

**Extractive Industry Application
and
Management Plans
Lot 121, Carlotta, Shire of Nannup**



Prepared for
L.M. and E.A. Crouch

By



rachael@abrus.com.au
MOBILE: 0429137757

September 2024

Table of Contents

1. Introduction.....	1
1.1 Proponent.....	2
1.2 Consultant.....	2
2. Property Description and Locality.....	3
2.1 Background.....	3
2.2 Site Location.....	3
2.3 Zoning.....	5
2.4 Surrounding Land Uses.....	5
2.5 Nearest Residences.....	5
2.6 Services and Infrastructure.....	7
2.7 Mobile Plant and Vehicles.....	7
3. Environmental Background.....	8
3.1 Climate.....	8
3.2 Vegetation.....	8
3.3 Geology and Soils.....	8
3.4 Topography and Surface Water.....	10
3.5 Hydrogeology.....	12
3.6 Aboriginal Heritage.....	15
3.7 Other Heritage.....	15
3.8 Dust.....	15
3.9 Visual Amenity.....	16
3.10 Noise.....	16
3.11 Dieback.....	17
4. Operational Activities.....	18
4.1 Proposed Extraction.....	18
4.1.1 Depths and Extent of Excavation.....	18
4.2 Operating Times.....	18
4.3 Public Access and Safety.....	18
4.4 Surrounding Road Network and Transport Movements.....	20
4.5 Hydrocarbon Management.....	21
4.6 Benefits of the Proposal.....	22
5. Rehabilitation.....	23
5.1 Proposed Rehabilitation.....	23
6. References.....	24
APPENDIX A.....	
Department of Biodiversity Conservation and Attractions.....	
APPENDIX B.....	
Drainage Management Plan.....	
APPENDIX C.....	
Site Rehabilitation Plan.....	

1. Introduction

Abrus Consulting Pty Ltd (Abrus) has been engaged by L.M. and E.A. Crouch to prepare a Development Application for an extractive industry on their “Brookvale” property, Lot 121, in the Shire of Nannup, which the proponent will lodge. The Shire of Nannup Local Planning Strategy supports the sustainable extraction of minerals and basic raw materials provided the proposal suitably addresses environmental, land use compatibility, access, landscape and other relevant planning considerations. The aim of this document is to address these components and provide the Shire of Nannup with relevant information to approve this proposal.

The proposed extractive industry consists of new gravel pits. Resource capacity (estimated) considers the total capacity of the gravel quarry is approximately 118, 225 T within the property boundaries. The resource does however extend further. For the proposed 10 year lifespan extraction will depend on the market demand for the resource.

A permit time of 10 years is proposed for operation, however, extraction will be over short periods (ie 2-3 months) with the gravel stockpiled for use as required. Operation of the gravel pits will be contracted.

Extraction will be to supply base-course gravel and rocks, which is primarily used for roadworks, to be sold from site as needed. The proposed sites are located on areas currently under pasture.

There will be no clearing of native vegetation. Road access is well established and maintained.

Supporting documentation with this Report include:

- Drainage Management Plan
- Site Rehabilitation Plan

1.1 Proponent

The Proponent is L.M and E.A. Crouch.

Postal Address:
PO Box 52, NANNUP WA. 6275

Primary Contact
Beth Crouch
Owner
Phone: 0488 562 948
Email: chookinup@gmail.com

Lyndon Crouch
Owner
Phone: 9756 2048

1.2 Consultant

Abrus Consulting Pty Ltd is an Environmental Management Consultancy, specialising in environmental approvals, project management, environmental management plans associated environmental documentation and Aboriginal liaison.

Postal Address:
PO Box 186
Nannup WA 6275

Primary Contact
Rachael Wedd
Director
Phone: 0429137757
Email: rachael@abrus.com.au

2. Property Description and Locality

2.1 Background

Brookvale was acquired by the proponent in 2002 and has been previously been used for beef grazing, dairy production and hay production. The property is currently used for general farming and sand extraction.

Approval to use Red Gully Road for raw materials extraction (commercial basis) was granted by the then Department of Environment and Conservation, now the Department of Biodiversity, Conservation and Attractions (DBCA) in February 2007 (updated July 2024) with guidelines agreed by both parties (see Appendix A). The proponent has complied with all recommended guidelines. Approval was also sought (and granted) from Main Roads WA for use of the intersection of Red Gully Road and Vasse Highway.

The Shire had given approval for gravel extraction to the previous owners in 2002. The pit areas are located on areas currently under pasture.

2.2 Site Location

The farm is 7km south of Nannup township, off Roberts Road via Vasse Highway. This property is comprised of 67.161 hectares (ha) and is primarily used for general farming. A gravel pit (three sections, with a total area of 9.76 ha) proposed. The proposed gravel extraction areas are all currently under pasture and are being grazed by cattle. There is a managers residence located on the property. Access to the property is directly off Roberts Road, but truck and contractor access to the pits will access the site via a track which passes through DBCA managed land that connects with Red Gully Road. Red Gully Road then connects with the Vasse Highway. Access to this track is at the southern end of the property. See locality Figure 1.

Legend

- Local Road
- Highway
- Property boundary

McKelvie Rd

Roberts Rd

Chalwell Rd

Vase HWY



0 250 500 1,000
m

1:15,000

LOCATION MAP:

PERTH
NANNUP BRIDGETOWN

Base map:
Worldwide Imagery -
Sourced from
ESRI.

Abrus
CONSULTING

Crouch Property 'Brookvale'
Lot 121 Roberts Road, Carlotta
LOCATION PLAN

Figure: 1
Project:

Drawn: CNH
Date: 12/08/2024

Coordinate System:
GDA 1994

A4

2.3 Zoning

The site and surrounding areas are zoned as “Priority Agriculture”. The operation of an Industry Extractive means cannot be permitted in this zoning unless Council has granted the planning approval in accordance with Section 4.6 in the Shire of Nannup Local Planning Strategy.

2.4 Surrounding Land Uses

The proposed extraction areas are surrounded by agricultural land (mixed), rural lifestyle and State Forest (DBCA) managed land.

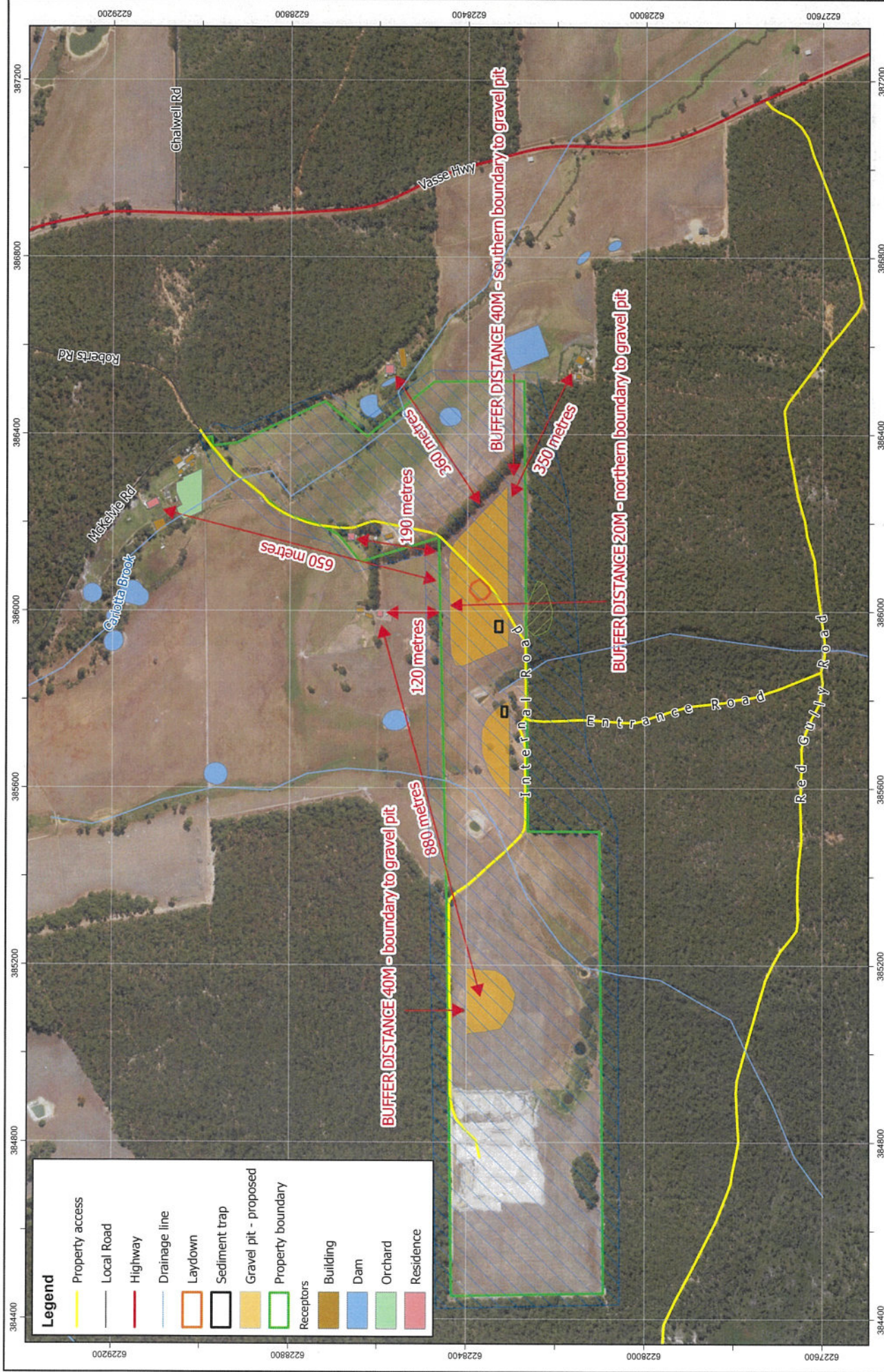
2.5 Nearest Residences

The EPA Guideline Separation Distances between Industrial and Sensitive Land Uses (No. 3, June 2005) requires a minimum separation of 1000m between sensitive land use and extraction/screening works.

The nearest residence (owned by Darren Ganzer) is located approximately 120m to the north of the main proposed gravel pit area (which is the property boundary). The residence of Bruce Blackburn is approximately 650m from the edge of the property boundary (a distance of 670m if the 20m buffer is used) and Mossbrook residence is 360m from the most eastern edge of the gravel pit. Another residence to the southeast of the main gravel pit (owned by Mike Dennis) is approximately 350m from the southern edge of the pit. The Brookvale managers residence is 190m from the edge of the main gravel pit.

All residences are within the EPA separation distance requirement for the proposed gravel extractive activities.

Please refer to Figure 2.



0 200 400 m

Notes:
1. Coordinate System: GDA 1994.
2. Background imagery courtesy of Landgate SLIP.

Legend

- Property access
- Local Road
- Highway
- Drainage line
- Laydown
- Sediment trap
- Gravel pit - proposed
- Property boundary
- Receptors
 - Building
 - Dam
 - Orchard
 - Residence

Location Plan

NANNUP BRIDGETOWN

Abrus CONSULTING

Crouch Property, 'Brookvale'

Gravel Extraction Development Application

Site Plan of Pits & Receptors

DRAWN	CNH	DATE
CHECKED	RW	07/08/2024
SCALE	1:8,000	FIGURE No. 2
PROJECT No.		A3

2.6 Services and Infrastructure

The property has services connected. Dams are onsite to provide water for dust suppression, fire suppression and associated works requirements.

The property is fully fenced externally comprising standard timber/steel post and pig wire with a top rung of single wire. The main internal road on the property runs from the farm entrance, westwards through the centre of the property and is maintained to a good standard.

No new or additional services will be required during the operation or rehabilitation of the site and there will be no impact or disruption of existing neighbouring services from extraction or transportation of material from the pit areas or property.

2.7 Mobile Plant and Vehicles

Plant and vehicles which will be used for the excavation operations and access construction/maintenance (if required) include:

- 980 wheel loader (or equivalent)
- 30 T excavator
- Roller water truck
- Trailer mounted fire unit (s)
- Semi-trailers (24T)
- Road Trains (40T)
- 4wd (operator transport)
- Grader
- Service truck (weekly visits)
- Mobile screen and stacker (depending on deposit variability)

3. Environmental Background

3.1 Climate

The property is located approximately 7km South of Nannup township (from the intersection of the Brockman Highway and Vasse Highway). The climate of Nannup is classed as warm and temperate, with warm dry summers and cool wet winters. The average annual temperature is 15.8°C, with most rain in the winter and drier summers. The average annual rainfall of Nannup is 923mm with most rainfall occurring between May and September. The warmest months are January and February, with the coldest months being July and August.

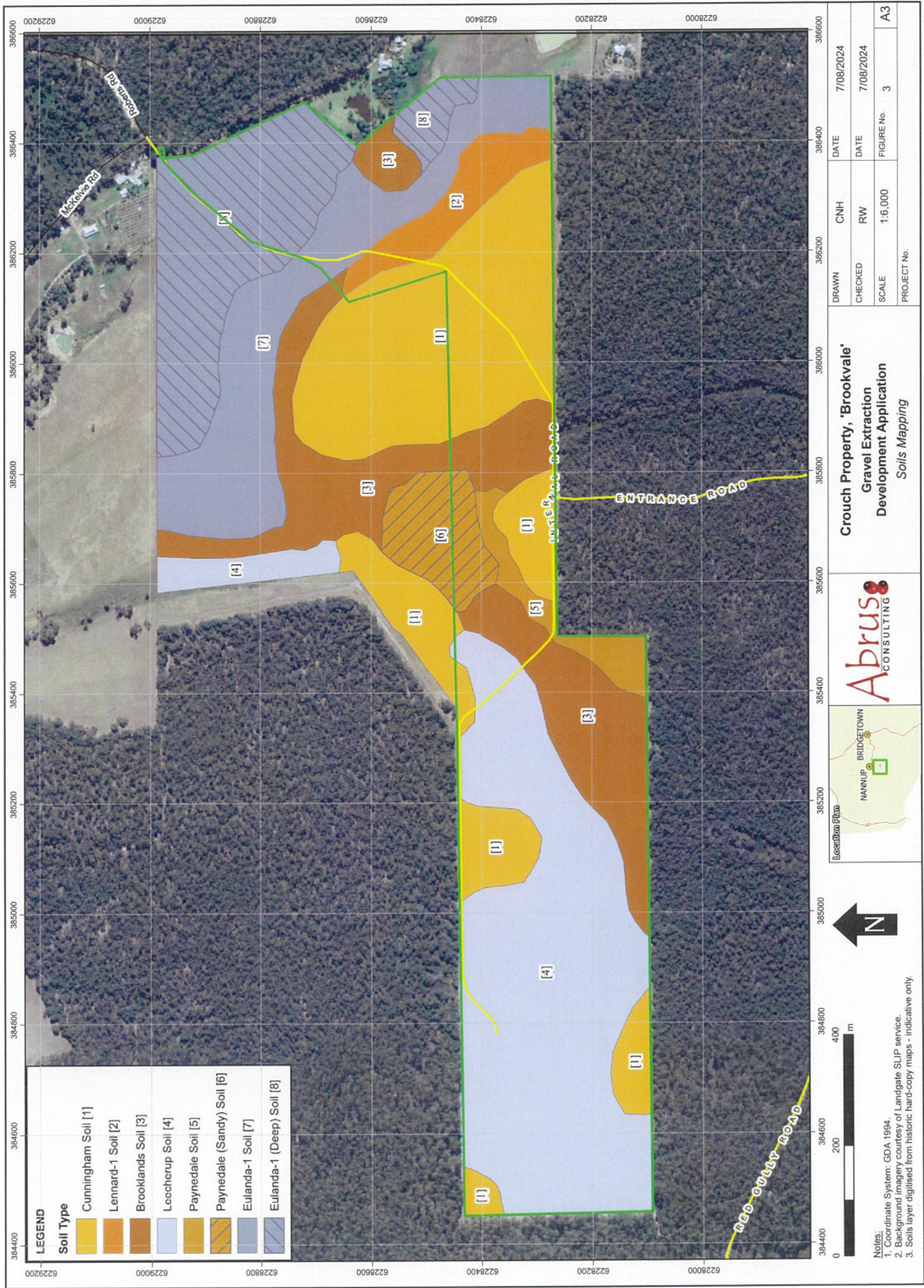
3.2 Vegetation

The area under application is predominately pasture for grazing. Surrounding land use is Agricultural and DBCA managed land (State Forest). There is some mixed open forest (primarily redgum and jarrah) where a sand pit is located. Trees which are present will be retained, no clearing will take place. It is proposed to have a 20m buffer between the edge of the main gravel pit and a 40m buffer at the boundary fence adjoining the State Forest.

3.3 Geology and Soils

Soil surveys were undertaken by Topoclimate Services Pty Ltd (TSPL) in 2005. These surveys included a radiometric survey to map the salinity and allows most soil units to be identified. Preliminary soil landscape units were assessed at a sub-paddock scale and a variety of soils types were identified (see Figure 3). Soil testing was also included in the surveys, which considered pH, cation exchange capacity (CEC), sodicity and nutrients. These parameters are important when assessing landscape condition and in this instance, to plan for suitable rehabilitation of the site. A salinity survey was also conducted as part of the farm plan to ascertain if there were any salinity issues present. TPSL (2005) identified that *“The slight salinity levels in the soils, mainly in the topsoils, do not appear to have affected the water in the dams...All of the water samples, at the time of testing had salinity measurements well within the non-saline range for irrigation water (ie less than 100mS/m).”*

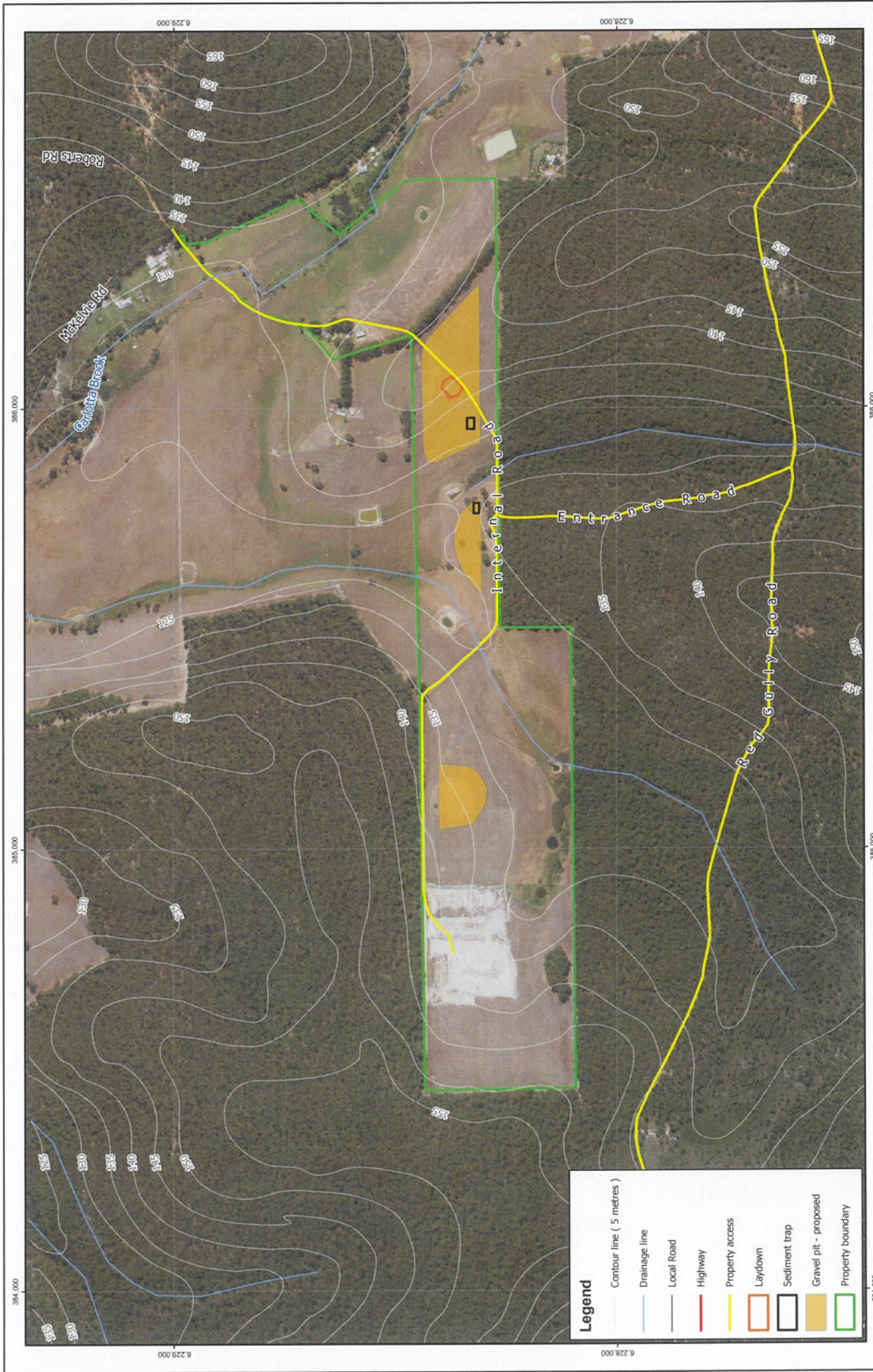
The proposed gravel extraction areas are Cunningham soil classification (area 1, Figure 3).



3.4 Topography and Surface Water

The proposed gravel extraction site is located in an area that ranges from 125m above sea level to approximately 145m (see Figure 4). There is a gentle slope to this area. Storm water at the gravel quarry area will flow primarily to the south west towards the creek. The optional third pit area has contours that are quite widely spaced, meaning there is no excessive or extreme slopes in that area. Storm water collected in the sediment traps drains naturally into the soil or evaporates. No pumping is required. Any sediment trapped that remains in the traps, will be infilled at rehabilitation. Proposed sediment trap locations are shown in Figure 6. None are currently proposed for the optional pit.

Given the topography of the area and the nature of the ground material, it is unlikely that there will be any impacts from expression of surface water within the proposed extraction areas.



DATE

13/08/2024

CNH

CHECKED

RW

SCALE

1:8,000

FIGURE No.

4

PROJECT No.

A3

Crouch Property, 'Brookvale'

Gravel Extraction Development Application

Contour and Drainage Plan

Abrus

CONSULTING

Location Plan

040080012001600

m

Notes:

1. Coordinate System: GDA 1994.

2. Background imagery courtesy of Landgate SLIP.

3. Salinity data courtesy of DPIRD.

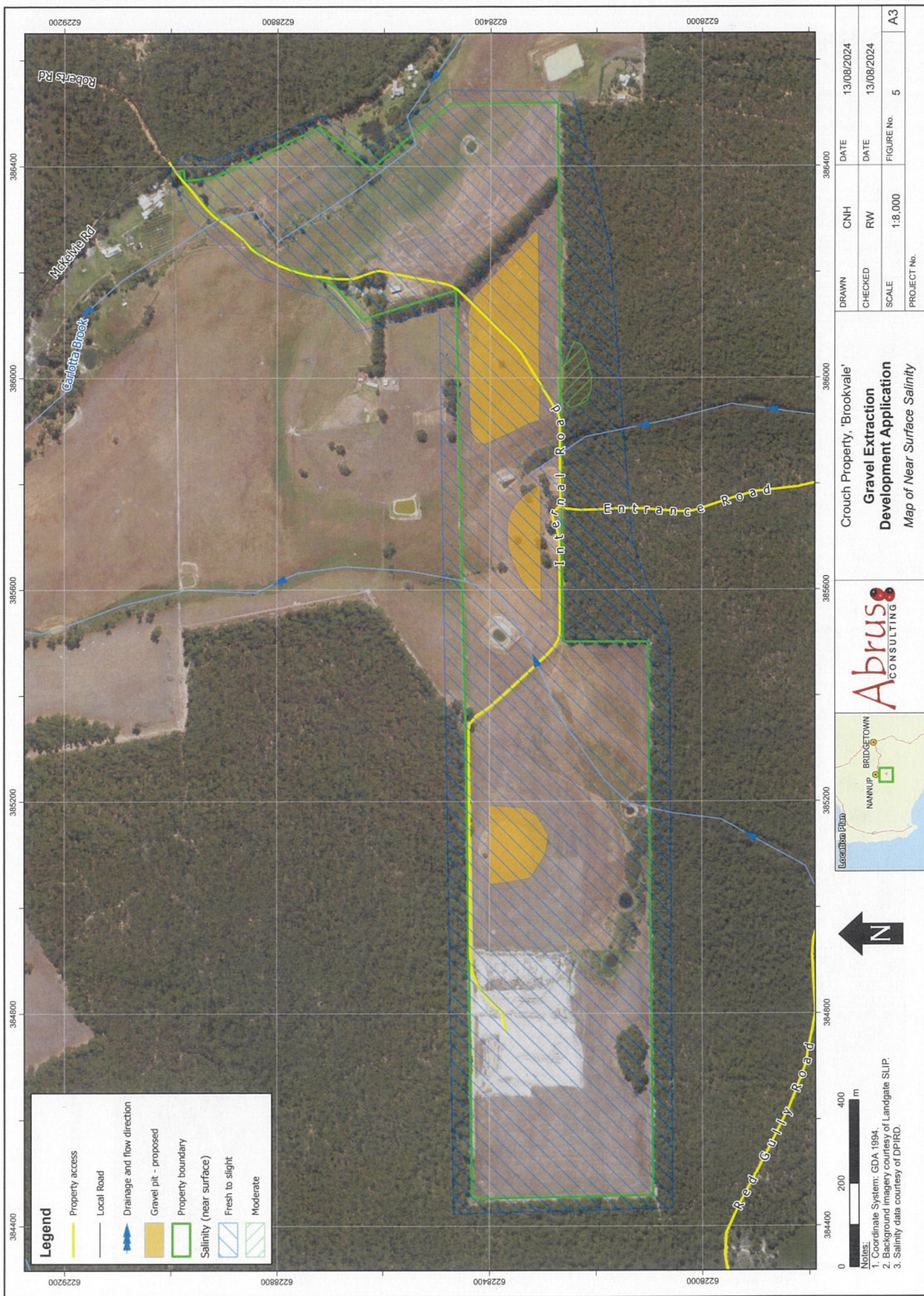
Tuesday, 13 August 2024 - 2:29 PM

3.5 Hydrogeology

Brookvale is located entirely within the Donnybrook hydrological zone which are used to report on dryland salinity (as can be seen on the interactive groundwater and salinity map for the south-west agricultural region (www.agric.wa.gov.au)). This area is classed as a very low salinity risk with a short term time (ie less than 20 years) to equilibrium for the groundwater trend. There are no trend bores located near the property. Soils are formed in lateritic colluvium, weathered in-situ sedimentary rocks & alluvium (poorly drained sandy alluvial plain in the south)

https://services.slip.wa.gov.au/public/services/SLIP_Public_Services/Water/MapServer/WMSServer

Due to the elevation of the proposed pit areas, the potential for any contamination from surrounding land uses is considered negligible. No groundwater exposure or contamination from the proposed extractive activities is anticipated. There is a very low risk of impacts to the regional salinity from the proposed operations (see Figure 5). Please also refer to Section 3.3.





Legend

- Property access
- Local Road
- Gravel pit - proposed
- Laydown
- Sediment trap
- Property boundary

Location Map

Abrus CONSULTING

Crouch Property, 'Brookvale'

Gravel Extraction Development Application

Site Plan and Pit Development

DRAWN	CNH	DATE	3/09/2024
CHECKED	RW	DATE	3/09/2024
SCALE	1:6,000	FIGURE No.	6
PROJECT No.			A3

Notes:
1. Coordinate System: GDA 1994.
2. Background imagery courtesy of Landgate SLIP.

3.6 Aboriginal Heritage

A search of the Aboriginal Heritage Enquiry system (September 2024) indicated that the enquiry area does not intersect with the boundary of any known Aboriginal Sites or Aboriginal Heritage Places.

The heritage enquiry is on land within or adjacent to the following Indigenous Land Use Agreement(s): South West Boojarah #2 Indigenous Land Use Agreement.

3.7 Other Heritage

A search of the inHerit database (a portal for information about heritage places and listings in Western Australia for the Government of Western Australia – Heritage Council) in September 2024 showed no search results for this location. The nearest registered State Heritage Place is the Carlotta Fire Tower.

3.8 Dust

Dust may be generated from a range of activities, including:

- Topsoil removal;
- Gravel excavation;
- Loading of haulage trucks; and
- Machinery use/vehicles on the unsealed surfaces/access tracks.

To mitigate any potential impacts on the nearest neighbour (as mentioned in Section 2.5), to reduce dust during normal operations, water is sprayed from the water cart on access roads as required. To reduce potential dust and therefore also topsoil loss, no extractive operations will occur on high wind days.

There is a belt of trees (single row but comprising mature trees) between the gravel extraction area and a section of paddock before the property boundary with Mossbrook. The Mossbrook property boundary has a substantial tree buffer zone between the residence and the proposed extraction area. Crushing and screening of gravel may be required, depending on deposit variability and future gravel market needs.

There is a wide and variable range of wind directions throughout the year. Given a nine year average (the range of data available from the nearest data monitoring point and taken at 3m), the highest winds (between 60-70km/hr) generally come from a WNW and NNW direction, although there are a few records of wind speeds in this range from WSW and SW directions. Dust generated under these conditions may be noticed but is not anticipated to have any significant impact on any of the nearest receptors/residences in the area due to the distance between sites and vegetation acting as a buffer zone. High wind days (number) ranges from as low as 2 to 17 over the nine year period listed. Conditions for maximum dust levels occur in the summer months when the ground conditions are dry. The nearest data monitoring point for this area is the Nannup 2 (Carlotta) (NU002) weather station.

There have been no complaints from the nearest sensitive receptor (D. Ganzer) in relation to dust or noise from existing operations to date, and communications between the Proponents and this person indicate that there are no anticipated issues in the future, which includes gravel extraction. However, if required, sound/visual/dust barriers (earthen bunds) can be created to meet industry best practice requirements to minimise sound or dust emissions for sensitive receptors.

3.9 Visual Amenity

Being located on a rural property, with the property front gate 0.7km from the Vasse Highway, the extractive area is not considered to be in a visually sensitive area. The area between the property and the highway contains mixed forest and other well-treed residences and DBCA managed State Forest. It is only just possible to see the highway through a gap in the trees from one corner of the southern section of the proposed gravel pit area.

Once rehabilitation has taken place and/or alternative land use is implemented there will be little evidence that extractive activities have occurred.



View from the primary Gravel Area Towards Mossbrook and the Vasse Highway

3.10 Noise

The majority of noise generating activities on site will be from:

- Excavation of material;
- Loading of haulage trucks; and
- Movement of haulage trucks.

The site is located on a large rural property and is surrounded by other rural properties. Due to the separation distances provided by the EPA guidelines, the nearest residences are within the 1000m mark (refer to Section 2.5) for gravel extraction, with the third optional pit at a further distance again from sensitive receptors.

Vehicle access and the haulage route are to the south of all properties and no traffic noise issues are anticipated. Although no noise management issues are anticipated for the proposed operations, industry standards for managing noise levels will continue to be implemented. Such measures include:

- All plant/machinery to be kept well maintained;
- Sound attenuation bunds will be constructed if required; and
- Complaints register to be maintained. Details for lodging complaints will be advertised on signage at the entrance to the property.

3.11 Dieback

Dieback (*Phytophthora cinnamomi* and other species) occurs throughout the South West. No presence of dieback has been observed in the area where material is to be extracted or transported through on site. The proposed gravel extraction areas do not require any removal/clearing of native vegetation.

All equipment used onsite is cleaned down prior to entry onsite, for general weed and dieback hygiene.

4. Operational Activities

4.1 Proposed Extraction

It is proposed to extract gravel from the excavation areas in a staged manner, dependent on contractor requirements and materials demand. Excavation activities at this scale are considered to be low. Contractors will be appointed to undertake extraction and transport of material. Extraction of gravel will be done in short bursts (eg 6-8 weeks) with gravel then stockpiled for transport as needed.

Active extraction areas will be a minimum 20m from the property boundaries (see Figure 6). Figure 6 also provides an indicative site plan for lay-down areas for both pits and sediment traps.

Deep excavation is not required due to the gravel being in the upper levels of the soil profile. A depth of 2m is estimated to be required for the gravel pits. Each active area will be stripped of topsoil and this will be stockpiled for use as a noise attenuating structure, then used for rehabilitation. These soil stockpiles will be no greater than 2m in height. The soil will be excavated with a front-end loader.

Gravel is extracted via ripping of the surface and excavated with earthmoving plant (ie excavator). Gravel is then stockpiled and then loaded into haulage trucks will be used to transport the gravel off-site as required.

4.1.1 Depths and Extent of Excavation

The depths of extraction will vary very little across the proposed pit location, dependent on the profile of the lateritic layer for the gravel pit. The average depth of excavation is 2m and this is expected to continue throughout the lifespan of the quarries. Resources are anticipated to be shallower as the pit(s) progress towards the riparian zones and tree buffer areas.

4.2 Operating Times

Market demand for both sand and gravel will have an influence on the operation of the pits. It is proposed that the quarry will operate Monday to Saturday from 7am – 5pm for extraction and processing. There will be no extractive activities or haulage on Sundays or public holidays. Haulage of material will be dependent on demand for the material from potential buyers. Gravel will be extracted over an intermittent period throughout the licence term, with extraction anticipated to occur in bursts of approximately 6-8 weeks/year, with gravel stockpiled and extracted as market demands require.

4.3 Public Access and Safety

The site is located on a rural property and is surrounded by rural land and DBCA reserve land. Public access is restricted. Direct access to the property outside of these hours will be controlled by locked steel double gates and no access to the public is authorised. Contractors (to be confirmed) and owners have keys. There is a sign on the front gate with contact details for any visitors to site. Signage is also clearly visible at the intersection of Vasse Highway and Red Gully Road cautioning users that trucks use the road.

In case of fire starting from localised events near the pits or by operational activity, the contractor will have trailer mounted fire units on-site as well as the water truck for dust suppression. As the

extractive activities on the property is under contract to contractors, they are required to have a strategic Fire Management Plan in place. This can be provided if required.



Property Entrance



Safety Information



Road Intersection Signage

4.4 Surrounding Road Network and Transport Movements

The site will be accessed directly off Red Gully Road and an internal DBCA track, which are both unsealed gravel roads.

The main farm entry is at the front of the property and the other (for extraction vehicles) approximately 1km from the main gate, at the southern end of the property. Both entries are well compacted gravel roads. The internal road network provides all weather access to all operational vehicles. Extracted gravel will be removed and transported via a variety of vehicle types, dependent on whomever is purchasing the gravel. Truck movements will be dependent on demand, however, it is reasonable to expect 1-6 trucks up to 3 visits (semi-trailers or road trains dependent on material demand) per day during peak usage. It is anticipated that whomever purchases and removes the gravel will be accredited with Mainroads Western Australia under WA Heavy Vehicle Accreditation (WAHVA).



Vasse Highway Intersection

Traffic statistics along the Vasse Highway are available from slightly north of Graphite Road (data provided by Main Roads of WA Traffic Map). Traffic rates are slowly increasing in this area. Traffic Map shows 761 traffic movements (2021/2022 average) of which 77% are cars and 23% are trucks and there are very similar numbers of north and south traffic movements. As a relatively remote rural area, it is assumed that numbers will not represent high vehicle movement so the potential associated with collision of general vehicles with operational vehicles would be considered low. There are no other main users of the road or track besides DBCA. Again, any risk in relation to truck movements is considered low.

The proposed haulage route from site will be dependent on the market requirements. The majority of the gravel is likely to be used locally for roadworks or potentially may be transported to Busselton via the Vasse Highway.

4.5 Hydrocarbon Management

No fuel or hydrocarbons will be stored onsite. These will be brought to site as required with a service truck and the operator's ute will have a fuel pod. Vehicles will be taken from the pit for fuelling as required. Appropriate measures will be undertaken to ensure no potential contamination of the soil can occur. Such measures (for refuelling or vehicle breakdown) will include hydrocarbon management kits such as drip trays, plastic liners/sheets, which are kept in the operator's site vehicle. In the event of a spill, any contaminated soil will be contained and removed to an appropriate disposal site and any old oils will be collected and recycled offsite at the nearest licensed facility.

4.6 Benefits of the Proposal

The extraction of material from this site is necessary for providing material needed within the Shire of Nannup and other Shires for ongoing road maintenance, which then provides for local and regional employment and reduces transportation distance of materials in the Shire.

5. Rehabilitation

5.1 Proposed Rehabilitation

Rehabilitation of the completed areas will be progressive, with the areas returned to pasture (primarily clover and rye). Due to the size of the extractive area and that the intent is to return the area to pasture, a detailed Site Rehabilitation Plan is not considered feasible at this stage, however, an indicative one is provided with this document as Appendix C.

A general methodology, undertaking a staged approach is proposed, with rehabilitation beginning once an area has been extracted. The selected contractor will redistribute the topsoil and re-contour the landscape, with the owner reseeding the areas and doing any other maintenance and management (ie weeds).

Some areas will need to be left for loading of gravel by purchasers and to leave a safe turn around area for trucks and loading machinery. The final areas will be rehabilitated once no longer required.

As a general rule, the following steps will be implemented:

- Stockpiled topsoil will be retained during extraction and spread back over the completed areas;
- The pit floor will be ripped along the contour;
- Area will be prepared for planting, which may require weed management.
- Seeding of pasture species.

The restoration/rehabilitation goal for this site is to return the area post-extraction to a stable and erosion resistant landform, all returned to pasture for future farming. It will blend with the surrounding landscape.

6. References

Topoclimate Services Pty Ltd. 2005. Topoclimate Farm Plan. L.M. & E.A. Crouch 'Belvedere' & 'Brookvale', Nannup, Western Australia.

APPENDIX A

Department of Biodiversity Conservation and Attractions

Red Gully Road Right of Access Letter



Department of Biodiversity,
Conservation and Attractions



*We're working for
Western Australia.*

Your ref: Red Gully Rd Forest Track Access
Enquiries: Larissa Zip
Phone: (08) 9752 5555
Email: blackwood@dbca.wa.gov.au

Beth Crouch
Out 'N' About Eggs
464 Cundinup South Road
NANNUP WA 6275

Dear Beth

RED GULLY ROAD FOREST TRACK ACCESS

The Department of Biodiversity, Conservation and Attractions (DBCA) can allow the conditional continued use of Red Gully Road forest track access for the private property owners, but it should not be used as an alternative to gazetted road network access provided by the shire. This conditional access should be used with the advice offered by Main Roads WA on safe access/egress for vehicles. Private access to the property via the DBCA managed track through State Forest would be under the following conditions:

1. Use of the access and track must not impede or limit DBCA operations in any way.
2. Periodic closure of the track for DBCA approved operations may be necessary, though DBCA will make reasonable efforts to minimise disruption or find a temporary alternative for access requirements.
3. You understand that DBCA will, on an irregular basis, be carrying out or allowing approved operations in the State Forest. These activities may include prescribed burning, the use of chemicals and poison baits for wildlife predator control and other approved land management activities.
4. The track may be shifted to a new alignment as required by DBCA.
5. DBCA may, at its discretion, repair damage to the track which results from its operations.
6. DBCA will be under no obligation to maintain or upgrade the existing track.
7. Traffic on the track will be limited to forty tonnes gross weight.
8. Any maintenance required on the track that can be shown to be a direct result of your use will require the damage to be made good at your expense.
9. Maintenance of the track by yourself must be conditionally authorised by the District Manager. DBCA will generally not approve the upgrading of the track beyond a condition deemed suitable for DBCA needs and will not be responsible in any way for repairing or maintaining such excessive improvements should they occur.

Blackwood District
14 Queen Street, Busselton, Western Australia 6280
Phone: (08) 9752 5555 Email: blackwood@dbca.wa.gov.au
dbca.wa.gov.au

10. DBCA will not guarantee the availability of the track or the access for any period of time.
11. The track will be available for public use as determined by DBCA. Use of the track for access to your location is not exclusive or restrictive of public use in any way.
12. DBCA accepts no liability for the condition or use of the access or track.
13. You should file a copy of this email so that it can be readily presented as proof of this agreement if required by staff of DBCA.
14. This authority for access is not transferable without signed agreement of the District Manager.

The above conditions are for the purpose of preserving DBCA's rights and prerogatives in all aspects of the ownership and management of State Forest and its access routes and tracks. The granting of this privilege of access does not confer any right of way or permanent access. It is granted in a spirit of neighbourly co-operation and goodwill, recognising that it is reasonable for landowners to be able to gain access to their property.

If you have any further questions, please contact me on 9752 5555.

Yours sincerely



Rory Chapple
ACTING DISTRICT MANAGER

12 July 2024

APPENDIX B

Drainage Management Plan

Drainage Management Plan

**“Brookvale”
Lot 121, Shire of Nannup**



Prepared for
L.M. and E.A. Crouch

By



rachael@abrus.com.au
MOBILE: 0429137757

Date: September 2024
Report Version: 1

Table of Contents

1 Introduction.....	1
1.1 Land Use and Location.....	1
1.2 Geology and Soils.....	3
3 Operations and Potential Impacts.....	5
3.1 Dust Generating Activities.....	5
3.2 Stormwater and Drainage.....	5
3.3 Receiving Environment.....	7
4 Actions.....	9
5 Drainage Post-Rehabilitation.....	10
6 Document Review.....	10

Drainage Management Plan

Lot 121, Shire of Nannup

1 Introduction

Drainage management is a primary issue for all extractive industry operators. Although it is accepted that some water movement is unavoidable during extractive activities, it cannot adversely affect health, have a negative impact on amenity of local residents or on the environment. This Drainage Management Plan (DMP) has been prepared in accordance with guidelines as provided by the Department of Environment and Conservation. This Plan should be read in conjunction with the Development Application “Extractive Industry Application and Management Plans, Lot 121, Shire of Nannup” prepared by Abrus Consulting Pty Ltd.

The objectives of this DMP include:

- To describe the nature of the proposed extraction activities;
- To identify potential storm water/drainage issues from operations;
- To identify any sensitive receptors and their proximity to operational areas; and
- To identify and describe measures to limit water movement and its impacts on receptors.

1.1 Land Use and Location

The property “Brookvale” is owned by L.M. and E.A. Crouch.

The proposed gravel quarry is 7km south of Nannup township (via Vasse Highway, to Roberts Road, on Lot 121. This property is comprised of 67.161 hectares (ha) and is primarily used for general farming.

A gravel pit (total of 9.76 ha) is proposed, however not all the proposed area may be extracted, depending on resource availability and market demand. Access to the property is directly off Roberts Road, but truck and contractor access to the pits will access the site via a track which passes through DBCA managed land that connects with Red Gully Road. Red Gully Road then connects with the Vasse Highway. See locality Figure 1.

Legend

- Local Road
- Highway
- Property boundary

McKewen Rd

Roberts Rd

Chalwell Rd

Naselle Hwy



0 250 500 1,000 m

1:15,000

LOCATION MAP:

PERTH
NANNUP BRIDGETOWN

Base map:
Worldwide Imagery -
Sourced from
ESRI.

Abrus
CONSULTING

Crouch Property 'Brookvale'
Lot 121 Roberts Road, Carlotta
LOCATION PLAN

Figure: 1
Project:

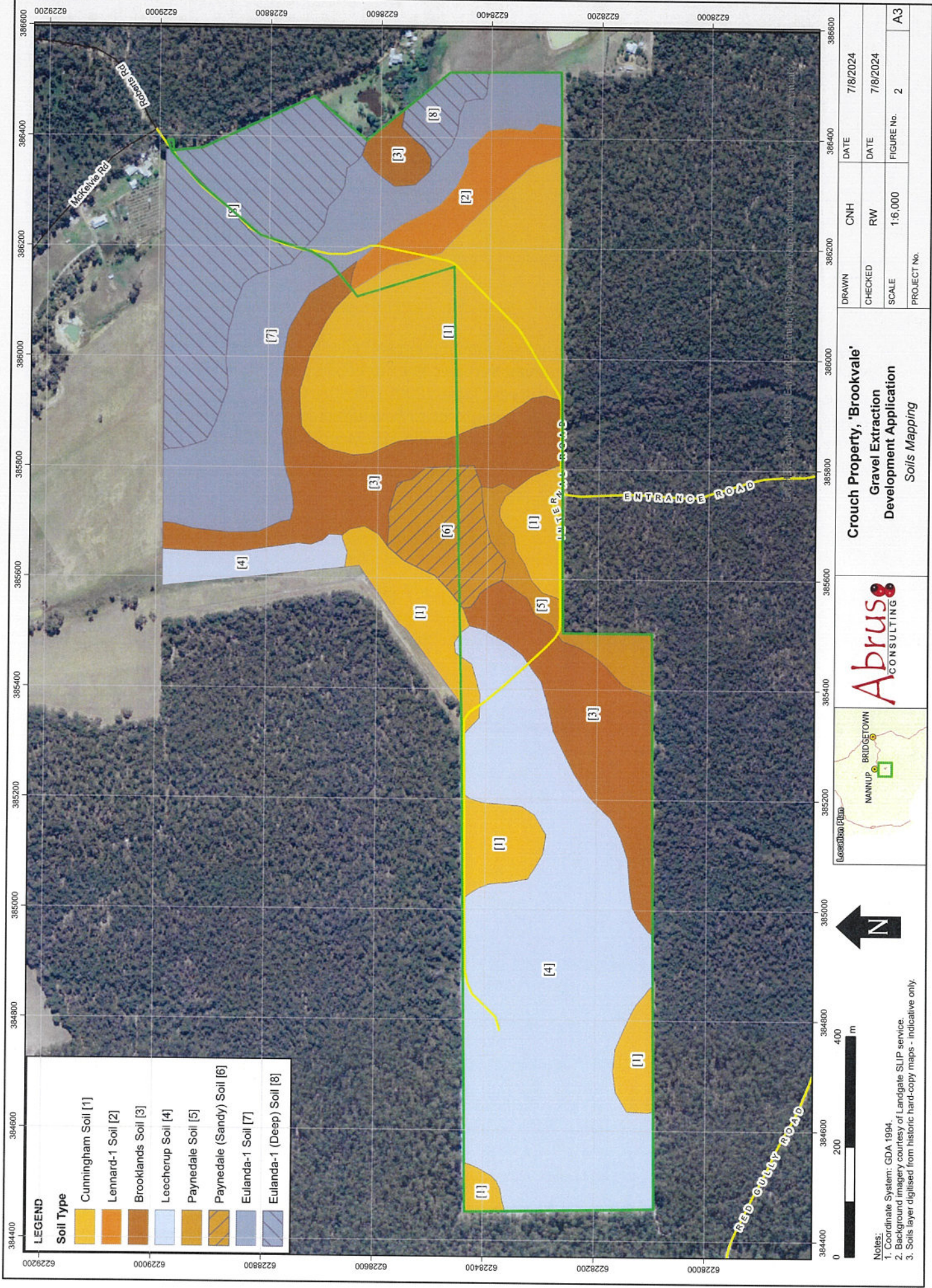
Drawn: CNH
Date: 12/08/2024

Coordinate System:
GDA 1994

A4

1.2 Geology and Soils

The area for gravel excavation is classified as Cunningham soil classification (area 1, Figure 2). Soil surveys were undertaken by Topoclimate Services Pty Ltd (TSPL) in 2005 which considered a range of parameters, including a salinity survey. TPSL (2005) identified that *“The slight salinity levels in the soils, mainly in the topsoils, do not appear to have affected the water in the dams...All of the water samples, at the time of testing had salinity measurements well within the non-saline range for irrigation water (ie less than 100mS/m).”*



3 Operations and Potential Impacts

3.1 Dust Generating Activities

The following operations have the potential to generate dust, which can impact on sediment loads in surface water:

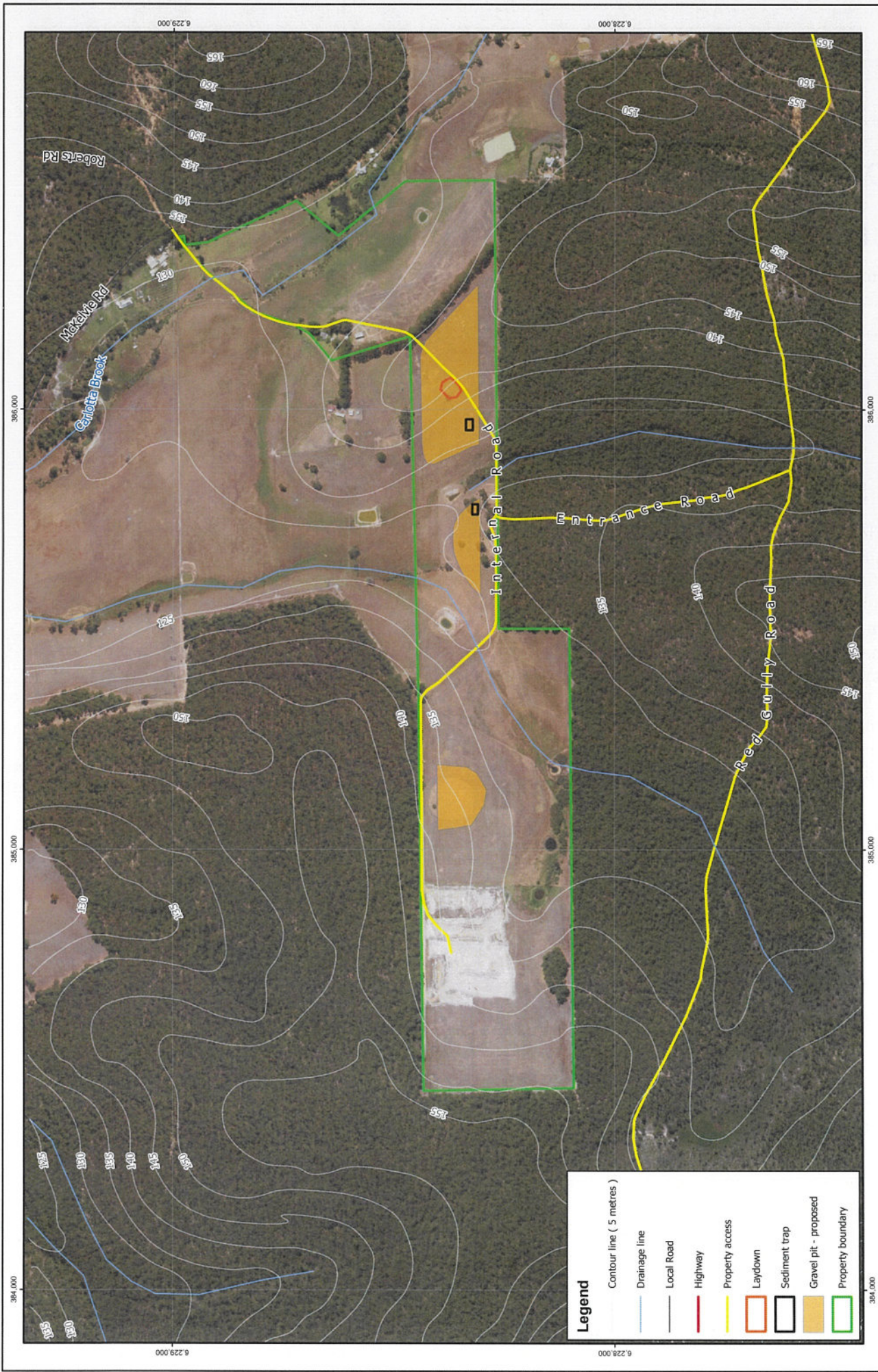
- Removal of topsoil;
- Excavation of gravel;
- Crushing and screening of gravel (materials processing);
- Material movement (loading of gravel) into haul trucks; and
- Vehicle movement onsite (unsealed ground).

3.2 Stormwater and Drainage

Overland flow of stormwater can occur from stripping the topsoil and extractive operations and transport sediment downstream. Management of this potential impact is vital to maintain the active working area of the pit and to reduce scouring and potential sediment transport to waterways.

The proposed excavation areas are located on gently sloping contours higher than the proposed sediment traps which permits stormwater management to occur in advance of any potential discharge to the surrounding environment (ie runoff is directed to the low points towards the creek areas). Refer to Figure 3. Storm water at the gravel quarry area will flow primarily to the south west towards the creek. The optional third pit area has contours that are quite widely spaced, meaning there is no excessive or extreme slopes in that area.

Storm water collected in the sediment traps drains naturally into the soil or evaporates. No pumping is required.



Location Plan

Crouch Property, 'Brookvale'

Gravel Extraction Development Application

Contour and Drainage Plan

Abrus CONSULTING

DRAWN	CNH	DATE
CHECKED	RW	7/8/2024

SCALE	FIGURE No.	A3
1:8,000	3	

PROJECT No.

Notes:

1. Coordinate System: GDA 1994.
2. Background imagery courtesy of Landgate SLIP.
3. Salinity data courtesy of DPIRD.

3.3 Receiving Environment

The proposed primary gravel extraction site is located in an area that ranges from 125m above sea level to approximately 145m (see Figure 3). There is a gentle slope to this area. Storm water at the gravel quarry area will flow primarily to the south west towards the creek. Storm water collected in the sediment traps drains naturally into the soil or evaporates. Any sediment trapped remains in the traps, which will be infilled at rehabilitation.

The potential third gravel extraction area is located in an area that ranges from 125m above sea level to approximately 140m and the contours are quite widely spaced, meaning there is no excessive or extreme slopes in that area. Storm water from this area will drain to the sediment traps and creek-line located to the east. Any overflow passes across into State Forest, with drainage direction primarily to the south east (towards the creek-line from the sand extractive area).

Given the topography of the area and the nature of the ground material, it is unlikely that there will be any impacts from expression of surface water within the previous or proposed extraction areas. No groundwater exposure or contamination from the proposed extractive activities is anticipated. There is a very low risk of impacts to the regional salinity from the proposed operations.

4 Actions

Management actions for identified risks are provided in Table 1 below.

Monitoring	Risk	Action
Visual stormwater/sediment collection in sediment trap	Overflow of water/sediment from trap	• Silt will be trapped in the sediment trap and allowed to settle • The water collection point (trap) will prevent the outflow of sediment from the quarry • Additional traps/bunds to be created if required
Complaints register	Complaint	• Manager to assess stormwater levels/sediment burden and notify complainant of outcome of conditions and actions taken (if any)

Table 1. Drainage Management Actions

5 Drainage Post-Rehabilitation

Drainage of the rehabilitated quarry will consist of re-establishment of the contours to allow for water movement to freely drain over the surrounding environment and to the riparian zones. The area will not be compacted.

6 Document Review

The owners will review all site management documentation on an annual basis. Any alterations/improvements to reflect the operational activities at the site will be updated in future documents.

APPENDIX C

Site Rehabilitation Plan

Site Rehabilitation Plan

“Brookvale”
Lot 121, Shire of Nannup



Prepared for
L.M. and E.A. Crouch

By

Abrus
CONSULTING

rachael@abrus.com.au
MOBILE: 0429137757

Date: September 2024
Report Version: 1

Table of Contents

1 Introduction.....1

 1.1 Land Use and Location.....1

 1.2 Soils and Previous Surveys.....1

 1.3 Surrounding Land Uses.....3

2 Operations and Potential Impacts.....5

 2.1 Potential Impacts.....5

 2.2 Rehabilitation Activities.....5

 2.3 Completion Criteria.....5

3 Document Review.....7

Site Rehabilitation Plan Lot 121, Shire of Nannup

1 Introduction

This Site Rehabilitation Plan (SRP) has been prepared in accordance with guidelines as provided by the Department of Environment and Conservation and the Western Australia Department of Mines, Industry Regulation and Safety. This Plan should be read in conjunction with the Development Application “Extractive Industry Application and Management Plans, Lot 121, Shire of Nannup” prepared by Abrus Consulting Pty Ltd.

The objectives of this SRP include:

- To identify potential impacts from the proposed extraction activities;
- To identify any sensitive receptors and their proximity to operational areas;
- To describe rehabilitation activities; and
- To identify rehabilitation completion criteria, targets and actions.

1.1 Land Use and Location

The property “Brookvale” is owned by L.M. and E.A. Crouch.

The proposed gravel pits are 7km south of Nannup township (via Vasse Highway, to Roberts Road, on Lot 121. This property is comprised of 67.161 hectares (ha) and is primarily used for general farming.

A gravel pit (in three sections, with a total of 9.76 ha) is proposed, however not all the proposed area may be extracted, depending on resource availability and market demand. Access to the property is directly off Roberts Road, but truck and contractor access to the pits will access the site via a track which passes through DBCA managed land that connects with Red Gully Road. Red Gully Road then connects with the Vasse Highway. See locality Figure 1.

1.2 Soils and Previous Surveys

Soil surveys were undertaken by Topoclimate Services Pty Ltd (TSPL) in 2005. Soil testing was also included in the surveys, which considered pH, cation exchange capacity (CEC), sodicity and nutrients. These parameters are important when assessing landscape condition and in this instance, to plan for suitable rehabilitation of the site. A salinity survey was also conducted as part of the farm plan to ascertain if there were any salinity issues present. TPSL (2005) identified that *“The slight salinity levels in the soils, mainly in the topsoils, do not appear to have affected the water in the dams...All of the water samples, at the time of testing had salinity measurements well within the non-saline range for irrigation water (ie less than 100mS/m).”*

Legend

- Local Road
- Highway
- Property boundary

McKelvie Rd

Roberts Rd

Chalwell Rd

Nasse Hwy



0 250 500 1,000
m

1:15,000

LOCATION MAP:

PERTH
NANNUP BRIDGETOWN

Base map:
Worldwide Imagery -
Sourced from
ESRI.

Abrus
CONSULTING

Crouch Property 'Brookvale'
Lot 121 Roberts Road, Carlotta
LOCATION PLAN

Figure: 1
Project:

Drawn: CNH
Date: 12/08/2024

Coordinate System:
GDA 1994

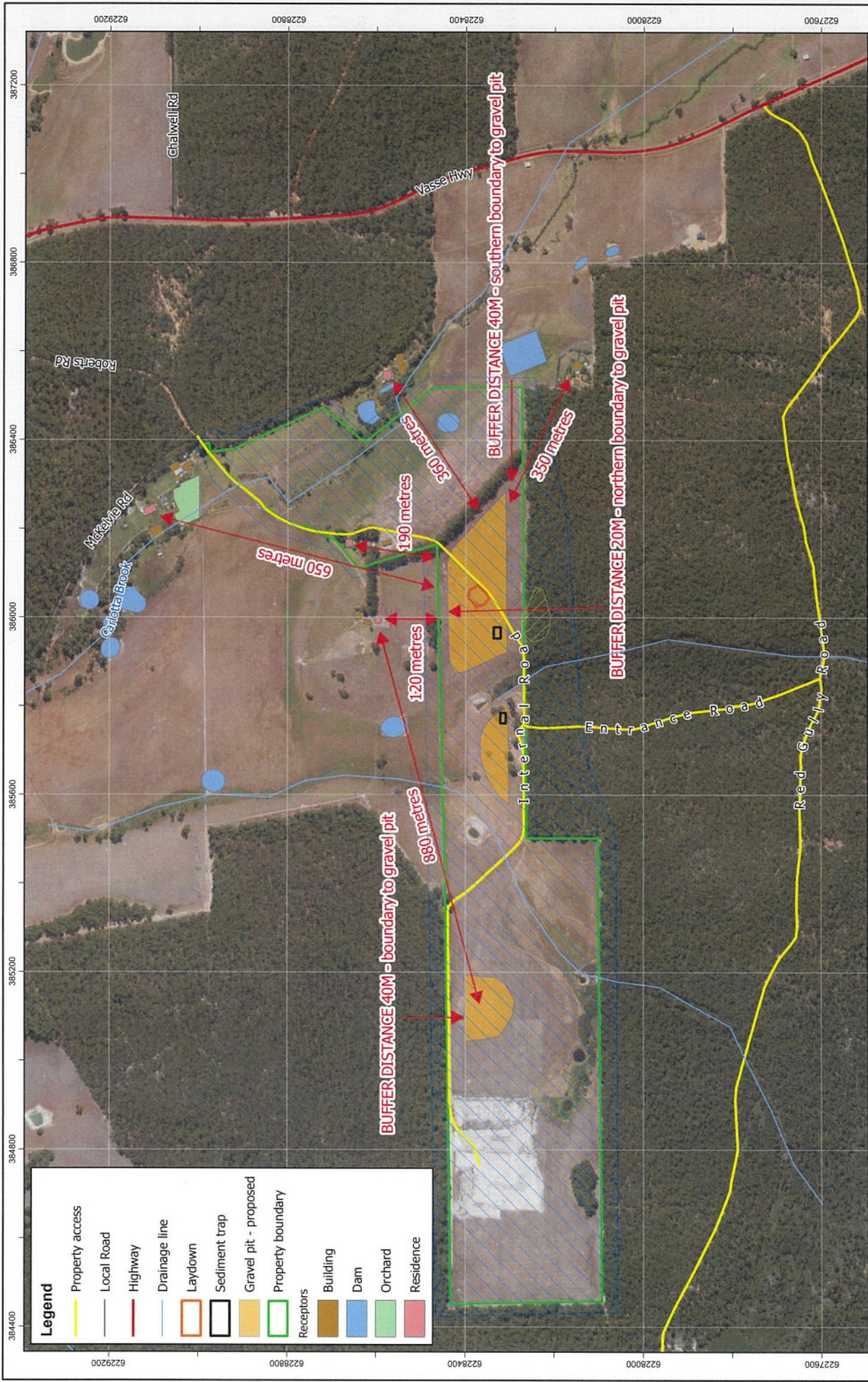
A4

1.3 Surrounding Land Uses

The proposed extraction areas are surrounded by agricultural land (mixed), rural lifestyle and State Forest (DBCA) managed land.

The nearest residence (owned by Darren Ganzer) is located approximately 120m to the north of the main proposed gravel pit area (which is the property boundary). The residence of Bruce Blackburn is approximately 650m from the edge of the property boundary (a distance of 670m if the 20m buffer is used) and Mossbrook residence is 360m from the most eastern edge of the gravel pit. Another residence to the southeast of the main gravel pit (owned by Mike Dennis) is approximately 350m from the southern edge of the pit. The Brookvale managers residence is 190m from the edge of the main gravel pit.

All residences are within the EPA separation distance requirement for the proposed gravel extractive activities (see Figure 2).



Location Plan

Abrus
CONSULTING

Crouch Property, 'Brookvale'
**Gravel Extraction
Development Application**
Site Plan of Pits & Receptors

DRAWN	CNH	DATE	07/08/2024
CHECKED	RW	DATE	07/08/2024
SCALE	1:8,000	FIGURE No.	2
PROJECT No.		A3	

Notes:
1. Coordinate System: GDA 1994.
2. Background imagery courtesy of Landgate SLP.

2 Operations and Potential Impacts

2.1 Potential Impacts

Potential impacts from extractive operations include:

1. Dust from operations (extraction and transportation) may affect nearby residents;
2. That erosion may occur creating an unstable landform;
3. Lack of vegetation regrowth/reduced health from disease;
4. That weeds may impact the area (growth or introduction of new species);
5. That the area may not blend visually with the surrounding environment;
6. That local fauna may be negatively impacted; and
7. Local hydrology may be impacted.

These are discussed in the completion criteria table (Table 1).

2.2 Rehabilitation Activities

Rehabilitation of the completed areas will be progressive, with the areas returned to pasture (primarily clover and rye). Due to the small scale of the extractive area and activities, and that the intent is to return the area to pasture, a detailed Site Rehabilitation Plan is not considered feasible at this stage.

A general methodology, undertaking a staged approach is proposed, with rehabilitation beginning once an area has been extracted. The selected contractor will redistribute the topsoil and re-contour the landscape, with the owner reseeding the areas.

Some areas will need to be left for loading of gravel by purchasers and to leave a safe turn around area for trucks and loading machinery. The final areas will be rehabilitated once no longer required.

As a general rule, the following steps will be implemented:

- Stockpiled topsoil will be retained during extraction and spread back over the completed areas;
- The pit floor will be ripped along the contour;
- Erosion control implemented if required;
- Area will be prepared for planting, which may require weed management;
- Seeding of pasture species.

The restoration/rehabilitation goal for this site is to return the area post-extraction to a stable and erosion resistant landform. It will blend with the surrounding landscape.

2.3 Completion Criteria

Completion criteria are necessary to ensure that the objectives of rehabilitation have been met. Table 1 below provides a summary of the criteria, objectives and targets.

Criteria	Target	Actions
1. Off-site impacts	That off-site impacts (ie dust) that could affect nearby residents do not occur	• Successful re-establishment of pasture • Maintaining existing tree and vegetation belts
2. Landform stability	1. That the final landform is stable 2. No erosion occurs	• Identification of potential erosion areas are identified and managed during rehabilitation
3. Vegetation	1. That the area will be returned to pasture 2. No dieback will be introduced	• Successful re-establishment of pasture • Implementation of vehicle hygiene procedures
4. Weeds	1. That declared weeds will not be present 2. That declared weeds will not be introduced	• Declared weeds if present will be removed/managed • Implementation of vehicle hygiene procedures
5. Visual amenity	The rehabilitated area will be returned to pasture and blend with the surrounding environment	• Successful re-establishment of pasture
6. Fauna	Fauna will return to the site area	• Successful re-establishment of pasture • Maintaining existing tree and vegetation belts and riparian zones
7. Hydrology	1. That the final landform will not be affected by site hydrology 2. Stormwater will not negatively impact the site	• Stormwater will be managed during rehabilitation allowing water movement to freely drain over the surrounding environment and into the riparian zones • The area will not be compacted

Table 1: Completion Criteria

3 Document Review

The owners will review all site management documentation on an annual basis. Any alterations/improvements to reflect the operational activities at the site will be updated in future documents.

