Pt Lot 9 & Lot 10 (186) Runnymede Road, Binningup

Industry - Extractive Development Application & License

October 2025 | 25190

We acknowledge the Whadjuk people of the Noongar nation as Traditional Owners of the land on which we live and work. We acknowledge and respect their enduring culture, their contribution to the life of this city, and Elders, past and present.

Document ID:					
Issue	Date	Status	Prepared by	Approved by	
			Name	Name	Signature
A	12 September 2025	Draft	Christian Parker	Daniel Lewis	DL
B	14 October 2025	Draft	Christian Parker	Daniel Lewis	DL

Contents

1. Development Application Details

1.1 Development Application Details

Proposed development	Industry - Extractive
Applicant	Element Advisory (part of SLR) (Element Advisory)
Landowner	Peter William Ivankovich (under contract to McDougall Quarries Pty Ltd) (Lot 111) McDougall Quarries Pty Ltd (Lot 9)
Subject Lots	Lot 111 (No.186) Runnymede Road, Binningup Pt Lot 9 (No. 150) Runnymede Road, Binningup (Access)
Proposed Extraction Area	64.98ha
Estimated Development Value	$3,500,000

1.2 Planning Framework Details

Local Government Area	Shire of Harvey
Region Scheme	Greater Bunbury Region Scheme - Rural
Local Planning Scheme	Shire of Harvey Local Planning Scheme 2: Rural, Special Control Area 2 – Basic Raw Material
Land Use Permissibility	A – Discretionary (requires advertising)
Aboriginal and/or Local Heritage Considerations	N/A
Environmental Considerations (Desktop)	Bushfire, Acid Sulphate Soils
Relevant State Planning Policy(s), Development Control Policy(s), Position Statements and/or Planning Bulletins	• SPP 2.4 Basic Raw Materials • SPP 3.7 Planning in Bushfire Prone Areas • EPA Separation Distances between Industrial and Sensitive Land uses (GS3)
Relevant Local Planning Policy and Local Law	• Extractive Industry Local Law 2017
Relevant Local Planning Checklist	Extractive Industry: • Works and Excavation Programme • Excavation Site Plan • Rehabilitation Management and Monitoring Plan • Dust management Plan • Noise Management Plan • Weed Management Plan • Water Management Plan • Dieback Management Plan

2. Consultant List

This development application has been prepared by Element Advisory (Part of SLR) on behalf of McDougall Quarries Pty Ltd (McDougall Quarries) with input from the following specialist consultants:

Table 1. Consultant Details

Discipline	Consultant
Planning Consultant	Element Advisory (Part of SLR)
Environmental Consultant	MBS Environmental
Acoustic Consultant	Herring Storer
Surveyor	Harley Dykstra
Groundwater Consultant	JDA

3. Introduction

This Development Application (DA) has been prepared by Element Advisory on behalf of McDougall Quarries as the operator for an Extractive Industry over a portion of Lot 111 (186) Runnymede Road, Binningup (subject site).

The subject site is 64.98 Ha and is currently used for general agriculture with no significant vegetation. The subject site abuts two existing extractive industries to the south and east. Other rural activities occur to the north and west.

One habitable building exists on the subject lot and will act as the caretakers dwelling for the life the extractive industry operations. The closest offsite caretaker dwelling is approximately 60m to the west of the subject site with no other habitable buildings within 500m. The staging of the proposal has been designed to minimise impact on the closest offsite caretaker dwelling by allowing works to always be occurring with the batter between the current stage and the dwelling to the west.

The property has legal road frontage to Runnymede Road, however, it is proposed to use the existing access leg for Lot 9 for avoidance of duplicate infrastructure and to minimise disturbance to the environment.

The purpose of this DA is to seek approval from the Shire of Harvey to allow sand extraction within an area of 64.98 Ha to a maximum depth no greater than +0.5m MGL.

The prosed development is estimated to yield approximately 5,077,754m^3 of sand for use in surrounding land development and infrastructure projects.

This report provides an overview of the subject site and the proposed development, as well as a detailed assessment against the relevant planning requirements and an examination of the planning merits of the proposal.

This report is accompanied by the following detailed technical reports, statements, approvals and plans:

Appendix A – Planning Assessment

Appendix B – Certificate of Title

Appendix C – Development Plans

Appendix D – Acoustic Report

Appendix E – Dust Management Plan

Appendix F – Weed and Dieback Management Plan

Appendix G – Rehabilitation Management Plan

Appendix H – Groundwater Monitoring Report

Appendix I – Neighbours Consent Letter

4. Subject Site

4.1 Property Description, Ownership and Locality

The subject site is located within the Shire of Harvey government area (Shire). The proposed extraction boundary totals 64.98Ha as outlined within the development plans.

Refer to Appendix C – Development Plans.

The subject lot contains one habitable dwelling, and a farm shed. The farm shed is proposed to be demolished as part of this application. The southeastern corner and norther portion of the site has some remanent native bushland, which is proposed to be retained, with the remainder of the site being farmland.

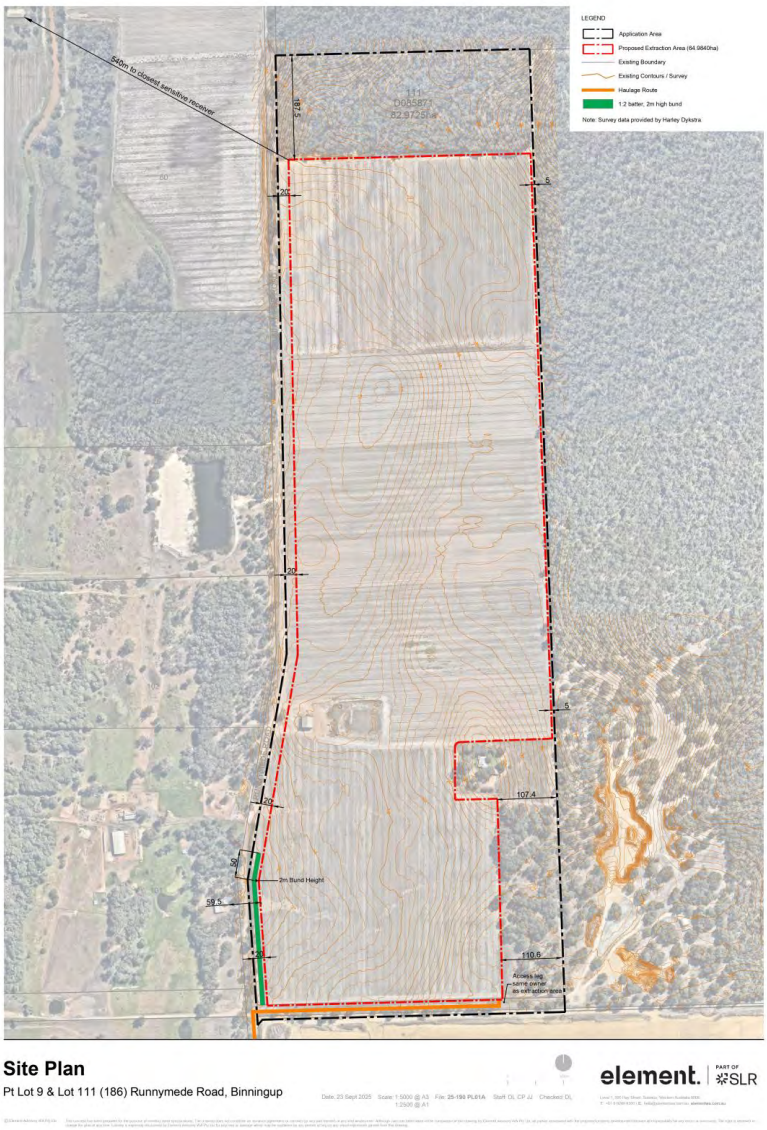


Figure 1 – Subject Site Aerial Image

The property details are provided within Table 1 below with a copy of the Certificate of Title attached at Appendix A.

Table 2. Certificate of Title Particulars

Lot No	Landowner	Area	Volume	Folio	Plan No
111	PETER WILLIAM IVANKOVICH	82.97ha	1996	502	D085871
9	MCDOUGALL QUARRIES PTY LTD	257.42ha	1340	70	D0410769

4.2 Heritage & Environmental Considerations

4.2.1 Existing Site Topography

The topography of the subject site is sloping down from east to west. The highest point of the subject site is at an elevation of approximately 26m AHD, while the lowest point is approximately 11m AHD. The slope undulates across the subject site.

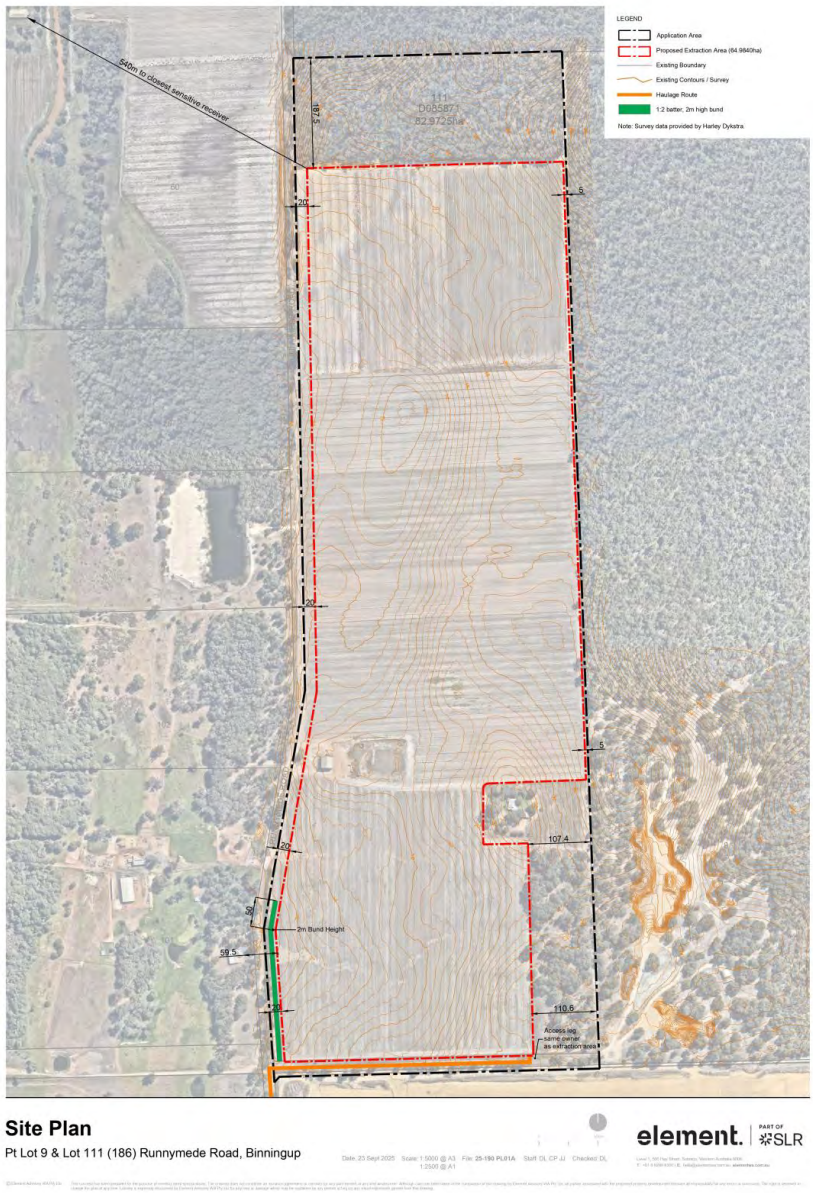


Figure 2 - Site Topography

4.2.2 Geology, Soils and Groundwater

Groundwater and soil conditions within the project area are addressed in the Groundwater Monitoring Report prepared by JDA Consultant Hydrologists. The report includes the following findings and considerations:

- Soils in the project area are mapped as sands associated with Tamala Limestone, consistent with excavation suitability.
- The site lies on a north–south sand ridge with elevations ranging from 26m AHD in the east to 11 m AHD in the west of the proposed extraction area.
- Regional groundwater flow is generally east to west toward the coast, with eventual discharge to Lake Preston or the Leschenault Estuary—both considered groundwater sinks.
- The site is located 1.4 km north of the Lake Clifton F Boreline, a historical groundwater monitoring transect. Groundwater data from bores F5 to F8 were used to estimate groundwater levels across the site.
- The Average Annual Maximum Groundwater Level (AAMGL) at bore F5 (1979–2020) is 4.42 mAHD, with a Maximum Groundwater Level (MGL) of 5.23 mAHD recorded in 1983.
- Estimated MGLs for bores F5 to F8 range from 5.23 mAHD to 15.18 mAHD, with corrections applied to historical data to account for seasonal variation.
- Groundwater contours were extrapolated across the site using these MGLs, indicating that the potential extraction area has an estimated MGL of 7–8 mAHD.
- Groundwater levels are relatively uniform across the extraction area (east to west), supporting the feasibility of excavation without intersecting the water table.
- No mapped watercourses exist within the site; nearby wetlands include Myalup Swamp (500 m west) and Conservation damplands to the east and west.
- Rainfall in the region has declined over recent decades, with average annual rainfall now around 857–887 mm, while pan evaporation averages approximately 1,675 mm/year.

Refer to the Groundwater Monitoring Report at Appendix H

4.2.3 Acid Sulphate Soils (ASS)

A desktop search of the Department of Environmental Regulation's Contaminated Sites Database indicates that a portion of the site along the western boundary has a moderate to low risk of encountering acid sulphate soils. The project will be maintaining minimum of 0.5m separation distance to groundwater which will significantly reduce the risk of ASS.

Figure 3 – Acid Sulphate Soils

4.2.4 Wetlands Areas

Areas of wetlands in Western Australia have been mapped, and this mapping has been converted into a digital dataset that is maintained by the DBCA. Pursuant to this dataset, there are no mapped wetlands within the subject site.

4.2.5 Native Vegetation

The subject lot has approximately 3ha of native vegetation in the southeastern corner and 8ha of native vegetation in the northern portion of the site. This native vegetation is proposed to remain as part of this development application.

4.2.6 Heritage

A search using the Department of Planning, Lands and Heritage (DPLH) mapping system indicates that there are no places with Aboriginal Cultural Heritage significance on the subject site. Furthermore, the Heritage Council's State Heritage Register and the Shires's heritage records indicate there are no sites or places of State or Local heritage significance that will be impacted by the proposed development.

5. Proposed Development

5.1 Development Details

5.1.1 Overview

The proposal is for sand extraction restricted to 64.98Ha of the subject site. Extraction is to occur over 34 stages, with each stage to comprise of an area less than 2Ha open to extraction at any given time prior to rehabilitation back to pasture for agricultural purposes.

Sand extraction is to be completed by McDougall Quarries, with haulage proposed to use a variety of haulage vehicles up to RAV 4 (27.5m trucks) on the road network identified in the haulage route defined below. The haulage route shows efficient regional connection through Runnymede Road and Wellesley Road North to Forrest Highway. The Development proposal is summarised in Table 3 below.

Table 3. Development Details

Development Details	
Subject Lot Area	82.97 Ha
Requested Approval Timeframe	10 years
Area of Vegetation Clearing	0 Ha
Material	Sand and Limestone
Lot Boundary Setbacks	20m to Runneymede Road (western boundary) 187.5m to northern boundary 5m to eastern boundary 0m to southern access leg (20m to southern neighbour (Lot 21) boundary)
Minimum Separation Distance to Sensitive Land Use	59.5m
Extractive Industry License Area (%)	64.98 Ha (78.3%)
Rehabilitation Area	100 % of Extraction Area
Rehabilitation Typology	Pasture
Extraction Method	Front-end loader, D9 Dozer, Excavator
Batter Slopes (Vertical: Horizontal)	1:3
No. of Stages	34
Proposed Extraction Yield	5,077,754m^3
Annual Extraction Rate (Estimate)	507,775.4m^3
Maximum Depth of Extraction 1	+0.5m MGL
RAV Network	Runnymede Road (RAV 4), Wellesley Road (RAV 4), and Forrest Highway (RAV 7)
Haulage Route	Runnymede Road (RAV 4), Wellesley Road (RAV 4), and Forrest Highway (RAV 7)

Hours of Operation	Mon-Fri: 7:00am to 5:00pm Sat: 7:00am to 12:00pm No works are to occur on Sundays or Public Holidays.

Machinery located onsite during daily extraction works may include but are not limited to the following:

- A loader for the purpose of loading sand into trucks;
- A bulldozer for the clearing of topsoil located within each extraction stage and the sequential rehabilitation of each stage by respreading topsoil;
- A crusher for processing of large limestone rocks;
- Trucks for transporting material off-site; and
- A 15kl water cart for dust suppression.

It is anticipated that all material may be extracted within 9 years, with rehabilitation to be completed following the completion of each stage, resulting in a 10-year approval period overall to allow for rehabilitation timeframes.

Rehabilitation and ongoing monitoring and maintenance of the rehabilitation area to a self-sustaining status will require management over a period of 1 year following the completion of works onsite.

The following activities are expected as part of the on-going operation of the site:

- **Removal and Stockpiling of Topsoil** - the top 100mm of topsoil from the active extraction stage is to be removed and stockpiled. Stockpiles are to be located where convenient within each extraction stage for operations with a batter no greater than 1:3 to ensure minimal erosion of the stockpile during winter periods and a height no greater than 2m for reduced wind erosion.
- **Sand excavation** - active excavation of the sand resource from the working face within the stage and loading of trucks for haulage offsite.
- **Screening and crushing** - Screening of excavated material may be required dependent upon the particle size of material and market demand for material permeability. Should screening be undertaken onsite, a mobile screen is to be located within centre of the stage and operated in accordance with the noise management plan attached at Appendix D. Larger pieces of material are to be adequately crushed prior to screening. Material is to be loaded into the screen by front-end loader and/or excavator prior to loading trucks for haulage.
- **Final contouring and topsoil respread** - A combination of equipment may be used to undertake spreading and earthworks including a bulldozer. Final contours are to reflect the development plans prepared by Harley Dykstra
- **Site rehabilitation** – Rehabilitation is to be completed in stages, following each stage of extraction. Rehabilitation of the subject site will ensure the subject site is rehabilitated to pasture.

5.1.2 Stages of Excavation

Extraction is to progress gradually in approximately 34 sequential stages as outlined in the development plans, followed by progressive rehabilitation to pasture for agriculture purposes. Where applicable, rehabilitation of each stage will occur during the extraction phase of the following stage.

5.1.3 Depth of Extraction

The maximum depth of extraction is to be limited to +0.5m MGL monitored onsite. Detailed post extraction contours are provided within the development plans attached at Appendix C.

5.1.4 Site Access and Movement

Site access and haulage route is set out within Figure 4. All proposed roads to be used are able to accommodate required haulage trucks as proposed. The preferred haulage route will be to use Runnymede Road and Wellesley Road North to achieve regional access via Forrest Highway.

Internal access for vehicles will be via the existing access leg for Lot 9 currently used to service the operating extractive industry on Lot 9. Vehicles will then enter the site operate along an north-south route constructed centrally within the extraction area. This will allow the trucks to utilise RAV network roads entirely.

The identified haulage route is able to accommodate vehicles of this size.

Figure 4 – Proposed Haulage Route

5.1.5 Hours of operation

The proposed hours of operation are:

- Monday to Friday - 7:00am to 5:00pm
- Saturday - 7:00am to 12:00pm
- No works are to occur on Sundays or Public Holidays.

5.1.6 Site Office & Ablutions

A temporary site office and portable (self-contained) ablutions may be located onsite during peak haulage campaigns intermittently.

5.1.7 Water Supply for Dust Suppression

It is anticipated that during the summer months of October to March, approximately 30KL (two full water cart loads) will be required for dust suppression per day during operations. McDougall Quarries will maintain a water cart onsite, with sourcing of water sourced from the existing dam located on the property at 229 Runnymede Road, Binningup. This will be supplied by a single 15KL watercart, refilling when required.

To assist in dust suppression to the neighbouring caretaker dwelling, Stages 29-34 will not be excavated during November-March (inclusive).

5.2 Noise

An acoustic report was prepared by Herring Storer Acoustics to assess noise emissions from the proposed sand extraction operations at Lot 111 (No. 186) Runnymede Road, Binningup, with a copy of the report included at Appendix D. Due to the proposed day-time operating hours (0700–1900 Monday to Friday, and 0700–1200 Saturday), the applicable acoustic criteria for this assessment is the assigned LA10 day period noise level of 60 dB(A) for caretaker dwellings.

Noise modelling revealed that anticipated noise levels received at the two caretaker dwellings associated with the site will not exceed 59 dB(A) and 42 dB(A), respectively. These levels comply with the applicable acoustic criteria of 60 dB(A). As the noise emissions are considered to contain tonal characteristics, a +5 dB(A) penalty has been included in the assessable noise levels. Additionally, noise levels at the closest sensitive receiver will not exceed 37 dB(A). This complies with the applicable acoustic criteria of 45 dB(A).

To ensure compliance with the *Environmental Protection (Noise) Regulations 1997*, noise modelling was conducted using SoundPLAN software, incorporating equipment such as loaders and screening plants. The modelling accounted for site topography and prevailing weather conditions. The results confirmed that noise levels at the nearest premises comply with the assigned criteria, even with the tonal penalty applied.

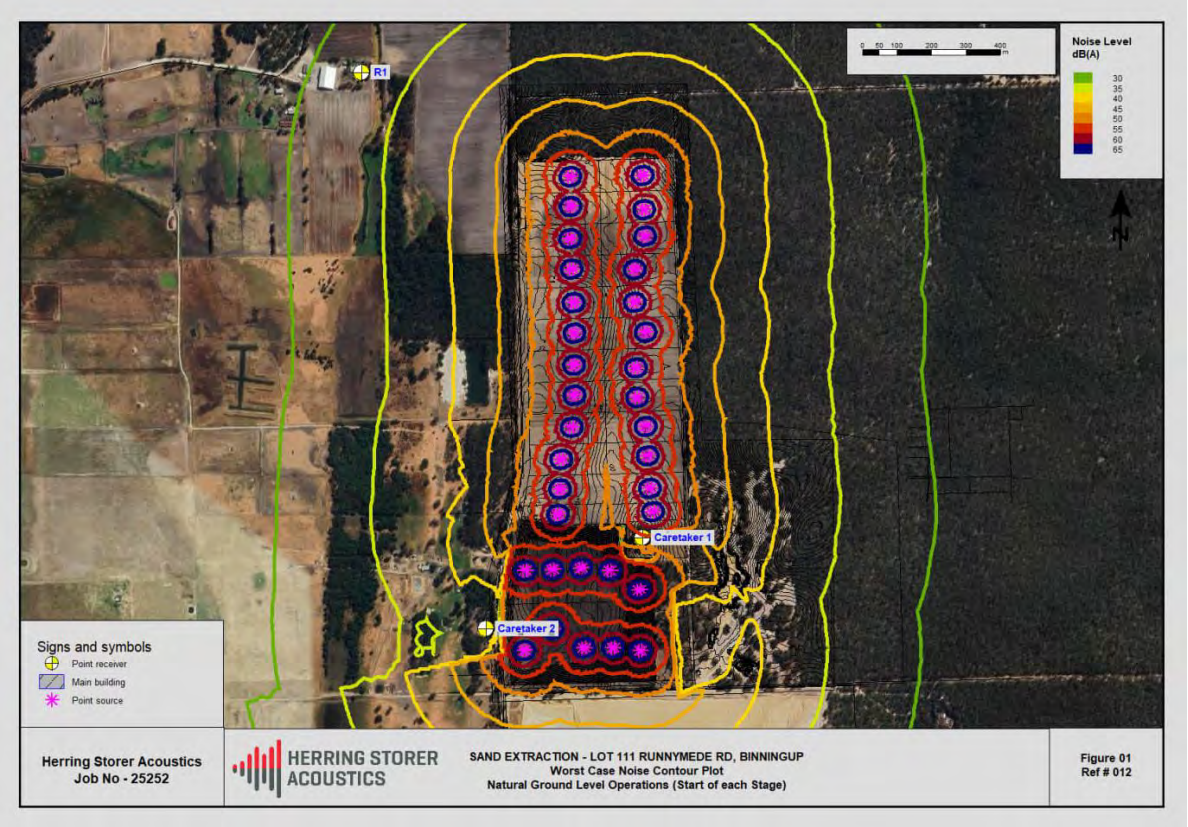


Figure 5 – Modelled Acoustic Contours (Worst Case Scenario with noise bunding per stage)

Refer to Appendix D – Acoustic Report

5.3 Traffic and Transport

The proposed development is estimated to generate up to 146 daily truck trips, which translates to approximately 15 peak hour trips (two-way). These volumes are considered only to be experienced on the existing road network during infrequent peak haulage campaigns.

RAV-4 network road trains may be used for haulage, trucks of this size are permitted to use the haulage route as it is entirely a RAV network.

The impacts on the road network of traffic volumes anticipated are considered to be acceptable and reflect the volume of traffic on Runnymede Road during peak haulage for the Wilman Wadandi Highway. The crossover to Runnymede Road is existing and currently used for extractive industry operations on Lot 9. This provides ample sightlines for exiting vehicles and oncoming vehicles.

5.4 Weed and Dieback Management

Weed and Dieback management for the proposed development is addressed in the Weed and Dieback Management Plan (WDMP) prepared by MBS Environmental. The WDMP includes the following strategies to mitigate against the spread of weeds and dieback:

- Ensure all vehicles, machinery, and equipment entering or exiting the site are clean and free of soil and vegetation.
- Conduct a baseline weed survey prior to operations; treat any Declared Pest Plants or Weeds of National Significance before topsoil removal.
- Remove and stockpile topsoil gradually in stages; stockpile infested topsoil separately and manage for weed control.
- Limit vehicle and machinery movement to areas free of topsoil after stripping to reduce weed spread.
- Ensure imported materials and exported quarry products are free of weeds.
- Undertake weed control in operational areas and on topsoil stockpiles to prevent seed set; maintain records of treatment location, date, size, and method.
- Monitor weed presence biannually and after significant rainfall; check effectiveness of weed control six to eight weeks post-treatment.
- Engage licensed contractors for weed control using appropriate methods; conduct control at least twice per year.
- During rehabilitation, implement weed control prior to seeding and as needed to establish pasture.
- For dieback management:
    - Clean earth-moving machinery before entering and leaving site.
    - Move soil only in dry conditions; keep machinery within extraction area.
    - Contain drainage within the extraction area; maintain well-drained trafficable areas.
    - Restrict site access to designated entry/exit points; install signage and fencing to prevent unauthorised access.
    - Inform personnel and customers about dieback risks and hygiene requirements; ensure imported materials are dieback-free.
    - Cover truck loads when exporting sand.
- Educate all personnel on weed and dieback prevention measures during induction.
- Maintain records and ensure compliance with the Biosecurity and Agriculture Management Act 2007 and relevant guidelines.

Refer to Appendix F – Weed and Dieback Management Plan

5.5 Dust Management

Dust generated onsite is to be managed in accordance with the Dust Management Plan (DMP) prepared by MBS Environmental. The DMP includes the following dust management measures:

- Vegetation clearing and topsoil removal will only occur under suitable wind conditions to minimise windblown dust.
- Clearing and ground disturbance will proceed gradually in stages; rehabilitation to pasture will follow progressively.
- Topsoil stockpiles will not exceed 2 m in height; other stockpiles will be limited to 4 m.
- A maximum onsite speed limit of 20 km/hr will be enforced.

- A water cart (15KL capacity) will be available to water access roads, tracks, working areas, and stockpiles during dry periods.
- Trucks leaving the site must have loads covered and be cleaned of dust-producing material before entering public roads; signage will be installed at the exit.
- Visual dust monitoring will occur continuously during operations; additional watering or alternative controls (e.g., chemical suppressants, dust fencing) will be applied if excessive dust is observed.
- If dust cannot be controlled due to weather conditions, dust-generating activities will cease until conditions improve.
- A dust complaints process will be in place, including signage with contact details, investigation within four hours, and reporting to the Shire of Harvey.
- All personnel will be trained in dust prevention and mitigation measures; the EIL Licensee will oversee compliance and record-keeping.
- Stages 29-34 will not be excavated during November-March (inclusive).

Refer to Appendix E – Weed and Dieback Management Plan

5.6 Rehabilitation

Following extraction, the cleared portion of the subject site will be rehabilitated in accordance with the Rehabilitation Management and Monitoring Plan (RMMP) prepared by MBS Environmental. The RMMP includes the following measures:

- The 64.98 ha extraction area will be rehabilitated to pasture for continued agricultural use, staged progressively following extraction.
- Final landform will be largely flat with batter slopes no steeper than 1:3, tying into surrounding land; digital survey will confirm compliance.
- Topsoil (approx. 100 mm) will be stripped and either directly respread or stockpiled (max. 2 m height) for later use; prior to respreading, pit floors will be deep-ripped to alleviate compaction.
- After topsoil return, shallow ripping (300–500 mm) along contour will be undertaken to improve water infiltration; scarification may occur before seeding.
- Pasture establishment will involve direct seeding of a species mix (annual grasses, clovers, and other species suited to Spearwood sands) at a minimum rate of 30 kg/ha, timed after sufficient rainfall.
- Erosion control will rely on flat landform and pasture cover; soil binders may be applied to batters if required; water trucks will manage dust and erosion during operations.
- Weed management will target declared pest plants and Weeds of National Significance; initial weed spraying will occur several weeks after topsoil respread and germination, followed by spot spraying as needed.
- Dieback management will require all vehicles to arrive and leave clean; measures from the Weed and Dieback Management Plan also apply.
- Firebreaks will be maintained per Shire of Harvey requirements; internal tracks will remain for fire and property access.
- No hydrocarbons or hazardous chemicals will be stored onsite; refueling will occur via mobile service vehicles with spill kits.
- Completion criteria include:
  - Final landform as per approved plan.
  - Topsoil respread.
  - 80% pasture cover with no bare patches greater than 30m².
  - No declared pest plants or Weeds of National Significance.
- Monitoring will occur quarterly for erosion and pasture establishment, biannually for weeds and bare ground (first two years), then annually until criteria are met and maintained for two years.
- Maintenance actions may include supplementary seeding, weed/pest control, erosion control, watering, and grazing management.
- Records of all rehabilitation activities, monitoring, and corrective actions will be maintained; annual reports will document progress and contingency measures.

Refer to Appendix G – Rehabilitation Management Plan

5.7 Stormwater Management

Surface water runoff associated with the proposed extraction operations is anticipated to be contained within each extraction stage, without any surface water runoff offsite. The natural permeability of the soils will allow for stormwater contained onsite to be drained naturally to the sub-surface through infiltration. No swales or detention basins will be created onsite as stormwater will infiltrate within the extraction boundary.

5.8 Onsite Vehicle Maintenance

All machinery onsite are to be serviced by an authorised service vehicle which is to arrive onsite as required. Each service and maintenance vehicle are to contain a hydrocarbon spill kit to prevent any potential contamination of the site. All major servicing is to occur offsite with machinery transported offsite. No hydrocarbons are to be stored onsite at any time within a fuel tank, with the refuelling of machines to occur from an authorised service vehicle.

6. Orderly and Proper Planning

In addition to the assessment and justification provided in the planning assessment at Appendix A, the principles of orderly and proper planning require that new development is consistent with the planning vision and strategic direction for the locality. The key matters relating to orderly and proper planning are as follows:

- The application seeks approval for an Extractive Industry, a discretionary land use within the Rural Zone under the Shire of Harvey Local Planning Scheme No.2.
- The proposed use is a temporary land use. The subject site will be appropriately rehabilitated following extraction of material.
- The proposed development seeks to extract sand to a depth no greater than +0.5m MGL.
- The proposal will enable the extraction of sand, supplying efficiently sourced construction material to the region, contributing to local employment, economic development and assisting the land development market.
- The proposal will not impact on the amenity of surrounding horticulture, rural and extractive industry land uses.
- The proposal uses a haulage route which has the capacity to accommodate all haulage vehicles and provides efficient regional access to market.
- The proposed development is capable of managing dust within the site without any offsite amenity impacts on the locality.
- Following extraction, each stage is to be progressively rehabilitated to pasture.

Given the above, the proposed development is consistent with the principles of orderly and proper planning and therefore may be conditionally approved by the Shire of Harvey on its planning merit.

7. Conclusion

This report has been prepared by Element Advisory, on behalf of McDougall Quarries for an Extractive Industry at Pt Lot 9 and Lot 111 (186) Runnymede Road, Binningup. The development proposal seeks approval to extract sand from the subject site within 34 stages before being appropriately rehabilitated to pasture for agricultural use. This report sets out the development approval framework, project area description, proposed development and planning framework applicable to the proposal.

The planning assessment demonstrates that the proposed development will remain compliant with the strategic intent for the area and is consistent with the requirements and standards in the applicable statutory planning framework. This proposal provides a development proposal which is sequential in nature, and which enables the supply of surplus sand, a critical building material to meet current and projected demand within the region. The proposal is therefore consistent with the principles of orderly and proper planning and can be appropriately managed within a 10-year time limited period, as outlined within this report. It is respectfully requested that the Shire of Harvey approve the proposed development, subject to appropriate conditions reflective of proposed extractive operations.

8. Appendices

8.1 Appendix A – Planning Assessment

8.1.1 Shire of Harvey Local Planning Scheme No.2

The subject site is zoned "Rural" under the Shire of Harvey Local Planning Scheme No.2 (LPS 2).

Figure 6 - Local Planning Scheme

The 'Rural' zone under LPS 2 is subject to the following objectives:

- To provide for the maintenance or enhancement of specific local rural character.
- To protect broad acre agricultural activities such as cropping and grazing and intensive uses such as horticulture as primary uses, with other rural pursuits and rural industries as secondary uses in circumstances where they demonstrate compatibility with the primary use.
- To maintain and enhance the environmental qualities of the landscape, vegetation, soils and water bodies, to protect sensitive areas especially the natural valley and watercourse systems from damage.
- To provide for the operation and development of existing, future and potential rural land uses by limiting the introduction of sensitive land uses in the Rural zone.
- To provide for a range of non-rural land uses where they have demonstrated benefit and are compatible with surrounding rural uses

Industry- Extractive is a 'A' use under the LPS 2 meaning that:

"*the use is not permitted unless the local government has exercised its discretion by granting development approval after advertising the application in accordance with clause 64 of the deemed provisions*"

As the proposed development seeks approval for the extraction of sand, the 'Extractive Industry' land use definition is satisfied and deemed appropriate.

In addition to its rural zoning, the subject site is within 'Special Control Area 2 – Basic Raw Material' and is subject to the following objectives:

Table 4. SCA 2 Objectives Assessment

SCA 2 Objective	Proposed Development
Ensure that the strategic resources of State or regional significance are not sterilised from incompatible land uses and development	The proposed development is for the extraction of basic raw materials.
Encourage the mining of strategic resources in accordance with acceptable environmental standards	The proposed extractive industry development application does not propose the removal of any significant vegetation and is contained entirely within previously cleared farming land.
Promote the rehabilitation and restoration of mining and extraction sites, after works have been completed, in a way that is consistent with the long-term use of the land.	Post extraction, the land will be rehabilitated back to pasture inline with the sites current land use.

8.1.2 Shire of Harvey Local Planning Strategy

The subject site is zoned "General Agriculture" and "Basic Raw Materials Significant Geological Supplies" under the Shire of Harvey Local Planning Strategy (LPS)

The LPS identifies that there will be an increasing demand for basic raw materials, including sand within the Harvey region. The proposed development application will help ensure supply of the increased demand.

8.1.3 Greater Bunbury Region Scheme

The subject site is zoned "Rural" under the Greater Bunbury Region Scheme (GBRS). The proposed development meets the purpose of the Rural Zone.

"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"

Additionally, the GBRS identifies the site as "Basic Raw Materials Significant Geological Supplies". The proposed development meets the objectives of these identified sites by proposing to extract the sand resource prior to rehabilitating the land back to pasture, suitable with the land term use of the land.

8.1.4 State Planning Policy 2.4 - Basic Raw Materials Resource Policy (2021)

State Planning Policy 2.4 – Basic Raw Materials seeks to enable the responsible extraction of Basic Raw Materials (BRM) while ensuring the protection of people and the environment. The application of this Policy provides the foundation for land use planning to address the sustainable management of BRM in Western Australia.

The policy objectives and applicable response are provided within **Table 5** below.

Table *5*: SPP2.4 Objectives Assessment

SPP2.4 Policy Objective	Proposed Development
Ensure BRM and its regional importance is considered at the earliest stages of the planning process;	The subject site is zoned as 'Rural' and within Special Control Area 2 – Basic Raw Material under LPS2 showing that the land has been identified for resource extraction at the earliest stage.
Ensure BRM resources are used efficiently in land use planning and development;	The extraction area includes a deposit of a regionally significant basic raw material. This resource is widely used as an essential component in development.
Identify BRM extraction opportunities through sequential land use without compromising the final intended land use; and	Consistent with the Rural Zone objectives under LPS2, the subject site has been protected from incompatible uses prior to extraction of resources. The subject site will also be sequentially rehabilitated to pasture post-extraction to protect future agriculture land use.
Ensure the extraction of BRM avoids, minimises or mitigates any adverse impacts on the community, water resources and biodiversity values.	The proposed extractive industry has demonstrated significant consideration of the subject sites environmental characteristics by containing the extraction area to areas of previously cleared farmland so as to not impact on surrounding bushland.

In addition to the above policy objectives, SPP2.4 also includes associated guidelines (SPP 2.4 Guidelines) Section 4 of the SPP 2.4 Guidelines includes more specific assessment criteria for extractive industry developments. The following table includes an assessment of the proposal against these criteria:

Table 6: SPP2.4 Guidelines Assessment

SPP 2.4 Guidelines Extractive Industries Criteria	Analysis of this Extractive Industry Application
(a) the avoidance or mitigation of conflicts and detrimental effects on existing and future sensitive land uses and agricultural land in the surrounding areas (that is, noise, dust, vibration, blasting and vehicular traffic);	The proposed extractive industry is to be appropriately separated from surrounding sensitive land uses. Potential amenity impacts have been considered and planned for in the attached Dust and Noise reports. Refer to Appendix D - E
(b) having an effective consultation process with appropriate stakeholder engagement, including advertising as required;	The development application is to be made available for public comment as part of the development application process with due regard given to any submissions made.
(c) prioritisation of proposals within SGS areas aligned with DMIRS geoVIEW.WA mapping in Perth and Peel;	The subject site is identified as a Significant Geological Supply for Sand.
(d) if the resources is identified as a SGS area and/or local basic raw material demand;	The subject site is identified as a Significant Geological Supply for Sand.
(e) the quantity and quality of resource and scale and duration of extraction;	The proposal seeks approval to extract 5,077,754m^3 of sand, a significant resource for surrounding development projects.
(f) management of finished ground levels for BRM extraction and site rehabilitation to:	Groundwater monitoring has been conducted by taking the historical data of long-term groundwater monitoring bores and extrapolating their data to maximum groundwater levels (MGL).

SPP 2.4 Guidelines Extractive Industries Criteria	Analysis of this Extractive Industry Application
• Maintain appropriate horizontal separation between extraction, water supply infrastructure and any other engineering requirements; • Avoid the exposure of groundwater and maintain the required vertical separation distances to groundwater for sequential land use; • Protect ground water and surface water quality.	The proposed extraction is to maintain at least 0.5m vertical separation to MGL.
(g) the site's potential for sequential land use and the ability to rehabilitate the land in a manner compatible with its long-term use identified by the Local Planning Scheme;	The subject site is to be adequately rehabilitated in accordance with the approved Rehabilitation Plan. Rehabilitation will be to pasture for agriculture use.
(h) the ability to stage the extraction operations to avoid conflicts with any adjacent land uses;	Staging is proposed in a manner which does not impact surrounding sensitive land uses. Each stage is appropriately planned which avoids potential land use conflicts. Stages include additional screening measures where required to limit impacts upon adjacent sensitive land uses.
(i) the effect of the proposed extractive industry on any adjacent agricultural land;	Nearby agricultural uses are located to the west of the subject site. The interface of the extraction area with these properties will include additional screening measures to avoid adverse impacts upon agricultural uses.
(j) the availability and suitability of road access;	The subject site has efficient access to Runnymede Road providing regional access via the RAV network.
(k) the effect of the proposed extractive industry on any native flora and fauna and general landscape values;	Impact on the subject site's environmental values will be minimal due to there being no proposed clearing of native vegetation with the extraction area limited to previously cleared farming land.
(l) how all water resources will be protected during BRM extraction including a separation distance to the defined groundwater level plus other management measures to protect water resources during BRM extraction;	No water resources are anticipated to be impacted by this proposal. The maximum extraction depth is considerate adequate separation from groundwater.
m) potential impacts on fragmentation and connectivity of remnant vegetation;	No fragmentation is anticipated as part of this application as no vegetation is proposed to be cleared.
n) any requirements for an environmental offset;	No clearing is proposed as part of this application.
o) sites of cultural and historic significance on and near the land, having regard to how they are likely to be integrated with subsequent land uses; and	Not applicable to this application.
p) location and stability of excavations, stockpiles and overburden dumps.	No stockpiling is to occur onsite.

Concerning the above, the proposal is deemed to be demonstrating compliance with the provisions of SPP 2.4 and the associated SPP 2.4 Guidelines.

8.1.5 State Planning Policy 3.7 – Planning in Bushfire Prone Areas

The subject site is designated to be bushfire prone as outlined within Figure 7.

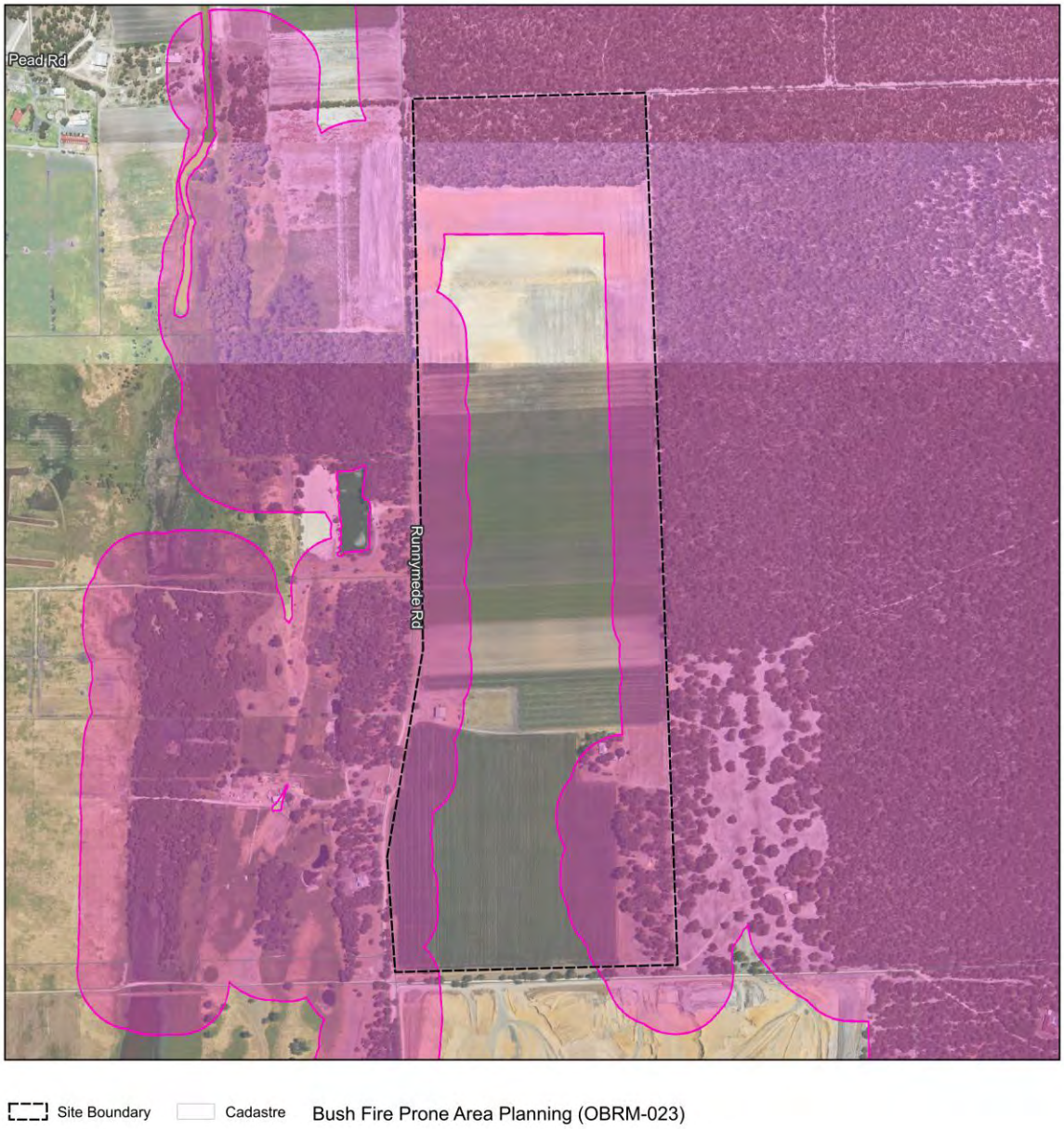


Figure 7 - Bushfire Prone Areas

The subject site is designated to be bushfire prone by DFES with the provisions of SPP 3.7 and associated guidelines for November 2024 Planning for Bushfire Guidelines.

Section 1.2.1 – Exemptions stipulates development can be exempt from SPP3.7 where there is no increase in the bushfire risk and where there is no habitable building to assess.

An Extractive Industry is considered as a land use which may be exempt from compliance with the guidelines where no habitable buildings are proposed and the proposal does not propose an intensification of land use. Since the proposal does not contain any habitable buildings, and employees onsite are to be onsite for periods of haulage and loading only, the application is considered exempt from requiring a bushfire assessment.

Additionally, any potential bushfire risk is further mitigated through the lack of vegetation within the extraction area.

8.1.6 Planning and Development (Local Planning Schemes) Regulations 2015

Clause 67(2) of Schedule 2 of the Planning and Development (Local Planning Schemes) Regulations 2015 (the Deemed Provisions), specifies matters which are to be given due regard when determining applications for approval.

An assessment of the proposal against the relevant matters outlined in Clause 67(2) of the Deemed Provisions has been undertaken. A summary of the assessment is provided below in Table 7.

Table 7: Clause 67(2) of the Planning and Development (Local Planning Schemes) Regulations 2015 Assessment

Provision	Applicant Response	
the aims and provisions of this Scheme and any other local planning scheme operating within the Scheme area	Refer to the planning justification provided under the Local Planning Scheme No. 2	✓
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	N/A	
any approved State planning policy	Refer to the assessment listed under State Planning Policy 2.4 and 3.7.	✓
any environmental protection policy approved under the Environmental Protection Act 1986 section 31(d)	N/A	
any policy of the Commission	N/A	
any policy of the State	N/A	
any local planning strategy for this Scheme endorsed by the Commission	Refer to the planning justification provided under the Local Planning Strategy	✓
any local planning policy for the Scheme area	N/A	
any structure plan or local development plan that relates to the development	N/A	
any report of the review of the local planning scheme that has been published under the Planning and Development (Local Planning Schemes) Regulations 2015	N/A	
in the case of land reserved under this Scheme, the objectives of the reserve and the additional and permitted uses identified in this Scheme for the reserve	N/A	
the built heritage conservation of any place that is of cultural significance	N/A	
the effect of the proposal on the cultural heritage significance of the area in which the development is located	N/A	

Provision	Applicant Response	
the compatibility of the development with its setting, including – the compatibility of the development with the desired future character of its setting; and the relationship of the development to development on adjoining land or on other land in the locality, but not limited to, the likely effect of the height, bulk, scale orientation and appearance of the development.	The proposed development is currently surrounded extractive industries to the east and south and rural properties to the west and north. One habitable dwelling is located on the rural property to the west. Additional screening measures are included at these interfaces to minimise adverse amenity impacts to this property. Furthermore, extraction of stages 29-34 will not occur between November and March inclusive.	✓
the amenity of the locality including the following – environmental impacts of the development the character of the locality social impacts of the development	Refer to the Environmental Management Plans (Dust, Noise, weed and dieback etc) for responses to these identified considerations. The proposed operations are screened from surrounding development and will not impact upon the character or amenity of the locality. No social impacts are anticipated by the development.	✓
the likely effect of the development on the natural environment or water resources and any means that are proposed to protect or mitigate impacts on the natural environment or the water resource	The proposed development will not adversely impact upon any natural water resources. Separation of extraction activities to groundwater will be maintained.	✓
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	No trees or other vegetation is proposed to be removed as part of the proposal. Post extraction, the land will be rehabilitated back to pasture.	✓
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	The site is suitable for sand extraction. No soil erosion or land degradation is proposed by this development. No flooding or bush fire risk is anticipated in the proposal.	✓
the suitability of the land for the development taking into account the possible risk to human health or safety	Refer to the EMP.	✓
the adequacy of – the proposed means of access and egress from the site; and arrangements for the loading, unloading, manoeuvring and parking of vehicles	The site access and haulage routes for vehicles associated with the proposal is deemed appropriate. Refer to the Transport Impact Statement.	✓
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	The amount and type of additional traffic is considered appropriate with the RAV network connect to the site.	✓
the availability and adequacy for the development of the following – public transport services public utility services storage, management and collection of waste access for pedestrians and cyclists (including end of trip storage, toilet and shower facilities)	N/A	

Provision	Applicant Response	
access by older people and people with disability		
the potential loss of any community service or benefit resulting from the development other than potential loss that may result from economic competition between new and existing businesses	N/A	
the history of the site where the development is to be located	N/A	
the impact of the development on the community as a whole notwithstanding the impact of the development on particular individuals	The development will positively impact the community, by providing sand for future construction purposes within the region.	✓
any submissions received on the application	Submissions received on the application are to be considered and addressed through the assessment process.	✓
the comments or submissions received from any authority consulted under clause 66	Submissions received on the application are to be considered and addressed through the assessment process.	✓
any other planning consideration the local government considers appropriate	N/A	

8.1.7 EPA Separation Distances between Industrial and Sensitive Land Uses (GS3)

The Environmental Protection Authority (EPA) has prepared a guiding document for assessment of environmental factors associated with the separation distances between sensitive land uses and Industrial land uses.

The proposed extractive industry is of a nature which reflects the 'Extractive Industry - Sand and Limestone' industry listed within Appendix 1. The relevant buffer distance is recommended to be 300-500m to sensitive land uses, depending on the size and nature of operations, with key impacts associated with operations being noise and dust.

The proposed development is located within 59.5m from the offsite caretaker dwelling land use (closest point), located to the west of the proposed extraction area. Due to the proposed amenity protection measures, this buffer distance is deemed to be appropriate in regards to the EPA separation guidelines.

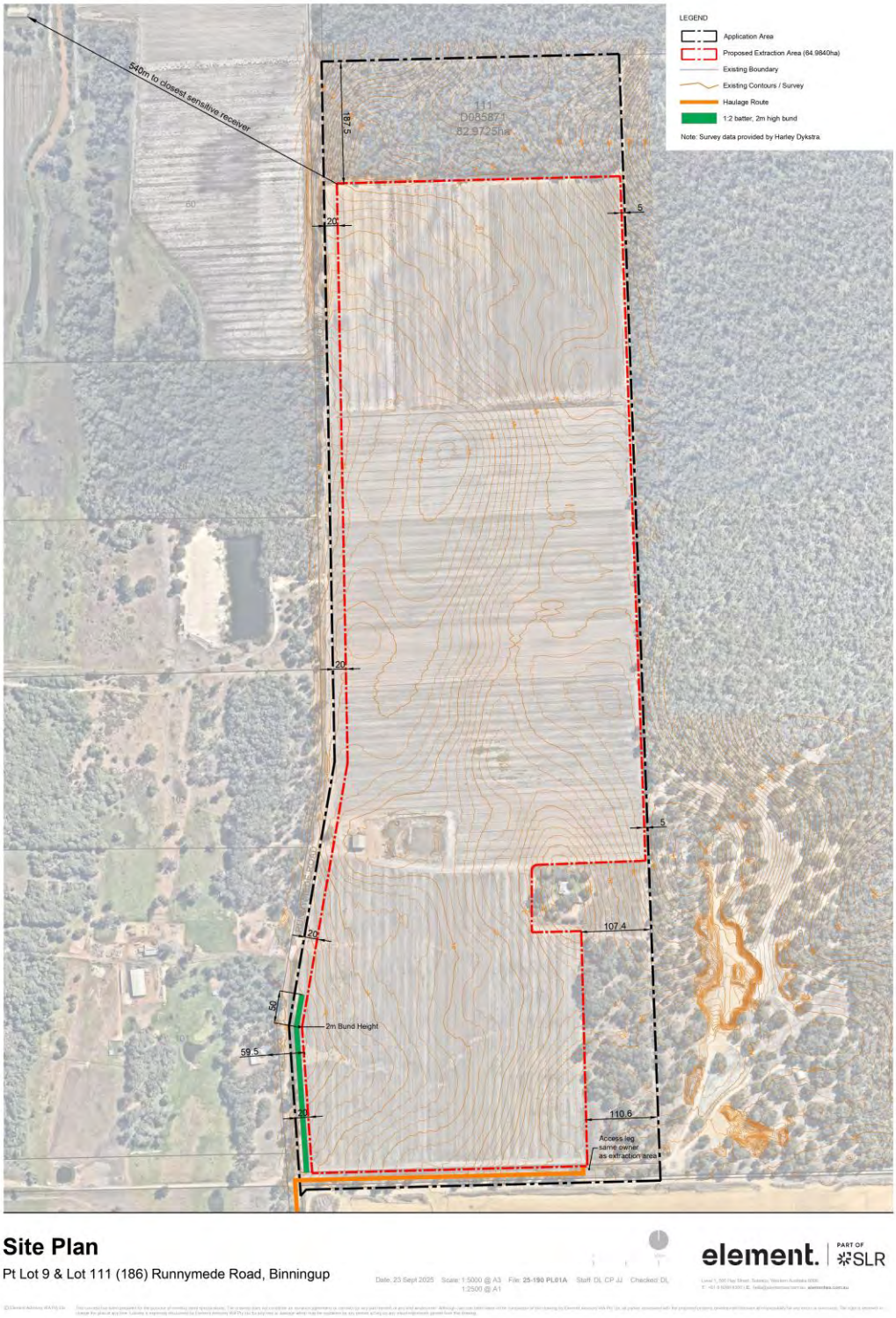


Figure 8 - Separation Distances to Nearest Sensitive land uses

The proposal is supported by an acoustic report and environmental management plans that demonstrate the proposal can achieve compliance with the relevant standards and therefore the proposed development will not detrimentally impact the nearby land uses.

8.2 Appendix B – Certificate of Title

WESTERN AUSTRALIA

TITLE NUMBER	
Volume	Folio
1996	**502**

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.

BGRoberts

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 111 ON DIAGRAM 85871

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

PETER WILLIAM IVANKOVICH OF RMB 3571, HARVEY

(ND L794841) REGISTERED 28/11/2011

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

1. L887730 MORTGAGE TO AUSTRALIA & NEW ZEALAND BANKING GROUP LTD REGISTERED 21/3/2012.
2. O263701 CAVEAT BY IVANKOVICH PTY LTD LODGED 22/10/2019.

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. 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:	1996-502 (111/D85871)
PREVIOUS TITLE:	1796-469
PROPERTY STREET ADDRESS:	186 RUNNYMEDE RD, BINNINGUP.
LOCAL GOVERNMENT AUTHORITY:	SHIRE OF HARVEY

ORIGINAL—NOT TO BE REMOVED FROM OFFICE OF TITLES

Application F515127

Volume 1796 Folio 469

WESTERN AUSTRALIA

REGISTER BOOK
VOL. FOL.
CT 1996 502

CERTIFICATE OF TITLE

UNDER THE "TRANSFER OF LAND ACT, 1893" AS AMENDED

I certify that the person described in the First Schedule hereto is the registered proprietor of the undermentioned estate in the undermentioned land subject to the easements and encumbrances shown in the Second Schedule hereto.

REGISTRAR OF TITLES

Dated 13th April, 1994

ESTATE AND LAND REFERRED TO

Estate in fee simple in portion of Wellington Location 1 and being Lot 111 on Diagram 85871, delineated on the map in the Third Schedule hereto.

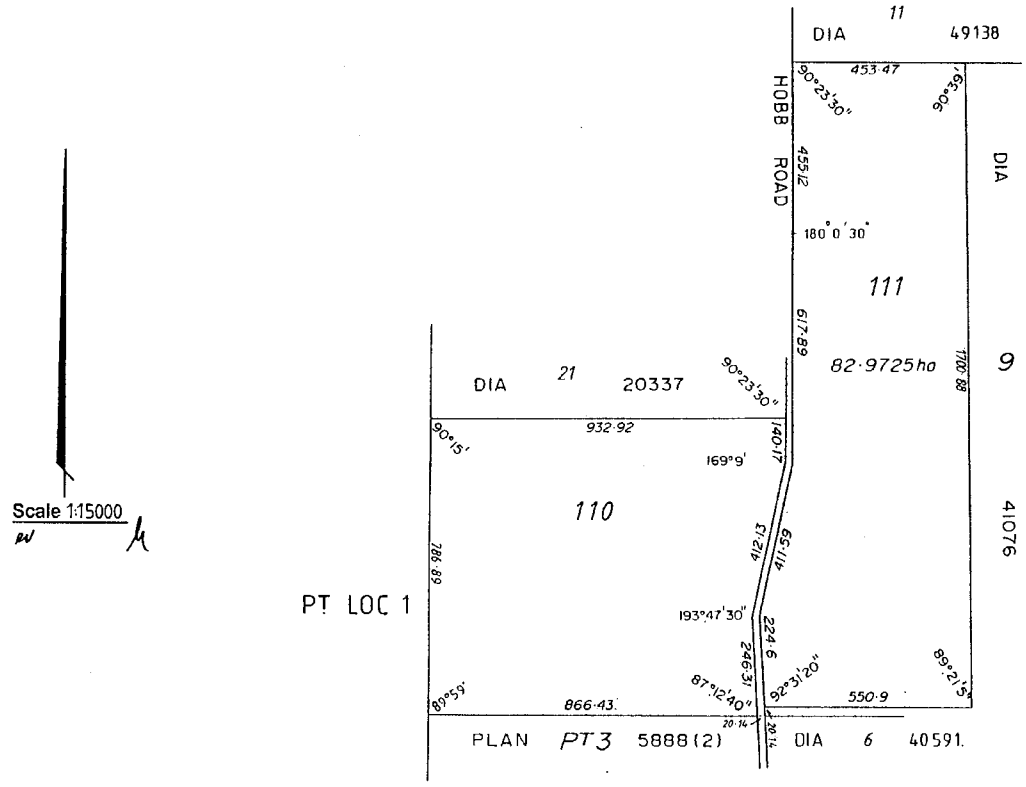
FIRST SCHEDULE (continued overleaf)

~~Graeme Paul Reading of "Runnymede" Runnymede Road, Binningup.~~

SECOND SCHEDULE (continued overleaf)

NIL

THIRD SCHEDULE



NOTE: ENTRIES MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS.

E67590/3/89-20M-L/4664

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WESTERN AUSTRALIA

TITLE NUMBER	
Volume	Folio
1340	**70**

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.

BGRoberts

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 9 ON DIAGRAM 41076

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

MCDOUGALL QUARRIES PTY LTD OF 44 FORREST BEACH ROAD WONNERUP WA 6280
(T P159164) REGISTERED 26/5/2022

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

1. E301273 EASEMENT TO THE STATE ENERGY COMMISSION OF WESTERN AUSTRALIA. SEE SKETCH ON VOL 1340 FOL 070. REGISTERED 21/2/1990.
2. P159165 MORTGAGE TO CORPORATE FUNDING PTY LTD OF LEVEL 11 100 EDWARD STREET BRISBANE QLD 4000 REGISTERED 26/5/2022.

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. 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: 1340-70 (9/D41076)
PREVIOUS TITLE: 1276-593, 1276-594
PROPERTY STREET ADDRESS: 150 RUNNYMEDE RD, BINNINGUP.
LOCAL GOVERNMENT AUTHORITY: SHIRE OF HARVEY

NOTE 1: I969057 DEPOSITED PLAN 39081 LODGED FOR EASEMENT PURPOSES ONLY.

LT. 37

FIRST SCHEDULE (continued) NOTE: ENTRIES MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	REGISTERED	TIME	SEAL	CERT. OFFICER
Peter William Ivankovich and Vesna Ivankovich both of Lot 9 Watson Road, Yangebup.	Transfer	F515128	13.4.94	14.38		

SECOND SCHEDULE (continued) NOTE: ENTRIES MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS

INSTRUMENT NATURE	INSTRUMENT NUMBER	PARTICULARS	REGISTERED	TIME	SEAL	CERT. OFFICER	CANCELLATION	NUMBER	REGISTERED OR LODGED	SEAL	CERT. OFFICER

CERTIFICATE OF TITLE VOL. 1996 FOL. 502

8.3 Appendix C – Development Plans

Site Plan

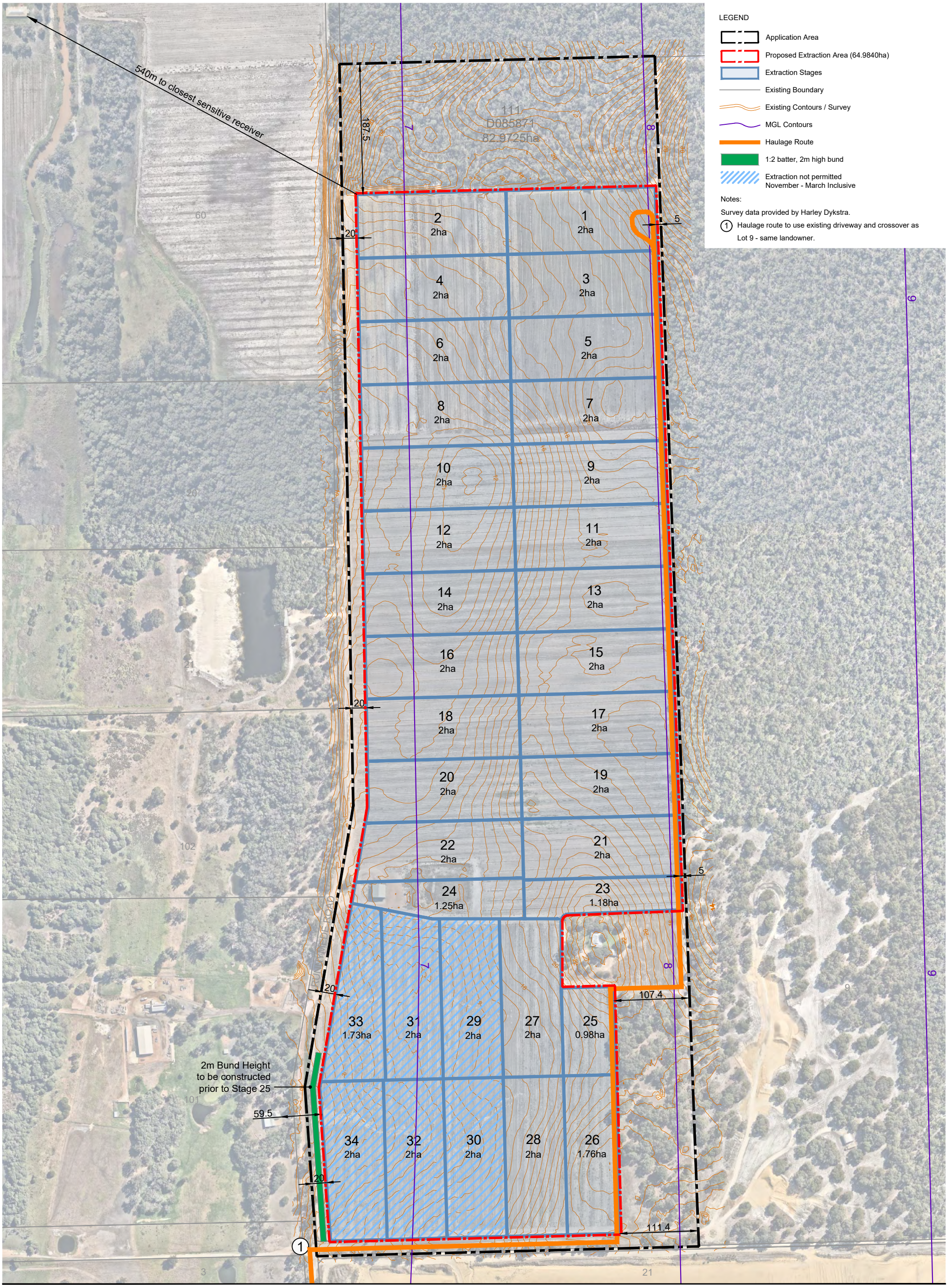
Pt Lot 9 & Lot 111 (186) Runnymede Road, Binningup

0 100m

Date: 8 Oct 2025 Scale: 1:5000 @ A3 1:2500 @ A1 File: **25-190 PL01A** Staff: DL CP JJ Checked: DL

element. | PART OF SLR

Level 1, 500 Hay Street, Subiaco, Western Australia 6008.
T. +61 8 9289 8300 | **E.** hello@elementwa.com.au **elementwa.com.au**



Excavation & Earthworks Plan

Pt Lot 9 & Lot 111 (186) Runnymede Road, Binningup

Date: 15 Oct 2025 Scale: 1:5000 @ A3 1:2500 @ A1 File: **25-190 CP01A** Staff: DL CP JJ Checked: DL

element. | PART OF SLR
Level 1, 500 Hay Street, Subiaco, Western Australia 6008.
T. +61 8 9289 8300 | E. hello@elementwa.com.au elementwa.com.au

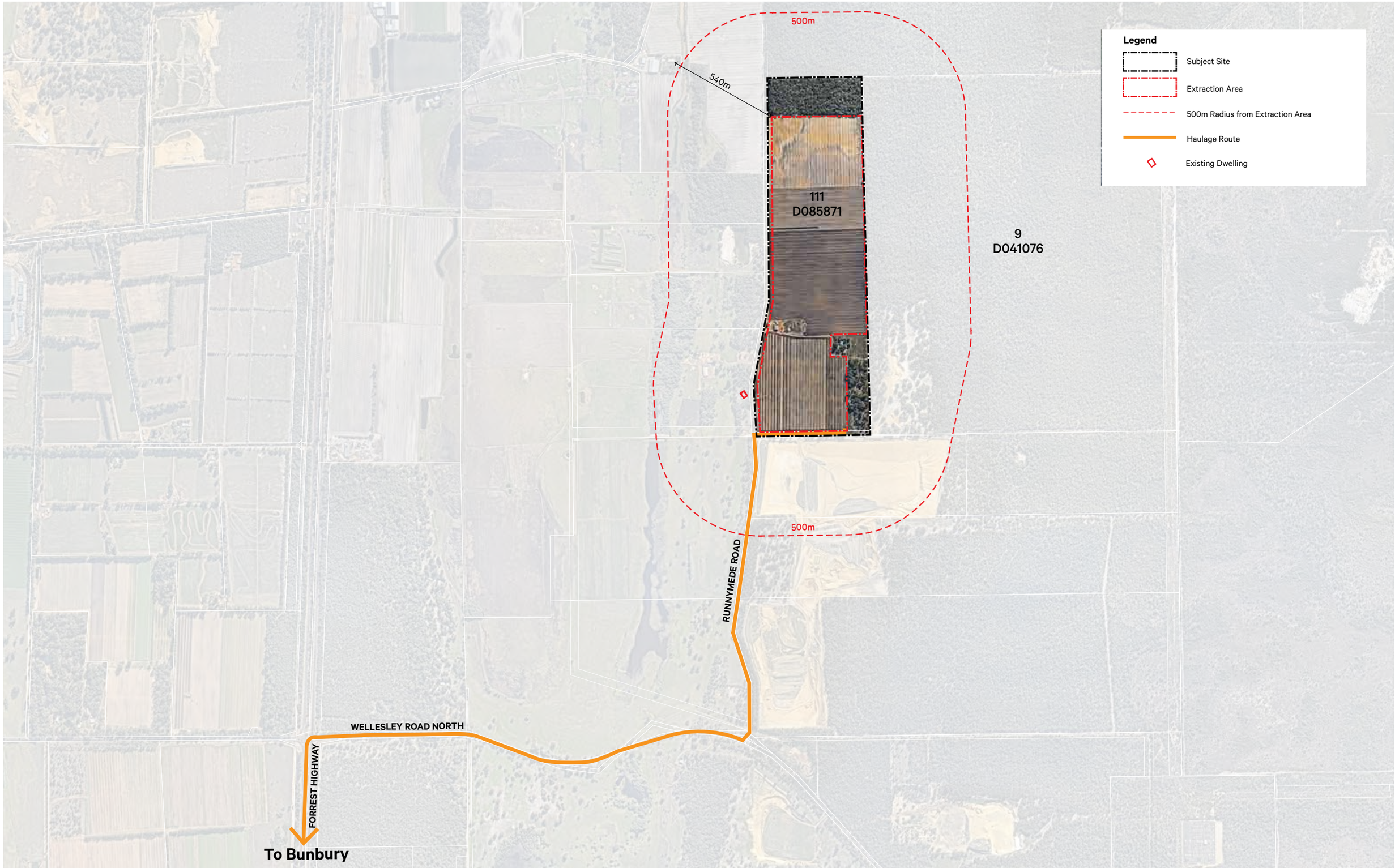
Post Extraction Plan

Pt Lot 9 & Lot 111 (186) Runnymede Road, Binningup

Date: 15 Oct 2025 Scale: 1:5000 @ A3 1:2500 @ A1 File: **25-190 CP01B** Staff: DL CP JJ Checked: DL

0 100m

element. | PART OF SLR
Level 1, 500 Hay Street, Subiaco, Western Australia 6008.
T. +61 8 9289 8300 | **E.** hello@elementwa.com.au **elementwa.com.au**



Haulage Route Plan

Pt Lot 9 & Lot 111 (186) Runnymede Road, Binningup

Date: 8 Oct 2025 Scale: 1:20000 @ A3 1:10000 @ A1 File: **25-190 PL01B** Staff: DL CP JJ Checked: DL

element. | PART OF SLR
Level 1, 500 Hay Street, Subiaco, Western Australia 6008.
T. +61 8 9289 8300 | **E.** hello@elementadvisory.com.au
elementadvisory.com.au

8.4 Appendix D – Acoustic Report

MCDOUGALL QUARRIES PTY LTD

EXTRACTIVE INDUSTRY
LOT 111 (#186) RUNNYMEDE ROAD, BINNINGUP

ACOUSTIC ASSESSMENT

AUGUST 2025

OUR REFERENCE: 35146-3-25252

Rochdale Holdings Pty Ltd A.B.N. 85 009 049 067 trading as:
HERRING STORER ACOUSTICS
P.O. Box 219, Como, W.A. 6952
(08) 9367 6200
hsa@hsacoustics.com.au

DOCUMENT CONTROL PAGE

ACOUSTIC ASSESSMENT

RUNNYMEDE ROAD, BINNINGUP

Job No: 25252

Document Reference: 35146-3-25252

FOR

MCDOUGALL QUARRIES PTY LTD

DOCUMENT INFORMATION			
Author:	Paul Daly	**Checked By:**	Tim Reynolds
Date of Issue:	18 August 2025		

REVISION HISTORY				
Revision	**Description**	**Date**	**Author**	**Checked**
1	Revised plans	19/08/2025	PLD	
2	Additional Stages	14/10/2025	PLD	

DOCUMENT DISTRIBUTION				
Copy No.	**Version No.**	**Destination**	**Hard Copy**	**Electronic Copy**
1	2	Element Advisory Att: Christian Parker Email: christian.parker@elementadvisory.com.au		✓

CONTENTS

APPENDICIES

1. INTRODUCTION

Herring Storer Acoustics have been commissioned by Element Advisory on behalf of McDougall Quarries Pty Ltd to undertake an acoustic assessment of noise emissions from the proposed sand extraction operations located at Lot 11 (#186) Runnymede Road, Binningup.

The proposed extraction operations will operate from 0700 – 1900 Monday to Friday and 0700 – 12:00 on Saturdays. No operations would occur on Sundays or Public Holidays.

There are three residential dwellings, one located to the north, on Lot 111 and the third on the neighbouring western Lot. The two dwellings on the southern side of the development are associated with the proposed extractive industry, hence have been treated as caretaker dwellings for the purpose of this assessment. The third receiver to the north is located approximately 540m from the nearest boundary of the extractive industry. This receiver has been considered as residential and would be classified as highly noise sensitive in accordance with the regulations.

The main access road is off Runnymede Road, (being the current Lot 9 access) as shown in Figure 1.1, along with the proposed operations.

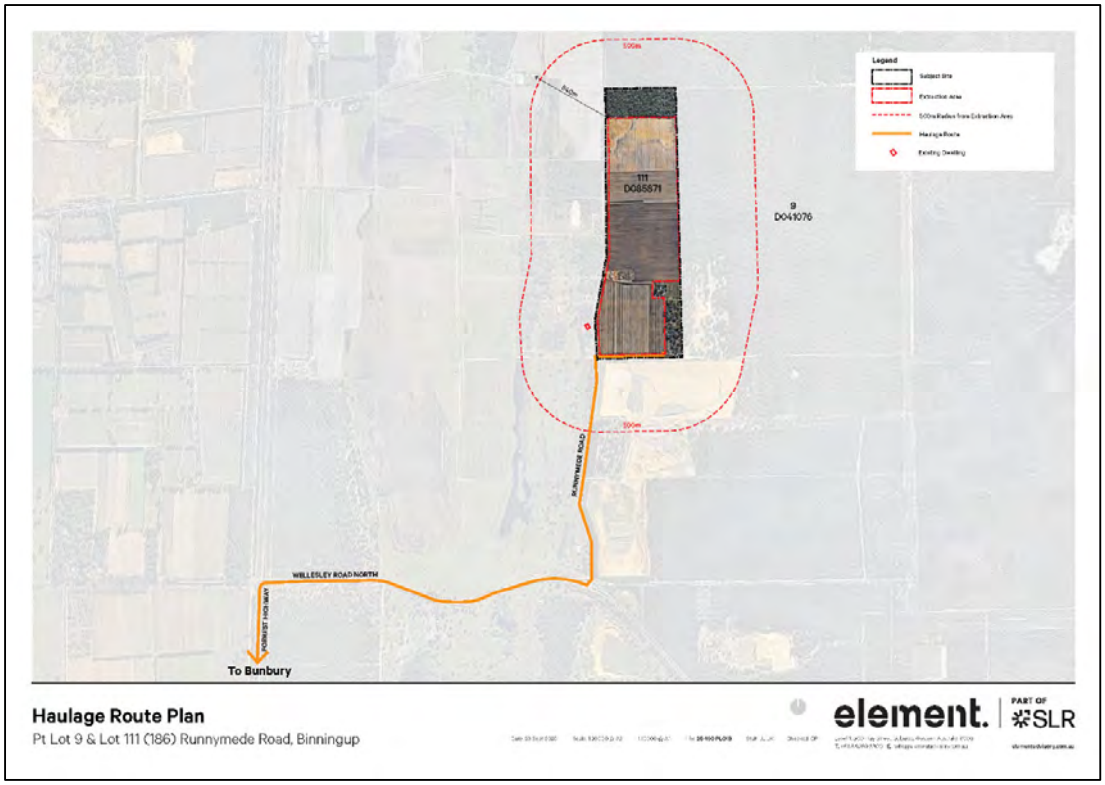


FIGURE 1.1 – EXTRACTION OPERATIONS

This assessment is provided to support the regulatory approvals processes and show that compliance with the requirements of the *Environmental Protection (Noise) Regulations 1997* can be achieved.

As part of the study, the following was carried out:

- Identification of individual operations and the associated noise levels.
- Assess the predicted noise levels at the nearest surrounding highly noise sensitive premises for compliance with the appropriate criteria.

- If exceedances are predicted, comment on possible noise amelioration options for compliance with the appropriate criteria.

For information, a locality plan is shown in Appendix A.

2. SUMMARY

An environmental noise assessment has been conducted on the proposed sand extraction operations for Lot 111 Runnymede Road, Binningup.

The facility would only operate during the day period (being Monday to Friday 0700 to 1900 hours and 0700 to 1200 on Saturdays). Therefore, for the dwellings considered as Caretakers (sensitive premises other than highly noise sensitive), the applicable assigned noise level is 60 dB(A). For the highly noise sensitive residence (R1) the applicable assigned noise level is 45 dB(A

Noise received at the Caretaker premises has been determined, to be 42 and 59 dB(A) for the sand extraction operations for the highest noise level at any stage of the operations. This can be compared to the applicable assigned noise level criteria of 60 dB(A).

For the highly noise sensitive residence the noise received has been determined to be 37 dB(A), for the sand extraction operations for the highest noise level at any stage of the operations. This can be compared to the applicable assigned noise level criteria of 45 dB(A).

The above assessable noise levels have been considered to contain tonal characteristics and therefore, contains a +5 dB(A) penalty.

Given these operating parameters, noise levels received at the nearest premises has been calculated to comply with the *Environmental Protection (Noise) Regulations 1997* for the operating times as outlined in this assessment, even with the inclusion of a +5 dB(A) penalty for tonality.

3. CRITERIA

The allowable noise level for noise sensitive premises in the vicinity of the proposed site is prescribed by the *Environmental Protection (Noise) Regulations 1997*. Regulations 7 and 8 stipulate maximum allowable external noise levels or assigned noise levels that can be received at a premise from another premises. For residential premises, this noise level is determined by the calculation of an influencing factor, which is then added to the base levels shown below. The influencing factor is calculated for the usage of land within two circles, having radii of 100m and 450m from the premises of concern. The base noise levels for residential premises are listed in Table 3.1.

TABLE 3.1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Noise sensitive premises	0700 - 1900 hours Monday to Saturday (Day)	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day Period)	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days (Evening)	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	35 + IF	45 + IF	55 + IF

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.
IF is the influencing factor.

It is a requirement that received noise be free of annoying characteristics (tonality, modulation and impulsiveness), defined below as per Regulation 9.

"impulsiveness" means a variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax\ Slow}$ is more than 15 dB when determined for a single representative event;

"modulation" means a variation in the emission of noise that –

(a) is more than 3dB $L_{A\ Fast}$ or is more than 3 dB $L_{A\ Fast}$ in any one-third octave band;
(b) is present for more at least 10% of the representative assessment period; and
(c) is regular, cyclic and audible;

"tonality" means the presence in the noise emission of tonal characteristics where the difference between –

(a) the A-weighted sound pressure level in any one-third octave band; and
(b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as $L_{A\ Slow}$ levels.

The nearest potential noise sensitive premises to the proposed development have been identified using the area map in Figure 3.1.

FIGURE 3.1 – RECEIVER LOCATION MAP

The usage of the surrounding land use varies from intensive horticulture and residential land use. Therefore, the assigned noise levels for operational times are as noted in Table 3.2.

TABLE 3.2 – ASSIGNED NOISE LEVELS

Premises Receiving Noise	IF dB	Time of Day	Assigned Level (dB)		
			$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Caretakers 1 and 2	-	All Hours	60	75	80
Residence 1	0	0700 - 1900 hours Monday to Saturday (Day)	45	55	65

4. CALCULATED NOISE LEVELS

Noise immissions[1] at the nearest neighbouring premises, due to noise associated with the proposed operations, were modelled with the computer programme SoundPlan. Sound power levels used for the calculations are based on measured sound pressure levels of similar equipment proposed for use on site.

The modelling of noise levels has been based on noise sources and sound power levels shown in Table 4.1.

TABLE 4.1 – SOUND POWER LEVEL - NOISE SOURCES dB(A)

Source Name	Quantity	SWL dB(A)
Loaders (Cat 980H or similar)	2	105
Screening Plant (McCloskey S190 Screener or Similar)	2	101

Note: The above equipment models have been used to provide an indication of the size. Other models may be used although these have been assumed to have a similar sound power level.

Based on noise emissions from the above equipment, an overall operating scenario has been developed. Figure 4.1 details the source locations assumed in the predictive modelling along with the proposed development of the pit.

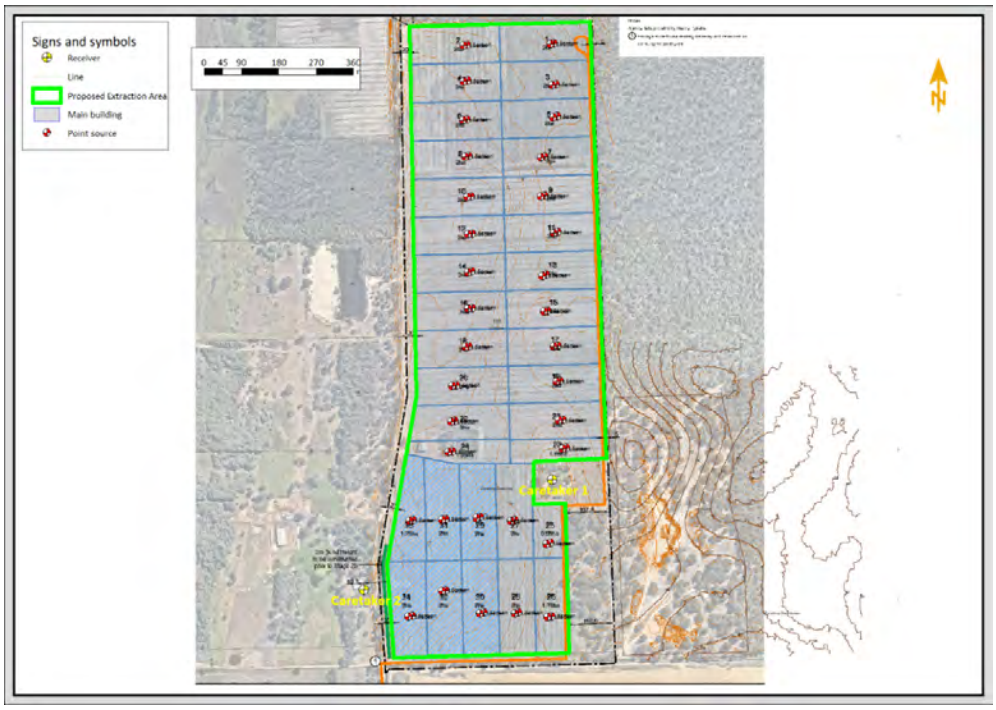


FIGURE 4.1 – SOURCE LOCATION AND PIT PROGRESSION

1 Immissions – noise received at a source
2 Emissions – noise emanating from a source and / or location

Based on the initial modelling scenario, the noise sources have been placed at the existing surface level. As the pit is open towards the north/west, additional protection is achieved to barrier noise emissions from the plant.

The following input data was used in the calculations:

a) Provided area plots.
b) Sound Power Levels listed in Table 4.1.
c) Ground contours and receiver point provided by client (Appendix A).

Weather conditions for modelling were as stipulated in the Environmental Protection Authority's "*Draft Guidelines on Environmental Noise for Prescribed Premises"* and for the day period are as listed in Table 4.2.

TABLE 4.2 – WEATHER CONDITIONS

Condition	Day
Temperature	20°C
Relative humidity	50%
Pasquill Stability Class	E
Wind speed	4 m/s*

* From sources, towards receivers.

5. RESULTS

Calculated noise levels associated with the noise emissions from the proposed operations for the assumed scenarios, are summarised below in Table 5.1. Appendix B contains the overall noise contour plots.

TABLE 5.1 – CALCULATED NOISE LEVEL

Receiver	Calculated Noise Level (L_{A10} dB(A))	Critical Stage Area
Residence 1	32	2
Caretaker 1	54	33,34
Caretaker 2	37	23,25 and 27

6. ASSESSMENT

For the day time operations, based on calculated noise levels at the nearest premises, noise levels could be considered as being tonal in characteristics. Thus, the +5 dB(A) penalty has been included to allow for a tonal component for the residence.

Hence, Table 6.1 summarises the applicable Assigned Noise Levels, and assessable noise level emissions, for the cumulative (all industry) scenario considered.

TABLE 6.1 – APPLICABLE ADJUSTMENTS AND ASSESSABLE LEVEL OF NOISE EMISSIONS, dB(A)

Receiver	Calculated Noise Level, dB(A)	Applicable Adjustments to Measured Noise Levels, dB(A)			Assessable Noise Level, dB(A)
		Where Noise Emission Is Not Music			
		Tonality	Modulation	Impulsiveness	
Residence 1	32	+5	-	-	37
Caretaker 1	54	+5	-	-	59
Caretaker 2	37	+5	-	-	42

Based on the assessable noise levels above, comparison against the relevant assigned noise level is contained in Table 6.2

TABLE 6.2 – ASSESSMENT OF NOISE LEVELS

Receiver	Premises Receiving Noise Assessable Noise Level dB(A)	Time of Day	Assigned Level (dB)	Compliance
Residence 1	37	0700 - 1900 hours Monday to Saturday (Day)	45	Complies
Caretaker 1	59	All Hours	60	Complies
Caretaker 2	42			Complies

7. CONCLUSION

An environmental noise assessment has been conducted on the proposed sand extraction operations for Lot 111 Runnymede Road, Binningup.

The facility would only operate during the day period (being Monday to Friday 0700 to 1900 hours and 0700 to 1200 on Saturdays). Therefore, for the dwellings considered as Caretakers (sensitive premises other than highly noise sensitive), the applicable assigned noise level is 60 dB(A). For the highly noise sensitive residence (R1) the applicable assigned noise level is 45 dB(A

Noise received at the Caretaker premises has been determined, to be 42 and 59 dB(A) for the sand extraction operations for the highest noise level at any stage of the operations. This can be compared to the applicable assigned noise level criteria of 60 dB(A).

For the highly noise sensitive residence the noise received has been determined to be 37 dB(A), for the sand extraction operations for the highest noise level at any stage of the operations. This can be compared to the applicable assigned noise level criteria of 45 dB(A).

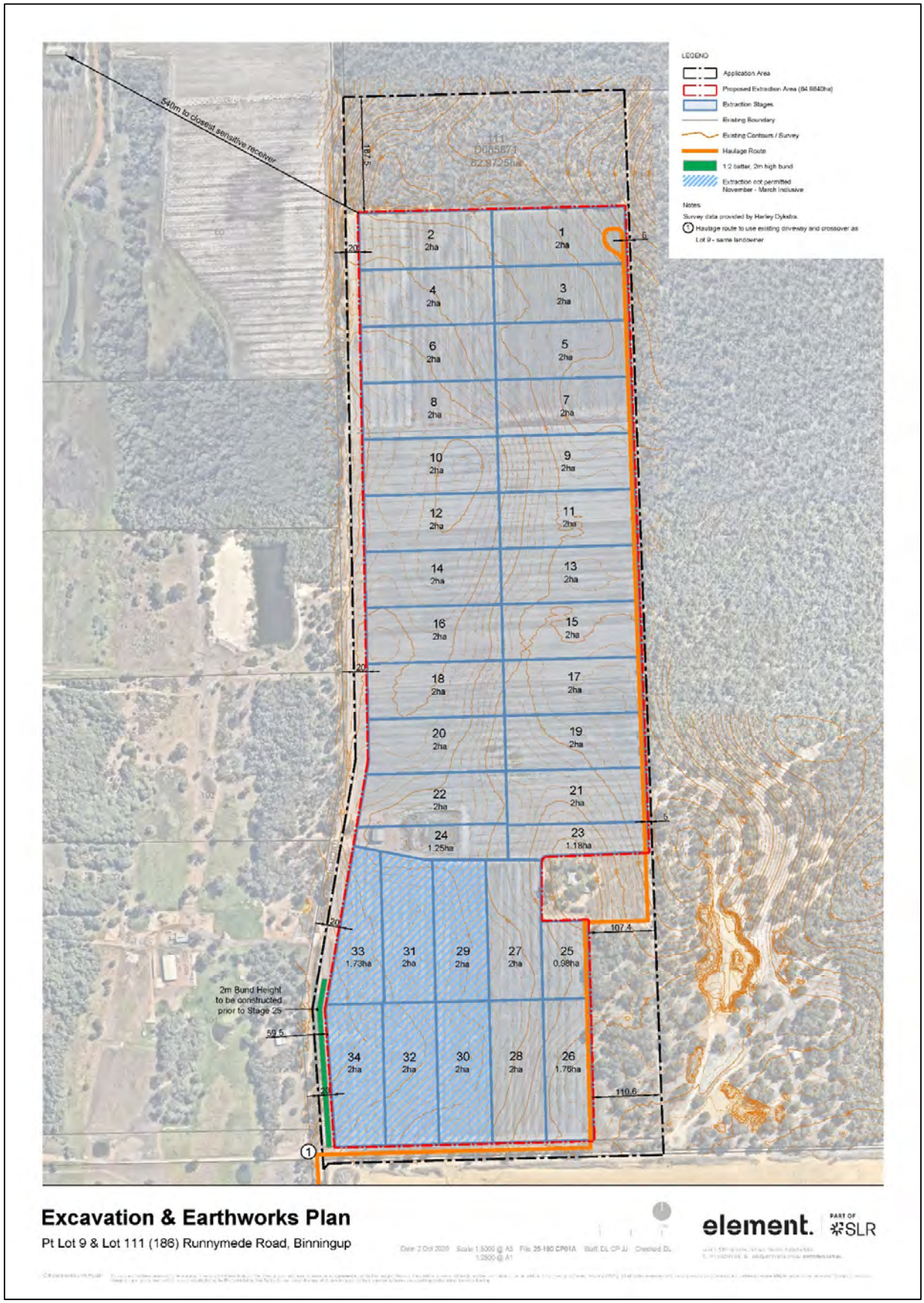
The above assessable noise levels have been considered to contain tonal characteristics and therefore, contains a +5 dB(A) penalty.

Given these operating parameters, noise levels received at the nearest premises has been calculated to comply with the *Environmental Protection (Noise) Regulations 1997* for the operating times as outlined in this assessment, even with the inclusion of a +5 dB(A) penalty for tonality.

APPENDIX A

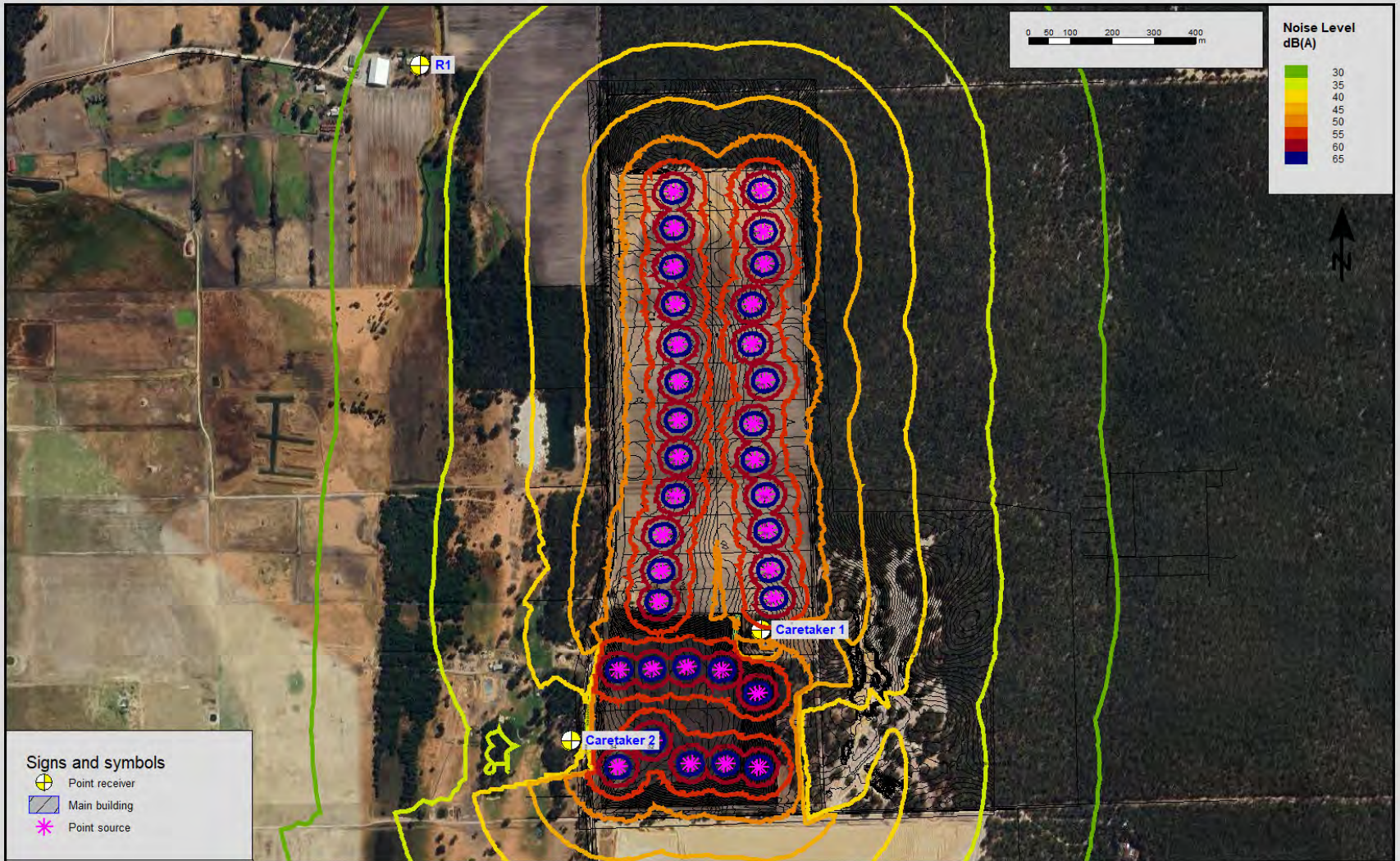
FIGURE A1 – LOCATION MAP

FIGURE A1 – SITE LAYOUT



APPENDIX B

Noise Contours


0 50 100 200 300 400 m
Noise Level dB(A)
30
35
40
45
50
55
60
65
N
R1
Caretaker 1
Caretaker 2
Signs and symbols
Point receiver
Main building
Point source
Herring Storer Acoustics
Job No - 25252
HERRING STORER ACOUSTICS
SAND EXTRACTION - LOT 111 RUNNYMEDE RD, BINNINGUP
Worst Case Noise Contour Plot
Natural Ground Level Operations (Start of each Stage)
Figure 01
Ref # 012

8.5 Appendix E – Dust Management Plan

186 (LOT 111) RUNNYMEDE ROAD, BINNINGUP

DUST MANAGEMENT PLAN

October 2025

Prepared for:

McDougall Quarries Pty Ltd

Prepared by:

Martinick Bosch Sell Pty Ltd
ABN: 60 102 614 478
4 Cook Street
West Perth WA 6005
Phone: (08) 9226 3166
Email: info@mbsenvironmental.com.au
Web: www.mbsenvironmental.com.au

MBS ENVIRONMENTAL

186 (LOT 111) RUNNYMEDE ROAD, BINNINGUP

DUST MANAGEMENT PLAN

Distribution List:

Company	Contact Name	Date
McDougall Quarries Pty Ltd	Kyle Jackson	13/10/2025
Element	Daniel Lewis	13/10/2025

Document Control for Job Number: MDQ186RUN

Document Status	Prepared By	Authorised By	Date
Draft Report	Elodie Payet, Sharon Rose	Kirsi Kauhanen	6/10/2025
Final Report	Sharon Rose	Kirsi Kauhanen	13/10/2025

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APPENDICES

1. Introduction

1.1 Purpose

McDougall Quarries Pty Ltd (McDougall Quarries, the applicant) are applying for a Developmental Approval (DA) and Extractive Industry Licence (EIL) for the extraction of sand on 186 Runnymede Road (Lot 111 on Diagram 85871, the property) in Binningup, within the Shire of Harvey (Figure 1). A Dust Management Plan (DMP) is required for local government approval purposes.

This DMP was prepared in accordance with the Department of Environment and Conservation's (DEC) "*A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities*" (DEC, 2011).

1.2 Scope

The scope of this DMP includes the following:

- Description of the existing environment and identification of sensitive receptors.
- Identification of potential sources of dust associated with the operations.
- A site risk assessment for dust.
- Description of appropriate dust prevention, monitoring, and mitigation measures.
- Description of the dust complaints process.
- Roles and responsibilities.

1.3 Objective

The objective of this DMP is to minimise off-site dust emissions from the sand extraction operations.

Scale: 1: 57,368
Original Size: A4
Grid: GDA2020 / MGA zone 50
(EPSG:7850)
0 1 2 km

Legend

- Property Location
- Cadastre (LGATE-218)
- State Road
- Local Road

Figure 1

Project Location

MBS ENVIRONMENTAL

2. Existing Environment

2.1 Climate

The climate of the project area is Mediterranean, with cool wet winters and hot dry summers. Long-term average climate data for the closest meteorological station (Bunbury, 23 km south of project) is shown in Chart 1. The average annual rainfall is 729.5 mm, mean minimum temperatures between 7.4°C and 16°C and mean maximum temperatures between 17.4°C and 30.1°C (BoM, 2025).

Long-term wind roses for Bunbury (BoM, 2025) indicate prevailing winds comprise morning easterlies and afternoon westerlies (Appendix A).

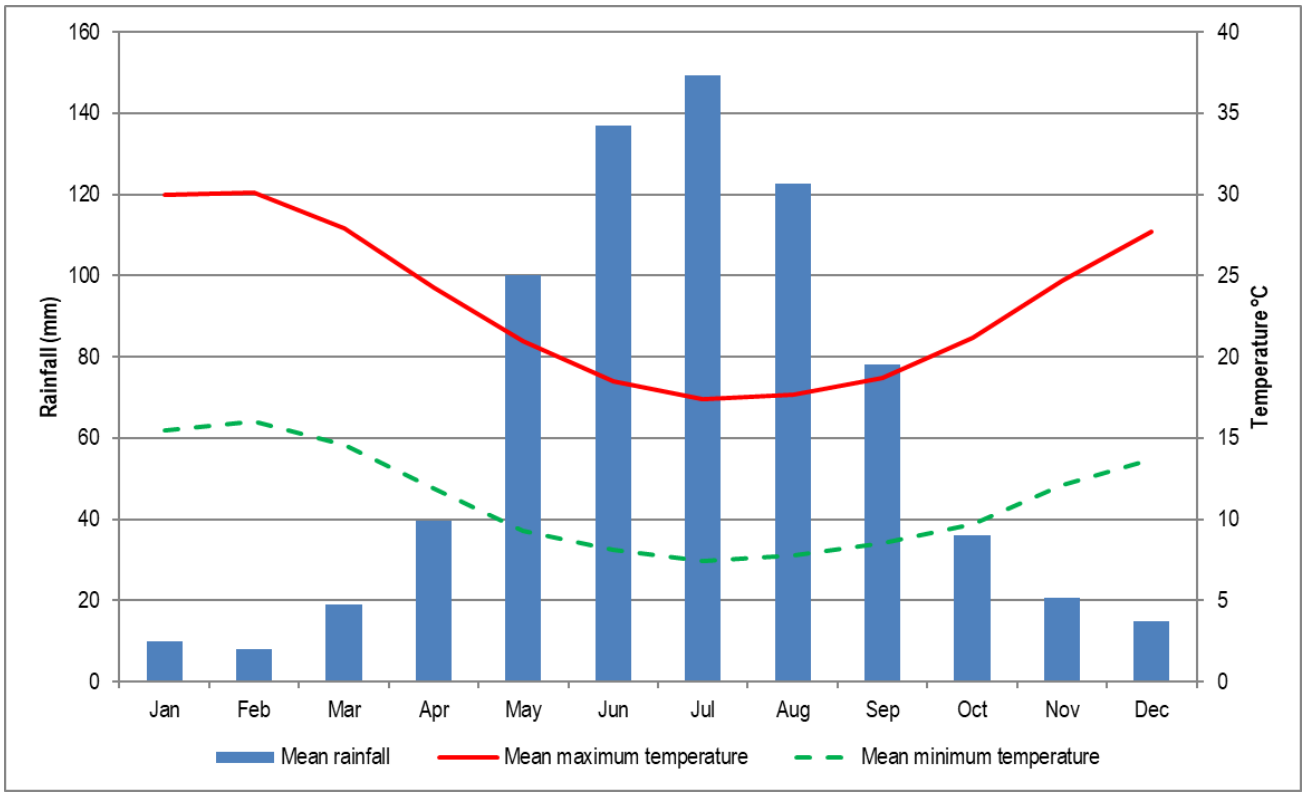


Chart 1: Long-term Rainfall and Temperature Data (1995-2025) for Bunbury Meteorological Station 9965 (BoM, 2025)

2.2 Land Use

The project is located on Lot 111 (No 186) Runnymede Road in Binningup, approximately 23 km north of Bunbury in the Shire of Harvey (Figure 1, Figure 2, Figure 3). The property is zoned as 'Rural' and 'Special Control Area - Basic Raw Materials' in the Shire of Harvey Town Planning Scheme No 1 (Intramaps, 2025) The proposed extraction area (64.98 ha) covers most of Lot 111 which has a total area of 82.97 ha. The property, including the proposed extraction area, was cleared for agriculture several decades ago and is currently being used for horticulture. Two areas of native vegetation remain on the property; both are located outside the proposed extraction area.

Site Plan

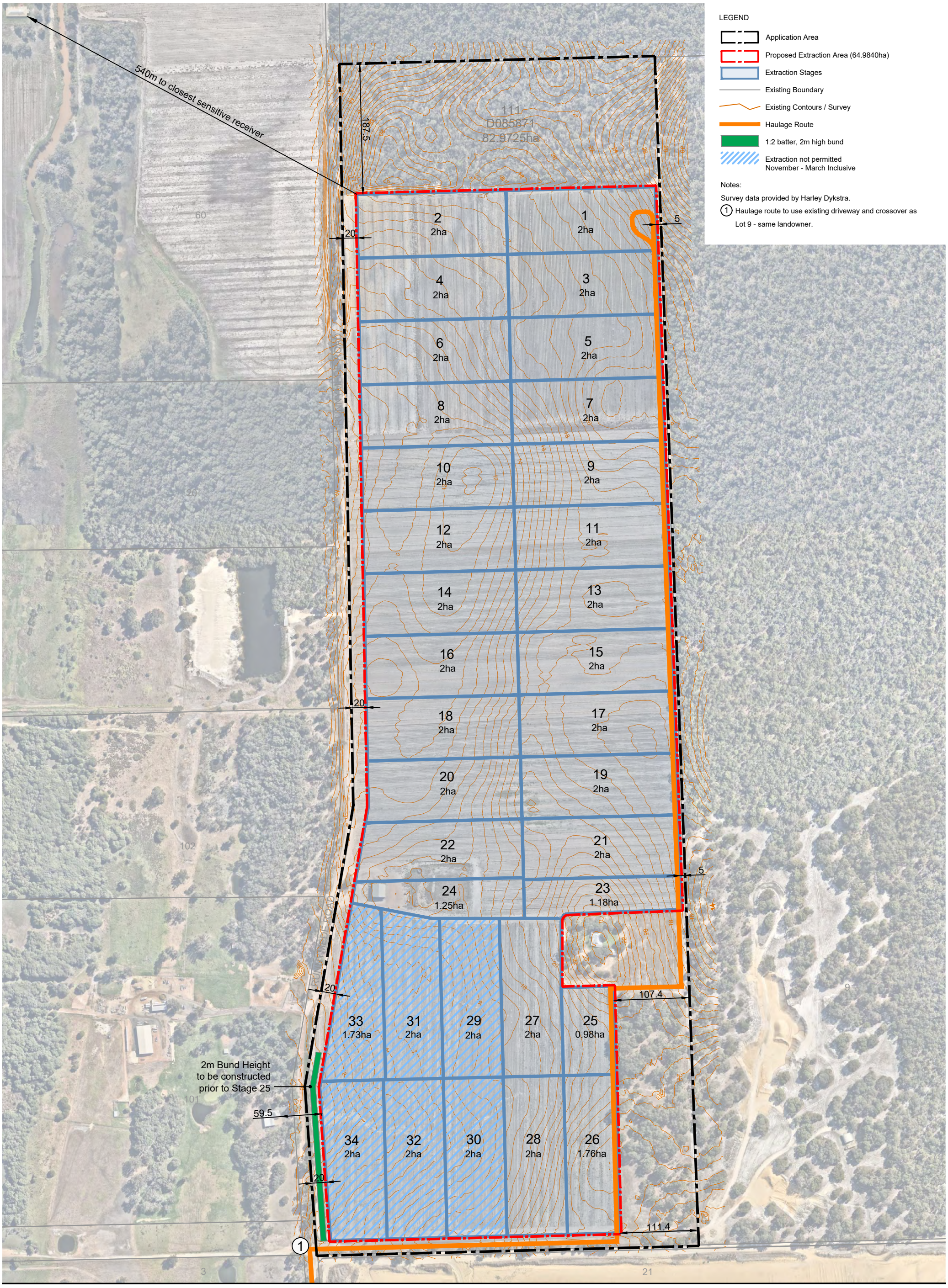
Pt Lot 9 & Lot 111 (186) Runnymede Road, Binningup

0 100m

Date: 8 Oct 2025 Scale: 1:5000 @ A3 1:2500 @ A1 File: **25-190 PL01A** Staff: DL CP JJ Checked: DL

element. | PART OF SLR

Level 1, 500 Hay Street, Subiaco, Western Australia 6008.
T. +61 8 9289 8300 | **E.** hello@elementwa.com.au **elementwa.com.au**



Excavation & Earthworks Plan

Pt Lot 9 & Lot 111 (186) Runnymede Road, Binningup

0 100m

Date: 8 Oct 2025 Scale: 1:5000 @ A3 1:2500 @ A1 File: **25-190 CP01A** Staff: DL CP JJ Checked: DL

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2.3 Landform and Soils

Lot 111 is located on a gently sloping landform between low lying wetlands to the west and a sand dune ridge to the east. The topography of the proposed extraction area slopes to the west from approximately 20 to 24 mAHD in the east to 12 mAHD to the west.

Lot 111 Runnymede Road is wholly located in the Spearwood System (211Sp) (DPIRD, 2022) which has been described as consisting of sand dunes and plains with yellow and pale deep sands and yellow and brown shallow sands. The majority of the extraction area occurs on Spearwood S2c Phase, consisting of the lower slopes (1-5%) of dune ridge with bleached or pale sands with a yellow-brown or pale brown subsoil. The northern part of the extraction area also contains Spearwood S1c, consisting of dune ridges with deep bleached grey sands with yellow-brown subsoils, and slopes up to 15% (DPIRD, 2021, 2025).

2.4 Vegetation

The proposed extraction area contains no native vegetation. The ground is either bare or at times covered in a horticultural crop.

2.5 Sensitive Receptors

Lot 111 and the surrounding properties are zoned as 'Rural' and/or 'Strategic Industry' and are mainly used for agriculture and grazing, and sand extraction. The nearest sensitive receptors for the southern extraction stages is a residential dwelling located on the adjacent rural property (Lot 101), 59.5 m west of the proposed extraction stage 34. The nearest sensitive receptor for the northern extraction stages is a residential dwellings 540 m northwest of the proposed extraction stage 2 (Figure 3). It is noted that a residence on Lot 22 (approximately 835 m southeast of the extraction area), which shows up on aerial imagery, has been demolished. Further, there are no 'Environmentally Sensitive Areas' within or in the immediate vicinity of the proposed extraction area, with the closest being a conservation category wetland 1.2 km to the west of the extraction site (DWER, 2021).

2.6 Existing Air Quality/Dust Levels

There is no known ambient air quality data available for Lot 111 or the surrounds. The closest data was for Bunbury where monitoring by DWER has shown that air quality is good on most days, although some poor days occur in any given year. The days of poor air quality have generally been attributed to prescribed fire hazard reduction burns or bushfires (DWER, 2016). Fire related air quality issues are relevant for the entire region, including the site. The annual average PM_{10} dust concentration for Bunbury in 2015 was 17.5 µg/m^3 (DWER 2016).

It is noted that the proposed sand extraction operations on Lot 111 are not the only potential source of dust in the local area. There are operational sand extraction sites on adjacent properties to the east and south and there are several other sand extraction sites in the local area. The existing horticultural operations on Lot 111 and other horticultural and agricultural activities on properties to the west of Lot 111 also produce dust at times from bare ground surfaces or from working the soil.

3. Potential Sources of Dust

The proposed project layout is shown in Figure 3. Potential sources of dust associated with the sand extraction operations include following:

- Vegetation clearing, topsoil stripping and stockpiling.
- Sand extraction, stockpiling and loading activities.
- Wind borne dust from exposed surfaces, including cleared land, topsoil and resource stockpiles and roads.
- Vehicle movements on internal unpaved roads.
- Poorly contained truck loads.
- Loading of haulage trucks.
- Rehabilitation works (final contouring, ripping, spreading of topsoil and other materials).

4. Site Risk Assessment

Dust potentially generated as part of the sand extraction operations is expected to be free of contaminants and pollutants. The adverse effects of dust generation from the site would typically be 'nuisance dust'.

A risk assessment was prepared based on the DEC's "A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities" (DEC, 2011). The risk assessment for the proposed extractive operations is provided in Appendix B. It calculates the risk of dust impacts and the need for management controls based on the nature of the site and the proposed operations as well as the proximity of sensitive receptors and prevailing winds. The risk assessment assumes that ground disturbance will be gradual and proceed in stages and that rehabilitation to pasture will follow gradually in stages as well. Prevailing summer winds are morning easterlies and afternoon westerlies, and these have been taken into consideration in the risk assessment.

A site classification score of 672 was calculated for the on-site works placing this development in a Classification 3 (Medium Risk) category (between 400 and 799 points). Based on the Medium Risk classification, a range of provisions, contingency arrangements and monitoring measures are required (DEC, 2011) and these have been incorporated into Section 5.

The Medium Risk rating applies only to the closest residential dwelling located approximately 59.5 m to the west of the extraction area. It is noted that the residence is not downwind of the site under prevailing summer afternoon winds that hold the highest potential for dust generation, and this will assist in avoiding dust impacts. The residence is also partially screened by vegetation on the side of the extraction area. As the buffer distance to other local residences is more than 500 m, the risk of dust impacts on these residences from the proposed operations is low and is not discussed further.

5. Dust Management Actions

5.1 Dust Prevention

The Site operator will implement the following measures to prevent dust generation from site activities:

- Vegetation clearing and topsoil removal will only be undertaken on days of conducive wind strength and conditions to ensure windblown dust is minimised.
- Vegetation clearing and ground disturbance will be gradual in nature and proceed in stages.
- Extraction will not be undertaken in Stages 29 to 34 from November to March.
- Rehabilitation to pasture will also be gradual in nature and proceed in stages, closely following the completion of sand extraction.
- A 2 m high bund along the southern end of the western boundary.
- Topsoil stockpiles will be no greater than 2 m in height and other stockpiles will not exceed 4 m in height.
- A vehicle speed limit of 20 km/hr will be implemented across the site.
- A water cart with a capacity greater than 15,000 L will be available for the site when required and will undertake preventative watering of access road, tracks, working areas and stockpiles during dry periods.
- Trucks leaving the site will be required to have their load covered and tailgates and draw-bars clear of dust producing material prior to entering Runnymede Road. Appropriate signage will be erected at the site exit advising truck drivers to cover loads and clean their vehicle as required prior to entering public roads.

5.2 Dust Monitoring and Mitigation

The Site operator will implement the following measures to monitor and mitigate dust generation from site activities:

- Visual monitoring of dust generation from the operations will be undertaken on an ongoing basis (during operational hours).
- During Stages 31 to 34, continual PM_{10} dust monitoring and associated monitoring of wind speed, direction, and temperature (see Section 5.3).
- Should excessive dust generation be observed and there is a risk of dust being blown off site, additional watering of dust sources with the water cart will be organised. Alternative dust controls, such as chemical dust suppressants and dust fencing may also be considered for more persistent sources of dust.

- When weather conditions negate the effectiveness of dust prevention and mitigation measures and dust continues to be blown off site, the dust generating activities will cease until conditions improve, dust producing material is stabilised and compliance with this DMP can be achieved.

5.3 Continual PM10 Dust Monitoring

In addition to the ongoing visual dust monitoring, instrumental monitoring of PM_{10} will be conducted to verify the effectiveness of the controls specified in Section 5.1 and to guide any changes.

The National Environment Protection Council (NEPC) is the body responsible for making National Environment Protection Measures (NEPM). The National Environment Protection (Ambient Air Quality) Measure (as amended by Variation 2015) includes standards for PM_{10} components of dust (Table 1), however includes no standard for total suspended particulates (TSP).

Table 1: NEPM Standards for PM_{10}

Pollutant	Averaging Period	Maximum Concentration Standard
Particles as PM_{10}	1 day	50 µg/m^3
	1 year	25 µg/m^3

5.3.1 Number and Location of Monitoring Sites

Given the proximity of the nearest sensitive receptor 59.5 m west of the site (Lot 101 Plan 059106), PM_{10} monitoring is proposed to be undertaken during Stages 31-34 as shown in Figure 3. Taking into consideration the location of sensitive receptors, proposed operations, surrounding vegetation, and prevailing winds (Appendix A), one monitoring site is proposed along the western boundary between the operations and the residence on Lot 101. Other sensitive receptors identified in Section 2.5 are considered unlikely to be impacted by dust generation from the site given their distance, prevailing winds and surrounding bushland. In the unlikely event that dust becomes an issue with other sensitive receptors, then a secondary monitoring site can be considered.

Prevailing winds are from the east in the morning (towards the receptor 59.5 m to the west) and from the west in the afternoon (away from the sensitive receptor), and therefore one monitoring station is considered sufficient to both monitor potential dust emissions from site, as well gather background air quality data from the surrounding area for ongoing comparison.

The monitoring program will utilise one real-time monitoring instrument (optical scattering monitor) to measure PM_{10}. The system will also be equipped with sensors to monitor wind speed, direction and temperature. The system will be fitted with telemetry to enable remote interrogation of the monitoring data and allow alarms to be sent in case of exceedances. This type of monitoring equipment is considered the most suitable where the purpose of the monitoring is to assist in effective management.

The monitoring station will be sited, to the extent possible, in accordance with AS/NZS 3580.1.1:2016 *Methods for sampling and analysis of ambient air, Part 1.1: Guide to siting air monitoring equipment* (SA and NZS, 2016). The siting requirements of AS/NZS 3580 are summarised in Table 2. Any deviations from the standard will be documented. An external consultant may be engaged to assist with the instrument installation and ongoing dust monitoring.

Table 2: AS NZS 3580.1.1 - 29016 Siting of Air Monitoring Equipment

Item	Requirement
General Siting Requirements for Measurement of PM_{10}	120° clear angle to sky
General Siting Requirements for Measurement of PM_{10}	>10 m from trees
General Siting Requirements for Measurement of PM_{10}	>50 m from nearest roads
General Siting Requirements for Measurement of PM_{10}	>1 m from buildings and 2*height of nearest building is ≤ distance to building
General Siting Requirements for Measurement of PM_{10}	At least 270° of airflow around unit
General Siting Requirements for Measurement of PM_{10}	Inlet 1 m above ground (breathing zone).
Absence of Extraneous sources of dust	e.g., unsealed roads, burning, construction
Particular effects from topography at location	e.g., wind funnelling from hills

5.3.2 Trigger and Threshold Levels

Performance criteria and triggers for mitigation measures will be set in accordance with the Ambient Air Quality NEPM (National Environment Protection Measure) (Table 1) and currently known site conditions and sources (Section 2.6). Initially, there will be one trigger level and one threshold level for corrective actions over a 24 hour monitoring period. The first trigger is set to PM_{10} concentration exceeding 30 µg/m^3 when averaged over 24 hours. This provides an early warning of relatively higher dust conditions and an opportunity to address them. The value of 30 µg/m^3 has been chosen based on being sufficiently above the Bunbury average of 17.5 µg/m^3 (DWER 2016) to reduce the number of regionally/area based exceedances but still be approximately half (normal adopted action level) of the NEPM standard for 24 hours of 50 µg/m^3. The threshold level is set to PM_{10} concentration 50 µg/m^3 averaged over 24 hours based on NEPM standard.

Continual instrumental readings/monitoring of PM_{10} will also be used to provide an alert to management if a set trigger level (Trigger Level 2) for dust is exceeded over a short 15 minute interval period. There are no guidelines or reporting requirements for short term peak triggers, only for 24 hour and annual averages as shown in Table 1. Trigger 2 is therefore intended as an instantaneous (phone SMS alert) site-based management tool to maintain levels below the final 24 hour time averaged trigger and threshold levels (Trigger 1, Threshold 1). The short-term trigger will be based on the site operational hours versus typical background results (outside of operational hours/days). It is proposed that PM_{10} concentrations over 15 min averaging intervals (continual rolling average readings calculated by the instrument) over at least 2 months will provide sufficient data to characterise ambient air quality at the site, and therefore set the short-term peak trigger (Trigger 2). Peak concentrations for Trigger 2 can be set such that if exceeded for more than (nominally) 50% of the operational hours, would potentially result in Trigger 1 and Threshold 1 exceedances for the 24 hour period, however this is also wind direction and ambient dust level dependent.

As Trigger 2 is intended as an instantaneous site-based management tool to maintain levels below the 24 hour averaged trigger and threshold levels (Trigger 1, Threshold 1), if required, it may be further adjusted (lowered) over time to achieve more effective dust management and prevent

exceedances of Trigger 1/Threshold 1 levels caused by the operation. This Dust Management Plan is therefore intended to be updated initially following 2 months of data capture to set the Trigger 2 level in consultation with the Shire of Harvey and if necessary updated following further changes to Trigger Level 2.

A summary of performance criteria, trigger level, monitoring and corrective actions is provided in Table 3.

Table 3: Summary of PM_{10} Performance Criteria, Trigger, Threshold Levels and Corrective Actions

Performance Criteria	Trigger/Threshold Level	Corrective Actions
50 µg/m³ averaged over 24 hours as per NEPM	**Trigger 1 (24 Hour):** PM_{10} concentration exceeding30 µg/m³ when averaged over 24 hours.	• Personnel will review operations undertaken on the day of the exceedance to determine what site activities may have contributed to the exceedance. Potential offsite causes for the exceedance will also be considered. • Personnel will consider how similar exceedances can be avoided in the future and whether additional dust control measures or procedures are needed. • A record will be kept of the outcome of each review. • In case of repeated exceedances of the daily PM_{10} concentration standard of 50 µg/m³ that are not caused by external sources, dust generating operations will need to cease until either more effective controls are established, or the environmental conditions improve (e.g., reduction in wind speed).
	Threshold 1 (24 Hour): PM_{10} concentration exceeding50 µg/m³ when averaged over 24 hours.	
	Trigger 2 (Short Term Peaks): To be determined following at least two months of monitoring, based on rolling PM_{10} concentration over 15 min.	• Site personnel will determine the source of excessive dust and the dust generating activity will cease. • Site personnel will determine what control measures can be implemented to reduce the generation of dust (e.g., watering). • The activity will recommence with additional controls in place and site personnel will observe to confirm the controls are effective in minimising dust. • If the trigger level is exceeded again, the process above will be repeated. Where necessary, the EIL Licensee will be consulted. • In case of repeated trigger level exceedances, potential alternative causes for the exceedances will be considered e.g. smoke from bush fires. If obvious alternative causes for the exceedances are identified, the operations may continue assuming no visible dust is observed leaving the site.

5.3.3 Reporting Mechanisms

The EIL Licensee is not currently required to report PM_{10} trigger or threshold exceedances to regulatory bodies. Where dust complaints are received these are required to be reported to the Shire of Harvey as per the reporting process described in Section 5.4.

Regardless of reporting to regulatory bodies, the EIL Licensee is responsible for maintaining sufficient records to show compliance with this management plan, and these records would be made available to relevant authorities upon request including:

- Dust incidents and corrective actions undertaken.
- Dust complaints, associated investigations undertaken, any corrective actions put in place and overall outcomes.
- Instrumental monitoring undertaken including methods (equipment, timing, location, deviation from standards etc.), results and any follow up action. Raw monitoring data will also be recorded and archived.
- Any exceedances of PM_{10} concentration triggers (Trigger 1) or thresholds (Threshold 1) and corrective actions undertaken.
- Communication with adjacent residents in regard to dust.
- Communication with local government in regard to dust.

5.4 Dust Complaints

The dust complaints process will be following:

- A sign will be erected at the entrance to the extraction site to advise the public on the appropriate contact in the event of a complaint.
- In the event of receiving a complaint, the EIL licensee will complete a Dust Complaint Form (Appendix C), investigate, and resolve complaint within four hours.
- A copy of the completed Dust Complaint Form will be forwarded to the Shire of Harvey for their records.
- If required, a review of the DMP will be undertaken to refine dust prevention, monitoring, and mitigation measures.

6. Roles and Responsibilities

Roles and responsibilities with respect to dust management are outlined in Table 4.

Table 4: Roles and Responsibilities

Role	Responsibilities
EIL Licensee	• Will have overall responsibility for the dust management of the operations. • Will provide information for site operators and truck drivers on dust management objectives, and dust management measures to be undertaken on site (prevention, monitoring, and mitigation). • Will be responsible for resolving any persistent dust management issues. • Will be responsible for administering the dust complaints process.
All personnel	• Will be familiar with potential sources of dust associated with own role and how to minimise dust generation. • Will implement the dust prevention, monitoring and mitigation measures as described in this plan and as advised by the EIL Licensee. • Will be responsible for reporting any persistent dust management issues to the EIL Licensee.

7. References

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APPENDIX A:
WIND ROSES

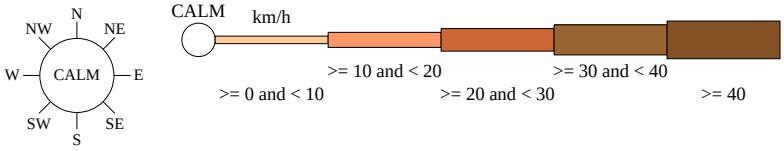
Rose of Wind direction versus Wind speed in km/h (22 Nov 1995 to 10 Aug 2024)

Custom times selected, refer to attached note for details

BUNBURY

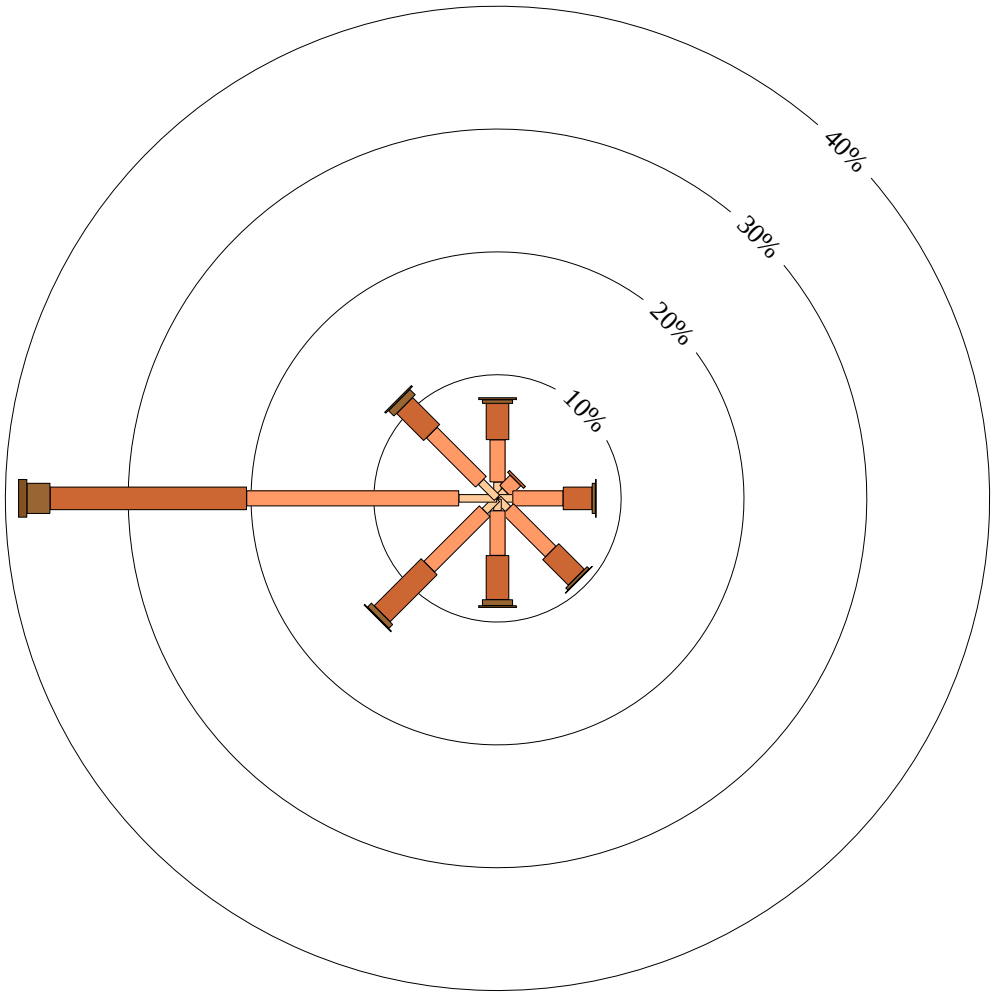
Site No: 009965 • Opened Nov 1995 • Still Open • Latitude: -33.3567° • Longitude: 115.6447° • Elevation 5.m

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



3 pm
10356 Total Observations

Calm *



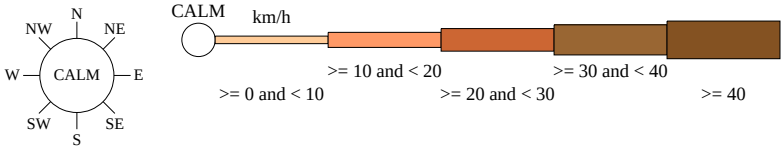
Rose of Wind direction versus Wind speed in km/h (22 Nov 1995 to 10 Aug 2024)

Custom times selected, refer to attached note for details

BUNBURY

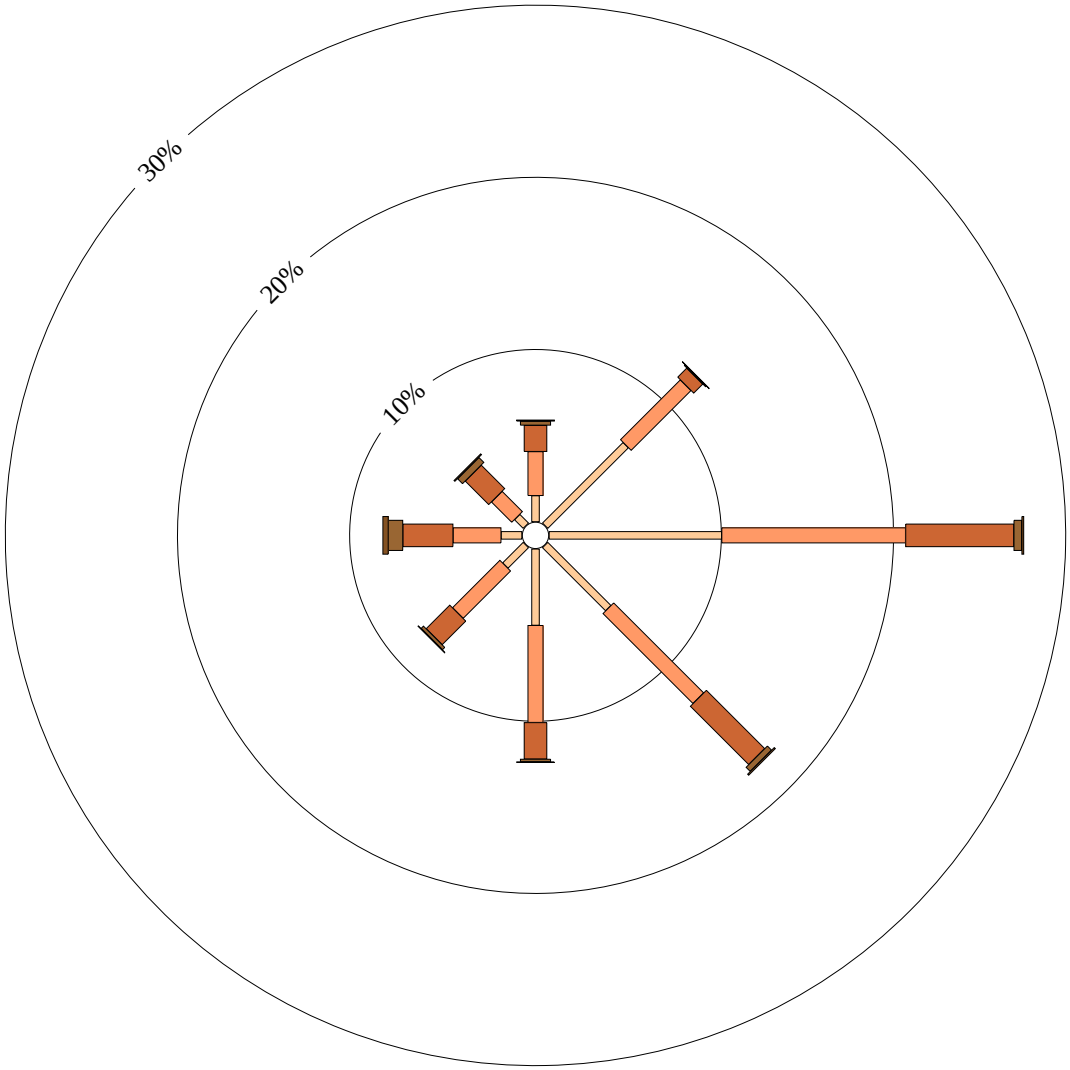
Site No: 009965 • Opened Nov 1995 • Still Open • Latitude: -33.3567° • Longitude: 115.6447° • Elevation 5.m

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



9 am
10378 Total Observations

Calm 4%



APPENDIX B

APPENDIX B:
RISK ASSESSMENT

Site Risk Assessment/Classification for Activities Generating Uncontaminated Dust

Table A1: Part A – Nature of Site

Item	Score Options				Allocated Score
1. Nuisance potential of soil, when disturbed.	Very low.....**1**	Low.....**2**	Medium.....**4**	High.....**6**	4
2. Topography and protection provided by undisturbed vegetation.	Sheltered and screened.....**1**	Medium screening...**6**	Little screening.....**12**	Exposed and wind prone.....**18**	12
3. Area of site disturbed by the works.	Less than 1 ha.....**1**	Between 1-5 ha.....**3**	Between 5-10 ha.....**6**	More than 10 ha.....**9**	3
4. Type of work being done.	Roads or shallow trenches.....**1**	Roads, drains, and medium depth sewers...**3**	Roads, drains, sewers and partial earthworks.....**6**	Bulk earthworks and deep trenches.....**9**	9
				TOTAL score for Part A	**28**

Table A2: Part B – Proximity of site to other land uses

Item	Score Options				Allocated Score
1. Distance of other land uses from site.	More than 1 km.....**1**	Between 1 km and 500 m.....**6**	Between 100 m and 500 m.....**12**	Less than 100 m.....**18**	18
2. Effect of prevailing wind direction (at time of construction) on other land uses.	Not affected.....**1**	Isolated land uses affected by one wind direction.....**6**	Dense land uses affected by one wind direction.....**9**	Dense/sensitive land uses highly affected by prevailing winds.....**12**	6
				TOTAL score for Part B	**24**
				Site Classification Score (Ax B)	**672**

APPENDIX C:

DUST COMPLAINT FORM

DUST COMPLAINT FORM

Property: 186 Runnymede Road, Binningup

Complaint date: _____

Complaint time: _____

Received by: _____

Complainant's Details

Name: _____

Telephone: _____

Affected address: _____

_____

Complaint Details (attach report if insufficient space)

_____

_____

_____

_____

Action Taken (attach report if insufficient space)

_____

_____

_____

_____

Actions recorded by: _____

Date: _____

Copy to Shire of Harvey: ☐ (tick)

8.6 Appendix F – Weed and Dieback Management Plan

186 (LOT 111) RUNNYMEDE ROAD, BINNINGUP

WEED AND DIEBACK MANAGEMENT PLAN

October 2025

Prepared for:

McDougall Quarries Pty Ltd

Prepared by:

Martinick Bosch Sell Pty Ltd
ABN: 60 102 614 478
4 Cook Street
West Perth WA 6005
Phone: (08) 9226 3166
Email: info@mbsenvironmental.com.au
Web: www.mbsenvironmental.com.au

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186 (LOT 111) RUNNYMEDE ROAD, BINNINGUP

WEED AND DIEBACK MANAGEMENT PLAN

Distribution List:

Company	Contact Name	Date
McDougall Quarries Pty Ltd	Kyle Jackson	13/10/2025
Element	Daniel Lewis	13/10/2025

Document Control for Job Number: MDQ186RUN

Document Status	Prepared By	Authorised By	Date
Draft Report	Elodie Payet, Sharon Rose	Kirsi Kauhanen	6/10/2025
Final Report	Sharon Rose	Kirsi Kauhanen	13/10/2025

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CHARTS

1. Introduction

1.1 Purpose

McDougall Quarries Pty Ltd (McDougall Quarries) is proposing to extract sand from 186 (Lot 111 on Diagram 85871) Runnymede Road, Binningup (the site; Lot 111), Western Australia (Figure 1). This Weed and Dieback Management Plan (WDMP) has been prepared for the proposed operations as supporting documentation to accompany a Development Application (DA) and Extractive Industry Licence (EIL) application to Shire of Harvey.

This WDMP is prepared in accordance with *the Biosecurity and Agriculture Management Act 2007* (BAM Act), the 2014 *Department of Agriculture and Food WA guidelines for weed control procedures for extractive industries licence*, and aligns with the Australian Weeds Strategy 2017-2027 developed by the Invasive Plants and Animals Committee (IPAC, 2017), and the Dieback Working Group's *Best Practice Guidelines for Management of Phytophthora Dieback in Raw Material Industries* (the Guidelines) (DWG, 2021). Consideration has also been given to the *Phytophthora Dieback Management Manual* (the Manual) produced by the Department of Biodiversity, Conservation and Attractions (DBCA, 2020) and the *Dieback Hygiene Guidelines* by South Coast Natural Resource Management (South Coast NRM, 2013).

1.2 Scope and Objective

This WDMP has been developed to provide details of the existing environment and guidance around best management practices for weeds and *Phytophthora cinnamomi* (dieback) with the objective to minimise the risk of introduction and spread of weeds and dieback on the property.

The scope of this WDMP includes following:

- Describe the existing environment.
- Provide guidance to minimise spread of weeds and dieback within, to, and from Lot 111.

Scale: 1: 57,368
Original Size: A4
Grid: GDA2020 / MGA zone 50
(EPSG:7850)
0 1 2 km

Legend

- Property Location
- Cadastre (LGATE-218)
- State Road
- Local Road

Figure 1

Project Location

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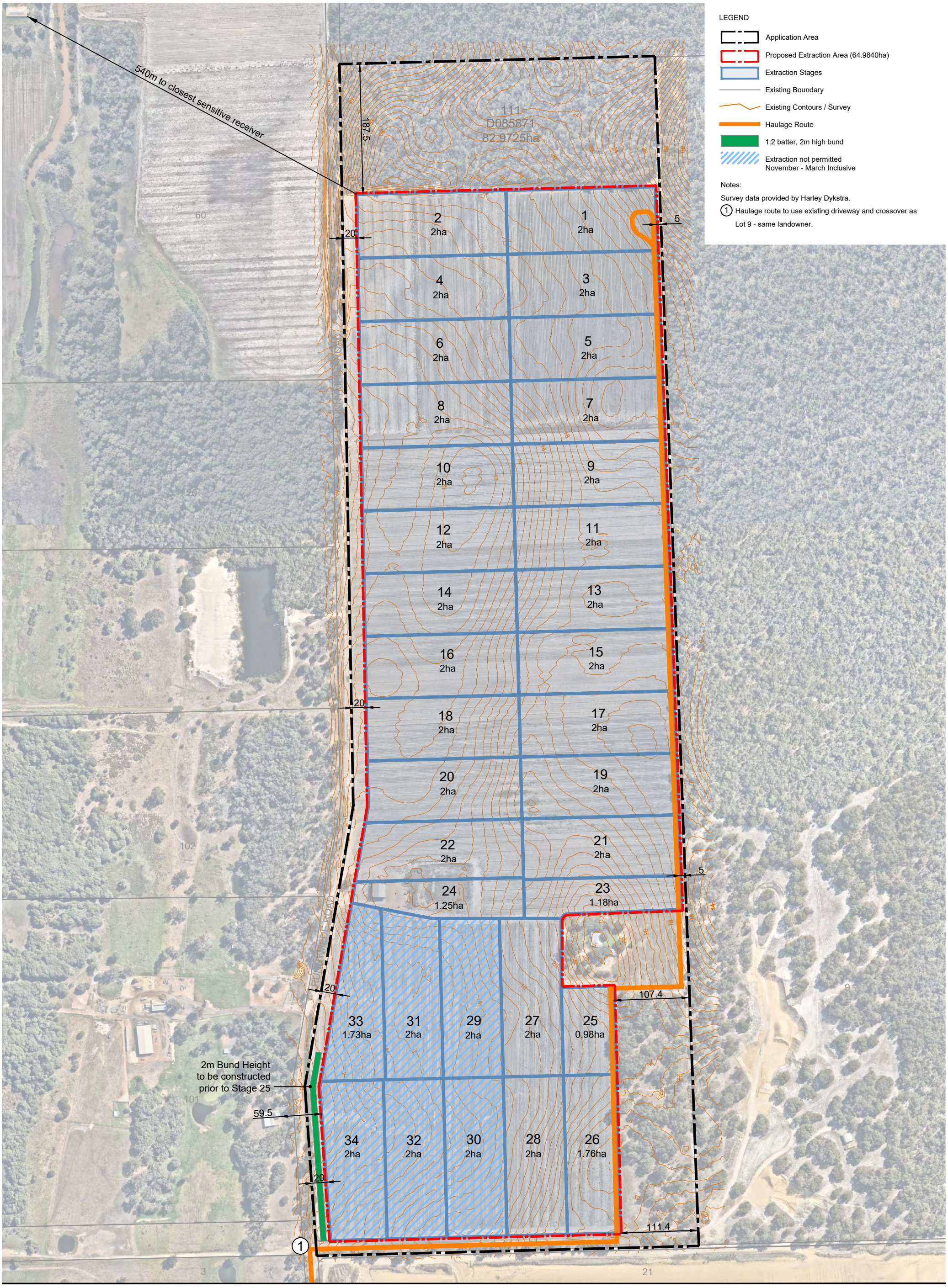

Excavation & Earthworks Plan

Pt Lot 9 & Lot 111 (186) Runnymede Road, Binningup

0 100m

Date: 8 Oct 2025 Scale: 1:5000 @ A3 1:2500 @ A1 File: **25-190 CP01A** Staff: DL CP JJ Checked: DL

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Level 1, 500 Hay Street, Subiaco, Western Australia 6008.
T. +61 8 9289 8300 | **E.** hello@elementwa.com.au **elementwa.com.au**

2. Existing Environmental

2.1 Climate

The climate of the project area is Mediterranean, with cool wet winters and hot dry summers. Long-term average climate data for the closest meteorological station (Bunbury, 23 km south of project) is shown in Chart 1. The average annual rainfall is 729.5 mm, mean minimum temperatures between 7.4°C and 16°C and mean maximum temperatures between 17.4°C and 30.1°C (BoM, 2025).

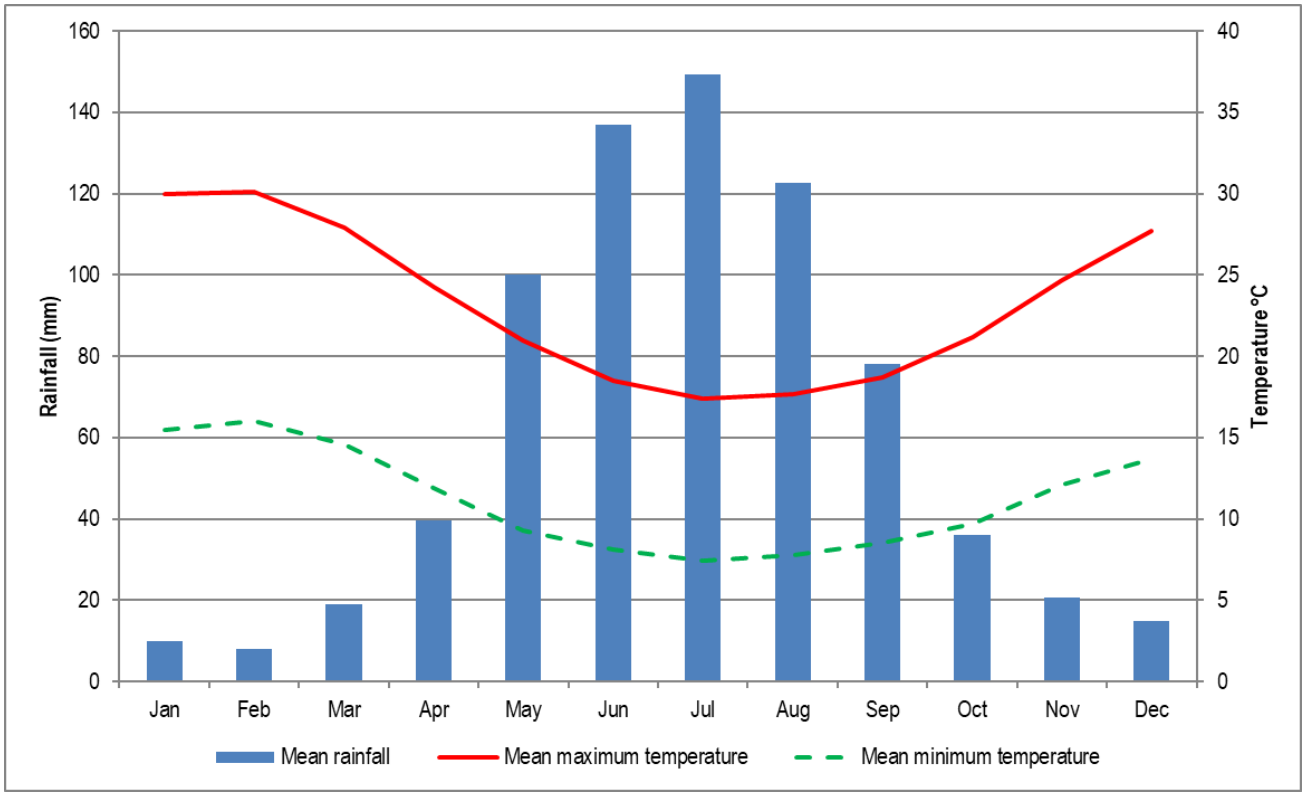

Chart 1: Long-term Rainfall and Temperature Data (1995-2025) for Bunbury Meteorological Station 9965 (BoM, 2025)

2.2 Landform and Soils

Lot 111 is located on a gently sloping landform between low lying wetlands to the west and a sand dune ridge to the east. The topography of the proposed extraction area slopes to the west from approximately 20 to 24 mAHD in the east to 12 mAHD to the west.

Lot 111 Runnymede Road is wholly located in the Spearwood System (211Sp) (DPIRD, 2022), which has been described as consisting of sand dunes and plains with yellow and pale deep sands and yellow and brown shallow sands. The majority of the extraction area occurs on Spearwood S2c Phase, consisting of the lower slopes (1-5%) of dune ridge with bleached or pale sands with a yellow-brown or pale brown subsoil. The northern part of the extraction area also contains Spearwood S1c, consisting of dune ridges with deep bleached grey sands with yellow-brown subsoils, and slopes up to 15% (DPIRD, 2025; DPIRD, 2021).

2.3 Hydrology

No wetlands or watercourses intersect the property or the proposed extraction area. The property is located on a sand dune, approximately 80 m upgradient of a large, seasonally waterlogged, Multiple Use dampland (DBCA, 2025). The wetland has been mostly cleared, is used for grazing and contains several dams.

2.4 Vegetation

The proposed extraction area contains no native vegetation. The ground is either bare or at times covered in a horticultural crop.

2.5 Land Use

The project is located on 186 (Lot 111 on Diagram 85871) Runnymede Road in Binningup, approximately 23 km north of Bunbury in the Shire of Harvey (Figure 1). The property is zoned as 'Rural' and 'Special Control Area - Basic Raw Materials' (SCA2) in the Shire of Harvey Local Planning Scheme No. 2 (Intramaps, 2025). The proposed extraction area (64.98 ha) covers only part of Lot 111, which has a total area of 82.97 ha. The majority of property, including the proposed extraction area, was cleared for agriculture several decades ago and is currently being used for horticulture. Two areas of native vegetation remain on the property; both are located outside the proposed extraction area.

2.6 Current Weed Status

No vegetation surveys have been carried out at the property. The proposed extraction area has been cleared and is primarily used for horticulture. As part of the horticultural operations weeds are regularly controlled to minimise competition with crops. However, considering the landuse, the introduction and spread of weeds is likely and the soil is expected to have a significant weed seed stock, comprising locally common environmental weed species, and potentially also Declared Pest Plants or Weeds of National Significance.

The surrounding properties support a range of rural land uses, including paddocks for grazing and hay production, sand extraction, residential dwellings and associated gardens, and bushland. Many of these landuses either involve weed species or they pose a risk for introducing and spreading weeds in the local area. Additionally, weeds can also be spread between properties by wind and by movement of local fauna (e.g. kangaroos and birds). Overall, there is a high risk of ongoing weed introduction and spread in the local area, including Lot 111.

2.7 Current Dieback Status

No Phytophthora dieback survey has been undertaken on the property. The areas currently in use for horticulture, including all of the proposed extraction area, are uninterpretable for dieback due to the high level of historical disturbance and the lack of indicative flora species. This means that the occurrence of dieback cannot be ruled out within the extraction area. Further, the occurrence of Phytophthora dieback has been recorded in the Binningup area within the vicinity of Lot 111 on the *Dieback Public Map* (South Coast NRM, 2022)

Dieback is spread through infected soil. The infected soil can be spread by fauna movement, surface water runoff, soil movement on sloping surfaces, and spores; however, the biggest spreader of dieback is human activity and movement. Infected soil can contaminate vehicles, footwear, and equipment that then moves to an uninfected area, introducing the pathogen. Additionally, the transport of infected soil as import or export material from a site can contribute to dieback spread. The rural activities described earlier as occurring on the property and on the surrounding properties have a significant risk of introducing and spreading dieback.

3. Weed Management

McDougall Quarries recognises the importance of effective management of weeds during extractive operations and subsequent rehabilitation to pasture. Weeds can be spread or introduced to an area via a number of circumstances, such as wind borne seed, vehicle movements, rain runoff, fauna activity, movement of soil, dust, and introduction of soil from external sources. The following are actions that will be implemented at Lot 111 for the purposes of weed management.

3.1 Weed Prevention

The site operator will implement the following measures to reduce weed spread and prevent, as far as practicable, the introduction of new weed species at Lot 111 and the export of weeds from the property:

- Vehicles, plant, and equipment entering or exiting Lot 111 will be clean and free of weeds.
- Baseline weed survey of the extraction area and immediate surrounds will be undertaken by an environmental specialist or a weed management contractor prior to operations commencing.
  - Should infestations of Declared Pest Plants (under *Biosecurity and Agriculture Management Act 2007*), Weeds of National Significance or other potentially significant weeds be detected, these will be treated prior to topsoil being removed ahead of extraction.
- Topsoil will be removed from the extraction area and stockpiled (gradually in stages).
  - Topsoil from areas infested by Declared Pest Plants or Weeds of National Significance will be stockpiled separately for potential further weed control to minimise the risk of weed spread.
- Following removal of topsoil, the movement of vehicles and machinery will be limited to the areas free of topsoil to limit the spread of weeds.
- Exported quarry products will be free of weeds.
- Materials imported to site will be free of weeds.
- Weed control will be conducted in operational areas (e.g. trafficable areas and sand stockpiles) to ensure these areas remain weed free.
- Weed control of topsoil stockpiles will be undertaken to minimise seed set.
- During rehabilitation activities, weed control will be undertaken as necessary.
- A record of location, date, approximate size of treatment area, and control methods will be maintained.
- Weed presence and control will be monitored (Section 3.2).

The requirements for rehabilitation and associated weed control will be detailed in a separate rehabilitation plan. At this stage, it is anticipated that pasture will be returned to the extraction area. It is expected that rehabilitation weed control will, as a minimum, include control prior to seeding of pasture once topsoil has been re-spread. This is typically undertaken in late autumn depending on the commencement of seasonal rains. This will enable any weeds germinating from the soil seed bank to be targeted. Ongoing weed control following seeding will also occur as need be to allow for the pasture to become established.

3.2 Weed Control Guidance

An experienced and appropriately licenced weed control contractor will be engaged to conduct weed control on Lot 111. The weed control contractor will undertake control using an appropriate method (chemical or manual as required) for the weed type. It is expected that weed control will be undertaken at least twice per year, but the timing will be tailored to suit the weed species present to achieve the most effective control. A record of location, date, approximate size of treatment area, and control methods will be maintained by the contractor and reported to the EIL licensee.

3.3 Monitoring

3.3.1 Weed Status Monitoring

A baseline weed survey will be undertaken by an environmental specialist or a weed management contractor prior to the commencement of the extraction operations. Subsequently, the weed status of the property will be monitored biannually during operations to determine whether introduction or spread of weeds is occurring and to identify required weed control. Monitoring should occur four to six weeks after the first significant autumn/early winter rains and in mid to late spring; however, passive monitoring should occur as a part of general operations and weed control organised if the need is identified.

3.3.2 Weed Control Monitoring

Areas requiring weed control will be checked within two weeks before the commencement of weed control (either as part of biannual monitoring or separately) and then six to eight weeks after weed control has been conducted to gauge effectiveness and determine if follow up control is required.

4. Dieback Management

McDougall Quarries recognises the damaging impact Phytophthora dieback has in the southwest and the importance of taking precautions to minimise potential dieback related impacts associated with the sand extraction activities, both within Lot 111 and more broadly.

The site operator will implement the following measures to minimise the risk of introducing or spreading Phytophthora dieback as a result of the operations:

- Earth-moving machinery will be cleaned of soil and vegetation prior to entering and leaving site.
- Topsoil will be removed and stockpiled from the extraction area (gradually in stages), and the subsequent movement of vehicles and machinery will be limited to the areas free of topsoil.
- Topsoil will be stockpiled and respread as close to its source area as possible.
- Soil will only be moved in dry conditions.
- Machinery and other vehicles will remain within the extraction area to minimise the risk of spreading disease.
- Drainage will be contained within the extraction area; there will be no surface water runoff from the extraction area.
- Personnel will be informed that the site may be infested with dieback and that dieback can spread on vehicles, machinery, equipment, footwear, and tools, and instructed on dieback prevention measures e.g. clean down requirements.
- Potential customers will be advised that the material exported from site cannot be considered dieback free.
- Entry to and exit from the site will be limited to designated locations.
- Trucks exporting sand from the site will be required to have their load properly covered.
- Ensure that, as far as can be known, any soil, mulch, fill, or other material brought on site is sourced responsibly and free of dieback.
- Unauthorised access to the extraction site will be managed through fencing and lockable gates.
- Signage regarding unauthorised entry and 'clean on entry' requirements will be placed at the gates.
- Trafficable areas and material stockpiles areas will be maintained well drained.

5. Roles and Responsibilities

The roles and responsibilities for dieback management and prevention are outlined in Table 1.

Table 1: Roles and Responsibilities

EIL Licensee	• Responsible for overall weed and dieback management within operations. • Will provide information for site personnel and truck drivers on weed and dieback management objectives and measures to be undertaken on site (prevention, monitoring, and mitigation). • Responsible for scheduling monitoring of weeds. • Responsible for engagement and supervision of contractors. • Responsible for site access security and appropriate signage. • Responsible for monitoring and maintaining measures outlined in Sections 3 and 4. • Responsible for record keeping.
All personnel	• Will be familiar with weed and dieback management objectives. • Will implement measures to prevent weeds as outlined in Section 3.1. • Will implement any measures required to prevent dieback spread as outlined in Section 4. • Responsible for reporting any weed or dieback management issues to EIL Licensee.

6. References

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8.7 Appendix G – Rehabilitation Management Plan

186 (LOT 111) RUNNYMEDE ROAD, BINNINGUP

REHABILITATION MANAGEMENT AND MONITORING PLAN

October 2025

Prepared for:

McDougall Quarries Pty Ltd

Prepared by:

Martinick Bosch Sell Pty Ltd
ABN: 60 102 614 478
4 Cook Street
West Perth WA 6005
Phone: (08) 9226 3166
Email: info@mbsenvironmental.com.au
Web: www.mbsenvironmental.com.au

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186 (LOT 111) RUNNYMEDE ROAD, BINNINGUP

REHABILITATION MANAGEMENT AND MONITORING PLAN

Distribution List:

Company	Contact Name	Date
McDougall Quarries Pty Ltd	Kyle Jackson	13/10/2025
Element	Daniel Lewis	13/10/2025

Document Control for Job Number: MDQ186RUN

Document Status	Prepared By	Authorised By	Date
Draft Report	Elodie Payet, Sharon Rose	Kirsi Kauhanen	6/10/2025
Final Report	Sharon Rose	Kirsi Kauhanen	13/10/2025

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TABLES

FIGURES

1. Introduction

1.1 Plan Purpose

McDougall Quarries Pty Ltd (McDougall Quarries, the applicant) are applying for a Developmental Approval (DA) and Extractive Industry Licence (EIL) for the extraction of sand on 186 (Lot 111 on Diagram 85871) Runnymede Road in Binningup (the property; Lot 111), within the Shire of Harvey (Figure 1). The property totals 82.97 ha in size and is zoned as Rural with a Special Control Area (SCA) applying: SCA2 Basic Raw Materials in the Shire of Harvey *Local Planning Scheme No. 2* (Shire of Harvey 2024).

The sand extraction will cover 64.98 ha within an already cleared part of the property (Figure 2). No Native Vegetation Clearing Permit (NVCP) is required. Following sand extraction, the extraction area will be rehabilitated to pasture. This Rehabilitation Management and Monitoring Plan (the plan) has been prepared for local government approval purposes.

1.2 Objectives of Rehabilitation

The objectives of the rehabilitation are as follows:

- Establish a stable and safe landform.
- Remove any temporary infrastructure, rubbish, and debris.
- Establish pasture to cater for future rural use.

Scale: 1: 57,368
Original Size: A4
Grid: GDA2020 / MGA zone 50
(EPSG:7850)
0 1 2 km

Legend

- Property Location
- Cadastre (LGATE-218)
- State Road
- Local Road

Figure 1

Project Location

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Site Plan

Pt Lot 9 & Lot 111 (186) Runnymede Road, Binningup

0 100m

Date: 8 Oct 2025 Scale: 1:5000 @ A3 1:2500 @ A1 File: **25-190 PL01A** Staff: DL CP JJ Checked: DL

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T. +61 8 9289 8300 | **E.** hello@elementwa.com.au **elementwa.com.au**

2. Background Information

2.1 Site History and Landuse

The majority of property, including the proposed 64.98 ha extraction area, has been historically cleared, with aerial imagery for the area showing it as established agriculture in 1996 (Landgate, 2025). The property is currently being used for horticulture. Two areas of native vegetation remain on the property; both of which are located outside the proposed extraction area.

2.2 Bioregional Context

The proposal area is located within the Swan Coastal Plain Bioregion classified by the Interim Biogeographic Regionalisation for Australia and described as a low lying coastal plain mainly covered by Banksia or Tuart woodlands over sandy soils with paperbark prevalent in swampy areas (Thackway and Cresswell, 1995).

The Swan Coastal Plain Bioregion is divided into two subregions; the Dandaragan Plateau (SWA01) and Perth (SWA02). The proposal area is located within the Perth subregion (SWA02). This subregion is comprised of colluvial and aeolian sands, alluvial river flats, and coastal limestone. The primary land use associated with this subregion includes dry land agriculture, conservation, and crown reserve, as well as urban and rural residence (Mitchell, Williams and Desmond, 2002).

2.3 Landforms and Soil Systems

The property is located on a gently sloping landform between low lying wetlands to the west and a sand dune ridge to the east. The topography of the proposed extraction area slopes to the west from approximately 20 to 24 m Australian Height Datum (AHD) in the east to 12 mAHD to the west.

The property is wholly located in the Spearwood System (211Sp) (DPIRD, 2022) which has been described as consisting of sand dunes and plains with yellow and pale deep sands and yellow and brown shallow sands. The majority of the extraction area occurs on Spearwood S2c Phase, consisting of the lower slopes (1–5%) of dune ridge with bleached or pale sands with a yellow-brown or pale brown subsoil (Figure 3). The northern part of the extraction area also contains Spearwood S1c, consisting of dune ridges with deep bleached grey sands with yellow-brown subsoils, and slopes up to 15% (DPIRD, 2025; (DPIRD, 2021).

2.4 Groundwater

The proposal area lies within the South West Coastal Groundwater Area, proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act) (DWER, 2018f). The unconfined 'Perth – Superficial Swan' aquifer overlies the more confined 'Perth-Leederville' aquifer (Government of Western Australia, 2022b). A desktop review of available groundwater monitoring data (DWER's long-term monitoring bores) found the maximum groundwater table within the proposal area to be approximately 7 m to 8 m AHD, or approximately 5 m to 14 m below the natural ground surface level (JDA, 2022).

2.5 Surface Water

The proposal area lies within the eastern edge of the Harvey Diversion Catchment of the Harvey River Basin (712 km^2) of the South West Division (DWER, 2018a, 2018b, 2018c, 2018d). No surface water areas proclaimed under the RIWI Act occur within the proposal area (DWER, 2018g).

There are no permanent or ephemeral water bodies (wetlands, rivers, creeks, drainage lines) within the proposal area or property boundary (DWER, 2018e; DBCA, 2001, 2025a, 2025b). The closest wetland is a multiple use wetland (UFI 13249) mapped approximately 80 m to the west of the proposal area, with the closest conservation category wetland (UFI 1598) approximately 1.2 km to the southwest (DBCA, 2025a).

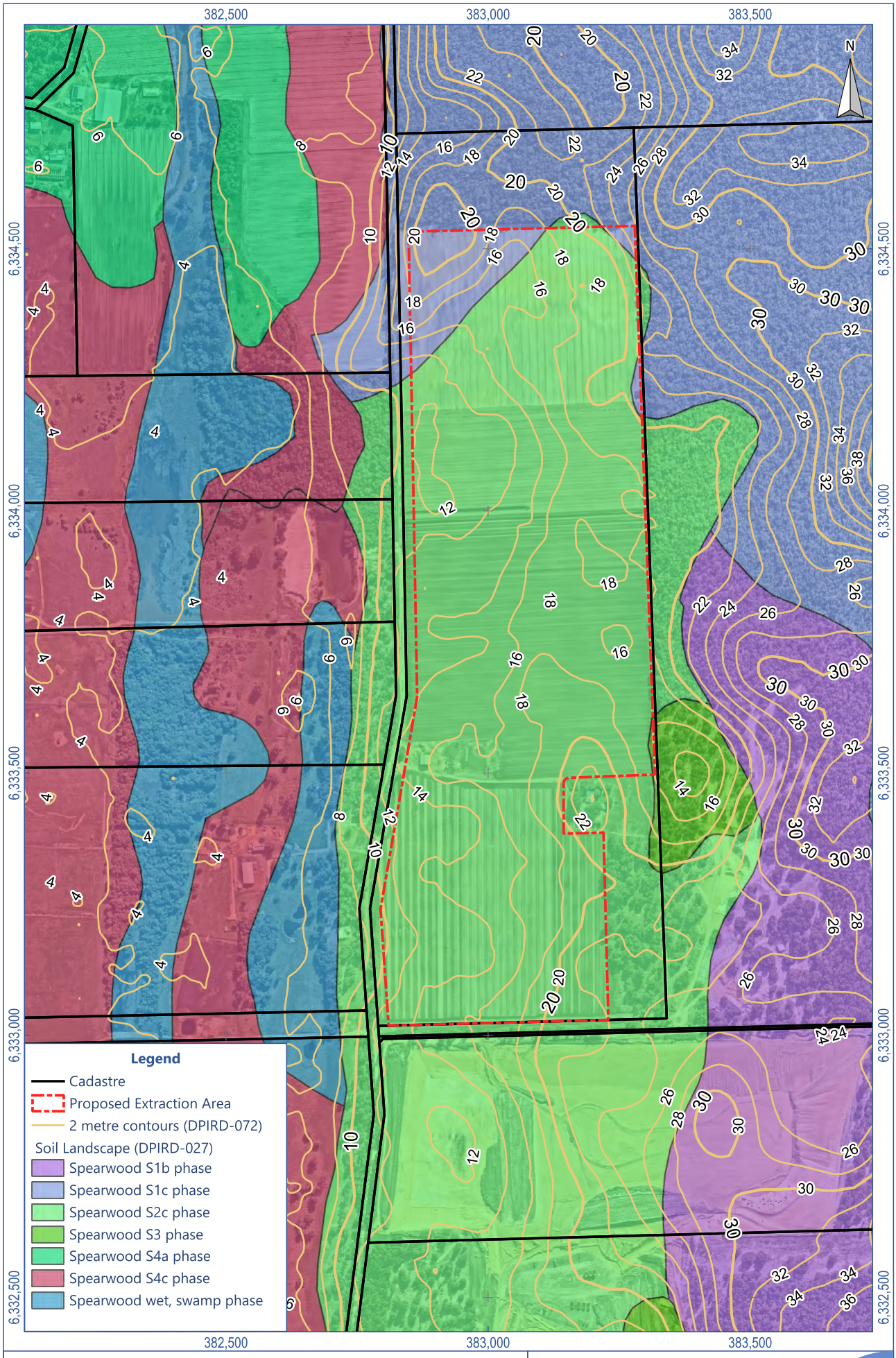
No Public Drinking Water Source Areas (PDWSAs) are located within the proposal area or property boundary, with the closest being the Preston Beach Water Reserve, 20 kms to the north (DWER, 2023).

2.6 Environmentally Sensitive Areas

There are no 'Environmentally Sensitive Areas' within or in the immediate vicinity of the proposed extraction area, with the closest being a conservation category wetland 1.2 km to the west of the extraction site (DWER, 2021).

2.7 Flora and Vegetation

The majority of the property has been cleared for agricultural activities including the extraction area. Remnant native vegetation is present along the northern boundary and southeastern corner of the property outside of the extraction area. The proposed extraction area is periodically covered in horticultural crops, with bare ground and weeds present between crop cycles.



Scale: 1: 10,000
Original Size: A4
Grid: GDA2020 / MGA zone 50
(EPSG:7850)
0 200 400 m

Figure 3

Soil and Landform

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3. Sand Extraction Operations

3.1 Site Layout

Extraction operations are proposed to be undertaken gradually across 34 stages, with each stage a maximum of 2 ha in size. The general layout of the site and the proposed stages are shown in Figure 4.

3.2 Vegetation Clearing

As the extraction area has been historically cleared, no further native vegetation clearing is proposed.

3.3 Topsoil Removal

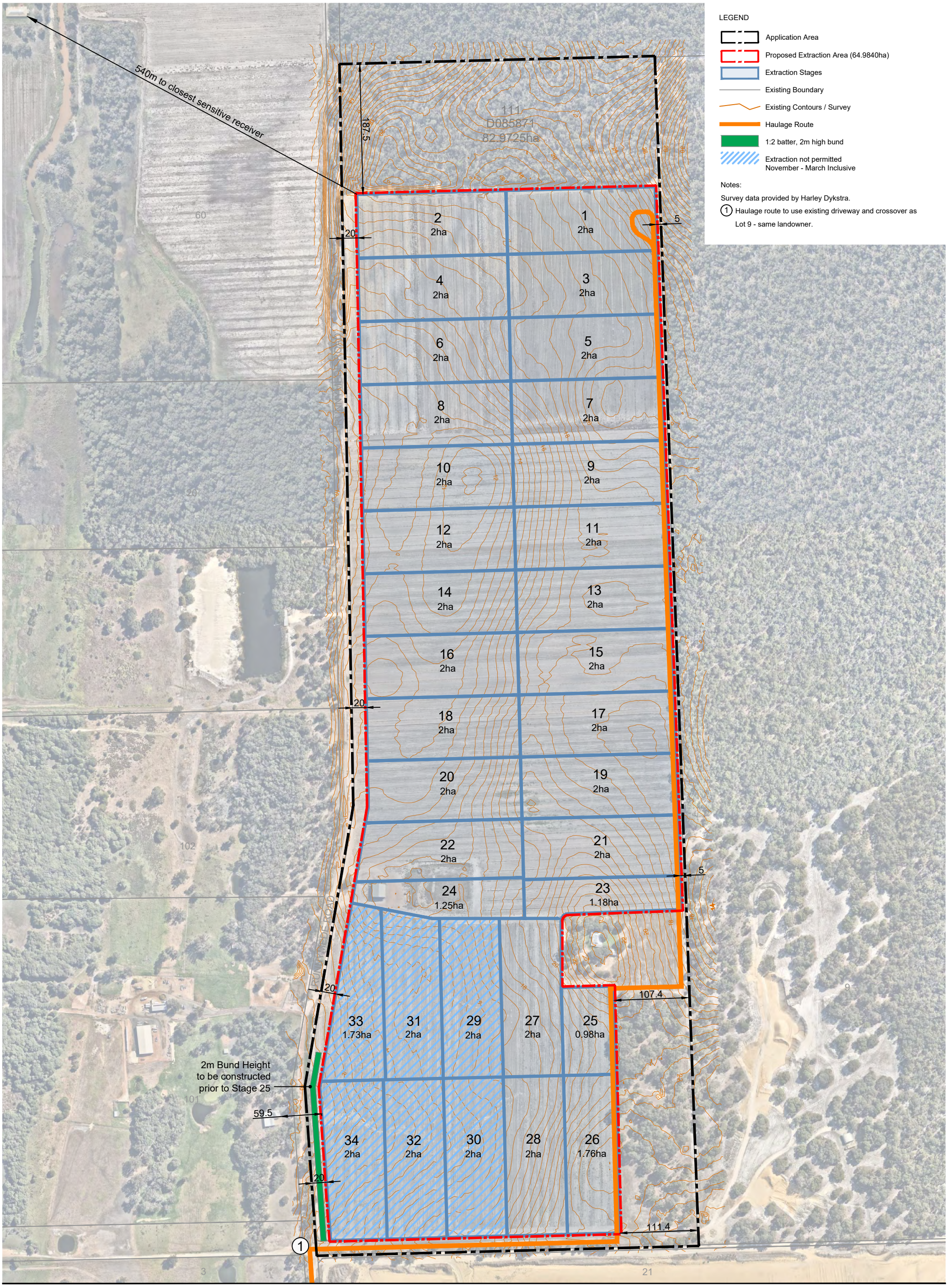
Topsoil will be removed to a depth of approximately 100 mm and either directly respread in areas ready for pastoral rehabilitation or stockpiled in maximum 2 m high windrows for later use in rehabilitation. Topsoil will be removed in stages once the stage is ready for extraction. The site is considered uniform in terms of the risk of weed seed and dieback, and therefore it is not necessary to stockpile topsoil separately from any area.

3.4 Extraction of Sand

Sand will be extracted in stages and stockpiled near the haul road for easy loading of trucks by the loader. Final batter slopes will have a maximum slope of 1:3 vertical : horizontal. Figure 5 shows an indicative final landform for the site.

3.5 Project Duration

The sand extraction is expected to be completed within 10 years, with rehabilitation activities potentially extending longer. However, this is subject to market demand for the sand.



Excavation & Earthworks Plan

Pt Lot 9 & Lot 111 (186) Runnymede Road, Binningup

0 100m

Date: 8 Oct 2025 Scale: 1:5000 @ A3 1:2500 @ A1 File: **25-190 CP01A** Staff: DL CP JJ Checked: DL

element. | PART OF SLR

Level 1, 500 Hay Street, Subiaco, Western Australia 6008.
T. +61 8 9289 8300 | **E.** hello@elementwa.com.au **elementwa.com.au**

LEGEND

- Application Area
- Proposed Extraction Area (64.9840ha)
- Existing Boundary
- Existing Contours / Survey
- Post Extraction Contours
- Toe Line
- Area rehabilitated to pasture

Note: Survey data provided by Harley Dykstra.

Post Extraction Plan

Pt Lot 9 & Lot 111 (186) Runnymede Road, Binningup

Date: 8 Oct 2025 Scale: 1:5000 @ A3 1:2500 @ A1 File: **25-190 CP01B** Staff: DL CP JJ Checked: DL

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element. | PART OF SLR

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T. +61 8 9289 8300 | E. hello@elementwa.com.au elementwa.com.au

4. Rehabilitation Plan

4.1 Rehabilitation Area

The proposed extraction area will be rehabilitated to pasture, totalling 64.98 ha (Figure 5). Rehabilitation will follow extraction in stages no larger than 2 ha each. The post extraction landform will be largely flat and tie into the surrounding landform along the edges of the extraction area, with maximum final batter slopes of 1:3 (Figure 5).

Rehabilitation to pasture is in accordance with the pre-existing land use and the current Rural zoning of the property. The property is already fenced to prevent livestock access from surrounding properties and this fencing will be maintained.

4.2 Soil Management and Earthworks

Key measures relating to soil management and earthworks include following:

- Removal of topsoil (approximately 100 mm thick) and remaining litter will proceed in stages ahead of extraction. When possible, stripped topsoil will be directly transferred into rehabilitation areas and spread across finalised land surfaces to avoid stockpiling, thus maximising microbial benefits. When necessary, topsoil will be stockpiled for later use.
- Sand extraction will proceed in stages. As each stage of extraction phase is completed, the landform will be finalised in accordance with the approved development plan (maximum batter slopes of 1:3). The final contours shall be achieved and confirmed by way of digital survey.
- Prior to topsoil return, the pit floor will be deep-ripped along contour to remove any compaction that may have occurred during the sand extraction operations. Other areas of potential compaction will also be ripped. The removal of compaction is necessary to maximise plant root and water penetration into the soil during rehabilitation to pasture. Due to the sandy nature of the soils, the pit batter slopes are not expected to require deep ripping.
- Where appropriate, the stockpiled topsoil will be re-spread across the extraction area to 50 to 100 mm deep.
- Following the return of topsoil, all areas will be shallow ripped along contour to the depth of 300 to 500 mm. This will create rip lines that will assist in stormwater retention and infiltration. The reason ripping is undertaken after spreading of topsoil is to avoid compacting and otherwise disturbing the rip lines while moving topsoil. Scarification may be undertaken immediately prior to seeding, particularly along the batter slopes.

4.3 Pasture Establishment

Once all the preparation works have been undertaken, pasture will be established as follows:

- A pasture species mix will be direct seeded into the topsoil by appropriate machinery. This will include a mix of annual grasses, clovers, and other species suitable to Spearwood sands. Seeding will only take place once sufficient rains have fallen to allow for successful germination.
- Pasture seed will be sown at a rate of at least 30 kg of seed/ha.

4.4 Erosion Control

The final landform is largely flat and this will reduce the risk of erosion. Batters will be finalised to 1:3 slope and these areas have a higher risk of erosion than the rest of the extraction area. A soil binding agent will be considered if required. The establishment of pasture will then stabilise the soils for the long term. A water truck will be used as necessary to control wind-generated dust and erosion across the site during the operations. Refer to the Dust Management Plan for further details (MBS, 2025a).

4.5 Weed Management

Weed management will aim to control weeds that could outcompete the desired pasture species. Declared pest plants, weeds of national significance, or priority weeds of concern for the region will be targeted.

Weed control will be conducted during the extraction works as detailed in the Weed and Dieback Management Plan (MBS, 2025b). The aim of that plan is to prevent introduction of new weeds and spread of weeds during the extraction works. It is noted that, considering the past and current land use on the property and the degree of disturbance, the property is already weed infested and the eradication of weeds is not feasible. Additionally, the pasture species that will be sown are considered introduced species in themselves.

4.6 Dieback Management

While no obvious signs of dieback are present in the proposed extraction area, the area has been largely cleared and extensively disturbed in the past and, therefore, the dieback status cannot be confirmed. Dieback management of the extractive operations is detailed in a separate Weed and Dieback Management Plan (MBS, 2025b) and these measures also apply to the rehabilitation works. The main control measure will be the requirement for all vehicles to arrive and leave the site clean (tyres and undercarriage free of soil and plant matter) both during sand extraction and pasture establishment.

4.7 Access and Fire Management

Existing main access from Runnymede Road into the property will be maintained to service post-extraction land uses on the property. Firebreaks will be maintained along the property boundaries and will comply with Shire of Harvey specifications. Internal tracks on the property will also be maintained to provide long-term access for fire-fighting purposes (and other landuses).

4.8 Hydrocarbons and Other Potential Contaminants

There shall be no storage of hydrocarbons or other potential contaminants (e.g. herbicides) on-site during extraction or rehabilitation. On-site refuelling of equipment will be from a mobile service vehicle carrying appropriate spill prevention and clean-up equipment. No major repairs or maintenance will take place on site.

4.9 Schedule of Works

An indicative annual schedule of works has been developed for rehabilitation, as shown in Table 1. Extraction will occur in stages no larger than 2 ha, as shown in Figure 4. The pace of extraction will be dependent on demand for sand and this will also drive the pace of rehabilitation works.

Table 1: Indicative Annual Pasture Rehabilitation Schedule

No.	Tasks	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Sand extraction.												
2	Primary rehabilitation earthworks: reinstating embankments, ripping[1]												
3	Topsoil respreading in rehabilitation areas[1]												
4	Pre-seeding weed control												
5	Seeding pasture												
6	Maintenance weed control - as required												

[1]*Subject to suitable wind conditions due to potential generate dust.*

5. Completion Criteria

Completion criteria for pasture rehabilitation is presented in Table 2. Completion criteria is expected to be achieved within two years of a particular stage undergoing pasture seeding; however, if this is not the case then rehabilitation works will continue until the completion criteria have been achieved. As the extraction and rehabilitation works are staged, the completion criteria will be achieved gradually across the proposed site.

Table 2: Completion Criteria

Aspect	Completion Criteria
Landform	Final landform is in accordance with an approved post-extraction plan.
Soil profile	Topsoil has been respread.
Pasture cover	Pasture cover is sufficient to stabilise soil (>80%).
Significant weeds	No declared pest plants or Weeds of National Significance present.
Bare ground	No bare patches of ground more than 30 m^2 in size.

6. Monitoring, Maintenance, and Mitigation Measures

Monitoring, maintenance, and mitigation measures for pasture rehabilitation (Table 3) will commence following extraction operations for each individual stage (when final landform is completed and rehabilitation commences) and will continue until completion criteria has been met and maintained for two years.

Table 3: Monitoring, Maintenance, and Mitigation Measures for Rehabilitation

Item	Monitoring Frequency	Responsible	Maintenance/Mitigation
Final Landform	Once per completion of extraction stage.	Surveyor.	Corrective works as necessary to meet final completion criteria.
Soil Profile	Once per completion of extraction stage.	Operator	Corrective works as necessary to meet final completion criteria.
Erosion	Quarterly.	Operator.	Spreading of surface soil stabiliser if required. Recontouring if required.
Pasture Establishment	Quarterly.	Operator.	Re-seed areas of poor success. Trial alternative pasture species if required. Short term watering of dry areas until established. Mitigation of poor soils as required (e.g: fertiliser).
Fence Damage	Quarterly.	Operator.	Repair or replace fence as needed.
Weeds	Biannually: first two years (autumn and spring).	Environmental Specialist / Weed Contractor	Weed control as necessary to meet final completion criteria.
	After two years – Annually: as required until completion criteria met (spring).		
Bare Ground	Biannually: first two years (autumn and spring).	Operator	Infill seeding if necessary.
	After two years – Annually: as required until completion criteria met (spring).		

Monitoring of pasture rehabilitation will involve the following:

- Meandering across the pasture rehabilitation areas and noting the following:
  - Estimated % of pasture cover.
  - Estimated % of bare ground.
  - Declared pest plants or Weeds of National Significance.
  - Signs of grazing, disease, pests, lack of moisture, erosion or other landform instability, or other factors potentially impacting on pasture revegetation.
- Representative photographs will be taken.

Where required, maintenance and mitigation measures will include, but are not limited to, the following:

- Supplementary seeding.
- Weed and/or pest control.
- Erosion control.
- Grazing control.
- Watering.

7. Record Keeping and Reporting

7.1 Record Keeping

McDougall Quarries is responsible for collecting and maintaining records on the implementation of this plan on Lot 111. This will include but is not limited to the following data:

- Date and location of landform finalisation.
- Date and location of preparatory earthworks (e.g. spreading of topsoil and ripping).
- Date and location of pasture rehabilitation actions (e.g. seeding).
- Date and location of weed control actions.
- Date and location of monitoring, maintenance, and mitigation actions.
- Monitoring reports issued by consultants (e.g. environmental specialist).
- Invoices relating to the implementation of this plan.

7.2 Annual Reporting

An annual report will be prepared providing details of following:

- Pasture rehabilitation activities carried out.
- Monitoring results, including progress towards completion criteria.
- Any contingency measures to be undertaken (e.g. infill seeding).
- Any other reporting requirements specified in the issued clearing permit.

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8.8 Appendix H – Groundwater Monitoring Plan

Jim Davies & Associates Pty Ltd
ABN 24 067 295 569
Suite 1, 27 York Street, Subiaco WA 6008
PO Box 117, Subiaco WA 6904
Ph: (08) 9388 2436
info@jdahydro.com.au
www.jdahydro.com.au

To :	McDougall Quarries Pty Ltd (c/o – Harley Dykstra)	**Date :**	8 Feb 22
Attention :	Daniel Lewis (Harley Dykstra)	**Our Ref :**	J7182a
Email :	daniel@harleydykstra.com.au	**Pages :**	23

LOT 9 RUNNYMEDE ROAD, BINNINGUP
GROUNDWATER LEVEL MAPPING

1. INTRODUCTION

Lot 9 Runnymede Road, Binningup, shown on Figure 1 and herein referenced as the Study Area, is situated 6 km north-east of the Binningup townsite and located within the Shire of Harvey. The Study Area is within Precinct Area 8 *Runnymede* and zoned *General Farming* in the Shire of Harvey District Planning Scheme No. 1 (DPLH, 1996).

An area in the south-west corner of Lot 9 Runnymede Road, Binningup, Figure 1, is proposed as a potential site for sand extraction and a future application for an Extractive Industries Licence (EIL).

JDA understands a desktop groundwater assessment of the area is required to inform a EIL permit for sand extraction. JDA was appointed by McDougall Quarries Pty Ltd to complete this desktop assessment of groundwater and to estimate maximum groundwater level (MGL) contours across the Study Area.

Presented below is a summary of JDA's desktop assessment of groundwater levels and estimated MGL for the Study Area.

2. EXISTING STUDY AREA CHARACTERISTICS

The 257 ha Study Area generally comprises trees and shrub land cover with the smaller 17.8 ha potential EIL area in the south-west corner mostly cleared and comprising of scattered trees, a homestead and neighbouring sheds.

The topography of the Study Area is generally characterised by a sand ridge north-south through the Study Area represented by small mounds ranging from 36 to 48 mAHD along the centreline of the ridge with gradients generally eastward and westward from the ridge to elevations around 16 to 20 mAHD, Figure 2 *left*. The potential EIL area is located within the receding slope of the ridge with topographic elevations of 30 to 32 mAHD at the north-east corner generally falling south-westerly to 25 mAHD. There is a localised low in the north-west corner of the EIL area with elevations generally between 14 to 18 mAHD.

The surface geology of the Study Area is generally mapped in GSWA (1982) as sands associated with Tamala Limestone (Qts) with the surface interface of the Tamala Limestone and Bassendean Sand (Qpb) along the eastern boundary of the Study Area, Figure 2 *right*. Mapped wetland areas east and west of the Study Area generally align with mapped soils comprising a thin layer of a Bassendean Sand over Guildford Formation (Qpb/Qpa) or swamp deposits and peaty sands (Qhw), Figure 2 *right*.

Commander (1984) describes a shallow groundwater investigation *Geology and Hydrogeology of the 'Superficial formations' and coastal lakes between Harvey and Leschenault Inlets (Lake Clifton Project)*. It involved the installation of 61 bores drilled across seven east-west lines, A to G.

The Study Area is located 1.4 km north of the Lake Clifton F Boreline, which comprises a series of bores (numbered 1 to 8) running west to east from the Binningup townsite. Bore completion reports are contained in Commander (1990). The Study Area is situated between bores F6 and F8, with F6 aligning vertically with Runnymede Road and F8 with the eastern Study Area boundary (Figure 3).

Geological cross-section from the Lake Clifton F Boreline is shown in Diagram 1 below. The Bassendean Formation (Qb) underlies the Tamala Limestone (Qt) between bores F5 and F8, although the sands are generally indistinguishable from the beds of leached quartz sand within the Tamala Limestone (Commander, 1984). Diagram 1 suggests a steady increase in elevation of the Bassendean Sand deposit (Qb) between bore F6 (approximately at 0 mAHD) and bore F8 (16 mAHD; interface of the Tamala Limestone and Bassendean Sand formations at surface).

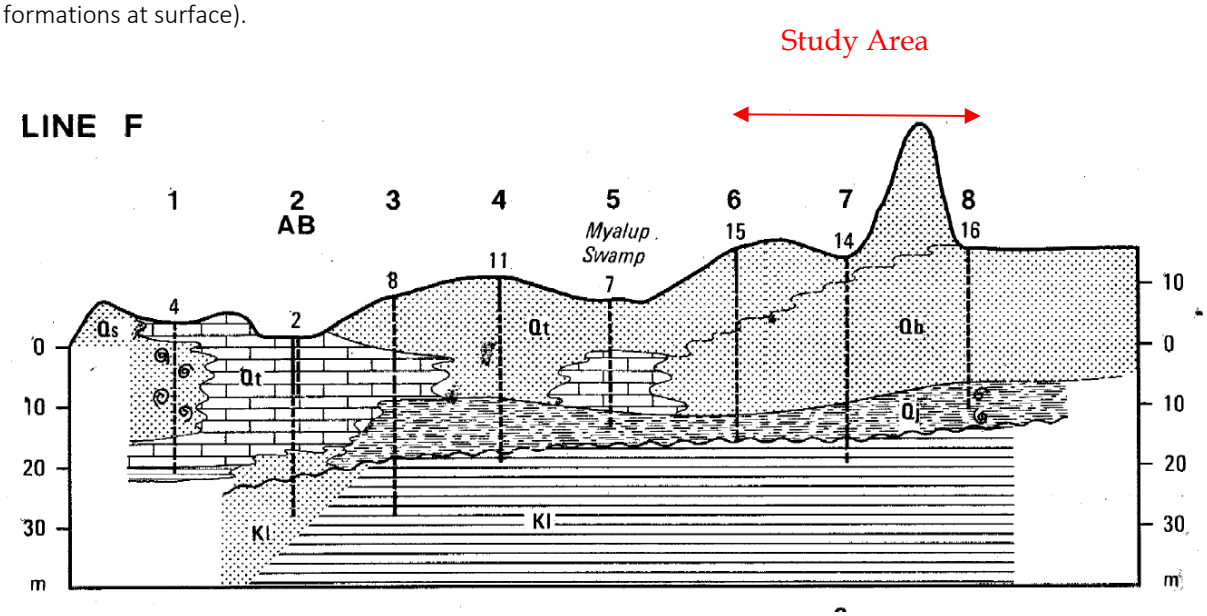

DIAGRAM 1: GEOLOGICAL CROSS-SECTION, LAKE CLIFTON F BORELINE (COMMANDER, 1984)

There are no mapped watercourses within the Study Area. East of the Study Area are numerous Conservation damplands, Figure 2. Myalup Swamp is located 500 m west of the Study Area and is mapped as a Multiple Use wetland, which drains northward to the Harvey River Diversion Drain 2 km north-west of the Study Area, location shown on Figure 1.

Excavated farm dams within the area are predominantly located around Myalup Swamp and near the western boundary of the Study Area adjacent to the Conservation dampland, Figure 2. The dam mapped south of the Study Area, Figure 2, is a water tank associated with the lot homestead.

Regional groundwater flow direction is generally east to west towards the coast and then either north to Lake Preston or south to the Leschenault Estuary (Commander, 1984). These are groundwater sinks with no outflow (Commander, 1984). Recharge of the groundwater system is from direct rainfall recharge with hydraulic gradients very low in the Bassendean Sand although there is a steep hydraulic gradient between bores F7 and F8 (Commander, 1984).

3. CLIMATE

The Binningup area is characterised by a Mediterranean climate with warm dry summers and cool wet winters.

Rainfall data is provided by two nearby Bureau of Meteorology (BoM) rainfall gauging stations, namely *Brunswick Junction* (Site ID. 009513), 12.7 km south-east of the Study Area, and *Wokalup* (Site ID. 009642), 12 km east of the Study Area, Figure 4 *top right*.

The average annual rainfall, 1909 to 2021, for Brunswick Junction is 972.5 mm, with a 50-year average (1972-2021) of 887.3 mm and a 30-year average (1992-2021) of 857.4 mm, Figure 4. This represents a 9% and 12% decline, respectively, from the long-term average annual rainfall and is consistent with the declining rainfall trend across southwest Western Australia (DoW, 2015). The seasonal rainfall distribution has also altered since 1970s, with a reduction of average monthly totals in the winter months, but no reduction or an increase in summer months, Figure 4.

The Wokalup rainfall gauge (009642) is located marginally closer to the Study Area than Brunswick Junction (009513) but has 40 years less data. At the Wokalup rain gauge, the long-term average annual rainfall of 921.8 mm is 50 mm lower than Brunswick Junction but both sites have relatively similar 50-year averages with 883.4 mm at Wokalup and 887.3 mm at Brunswick Junction.

Pan evaporation is provided by the Department of Primary Industries and Regional Development (DPIRD) Myalup weather station where annual pan evaporation has ranged from 1,400 to 2,000 mm for the 2008 to 2021 period with an average around 1,675 mm. This is higher than the estimated pan evaporation in Luke (1987) of 1,420 mm but within the range of recently recorded pan evaporation (2008 to 2021).

4. DETERMINATION OF MAXIMUM GROUNDWATER LEVEL (MGL)

A desktop assessment of groundwater levels for the Study Area has been performed by JDA based on the water level monitoring data from bores F4 to F8 of the Lake Clifton F Boreline in Commander (1984). Of these bores, only bore F5 is still currently monitored by DWER. Bores F6 and F7 have generally not been monitored by DWER due to significant root growth within the bore casings.

The groundwater level time-series for bore F5 is presented in Figure 5 and shows that in the long-term, groundwater levels have fallen by about 0.5 m since the 1980s. A water level data logger was installed by DWER in bore F5 in February 2017 with recorded data to 09 March 2020 also shown on Figure 5. The Average Annual Maximum Groundwater Level (AAMGL), 1979 to 2020, for bore F5 is 4.42 mAHD with the MGL of 5.23 mAHD recorded on 31 August 1983.

Recorded groundwater levels for bores F6 to F8 are shown on Figure 6. Groundwater levels in bore F8 generally ranged from 13.5 to 14.75 mAHD between 1980 and 1991. There were few groundwater levels measured in bores F6 and F7 due to blockages from tree roots. Bore completion reports for bores F5 to F8 from Commander (1990) are attached as Appendix A to this report.

Groundwater levels were recorded in bores F5 to F8 in September 1982, see Figures 5 and 6 and Table 1. To estimate the MGL in these bores, a correction of +0.34 m has been applied to September 1982 groundwater levels, representing the difference in bore F5 between the 29 July 1982 recorded groundwater level of 4.89 mAHD and the MGL of 5.23 mAHD.

Estimated MGL values for bores F5 to F8 are shown in Table 1 and on Figure 7. Note that for bore F8, a groundwater level of 15.14 mAHD was measured on 31 August 1983, the date of the bore F5 MGL. This was only 0.12 m higher than the July 1982 groundwater level compared to the 0.34 m for bore F5 and may be due to local

variations at F8 from the Bassendean Sand and Guildford Formation within the area. A higher groundwater level of 15.18 mAHD was recorded at bore F8 on 22 September 1983 and has been used as the bore's MGL, Table 1 and Figure 7.

TABLE 1: CALCULATION OF BORE MGLS

Bore ID	Measurement Date	Groundwater Level (mAHD)	Correction	MGL (mAHD)
F5	21 July 1982	4.89	+0.34 m	5.23
F6	29 July 1982	6.60	+0.34 m	6.94
F7	29 July 1982	8.25	+0.34 m	8.59
F8	29 July 1982	15.02	-	15.18[1]

Note: 1. Groundwater Level measured on 22 September 1983; Measurement on 31 August 1983 was 15.14 mAHD.

The estimated MGL values were used by JDA to create MGL contours for the potential EIL area assuming that the groundwater trend observed across the F Boreline is representative of groundwater across the Study Area as shown on Figure 7.

MGL is estimated at approximately 8 mAHD at the western boundary of the potential EIL area and 9 mAHD at the eastern boundary, Figure 7, with groundwater flow direction east to west.

5. CONCLUSIONS

JDA concludes that:

- The topography of the Study Area is generally characterised by sand ridge north-south through the area with the potential EIL area located across the receding slope of the ridge with elevations generally from 30 to 32 mAHD at the north-east corner to 25 mAHD in the south-west corner, Figure 2.
- The surface geology across the Study Area is generally sands associated with Tamala Limestone, Figure 2, with regional groundwater flow direction generally east to west towards the coast and then either north to Lake Preston or south to Leschenault Estuary, both of which are groundwater sinks.
- The Study Area is located 1.4 km north of the Lake Clifton F Boreline and long-term groundwater monitoring of bore 5 from this boreline ('F5') shows that the bore AAMGL (1979 to 2020) is 4.42 mAHD and the MGL is 5.23 mAHD, Figure 5.
- MGLs at bores F5 to F7 have been estimated by applying a correction of +0.34 m to groundwater levels recorded in July 1982 based on the long-term monitoring data at F5, Table 1. For bore F8, the MGL has been estimated as the groundwater level recorded on 22 September 1983.
- Estimated MGL contours were estimated by JDA assuming the groundwater trend observed across the F Boreline is representative of groundwater across the Study Area, Figure 7.
- MGL is estimated at 8 to 9 mAHD, Figure 7, across the potential EIL area.

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Attachments:

Figure 1: Location Plan

Figure 2: Existing Study Area Characteristics

Figure 3: F-Line Lake Clifton Bores

Figure 4: Rainfall and Evaporation

Figure 5: Bore Lake Clifton F5 Groundwater Level Time-Series, AAMGL and MGL

Figure 6: Groundwater Levels, Lake Clifton Bores F6 to F8

Figure 7: Estimated Maximum Groundwater Level (MGL) Contours

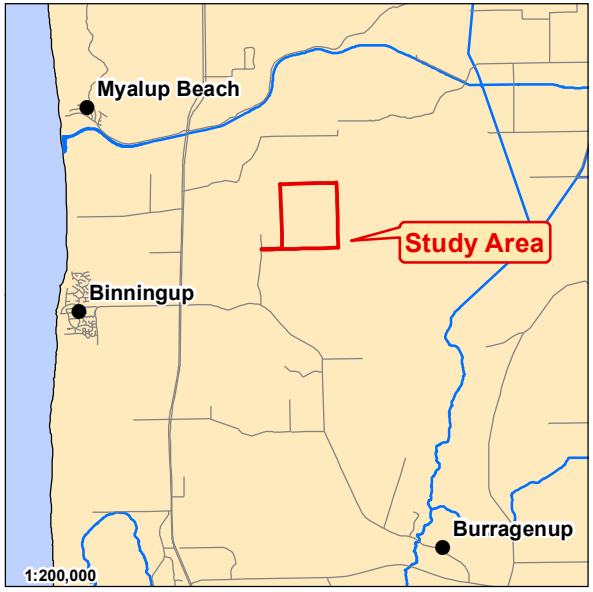
Appendix A: Bore Completion Reports, F5 to F8 (Commander, 1990)

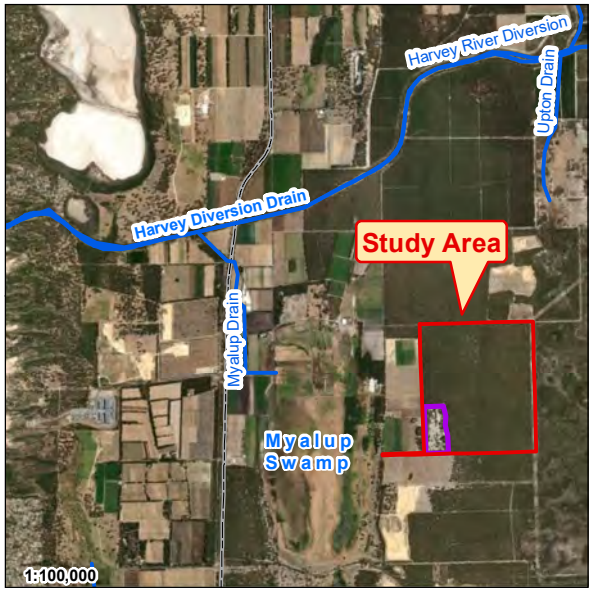
If you have any queries on this report, please contact Matthew Yan or Michael Ioannidis.

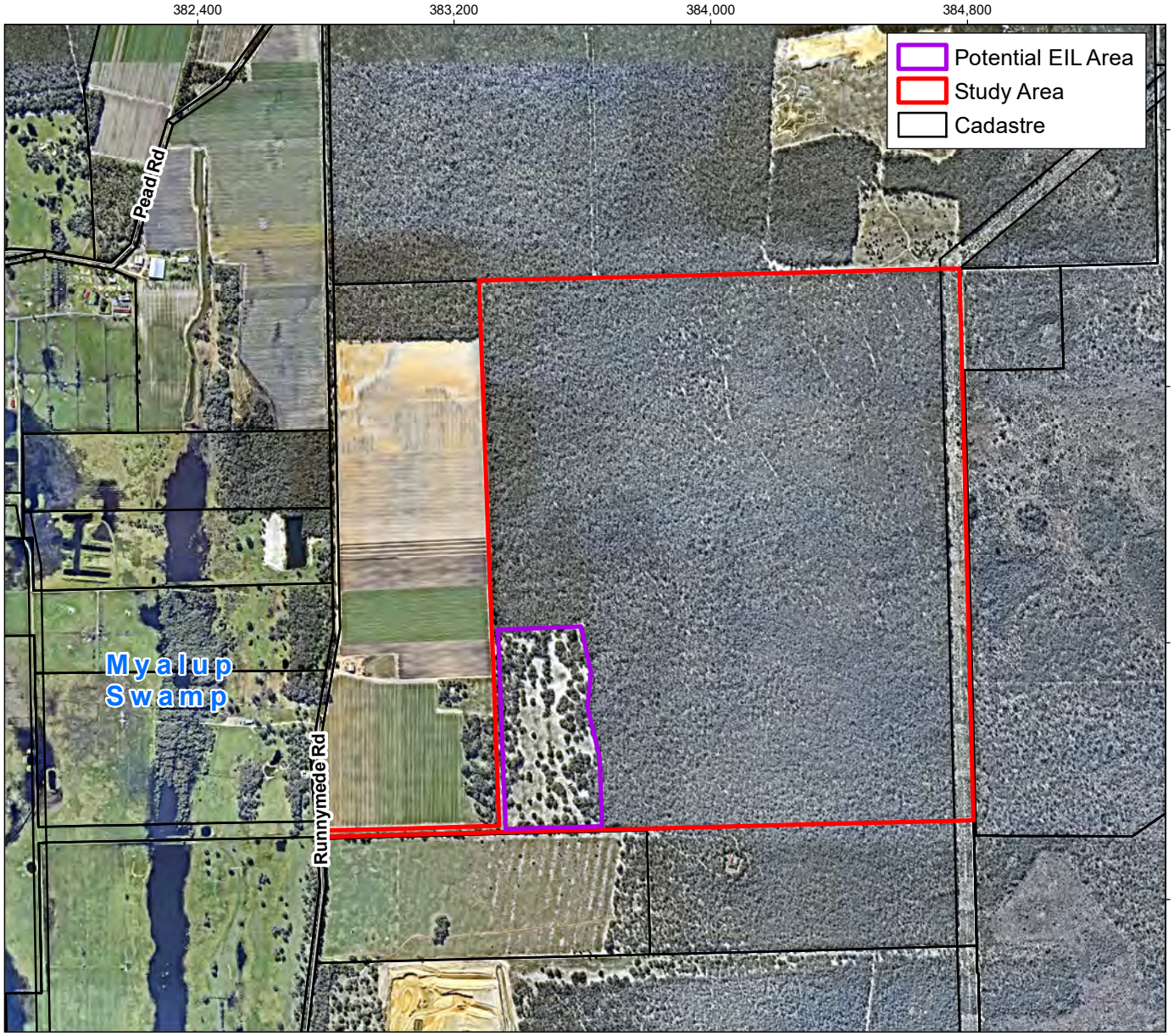
Regards,

JDA CONSULTANT HYDROLOGISTS

FIGURES







Data Source: Nearmap Digital Imagery (2021), 05 August 2021.

Coordinate System: GDA 94, Zone 50

JDA

Job No. J7182
Scale: 1:20,000 @A4

0 250 500 750 1,000 Metres

N

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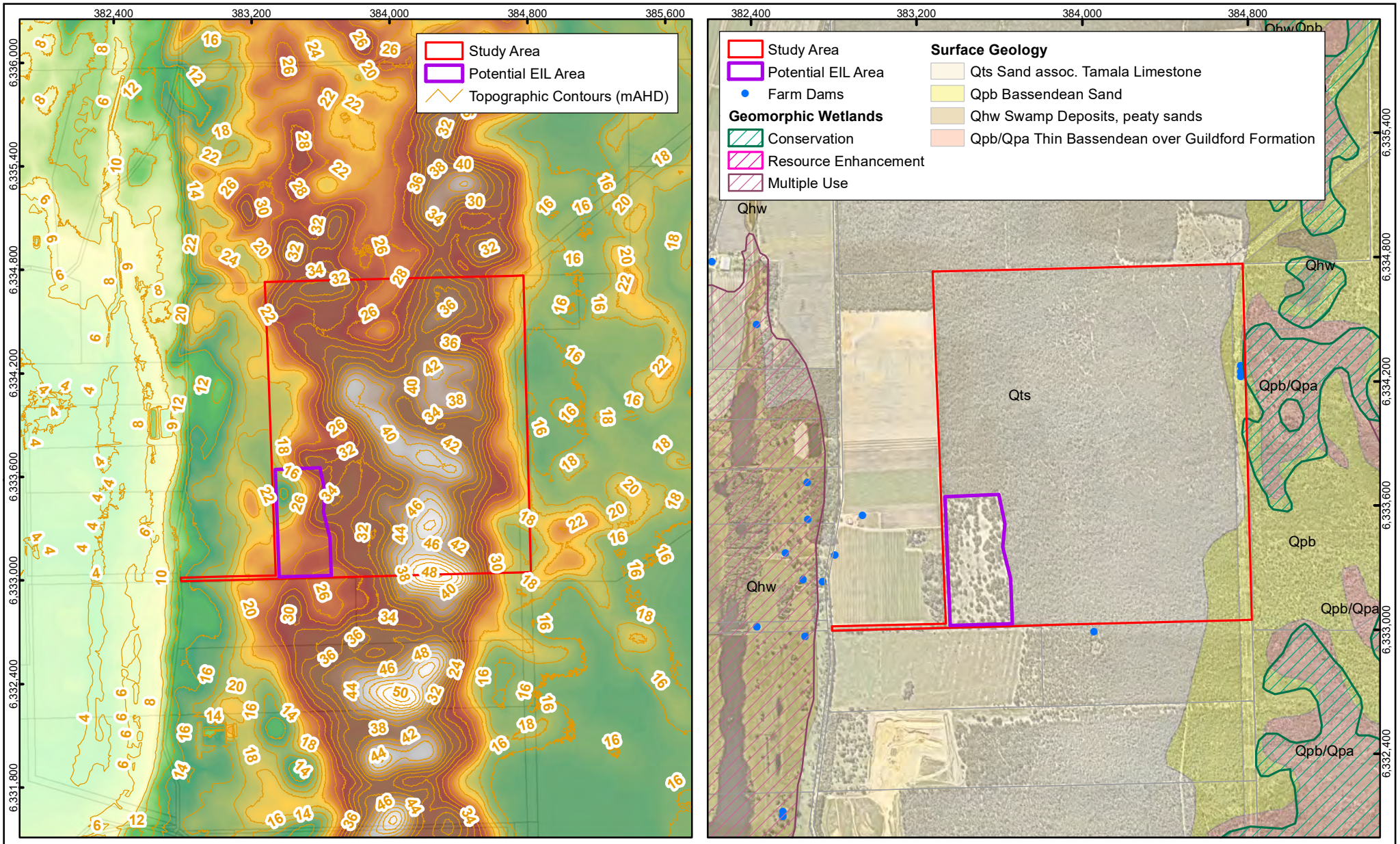
Lot 9 Runnymede Road, Binningup: Groundwater Level Mapping
Figure 1: Location Plan



Data Source: GSWA (1982) *1: 50 000 urban geology map,Harvey-Lake Preston (2031 I and 2031 IV)*. Landgate (2019) *Medium Scale Topo Water Line (LGATE-018)*; NearMaps (2021) Coordinate System: GDA 94, Zone 50

JDA

Job No. J7182
Scale:1:25,000 @A4

0 400 800 1,200 1,600 Metres

N

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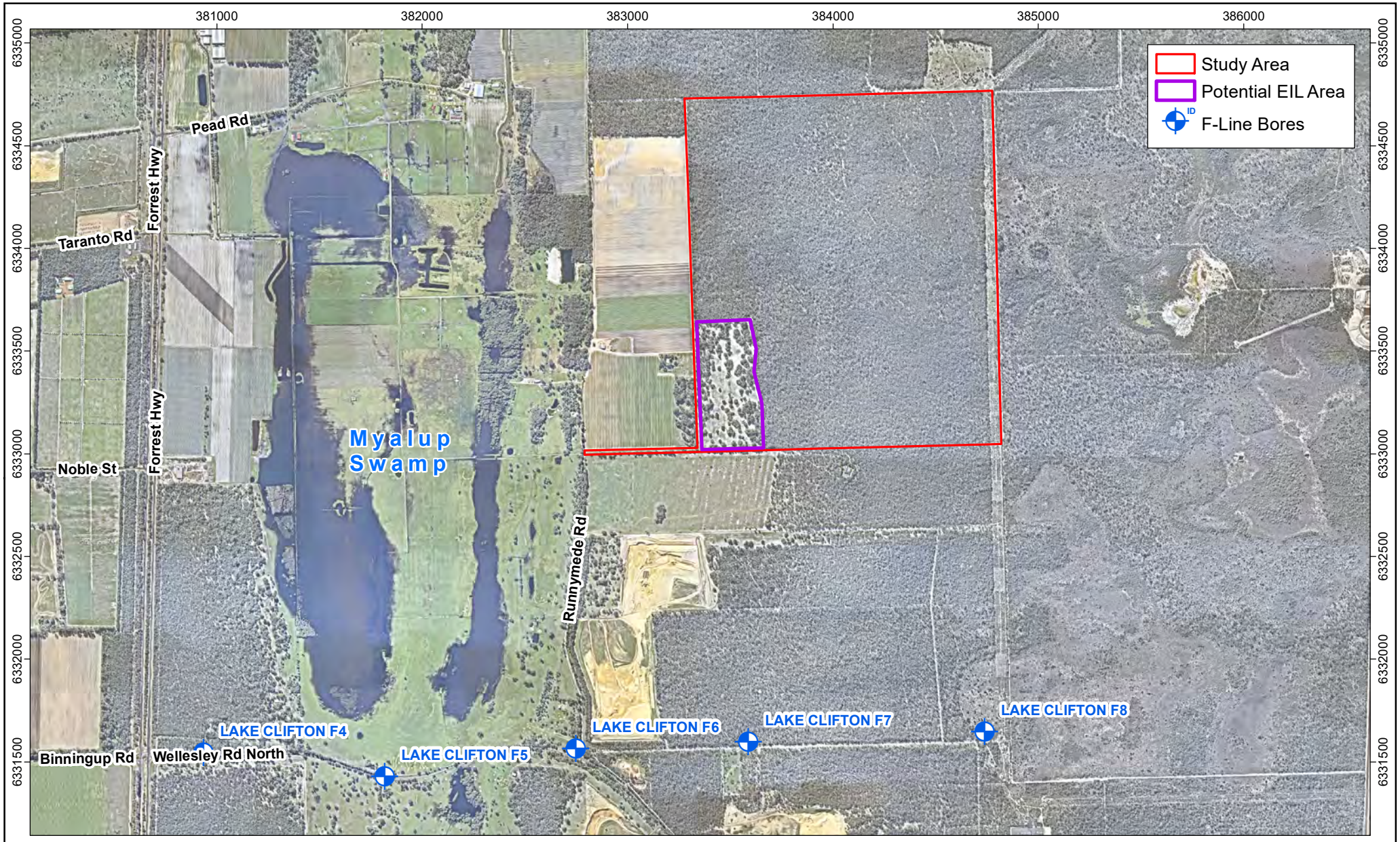
Figure 2: Study Area Characteristics



Data Source:

Coordinate System: GDA 94, Zone 50

JDA

Job No. J7182
Scale: 1:25,000 @A4

0 200 400 600 800
Metres

N

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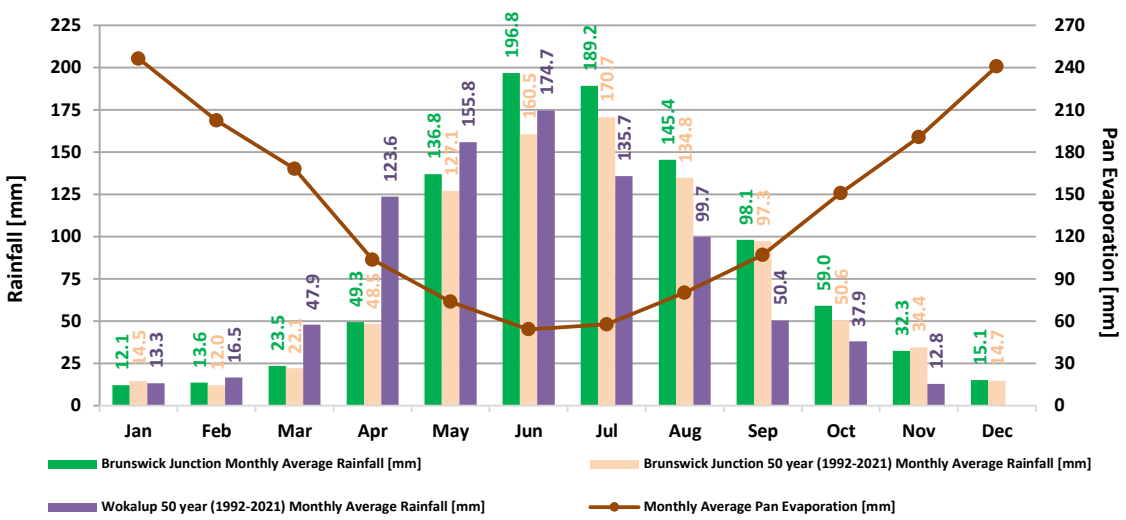
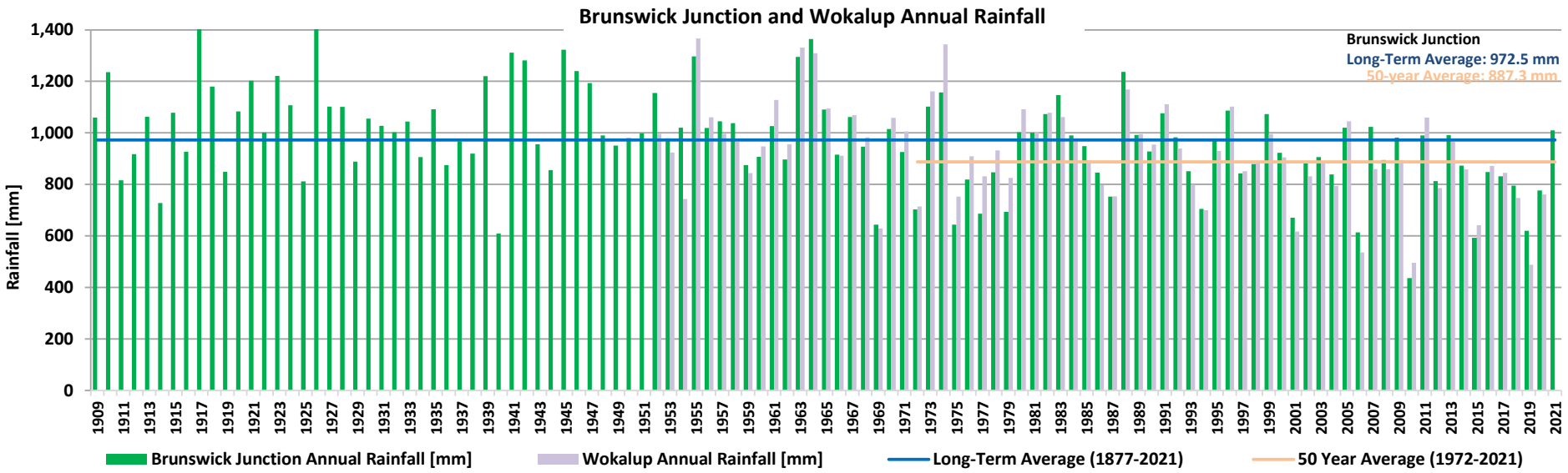
Figure 3: F-Line Lake Clifton Bores





Data Source: BoM (2022) Climate Data Online, Brunswick Junction (009513) and Wokalup (009642); DPIRD (2022) Myalup (Waterloo) Pan Evaporation

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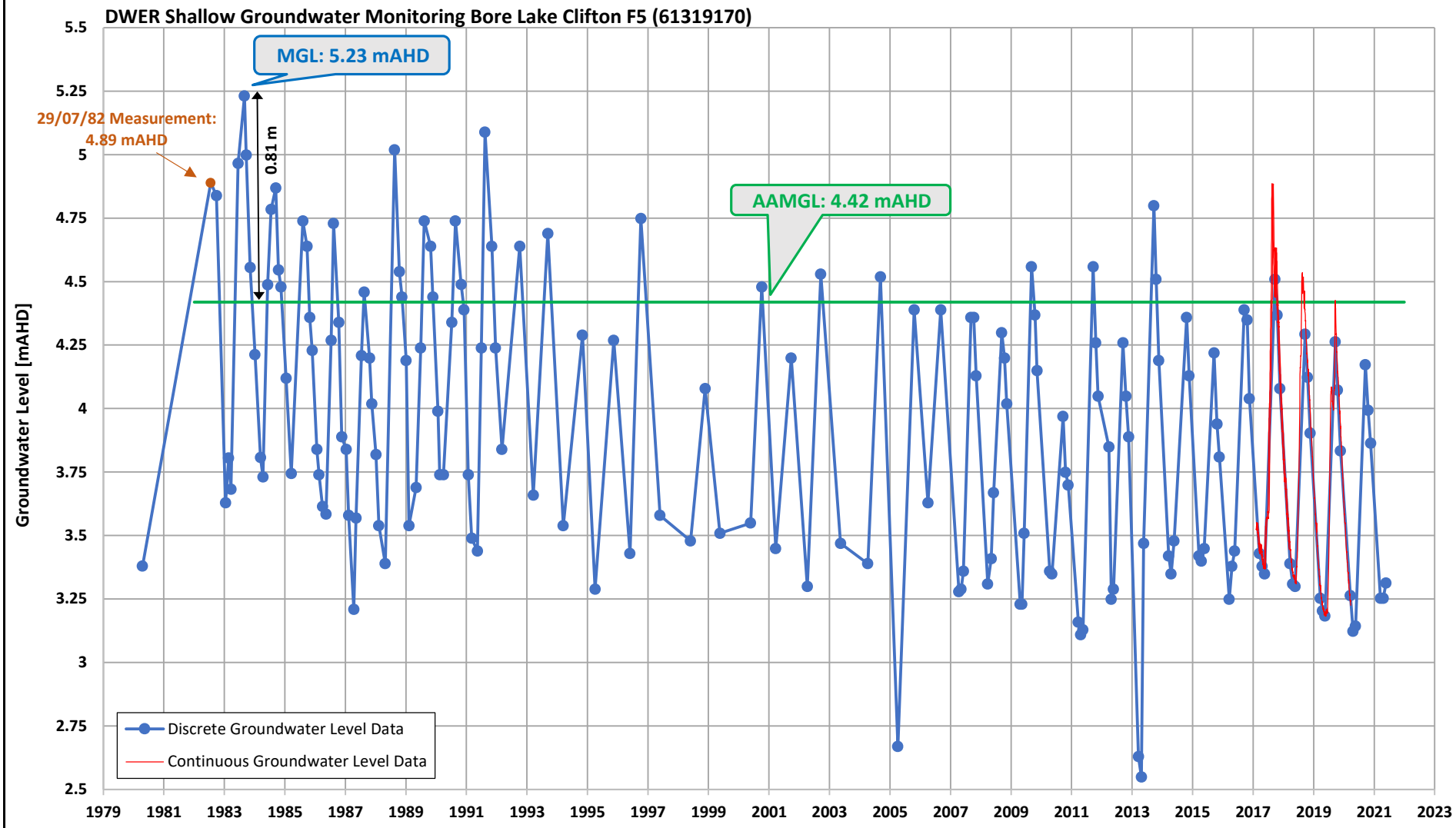
Figure 4: Rainfall and Evaporation



Data Source: Department of Water and Environmental Regulation Online Water Information Reporting (WIR) (DWER, 2022)

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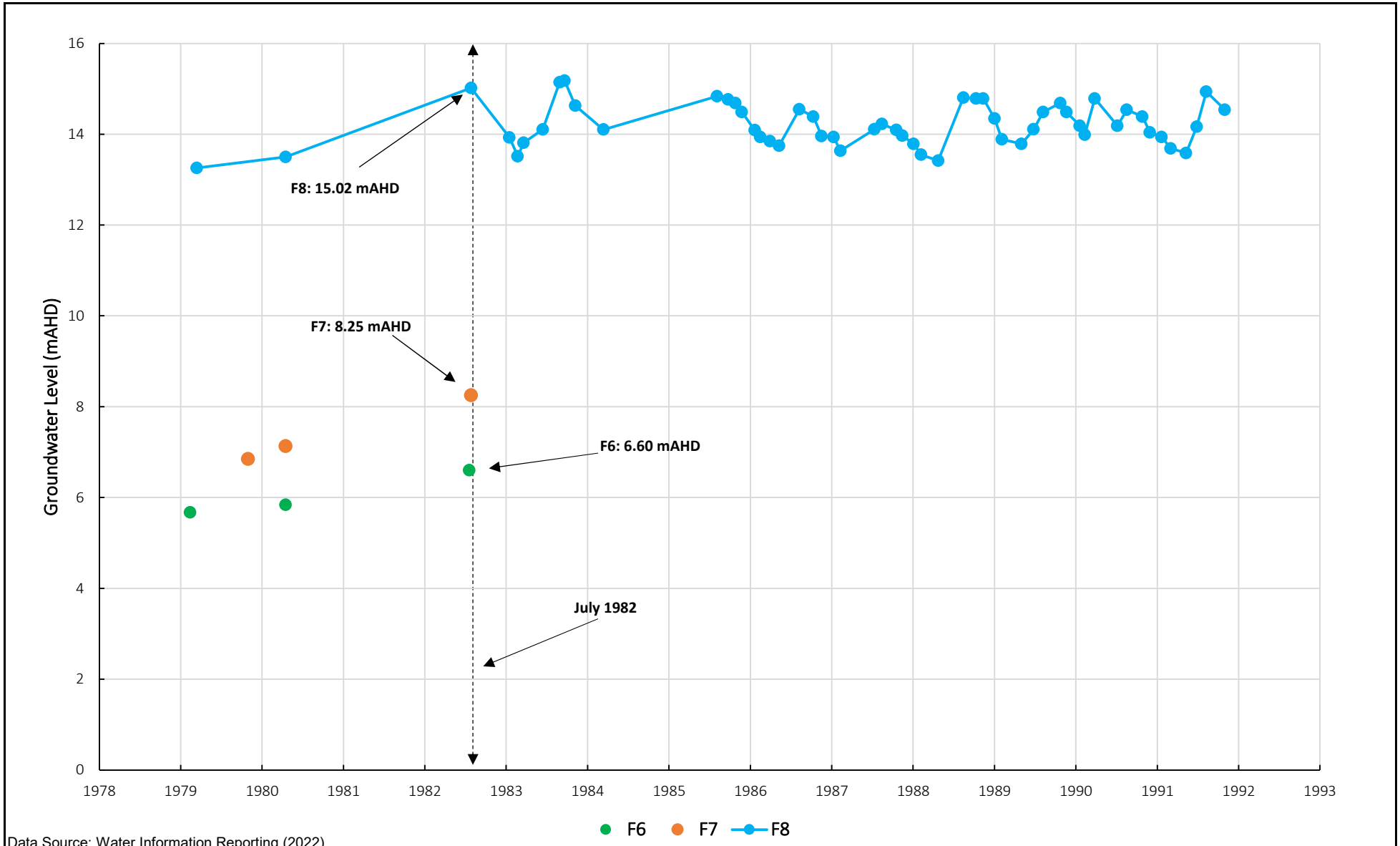
Lot 9 Runnymede Road, Binningup: Groundwater Level Mapping

Figure 5: Bore Lake Clifton F5 Groundwater Level Time-Series, AAMGL and MGL



Data Source: Water Information Reporting (2022)

Job No. J7182

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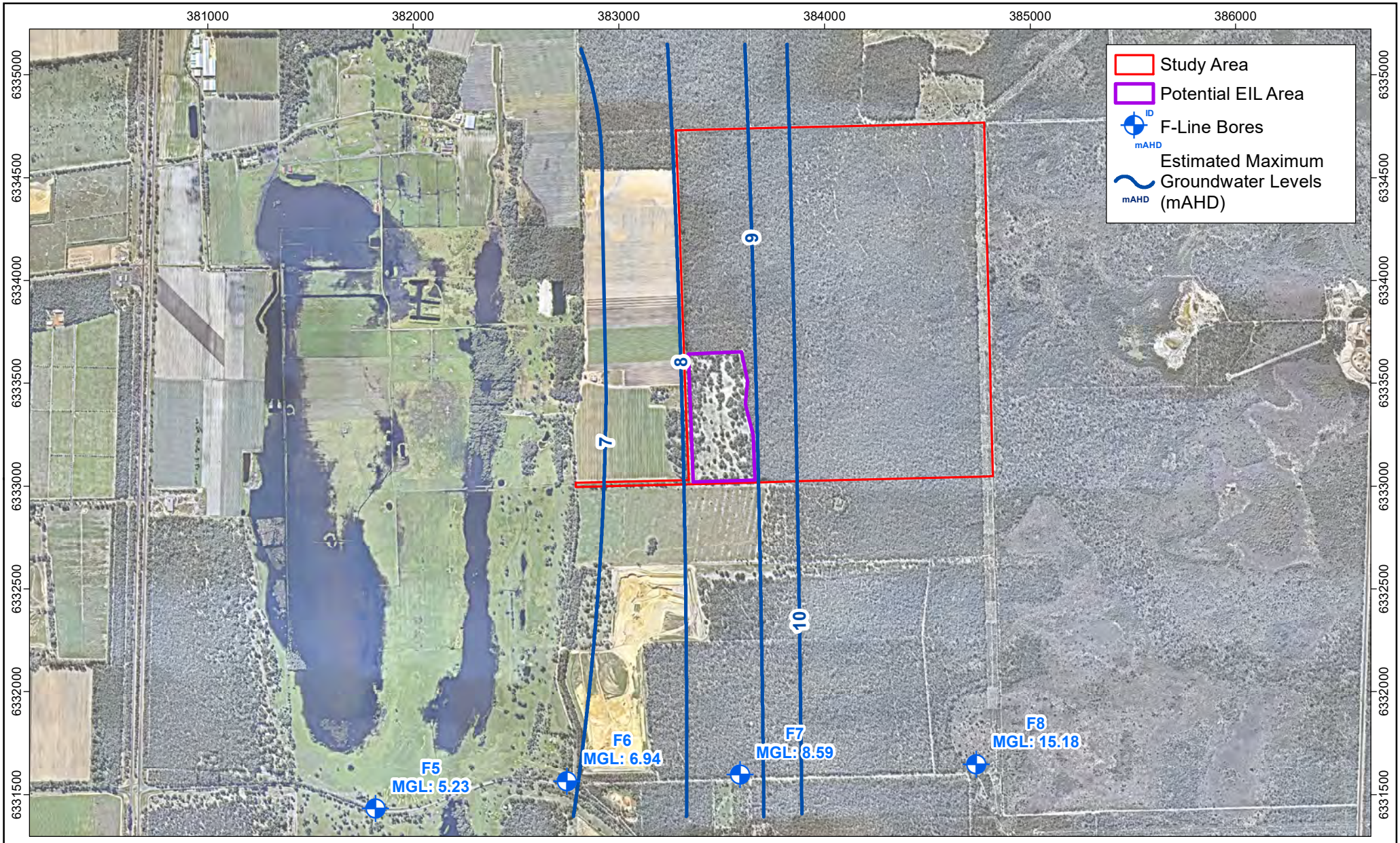
Lot 9 Runnymede Road, Binningup: Groundwater Level Mapping

Figure 6: Groundwater Levels, Lake Clifton Bores F6 to F8



Data Source:

Coordinate System: GDA 94, Zone 50

JDA

Job No. J7182
Scale: 1:25,000 @A4

0 200 400 600 800
Metres

N

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Lot 9 Runnymede Road, Binningup: Groundwater Level Mapping

Figure 7: Estimated Maximum Groundwater Level (MGL) Contours

APPENDIX A

Bore Completion Reports, F5 to F8
(Commander, 1990)

COMPLETION REPORT
LAKE CLIFTON F5

OWNER	GSWA
LOCATION	On north side of Wellesley Road, 1.5km east of Old Coast Road.
MAP SHEET	BUNBURY 2031, G.R. 815313
PURPOSE	Exploratory
ELEVATION	Casing top: 7.239m, G.L. 6.580m AHD
STATUS	Observation
DRILLED	20 February 1979
DRILLED BY	Mines Dept. Drilling Section driller G. Meek.
RIG	Edson, mud rotary
TOTAL DEPTH	20m
BORE DIAMETER	149mm
CASING (COMPLETION)	40mm PVC 0-20m
SLOTTED INTERVAL	0-20m
REMARKS	Drilled mud-rotary with tricone bit.
SAMPLES	3m ditch samples, logged by D.P. Commander held in GSWA store.

SUMMARY LOG		Quaternary
	0-12m	Sand, coarse grained quartz with calcarenite 9-12m.
	12-18m	Calcarenite and sand with shell fragments.
	18-20m	Clay, khaki brown to grey.
DEVELOPMENT	By airlifting	
SALINITY	(of airlift sample) 470 mg/L	
STATIC WATER LEVEL	3.64m on 26 February 1979.	

COMPLETION REPORT
LAKE CLIFTON F6

OWNER	GSWA
LOCATION	On north side of Wellesley Road, former alignment, 2.3km east of Old Coast Road.
MAP SHEET	BUNBURY 2031, GR 826315
PURPOSE	Exploratory
ELEVATION	Top casing: 15.691m G.L.
STATUS	Observation
DRILLED	31 January - 1 February 1979
DRILLED BY	Mines Dept. Drilling Section, driller G. Meek.
RIG	Edson, mud rotary
TOTAL DEPTH	31.2m
BORE DIAMETER	152mm
CASING (COMPLETION)	40mm PVC 0-31.2
SLOTTED INTERVAL	6.2 - 31.2m
REMARKS	Drilled mud rotary with 149mm tricone bit, lost circulation at 25.2m, drilled on with 152mm drag bit and augers.

SAMPLES	3m ditch samples, except between 18 and 29m, logged by D.P. Commander, held in GSWA store.
SUMMARY LOG	<u>Quaternary</u> 0-18m Sand medium grained quartz, yellow from 0-9m. 18-29m No sample recovery, driller reports limestone. 29-31m Sand, dark grey, coarse with bivalve shells. <u>Cretaceous</u> 31m Clay, dark grey, shelly.
DEVELOPMENT	By airlifting
SALINITY	(of airlift sample) 720 mg/L
STATIC WATER LEVEL	9.52m on 13 February 1979.
PALAEONTOLOGY REPT	32/1980 by J Backhouse
	Depth: 31 m
	Age: Late Neocomian to Aptian.
	Environment: Non-marine.

COMPLETION REPORT
LAKE CLIFTON F7

OWNER	GSWA
LOCATION	900m east of bend in Wellesley Road at 2.3km east of Old Coast Road, on north side of fence adjacent to firebreak.
MAP SHEET	BUNBURY 2031, GR 836315
PURPOSE	Exploratory
ELEVATION	Casing top: 14.332m, G.L. 13.836m AHD.
STATUS	Observation
DRILLED	15 October 1979
DRILLED BY	Mines Dept. Drilling Section, driller G. Meek.
RIG	Edson, mud rotary
TOTAL DEPTH	33m
BORE DIAMETER	152mm
CASING (COMPLETION)	40mm PVC 0-33m
SLOTTED INTERVAL	0-33m
REMARKS	Drilled mud rotary with tricone bit.
SAMPLES	3m ditch samples, logged by D.P. Commander, held in GSWA store.

SUMMARY LOG		<u>Quaternary</u>
	0-24m	Sand, coarse grained quartz with lignite at base.
		<u>Jandakot Beds?</u>
	24-30m	Silt, fine sand, minor shell fragments.
	30-33	Clay, black.
DEVELOPMENT	By airlifting	
SALINITY	(of airlift sample) 350 mg/L	
STATIC WATER LEVEL	6.99m on 31 October 1979.	

COMPLETION REPORT
LAKE CLIFTON F8

OWNER	GSWA
LOCATION	On north east corner of Wellington location 1. pt 5.
MAP SHEET	BUNBURY 2031, GR 846315
PURPOSE	Exploratory
ELEVATION	Top casing 14.332m AHD
STATUS	Observation
DRILLED	24 January 1979
DRILLED BY	Mines Dept. Drilling Section, driller G. Meek.
RIG	Edson, mud rotary
TOTAL DEPTH	26.5m
BORE DIAMETER	149mm
CASING (COMPLETION)	40mm PVC 0-26.5m
SLOTTED INTERVAL	1-26.5m
REMARKS	Drilled mud rotary with tricone bit.
SAMPLES	3m ditch samples, logged by D.P. Commander, held in GSWA store.

SUMMARY LOG		Quaternary
	0-21m	Sand, medium to coarse quartz, minor feldspar, accessory heavy minerals.
		Jandakot Beds.
	21-26.5m	Sand, shelly, silty, very coarse quartz sand with bivalve and small gastropod shells, minor limestone.
DEVELOPMENT		Airlift
SALINITY		(of airlift sample) 600 mg/L
STATIC WATER LEVEL		2.43m on 15 March 1979

Suite 1, 27 York St, Subiaco WA 6008
PO Box 117, Subiaco WA 6904
Ph: +61 8 9388 2436

www.jdahydro.com.au

info@jdahydro.com.au