



HAERSES ROAD QUARRY MODIFICATION 4

Statement of Environmental Effects

FINAL

September 2020



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Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Dixon Sand (No. 1) Pty Limited

Project Director: Alex Irwin
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1.0 Introduction

1.1 Project Overview

Dixon Sand (No. 1) Pty Limited (Dixon Sand) operates the Haerses Road Quarry (the Quarry) on land adjoining Haerses Road at Maroota in New South Wales (NSW), within the Hills Shire Council Local Government Area (LGA) (refer to **Figure 1.1**). The Quarry site is approximately 128 hectares (ha) and includes Lot 170 DP 664766, Lot 170 DP 664767, Lots A and B DP 407341, Lots 176, 177 and 216 DP 752039 which adjoin Haerses Road (refer to **Figure 1.2**). Haerses Road is a no-through road providing access to the nominated lots of the Quarry, as well as Lot 7308 DP1163424 and Lot 1 DP1139713 of Deerubbin Local Aboriginal Land Council (LALC) (formerly Maroota State Forest).

The Quarry is located within the small rural community of Maroota which supports several other sand extraction operations, including the Old Northern Road Quarry which is also operated by Dixon Sand. The Quarry supplies concrete sand and specialty sands to the Sydney metropolitan market.

Dixon Sand is proposing a modification to the Development Consent (DA 165-7-2005) to allow for a modified sequence of extraction. **Figure 1.3** shows the approved Quarry site layout¹ and nominated extraction cells. Currently, extraction within Cells 1A and 2A of the Friable Hawkesbury Sandstone resource is approved as the relevant biodiversity credits nominated in Table 4 Condition 30 of Schedule 3 of DA 165-7-2005 have been retired through the biodiversity offset area identified in **Figure 1.4**. Extraction has commenced in Cell 1A.

Dixon Sand has reviewed the properties of the sand contained in the A and B Extraction Areas of the Friable Hawkesbury Sandstone and determined that the majority of the more commercially marketable white sand occurs within Extraction Area B (otherwise identified as the Maroota Tertiary Sands Groundwater Source [MTSGS] Buffer Zone). The sand resource was confirmed during drilling undertaken in 2018 for construction of the groundwater monitoring bores located within the 'B' cells. Dixon Sand is proposing to modify the extraction sequence (the Proposed Modification) such that following completion of extraction in Cell 1A, extraction would commence in Cell 1B in preference to Cell 2A. It is proposed to modify Conditions 31 and 32 of DA 165-7-2005 such that the biodiversity credits nominated in Condition 30 can be assigned against Cell 1B rather than Cell 2A.

1.2 The Proponent

The proponent of this application to modify DA 165-7-2005 is Dixon Sand (No. 1) Pty Ltd, whose details are provided below:

Head Office Address

4610 Old Northern Road
Maroota 2756 NSW

Postal Address

PO Box 4019
Pitt Town NSW 2756

P | 02 4566 8348

E | environment@dixonsand.com.au

Dixon Sand is a family-owned and operated business supplying specialty concrete and mortar sands to the Sydney metropolitan region since 1955. Dixon Sand currently operates three quarries at Maroota (Haerses Road Quarry, Old Northern Road Quarry and Loughtondale Gully Road Quarry) and one at Agnes Banks.

¹ A modification to the Quarry Site layout is currently the subject of Modification 3 which is the final stages of assessment

1.3 Property Description and Affected Land

The address and land titles of the Quarry approved by DA 165-7-2005 are as follows:

- Address: Haerses Road, Maroota, NSW 2756
- Land Titles:
 - Lot 170 DP 664766
 - Lot 170 DP 664767
 - Lots A and B DP 407341
 - Lots 176, 177 and 216 DP 752039.

Dixon Sand owns all the land identified above comprising the Haerses Road Quarry site.

The Proposed Modification would not require any works outside the existing Quarry site boundary and therefore is entirely contained within land owned by Dixon Sand.

1.4 Planning Approval History

The Quarry operates in accordance with DA 165-7-2005 (State Significant Development under the *State Environmental Planning Policy (State and Regional Development) 2011*) (SRD SEPP), originally issued by the Minister for Planning on 14 February 2006 (the development consent). Since commencing operations in 2006, DA 165-7-2005 has been modified twice with a third modification currently under assessment.

- The first modification (MOD 1) was issued under (the now repealed) Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on 22 January 2018 and approved an extension to the extraction area as well as the importation of VENM and ENM.
- The second modification (MOD 2) was issued under Section 4.55(1A) of the EP&A Act on 29 January 2019 to correct an inconsistency between the approved area of disturbance and identified buffers to this disturbance.
- The third modification (MOD 3) application is in the final stages of assessment and proposes an increase in extraction rate from 250,000 tonnes per annum (tpa) to 495,000 tpa; an increase in the amount of clean fill virgin excavated natural material (VENM) & excavated natural material (ENM) from 100,000 tpa to 250,000 tpa; a small extension in extraction area; and increase truck movements from 56 per day to 180 per day (ie 90 inbound, 90 outbound).

The Proposed Modification described in this report will be the fourth modification to DA 165-7-2005.

1.5 Need for the Modification

Within Haerses Road Quarry the approved Extraction Areas A and B (refer to **Figure 1.3**) are within a friable sandstone resource. Extraction Area B also forms part of the buffer zone for the Maroota Tertiary Sands Groundwater Source (MTSGS). Dixon Sand has reviewed the properties of the sand contained in the A and B Extraction Areas of the Friable Hawkesbury Sandstone and have confirmed that the majority of the more commercially marketable white sand occurs within Extraction Area B.

The original extraction sequence developed for MOD 1 was designed to allow operations to commence within the extended extraction area, namely Extraction Area A, while allowing sufficient time to establish groundwater monitoring data within the MTSGS buffer area of Extraction Area B. The requirement for two years of groundwater monitoring data from the MTSGS buffer zone will be met in August 2020. The staging of extraction also allowed for extraction into areas for which biodiversity offsets had been obtained and allowed Dixon Sand time to secure the necessary offsets for the entire extended extraction area. As detailed in **Section 2.2.1.2**, the original initial extraction sequence is no longer necessary in relation to establishing background groundwater level monitoring or allowing sufficient time to secure offset requirements in relation to potential biodiversity impacts associated with Cell 1B.

An alteration of the original extraction sequence would allow Dixon Sand to access the more commercially marketable white sand found within Extraction Area B.

1.6 Modification Application Requirements

Application to modify DA 165-7-2005 is being made under Section 4.55(1A) of the EP&A Act as a modification which involves 'minimal environmental impact' and this SEE has been prepared to address the requirement of Cl. 115 of the *Environmental Planning & Assessment Regulation 2000* (EP&A Reg).

Table 1.1 identifies the applicable requirements of Cl 115 and where these are addressed in the SEE.

Table 1.1 Application for Modification of Development Consent – Requirements of Clause 115

Requirement	Section
1 An application for modification of a development consent under section 4.55(1), (1A) or (2) or 4.56(1) of the Act must contain the following information	
(a) the name and address of the applicant,	1.3
(b) a description of the development to be carried out under the consent (as previously modified),	2.0
(c) the address, and formal particulars of title, of the land on which the development is to be carried out,	1.3
(d) a description of the proposed modification to the development consent,	3.0
(e) a statement that indicates either— (i) that the modification is merely intended to correct a minor error, misdescription or miscalculation, or (ii) that the modification is intended to have some other effect, as specified in the statement,	4.1
(f) a description of the expected impacts of the modification,	4.3
(g) an undertaking to the effect that the development (as to be modified) will remain substantially the same as the development that was originally approved,	5.1
(h) if the applicant is not the owner of the land, a statement that the owner consents to the making of the application (except where the application for the consent the subject of the modification was made, or could have been made, without the consent of the owner),	N/A

Requirement	Section
<p>1A An application for modification of development consent must—</p> <ul style="list-style-type: none"> (a) be in the form that is approved by the Planning Secretary and made available on the NSW planning portal, and (b) be accompanied by the information and documents specified in the approved form and information or documents required by the Act or this Regulation, and (c) be lodged on the NSW planning portal. 	Noted
<p>2 The notification requirements of clause 49 apply in respect of an application if the consent of the owner of the land would not be required were the application an application for development consent rather than an application for the modification of such consent.</p>	Noted

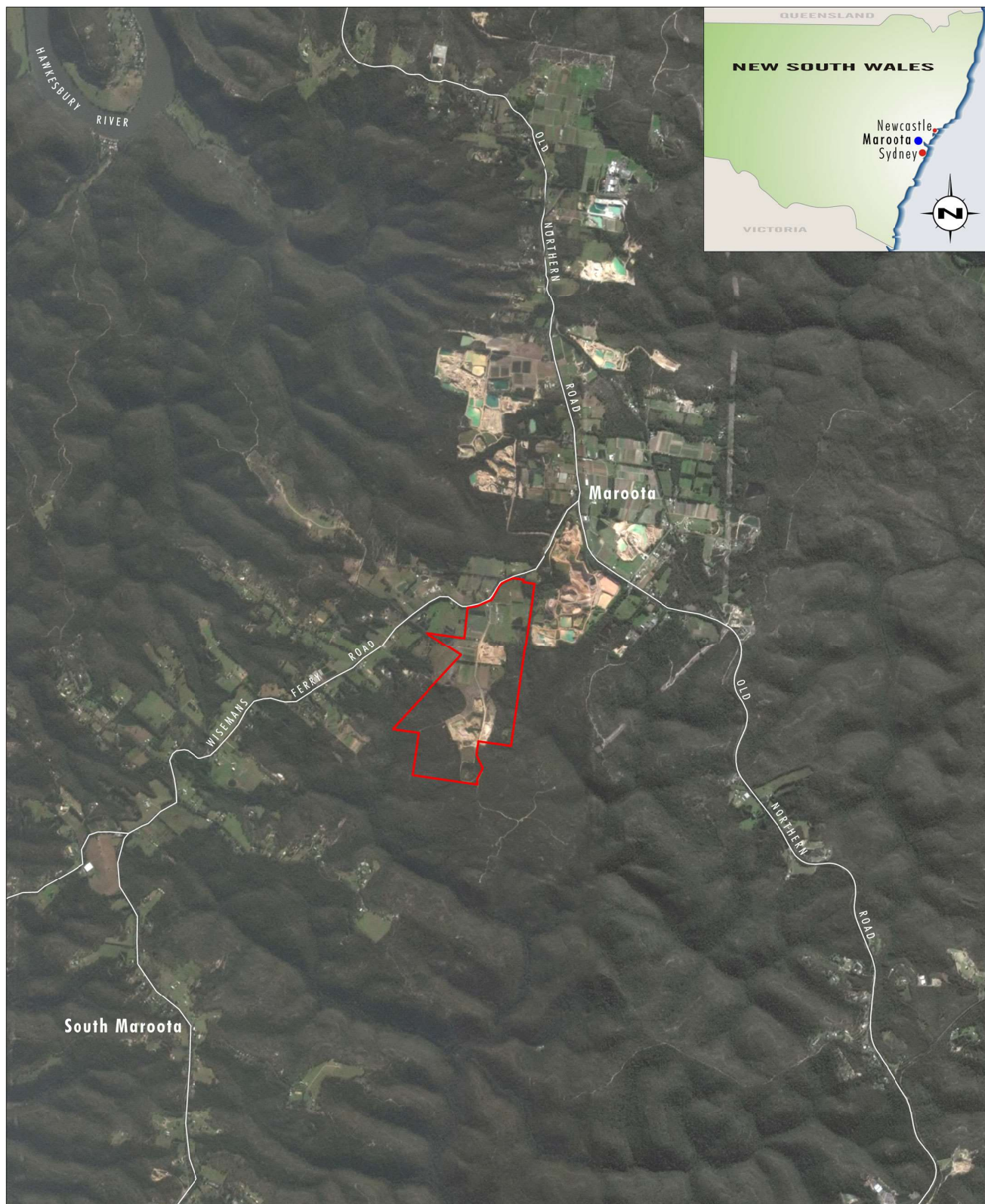


Image Source: Google Earth (2014)

0 0.5 1.0 2.0 km
1:50 000

Legend

Haerses Road Quarry Site

FIGURE 1.1
Locality Map

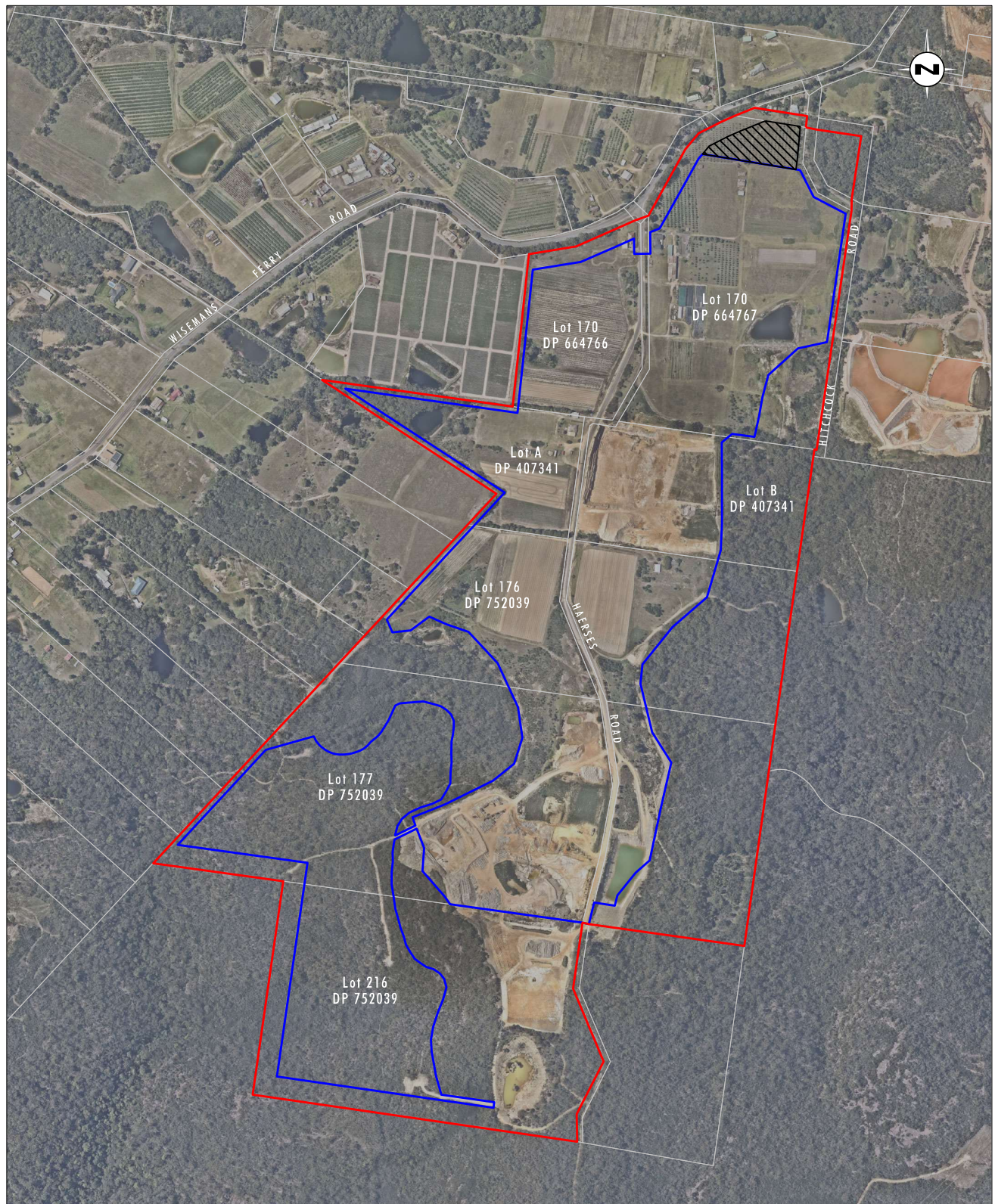


Image Source: Nearmap (Dec 2018)

Data Source: Mc Kinlay Morgan & Associates Pty Ltd (2019)

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1:10 000

Legend

- ▬ Haerses Road Quarry Site
- ▬ Approved Extraction Area
- Proposed Extraction Area Extension

FIGURE 1.2

Site Plan

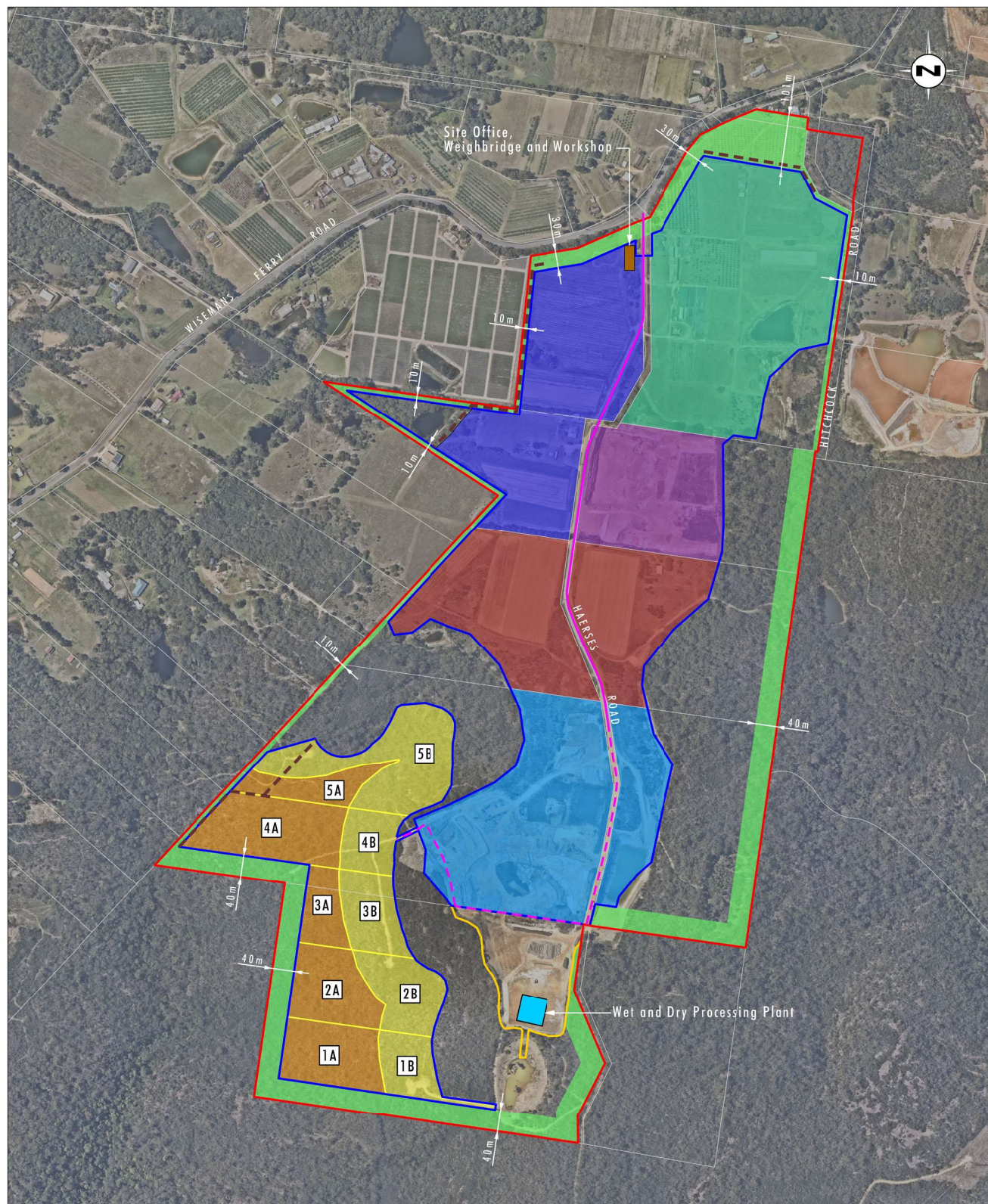


Image Source: Nearmap (Dec 2018)

Data Source: Mc Kinlay Morgan & Associates Pty Ltd (2019)

0 100 250 500m
1:10 000

Legend

- | | | |
|---|--|---|
| Haeres Road Quarry Site | Approved Extraction Area Stage 1 | Sealed Haul Road |
| Processing and Stockpiling Area | Approved Extraction Area Stage 2 | |
| Buffer Zone | Approved Extraction Area Stage 3 | |
| Approved Extraction Area | Approved Extraction Area Stage 4 | |
| Approved Extraction Area A | Approved Extraction Area Stage 5 | |
| Approved Extraction Area B | Site Office, Weighbridge and Workshop | |
| 1 Extraction Cell Number | Indicative Unsealed Haul Road | |
| Wet Processing Plant | Approved Acoustic Bund | |

File Name (A4): R01/20027_003.dgn
20191016 13.55

FIGURE 1.3
Approval Quarry
Site Layout

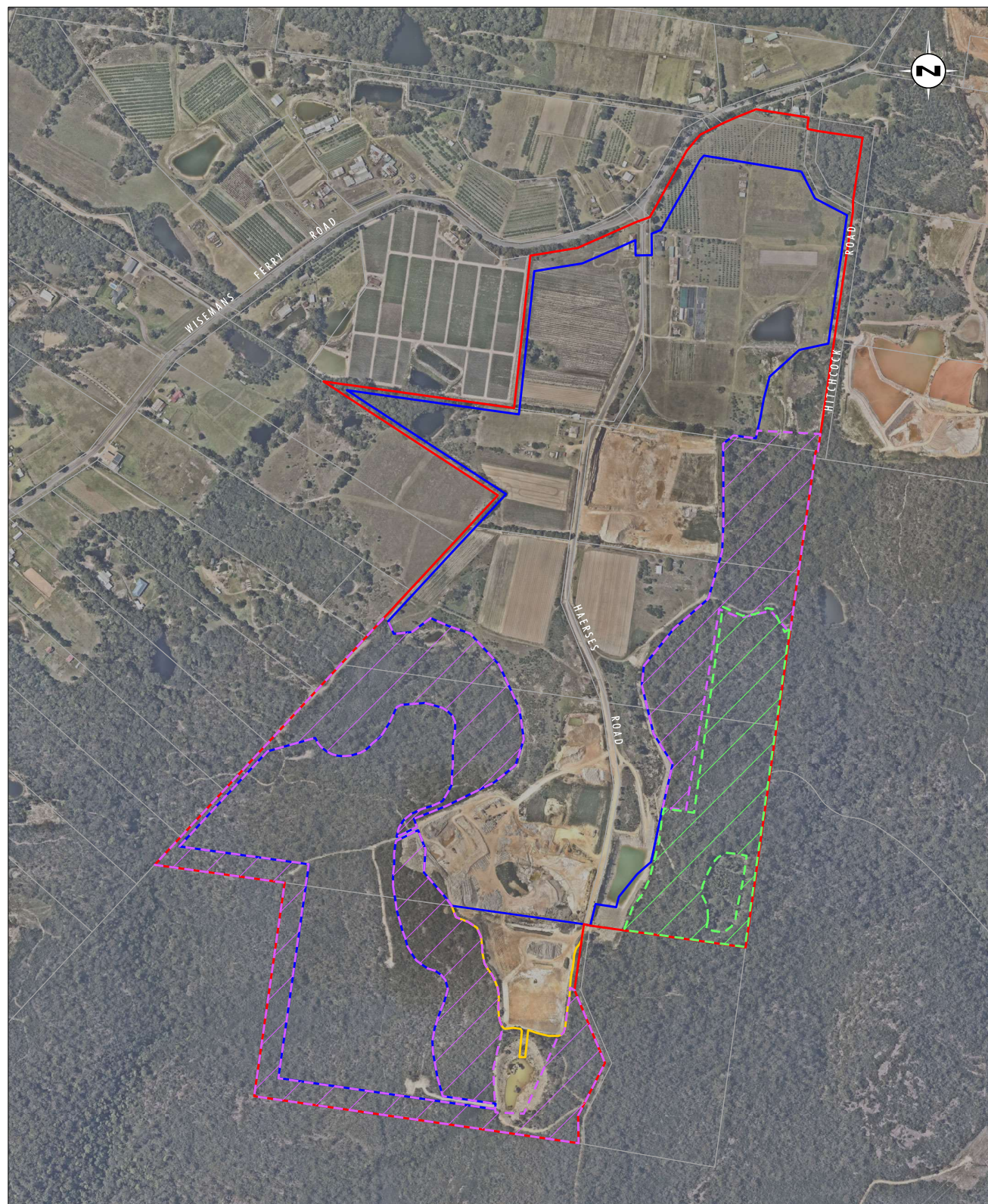


Image Source: Nearmap (Dec 2018)

Data Source: Mc Kinlay Morgan & Associates Pty Ltd (2019)

0 100 250 500 m
1:10 000

Legend

- Haerses Road Quarry Site
- Approved Extraction Area
- Processing and Stockpiling Area
- Biodiversity Offset Area for Old Northern Road Quarry
- Biodiversity Offset Area for Haerses Road Quarry

FIGURE 1.4

Existing Biodiversity
Offset Areas

2.0 The Approved Development

2.1 Existing Approvals

As previously discussed in **Section 1.1**, the Quarry currently operates under DA 165-7-2005, which has been previously modified twice since approval in February 2006. Dixon Sand also holds an Environment Protection Licence (EPL) 12513 for the scheduled activities of crushing, grinding or separating and extractive activities (as listed in Schedule 1 of the *Protection of the Environment Operations Act 1997* (POEO Act). EPL 12513 establishes conditions relating to air and noise emissions from the site.

Dixon Sand also obtained agreement from the NSW Roads and Maritime Service (RMS) for upgrade works to the Wisemans Ferry Road intersection with Haerses Road, to provide a channelised right turn (CHR) treatment, in satisfaction of Condition 24 of Schedule 3 of the development consent. Works are due for completion in September 2020.

Dixon Sand currently holds two surface Water Access Licences (WALs) and associated works approvals for the Quarry. **Table 2.1** presents the WAL details.

Table 2.1 Water Access Licences

WAL Number	Associated Works Approval	Land Holding	Works	Extraction Limit (ML/year) ¹
25956	10CA105044	Lot 170 DP 664767	Work 1 Bywash Dam Work 2 80 mm pump centrifugal pump Work 3 80 mm centrifugal pump Work 4 Bywash Dam Work 5 32 mm centrifugal pump	132
25941	10CA104191	Lot B DP 407341	Work 1 Bywash Dam x 2 Work 2 65 mm centrifugal pump	50

Note: ¹ Extraction limit assuming a full allocation of 1 ML for each unit share

As all extraction activities are maintained above the wet weather groundwater table of the two regional aquifers, there will be no intentional interception of groundwater and therefore no water access licences for groundwater extraction are required under Section 56 of the *Water Management Act 2000* (WM Act). As State Significant Development (SSD), there is no requirement to obtain a controlled activity approval for works on waterfront land under section 91 of the WM Act.

2.2 Approved Operations

The approved development consent provides for the operation of a sand quarry at an extraction rate of 250,000 tpa until February 2046. The development consent also approves the importation of up to 100,000 tpa of VENM and ENM.

Key components of the approved operations are as follows.

- Progressive extraction and rehabilitation of the five original extraction stages over the Tertiary Sand deposit and five extraction stages from the Hawkesbury Sandstone deposit following the approval of MOD 1 (refer to **Figure 1.3**).

- Extraction from the Hawkesbury Sandstone Stages 1B to 5B, which occur within a 100 m buffer zone to the Maroota Tertiary Sand Groundwater Source (MTSGS) of the tertiary sand deposit, will only proceed once groundwater monitoring data demonstrates groundwater will not be intercepted within this zone (which could be a recharge zone to the MTSGS).
- Progressive extraction and reinstatement of Haerses Road, which runs through the site, so that access is maintained during the life of the quarry.
- On-site crushing of the extracted Hawkesbury Sandstone. The crushing equipment is mobile and may be undertaken either within the active extraction area or the defined processing and stockpile area of the Quarry.
- On-site processing to remove coarse rejects using a mobile screen.
- On-site wet processing (washing) to remove fine material from the sand.
- Haulage of up to 190,000 tpa of screened sand to the Old Northern Road Quarry (for further processing and washing).
- Haulage of up to 250,000 tpa of screened sand direct to local and regional markets.
- Rehabilitation of the Quarry site to either Class 4 agricultural land or native vegetation.

2.2.1 Sand Extraction

2.2.1.1 Extraction Area

Sand is approved for extraction from two extraction areas as follows.

- Tertiary Sand Extraction Area: which includes the originally approved extraction area of the Quarry (2006) and targets the alluvial tertiary Maroota Sands deposits. This extraction area has been divided into five separate extraction stages as identified on **Figure 1.3**.
- Friable Sandstone Extraction Area: which includes the more recently approved extraction area (of MOD 1 2018) and targets the friable Hawkesbury Sandstone deposit. This extraction area has been divided into five extractions cells, which further separated into Areas A and B in each stage representing the areas within the 100 m buffer (Area B) and outside the 100 m buffer to the Maroota Tertiary Sand Groundwater Source (refer to **Figure 1.3**).

No change is proposed to the sand extraction areas.

2.2.1.2 Extraction Sequence and Staging

Extraction cells in the friable Hawkesbury sandstone and the Tertiary sand deposit have both been labelled 1 to 5 reflecting the anticipated sequence of extraction over the life of the Quarry (refer to **Figure 1.3**). As extraction is completed within the Tertiary sand resource, the landform will be profiled to construct a final landform for rehabilitation.

The Proposed Modification is to change the initial sequence of extraction within the friable sandstone extraction area. No changes are proposed within the tertiary sand extraction area.

As each cell in the friable Hawkesbury sandstone resource is completed, the area will be used for the construction of silt dams for deposition and retention of the silt and fines generated by the sand washing process and/or the placement of VENM and ENM imported to the Quarry Site. As the placement of silt and/or VENM and ENM fills the void space, a final landform will be constructed and prepared for rehabilitation.

Extraction within Cells 1A and 2A of the Friable Hawkesbury Sandstone resource is approved as the relevant biodiversity credits nominated in Table 4 Condition 30 of Schedule 3 of DA 165-7-2005 have been retired. Extraction within the remaining cells in the Friable Hawkesbury Sandstone resource can only commence when biodiversity credits specific to certain habitat types as identified in Conditions 31 and 32 of Schedule 3 of DA 165-7-2005 have been retired.

Modification to the currently approved sequence is proposed to allow for extraction from Cell 1B in preference to Cell 2A. Subsequent extraction from Cell 2A, and Cells 2B, 3A, 3B, 4A, 4B, 5A and 5B would be subject to retirement of additional biodiversity credits identified in Conditions 31 and 32 of Schedule 3 of DA 165-7-2005.

3.0 Proposed Modification

No changes to the Quarry extraction area or operational activities are proposed, the Proposed Modification seeks only to allow for a change to the approved sequence of extraction within the MOD 1 Friable Hawkesbury Sandstone resource and the associated timing of securing biodiversity credit offsets.

It is proposed that the biodiversity credits nominated in Condition 30 (which have been retired) be assigned against Cell 1B (rather than 2A). The biodiversity credit requirements currently identified in Conditions 31 and 32 could then be modified such that they relate to Cell 2A rather than 1B. As such, extraction could commence in Cell 1B rather than 2A and all biodiversity credit requirements would have been met relative to the vegetation and habitats impacted.

A review of biodiversity credit calculations has been completed (refer to **Section 4.3.2**) and there would be sufficient biodiversity credits retired to account for extraction from Cell 1B instead of Cell 2A.

The changes proposed to Conditions 31 and 32 of Schedule 3 of DA 165-7-2005 are detailed below the reproduced extract of the condition as follows.

BIODIVERSITY AND REHABILITATION

BIODIVERSITY OFFSET STRATEGY

31. The Applicant must retire the biodiversity credits specified in Table 5 to the satisfaction of the Secretary and OEH. The Applicant must retire the credits prior to commencing any vegetation clearing in extraction cells 1B, 2B or 3B (as shown in Figure 2, Appendix 1), except the minimum clearing required to comply with condition 16 of this Schedule.

Table 5: Biodiversity credits to be retired prior to vegetation clearing in extraction cells 1B, 2B or 3B

Credit type	Number of Credits
<i>Species Credits</i>	
Dural Land Snail (<i>Pommerhelix duralensis</i>)	132

Proposed change to Condition 31:

- Replace cell “1B” with “2A”.
- Addition of “Prior to commencing vegetation clearing in any of extraction cells 2A, 2B, 3A, 3B, 4A, 4B and 5B, the Applicant must demonstrate that the credits required in respect of that cell have been retired, to the satisfaction of the Secretary.”

32. The Applicant must retire the biodiversity credits specified in Table 6 to the satisfaction of the Secretary and OEH. The Applicant must retire the credits prior to commencing any vegetation clearing in extraction cells 1B, 2B, 3A, 3B, 4A, 4B and 5B (as shown in Figure 2, Appendix 1), except the minimum clearing required to comply with condition 16 of this Schedule.

Prior to commencing vegetation clearing in any of extraction cells 1B, 2B, 3A, 3B, 4A, 4B and 5B, the Applicant must demonstrate that the credits required in respect of that cell have been retired, to the satisfaction of the Secretary.

Table 6: Biodiversity credits to be retired progressively

Credit type	Number of Credits
Ecosystem Credits	
HN582 Scribbly Gum – Hairpin Banksia – Dwarf Apple Heathy Woodland on Hinterland Sandstone Plateaux of the Central Coast, Sydney Basin Bioregion	357
Species Credits	
Eastern Pygmy Possum (<i>Cercartetus nanus</i>)	75

Proposed change to Condition 32:

- Replace cell “1B” with “2A” in both paragraphs.

4.0 Environmental Assessment

4.1 Statement of Impact

The Proposed Modification would not result in any impacts additional to those already approved, however, there would be a change to the sequence of clearing and extraction within the Friable Hawkesbury Sandstone resource. An assessment (refer to **Section 4.3**) of the associated offsetting credits required for the proposed extraction in Cell 1B against those already obtained for the Project shows that Dixon Sand has already secured the necessary credits associated with vegetation and habitat impacts within that cell.

It is only the timing of extraction of Cell 1B that would be brought forward with an associated delay to extraction in Cell 2A.

4.2 Review of Compliance Against Planning Provisions

4.2.1 Commonwealth Legislation

The Proposed Modification would not result in any changes to the approved development which would increase impacts on Matters of National Environmental Significance listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). As EPBC Act Approval 2015/7608 was granted under the bilateral agreement with the NSW government, it contains the same condition as the NSW development consent in relation to the Dural Land Snail. Replicating Conditions 30 to 36 of Schedule 3 of DA 165-7-2005, *Condition 4* of EPBC Act Approval 2015/7608 requires that credits for the Dural Land Snail must be retired *prior* to vegetation clearing and extraction in Cell 1B. EPBC Act Approval 2015/7608 would therefore be required to be amended.

The Proposed Modification does not require further consideration of the *Native Title Act 1993*.

4.2.2 NSW Legislation

Environmental Planning and Assessment Act 1979 (EP&A Act)

The EP&A Act is administered by DPIE and by local government. It is the primary legislation governing environmental planning and assessment for NSW.

The objectives of the EP&A Act relevant to the Project encourage:

- the proper management, development and conservation of natural and artificial resources
- the promotion and co-ordination of the orderly and economic use and development of land
- the protection of the environment
- ecologically sustainable development
- to provide public involvement and participation in the planning process.

The Quarry was previously assessed as being compliant with the objectives and there is nothing included in the Proposed Modification which would affect this assessment.

This SEE addresses the requirements of Sections 4.15(1) and 4.55(1A) of the EP&A Act pertaining to evaluation of a development applications generally and modifications involving minor environmental impacts specifically.

Environmental Planning and Assessment Regulation 2000 (EP&A Reg)

This SEE addresses the requirements of Clause 115 of the EP&A Reg relating to applications to modify development consent (refer to **Section 1.6** and **Table 1.1**).

Protection of the Environment Operations Act 1997 (POEO Act)

The Proposed Modification does not require any variation to licensing requirements under the POEO Act.

4.2.3 State Environmental Planning Policies (SEPP)

A detailed review of applicable SEPP was provided as part of the original development application. There are no SEPP that require further consideration as a result of the Proposed Modification.

4.3 Assessment of Environmental Effects

4.3.1 Preliminary Environmental Risk Analysis

The potential for the Proposed Modification to result in additional or modified impacts on the local environment have been reviewed as part of a preliminary environmental risk analysis. The findings of the preliminary environmental risk analysis are provided in **Table 4.1** and direct the additional assessment completed to consider the impacts of the Proposed Modification.

Table 4.1 Potential Environmental Impacts Associated with the Project

Environmental Aspect	Preliminary Environmental Risk Analysis	Further Assessment Required for Modification?
Land Resources	The Proposed Modification does not require any additional disturbance from that already approved.	No
Water Resources	The Proposed Modification does not require any change to the proposed water management system of the Quarry.	No
Air Quality	The Proposed Modification would not change the air quality impacts associated with the approved Project.	No
Noise	The Proposed Modification would not change the noise impacts associated with the approved Project.	No
Biodiversity	The Proposed Modification would change the sequence of extraction within the Friable Hawkesbury Sandstone resource. Assessment required to determine biodiversity credit requirements associated with modification to extraction sequence compared to those credits already secured for the Project.	Yes – refer to Section 4.3.2
Cultural Heritage	The Proposed Modification would not result in disturbance to any additional areas or alteration to any impacts assessed as part of the approved Project.	No
Hazard and Risk (including Bushfire)	The Proposed Modification does not introduce any additional hazards or risks from that previously assessed and approved.	No
Waste	No change to waste generation or management is proposed.	No

Environmental Aspect	Preliminary Environmental Risk Analysis	Further Assessment Required for Modification?
Visual	No change to the proposed area of impact, method of operation or construction of Quarry infrastructure is proposed which would result in a change to visual amenity impacts.	No
Rehabilitation	No change to rehabilitation strategy is proposed.	No
Traffic and Transport	The Proposed Modification would not result in any change to the transport and traffic arrangements.	No
Socio-economic Assessment	The Proposed Modification would not impact the socio-economic setting.	No

4.3.2 Biodiversity Credits Allocation

Biodiversity credit requirements for the approved Project are shown in **Table 4.2**. Conditions 30, 31 and 32 of Schedule 3 establish resource extraction sequencing according to designated cells, allowing a staged approach to biodiversity credit retirement. The intended extraction sequence for the Friable Hawkesbury Sandstone resource was to start at Cell 1A and then progress to 2A, principally to allow time (2 years) for the establishment of a wet weather groundwater level of the MTSGS buffer zone. The Proposed Modification seeks to change the extraction sequence such that extraction would progress from Cell 1A to Cell 1B instead of Cell 2A. Umwelt have undertaken an assessment to determine whether enough biodiversity credits have been retired to date to allow a change of sequencing from Cell 2A to Cell 1B. Prior to undertaking planned vegetation clearance in Cell 1A, Dixon Sand retired biodiversity credits in accordance with the development consent. The total biodiversity credits retired to date are shown in **Table 4.2**.

Table 4.2 Ecosystem and Species Credits Generated by the Project and the Number of Biodiversity Credits Retired to Date

Name	Credits Required	Total Credits Retired ¹
Ecosystem Credits		
HN560 Needlebush – Banksia Wet Heath on Sandstone Plateaux of the Sydney Basin Bioregion (Moderate/Good)	3	3
HN566 Red Bloodwood – Scribbly Gum Heathy Woodland on Sandstone Plateaux of the Sydney Basin Bioregion (Moderate/Good)	377	377
HN582 Scribbly Gum – Hairpin Banksia – Dwarf Apple Heathy Woodland on Hinterland Sandstone Plateaux of the Central Coast, Sydney Basin Bioregion (Moderate/Good)	538	181
HN586 Smooth-barked Apple – Red Bloodwood – Sydney Peppermint Heathy Open Forest on Slopes of Dry Sandstone Gullies of Western and Southern Sydney, Sydney Basin Bioregion (Moderate/Good)	44	44
Total Ecosystem Credits	962	605
Species Credits		
<i>Darwinia biflora</i>	360	360
Dural woodland snail (<i>Pommerhelix duralensis</i>)	230	98
<i>Tetratheca glandulosa</i>	288	288
<i>Grevillea parviflora</i> subsp. <i>supplicans</i>	338	338
eastern pygmy-possum (<i>Cercartetus nanus</i>)	223	148
Total Species Credits	1439	1232

Note: ¹. Total credits retired includes Haerses Rd and Porters Rd BioBank Sites, plus Biodiversity Fund Payment Credits.

The number of biodiversity credits required for Cell 1A and 1B was calculated by comparing the vegetation and habitat mapping in Cell 1A and 1B to the applicable credits per hectare previously calculated by Umwelt (2016 & 2017). **Table 4.3** and **Figure 4.1** identify the areas of vegetation communities and threatened species habitat and the overall cell sequencing in relation to the vegetation zones and threatened species habitat. **Table 4.3** also includes a comparison of the total biodiversity credits required for both Cell 1A and Cell 1B with the number of biodiversity credits retired to date. Based on this assessment Dixon Sand has satisfied the biodiversity credit obligations for Cell 1A and Cell 1B. For all ecosystem and species credits there are a surplus of credits retired to date.

Table 4.3 Required Biodiversity Credits Compared to the Number of Retired Biodiversity Credits

Name	Credits Required for Cell 1A	Credits Requirement for Cell 1B	Credits Required for Cell 1A & Cell 1B	Total Credits Retired To Date	Surplus Retired Credits accounting for Cell 1A & Cell 1B
Ecosystem Credits					
HN560 Needlebush – Banksia Wet Heath on Sandstone Plateaux of the Sydney Basin Bioregion (Moderate/Good)	0	0	0	3	3
HN566 Red Bloodwood – Scribbly Gum Heathy Woodland on Sandstone Plateaux of the Sydney Basin Bioregion (Moderate/Good)	5	0	5	377	372
HN582 Scribbly Gum – Hairpin Banksia – Dwarf Apple Heathy Woodland on Hinterland Sandstone Plateaux of the Central Coast, Sydney Basin Bioregion (Moderate/Good)	98	63	161	181	20
HN586 Smooth-barked Apple – Red Bloodwood – Sydney Peppermint Heathy Open Forest on Slopes of Dry Sandstone Gullies of Western and Southern Sydney, Sydney Basin Bioregion (Moderate/Good)	0	0	0	44	44
Total Ecosystem Credits	103	63	166	605	439
Species Credits					
<i>Darwinia biflora</i> (associated with HN566 and HN582)	42	26	68	360	292
Dural woodland snail (<i>Pommerhelix duralensis</i>)	30	24	54	98	44
<i>Tetratheca glandulosa</i> (associated with HN566 and HN582)	34	21	55	288	233
<i>Grevillea parviflora</i> subsp. <i>supplicans</i>	No impact	0	0	338	338
eastern pygmy-possum (<i>Cercartetus nanus</i>) (associated with HN582)	41	26	67	148	81
Total Species Credits	147	97	244	1,232	988

Note: Credits rounded to nearest whole number

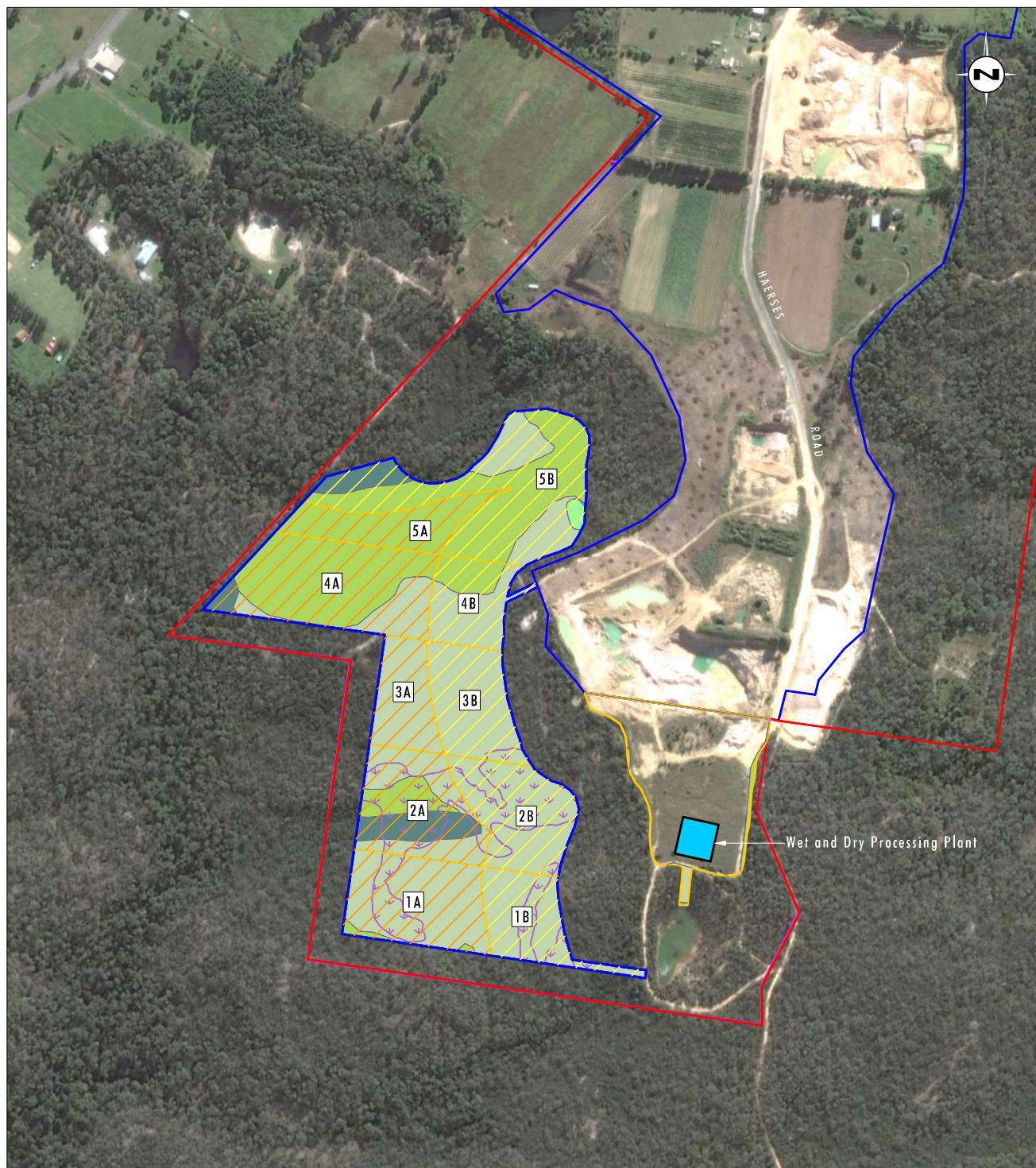


Image Source: Google Earth (2014)

0 100 200 400m
1:7500

Legend

- Haereses Road Quarry Site
- Processing and Stockpiling Area
- Approved Extraction Area
- Approved Extraction Area A
- Approved Extraction Area B
- 1 Extraction Cell Number
- Wet and Dry Processing Plant
- Dural Woodland Snail Potential Habitat

- HN560 – Needlebush – Banksia Wet Heath on Sandstone Plateaux of the Sydney Basin Bioregion – Moderate to Good Condition
- HN566 – Red Bloodwood – Scribbly Gum Heathy Woodland on Sandstone Plateaux of the Sydney Basin Bioregion – Moderate to Good Condition
- HN582 – Scribbly Gum – Hairpin Banksia – Dwarf Apple Heathy Woodland on Hinterland Sandstone Plateaux of the Central Coast, Sydney Basin Bioregion – Moderate to Good Condition
- HN586 – Smooth-barked Apple – Red Bloodwood – Sydney Peppermint Heathy Open Forest on Slopes of Dry Sandstone Gullies of Western and Southern Sydney, Sydney Basin Bioregion – Moderate to Good Condition

FIGURE 4.1

**Vegetation and habitat within
Friable Hawkesbury Sandstone
Resource Extraction Area**

5.0 Evaluation and Justification

5.1 Substantially the Same Development

The Proposed Modification is considered to be substantially the same development as that approved on the basis of the following:

- The type of development, namely extractive industry and resource recovery, remains the same with no additional development types proposed.
- No change to extraction methods, processing methods or operating hours is proposed.
- The predicted impacts of the Proposed Modification would remain equivalent to those approved by DA 165-7-2005.

On the basis of their being no additional activities or impacts proposed, it is concluded that the modified development will be substantially the same as the current operations, as last modified, for the purpose of Section 4.55(1A) of the EP&A Act.

5.2 Site Suitability

The Quarry is located within a rural environment in an area dominated by extractive industries. The site is considered suitable for the Proposed Modification for the following reasons:

- The site has been used for sand extraction since original approval was granted in 2006.
- The site contains extensive sand resources and is located within proximity to markets for these resources.
- The Proposed Modification would not increase or change the impacts already assessed and approved as part of the approved project.

5.3 Benefits of the Proposed Modification

The key benefits of the Proposed Modification include:

- Enabling extraction of an area of higher value resource within the Quarry without incurring any additional impacts above those already approved.
- The environmental impact of the Proposed Modification can be acceptably managed by the existing environmental controls.

5.4 Conclusion

Based on the comparative analysis, the Quarry would remain essentially and materially the same as originally approved (refer to **Section 5.1**) and would not result in greater impacts than those already approved (refer to **Section 4.3**). On the basis that the Proposed Modification does not propose any new activity or any further increase in disturbance and would result in changes to the environmental impacts associated with the Quarry, it is concluded that the modified quarry would remain substantially the same development to that originally approved and may be modified under section 4.55(1A) of the EP&A Act.

