Major (4)	Possible (3)	High (12 - 19)	Applicant to prepare and submit ground water investigation and, associated management plan, stormwater management plan and updated dust management plan for the Shire and DWER to review prior to works commencing. Applicant would need to demonstrate that groundwater interception will not impact water quality.	Moderate (3)	Possible (3)	Moderate (5 - 11)

(Appendix ORD: 12.5E)

Clause 67 Deemed Provisions Table

Clause No	Matter to be Considered	Yes	No	N/A	Comment
(a)	The aims and provisions of this Scheme and any other local planning scheme operating within the Scheme area.	✓			See Officers report
(b)	The requirements of orderly and proper planning including any proposed local planning scheme or amendment to this Scheme that has been advertised under the Planning and Development (Local Planning Schemes) Regulations 2015 or any other proposed planning instrument that the local government is seriously considering adopting or approving.	✓			See Officers report
(c)	Any approved State planning policy.	✓			See Officers report for discussion on the following relevant State Planning Policies: o SPP 2.0 - Environment and Natural Resources o SPP2.4 - Basic Raw Materials (draft 2018) o SPP 2.5 - Rural Planning o SPP 2.9 - Water Resources
(d)	Any environmental protection policy approved under the Environmental Protection Act 1986 section 31(d).	✓			See Officers report for discussion on *EPA Guidance Statement 3 – 'Guidance for the Assessment of Environmental Factors: Separation Distances between Industrial and Sensitive Land Uses'* (EPA).
(e)	Any policy of the Commission.			✓	No relevant policies
(f)	Any policy of the State.	✓			See Officers report for discussion on State Planning Policies and *Water Quality Protection Note No.15 'Basic raw materials extraction, 2019'* (DWER).
(g)	Any local planning policy for the Scheme area.	✓			See Officers report for discussion on CP055 – Extractive Industries (Site Rehabilitation).
(h)	Any structure plan, activity centre plan or local development plan that relates to the development			✓	
(i)	Any report of the review of the local planning scheme that has been published under the Planning and Development (Local Planning Schemes) Regulations 2015.			✓	
(j)	In the case of land reserved under this Scheme, the objectives for the reserve and the additional and permitted uses identified in this Scheme for the reserve.			✓	
(k)	The built heritage conservation of any place that is of cultural significance.			✓	

(l)	The effect of the proposal on the cultural heritage significance of the area in which the development is located.			✓	
(m)	The compatibility of the development with its setting including the relationship of the development to development on adjoining land or on other land in the locality including, but not limited to, the likely effect of the height, bulk, scale, orientation and appearance of the development.	✓			Officers have not been satisfied that the proposed development is compatible with other land uses in the vicinity, as assessment or ground water investigation has been submitted, and the acoustic report does not demonstrate compliance with assigned noise levels. In terms of the landscape setting, visual amenity of the area can be protected if the rehabilitation of excavation pits is undertaken during excavation of subsequent stages, rather than at the completion of the operation (after 20 years). Officers are recommending a condition to require progressive rehabilitation if the application is supported. Officers do not consider that 0.5m high stockpiles are sufficient to screen the excavation works, and are recommending a condition requiring 2m high bunds. It should be noted that Lot 51 is within the proposed Waterloo Industrial Expansion area, which will likely be developed in future for other industrial uses. The interface with Waterloo Rd and the land to the east of it will need to be considered at that time also.
(n)	The amenity of the locality including the following — (i)environmental impacts of the development; (ii) the character of the locality; (iii)social impacts of the development;	✓			As above
(o)	The likely effect of the development on the natural environment or water resources and any means that are proposed to protect or to mitigate impacts on the natural environment or the water resource;	✓			Impacts to and from water resources are unable to be determined as no ground water investigation and ground water management plan has been provided. Therefore officers are unable to determine the likely impacts to water quality in the area.
(p)	Whether adequate provision has been made for the landscaping of the land to which the application relates and whether any trees or other vegetation on the land should be preserved;	✓			There are no trees on the land that need to be protected.

					The proposal includes a 10m wide vegetated bund surrounding the excavation stages.
(q)	The suitability of the land for the development taking into account the possible risk of flooding, tidal inundation, subsidence, landslip, bush fire, soil erosion, land degradation or any other risk;	✓			Impacts to and from water resources are unable to be Impacts to and from water resources are unable to be determined as no ground water investigation and ground water management plan has been provided. Therefore officers have not been satisfied that the land is suitable for the proposed development.
(r)	The suitability of the land for the development taking into account the possible risk to human health or safety;	✓			Impacts from noise and to water resources are unable to be determined as the acoustic assessment is incomplete, and ground water investigation has not been provided.
(s)	The adequacy of — (i) the proposed means of access to and egress from the site; and (ii) arrangements for the loading, unloading, manoeuvring and parking of vehicles;	✓			Officers consider that access can be achieved with minimal impact to the road network or adjoining land owners, as long as access is not via Wild Rose Road. Access should be directly via Waterloo Road to both subject lots. The BORR is proposed to be aligned along the existing Waterloo Road frontages to the lots. MRWA has requested that the proposal be amended to remove that part of the land currently within the BORR alignment from the proposal.
(t)	The amount of traffic likely to be generated by the development, particularly in relation to the capacity of the road system in the locality and the probable effect on traffic flow and safety;	✓			According to the application and Traffic Impact Assessment, approximately 2000 truck movements are expected over a period of 4-6 weeks, each year.
(u)	The availability and adequacy for the development of the following — (i) public transport services; (ii) public utility services; (iii) storage, management and collection of waste; (iv) access for pedestrians and cyclists (including end of trip storage, toilet and shower facilities); (v) access by older people and people with disability			✓	
(v)	The potential loss of any community service or benefit resulting from the development other than	✓			No community services will be impacted.

	potential loss that may result from economic competition between new and existing businesses;				
(w)	The history of the site where the development is to be located;	✓			The lots have been used for grazing.
(x)	The impact of the development on the community as a whole notwithstanding the impact of the development on particular individuals;	✓			Impacts from noise and to water resources are unable to be determined as the acoustic assessment is incomplete, and ground water investigation has not been provided.
(y)	Any submissions received on the application;	✓			See the Appendix "Schedule of Submissions"
(za)	The comments or submissions received from any authority consulted under clause 66;	✓			See the Appendix "Schedule of Submissions"
(zb)	Any other planning consideration the local government considers appropriate.	✓			The relevant provisions have been considered and discussed in the officer's report.