

Your ref:
Our ref: 12531104

05 September 2022

**Native Vegetation Branch
Department of Water and Environmental Regulation
Locked Bag 10
JOONDALUP DC WA 6919**

**Shire of Plantagenet Mount Barker Waste Management Facility, Lot 7546 Plan 186612 O'Neill Road,
Mount Barker, Native Vegetation Clearing Permit Application**

To Whom It May Concern

Background information

The Shire of Plantagenet (the applicant/ proponent) is proposing to expand the Mount Barker Waste Management Facility (WMF), which is a Prescribed Premises licenced under the *Environmental Protection Act (1986)* (EP Act) as administered by Department of Water and Environmental Regulation (DWER) licence number L7026/1997/14. The Mount Barker WMF is located at Lot 7546 Plan 186612, on Crown Reserve 23969 O'Neill Road, within the Shire of Plantagenet, approximately four kilometres (km) south-east of the Mount Barker town-site (Figure 1, Attachment A). The Shire of Plantagenet proof of ownership has been provided in Attachment B.

The current available airspace at the landfill is likely to reach the final design height in less than five years. As such, the Shire requires the landfill to be appropriately reprofiled, capped and closed and an additional landfill area (constructed as three new cells) adjoining the west of the current landfill. As part of the proposed closure and expansion activities, the current emissions management infrastructure (e.g. stormwater and leachate) will be redesigned and upgraded. The upgrades will minimise the impact of future emissions and discharges to environmental receptors in relation to the new cells and the current landfill mass (there is currently no leachate and minimal sediment/stormwater controls down gradient of the landfill).

The proposed expansion (the Proposal) will include additional landfill cells to the west of the current public transfer station and existing landfill footprint, and south of the current liquid waste facility. The proposed expansion works are to be supported through the staged capping of the completed landfill areas and construction of appropriately designed leachate and stormwater management infrastructure. The concept design for the proposed expansion works has been provided in Attachment C.

As the proposed landfill extension and associated environmental management infrastructure is not proposed to result in an increase in the facility's annual throughput capacity or a change in the operational methods, the levels of environmental emissions and discharges are likely to remain similar to that currently produced.

A number of management and mitigation measures have been outlined in the DWER Works Approval Application (GHD). These will be implemented during construction and operation of the landfill extension to mitigate potential direct and indirect impacts, such as those from dust and leachate, on the surrounding native vegetation. These measures are discussed further in the assessment of the Ten Clearing Principles in Attachment D.

Native Vegetation Clearing Permit application area

The Shire of Plantagenet commissioned GHD Pty Ltd (GHD) to prepare a Native Vegetation Clearing Permit (NVCP) application for clearing of up to 2.45 ha (NVCP application area) within the 8.68 ha development footprint.

Figure 1 (Attachment A) provides the approximate extent of the following:

- Development footprint (8.68 ha)
- Survey area (1.68 ha) (Bio Diverse Solutions, 2021)
- NVCP application area (2.45 ha) (this application).

A Reconnaissance Flora and Vegetation and Basic Fauna Survey was undertaken by Bio Diverse Solutions in November 2021. The Bio Diverse Solutions (2021) survey area was approximately 1.68 ha, with a survey gap of approximately 0.92 ha. Vegetation types, condition and fauna habitat types have been extrapolated for the survey gap, based on Bio Diverse Solutions (2021) mapping coupled with current aerial imagery and site photographs. This indicates that the survey gap is predominantly comprised of Cleared/ Disturbed areas (95%).

Avoidance of native vegetation clearing was a key consideration in the preparation and planning of the Proposal. The 2.45 ha NVCP application area has been restricted to areas of the Development footprint which have been disturbed previously where practicable.

The NVCP application area has a disturbance area of approximately 2.45 ha including 0.69 ha of native vegetation and 1.76 ha of Cleared/ Disturbed (Figure 2, Attachment A). The native vegetation within the NVCP application area was mapped in a Degraded condition and Cleared/ Disturbed areas in Completely Degraded condition (Figure 3, Attachment A).

The remainder of the Development footprint is comprised of areas of the following:

- 4.35 ha of previous landfill area
- 1.88 ha previously subject to DWER clearing permit 4256/1, approved 16/05/2011 and expired 16/05/2013 (Figure 4, Attachment A).

This letter has been prepared in support of an application for a NVCP under Section 51E of Part V of the *Environmental Protection Act 1986* (EP Act), for activities associated with the DWER Works Approval Application for the Proposal.

Ten Clearing Principles Assessment

Schedule 5 of the EP Act defines Ten Clearing Principles for native vegetation. These principles aim to ensure that all potential impacts resulting from removal of native vegetation can be assessed in an integrated way. Clearing required for construction of the Proposal has been assessed against the Ten Clearing Principles, in accordance with the DWER's A Guide to the Assessment of Applications to Clear Native Vegetation (DER, 2014) to determine whether the application is at variance.

The assessment has been based on clearing of up to 0.69 ha of native vegetation within the 2.45 ha NVCP application area. The assessment indicates that clearing within the NVCP application area is not considered likely to be at variance to the ten clearing principles (Attachment D).

Relevant investigation reports and management plans

The following relevant investigations have been undertaken for the purpose of the Proposal:

- Reconnaissance Flora and Vegetation and Basic Fauna Survey report (Bio Diverse Solutions, 2021) (Attachment E).
- Mount Barker Waste Management Facility - Closure and Post Closure Management Plan (GHD, 2021)
- Mount Barker Waste Management Facility, Works Approval Supporting Document (GHD).

This report is subject to, and must be read in conjunction with, the limitations set out in Attachment F and the assumptions and qualifications contained throughout the report.

If you require any further information, please do not hesitate to contact the undersigned.

Regards



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References

- Beard, J. S. (1979). *Vegetation Survey of Western Australia: the Vegetation of the Perth Area Western Australia, map and explanatory memoir 1:250,000 series*. Applecross: Vegmap Publications.
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- GoWA. (2022). *data.wa.gov.au*. Retrieved from <https://data.wa.gov.au/>
- Shepherd, D. P., Beeston, G. R., & Hopkins, A. J. (2002). *Native Vegetation in Western Australia – Extent, Type and Status, Resource Management Technical Report 249*. Perth: Department of Agriculture WA.

Attachments

Attachment A – Figures

Attachment B – Proof of ownership

Attachment C – Concept Design

Attachment D – Assessment Against the Ten Clearing Principles

Attachment E – Reconnaissance Flora and Vegetation and Basic Fauna Survey (Bio Diverse Solutions, 2021)

Attachment F – GHD Limitations

Attachment A – Figures

Figure 1: Locality

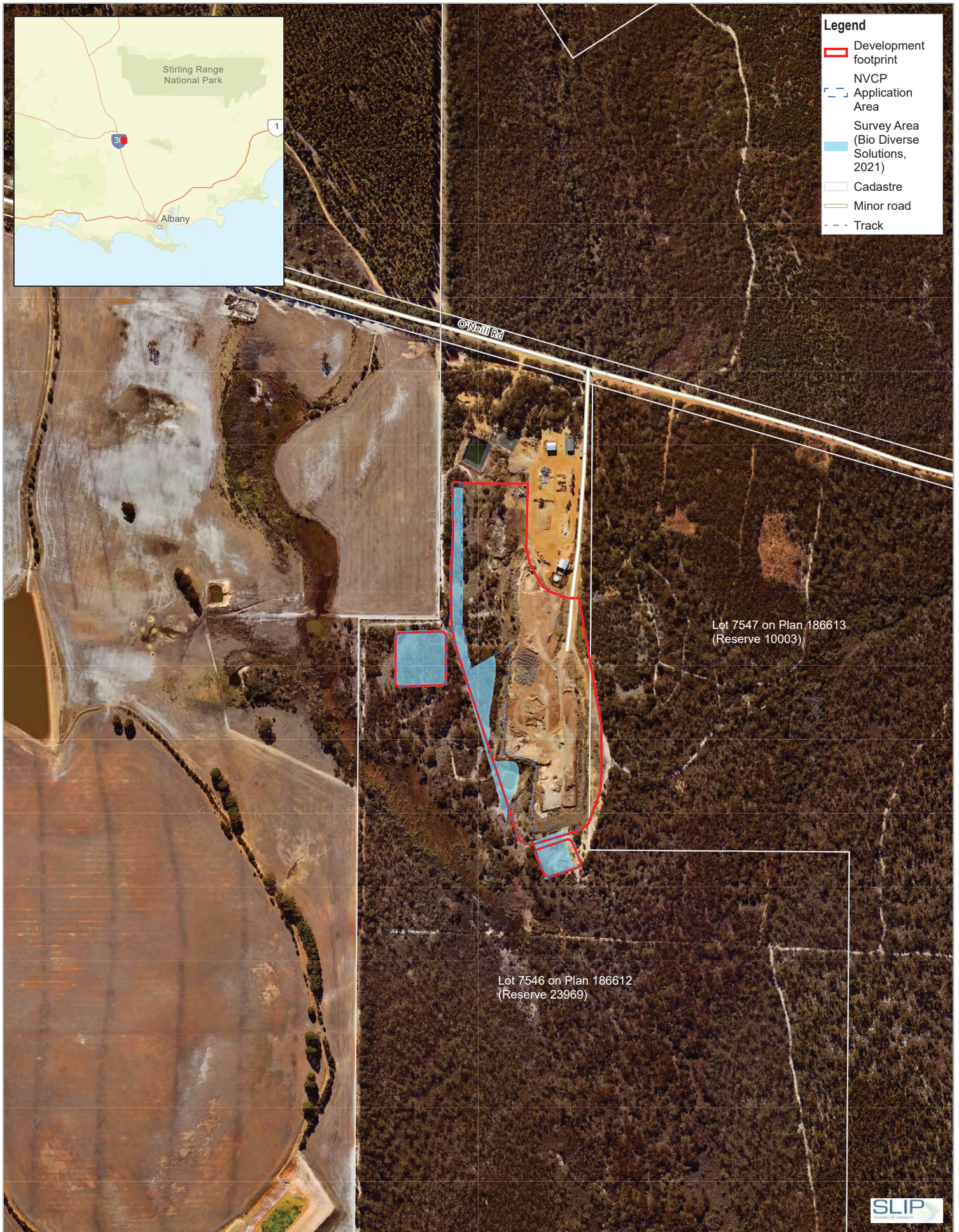
Figure 2: Vegetation Types

Figure 3: Vegetation Condition

Figure 4: Previous Clearing

Figure 5: Fauna Habitat

Figure 6: Hydrology

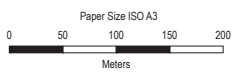


Legend

- Development footprint
- NVCP Application Area
- Survey Area (Bio Diverse Solutions, 2021)
- Cadastre
- Minor road
- Track

Lot 7547 on Plan 186613
(Reserve 10003)

Lot 7546 on Plan 186612
(Reserve 23969)



SHIRE OF PLANTAGENET
O'NEILL ROAD WASTE MANAGEMENT FACILITY

Project No. 61-12531104
Revision No. 0
Date 9/06/2022

LOCALITY

FIGURE 1



Legend

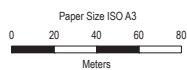
- Development footprint
- NVCP Application Area
- Cadastre
- Minor road
- Track

Vegetation Types (Bio Diverse Solutions 2021)

- Cleared / Disturbed
- Corcal Eucmar Woodland
- Eucocc Open Forest
- Melcut wetland

Extrapolated Vegetation Types

- Cleared / Disturbed
- Corcal Eucmar Woodland
- Eucocc Open Forest



Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



SHIRE OF PLANTAGENET
 O'NEILL ROAD WASTE MANAGEMENT FACILITY

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VEGETATION TYPES

FIGURE 2



Legend

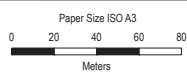
- Development footprint
- NVCP Application Area
- Cadastrate
- Minor road
- Track

Vegetation condition (Bio Diverse Solutions 2021)

- Completely Degraded
- Degraded

Extrapolated vegetation condition

- Completely Degraded
- Degraded



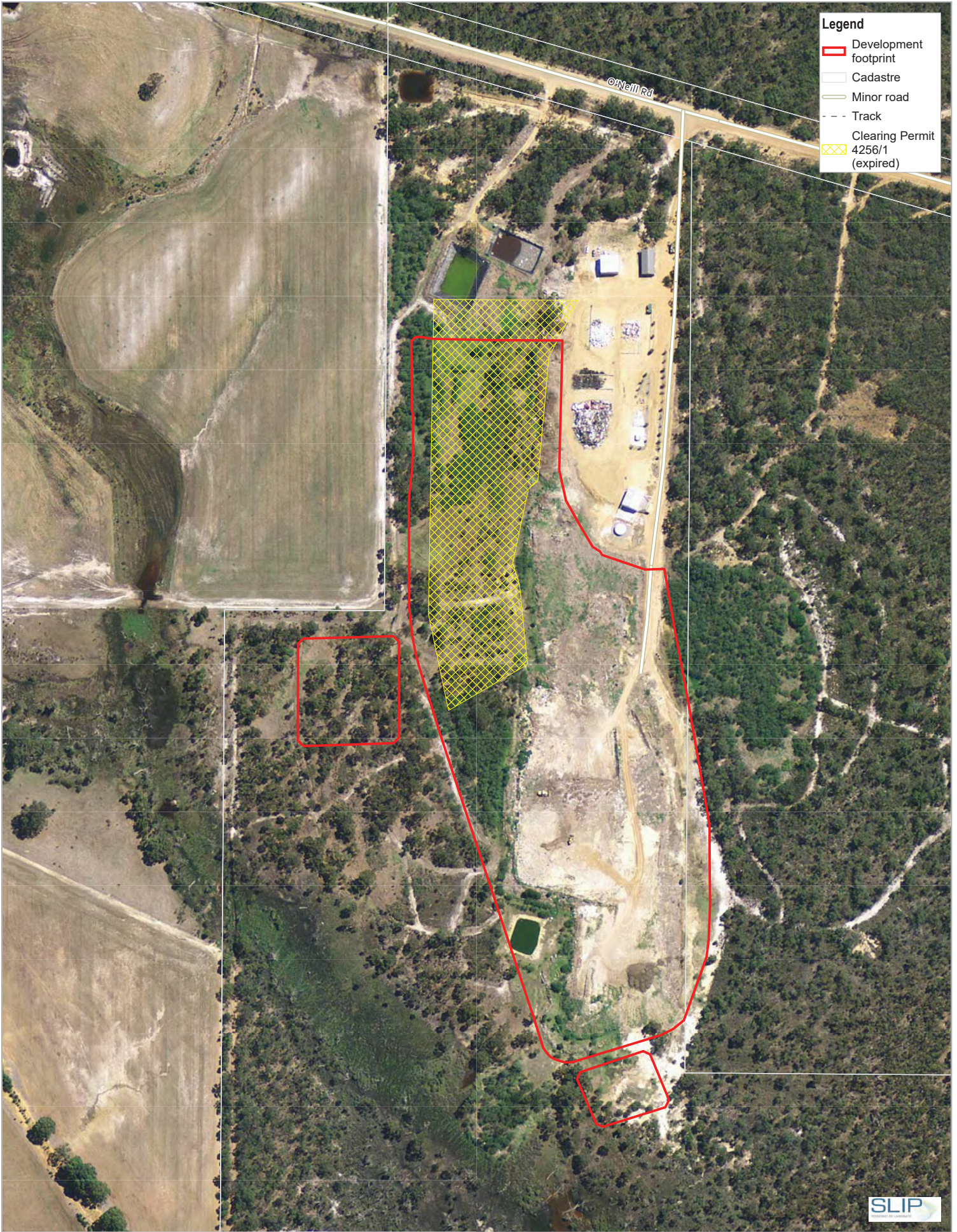
SHIRE OF PLANTAGENET
O'NEILL ROAD WASTE MANAGEMENT FACILITY

Project No. 61-12531104
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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

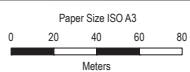
VEGETATION CONDITION

FIGURE 3



Legend

- Development footprint
- Cadastre
- Minor road
- Track
- Clearing Permit 4256/1 (expired)



Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



SHIRE OF PLANTAGENET
 O'NEILL ROAD WASTE MANAGEMENT FACILITY

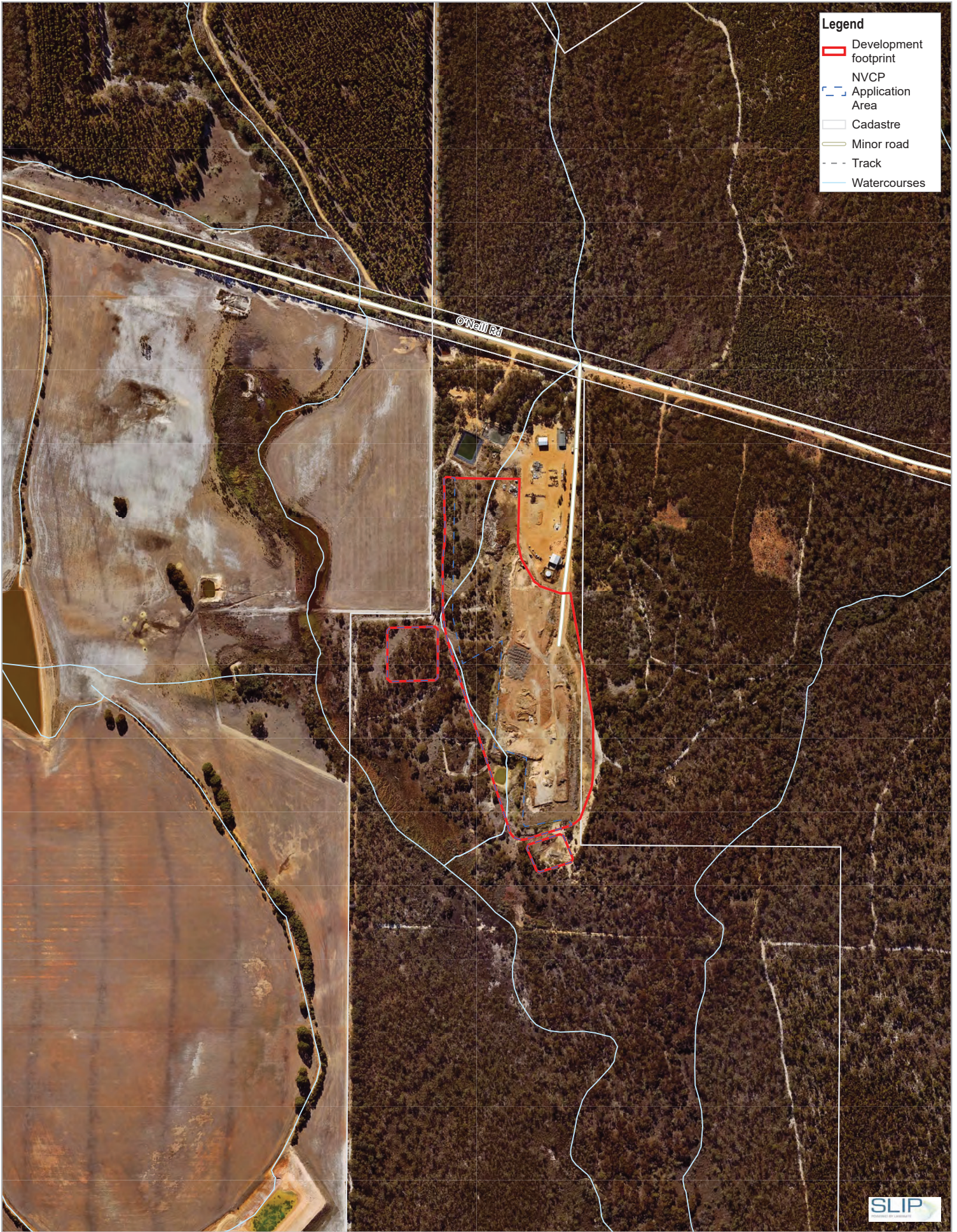
**PREVIOUS CLEARING
 PERMIT 4256/1 (EXPIRED)
 2006 AERIAL IMAGE**

Project No. 61-12631104
 Revision No. 0
 Date 9/06/2022



FIGURE 4





Legend

- Development footprint
- NVCP Application Area
- Cadastre
- Minor road
- Track
- Watercourses

Paper Size ISO A3
 0 20 40 60 80
 Meters

Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 50



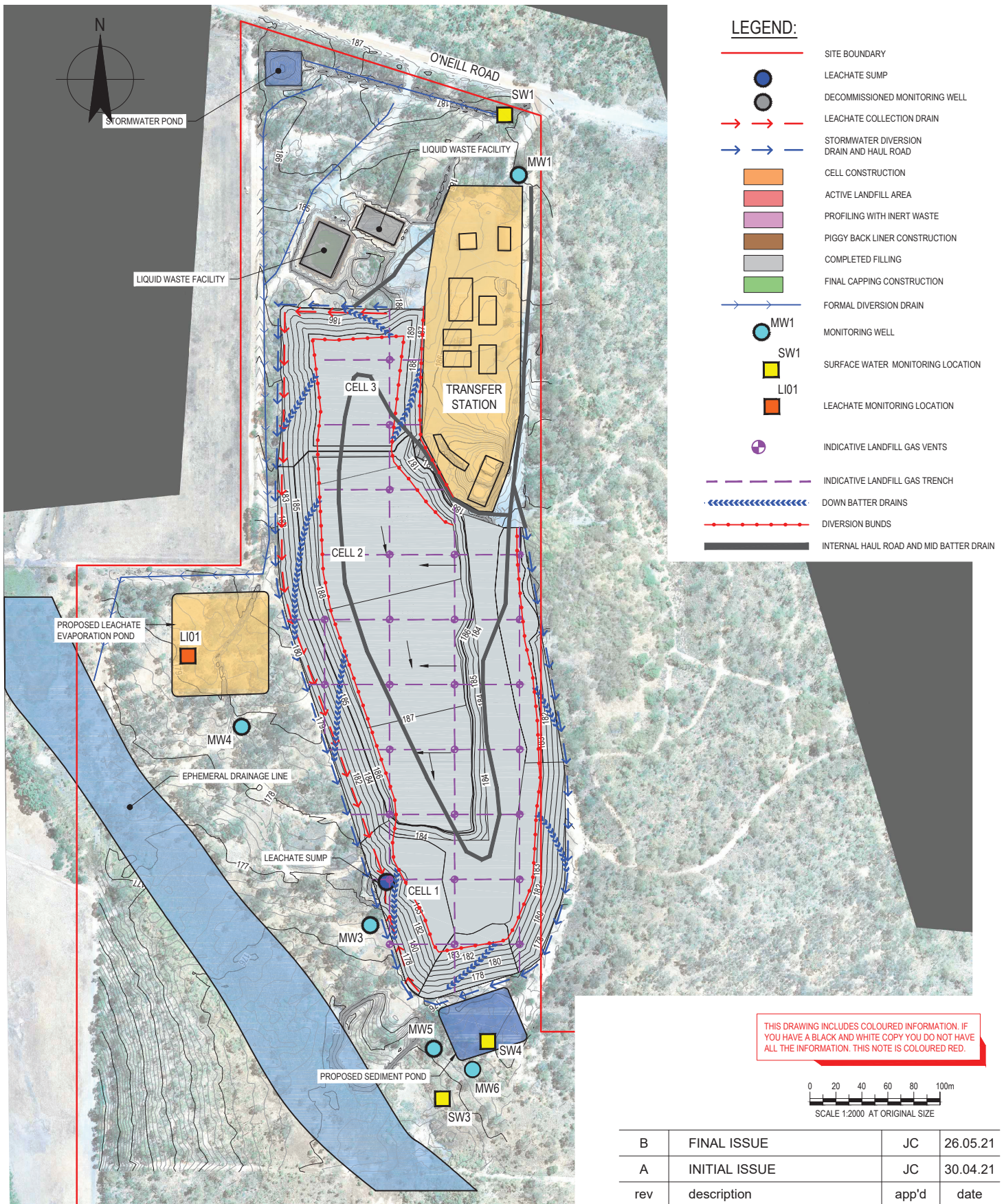
SHIRE OF PLANTAGENET
 O'NEILL ROAD WASTE MANAGEMENT FACILITY

Project No. 61-12531104
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 Date 9/06/2022

HYDROLOGY

FIGURE 6

Attachment C – Concept Design



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Plot Date: 15 August 2022 - 10:45 AM Plotted by: Patrick Moses Diaz

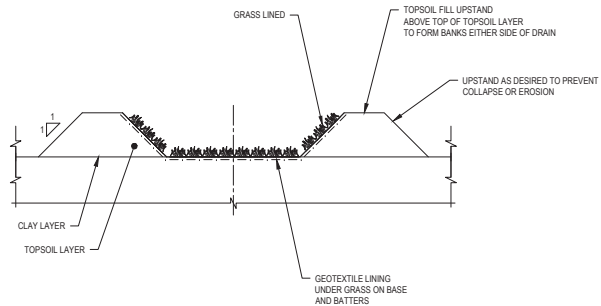
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SHIRE OF PLANTAGENET
MOUNT BARKER WMF

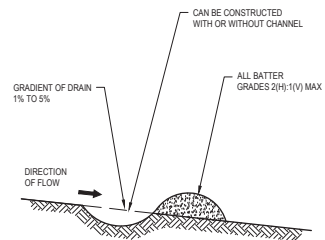
FINAL LANDFORM

scale | 1:2000 for A4 job no. | 12531104
date | MAY 2021 rev no. | B

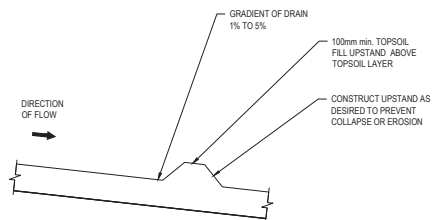
approved (PD) J.CRAMER **Figure 5**



**DOWN BATTER DRAIN
TYPICAL SECTION**
NOT TO SCALE



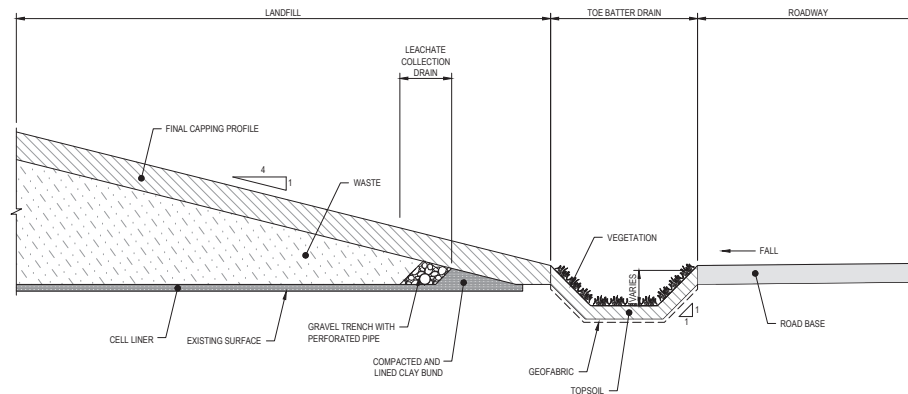
**DIVERSION BUND - TYPE 1
(TYPICAL SECTION)**
NOT TO SCALE



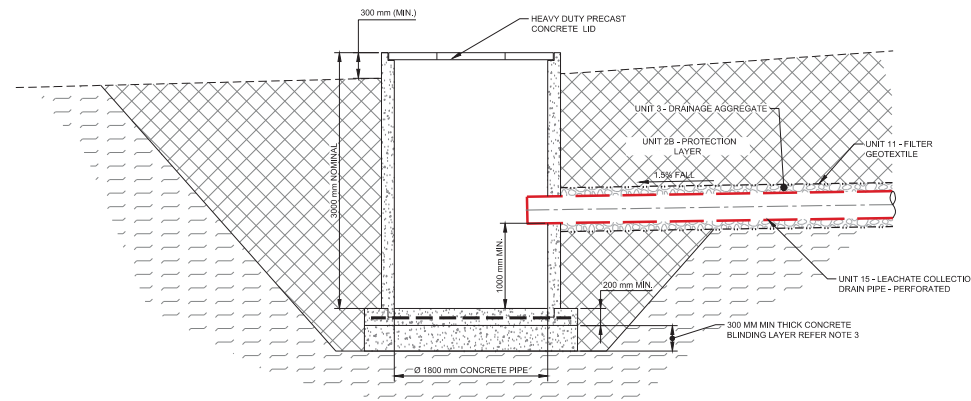
**DIVERSION BUND - TYPE 2
(TYPICAL SECTION)**
NOT TO SCALE

NOTES:

1. STORMWATER MANAGEMENT CONTROLS SUCH AS DOWN BATTER DRAINS AND DIVERSION BUNDS TO BE PROGRESSIVELY CONSTRUCTED, MAINTAINED AND MODIFIED AS SITE DEVELOPMENT PROGRESSES.
2. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH THE FILLING PLAN SKETCH SET.
3. EROSION AND SEDIMENT CONTROL STRUCTURES SUCH AS SEDIMENT FENCES, ROCK DRAINS ETC. TO BE CONSIDERED AND PLACED AS REQUIRED.



**TYPICAL SECTION
HAUL ROAD WITH TOE BATTER DRAIN AND
LEACHATE COLLECTION DRAIN**
SCALE 1:20



TYPICAL LEACHATE COLLECTION SUMP DETAIL
SCALE 1:30

NOTES:

1. THE LID SHALL BE HEAVY DUTY PRECAST CONCRETE, CLASS C EQUIPPED WITH A HINGED GALVANIZED STEEL GRATE. THE GRATE SHALL HAVE A LOCKING SYSTEM TO PREVENT UNREGULATED ENTRY.
2. IF BASE OF EXCAVATION IS ON WASTE, THEN INSTALL MASS POUR CONCRETE BLINDING LAYER MINIMUM 300 mm THICK LOCALLY UNDER SUMP AND/OR PIT.

THIS DRAWING INCLUDES COLOURED INFORMATION. IF YOU HAVE A BLACK AND WHITE COPY YOU DO NOT HAVE ALL THE INFORMATION. THIS NOTE IS COLOURED RED.



SHIRE OF PLANTAGENET
MOUNT BARKER WMF

**TYPICAL STORMWATER AND
LEACHATE DETAILS**

Job Number | 12531104

Revision | A

Date | MARCH 2021

Figure 10

Attachment D – Assessment Against the Ten Clearing Principles

Principle	Assessment	Outcome
<p>A Native vegetation should not be cleared if it comprises a high level of biological diversity.</p>	<p>The 2.45 ha NVCP application area includes 0.69 ha of native vegetation as described in the Reconnaissance and Targeted Flora and Vegetation Survey (Bio Diverse Solutions, 2021), consisting of three vegetation units (Figure 2, Attachment A), which is in Degraded condition (Figure 3, Attachment A). The remainder of the NVCP application area is mapped as Cleared/ Disturbance – approximately 1.76 ha (30.8%) in Completely Degraded condition. Vegetation types identified within the NVCP application area include:</p> <ul style="list-style-type: none"> – Corcal Eucmar – <i>Corymbia calophylla</i> and <i>Eucalyptus marginata</i> Woodland (approximately 0.06 ha) – Eucocc – <i>Eucalyptus occidentalis</i> Open Forest (approximately 0.62 ha) – Melcut – <i>Melaleuca cuticularis</i> Wetland (approximately 0.01 ha). <p>A search of the NatureMap database (DBCA, 2007-) and DAWE Protected Matters Search Tool (PMST) (DAWE, 2021) (Attachment E) identified 738 flora species (including 101 introduced species) potentially occurring within 10 km of the Survey Area. Dominant families recorded included Fabaceae (115 species), Orchidaceae (67 species), Proteaceae (67 species), Myrtaceae (59 species) and Poaceae (36 species).</p> <p>A total of 62 flora taxa (including subspecies and varieties), representing 23 families, were recorded within the 1.68 ha Survey Area during the field survey. This total comprised 21 native taxa and 41 introduced flora taxa (Bio Diverse Solutions, 2021).</p> <p>A search of the NatureMap database (DBCA, 2007-) and DAWE Protected Matters Search Tool (PMST) (DAWE, 2021) (Attachment E) identified 153 vertebrate species (including 10 introduced species) potentially occurring within 10 km of the Survey Area comprising six amphibians, 116 birds, two fish, 21 mammals and eight reptiles. Dominant families recorded included Anatidae (10 species), Meliphagidae (10 species) and Accipitridae (nine species).</p> <p>A total of 22 fauna species were recorded within the Survey Area during the field survey, including 17 bird and five mammal species (Bio Diverse Solutions, 2021).</p> <p>The NVCP application area comprises 0.69 ha of the total 300 km² covered by the desktop searches, which were undertaken to compile the species diversity statistics provided above. It is expected that only a portion of the total biological diversity described above will occur within the NVCP application area.</p> <p>Desktop assessment of historical aerial imagery (Figure 4, Attachment A) indicates that the majority of the Development footprint has been previously cleared within the NVCP application area for the purpose of landfilling activities and under an expired DWER clearing permit 4256/1, cleared between 2011 and 2013. Vegetation immediately surrounding the existing landfill is largely comprised of regrowth and weeds.</p> <p>An A Class Nature Reserve (Reserve 10003) is located directly to the west and south of Lot 7546 and continues to the north of O'Neill Road. This land is listed as Nature Reserve under Section 5(1)(d) of the <i>Conservation and Land Management Act 1984</i> (CALM Act) and based on assessment of aerial photography, is expected to be in better condition than the vegetation within Lot 7546.</p> <p>Given the Degraded to Completely Degraded condition of vegetation within the NVCP application area it is considered that the native vegetation present does not comprise a high level of biological diversity. In addition, there are significant areas of intact native vegetation to the west, south and north of the WMF site and it is considered that the NVCP application area is not likely to comprise a greater diversity than similar areas, either locally or at a bioregional scale. The proposed clearing is considered not likely to be at variance to this Principle.</p>	<p>The proposed clearing is not likely to be at variance to this principle</p>

Principle	Assessment	Outcome
<p>B Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.</p>	<p>The NVCP application area includes two fauna habitat types, that were described in the Basic Fauna Survey report (Attachment E). The habitat types include (Figure 5, Attachment A):</p> <ul style="list-style-type: none"> – Corcal Eucmar – potential Black Cockatoo foraging and roosting habitat (approximately 0.06 ha) – Eucocc – potential Black Cockatoo roosting habitat (approximately 0.62 ha). <p>A search of the NatureMap database (DBCA, 2007-) and DAWE Protected Matters Search Tool (PMST) (DAWE, 2021) (Attachment E) identified 153 vertebrate species (including 10 introduced species) potentially occurring within 10 km of the Survey Area comprising six amphibians, 116 birds, two fish, 21 mammals and eight reptiles. Dominant families recorded included Anatidae (10 species), Meliphagidae (10 species) and Accipitridae (nine species).</p> <p>Searches of the EPBC Act PMST (DAWE, 2021) and NatureMap database (DBCA, 2007-) identified the potential presence of 27 significant fauna species including 16 Threatened species listed under the EPBC Act and/or BC Act, two Priority 4, nine other specially protected fauna species within 10 km of the Survey Area.</p> <p>A total of seven migratory terrestrial and wetland birds were identified as potentially occurring with a 10 km buffer of the Survey Area. The likelihood of occurrence assessment, based on habitat availability and previous records in the local area, undertaken by Bio Diverse Solutions (2021) concluded that six taxa possibly occur within the Survey Area:</p> <ul style="list-style-type: none"> – Carnaby's Cockatoo (<i>Zanda latirostris</i>) (listed as Endangered (EN) under both the <i>Environmental Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) and <i>Biodiversity Conservation Act 2016</i> (BC Act)) – Baudin's Cockatoo (<i>Zanda baudinii</i>) (EN/ EN) – Forest Red-tailed Black Cockatoo (<i>Calyptorhynchus banksii subsp. naso</i>) (Vulnerable (VU)/ VU) – Fork-tailed Swift (<i>Apus pacificus</i>) (Migratory (MI)/ MI) – Muir's Corella (<i>Cactua pastinator subsp. pastinator</i>) (listed as Conservation Dependent (CD) under the BC Act) – White-tail Black Cockatoo (<i>Zanda sp.</i> EN/ EN) <p>Species possibly occurring, with suitable habitat located within the NVCP application area, are discussed in detail below:</p> <p>Fork-tailed Swift</p> <p>Potential habitat (<i>Melaleuca cuticularis</i> Wetland) for the Fork-tailed Swift was identified within the Survey Area however this species was not observed during the field survey (Bio Diverse Solutions, 2021).</p> <p>Muir's Corella</p> <p>Potential habitat (<i>Corymbia calophylla</i> and <i>Eucalyptus marginata</i> Woodland and <i>Eucalyptus occidentalis</i> Open Forest) for the Muir's Corella was identified within the Survey Area however there was no evidence of feeding, roosting or nesting activity for this species within the Survey Area and no birds seen or heard during the field survey (Bio Diverse Solutions, 2021).</p>	<p>The proposed clearing is not likely to be at variance to this principle</p>

Principle	Assessment	Outcome
	<p>Black Cockatoos (Carnaby's Cockatoo, Forest Red-tailed Black Cockatoo and Baudin's Cockatoo)</p> <p><i>Breeding</i></p> <p>The NVCP application area is located within the mapped breeding range for Carnaby's Cockatoo (DSEWPAC, 2012).</p> <p>There was no evidence of Black Cockatoo nesting activity within the Survey Area and no birds seen or heard during the field survey (Bio Diverse Solutions, 2021).</p> <p>Two potential Black Cockatoo breeding trees (DBH greater than 500 mm) with hollows are located within the NVCP application area (Figure 5, Attachment 1). Of these trees, one has a suitable hollow, however there was no recent evidence of nesting or hollow occupation observed during the field survey (Bio Diverse Solutions, 2021).</p> <p><i>Foraging</i></p> <p>There was no evidence of Black Cockatoo foraging within the Survey Area during the field survey (Bio Diverse Solutions, 2021).</p> <p>The NVCP application area contains approximately 0.06 ha of potential foraging habitat (<i>Corymbia calophylla</i> and <i>Eucalyptus marginata</i> Woodland) which was in Degraded condition.</p> <p>Approximately 167,000 ha of remnant vegetation is mapped within 40 km of the NVCP application area and is considered likely to represent potential Black Cockatoo foraging habitat, based on broad scale (1:250,000) vegetation mapping of pre-European vegetation associations undertaken by Beard (1979).</p> <p>Clearing of 0.68 ha of foraging and roosting habitat represents less than 0.001 % reduction in potential habitat for the Black Cockatoo species within 40 km of the NVCP application area and therefore is considered unlikely to significantly fragment or reduce the occupancy of these species within the local area.</p> <p><i>Night roosting</i></p> <p>There was no evidence of Black Cockatoo roosting within the Survey Area during the field survey (Bio Diverse Solutions, 2021).</p> <p>The NVCP application area contains approximately 0.68 ha of potential roosting habitat (<i>Corymbia calophylla</i> and <i>Eucalyptus marginata</i> Woodland and <i>Eucalyptus occidentalis</i> Open Forest) which was in Degraded condition.</p> <p>Conclusion</p> <p>Potential clearing of habitat was assessed for species known or likely to occur within the NVCP application area as including up to:</p> <ul style="list-style-type: none"> – 0.68 ha potentially suitable habitat for Carnaby's Cockatoo, Forest Red-tailed Black Cockatoo and Baudin's Cockatoo <ul style="list-style-type: none"> • 0.06 ha potential foraging/ roosting habitat • 0.62 ha potential roosting habitat. • Two potential breeding trees (suitable species > 500 mm DBH, one with hollows suitable for breeding) is located within the NVCP application area. – 0.68 ha potentially suitable habitat for the Muir's Corella 	

Principle	Assessment	Outcome
	<ul style="list-style-type: none"> - 0.01 ha potentially suitable habitat for the Fork-tailed Swift. <p>Due to the extensive remnant vegetation potential Black Cockatoo habitat identified within 40 km of the NVCP application area (of which the proposed clearing represents less than 0.001 % reduction), remnant vegetation located directly to the east, south and north of the WMF Site, and Degraded to Completely Degraded condition of the vegetation within the NVCP application area it is considered that the proposed clearing is unlikely to be at variance to this principle.</p>	
C	<p>Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.</p> <p>Searches of the EPBC Act PMST (DAWE, 2021) and NatureMap (DBCA, 2007-) identified the presence/potential presence of 30 significant flora taxa, including 15 Threatened taxa listed under the EPBC Act and/or the BC Act, within a 10 km buffer of the Survey Area.</p> <p>A post survey likelihood of occurrence undertaken by Bio Diverse Solutions (2021) based on habitat present and survey effort within the NVCP application area, indicates that four Threatened flora species possibly occur within the Survey Area (Attachment E).</p> <ul style="list-style-type: none"> - <i>Lambertia orbifolia subsp. orbifolia</i> (T) - <i>Drakaea micrantha</i> (T). <p>No Threatened flora species listed under the EPBC Act and/ or <i>Biodiversity Conservation Act 2016</i> (BC Act) were recorded during the field survey (Bio Diverse Solutions, 2021). It is considered, based on the survey effort and Degraded to Completely Degraded condition of vegetation within the Survey Area, that the proposed clearing is not likely to be at variance to this Principle.</p>	The proposed clearing is not likely to be at variance to this principle
D	<p>Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for, the maintenance of a threatened ecological community.</p> <p>Desktop assessment of the EPBC Act PMST (Bio Diverse Solutions, 2021) identified one Threatened Ecological Community (TEC) that may occur within the Proposal Area (10 km buffer from the Survey Area):</p> <ul style="list-style-type: none"> - Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia (EPBC Act – Endangered TEC) <p>The Bio Diverse Solutions (2021) field survey did not identify any vegetation units present within the survey area is consistent with this ecological community.</p> <p>It is considered the proposed clearing is unlikely to be at variance to this principle.</p>	The proposed clearing is not likely to be at variance to this principle
	<p>Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.</p> <p>Broad scale (1:250,000) vegetation mapping undertaken by Beard (1979) indicates that one vegetation association is present across the Development Area. This vegetation association is described as follows:</p> <ul style="list-style-type: none"> - Narrikup – (vegetation association 3). The vegetation description is “mainly jarrah and marri <i>Eucalyptus marginata</i>, <i>Corymbia calophylla</i>”. <p>Beard mapping has been adapted and digitised by Shepherd et al (2002).The extent of Beard’s (1979) vegetation associations has been determined by the state-wide vegetation remaining extent calculations maintained by DBCA (latest update March 2019 – Government of Western Australia 2019).</p> <p>As shown in the table overpage, the extent of vegetation association 3 remaining is above the 30 % threshold level of the pre-European extent for the State, IBRA bioregion, subregion and Local Government Area (LGA).</p>	The proposed clearing is not likely to be at variance to this principle

Principle		Assessment					Outcome
		Beard Vegetation Association	Scale	Pre-European extent (ha)	Current extent (%)	Remaining (%)	% Current extent in all DBCA managed lands (proportion of current extent)
		Narrikup 3	Western Australia	2,661,404.62	1,806,437.48	67.76	55.23
			IBRA Bioregion – Jarrah Forest	2,390,591.54	1,604,101.56	67.10	54.35
			IBRA Sub-region – Southern Jarrah Forest (JF02)	1,482,491.85	880,655.65	59.40	46.63
			LGA: Shire of Plantagenet	252,388.59	91,789.98	36.37	17.96
<p>Note: The DBCA Statewide vegetation reports are provided as a historic archive only, last update in March 2019, and may not be current.</p> <p>The proposed clearing will result in less than 0.001% reduction in the current extent of these vegetation complexes within the Jarrah Forest IBRA Bioregion and the Shire of Plantagenet.</p> <p>Due to the small area of proposed clearing, it is therefore considered that the proposed clearing is not likely to be at variance to this principle.</p>							
F	Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	<p>The NVCP application area does not intercept any watercourses or wetlands categorised as per the following accessed from Data WA (GoWA, 2022):</p> <ul style="list-style-type: none"> – DBCA’s Directory of Important Wetlands in Australia (DBCA-045) – The closest Nationally Important Wetland is Oyster Harbour, located approximately 35 km to the south east. – Ramsar Sites (DBCA-010) – The closest Ramsar site, Lake Muir – Byenup Lagoon, is located approximately 82 km to the west. – RIWI Act Rivers (DWER-036) – The closest RIWI listed river is the Preston River and its tributaries which is located approximately 180 km to the north west. – South Coast Significant Wetlands (DBCA-018) – The closest South Coast Significant Wetland is Lake Barnes (Register of the National Estate) which is located approximately 8 km to the south west. <p>One wetland community vegetation type, Melaleuca cuticularis Wetland (approx. 0.01 ha) (Degraded condition), was identified within the Survey Area during the vegetation and flora survey (Bio Diverse Solutions, 2021).</p> <p>Surface water enters the WMF from the north-eastern corner via a seasonal creek. A large surface water diversion drain carries water from the northern boundary of the site to the west of the landfill, where it enters a small sediment pond. Surface water at the site then drains in a southerly direction to Sleeman Creek in the southern half of the site, and eventually discharging into Blue Gum Creek approximately 23 km south of the site. Informal channels run north to south down the eastern and western sides of the site to divert surface water in a southerly direction.</p> <p>An on-site sediment pond is currently located in the south western corner of the landfill, which collects surface water runoff from the landfill. However, this pond does not function properly due to a lack of formal drains to direct runoff towards this pond. Surface water within this sediment</p>					The proposed clearing is not likely to be at variance to this principle

Principle	Assessment	Outcome
	<p>pond is contained and does not appear to be impacting surface water downstream, as the elevated nutrient and metal concentrations are not reflected at this location. However, there is potential for the pond to overflow and result in downstream surface water contamination (GHD).</p> <p>As the proposed landfill extension and associated environmental management infrastructure is not proposed to result in an increase in the facility's annual throughput capacity or a change in the operational methods, the levels of environmental emissions and discharges are likely to remain similar to that currently produced.</p> <p>New stormwater drains will be constructed along the east and west of the landfill footprint, diverting clean water from the upstream catchment around the landfill and towards the creekline to the south. The location of stormwater drainage infrastructure is illustrated in Attachment C.</p> <p>As the existing sediment pond, SW2, is located within the future landfill footprint and proposed leachate sump location, it is proposed to be decommissioned prior to the construction of future Cell 1. The construction and operation of a new sediment pond (SW4) will therefore take precedence of the proposed works to provide continuous stormwater management at the premise, while the existing sediment pond is decommissioned. The existing sediment pond is typically dry as there are no formal stormwater drains diverting surface water runoff to this location. Therefore, it is expected that the pond will be dry during decommissioning works. The pond will be decommissioned by backfilling and compacting with material excavated from the new sediment pond.</p> <p>The new sediment pond, SW4, will be constructed to the south of the landfill footprint, as identified Attachment C. The sediment pond will be lined with a 300 mm compacted clay layer, utilising in situ excavation material.</p> <p>The following management and mitigation measures are proposed to be implemented to manage emissions of potential contaminated surface water during the construction and operation of the landfill extension:</p> <ul style="list-style-type: none"> – Landfill operations will be undertaken in such a way that contaminated surface water is retained within the active landfill area and not allowed to flow into non-waste areas. – Progressive construction of stormwater drains to divert un-contaminated surface water away from the active landfill area and directly off site, diverting it around the sediment pond, if possible. – Progressive rehabilitation of the landfill with intermediate or final capping to reduce the active landfill area and hence the area of exposed waste to generate contaminated surface water. – Inspections of the landfill cap and stormwater and leachate infrastructure will be completed on a regular basis so that failure of any control measures can be identified and rectified, with additional inspections undertaken immediately before the onset of winter rains and immediately after heavy rain events. – Maintain a freeboard of 300 mm at all times within the leachate evaporation pond and sediment pond. – Monitor groundwater, surface water and leachate quality at the premise to detect the potential migration of leachate. <p>Management measures are proposed be implemented during construction and operation to manage potential indirect impacts to water courses and wetlands downstream of the Proposal.</p> <p>It is considered that the proposed clearing is not likely to be at variance to this principle due to small area and Degraded Condition of native vegetation within the NVCP application area.</p>	

Principle	Assessment	Outcome
<p>G Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.</p>	<p>DWER groundwater salinity mapping (DWER-026) indicates that the NVCP application area is located in an area with a TDS concentration of 3000-7000 mg/L (GoWA, 2022) which indicates saline groundwater quality (DER, 2021).</p> <p>The DPIRD soil salinity risk mapping (DPIRD-009) indicates the soil salinity risk within the NVCP application area is “30-50% of map unit has a moderate to high salinity risk or is presently saline” (GoWA, 2022).</p> <p>DPIRD Flood Risk Mapping (DPIRD-007) indicates that the majority of the NVCP application area is mapped as “10-30% of the map unit has a moderate to high flood risk” (GoWA, 2022).</p> <p>Site preparation activities have the potential to generate dust from various sources, including vehicle movement on unsealed roads or work sites, loading and transfer of stockpile material and excavation works.</p> <p>During premise operations, potential sources of dust emissions for the proposed landfill extension include:</p> <ul style="list-style-type: none"> – Vehicles utilising the transfer station and landfill activities. Access to the recyclables area, and Tip Shop by the general public and contractors and access to the LWF is via gravel roads. – Earthmoving activities associated with the placement/dumping, excavation and compaction of waste, or the burial, covering and formation of trenches. – Vehicles transferring waste from the transfer station to the landfill. – Landfill waste compaction and capping. – Wind erosion of exposed and disturbed soil surfaces. – Extreme weather conditions, such as high winds and long dry periods, have the potential to cause more significant dust emissions which could potentially impact on nearby receptors. <p>Dust emissions have the potential to impact adjacent vegetation or result in amenity and/or health impacts to nearby sensitive human receptors. However, the movement of vehicles across the premise at low speeds and the application of cover soil relating to the increase in quantity of waste is expected to generate minimal dust. Further, given the relatively rural location of the WMF, dust emissions are unlikely to significantly impact sensitive receptors. Dust emissions resulting from the acceptance of waste into the landfill extension are unlikely to increase significantly above those already emitted as part of the current waste acceptance and landfilling activities.</p> <p>Potential indirect impacts to surrounding vegetation caused by sedimentation will be managed as per measures outlined in the response to Principle (f).</p> <p>Potential direct and indirect impacts which may cause land degradation, such as dust and sedimentation, will be managed during construction and operation via implementation of mitigation measures outlined in the Mount Barker Waste Management Facility - Closure and Post Closure Management Plan (GHD, 2021) and Mount Barker WMF, Works Approval Supporting Document (GHD). It is considered that, if these measures are implemented by the Shire, the proposed clearing is not likely to be at variance to this principle.</p>	<p>The proposed clearing is not likely to be at variance to this principle</p>

Principle	Assessment	Outcome
<p>H Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.</p>	<p>The NVCP application area does not intercept any of the following (GoWA, 2022):</p> <ul style="list-style-type: none"> – Environmentally Sensitive Areas (ESA) (DWER-046), the nearest ESA is approximately 4.6 km to the southwest, along Yerrimup Road, Narrikup. – Redbook Recommended Conservation Reserves 1976-1991 (DBCA-029), the closest site is mapped approximately 11 km to the east which is the Porongurup National Park. <p>An A Class Nature Reserve mapped under DBCA Legislated Lands and Waters (DBCA-011), Reserve 10003 (Lot 7547 on Plan 186613) is located directly to the west of Lot 7546. This land is listed as Nature Reserve under Section 5(1)(d) of the <i>Conservation and Land Management Act 1984</i> (CALM Act).</p> <p>As the NVCP application area is largely located in previously cleared areas, avoids clearing on the boundary of the DBCA legislated land to the east and proposed management measures will be implemented during construction and operation of the Proposal to mitigate direct and indirect off site impacts, it is considered the proposed clearing is not likely to be at variance to this principle.</p>	<p>The proposed clearing is not likely to be at variance to this principle</p>
<p>I Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.</p>	<p>The entirety of the NVCP application area lies within the Karri Groundwater Area which is unproclaimed (WRIMS – Groundwater Areas (DWER-085)) (GoWA, 2022).</p> <p>The NVCP application area is not located within a Public Drinking Water Source Areas (PDWSA – DWER-033) managed under the Country Areas Water Supply Act 1947 (CAWS Act) (GoWA, 2022). The closest PDWSA, Bolganup Creek Catchment Area, is located approximately 14 km to the west.</p> <p>DPIRD Flood Risk Mapping (DPIRD-007) indicates that the majority of the NVCP application area is mapped as “10-30% of the map unit has a moderate to high flood risk” (GoWA, 2022).</p> <p>The groundwater is assessed as being confined beneath a thick, dry, impervious clay layer upon which the current landfill is constructed. Given the current groundwater separation and given that the future landfill cells will be lined and include leachate management infrastructure, it is anticipated that the risk of leachate discharging to groundwater is no greater than existing conditions. Groundwater monitoring at site to date does not indicate leachate impact to groundwater (GHD).</p> <p>The following management and mitigation measures are proposed be implemented to manage potential emissions of contaminated leachate during the construction and operation of the landfill extension (GHD):</p> <ul style="list-style-type: none"> – Construct formal leachate management infrastructure for the future landfill cells comprising leachate interception drain within cell liner, a centralised leachate sump and a leachate evaporation pond. – Minimise the amount of leachate generated by minimising the active landfill area, and placing intermediate or final capping over inactive and/or completed landfill areas as soon as is practicable. – Plant shallow rooted vegetation over capped areas to consume the majority of water absorbed into the cap and reduce the generation of leachate. – Maintain a freeboard of 300 mm at all times within the leachate sump and leachate evaporation pond. – Empty the leachate evaporation pond prior to a known rainfall events to avoid the risk of leachate overflow, via means such as off-site disposal, landfill recirculation or irrigation, if possible. 	<p>The proposed clearing is not likely to be at variance to this principle</p>

Principle	Assessment	Outcome
	<ul style="list-style-type: none"> - Monitor groundwater, surface water and leachate quality at the premise to detect the potential migration of leachate in line with the site licence. <p>Based on the small area of proposed clearing, management measures to be implemented during construction and operation, it is considered that the proposed clearing is unlikely to cause appreciable deterioration in the quality of surface or underground water and that the proposed clearing is not likely to be at variance to this principle.</p>	
J	<p>Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.</p> <p>DPIRD Flood Risk Mapping (DPIRD-007) indicates that the majority of the NVCP application area is mapped as “10-30% of the map unit has a moderate to high flood risk” (GoWA, 2022).</p> <p>Appropriate surface water management measures will be implemented as part of construction works and ongoing operation of the WMF Site. The proposed clearing is not expected to be likely to cause or exacerbate the incidence or intensity of flooding as drainage lines will be maintained as per the concept design illustrated in Attachment C.</p> <p>It is considered that the proposed clearing is not likely to be at variance to this principle.</p>	The proposed clearing is not likely to be at variance to this principle