

Deer Park Estate – 179 Tilburn Road, Deer Park

Growling Grass Frog Conservation Management Strategy (GGF CMS)

**Prepared for HB&B Property Pty Ltd,
and GPT Platform Pty Ltd**

May 2025
Report No. 22173.07 (1.7)



**Nature
Advisory**

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1. Executive Summary

HB&B Property Pty Ltd, engaged Nature Advisory Pty Ltd to prepare a Growling Grass Frog (*Litoria raniformis*; GGF) Conservation Management Strategy (GGFCMS). The GGF CMS outlines the management measures that will occur along the Kororoit Creek for the conservation and enhancement of GGF habitat within the proposed variable buffer area that is part of a larger industrial and commercial development proposed for the whole 70-hectare property at 179 Tilburn Road, in Deer Park. The study area is bordered by the Western Ring Road to the east, Ballarat Road to the north, and the Orica owned property to the west that is used for industrial purposes.

Construction of the proposed development in the study area will not result in a direct impact to identified GGF habitat along Kororoit Creek. This is due to the implementation of a 50m average (minimum 30m) variable creek buffer zone from top of bank (Kororoit Creek). The buffer will occur along the entire frontage of the subject site and the only proposed additional infrastructure that will be built into the variable buffer area are two storm water outfalls that are required to be constructed to the 1 in 100-year flood line to meet Melbourne Water requirements. These drainage outfalls have been designed so as to not impact any native vegetation identified within the study area.

The site has been used since circa 1874 for various forms of manufacturing and storage of chemicals. There is historic and current existing works, infrastructure (roads both sealed and unsealed, bridge, pipes, bunkers, fencing, stone walls), and rehabilitation measures that have been undertaken in the study area including up to the Creekline and on both side of the creek. The recent rehabilitation measures include weed control, revegetation and habitat creation including the use of Jute mat, mulch and tree guards.

This GGF CMS is a Council planning requirement to ensure Biodiversity Protection along the Kororoit Creek, specifically for GGF. This CMS aims to provide guidance on measures and management actions and responsibilities to ensure that no Growling Grass Frog or their habitat or the wider Kororoit Creek habitat and water quality are impacted by the proposed development. It also outlines access arrangements to the Kororoit Creek area for maintenance works. All future developments and works must be completed in accordance with this GGF CMS. The variable creek buffer area will be managed by the landowner GPT Platform Pty Ltd and they will be the responsible party for ensuring the buffer area is managed for the 10-year management period.

The objectives of this GGF CMS are, therefore, to provide guidance regarding:

- The preparation of a Conservation Management Plan for GGF;
- Construction mitigation measures to prevent impacts to GGF habitat within the study area, as well as upstream and downstream of works;
- The creation and protection of suitable habitat for fauna, specifically GGF, along the Kororoit Creek corridor;
- Habitat enhancement strategies and methods to be implemented within the variable creek buffer zone width of 30m-74m (average width of 50m) from the edge of the bank of the Kororoit Creek (Section 5.3);
- The removal of all noxious weeds listed in the Catchment and Land Protection (CALP) Act and recorded within the study area, including methods of weed control (Section 5.4.5);
- The implementation of appropriate environmental mitigation and rehabilitation measures including erosion control and litter removal (Section 5);
- Environmental monitoring, performance measures and reporting requirements (Section 6).

This investigation was conducted by a team from Nature Advisory comprising Lilith Armstrong (Zoologist), Cody Hajnal (Botanist), Dean Karopoulos (Botanist), Kate Thurkle (Botanist), James Bennie (GIS Analyst), Maya Zaeim (GIS Analyst), Grace O'Loughlin (GIS Analyst), Alan Brennan (Director) and Linda Parker (Senior Ecologist & Project Manager).

2. Introduction

2.1. Project Description

HB&B Property Pty Ltd, engaged Nature Advisory Pty Ltd to prepare a Growling Grass Frog Conservation Management Strategy (GGFCMS) for the conservation and habitat enhancement of Kororoit Creek within the wider 70-hectare land development project in Deer Park. The specific area investigated in this report, referred to herein as the 'study area', comprised the Kororoit Creek and its associated 50m average (min 30m) variable creek buffer zone from top of bank (Kororoit Creek) south to comply with the Development Plan endorsed by Council in the north-eastern corner of the property at 179 Tilburn Road in Deer Park. The northern bank of Kororoit Creek is not included in this plan as the proponent has no ownership or control of land on the north side of the creek, and it is not part of the proposed action. The study area was bordered by the Western Ring Road to the east, Ballarat Road to the north, and the remainder of the property to the west and south. An industrial subdivision is proposed for the wider property.

Construction of the proposed development in the study area will not result in a direct impact to identified GGF habitat along Kororoit Creek. This is due to the implementation of a 50m average (minimum 30m) variable creek buffer zone from top of bank (Kororoit Creek). The buffer will occur along the entire frontage of the subject site and the only proposed additional infrastructure that will be built into the variable buffer area are two storm water outfalls that are required to be constructed to the 1 in 100-year flood line to meet Melbourne Water requirements. These drainage outfalls have been designed so as to not impact any native vegetation identified within the study area.

The proposed development for the study area is not yet finalised in terms of the location and types of industrial development (See Appendix 1). Engineering works including drainage and earthworks near the buffer area are confirmed (See Appendix 2).

This Growling Grass Frog Conservation Management Strategy (GGFCMS) has been prepared to support the EPBC Act Referral for Stage 1 & 2 by summarising the proposed works required to protect and enhance GGF habitat within the variable creek buffer area. A GGF Conservation Management Plan will be prepared to satisfy the endorsed Development Plan condition requirement (see below). The GGF CMP will detail the management actions needed in the variable creek buffer area to provide and enhance GGF habitat.

"Biodiversity Protection

"Prior to works commencing on site, a conservation management plan to protect Kororoit Creek and Growling Grass Frog habitat must be prepared to the satisfaction of the Responsible Authority in accordance with Melbourne Water and DEECA requirements. This must include details of management responsibilities and access arrangements for maintenance. All future development and works must be in accordance with the recommendations of the Conservation Management Plan."

Furthermore, a Conservation Management Plan for GGF will be prepared in greater detail to support the GGFCMS.

The following report outlines the GGFCMS that is to be implemented along Kororoit Creek and the associated buffer within the study area and includes the following:

- Review of existing information including; GGF habitat design standards, management prescriptions, existing ecological reporting, detailed development layouts, the approved Development Plan and a statement of the methods used and sources of information consulted for each investigation, including any limitations, where applicable (Section 2.3)

- Results of the review of existing information documenting biodiversity, ecological values and management requirements of the site (Section 4)
- Habitat enhancement recommendations and identification of key threats to ecological values at the site (Section 5)
- Maps of site showing the values to be conserved, threats and relevant management measures (Sections 4, 5 and 6)
- Tables of appropriate management actions, including monitoring and reporting requirements, required to conserve the ecological values present (Section 6).

2.2. Site Description

The study area for this investigation (Figure 1) constituted approximately five hectares of private land located at Deer Park, approximately 16 kilometres west-northwest of Melbourne's CBD, and was bordered by Kororoit Creek to the north, private property adjoining the Western Ring Road to the east, and the balance of the land proposed for development to the west and south.

The study area supported clay soils within the riparian zone of Kororoit Creek, which runs along the northern boundary of the study area. The slope of the land within the Kororoit Creek corridor is variable, with some sections sloping steeply towards the bank and others supporting a gentle gradient.

Vegetation in the study area was dominated by exotic grassy weeds such as Kikuyu and Toowoomba Canary-grass, with a range of planted non-indigenous trees such as Sugar Gum, Southern Mahogany, Spotted Gum, Red Ironbark and Giant Honey-myrtle (Photo 1), although two remnant patches of native vegetation occurred alongside the creekline (Figure 1). Existing biodiversity values are described in detail in Section 4.



Photo 1: Representative area of Kororoit Creek showing weed invasion and planted trees with native vegetation on creek edge

The adjoining land was historically used for manufacturing and storage of explosive materials and has undergone substantial remediation works over the past 15 years. There are ongoing rehabilitation works as these uses are being largely decommissioned. Rehabilitation measures that have been undertaken in the study area include weed control, and revegetation and habitat creation including the use of Jute mat and mulch and tree guards (See previous works report in Appendix 6). Areas of existing revegetation works are shown in Figure 2.

The northern bank of Kororoit Creek is not included in this strategy as the proponent has no ownership or control of land on the north side of the creek, and it is not part of the proposed action. It comprises a mixture of private and crown land of a similar condition to the southern bank.

2.3. Existing Information

To prepare this management strategy the following reports, planning schemes and development plan relating to the study area were reviewed:

- Growling Grass Frog Masterplan for Melbourne's Growth Corridors (DELWP 2017a)
- Growling Grass Frog Habitat Design Standards (DELWP 2017b)
- Growling Grass Frog Crossing Design Standards (DELWP 2017c)
- *Orica Deer Park: Flora & Fauna Assessment*, Report No. 22173.02 (1.0) (Nature Advisory 2022)
- Brimbank Planning Scheme (Department of Transport and Planning 2024)

- Development plan (P00392/2023) stamped by Council on 26/09/2024 (Job Number: 23026; Drawing number: SK03; Revision: A) dated 07/07/2023 (Watson Young 2023; Appendix 1)
- *Landcape Rehabilitation Plan For Designated Remediated Land in Areas 1, 2, 3 and 8 Orica Deer Park* (Landserv 2022)

2.4. Objectives

Construction of the approved Stage 1 development in the study area will not result in a direct impact to identified GGF habitat along Kororoit Creek. This is due to the implementation of a variable creek buffer zone width of 30m – 74m (average width of 50m) from the centreline of the water course. The buffer will occur along the entire frontage of the subject site to Kororoit Creek in the approved development plan which will be free from construction activities.

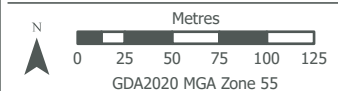
The objectives of this GGFCMS are, therefore, to provide guidance regarding:

- Construction mitigation measures to prevent impacts to GGF habitat within the study area, as well as upstream and downstream of planned works;
- The creation and protection of suitable habitat for fauna, specifically GGF, along the Kororoit Creek corridor;
- Habitat enhancement strategies and methods to be implemented within variable creek buffer zone (Section 5.3);
- The removal of all noxious weeds listed in the *Catchment and Land Protection Act 1994* and recorded within the study area, including methods of weed control (Section 5.4.5);
- The implementation of appropriate environmental mitigation and rehabilitation measures including erosion control and litter removal (Section 5);
- Environmental monitoring, performance measures and reporting requirements (Section 6).
- Guide the preparation of the GGF Conservation Management Plan (GGF CMP).
- Provide details of the works that will be conducted in the variable creek buffer area as part of the Preliminary Documentation.

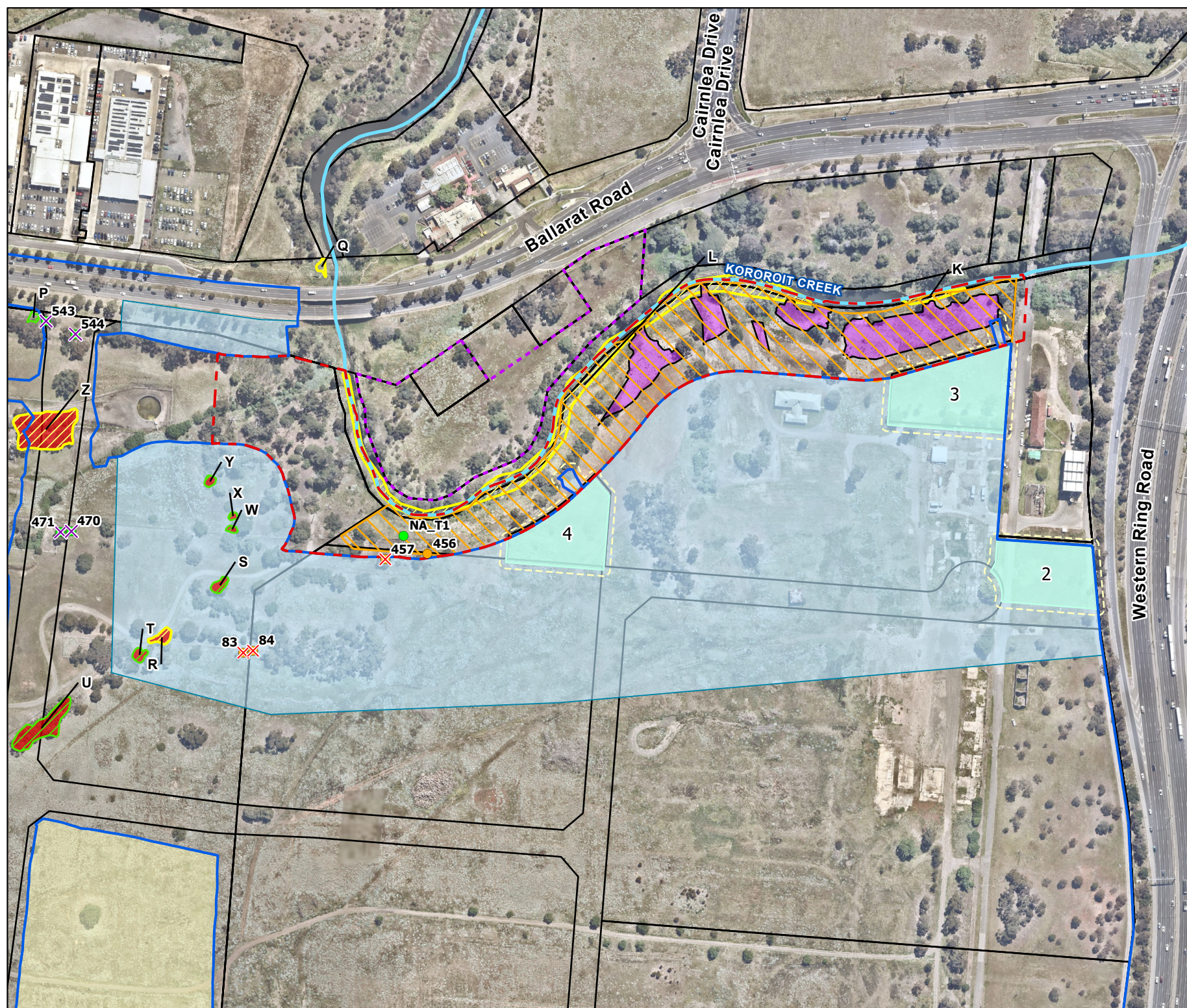
Figure 1: Study area ecological features

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Project: Orica Deer Park
Date: 12/05/2025

- - - Variable creek buffer
- Limit of works
- Area outside of limit of works
- Impact area
- - - Crown Land Tenure Polygons and Descriptors
- Watercourse
- Environmental works**
 - - - Environmental works area
 - Vegetation area previously rehabilitated and revegetated by others
- Construction**
 - OutFall
 - Drianage reserve
 - - - Buffer (5m)
- Native vegetation**
 - Small scattered tree
 - Large scattered tree
 - ▨ Plains Grassland (EVC 132)
 - ▨ Riparian Woodland (EVC 641)
 - ✕ Past tree removal
 - ✕ Tree to be removed
 - Native vegetation to be removed



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3. Species Information – Growling Grass Frog

3.1. Legislative Protection

The Growling Grass Frog (*Litoria raniformis*) is listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and is listed as Vulnerable under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act). It has also been recognised internationally as Endangered by the Global Amphibian Assessment of the CI/CABS – IUCN/SSC Biodiversity Assessment Initiative (IUCN 2008).

3.2. Description

The Growling Grass Frog is a large species of frog growing to a size of 85 millimetres. It is dull green to bright emerald green with blotches of brown or rich golden bronze, numerous large warts above and whitish flesh below (see **Photo 2** below). It has a narrow blackish stripe from the nostrils along each side to the groin. The groin itself is bright blue or blue-green (Cogger 2000).



Photo 2: Growling Grass Frog

3.3. Distribution

This species was once distributed over much of south-eastern Australia, including Tasmania. While populations still exist in their former range, many have experienced a significant decline. In Victoria, the species is found in isolated populations in the greater Melbourne area, and in south-western Victoria. There are also small, isolated populations in central Victoria and Gippsland. Populations of Growling Grass Frogs persist in several parts of the greater Melbourne area, such as at the Western Treatment Plant at Werribee, within the Merri Creek Catchment, and in some south-eastern suburbs. There are 6 location records of GGF north of the study area along the Kororoit Creek (Figure 3).

3.4. Habitat

The Growling Grass Frog is predominantly aquatic and associated with vegetation fringing permanent waterbodies such as streams, lagoons, farm dams and old quarry sites (Cogger 2000) and is usually associated with water bodies supporting large areas of fringing and aquatic vegetation such as Common Reed (*Phragmites australis*), Cumbungi (*Typha* spp.) and Water Ribbons (*Cycnogeton procerum*) (Organ 2002). The Kororoit Creek in the north of the study area provides know habitat for the species however this habitat is likely to only be used for foraging and dispersal, not for breeding as they prefer to breed in still water that is not available within the study area.

Growling Grass Frogs breed in summer and prefer permanent waterbodies (such as the Kororoit Creek) or those in close proximity to permanent water so that tadpoles have sufficient water in which to complete development. In these areas, frogs' over-winter beneath thick vegetation, logs, rocks and other ground debris, sometimes at considerable distances from waterbodies (Smith and Clemann 2008).

3.5. Threats

Threats and potential threats to Growling Grass Frogs (Flora and Fauna Guarantee – Scientific Advisory Committee 1999; DEWHA 2009) include:

- Disease – *Chytridiomycosis* caused by Chytrid fungus (*Batrachochytrium dendrobatidis*), a water borne pathogen affecting amphibian populations worldwide
- Habitat loss
- Habitat fragmentation through agricultural and urban land clearing
- Drainage and degradation of wetlands
- Increasing wetland salinity
- Road kills
- Increasing pollution e.g., biocides and increased ultraviolet-B radiation due to a reduced ozone layer
- Increased tadpole predation by introduced fish including the Mosquito fish (*Gambusia holbrooki*)

4. Existing Biodiversity and Ecological Values

Existing information was reviewed for information pertaining to the biodiversity, ecological values, and management requirements of the study area. These are detailed below.

- Growling Grass Frog Habitat Design Standards (DELWP 2017b);
- Growling Grass Frog Crossing Design Standards (DELWP 2017c);
- Frog Survey (including GGF) (Golder Associates 2010);
- Growling Grass Frog Targeted Survey Report (Ecology and Heritage Partners 2012a);
- Summary of Ecological values Report (Ecology and Heritage Partners 2012b);
- Orica Deer Park: Flora & Fauna Assessment, Report No. 22173.02 (1.0) (Nature Advisory 2022);
- Deer Park, Flora and Fauna Assessment Report, Report No. 22173.03 (1.6) (Nature Advisory 2024a).
- Industrial Development (Stages 1 & 2), Deer Park, Victoria: Matters of National Environmental Significance (MNES) Assessment Report No. 22173.03 (1.0). (Nature Advisory 2024b).

These were used to ascertain the ‘baseline’ conditions of the study area, which are described in the following sections.

4.1.1. Vegetation

Vegetation in the study area was dominated by the exotic grassy weeds such as Kikuyu and Toowoomba Canary-grass, with a range of planted non-indigenous trees such as Sugar Gum, Southern Mahogany, Spotted Gum, Red Ironbark and Giant Honey-myrtle.

Two patches of native vegetation, referred to herein as ‘habitat zones’ (defined as an area where at least 25% of the perennial vegetative cover is native) were recorded in the study area. These two patches of native vegetation amount to 0.493 hectares, or roughly 10% of the study area.

Habitat Zone L occupied a narrow band along the majority of the length of Kororoit Creek within the study area (Figure 1), and comprised sparse native shrub species including Tangled Lignum, Kangaroo Apple and Black Wattle. Tree species included Black Wattle, Lightwood and immature River Red-gum at very low cover. Native tree canopy and large trees were absent.

Habitat Zone K occurred as a small patch along the bank of Kororoit Creek in the east of the study area (Figure 1) and comprised almost entirely Common Reed with no canopy trees or large trees. Logs were effectively absent from both habitat zones. In both habitat zones, weed cover was moderate (30%) and included the high-threat species Kikuyu and Toowoomba Canary grass.

Both habitat zones as well as the remainder of the study area entirely lacked a native canopy with the exception of one large scattered Eucalypt which was dead (Tree ID NA_T1), and two small scattered Yellow Gums (Tree IDs 456 and 457). Tree 457 is considered lost due to adjacent works.

4.1.2. Fauna habitat

Previous Flora and Fauna Assessments of the study area found that it was largely used by a number of mostly native and some introduced fauna species commonly found in peri-urban and agricultural contexts (Ecology and Heritage Partners 2012b; Nature Advisory 2022 & 2024). The aquatic habitat is mostly located along Kororoit Creek supports a limited suite of aquatic fauna, including relatively common frog species (Nature Advisory 2022; 2024a).

Several large, embedded basalt rocks occur along the slopes leading down to Kororoit Creek.

Growling Grass Frog

Targeted surveys for GGF were not conducted for this report and instead this species have been assumed present due to their known presence within Kororoit Creek. The section of Kororoit Creek included in study area is considered to form potentially important habitat, acting as a dispersal corridor for aquatic fauna throughout the landscape. Targeted surveys have been undertaken within the study site in areas of suitable habitat and along the Kororoit Creek by Golder Associates (2010). No GGF were recorded within the study area but one male GGF was heard calling approximately 1 km north of the site along the Kororoit Creek (Golder Associates 2010). Additional targeted GGF surveys were undertaken by Ecology and Heritage Partners 2011 and 2012 and included call playback surveys and diurnal and nocturnal surveys and habitat assessments in accordance with the DSE targeted survey guidelines 2010. While no GGF were recorded within the study area it was acknowledged that GGF likely use sections of the Kororoit Creek (Ecology and Heritage Partners 2012a and 2012b).

Growling Grass Frog (GGF) is known to occur in the region, with historical VBA records from Kororoit Creek. There are 63 existing VBA records of this species within the search region as recent as December 2018 (Nature Advisory 2024b). These, and additional records from other sources, are illustrated in Figure 3. The section of Kororoit Creek in the study area has the potential to provide a foraging and movement corridor for Growling Grass Frog. However, there is no suitable breeding habitat for GGF in the study area as it is a fast flowing, deep section of Kororoit Creek that lacks still or slow-moving water with sufficient rocks and floating and submergent vegetation.

The GGF is likely to use the creek for foraging and dispersal and to overwinter. The proposed development will not fragment or impact the current habitat and the two proposed outfalls (Figure 1), and four drainage reserves will ensure that the stormwater leaving the site is treated and suitable for release into the Kororoit Creek. A Risk Assessment has been prepared for the creek (Nature Advisory 2024b).

Works have already been conducted historically on the site (WSP 2024) and more recently within the creek corridor. Weed control and revegetation works have been completed (Photo 3 and Photo 4) as part of rehabilitation requirements of Orica for the site (See Appendix 6 for a works report).

4.1.3. Existing rehabilitation works

Some rehabilitation works within the study area have already been conducted as part of the rehabilitation works required for the broader site as its historical use for the manufacturing and storage of explosive materials has been decommissioned. These works include the following:

- Five revegetation zones (Figure 2) totalling an area of 0.6199ha;
- Weed control;
- Soil management including mulching;
- Placement of large logs as habitat.

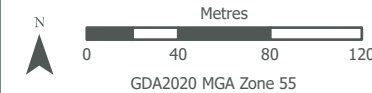
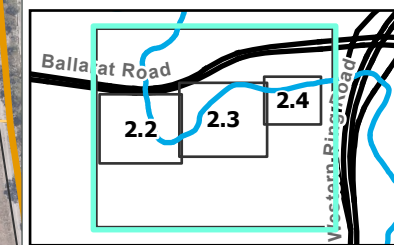
These works were undertaken before the creation of the GGF CMS and therefore are not necessarily targeted towards the creation of habitat for GGF. They are still likely an improvement over baseline conditions, as the majority of the Kororoit Creek corridor was dominated by weeds.

A full description of these works, including planting schedules, can be found in Appendix 6.

Figure 2.1: Proposed development overview

Project No: 22173.07
Project: Orica Deer Park
Date: 9/05/2025

- - Limit of works (No-go zone)
- Deer Park Estate
- Property boundary
- Client CAD
- Watercourse
- ▨ Variable creek buffer and GGF conservation area (between top of bank and limit of works)
- Native vegetation**
 - Small scattered tree
 - Large scattered tree
 - ✕ Tree to be removed
 - Vegetation area previously rehabilitated and revegetated by others
 - Plains Grassland (EVC 132)
 - Riparian Woodland (EVC 641)



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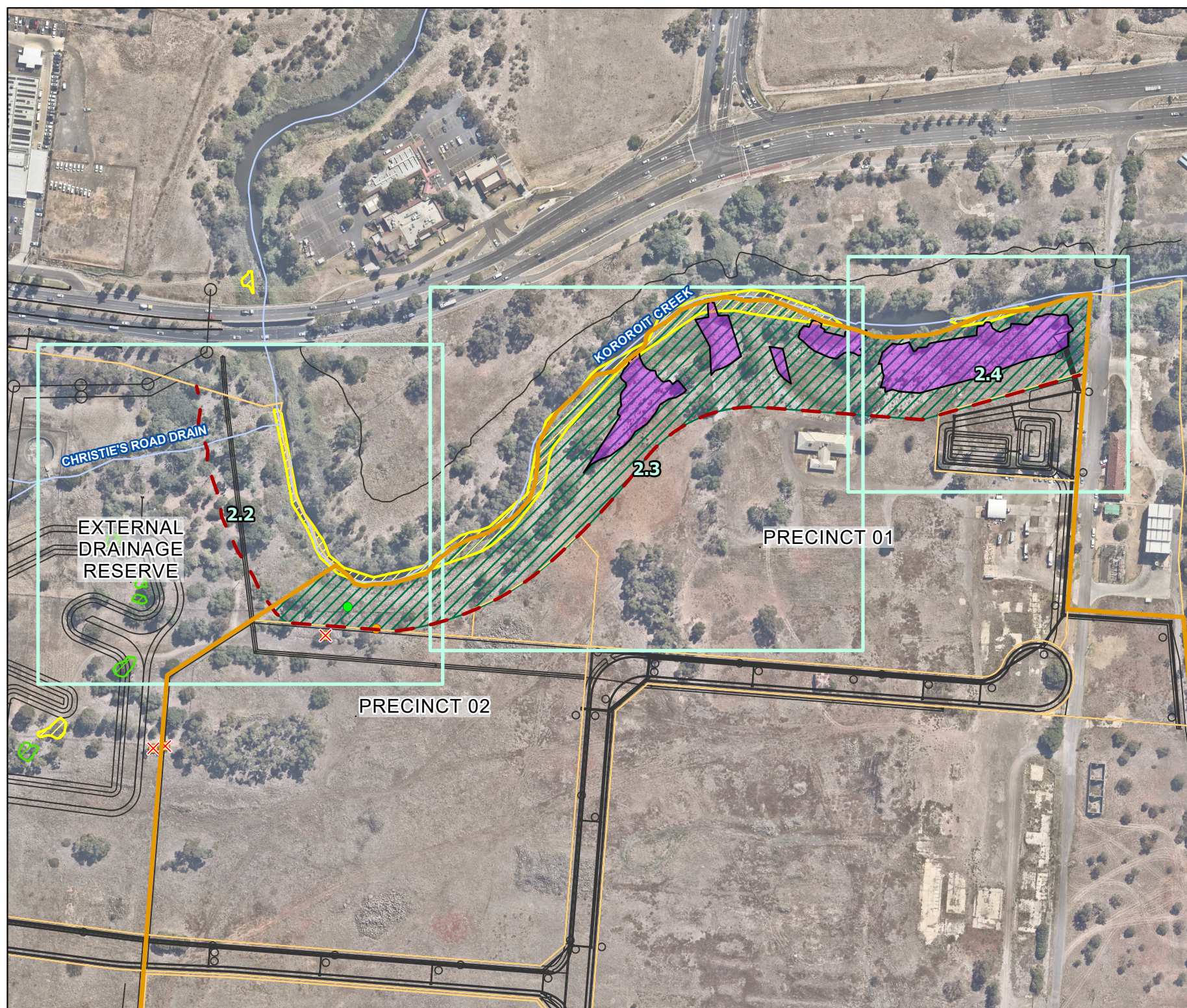
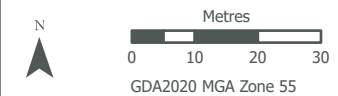
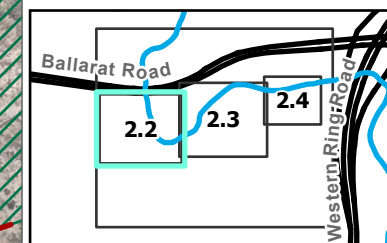


Figure 2.2: Proposed development - zoomed in on the buffer area

Project No: 22173.07
Project: Orica Deer Park
Date: 9/05/2025

- Limit of works (No-go zone)
- Deer Park Estate
- Property boundary
- Client CAD
- Watercourse
- ▨ Variable creek buffer and GGF conservation area (between top of bank and limit of works)
- Native vegetation**
 - Small scattered tree
 - Large scattered tree
 - × Tree to be removed
 - ▨ Plains Grassland (EVC 132)
 - ▨ Riparian Woodland (EVC 641)



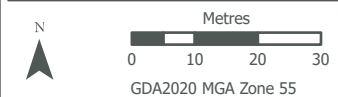
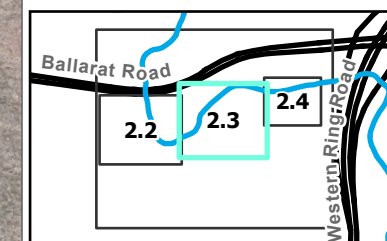
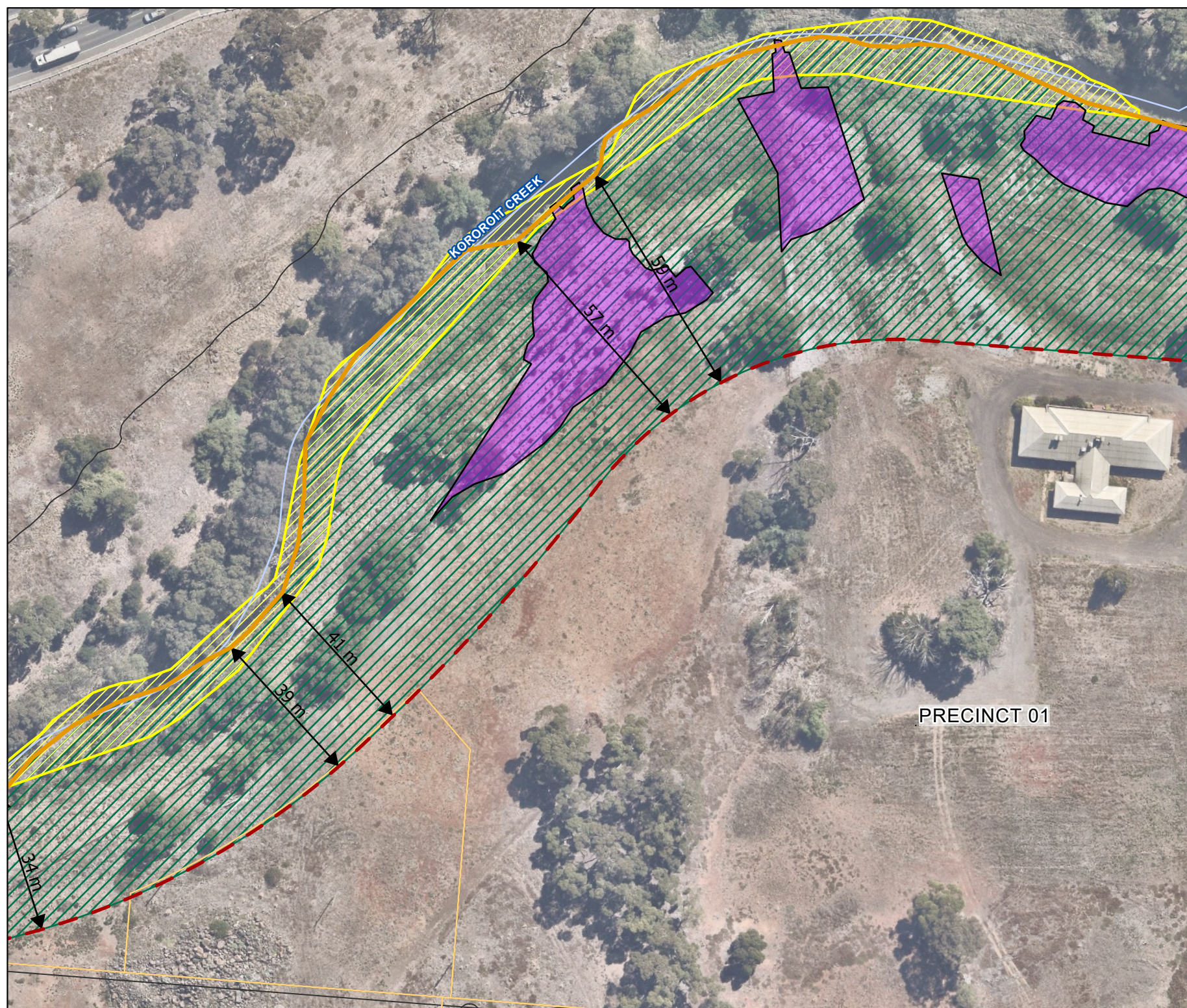
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Figure 2.3: Proposed development zoomed in on the buffer area

Project No: 22173.07
Project: Orica Deer Park
Date: 9/05/2025

- Limit of works (No-go zone)
- Deer Park Estate
- Property boundary
- Client CAD
- Watercourse
- ▨ Variable creek buffer and GGF conservation area (between top of bank and limit of works)
- X Tree to be removed
- ▨ Vegetation area previously rehabilitated and revegetated by others
- ▨ Riparian Woodland (EVC 641)



GDA2020 MGA Zone 55

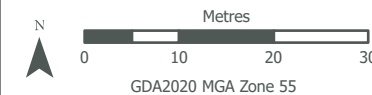
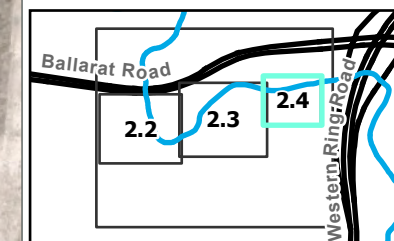
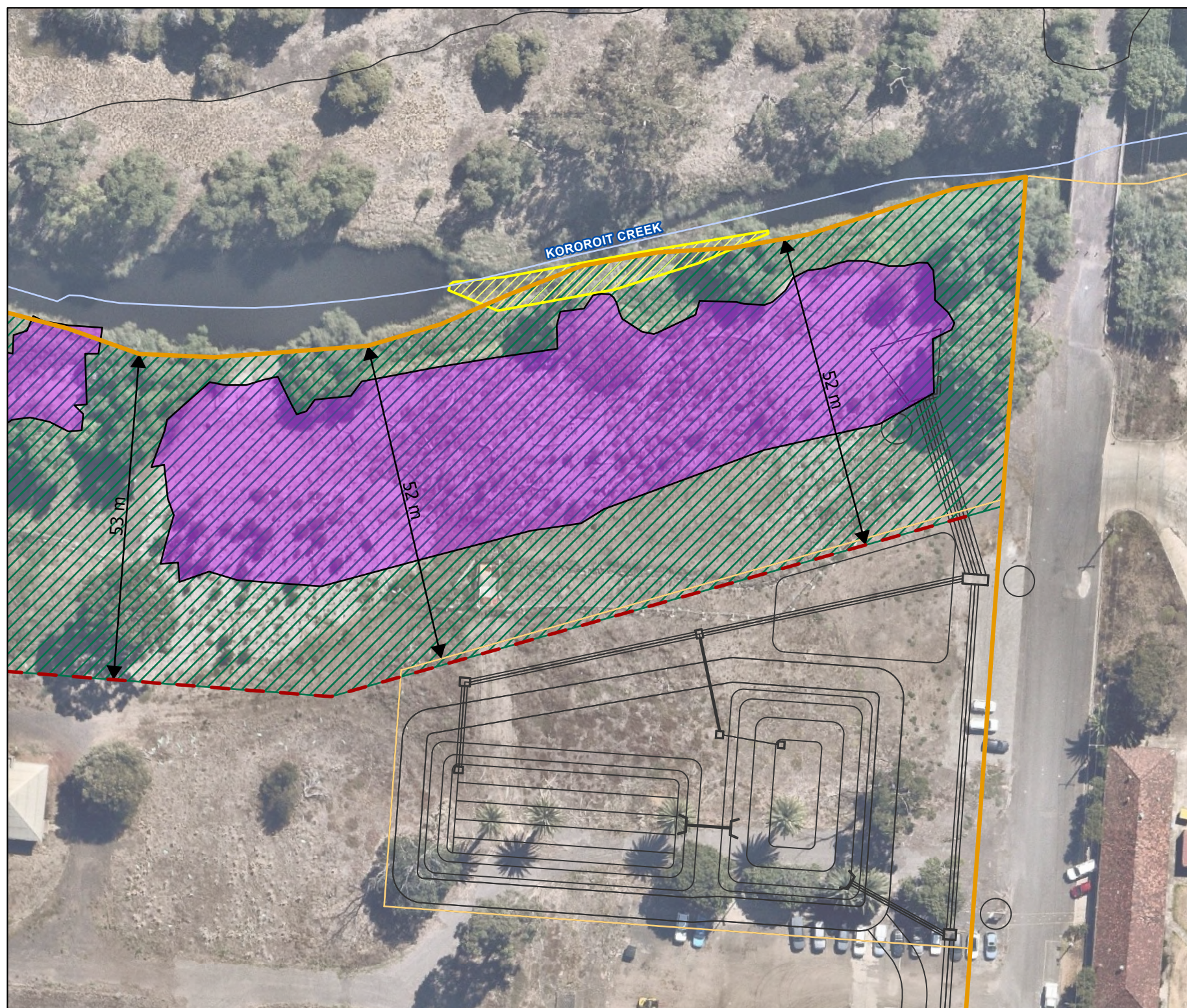


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Figure 2.4: Proposed development zoomed in on the buffer area

Project No: 22173.07
Project: Orica Deer Park
Date: 9/05/2025

- Limit of works (No-go zone)
- Deer Park Estate
- Property boundary
- Client CAD
- Watercourse
- ▨ Variable creek buffer and GGF conservation area (between top of bank and limit of works)
- X Tree to be removed
- ▨ Vegetation area previously rehabilitated and revegetated by others
- ▨ Riparian Woodland (EVC 641)



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Photo 3: Kororoit Creek with revegetation works that have already occurred within the variable creek buffer zone visible in the foreground. This deep section of Kororoit Creek lacks preferred habitat features such as rocks and floating and submergent vegetation.



Photo 4: This section of Kororoit Creek is dominated by Common Reed and lacks preferred habitat such as rocks and floating and submergent vegetation. Some revegetation works that have already occurred can also be seen in the foreground.

5. Habitat Management

The following section details the management strategies that will be implemented to minimise impacts to GGF during and after construction. These include:

- A variable creek 'no go' buffer zone with a width of 30m - 74m (average width of 50m) from the centreline of the water course. The buffer will occur along the entire frontage of the subject site to Kororoit Creek in the approved development plan which will be free from construction activities other than the two proposed outfalls (Figure 1). Some works will be permitted in the no-go zone including:
 - Sediment fencing to ensure no runoff into the creek from construction activities.
 - Appropriate habitat enhancement works in the buffer area following design standards for Growling Grass Frog habitat (DELWP 2017 b, c) following the completion of construction works, as outlined in Section 5.3 and shown in Figure 2. An indication of the type of habitat that will be installed is provided in Appendix 5. Please note that the design of the habitat will be in liaison with Council and requires their approval.
 - Revegetation works to increase the extent of native vegetation within the Kororoit Creek corridor whilst also meeting design standards for Growling Grass Frog habitat (DELWP 2017 b, c), as outlined in Section 5.3.2 and shown in Figure 2.
 - Ongoing monitoring of enhanced habitat (See section 6), including weed management (See Section 5.4.5).

5.1. Proposed Development

The wider study area is proposed for the development of an industrial subdivision (Appendix 1). As part of the stormwater management strategy, four stormwater drainage reserves are proposed. Two stormwater outfalls are proposed to occur within the variable creek 'no go' buffer zone, one from stormwater reserve 3 and one from stormwater reserve 4 (Figure 1). The stormwater outfalls are the only construction activity proposed to enter the creek variable buffer zone, and these will not be designed to provide habitat for GGF. Additionally, previous rehabilitation and revegetation works have already occurred along Kororoit Creek within the buffer area and the revegetation and rehabilitation work has not previously considered the habitat design standards for GGF.

The stormwater drainage reserves are proposed to be constructed solely for the purpose of stormwater management and will not be constructed to GGF design standards. Whilst the stormwater reserves may provide additional habitat for GGF, this is not their intended purpose. The role of the stormwater drainage reserves is to sufficiently control the flow of water downstream to pre-developed levels and reduce the level of sediment and nutrients in stormwater leaving the site in order to avoid impacts to GGF within Kororoit creek as well as other aquatic fauna and habitat. The volume of water flowing downstream after the proposed development has been constructed will be of an equal or lesser value (Arcadis 2024). There will be no changes to the direction of water flow within Kororoit Creek and that there will be no changes to peak flood levels due to the implementation of retarding basins (Arcadis 2024).

Within the stormwater drainage reserves, retarding basins will be co-located with sediment basins, which will provide primary stormwater quality treatment before water flows into Kororoit Creek. Modelling assessments (Arcadis 2024) have been completed to analyse the constraints and requirements of the Stormwater Management Systems (SWMS) required for the proposed development. This analysis demonstrates the compliance of the proposed SWMS to applicable water quality standards so that water quality objectives are met and no-worsening of the Kororoit Creek environs downstream of the two points of discharge as a result of the proposed works (Arcadis 2024). The SWMS have been developed in

consultation with Melbourne Water and Council (Arcadis 2024). Construction Environmental Management controls will be detailed in the GGF Conservation Management Plan (GGF CMP) and the Construction Environmental Management Plan (CEMP) that will be prepared in consultation with Council and the contractors engaged for the construction works.

The proposed development of the wider study area also involves the importation and spread across the site of fill that will meet the EPA Fill Material Criteria to ensure that the contaminants present in the site are not exposed (WSP 2024). There is then the requirement to install batters and some retaining walls around the fill to ensure that it is not able to wash away into adjoining areas including the Kororoit Creek (Appendix 2).






The proposed development will also include the removal of the old existing fencing that runs along the property boundary within the variable creek buffer area. Revegetation and rehabilitation work within the Kororoit Creek Variable Buffer area will incorporate the relevant (Table 1) GGF habitat design standards (DELWP 2017) that were designed for use on sites within the Melbourne Strategic Assessment Area (MSA) including using the appropriate native wetland plant species used in plantings. An indication of the type of GGF habitat that will be installed within the buffer area is provided in Appendix 5.

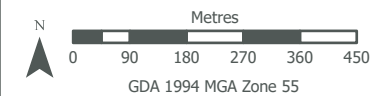
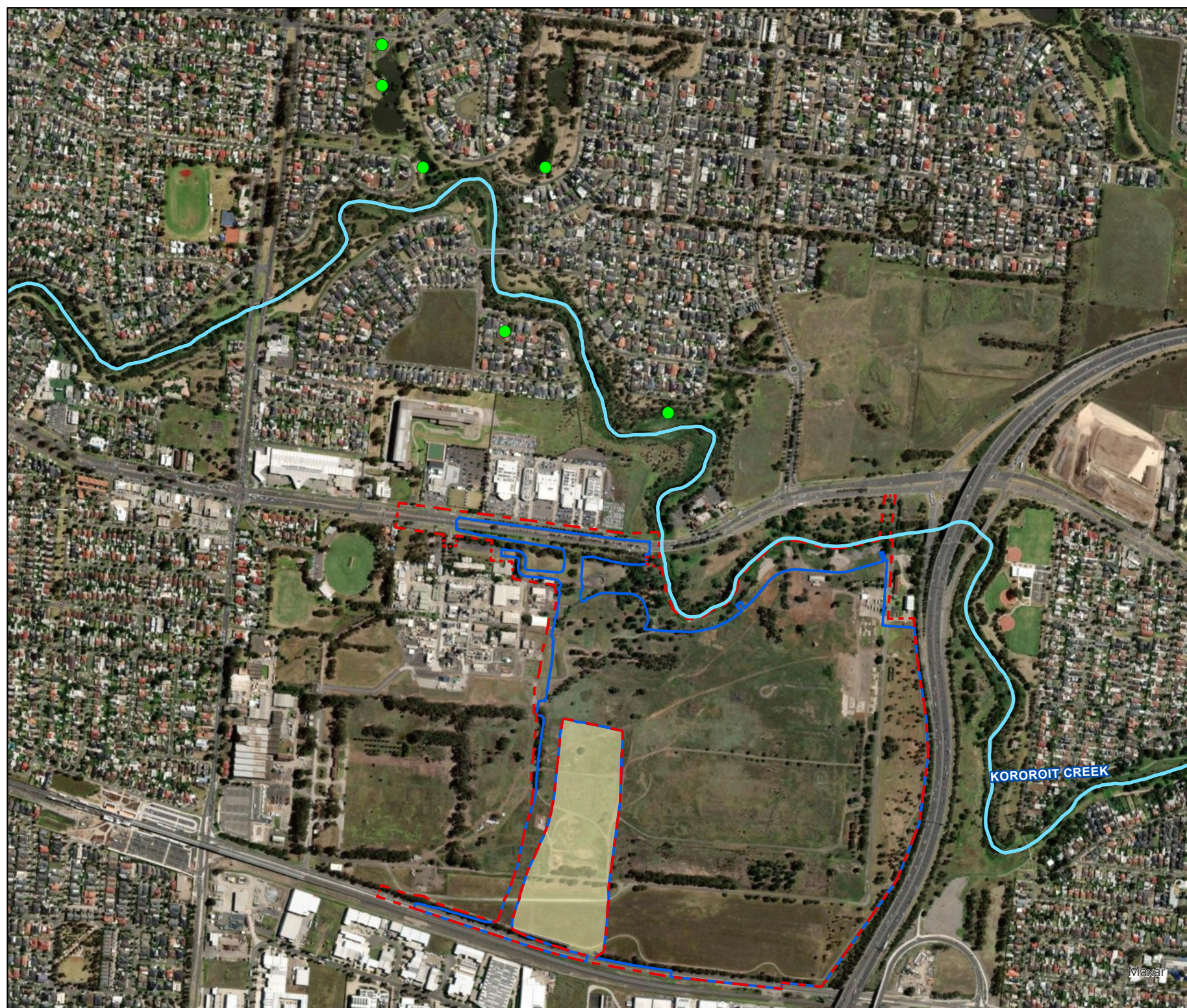
Figure 3: Growling Grass Frog VBA records

Project No: 22173.07

Project: Orica Deer Park, Tilburn Road, Deer Park

Date: 29/11/2024

-  Study area
-  Limit of work
-  Area outside of limit of works
-  Growling Grass Frog VBA record
-  Watercourse



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Mayar



Photo 5: Kororoit Creek (facing west) with the proposed stormwater outfall from drainage reserve 3 to occur in the area along the southern (left) bank. Revegetation works that have already occurred southern bank can also be seen and are shown closer up in Photo 3 and 4.

5.2. Construction Management

To mitigate impacts to the Kororoit Creek waterway, and subsequent impacts to GGF and other aquatic fauna, the following management practices are recommended:

5.2.1. *Temporary exclusion fencing along the variable buffer zone*

Erect fencing along the boundary of the variable buffer zone, with signage delineating the ‘no go’ area to ensure no construction equipment or materials enter or are laid-down in the area. Temporary Chain-wire mesh fencing with “Conservation Area -No unauthorised access” signage will be used during construction.

Signage must explain the purpose and importance of the GGF buffer to contractors.

5.2.2. *Permanent Fencing along the variable buffer zone*

The proposed development includes the erection of a permanent rural style fencing with gates along the length of the variable buffer zone along the Kororoit Creek. This fencing will delineate the conservation area to protect the creek buffer area from access by people unnecessarily. Signage must explain the purpose and importance of the GGF buffer. This fencing design is in accordance with Western Sydney Parklands Design Manual 2020 (See example photo 5 below).



Photo 5: Example of the permanent fencing proposed for the variable Buffer zone along Kororoit Creek.

5.2.3. Sediment fencing

Sediment fencing should be erected to direct sediment and effluent runoff away from the waterway, and such fencing should be monitored for effectiveness regularly and repaired when necessary.

Sediment fencing must be installed on the downward slope of the site between the construction zone and the waterway. The following measures must be undertaken to ensure that erosion is limited and indirect impacts to the waterway are avoided:

- All earthworks must be undertaken in a manner that will minimise soil erosion and adhere to Construction Techniques for Sediment Pollution Control (EPA 1991).
- Water runoff from the construction site must be diverted to avoid the runoff from entering the drainage line. Sediment fencing must be installed to minimise the potential impact of water runoff into the waterway. EPA construction guidelines are provided below in Figure 4 and Figure 5 (EPA 2004).

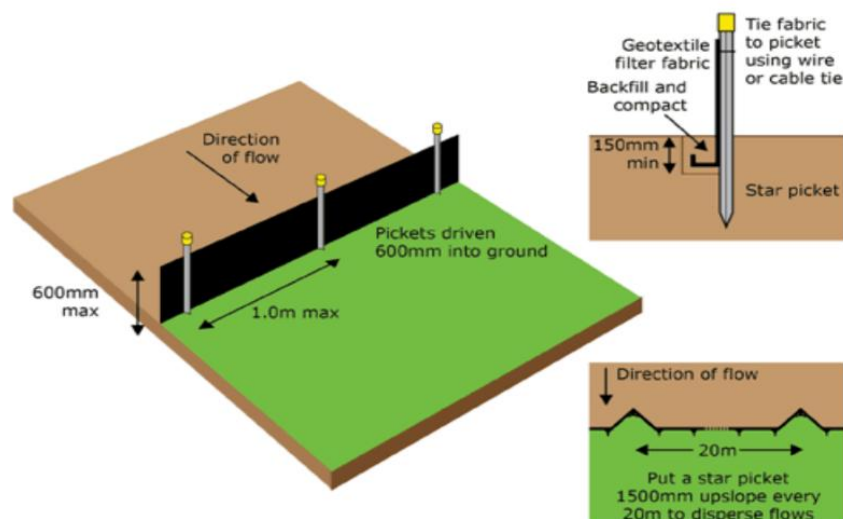


Figure 4: EPA guidelines for sediment fencing construction

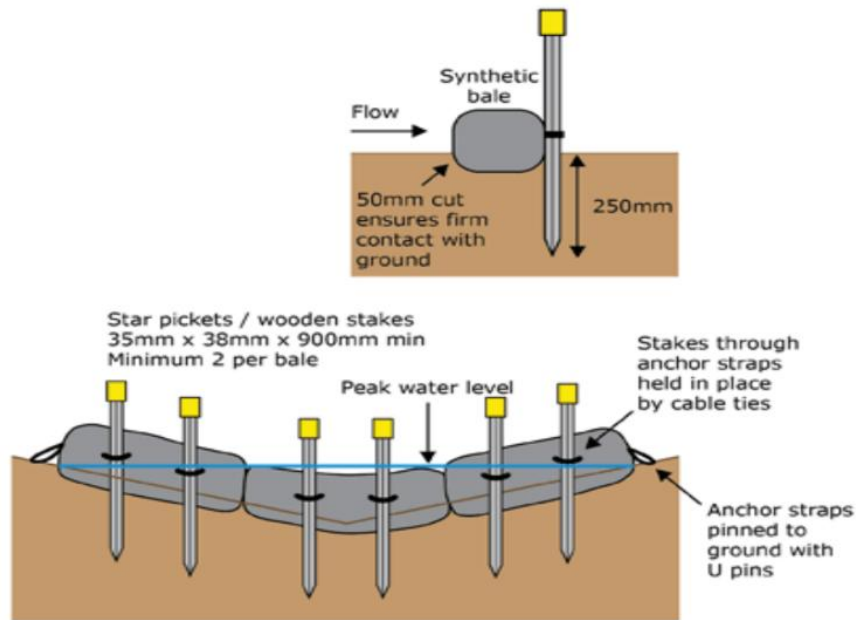


Figure 5: EPA guidelines for synthetic bale sediment control construction

5.2.4. Frog exclusion fencing

Temporary frog exclusion fencing will be installed to deter frogs from entering the construction zone.

Fencing will be installed by a qualified contractor with experience installing frog fences. The fencing is required to be affixed to the perimeter fencing to the following specifications:

- Fence at least 1m high with a 150mm section buried into the ground to prevent frogs from getting under the fence
- Made of fine metal mesh, shade cloth or similar robust material such as sediment fencing fabric attached to star pickets at regular 2-metre intervals
- Place fence material on the frog habitat side of the posts
- Overlap joins in fencing material and secure against the fence posts to avoid gaps that would enable frogs crossing or climbing the fence
- Ensure frog exclusion fence is tight and smooth, and in an upright (vertical) position
- Once the construction is completed, the temporary fencing is to be removed
- The flexible lip of the fence is to be opened immediately prior to and during any vegetation clearing in sections to ensure that any GGF or other ground-dwelling fauna species can have safe movement out of the study area into the buffer area, while simultaneously preventing their re-entry to the construction area.

Suitable GGF exclusion fencing is shown in Figure 6 and Figure 7 below.

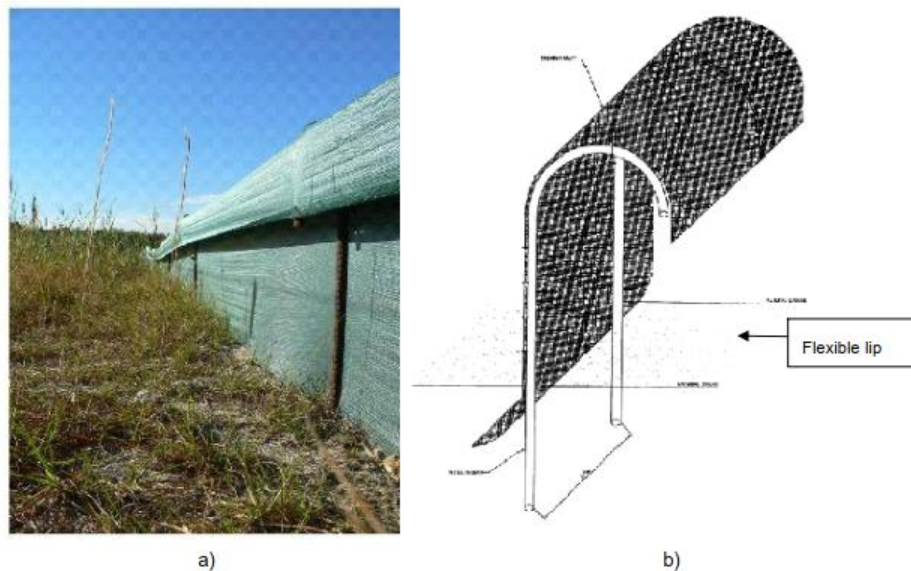


Figure 6: Temporary Frog Proof Fencing design (Department of Transport and Main Roads, 2024).

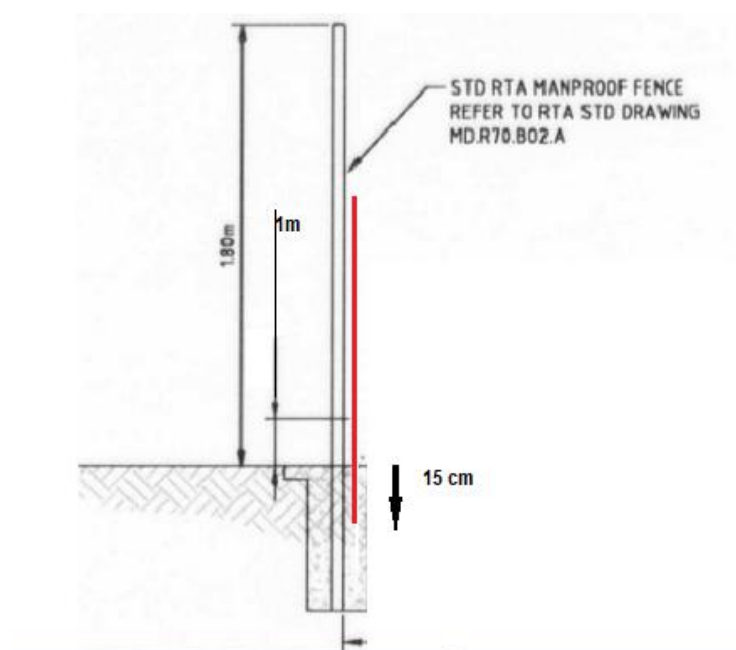


Figure 7: Temporary frog proof fencing attached to existing fence design.

5.3. Habitat Enhancement

Site rehabilitation and revegetation works have already occurred within the creek buffer zone by the previous owner (Orica). Any further works must follow the GGF Habitat Design Standards (DELWP 2017b) as described in the following sections to guide habitat enhancement within the study area.

Section 5.3.3 provides a summary of relevant GGF Habitat Design Standards (DELWP 2017b) to guide habitat enhancement within the study area. Note that these standards are based on wetland creation, which is not occurring in this project. Sections most pertinent to habitat enhancement for this project including *Aquatic Vegetation* and *Terrestrial Habitat* and Water quality have been left in the Table of standards.

The four drainage reserves proposed for the site are not planned to be designed for GGF habitat. GGF habitat enhancement works will be limited to the areas along the Kororoit Creek within the variable buffer area.

An indicative design for the habitat enhancement works is shown in Appendix 5.

5.3.1. Rocks

Terrestrial shelter and winter hibernation sites in the form of rocks and fringing vegetation are sparse along the section of the Kororoit Creek within the study area. Rock piles may be provided for Growling Grass Frogs on creek margins in sections where emergent rock cover is low and where rock has been made available through nearby construction.

Terrestrial shelter and winter hibernation sites in the form of rock piles are to be provided for GGF on the southern bank of Kororoit Creek as follows:

- Rock size must vary and include larger rocks (i.e. from 300 to 1000 mm diameter, with rocks 300 – 1000 mm considered larger rocks).
- Rocks should be spaced at varying intervals along Kororoit Creek to improve habitat variability.
- Several rock piles providing for winter hibernation habitat must be positioned adjacent the creek to at least 1m deep.
- Several rock piles providing basking, shelter and foraging habitat should be positioned from the water's edge to 1m from the normal water level.
- At least 20% of the perimeter of Kororoit Creek should consist of rock piles.

The placement of some of the piled rocks and logs within the buffer area along the creek will also provide good habitat for GGF. It is recommended that the rocks are not placed within the creek or in any manner that disrupts the flow of Kororoit Creek.

A detailed plan showing the location of proposed rock piles must be developed in consultation with Brimbank City Council following a feature survey of the site.

5.3.2. Revegetation

Revegetation works will be undertaken throughout the entirety of the variable creek buffer area, with the exception of areas of existing native vegetation (Figure 2). Based on existing knowledge of GGF habitat requirements (Organ 2004; Robertson *et al.* 2002) and DELWP habitat design standards (DELWP 2017a), the study area will be planted out using the species (or similar species where recommended species are not available) designated Table 1.

Revegetation works within the variable Creekline buffer area will incorporate the habitat design standards outlined in Table 1. Tube stock of appropriate wetland and grass species will be used and monitoring of the success of the revegetation works will occur. Weed management will also be conducted as required and its success monitored.

Following weed-control within the Kororoit Creek buffer area, these areas will be revegetated with locally indigenous species to create suitable habitat for Growling Grass Frog, as described below (Table 2). Where required, creek margins will be revegetated with 'emergent' vegetation. These actions are in accordance with the relevant management priorities for Melbourne Water's Lower Kororoit Creek management unit (Melbourne Water 2013a).

Revegetation will be undertaken in the first year using tube stock and will be monitored for survival for the first two years. Where plants have failed to establish, these will be replaced. Species will be sourced locally to maintain the local genetic diversity.

Recommended species for revegetation of the terrestrial habitat and creek margins are provided in Table 2 below, including minimum planting densities. Plants must be locally sourced as much as possible to preserve local genetic diversity of these plant species.

As per the guidelines (DELWP 2017a), it is assumed that initial plantings will spread quickly if wetland conditions are suitable, so the whole creek bank does not need to be completely planted out. Planting density must be such that it results in the establishment of a dense (target 50 per cent) cover of submergent/floating vegetation in the deep-water zone and patches of emergent vegetation within several years. As a guide, planting densities to create patches of emergent vegetation are generally 4 – 6 plants per square metre. Planting densities for patches of submergent vegetation can be lower.

Roughly 50% of the terrestrial vegetation within 10 m of water must be kept as low grass (10 cm or less in height) (DELWP 2017a). This is to remove biomass, so that tall, thick grass and ground vegetation does not inhibit GGF movement and activity. Following this recommendation will facilitate movement and foraging of GGF within the site, as well as their dispersal into and out of the site. Vegetation should be maintained this way by mowing and slashing during the winter months, when the cool conditions render GGF less active and more likely to hide, and therefore less likely to be injured or killed by these management actions.

Table 1: Recommended species and density for revegetation

Habitat type and use by Growling Grass Frog	Common name	Scientific name	Planting density (per square metre)
Emergent, fringing vegetation (creek margins) where existing vegetation insufficient – for shelter, basking and calling sites	Common Swamp Wallaby-grass	<i>Amphibromus nervosus</i>	4
	Tall Sedge	<i>Carex appressa</i>	2
	Swamp Billy-buttons	<i>Craspedia paludicola</i>	4
	Water-ribbons	<i>Cycnogeton procerum</i>	2
	Common Spike-sedge	<i>Eleocharis acuta</i>	4
	Hollow Rush	<i>Juncus amabilis</i>	2
	Green Rush	<i>Juncus gregiflorus</i>	2
	River Mint	<i>Mentha australis</i>	1
	Slender Knotweed	<i>Persicaria decipiens</i>	4
	River Club-rush	<i>Schoenoplectus tabernaemontani</i>	2
Submerged and floating vegetation (creek channel) –	Common Water-ribbons	<i>Cycnogeton procerum</i>	4
	Eel Grass	<i>Vallisneria australis</i>	

protection against predators, basking and calling sites	Fennel Pondweed	<i>Stuckenia pectinata</i>	
	Yellow Bladderwort	<i>Utricularia australis</i>	
	Large-fruit Tassel	<i>Ruppia megacarpa</i>	
	Many-fruit Tassel	<i>Ruppia polycarpa</i>	
	Curly Pondweed	<i>Potamogeton crispus</i>	
	Red Pondweed	<i>Potamogeton cheesemanii</i>	
	Blunt Pondweed	<i>Potamogeton ochreatus</i>	
	Coarse Water-milfoil	<i>Myriophyllum caput-medusae</i>	
	Upright Water-milfoil	<i>Myriophyllum crispatum</i>	
	Lake Water-milfoil	<i>Myriophyllum salsugineum</i>	
	Amphibious Water-milfoil	<i>Myriophyllum simulans</i>	
	Red Water-milfoil	<i>Myriophyllum verrucosum</i>	
	Running Marsh-flower	<i>Ornduffia</i> (syn. <i>Villarsia reniformis</i>)	
	Swamp Lily	<i>Ottelia ovalifolia</i> subsp. <i>ovalifolia</i>	
Terrestrial habitat – between creek and construction zone: grasses and graminoids – used for shelter, movement corridor, overwintering	Pale Flax-lily	<i>Dianella longifolia</i>	4
	Grey Tussock-grass	<i>Poa sieberiana</i>	
	Spiny-headed Mat-rush	<i>Lomandra longifolia</i>	
	Weeping Grass	<i>Microlaena stipoides</i>	
	Common Tussock-grass	<i>Poa labillardierei</i>	

5.3.3. Summary of GGF Habitat Design Standards

Table 2: Select Relevant habitat design standards for Growling Grass Frog habitat (DELWP 2017 b, c)

Wetland design standards
Aquatic vegetation standards
Planting density must be such that it results in the establishment of a dense cover (target 50%) of submergent/floating vegetation in the deep-water zone and patches of emergent vegetation within several years. As a guide, planting densities to create patches of emergent vegetation are generally 4–6 plants/m ² . Planting densities for patches or submergent vegetation can be lower.
A diversity of vegetation is highly desirable.
Species to be planted in Growling Grass Frog (GGF) wetlands must be selected from those shown in Appendix 1 of the <i>Growling Grass Frog Habitat Design Standards 2017</i> , taking account of local water quality conditions (brackish wetlands should be planted out with species adapted to growing moderately salty conditions).
In the deep-water zone, submergent/floating species must include Water Ribbons (<i>Cycnogeton procerum</i>) and species of genus <i>Potamogeton</i> . Or, if the water is brackish, Fennel Pondweed (<i>Stuckenia pectinata</i>).

Wetland design standards
Exotic species must not be used.
Common Reed (<i>Phragmites australis</i>) and bulrushes (<i>Typha</i> spp.) do not need to be planted as they are likely to establish naturally over time.
Terrestrial habitat standards (the proposed development is not proposing wetland creation but these standards are relevant to guide works within the variable buffer zone).
A minimum 50 m development buffer must surround each wetland, within which there is no major infrastructure (such as roads, car parks and buildings unless the wetland is constructed < 50 m from the conservation area boundary due to space constraints).
Shared-use paths, other minor infrastructure for passive recreation, and stormwater assets must not be constructed 30 m from the normal water level of a breeding wetland.
Approximately 50% of the area within 10 m of the wetland's normal water level must be designed to be maintained as low, grassy vegetation up to 10 cm in height.
Where tussock-forming grasses and sedges are used in the zone within 10 m of the normal water level, the planting density should form < 20% cover when mature.
Mulch must not be used within 50 m of a wetland.
Shrubs must not be planted within 10 m of the wetland's normal water level.
Rock piles at least 1 m deep must be constructed adjacent to the wetland margin using rocks with a variety of sizes (0.1–1 m diameter).
Where possible, the zone between 10 m and 100 m of the wetland (where space is available) should be designed to be maintained primarily as short, mown grass with an open structure (e.g., 20% cover).
Tree cover within 100 m of a wetland should be < 10%.
Shrub cover within 100 m of a wetland should be < 10%.
A patchy arrangement of dense plantings of tussock-forming species is encouraged to provide some potential terrestrial shelter.
Low, grassy vegetation does not need to be native (mown pasture and even lawn are acceptable).
Invasive plant species must not be used anywhere within the terrestrial habitat zone.

5.4. Threats to ecological values

GGF are highly sensitive to habitat degradation that can arise from pollution, loss of habitat structure and/or dominance of weed species. The actions below must be implemented to maintain habitat of a suitable quality for GGF and are summarised in Table 3 in Section 6.1. The threats are detailed briefly below. These threats can be mitigated through a comprehensive, multi-faceted approach that includes habitat restoration and revegetation, the use of the proposed SWMS, predator and invasive species management, weed control, appropriate development, the variable creek buffer, fencing, and pollution and sediment control.

5.4.1. *Habitat loss, and fragmentation*

Threat

Development of potential habitat and in areas between known habitat led to habitat loss and fragmentation. This leads to a loss of individuals and to isolation of populations that can lead to decline of species through inbreeding, and loss of breeding sites. Mitigation measures such as ensuring habitat connectivity, relocation and avoiding development effecting known areas of important habitat can reduce this threat.

Response

The proposed development will not lead to fragmentation of areas of GGF habitat. The only proposed infrastructure that will be built into the variable buffer area are two storm water outfalls that are required to be constructed to the 1 in 100-year flood line to meet Melbourne Water requirements. These drainage outfalls have been designed so as to not impact any native vegetation identified within the study area.

The creation and maintenance of the variable buffer along Kororoit Creek will ensure that the area of potential habitat for GGF is not fragmented by any construction works during and post development.

5.4.2. *Pollution and reduction in water quality leading to habitat degradation*

Threat

Pollution from nutrient, sediment or chemical run off from a development can reduce the quality of water in a creek. This can lead to changes in the suitability of the creek for species and lead to reduction in habitat.

Response

Mitigation actions to prevent changes in water quality are detailed in the SWMS (Arcadis 2024). These measures also include the installation and maintenance of four retaining basins, sediment fencing (Section 5.2.3), monitoring, retaining wall creation, habitat protection and maintenance, weed control, revegetation with appropriate wetland species.

5.4.3. *Hydrological changes*

Threat

Hydrological changes can result in the loss of areas for breeding, foraging and dispersal, either through drying out or through important vegetation and emergent habitat structures being submerged.

Response

The SWMS (Arcadis 2024) have been developed to ensure that the stormwater that is expected to be produced on the site will be appropriately treated and slowed before its release into the Kororoit Creek. Modelling of potential stormwater scenarios and consultation with the appropriate groups including Melbourne Water and Council and standards has resulted in the current SWMS (including the creation of

two outfalls and four retaining basins) that has measures included to meet all of the required water standards and ensure no negative effects of the expected flows on the Kororoit Creek (Arcadis 2024). A risk assessment of the Kororoit Creek (Nature Advisory 2024) has been undertaken. Ongoing monitoring of the flow into Kororoit Creek will be undertaken during and post construction to ensure that the system is working well.

5.4.4. Human disturbance

Threat

Human activities like use of the potential habitat for construction of developments and recreation can lead to loss or degradation of habitat and reduction in use of habitat and loss of GGF.

Response

During construction of the proposed development, 'No-go-zone' fencing will be installed along the perimeter of the creek buffer area (Section 5.2.1) as will one-way fencing to prevent GGF moving into the construction area beyond the buffer zone (Section 5.2.4). Contractors will be made aware of the importance of staying out of the no-go zone and what the emergency procedure is if a GGF is found within the construction area.

Hard rubbish and litter must be assessed and removed from waterways quarterly for a period of 10 years. This should be performed in conjunction with weed control in the section below.

5.4.5. Weed control

All noxious and environmental weed species must be controlled within the whole study area. Note that the weed and all vegetation outside of the variable creek buffer area is proposed for removal and that it is not appropriate or necessary to control Serrated Tussock in the south of the study site other than to slash it. Efforts to control Serrated Tussock require integrated management including fire and chemicals and mechanical removal and are not required as the weeds in the south and most of the study area outside the buffer area will all be filled over with clean fill as part of the development. Total weed cover in revegetation area must not exceed 5% unless vegetation is required in the short term for frog shelter.

Weed control will be undertaken by experienced bushland management personnel using herbicides appropriate for use near waterways, with cut-and-paste methods employed for woody weed removal wherever feasible. Contractors should avoid using herbicide in close proximity to Kororoit Creek where possible as there is potential for chemical drift and pollution of the water. Precision control methods that minimise off-target impacts such as the cut and paint method must be used where possible. However, where weeds are at high densities, these methods may not be appropriate or feasible. In such situations spraying is acceptable but must only be undertaken outside of GGF breeding and tadpole development times (September – April).

Contractors should avoid using herbicide in close proximity to Kororoit Creek as there is potential for chemical drift and pollution of the water. Precision control methods that minimise off-target impacts such as the cut and paint method must be used where possible. However, where weeds are at high densities, this method may not be appropriate or feasible. In such situations spraying is acceptable but must only be undertaken outside of GGF breeding and tadpole development times (September – April).

Care must be taken not to spill any herbicide close to the water. Transference of chemicals must always be undertaken away from the creek in case of spillage. If herbicide is required, Roundup Biactive® should be used as it biodegrades rapidly and has been deemed the safest option for frogs (Water and Rivers Commission 2001). Where possible, weed control must occur in winter when GGF hibernate. Herbicide must be used minimally and only in situations where manual weeding is not possible.

Weed control and monitoring will be undertaken quarterly following revegetation works for a period of 10 years to ensure weed species do not out-compete indigenous species.

5.4.6. Predation and Invasive species

Threat

Predation of individual GGF leads to a decline in the population. It may also lead to changes in behaviour of GGF using a site or the suitability of a site to support GGF.

Response

To mitigate the effects of predators, GGF need structure within their habitat to shelter in such as logs and rocks (Section 5.3.1). Introduced predators including foxes will also be controlled. Predatory fish also pose a threat to GGF. Predators that are introduced such as European fox are proposed to be controlled as part of the development. The proposed development will not result in increased predators within the Kororoit Creek or the variable buffer area.

Invasive plant species threaten GGF habitat as they compete with native flora species and can reduce space, water and light in the creek buffer area. Weed management within the Variable creek buffer area will be implemented according to a weed management plan to reduce the threat of weed species on GGF habitat.

5.4.7. Climate Change and extreme weather events

Threat

Change in climate and in the frequency and duration of climatic events threaten all fauna species including GGF. Drought and a reduction in the frequency of rainfall result in a reduction in available water in systems such as creeks.

Response

The proposed development will not reduce the threat of changing climate, but the appropriate management of the stormwater will result in more water in the system.

6. Ongoing Management Summary

6.1. Management Table

The management actions required for the implementation of this GGF CMS and the responsibilities are summarised in Table 3 below. All future developments and works must be completed in accordance with this GGF CMS.

All contractors working within the study area should be made aware of this GGF CMS and their responsibilities and sign on to the plan to acknowledge that they have read and understood their requirements and responsibilities. In addition, contractors should be made aware of the GGF and what to do if they find one while working in the study area (Emergency procedures are outlined in Appendix 3).

Nature Advisory to prepare an appropriate Weed Management Plan for the study area and the Kororoit Creek variable buffer area to detail required weed control works. Ensure compliance with the WMP.

The proponent/landowner GPT Platform Pty Ltd will be the responsible party for ensuring the variable creek buffer area is managed for the 10-year management period.

This GGF CMS will be used to prepare a GGF Conservation Management Plan (GGF CMP) following consultation with Brimbank Council and will include a detailed design for GGF habitat within the buffer area and detailed management actions. An example GGF habitat enhancement area design is provided in Appendix 5.

Table 3: Management action table

Phase	Objective	Timing and frequency	Management action	Performance measure to be achieved	Monitoring and review	Persons responsible
Pre-construction	Development of site CEMP	Prior to works commencing	<p>Construction Environmental Management Plan prepared to include:</p> <ul style="list-style-type: none"> ▪ Erosion and sediment control measures ▪ Pollution control measures ▪ Hygiene control measures ▪ Personnel briefing ▪ Significant environmental values emergency plan 	Site CEMP completed to the satisfaction of the responsible authority	Management log and annual report undertaken as per Section 6.6.1	Proponent
Pre-construction	Protection of existing habitat and associated values	Prior to works commencing	Erect temporary fencing around construction footprint of proposed works.	<p>Temporary fencing appropriately erected and signed.</p> <p>Fencing includes Growling Grass Frog proof fencing.</p>	Management log and annual report undertaken as per Section 6.6.1	Proponent
Pre-construction	Salvage and relocation	A minimum of one day before commencing work within potential GGF habitat in the management area and a maximum of three days before – i.e., over two nights.	Salvage any Growling Grass Frogs inside the construction area and relocate into suitable habitat along Kororoit Creek. Any other significant fauna will also be salvaged and relocated.	Any Growling Grass Frogs within construction footprint salvaged and relocated (See Appendix 3).	Report to DEECA filed in a manner and timeframe specified by the <i>Wildlife Act 1975</i> licence requirements	Proponent and a suitably qualified ecologist

Phase	Objective	Timing and frequency	Management action	Performance measure to be achieved	Monitoring and review	Persons responsible
Construction	Personnel briefing	Prior to works commencing	Growling Grass Frog briefing to all construction personnel prior to commencing works Implementation of Growling Grass Frog emergency plan if required.	Construction personnel adequately briefed.	Contractor induction acknowledgement filled out as per Appendix 4.	Proponent
Habitat Management	Litter and hard rubbish removal	Quarterly	Remove hard rubbish and litter including the old fence that runs along the creek (Section 5)	Hard rubbish and litter removed including old fence Potential Growling Grass Frog habitat not disturbed	Annual monitoring within 3 months of the end of each year post completion for an initial period of ten years	Proponent (year 1-10). Then review and management decided following review
Habitat Management	Weed control	Quarterly	Remove noxious and environmental weeds (Section 5) and woody weeds killed.	Overall weed cover does not exceed 5%.	Annual monitoring within 3 months of the end of each year post completion. Annual monitoring to run for an initial period of ten years	Proponent (year 1 -10). Then review and management decided following review
Habitat Creation and Management	Habitat creation - pools	Within the first year of CMS commencing	Create pools for water in the buffer area similar to indicated in Appendix 5	Pool creation	Annual monitoring of habitat use through surveys for GGF	Proponent (year 1 -10). Then review and management decided following review
Habitat Creation and Management	Rock introduction	Within first year of CMS commencing	Rocks taken from the site (currently in rock piles on the site) to be placed along length of Kororoit Creek as described in Section 5.3.1.	At least 20% of the perimeter of Kororoit Creek should consist of rock piles of suitable size and structure as detailed in Section 5.3.1.	Annual monitoring of habitat use through surveys for GGF	Proponent (year 1 -10). Then review and management decided following review

Phase	Objective	Timing and frequency	Management action	Performance measure to be achieved	Monitoring and review	Persons responsible
Habitat Management	Maintain vegetation that provides habitat for GGF, via Biomass Control	Annually, during winter	Slash all grass (except tussocks) and herbs in terrestrial vegetation zone (more than 10 m from water) to 10 cm high. Done in winter to avoid accidentally killing active GGF.	GGF are able to move and forage within the site and between the site and other habitats. At least 50% of areas within 10 m of water are covered by grass 10 cm high or less.	Annual monitoring within 3 months of the end of each year for an initial period of ten years	Proponent (year 1 -10). Then review and management decided following review
Revegetation	Plantings create habitat for GGF	Within 3 months of the end of each year post completion for an initial period of ten years.	Minimum planting density is maintained	As per DELWP guidelines (2017a), establishment of a dense (target 50 per cent) cover of submergent/floating vegetation and patches of emergent vegetation within several years	Annual monitoring within 3 months of the end of each year post completion for an initial period of ten years	Proponent (year 1 -10). Then review and management decided following review
Habitat Management	Works monitoring and reporting	Within 3 months of the end of each year post completion for an initial period of ten years.	Monitor condition of habitat and success. Prepare an annual report that outlines management actions and monitoring results, and assesses the compliance of actions undertaken against the actions required by this GGFCMS. This report is to be submitted to Council annually.	Reports completed and submitted to Council	Annual monitoring within 3 months of the end of each year post completion for an initial period of ten years. Report on usage surveys by GGF and other fauna species	Proponent (year 1 -10). Then review and management decided following review

6.2. Responsible parties

This GGF CMS will initially be implemented by HB&B Property Pty Ltd on behalf of GPT Platform Pty Ltd for years one and two after construction completion. The proponent/landowner GPT Platform Pty Ltd will be the responsible party for ensuring the variable creek buffer area is managed for the 10-year management period. After year 10, the management of the site, and GGF habitat in particular, will be reviewed and amended if necessary. The site is to be managed for GGF habitat values in perpetuity, with the management strategy reviewed on a decadal basis. The proponent/landowner does not intend to subdivide the variable creek buffer area from the larger property.

Kororoit Creek is known to harbour exotic predatory fish species. As the habitat in the study area is only considered suitable for dispersal and not breeding of GGF, specific measures to exclude such fish are not required. However, it is recommended that the enhancement of habitat within the variable buffer zone should include refuge zones on the bank, such as wet depressions with appropriate sedges and rocks, that provide refugia for GGF and breeding habitat. Success of predator management should be reviewed and if required management strategy adapted to control existing or new predators. Predator management and monitoring success and need for adaptive management.

6.3. Hygiene control

Strict hygiene controls must be implemented during all works (construction and management) to reduce the potential for introduction of the Chytrid fungus.

Management personnel will also implement hygiene controls. This includes:

- Vehicle tyres will be disinfected with bleach (active ingredient benzalkonium chloride) in prior to entering a wetland site or habitat corridor.
- People working adjacent to the wetlands will need to disinfect their shoes prior to entering vehicles and moving between GGF habitats.
- Any tools that have come into contact with water or soil must be disinfected with bleach before being used in the management area. This must also be done when tools are being transferred from one aquatic habitat to another within the management area, as well as when they leave the management area.
- Disinfection is not to result in bleach polluting habitat corridors and aquatic habitats. This can be achieved by using clean (ideally sterile) water to rinse tyres, tools and footwear that have been disinfected with bleach prior to exposure to GGF habitats.

6.4. Hydrological controls

The proposed development must be designed in a way that does not alter the site's hydrology in areas that act as tributaries to the creek. This will largely be an issue that will not require ongoing management once a suitable design has been implemented.

6.5. Pollution and sediment control

Testing of water quality upstream and downstream of outfalls (beyond the mixing zone) will be employed to determine the influence of stormwater inputs to Kororoit Creek and whether water quality meets the objectives for water quality as per the Environment Reference Standard 2021 (EPA Victoria 2021).

The sediment and effluent control measures (See section 5.2) should be adhered to so that impacts from construction activities are not imposed upon the creek.

6.6. Environmental monitoring

All performance measures outlined in Table 3 are to be monitored for compliance at the frequencies prescribed to ensure the successful implementation of this management strategy. Monitoring by the Responsible Parties as set out in Table 3 is to continue until such time as all compliance requirements and permit conditions have been adequately satisfied.

All monitoring results are to be documented and made available to the Responsible Authority (Council) upon request. Documentation shall include any supporting evidence of compliance such as reports from independent assessors, monitoring data (raw and analysed), photographs, receipts and copies of personnel qualifications.

6.6.1. Management Log and Annual Report

A log of all management activities undertaken must be kept by parties responsible for this strategy's implementation (Section 6.2), to assist with tracking of all management activities and ensuring each is being done at the appropriate time, frequency, and duration.

A report of all management activities undertaken, including an assessment of whether their objectives are being met (by examining whether performance indicators were achieved), will be compiled by the party responsible for this strategy and sent to the responsible authorities for review annually.

The monitoring outlined above must be undertaken for an initial minimum period of ten years by the responsible parties, and the need for additional monitoring beyond this must be assessed based on results and considered in annual reporting to the responsible authority (Council) (Section 6.8).

6.6.2. Habitat quality monitoring

Unless otherwise specified, all habitat quality monitoring and management, including weed control and litter removal, is the responsibility of the proponent for the first two years after construction concludes.

Subsequently, the proponent will request handover to the responsible authority (City of Brimbank or Melbourne Water). The vesting authority will be shown on the certified Plan of Subdivision on completion of the development. Handover is intended to occur once two years of initial maintenance has been performed by the proponent according to this strategy and accepted by the responsible authority. After Year 10, the management of this site will be reviewed by the responsible authority with the objective of ensuring the persistence of GGF habitat on-site in perpetuity.

6.6.3. Terrestrial habitat monitoring

Habitat enhancement, specifically revegetation efforts, must be assessed by a qualified ecologist at the end of the first year following planting, to advise on any additional measures required to meet the standards outlined (i.e., minimum planting densities).

This must also include assessing the presence of weeds on site post control outlined in the section above to meet standards.

6.6.4. Performance Measures (monitoring performance):

- Habitat monitoring is conducted in line with the requirement above.
- Terrestrial habitat in the site meets the standards outlined in Section 5.3.3.
- Weeds in the site do not exceed 5% cover, unless required as short-term cover for GGF.
- Surveys for GGF and other fauna annually during the targeted survey season to determine utilisation.

6.6.5. *Environmental auditing*

Monitoring results are to be collated and documented in a report and submitted to the Responsible Authority for auditing purposes annually. All actions undertaken will be assessed for compliance against the actions required by this GGF CMS. All instances of non-compliance shall be documented. Any non-compliance which poses a significant threat to sensitive environmental values must be immediately brought to the attention of the Responsible Authority.

6.7. *Corrective action*

Corrective action must be taken within 48 hours of any non-compliance identified as posing a significant risk to sensitive environmental values, or within 30 days of any other instance of non-compliance. Any corrective action undertaken must be documented. Where relevant, suitably qualified specialists are to be consulted to determine what corrective action(s) should be taken.

6.8. *Management Strategy review*

The environmental protection measures set out in the GGF CMS and CMP shall be reviewed in annual reporting and amended in consultation with Brimbank City Council and any relevant independent professionals (where requested by the Responsible Authority) to the satisfaction of the Responsible Authority if:

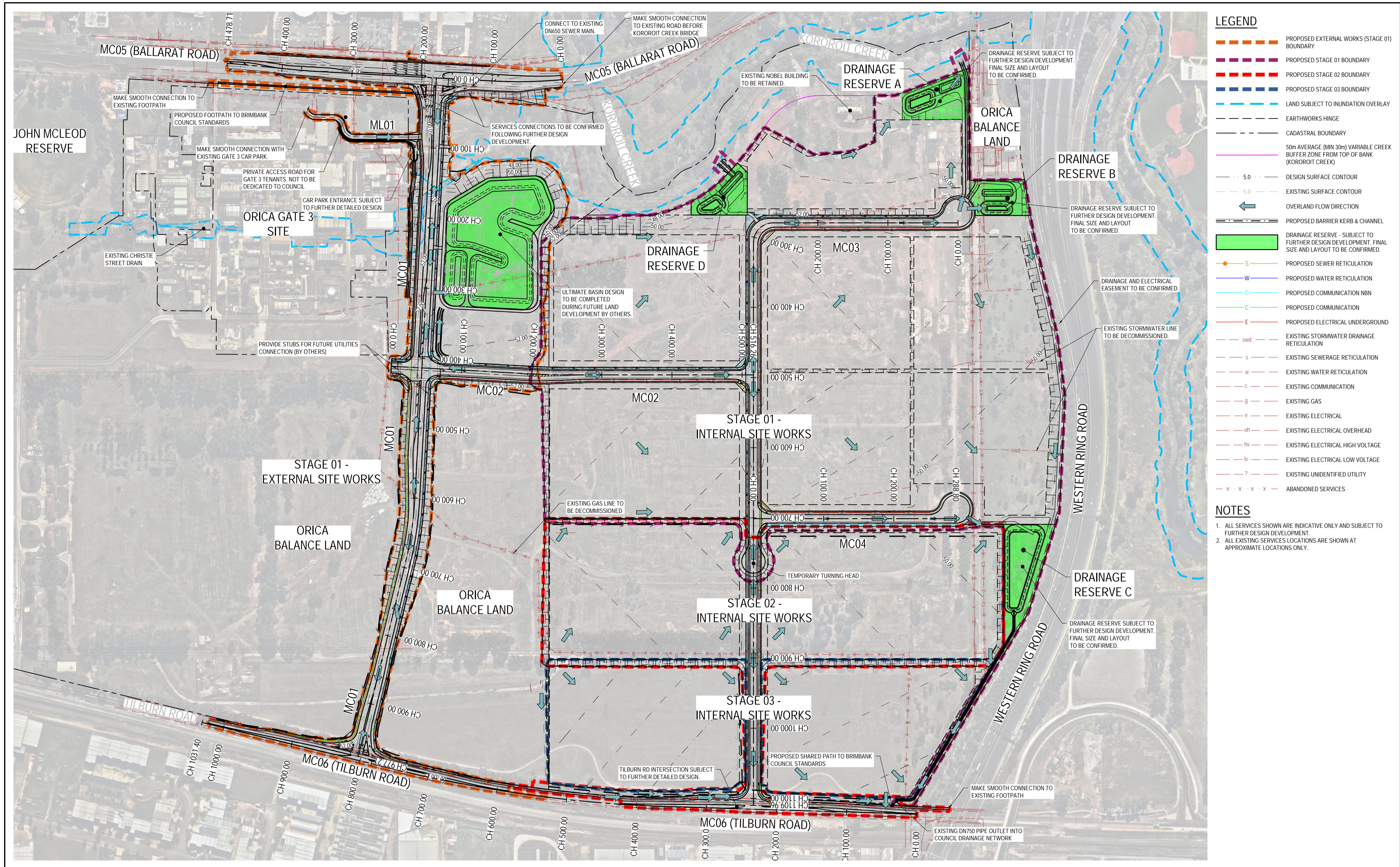
- The objectives of the GGF CMS and CMP are met and additional works or monitoring is shown to no longer be required;
- The objectives of the GGF CMS and CMP are not being met; or
- Monitoring has identified non-compliance AND the prescribed measures are found to be conflicting or impractical due to unavoidable site/project-specific constraints.

7. References

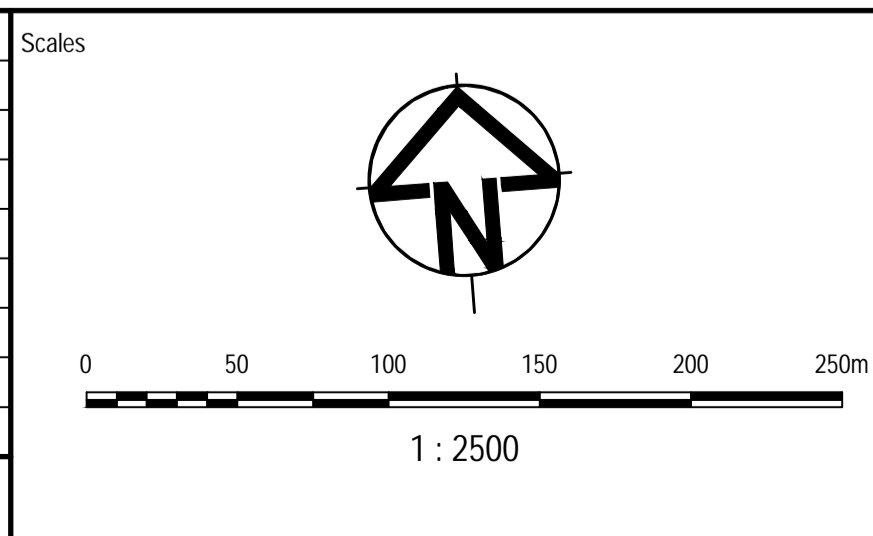
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Appendix 1: Site Development Plan



Issue	Description	DR	CH	VE	Date
06	REISSUED FOR PLANNING PERMIT APPLICATION	JS	IS	SG	17.12.24
05	ISSUED FOR PLANNING PERMIT APPLICATION	JS	IS	SG	02.08.24
04	ISSUED FOR INFORMATION	JS	IS	SG	29.07.24
03	ISSUED FOR INFORMATION	JS	IS	SG	24.07.24
02	ISSUED FOR INFORMATION	JS	IS	SG	17.07.24
01	ISSUED FOR INFORMATION	JS	IS	MV	15.07.24



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Architect

watson young

Client

PROPERTY

Status

PRELIMINARY ONLY
NOT TO BE USED FOR CONSTRUCTION

Original Issue Signatures

Drawn	J. SANTOS	Original Size	A1
Designed	I. SUMMERS	Height Datum	AHD
Project Manager	W. BURRELL	Grid	GDA94
Verified	S. GILBERT		

Project

DEER PARK ESTATE
PLANNING PERMIT APPLICATION

Title

GENERAL ARRANGEMENT PLAN

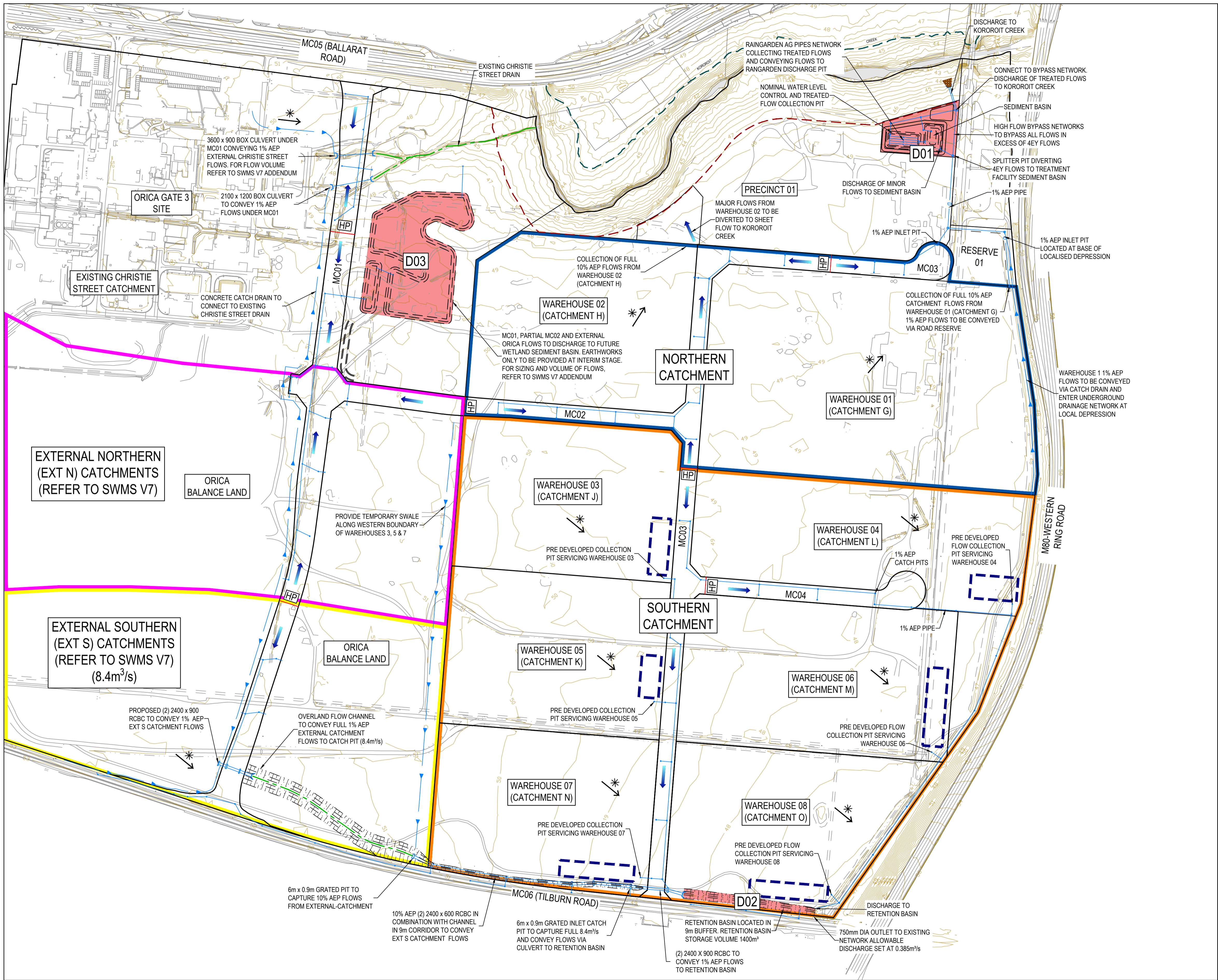
ARCADIS

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376-390 Collins Street
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Project Number	30169582
Issue	06

Drawing No. **DPK-AAP-PP-ZZ-DRG-CI-010061**

Appendix 2 Drainage Masterplan



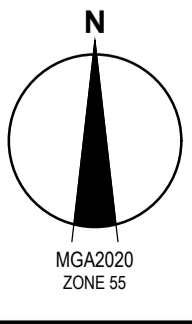
LEGEND - LAYOUT PLAN	
ALL PROPOSED, FUTURE & EXISTING SERVICE LOCATIONS ARE SHOWN INDICATIVELY	
	PIT PIPE NETWORK
	CATCH DRAIN
	DIRECTION OF FALL
	OVERLAND FLOW
	GRADED IN DIRECTION OF FALL TO LEVEL INDICATED
	KOROROIT CREEK
	UNDERGROUND STORAGE AREAS (INDICATIVE)
	DRAINAGE TREATMENT ASSET
	CHRISTIE STREET (MW) DRAIN
	CREEK RESERVE NO GO ZONE BOUNDARY

Drawing Index	
3508E-MP-ID-401	Drainage Masterplanning Overall Drainage Scheme
3508E-MP-ID-402	Drainage Masterplanning Internal Northern Catchment Masterplan
3508E-MP-ID-403	Drainage Masterplanning Critical Northern Drainage Longitudinal Sections
3508E-MP-ID-404	Drainage Masterplanning Internal Southern Catchment Masterplan
3508E-MP-ID-405	Drainage Masterplanning Critical Southern Drainage Longitudinal Sections

- NOTE:
- WAREHOUSE 01 AND 02. TO DISCHARGE FULL 10% AEP FLOWS TO UNDERGROUND DRAINAGE NETWORK. FLOWS TO BE TREATED AT TREATMENT NODE D01
 - SHEET FLOWS FROM WAREHOUSE 02 TO BE CONVEYED NORTH TO KOROROIT CREEK. WAREHOUSE 01 1% AEP RUNOFF TO BE CONVEYED VIA CATCH DRAIN ALONG EASTERN BOUNDARY. 1% AEP FLOWS CAPTURED VIA INLET PIT IN RESERVE 01 AND PIPED TO SPLITTER PIT AT TREATMENT NODE D01
 - WAREHOUSE 03 TO 08 TO RETAIN 1% AEP FLOWS ON SITE. MINOR FLOWS TO BE TREATED ON SITE. 10% AEP PRE-DEVELOPED FLOWS TO DISCHARGE TO UNDERGROUND DRAINAGE NETWORK.

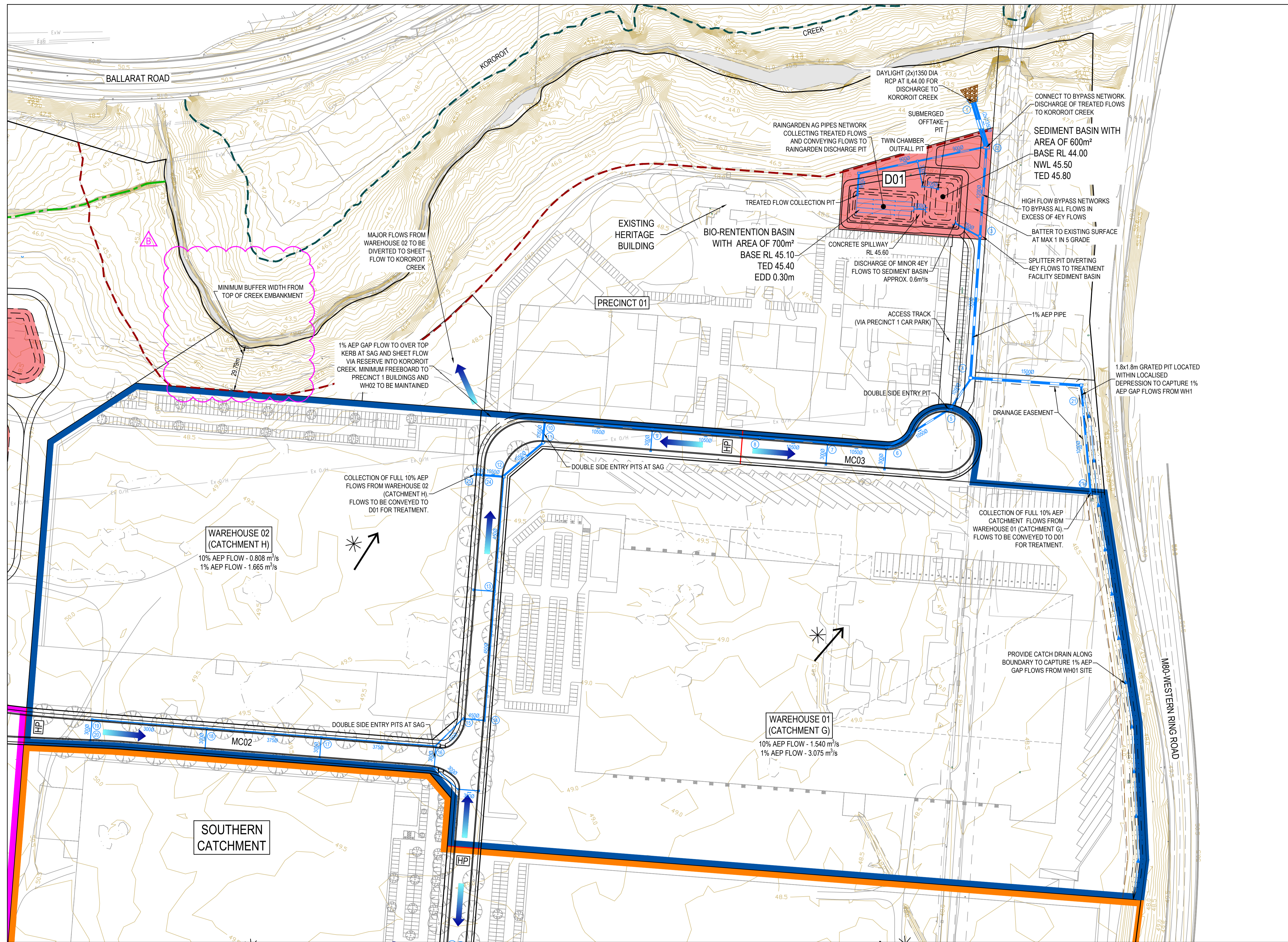
REV	DATE	AMENDMENT / REVISION DESCRIPTION	DRAFTER	DESIGNER	CHECKER	RP ENG	PERMIT REF. NO.	PLAN OF SUB. NO.	RP ENG	S. Cutajar
A	05.05.25	ISSUED FOR INFORMATION ONLY	R.RAYOBI	E.GLASSON	R.KOZUL	S.CUTAJAR			RP ENG NO.	PE0005321
									DATE	
EXTERNAL ISSUE										

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Scale 1:2500
SCALE AS SHOWN AT A1



Deer Park Estate
Brimbank City Council
Masterplanning & Information Documents
Drainage Masterplanning
Overall Drainage Scheme

MELWAYS REF	PROJECT / DRAWING No	SHEET No	REVISION
25 H10	3508E-MP-ID-401	01 of 05	A



REV	DATE	AMENDMENT / REVISION DESCRIPTION	DRAFTER	DESIGNER	CHECKER	RP ENG	PERMIT REF. NO.	PLAN OF SUB. NO.	RP ENG	S. Cutajar
A	05.05.25	ISSUED FOR INFORMATION ONLY	R.AYOBI	E.GLASSON	R.KOZUL	S.CUTAJAR			RP ENG NO.	PE0005321
B	07.05.25	MINIMUM CREEK BUFFER WIDTH ADDED	E.GLASSON	E.GLASSON	S.CUTAJAR	S.CUTAJAR			DATE	05.05.25
EXTERNAL ISSUE										
0 12.5 25 50 Scale 1:1250 SCALE AS SHOWN AT A1										
N NGA2020 ZONE 55										
smec an s company Collins Square, Tower 4, Level 20, 727 Collins St Melbourne, VIC 3008 Ph 03 9514 1500 © SMEC AUSTRALIA PTY LTD (ABN 47 065 475 149)										
PROPERTY										
Deer Park Estate Brimbank City Council Masterplanning & Information Documents Drainage Masterplanning Intenal Northern Catchment Masterplan										
MELWAYS REF 25 H10			PROJECT / DRAWING No. 3508E-MP-ID-402			SHEET No. 02 of 05			REVISION B	

Appendix 3: Work Method Statement for GGF

Prior to construction

Pre-clearance Growling Grass Frog salvage and translocation survey

Immediately prior to construction commencing (irrespective of the time of year), a pre-clearance salvage and translocation survey of the Construction Footprint for GGF must be undertaken by a suitably qualified individual (zoologist), licensed by DEECA (under the Wildlife Act) with knowledge of and demonstrated experience in frog relocation methods. This survey must involve the following.

- Systematic active searching for individuals within the Construction Footprint at night using spotlights. The search must target likely sheltering sites such as underneath debris, logs, rocks and emergent vegetation, if any, within the Construction Footprint. The entire Construction Footprint must be actively searched.
- Call playback must be carried out within the Construction Footprint at night.
- If GGF are recorded, active searching and call playback must continue for one additional hour after the last GGF is recorded.
- Notes on habitat description within the Construction Footprint will also be recorded as part of the pre-clearance surveys.
- Should GGF be encountered they will be immediately salvaged and translocated to suitable habitat such as dense vegetation, under rocks or under woody debris along the waterway downstream from the development.
- During relocation works, any incidentally captured fauna such as other frog species, reptiles or small mammals, will also be removed from harm. Any other person assisting in relocation works will work under the close supervision of the individuals listed on the permit.
- A suitably qualified individual must handle the frog using the following procedures:
 - If no water is available for washing hands before starting surveys, a sterilising alcohol-based hand disinfectant will be used, such as AquaGel.
 - Amphibians will be handled and released as quickly as possible. Unused disposable latex gloves will always be used when handling frogs. A new pair of gloves will be used for each individual.
 - No more than one individual will ever be held in the same container simultaneously. A new bag or sterilised container will be used for each individual and containers/bags will not be reused.
 - All amphibians will be regarded as a high infection risk and will be handled in the above manner.
 - The relocation of individuals between habitats could pose threat to an existing population by spread of disease such as Chytrid fungus (DSE 2010). Therefore, all fauna species captured will be released in the same watercourse it was located from to avoid spreading disease.
 - All captured frogs (and other fauna species) during construction will be released in suitable habitat within 100m of the initial capture point downstream from the development.
 - Captured frogs will be released immediately, in nearby habitat that will not be impacted by the proposed works. Frogs will be released in dense vegetation, under rocks or under woody debris along the waterway downstream from the development. Care will be taken to minimise

disturbance of habitat features to prevent impacting other Growling Grass Frogs that may potentially be within the area.

- Habitat to which frogs are relocated should include adequate deep water (>0.5 m) and at least partial dense, fringing vegetation or beneath rocks for shelter.
- If a sick, dying or freshly dead wild amphibian is found, it will be collected, preserved and submitted for disease diagnosis as advised by DEECA.
- Sick or dying amphibians will be identified as those whose appearance or behaviour shows one or more of the following signs (taken from DECC 2008):
 - Darker or blotchy upper dorsal surface
 - Reddish/pink-tinged lower (ventral) surface and/or legs and/or webbing or toes
 - Swollen hind limbs
 - Very thin or emaciated
 - Skin lesions (sores, lumps)
 - Infected eyes
 - Lethargic limb movements
 - Abnormal behaviour (i.e. a nocturnal, burrowing or arboreal frog sitting out in the open during the day and making no attempt to move when approached)
 - Little or no movement when touched

** Hygiene protocols should be guided by the best available scientific evidence. This protocol was adapted from Department of Sustainability, Environment, Water, Population and Communities (DSEWPoC) 'Hygiene protocols for the control of diseases in Australian frogs' (Murray et al. 2011).*

- Once translocation is complete, works may re-commence. A report to DELWP will need to be prepared under the terms of any licence to translocate. A suitably qualified zoologist licensed by DELWP (under the Wildlife Act) will report activities to DELWP in a manner and timeframe specified by the Wildlife Act 1975 licence requirements. The report will include:
 - Area of habitat salvaged
 - Number of individuals found
 - Number relocated
 - Relocation sites
 - Number of dead specimens
 - Records of non-target species are to be kept (location, species, number of individuals etc.) and forwarded to DEECA.

All key construction personnel will be briefed about the potential occurrence of GGF in the area. Other construction personnel will be informed about the species as part of the general environmental briefing of construction personnel. Information brochures have been prepared on this species for distribution to all site personnel providing a physical description of the species, their population distribution, habitat and similar species.

Sediment Fencing

Best practice erosion and sediment control measures will be employed. This includes the following:

- The use of sediment fences erected down slope of exposed soil and stockpiles near water courses; these will prevent sedimentation and movement of frogs from the waterway into the CMS Area.
- Sediment fencing must be erected around the boundary of the Construction Footprint prior to works commencing.
- Sediment fencing is to be installed prior to construction and frog salvage operations being undertaken. Sediment fencing will be maintained and remain in place until construction activities are completed in the relevant stage.
- In order to be frog proof, the fence will be:
 - Silt fence material at least 1m high to prevent frogs jumping over it (Note: shade cloth fabric can be used to help reduce impacts from wind)
 - Tall vegetation within a metre either side of the fence must be trimmed to prevent frogs jumping over the top of the fence
 - Dug or pegged in so that frogs cannot move underneath the fence and will be kept tight to avoid sagging
- Immediate repair (i.e. within 18 hours) of any gaps in, or under, sediment or drift fencing.
- Minimisation of the area of disturbed soil at any one time. Stockpiles will be minimised and these will be positioned away from the waterway.

During construction

Hygiene Controls

The GGF hygiene protocols must be implemented during the entire period of the construction phase of the project.

Hygiene controls will be implemented during the construction period to reduce the potential introduction and spread of the infectious disease *Chytridiomycosis* between amphibians, which is caused by a Chytrid fungus that attacks the frogs' skin. Chytrid fungus is listed as a key threatening process under the EBPC Act.

Best-practice measures will need to be implemented. Hygiene controls will be in accordance with the Department of Sustainability, Environment, Water, Population and Communities (DSEWPac) '*Hygiene protocols for the control of diseases in Australian frogs*' (Murray *et al.* 2011).

To prevent the spread of this pathogenic organism, the following hygiene protocol will be undertaken:

- All plant, equipment, tools and vehicles will be disinfected with bleach (active ingredient benzalkonium chloride) at a designated wash down bay prior to entering the waterway as this is Growling Grass Frog habitat.

All plant, equipment and vehicles must be sprayed/flushed initially with water and then with a disinfecting solution. All vehicles accessing the waterway must have wheels and tyres cleaned and disinfected. This should be carried out at a designated wash down bay. Spraying with bleach (active ingredient benzalkonium chloride) is required to disinfect car wheels and tyres. Cleaning of footwear before getting back into the car will prevent the transfer of pathogens from/to vehicle floor and control pedals.

- All people entering and exiting the waterway must use the boot wash station at the designated wash down bay to disinfect their footwear with bleach as the area is Growling Grass Frog habitat.

Footwear must be thoroughly cleaned and disinfected at the commencement and completion of work each day and when entering or exiting the construction site. This can be achieved by initially scraping boots clear of mud, washing all mud and soil off the boots, and standing the soles in a disinfecting solution. The remainder of the boot should be rinsed or sprayed with a disinfecting solution that contains benzalkonium chloride as the active ingredient.

Disinfecting solutions must be prevented from entering any water bodies.

Growling Grass Frog salvage and translocation (GGF Emergency Protocol)

Should GGF be encountered during construction:

- All construction activities will cease until the frog has been secured under a large bucket or plastic box (or similar) that must be placed carefully over the animal. Construction activities, except within 50 metres of the secured frog, can resume once the location of the secured frog has been temporarily fenced with para-webbing or similar and signed as a No-go Zone.
- A thorough search of an area with a radius of 50m around the site where the frog was found is to be undertaken by a suitably qualified zoologist, including a search of any potential overwintering refuge areas present within this radius.
- No handling of frogs is to be undertaken by construction personnel without the relevant license.
- Nature Advisory is to be contacted immediately on 9815 2111. Alternatively, Wildlife CSI is to be contacted on 0431 25 24 77.
- A suitably qualified individual, licensed by DEECA (under the Wildlife Act) with knowledge of and demonstrated experience in GGF relocation methods, must be appointed as the supervisor of the relocation operation.
- During relocation works, any incidentally captured fauna such as other frog species, reptiles or small mammals, will also be removed from harm. Any other person assisting in relocation works will work under the close supervision of the individuals listed on the permit.
- A suitably qualified individual must handle the frog using the following procedures:
 - If no water is available for washing hands before starting surveys, a sterilising alcohol-based hand disinfectant will be used, such as AquaGel.
 - Amphibians will be handled and released as quickly as possible. Unused disposable latex gloves will always be used when handling frogs. A new pair of gloves will be used for each individual.
 - No more than one individual will ever be held in the same container simultaneously. A new bag or sterilised container will be used for each individual and containers/bags will not be reused.
 - All amphibians will be regarded as a high infection risk and will be handled in the above manner.
 - The relocation of individuals between habitats could pose threat to an existing population by spread of disease such as Chytrid fungus (DSE 2010). Therefore, all fauna species captured will be released in the same watercourse it was located from to avoid spreading disease.
 - All captured frogs (and other fauna species) during construction will be released in suitable habitat within 100m of the initial capture point downstream from the development.

- Captured frogs will be released immediately, in nearby habitat that will not be impacted by the proposed works. Frogs will be released in dense vegetation, under rocks or under woody debris along the waterway downstream from the development. Care will be taken to minimise disturbance of habitat features to prevent impacting other Growling Grass Frogs that may potentially be within the area.
- Habitat to which frogs are relocated should include adequate deep water (>0.5 m) and at least partial dense, fringing vegetation or beneath rocks for shelter.
- If a sick, dying or freshly dead wild amphibian is found, it will be collected, preserved and submitted for disease diagnosis as advised by DELWP.
- Sick or dying amphibians will be identified as those whose appearance or behaviour shows one or more of the following signs (taken from DECC 2008):
 - Darker or blotchy upper dorsal surface
 - Reddish/pink-tinged lower (ventral) surface and/or legs and/or webbing or toes
 - Swollen hind limbs
 - Very thin or emaciated
 - Skin lesions (sores, lumps)
 - Infected eyes
 - Lethargic limb movements
 - Abnormal behaviour (i.e. a nocturnal, burrowing or arboreal frog sitting out in the open during the day and making no attempt to move when approached)
 - Little or no movement when touched

** Hygiene protocols should be guided by the best available scientific evidence. This protocol was adapted from Department of Sustainability, Environment, Water, Population and Communities (DSEWPoC) 'Hygiene protocols for the control of diseases in Australian frogs' (Murray et al. 2011).*

- All construction activities can re-commence once the frog has been salvaged and translocated.
- A report to DEECA will need to be prepared under the terms of any licence to translocate. A suitably qualified zoologist licensed by DEECA (under the Wildlife Act) will report activities to DEECA in a manner and timeframe specified by the *Wildlife Act 1975* licence requirements. The report will include:
 - Area of habitat salvaged;
 - Number of individuals found;
 - Number relocated;
 - Relocation sites;
 - Number of dead specimens; and
 - Records of non-target species are to be kept (location, species, number of individuals etc.) and forwarded to DEECA.

Post-construction

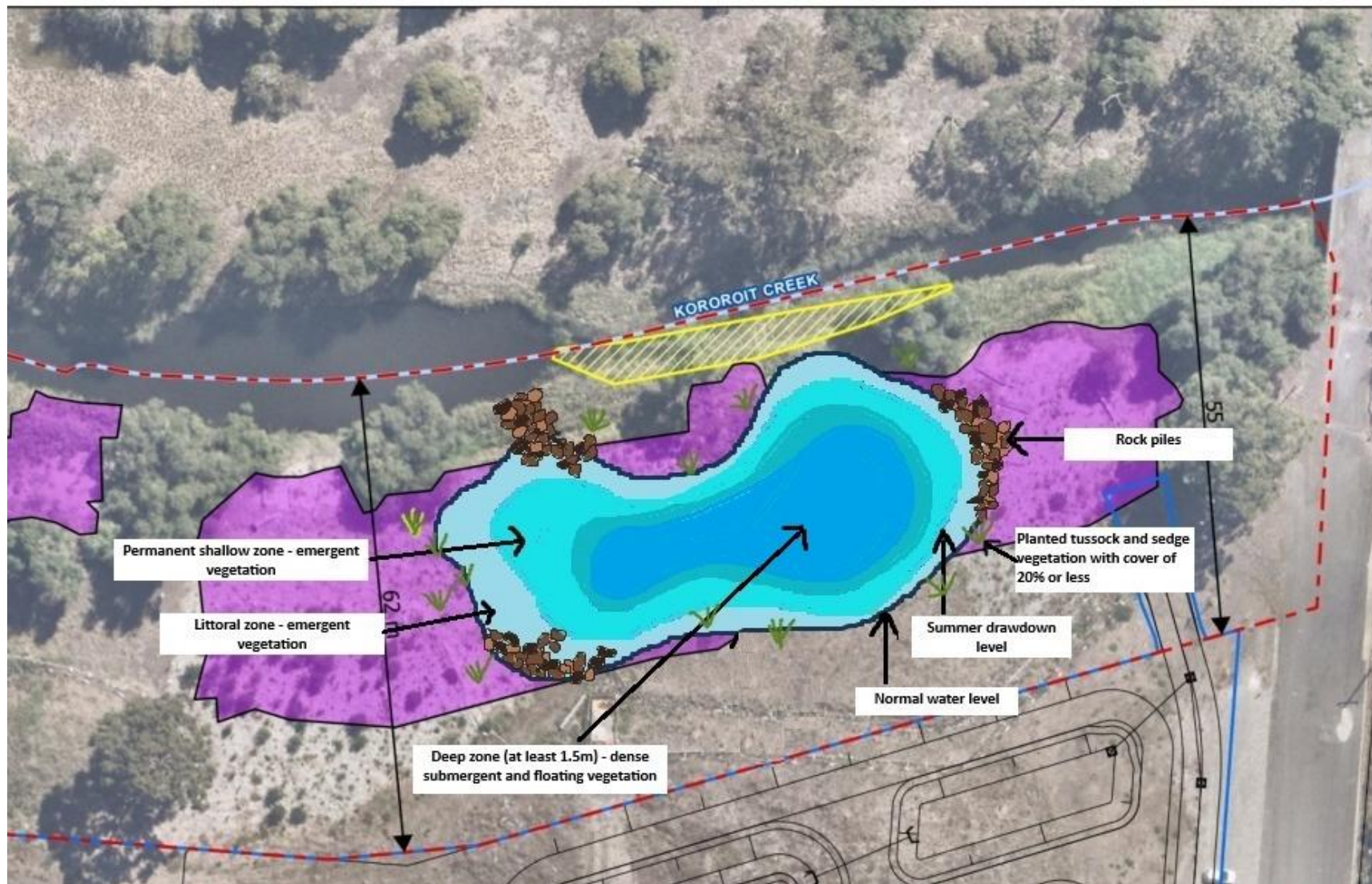
Rehabilitation of terrestrial Growling Grass Frog Habitat

Rehabilitation of affected GGF habitat that is not permanently lost is to be undertaken in accordance with the directives of this report (Sections 4-6).

Appendix 4 Contractor Induction Acknowledgement Table

[illegible]

Appendix 5 Indicative GGF habitat design for the buffer area



Appendix 6 Landscape Rehabilitation Plan Areas 1, 2, 3 & 8, Orica Deer Park (Landserv 2022)

THESE PLANS COMPLY WITH
CONDITIONS: 6 OF
PLANNING PERMIT NUMBER: P0461/2016
Delegate: Kudlicki, Ania
DATE: 22/06/2023



LANDSCAPE REHABILITATION PLAN

FOR DESIGNATED REMEDIATED LAND IN AREAS 1, 2, 3 and 8 ORICA DEER PARK




Prepared for:
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26 October 2022

**LANDSCAPE REHABILITATION PLAN
 AREAS 1, 2, 3 & 8, ORICA DEER PARK**
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**LANDSCAPE REHABILITATION PLAN
AREAS 1, 2, 3 & 8, ORICA DEER PARK**

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LANDSCAPE REHABILITATION PLAN AREAS 1, 2, 3 & 8, ORICA DEER PARK

EXECUTIVE SUMMARY

Landserv was commissioned by Orica to prepare this Landscape Rehabilitation Plan for the proposed soil investigation and remediation works across 'Areas 1, 2, 3 and 8' in the north part of the Orica Deer Park property, in close proximity to Kororoit Creek.

This Landscape Rehabilitation Plan (the Plan) is issued to address a condition of planning permit P461/2016 issued by Brimbank City Council, as amended on 9 May 2022. The Plan is required to be submitted under Melbourne Water conditions incorporated within the planning permit.

The remediation of Areas 1, 2, 3 and 8 (locations depicted in **Figures A1(A) and A1(B)**) is part of a broader Orica Deer Park clean-up program. In Areas 1, 2, 3 and 8, soil contamination from nitro-glycerine sourced from the former use of the site as an explosives manufacturing and research facility, as well as lead and other contaminants have been detected and are the target for the remediation activities. The soil remediation work is now complete and landscape rehabilitation has commenced.

Each remediation area has now been backfilled with basaltic soil and rocks. Mulch and woody debris including large girth dead trees have been placed across the surface at Areas 2 and 3.

Apart from addressing the planning permit and Melbourne Water conditions, the purpose of this Landscape Rehabilitation Plan is to guide and document the approach to finalising the rehabilitation and revegetation in the four subject areas.

As outlined in the Plan, prior to planting in Areas 1, 2 and 3 (Area 8 does not require planting), the surface will be prepared, 'jute mat' geofabric laid over the new remediation excavations where mulch and dead trees haven't already been placed and planting carried out – currently scheduled for winter 2023. The final surface will then be mulched and woody debris placed.

Section 1 of the Plan outlines the project background, including the site locality description and history.

Section 2 summarises the environmental setting including a survey of trees prior to the remediation work and a summary of the geological setting.

Section 3 describes the remediation works, completed in stages with the final work in Areas 1, 2 and 3 completed in March 2022 and Area 8 completed in July 2022.

Section 4 provides the main description of the site rehabilitation works, including site preparation, soil management, revegetation and aftercare / weed management.

The main visual depictions of the landscape rehabilitation plan are presented as a plan figure (**Figures A-1(A) and A-1(B)**) and four cross-sections (**Figures A-2 to A-5** inclusive), in **Appendix A** attached.

Appendix B provides the planting schedule.

Appendix C is the tree register for Areas 2, 3 and 8. There were no trees in Areas 1 and no trees required to be removed from Area 8.

Appendix D is the Weed Management Plan, which effectively also covers off aftercare maintenance in the period following planting.

Appendix E is a copy of the Native Vegetation Credit Register, Allocated Credit Extract.

Appendix F provides photographs of excavations completed adjacent to Kororoit Creek in February and March 2022.

LANDSCAPE REHABILITATION PLAN AREAS 1, 2, 3 & 8, ORICA DEER PARK

1 PROJECT BACKGROUND

1.1 Basis for Landscape Rehabilitation Requirements

Orica's soil investigation and remediation works across 'Areas 1, 2, 3 and 8' form part of a larger remediation project across the broader Orica Deer Park site.

Soil contamination from nitro-glycerine (NG) sourced from the former use of the site as an explosives manufacturing and research facility, as well as lead and other contaminants have been detected and are the target for the remediation activities.

Areas 1, 2, 3 and 8 adjoin the Kororoit Creek which is the limiting extent to the north of the property. The 'site' – is shown on **Figure 1-1** on the following page)

In 2016-17 Landserv Pty Limited (Landserv) produced Construction Environmental Management and Rehabilitation Plans (CEMRPs) and Site Management Plans (SMPs) for Orica Australia (Orica), as part of the supporting documentation for a planning permit application and associated authority from Melbourne Water to conduct the remediation works.

The planning permit that was subsequently issued (P461/2016 as amended 9 May 2022) requires additional revegetation of the disturbed land within the ESO, on the south bank, after remediation.

Following the soil remediation earthworks and the determination of the remediation extents, in accordance with the CEMRPs, the site planning permit requires a landscape plan to be submitted for approval. This condition also requires that the plan generally accord with landscape plans required to be submitted under Melbourne Water conditions incorporated within the planning permit.

Separate from the permit, authority to commence remediation works in the vicinity of the Kororoit Creek was also provided by Melbourne Water for each of Areas 1, 2, 3 and 8 in Works Near Waterway Consent letters (Melbourne Water references MWA-1036357, MWA-1036008 and MWA-1013009).

An Environmental Significance Overlay (ESO) is in place to protect the Kororoit Creek waterway corridor and extends approximately 30 m back from the creek edge. Additionally, the extent of a 1:100-year flood event must also be considered.

The Melbourne Water landscape plan conditions for all four areas include the following requirements:

- Preparation and submission of this detailed landscape plan for reinstatement of the disturbed area must be submitted to Melbourne Water for approval.
- The plan must detail the following:
 - a) A survey (including botanical names) of all trees that were retained or removed in Areas 1, 2, 3 and 8 as part of the works (there were no trees present in Area 1 and no trees were required to be removed from Area 8).
 - b) A weed management program for Areas 1, 2, 3 and 8, including the botanical name of species targeted; location; method of control and timing of control;

LANDSCAPE REHABILITATION PLAN AREAS 1, 2, 3 & 8, ORICA DEER PARK

- c) A planting schedule of all proposed trees, shrubs and ground covers, including botanical names; common names; pot sizes; life-form; quantities of each plant; planting density (plants per square metre); planting zones/locations (in plan and cross-section form in colour) landscape treatments with specifications of products such as mulching, erosion control matting, and rock beaching. All plants must be locally indigenous and appropriate to the EVC (Victorian Volcanic Plains Riparian Woodlands). The planting schedule must appropriately replace the trees which were removed from Areas 1, 2, 3 and 8 respectively.

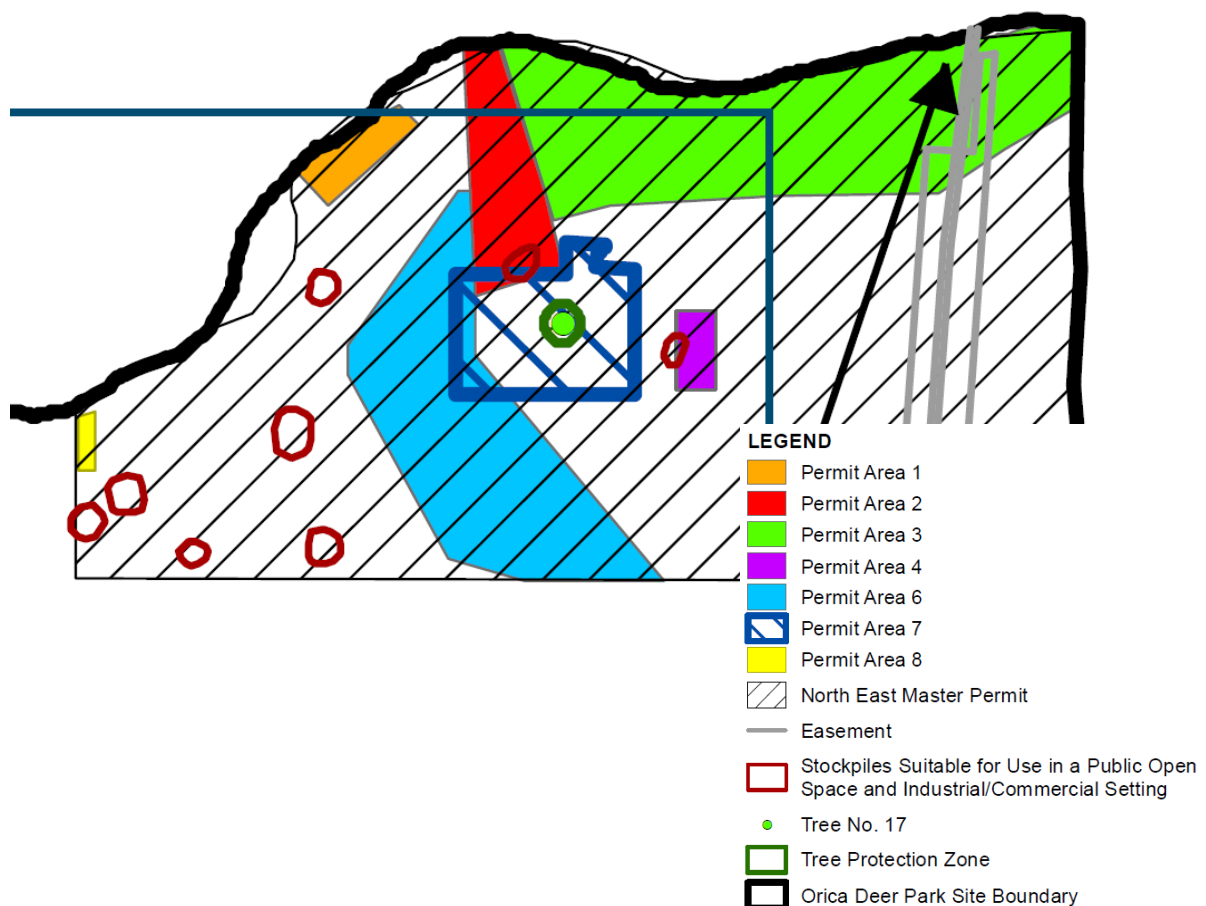
This Landscape Rehabilitation Plan has been produced to address the Melbourne Water requirements for Areas 1, 2, 3 and 8.

1.2 Site Location and Description

The site (Areas 1, 2, 3 and 8) is located at the former Orica Deer Park facility and is accessed from Gate 6, Tilburn Road, Deer Park, Victoria. The planning permit references the property at Lot 1, PLN:314933, 765 Ballarat Road, Deer Park, Victoria.

The site areas are illustrated in the figure below.

Figure 1-1 - Location of Areas 1, 2, 3 and 8



Only the disturbed sections from the works require revegetation under the planning permit and Melbourne Water conditions. These sections are defined as those disturbed by excavation that fall within the ESO or within the statistical flood extent of a 1:100-

LANDSCAPE REHABILITATION PLAN AREAS 1, 2, 3 & 8, ORICA DEER PARK

year storm event, whichever is greater. The remainder of each area will be maintained appropriately prior to future development.

With respect to each section requiring revegetation, the total areas are:

- Area 1 – 0.127 ha;
- Area 2 – 0.076 ha;
- Area 3 – 0.413 ha; and
- Area 8 - 0.0039 ha (approximately 0.03 ha was initially allowed for but only 0.0039 ha required excavation once the works commenced).

Each area is then further broken down into planting zones which are illustrated on the site revegetation plan in **Appendix A - Figures A-1(A), A-1(B)** and in the cross-sections, **Figures A-2, A-3, A4 and A-5**). The zone areas specified in **Table 1** in **Appendix B**.

The ESO is designed to preserve the water way corridor which consists of both the waterway channel and associated riparian zones by applying setback areas. This protects and enhances native vegetation, river health, biodiversity and storm water management. Brimbank City Council has determined the setback width of 30 m for this section of the Kororoit creek (as a third order waterway) and is the area of land required to help ensure a resilient waterway system.

Data provided by DELWP for a statistical 1:100-year flood extent has been obtained and utilised to map the southern extent from the creek. This was found to be further away from the creek than the ESO buffer and therefore forms the extent of the revegetation areas. Melbourne Water's interest is generally to ensure waterway protection and maintenance of flood capacity within the 1:100 year flood line.

The applicable flood level stated in the planning permit is 51.56 m Australian Height Datum (AHD) which is considerably greater than the 1:100-year statistical flood level.

1.3 Site History

The Orica property in Deer Park was an explosives factory that operated throughout the 20th century. During most of its operational period effluent waste was discharged from a part of the facility where NG was produced, into Kororoit Creek. Area 1 represents the main corridor for the former NG effluent drain.

The former "Whitehouse" building south of Area 2 was a testing laboratory from which a separate effluent drain was used to discharge waste from the laboratory activities into Kororoit Creek, between circa 1915 to the early 1970s. The former laboratory was used to test NG products and the waste liquids are understood to have included NG, laboratory solvents and other laboratory-related chemicals. The day-to-day quantities of NG disposed of this way may have been small but the practice continued over many decades. Area 2 is the corridor through which the laboratory effluent drain ran.

LANDSCAPE REHABILITATION PLAN AREAS 1, 2, 3 & 8, ORICA DEER PARK

2 ENVIRONMENTAL SETTING

2.1 Tree Survey and Ecology

Parts of all four Areas are within the ESO, which is in place to protect the creek and any native vegetation.

In response to a Melbourne Water condition, a tree survey was undertaken and records were kept of all trees retained and removed as part of the remediation works. Prior to the earthworks a survey was completed for each of the four areas that form the site by Galbraith & Associates. Trees that have been removed are required to be appropriately replaced through the revegetation plan.

It is important to note that the tree surveys cover the entirety of Areas 1, 2, 3 and 8 and not just the sections requiring a revegetation plan.

Area 1

There were no native or indigenous trees in the works remediation area. Hence, no trees are required to be replaced. However, a mix of 482 shrubs and trees are included in the Planting Schedule for Area 1 (See Appendix B, Table 1) to enhance the local habitat and ensure sufficient vegetative cover.

Area 2

No locally indigenous trees were identified. However, trees that are native to other parts of Victoria and other states of Australia were identified, along with some exotic trees. Eleven live trees and one dead tree were removed from Area 2.

The survey determined that no trees required a permit to remove under clause 52.17 as each native tree had been planted at the site. On this basis there are no specific trees requiring replacement in Area 2. However, a mix of 184 shrubs and trees are included in the Planting Schedule for Area 2 to enhance the local habitat and ensure sufficient vegetative cover.

Area 3

Indigenous trees and native trees to other parts of Victoria and to other states of Australia along with exotic trees were identified. Eighty five trees in total were removed and approximately fifty eight of these were exotic species, such as several groups of Pepper Trees that were removed.

Under the Environmental Significance Overlay (ESO4) applied to Area 3, a permit was required to remove, destroy, lop or prune vegetation. Following the removal of eighty-five trees as described above, a total of 1336 shrubs and trees are included in the revegetation plan to enhance the local habitat and ensure sufficient vegetative cover.

Area 8

There are approximately 10 trees in the broader Area 8, none of which are indigenous to the local area and none of which were located within the required excavation footprint. No trees required removal from the Area 8 works remediation area. Natural seeding is proposed to allow grass cover over Area 8, which is consistent with the pre-excavation and surrounding conditions.

LANDSCAPE REHABILITATION PLAN AREAS 1, 2, 3 & 8, ORICA DEER PARK

The tree register is provided as **Appendix C**.

A 2016 review of flora values in the subject remediation areas (EHP 2016) indicated that Areas 1, 2 and 3 contained patches of highly modified Riparian Woodland (EVC 641), consisting of Common Reed *Phragmites australis* and scattered occurrences of Tangled Lignum *Muehlenbeckia florulenta*. Kangaroo Apple *Solanum avicularia* was also present in Area 2.

Based on this finding, the consultant determined 'offset' obligations generated by the removal of native vegetation during the works and purchased offset credits on behalf of Orica. A copy of the Allocated Credit Extract from the DELWP Native Vegetation Credit Register is provided as Appendix E attached.

A frog survey by Golder Associates in 2010 did not detect any frogs in the vicinity of the Site (Golder 2010a).

During a site inspection on 9 May 2019 attended by Landserv and appointed ecologist Dean Platt of Tree Wishes, it was observed that dense established vegetation exists at the margin of the site, directly adjacent to the remediated areas, in the waterline, wet bank and moist bank zones. This vegetation is predominated by *Phragmites australis* which is expected to regenerate across the site in the order of hundreds of plants, quickly increasing the vegetative cover over the lower sections of the site and stabilising the soil surface. This is the primary mechanism for revegetation of these areas. However, to encourage diversity, medium and tall sized native shrubs will also be planted. The planting plan is discussed further in **Section 4.3**.

2.2 Geological Setting

Based on the 1:63,360 geological map sheet 'Melbourne' and our understanding of the Site locality, the Site area is predominantly underlain by Quaternary aged "Newer Volcanics" Basalt. The soil / rock profile is therefore predominantly basaltic clay with silty clay topsoil, underlain by basalt rock.

LANDSCAPE REHABILITATION PLAN AREAS 1, 2, 3 & 8, ORICA DEER PARK

3 REMEDIATION WORKS

3.1 Objective of the Remediation

The objective of the investigation and remediation works was to identify and remediate (excavate and remove, where practical) residual energetic material (explosives), lead and other contaminants in soil in Areas 1, 2, 3 and 8.

In summary, the remediation work carried out in Areas 1, 2, 3 and 8 comprised earthworks to investigate and, where practical, remove residual explosives contaminants (mainly NG) from three effluent corridors (in Areas 1 and 2) and some lead and other contaminants from shallow soil across Areas 3 and 8.

3.2 Description of Excavation Work

As at September 2022, all of the soil remediation work has now been completed, including follow up excavation completed in February – March 2022 to investigate the three NG drains in Areas 1 and 2 and remove lead contaminated soil in close proximity to the banks of Kororoit Creek and in June – July 2022 to address the Area 8 NG drain.

The cross-section figures attached in **Appendix A, Figure A-2** (Area 1), **Figure A-3** (Area 2), **Figure A-4** (Area 3) and **Figure A-5** (Area 8), depict the excavation work completed in stages from 2019 to 2022. The remediation work that has been completed to date has involved a combination of the following:

- Excavating soil using a track mounted modified D10 dozer and excavator.
- Removal of contaminated soil for treatment (where required) in another part of the site.
- Backfilling of the excavations with soil and rock, predominantly from on-site.

Figures A-1(A) and A-1(B) in **Appendix A** provides a plan view of the areas where excavation has been completed. The excavations have been backfilled with local basaltic rock and soil. As discussed with Gerard Morel (Waterways and Land Officer, Werribee Catchment, Melbourne Water) on 9 May 2021, mulch has been placed in most of Area 3 and 'coarse woody debris' (log and dead trees) have been placed in Areas 2 and 3. Aerial images are provided below (**Figures 3-1, 3-2, 3-3 and 3-4**), showing the state of backfilled excavations at various times on 'Nearmap' images.



Figure 3-1, Backfilled surface of Area 1 from Nearmap aerial images (left to right – 17 February 2020, 17 April 2022 and 14 December 2022)

**LANDSCAPE REHABILITATION PLAN
AREAS 1, 2, 3 & 8, ORICA DEER PARK**



Figure 3-2, Backfilled surface of Area 2 from Nearmap aerial images (left to right – 17 February 2020, 17 April 2022 and 14 December 2022)

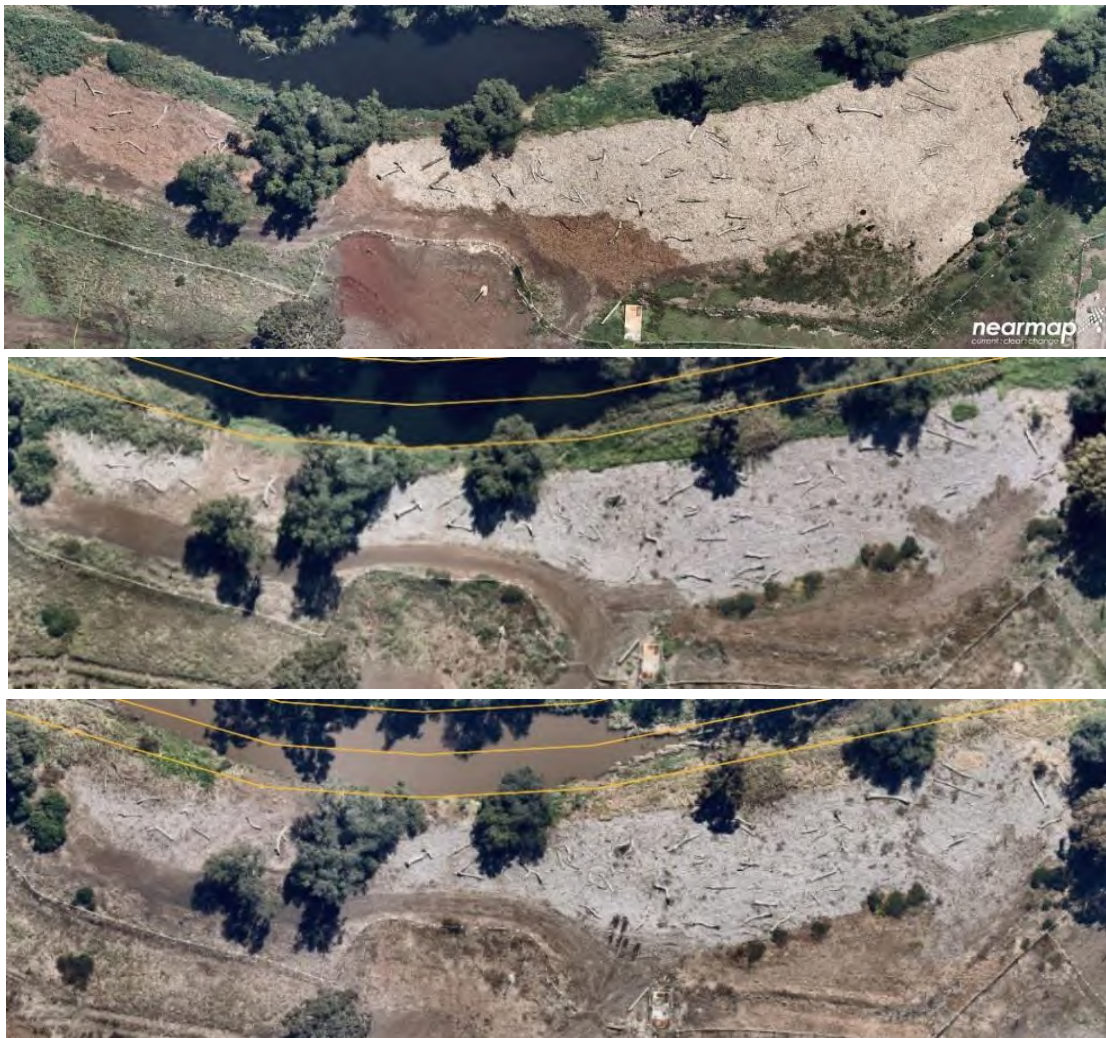


Figure 3-3, Backfilled surface of Area 3 from Nearmap aerial images (top to bottom – 17 February 2020, 17 April 2022 and 14 December 2022)

LANDSCAPE REHABILITATION PLAN AREAS 1, 2, 3 & 8, ORICA DEER PARK



Figure 3-4, Backfilled surface of Area 8 showing soil cover (Nearmap 28 June 2022 on the left, 14 September 2022 on the right)

The cross-sections (**Figures A-2, A-3, A-4 and A-5 in Appendix A**) show the excavation completed to date. The excavations to date have generally extended 1.0 to 2.0 metres below ground level (bgl), which is not as deep as anticipated during the planning phase.

During the works, care was taken to comply with the CEMRPs and SMPs, including engagement of a Zoologist to check any trees that needed to be removed for fauna and provide a clearance prior to the trees being removed. No night work has been conducted to avoid noise and light impacts to fauna and care has been taken to avoid generating dust and sediment run-off.

The final stage of remediation work alongside the banks of Kororoit Creek in Areas 1, 2 and 3 was completed in February and March 2022, with the following approach (see photographs in Appendix F):

- Three narrow trenches (approximately 1.2 m wide at the creek frontage and 3 to 4 metres back from the creek bank) were excavated to the top of rock along the former explosive waste drains from the water's edge in Area 1 (two trenches) and Area 2 (one trench). The purpose of the trenches is to investigate the potential for residual energetic material and potentially other contaminants.
- A trench in Area 3 was extended along approximately 12 metres of creek frontage and was around 1.5 m wide and 1 m deep.
- After the last excavator bucket of soil was removed from each trench up to the edge of the creek, basalt boulders were immediately placed back into the trench. Some of the boulders used for backfilling were larger than 1.0m in diameter.
- Backfilling was then completed to the surface using natural basaltic rocks and basaltic clay.

**LANDSCAPE REHABILITATION PLAN
AREAS 1, 2, 3 & 8, ORICA DEER PARK**

4 SITE REHABILITATION WORKS

4.1 Site Preparation

Rehabilitation of the surface after backfilling is completed will comprise revegetation as described in this section, using groundcover species as listed in the planting schedule provided as **Appendix B** to this plan.

In preparation for the revegetation works, the site's final surface in the open remediated areas has been graded to the pre-existing elevation contours. This work involved minor volumes of both cut and fill and was completed using a GPS guided excavator, to ensure that the pre-existing levels were achieved as far as reasonably practicable. A licensed surveyor was then engaged by Orica to complete a detailed final levels survey to verify the works.

Maintaining the original site surface levels is important so that the flood storage capacity of the waterway corridor is not reduced.

4.2 Soil Management

Following completion of the soil remediation earthworks a series of soil management measures are proposed to aid revegetation, erosion control and weed management, including a selection of the following in appropriate locations:

- During the 2019 excavation work silt fences were temporarily in place along the northern (down-gradient) edge of all mulched areas. A 2 m border was left along the northern extent between the mulched areas and existing vegetation to provide for temporary weed management and silt control. Now that surrounding vegetation has regrown, the silt fences are obsolete and no silt fences were required for the remaining minor trenching in the creek bank in 2022. Redundant silt fences will be removed at the time of replanting.
- After backfilling the 2019 excavations, approximately 75 mm of shredded wood mulch (sourced from waste wood stockpiles on site where possible) was placed across the surface of Areas 2 and 3, whilst minimising re-compaction of the broken soil surface. This was achieved using low ground pressure equipment (LGP tracks and/or floatation tyres and a Hydrema dump truck) and tracking across the site surface was minimised. The mulch covering serves to minimise soil erosion and the discharge of silt during storm events as well as preventing weed colonisation prior to planting.
- Mulch has not been placed across Area 1 and is not intended, as most of that area comprises steep 'dry bank zone' that will not retain the mulch as effectively (as the shallower gradient Areas 2 and 3). Instead, a layer of soil has been placed over Area 1 after backfilling. The new planting described in **Section 4.3** below will enhance Area 1 without the need for mulching or woody debris placement.
- Coarse woody debris comprising large tree branches, stumps, trunks and root balls was then placed randomly across Areas 2 and 3 to create significant features in the moist and dry planting zones (see **Figures 3-2 and 3-3** above). These features will enhance the local ecosystem and assist with soil stabilisation.
- After the final trench excavations were completed to the edge of the creek in February and March 2022, large basalt boulders (including some larger than 1m

LANDSCAPE REHABILITATION PLAN AREAS 1, 2, 3 & 8, ORICA DEER PARK

in diameter) were placed immediately into each creek bank excavation, as outlined in **Section 3.3** above.

- Mulch placement is not intended for the final creek bank trenches as the covering would be susceptible to washing away in high level flow events. Instead, the backfilled areas in the creek bank (new trenches) were covered with a thin layer of soil and then 'jute mat' geofabric, which were anchored into the surrounding soil through a combination of earthworks and pegs.
- Planting will be carried out to revegetate the whole of each excavation area in accordance with the approach outlined in **Section 4.3** below.

4.3 Revegetation

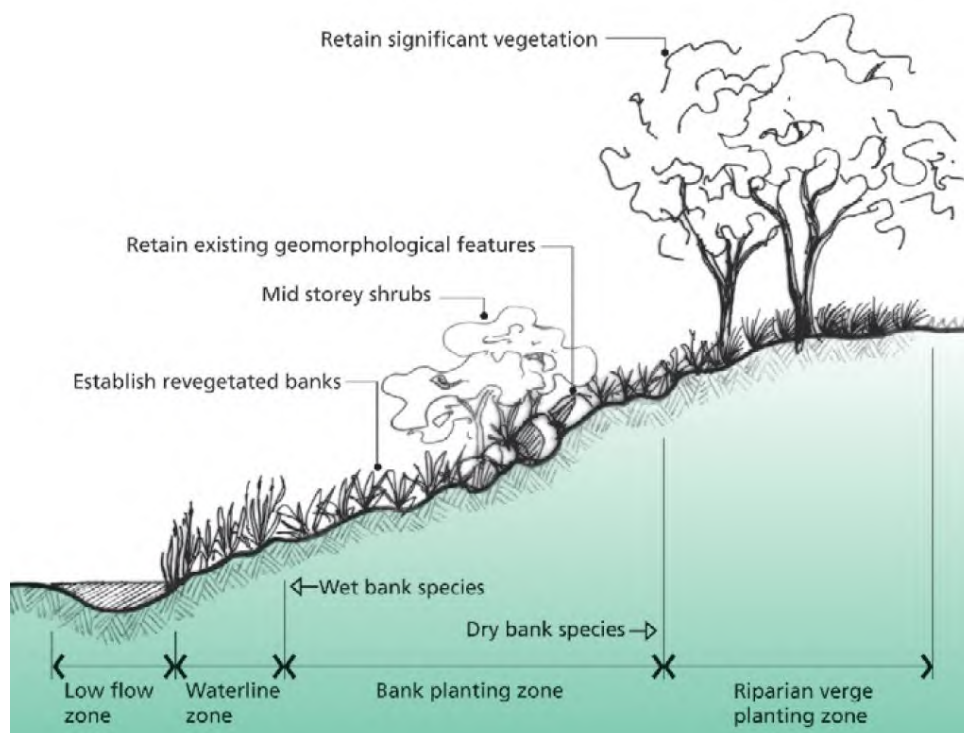
4.3.1 Species List

A site inspection was conducted 9 May 2019, at the completion of the soil remediation works, by Landserv personnel, along with an ecologist - Dean Platt of Tree Wishes, Orica representative Peter James and Melbourne Water representative Gerard Morel, to discuss and plan the revegetation program and plant selection.

It was noted that the current site vegetation, away from the areas densely colonised by *Phragmites australis*, is sparse and weedy with a high proportion of non-native species present and bare soil.

Taking into account the observations made during our inspections and discussions with Melbourne Water, the following generic planting cross-section from Melbourne Water guidelines has been adopted to guide the revegetation plan for the Victorian Volcanic Plains Riparian Woodland at the site (**Figure 4-1** below). It should be noted that this is a guide only and has provided the basis for the intended planting schedule (**Appendix B**).

Figure 4-1 - Cross-section showing planting zones according to moisture gradient along the creek bank and verge.



LANDSCAPE REHABILITATION PLAN AREAS 1, 2, 3 & 8, ORICA DEER PARK

The 'vision' for revegetation is described as follows:

- Moist areas closer to the channel will be allowed to regenerate mainly through the spread of *Phragmites australis*. These areas will have small plantings of woody species such as *Eucalyptus camaldulensis*, *Bursaria spinosa*; *Solanum laciniatum*, *Leptospermum lanigerum* and *Muehlenbeckia florulenta*.
- Areas rising away from the bank between seasonally moist and dry upper banks will be planted densely with low to medium shrubs. Small plantings of medium to large shrubs including *Allocasuarina verticillata*, *Acacia implexa*, *Acacia mearnsii*, *Bursaria spinosa*, *Melicytus dentatus* will be supported by low shrubs and woody groundcovers including *Acacia paradoxa* (Hedge Wattle), *Rhagodia parabolica*; *Enchylaena tomentosa*; *Atriplex semibaccata* (Berry Saltbush); *Einadia nutans*. Despite this area likely to have originally supporting a tussocky ground cover, there is no plan to introduce graminoids as the target sites are too small, too disturbed and too exposed to external colonizing weeds for this plant type to adequately establish.
- Large girth logs will be introduced randomly across the areas at a density of approximately 300 linear metres per hectare (i.e. woody debris, as discussed in **Section 4.2 above**).

In accordance with the planning permit and Melbourne Water conditions all proposed plants in the revegetation schedule are indigenous, of local provenance, and appropriate to the Victorian Volcanic Plains Riparian Woodland EVC benchmark. Species will include:

Waterline

- *Muehlenbeckia florulenta* – Tangled lignum

Wet Bank

- *Leptospermum lanigerum* – Woolly tea-tree

Moist Bank

- *Melicytus dentatus* – Tree violet
- *Solanum laciniatum* – Kangaroo apple
- *Bursaria spinosa* – Native blackthorn
- *Acacia implexa* – Lightwood
- *Eucalyptus camaldulensis* – River red gum

Dry Bank

- *Enchylaena tomentosa* – Ruby saltbush
- *Einadia nutans* – Climbing saltbush
- *Atriplex semibaccata* – Australian saltbush
- *Rhagodia parabolica* – Fragrant saltbush
- *Bursaria spinosa* – Native blackthorn
- *Acacia implexa* – Lightwood
- *Acacia paradoxa* – Hedge wattle

**LANDSCAPE REHABILITATION PLAN
AREAS 1, 2, 3 & 8, ORICA DEER PARK**

- *Acacia mearnsii* – Black wattle
- *Eucalyptus camaldulensis* – River red gum
- *Allocasuarina verticillata* – Drooping sheoak

Photographs are provided below for selected species:

- *Atriplex semibaccata*



- *Enchylaena tomentosa*



- *Leptospermum lanigerum*



**LANDSCAPE REHABILITATION PLAN
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- *Eucalyptus camaldulensis*



- *Accacia implexa*



- *Bursaria spinosa*



LANDSCAPE REHABILITATION PLAN AREAS 1, 2, 3 & 8, ORICA DEER PARK

4.3.2 Planting Approach and Methodology

The planting schedule is provided as **Table 1** in **Appendix B**, it specifies species to be planted by zone with densities and total numbers of plants for each of the four areas forming the site. A table summarising the total number of each species forming the revegetation planting programme is provided as **Table 2** in **Appendix B**, with approximately 2000 plants requiring planting.

The planting plan indicating each zone is provided as **Appendix A, Figure A-1**.

The total area for revegetation is relatively small at 0.679 hectares and as such a restricted plant palette is proposed, combining a total of 14 species. The average planting density for the site is 3,385 stems per hectare.

The revegetation procedures will include:

- Planting in winter 2023.
- Prepare planting spots 2 weeks prior to planting – using spot-sprayer dye marked.
- Guard using corflute guards and hardwood stakes.
- Water-in at time of planting.
- If predation is observed, repeated application of Sen-Tree browsing deterrent on predated species until such plants are over 1.5 m in height.

The process and timing of planting works has included (or will include) the following:

- Complete soil scraping (completed early 2022).
- Spray waterline weeds (mainly Kikuyu) around reeds during winter 2023.
- Lay mulch – 75 mm thick spread evenly (only across Areas 2 and 3, this has already been completed).
- Spread logs randomly, (this has been completed in Areas 2 and 3 and is not proposed for the steeper Area 1).
- Ordering of plant stock in November 2022 to allow for planting to be scheduled in June 2023.
- Spray high threat weeds as listed, allow others to colonise if they are considered not high threat (to be scheduled in winter 2023).
- Prepare for planting – Autumn (May 2023).
- Plant – Winter (June 2023).
- Commencement of aftercare and Weed Management Plan (June 2023).

If Melbourne Water and Brimbank City Council provide their approval of this rehabilitation in time, ordering of plant stock is intended in November 2022 to allow for planting to commence in June 2023.

4.4 Aftercare, Maintenance, and Weed and Pest Control

After the revegetation is completed, the post revegetation site care program including inspections and manual removal of weeds will be carried out at the frequency and duration outlined in the Weed Management Plan provided as **Appendix D**.

LANDSCAPE REHABILITATION PLAN AREAS 1, 2, 3 & 8, ORICA DEER PARK

4.4.1 Weeds

Weeds can out-compete local native species and reduce habitat value. To manage this negative impact, weed control will involve removal and/or herbicide treatments to reduce and manage the number of weeds present. This will reduce competition for available water and nutrients with the native plants, leading to a more successful revegetation outcome.

Management of weeds applies to the specified revegetation areas and to a 100 m radius buffer zone in the surrounding Orica owned or leased property. The duration of management will commence at the site preparation stage, continue through a caretaker stage prior to planting and for a post-planting maintenance period of twelve months.

Active weed management should be continued through the first summer after establishment to minimise weed colonisation. Overall, the weed management plan will be effective from the completion of remediation earthworks in 2022 through to revegetation planting in June 2023 and beyond, including the maintenance period of 12 months post-planting.

The CEMRP required the application of weed management techniques for the minimisation of weed spread during the remediation earthworks. These methods will continue to be followed during the rehabilitation and revegetation stage and include:

- Monitoring to ensure that vehicles brought to the site are free of mud, dirt, weeds and seeds. Record in the Permit to Work documentation inspections of vehicles and machinery for these items at the entry point.
- Document inspections of soil and rock imported to the work area from other parts of the Orica property, to ensure that the material is free of visible weeds.
- If soil or gravel is imported from off-site, obtain and retain certification or other records to show that the material is free of weeds.

In addition to the above methods, **Appendix D** provides a targeted site-specific weed management plan and includes identified high threat species. Weed management according to the schedule should be carried out prior to revegetation planting and then at the frequency specified in the table through to the end of the maintenance period.

Contractors engaged for weed management will be professional weed controllers with demonstrated skills in native vegetation management and hold an Agricultural Chemical User Permit (ACUP). All works are intended to be undertaken in accordance with the Agricultural and Veterinary Chemicals (*Control of Use*) Regulations 2007.

The site falls within the Melbourne Agricultural Chemical Control Area (ACCA) which restricts certain chemical use all year. Weed management herbicide chemicals should be selected with reference to these restrictions which are also presented in **Table 4-1 below**. Map 1 of the Melbourne ACCA is also provided in **Appendix D** for reference.

**LANDSCAPE REHABILITATION PLAN
AREAS 1, 2, 3 & 8, ORICA DEER PARK**

Table 4-1: Chemicals prohibited within the ACCA by application method

Chemical	Method of Application
Prohibited Use	
Picloram - Any formulation	Aerial spraying or Mister
Hexazinone applied as a liquid	
Sulfometuron Methyl containing products	
Triclopyr - Ester formulations	
2,4-D, 2,4-DB or MCPA – Ester formulations	All application methods
Use Requires ACCA Permit (issued by DJPR)	
Formulations of: Chlorsulfuron Clopyralid Glyphosate Metsulfuron Methyl	Aerial spraying or Mister
Amine formulations of: MCPA and MCPB 2,4-D and 2,4-DB Dicamba Mecoprop Triclopyr.	

4.4.2 Pests

450 mm corflute guards will be installed around each plant to provide protection from rabbits.

Ongoing monitoring will be undertaken to check for signs of predation of the planted species by other species such as wallabies. Should signs indicating predation be observed, Sen-Tree browsing deterrent will be applied repeatedly to the predated species at regular intervals until the plants are over 1.5 m in height.

**LANDSCAPE REHABILITATION PLAN
AREAS 1, 2, 3 & 8, ORICA DEER PARK**

5 REFERENCES

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Catchment and Land Protection Act 1994 (CaLP Act)

Department of Natural Resources and Environment (1997), Victoria's Biodiversity Strategy, Sustaining Our Living Wealth.

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Ecology & Heritage Partners, Response to Brimbank City Council Request for Further Information, Orica Deer Park, Tilburn Road, Deer Park, 28 October 2016

Galbraith & Associates (2016a) Arborist Report Orica Ltd site, Tilburn Rd, Deer Park- Area 1, 12 March 2016.

Galbraith & Associates (2016b) Arborist Report Orica Ltd site, Tilburn Rd, Deer Park- Area 3, 9 May 2016.

Galbraith & Associates (2016c) Arborist Report Orica Ltd site, Tilburn Rd, Deer Park- Area 2, 10 May 2016.

Golder Associates (2009) Flora Study - Review of Flora Values of the Orica Deer Park site, Victoria, 12 May 2009.

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Melbourne Water (2017c), Works on Waterway Approval – MWA-1036357, covering Area 1, 6 December 2017.

Melbourne Water Site Management Requirements – summary from Melbourne Water website: <http://www.melbournewater.com.au/planning-and-building/standards-and-specifications/site-management/pages/site-management-requirements.aspx>

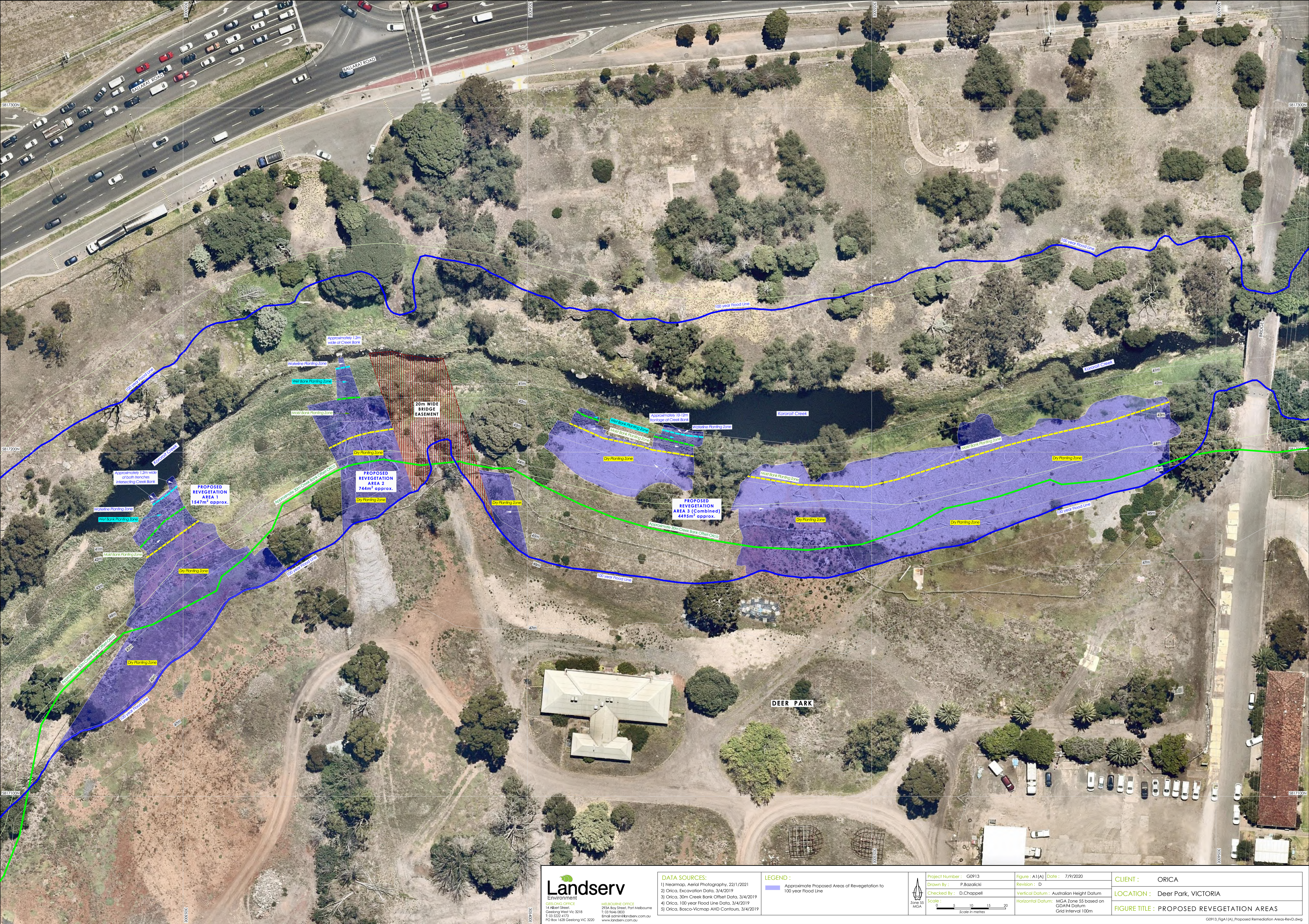
Melbourne Water, Waterway Corridors - Guidelines for greenfield development areas within the Port Phillip and Westernport Region

Melbourne Water, Constructed Waterways in Urban Developments Guidelines

Parks Victoria (2002) Linking People and Spaces.

**LANDSCAPE REHABILITATION PLAN
AREAS 1, 2, 3 & 8, ORICA DEER PARK**

**APPENDIX A
FIGURES**



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- DATA SOURCES:**
- 1) NeaMap, Aerial Photography, 22/1/2021
 - 2) Orica, Excavation Data, 3/4/2019
 - 3) Orica, 30m Creek Bank Offset Data, 3/4/2019
 - 4) Orica, 100 year Flood Line Data, 3/4/2019
 - 5) Orica, Bosco-Vicmap AHD Contours, 3/4/2019

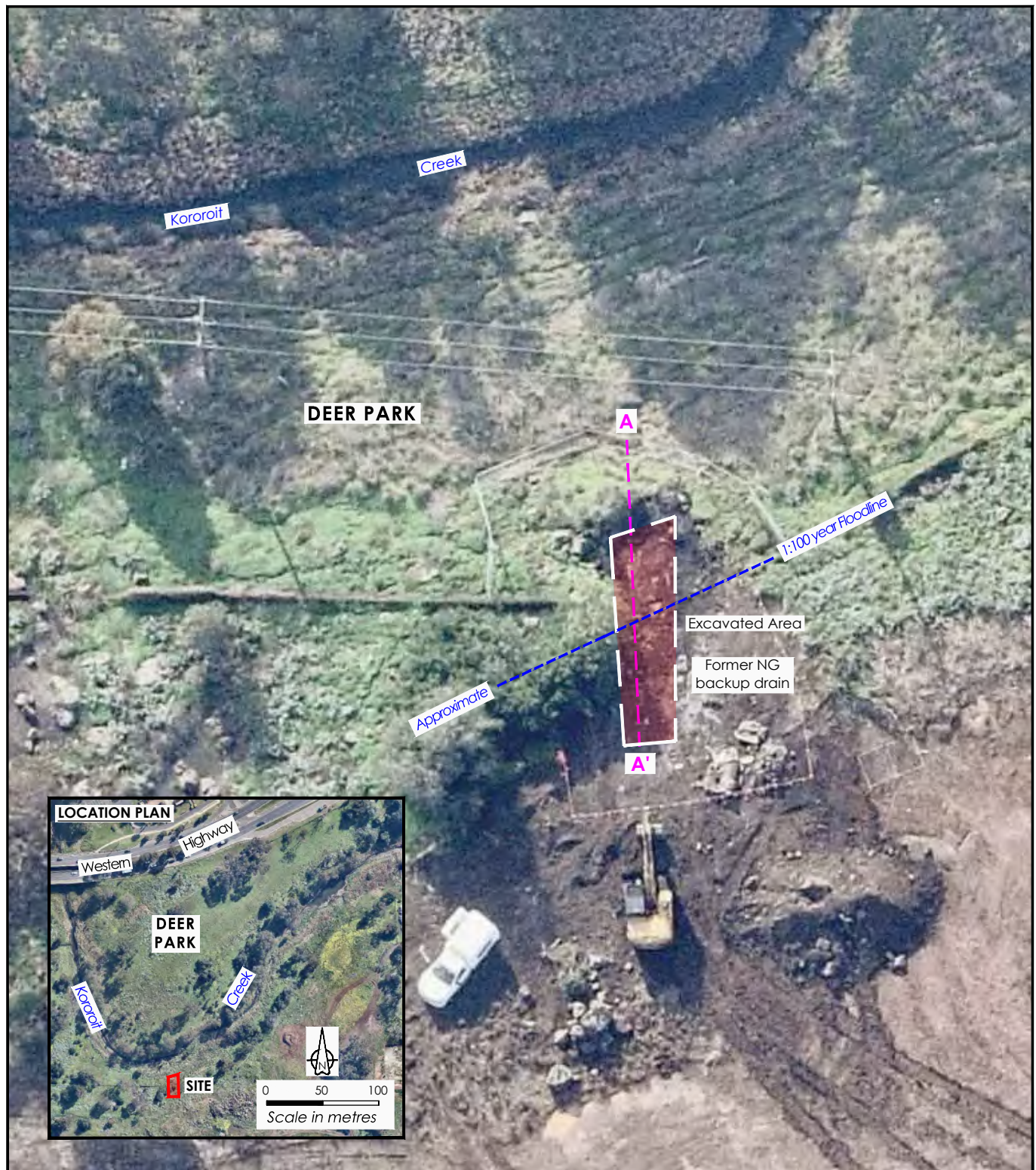
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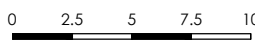

- Approximate Proposed Areas of Revegetation to 100 year Flood Line

Project Number: G0913
Drawn By: P.Bazalicki
Checked By: D.Chappell
Scale: 0 5 10 15 20
Scale in metres

Figure: A1(A) Date: 7/9/2020
Revision: D
Vertical Datum: Australian Height Datum
Horizontal Datum: MGA Zone 55 based on GDA94 Datum
Grid Interval 100m

CLIENT: ORICA
LOCATION: Deer Park, VICTORIA
FIGURE TITLE: PROPOSED REVEGETATION AREAS



Project Number : G0913	Figure : A1(B)	Date : 10/10/2022
Drawn By : P.Bazalicki	Revision :	Vertical Datum : Australian Height Datum
Checked By : D.Chappell	Horizontal Datum: MGA Zone 55 based on GDA94 Datum	
Data Sources : - Golder, Site Extents, Sep 2021 - Vicmap, Property Boundaries, Oct 2021 - Nearmap, Aerial Photography, June 2022		LEGEND :  Site Boundary  Proposed Excavation Extent  Cross Section Alignment (see Figure A5)
Scale :  Scale in metres		 Zone 55 MGA Mapping Note: All map locations are approximate only.

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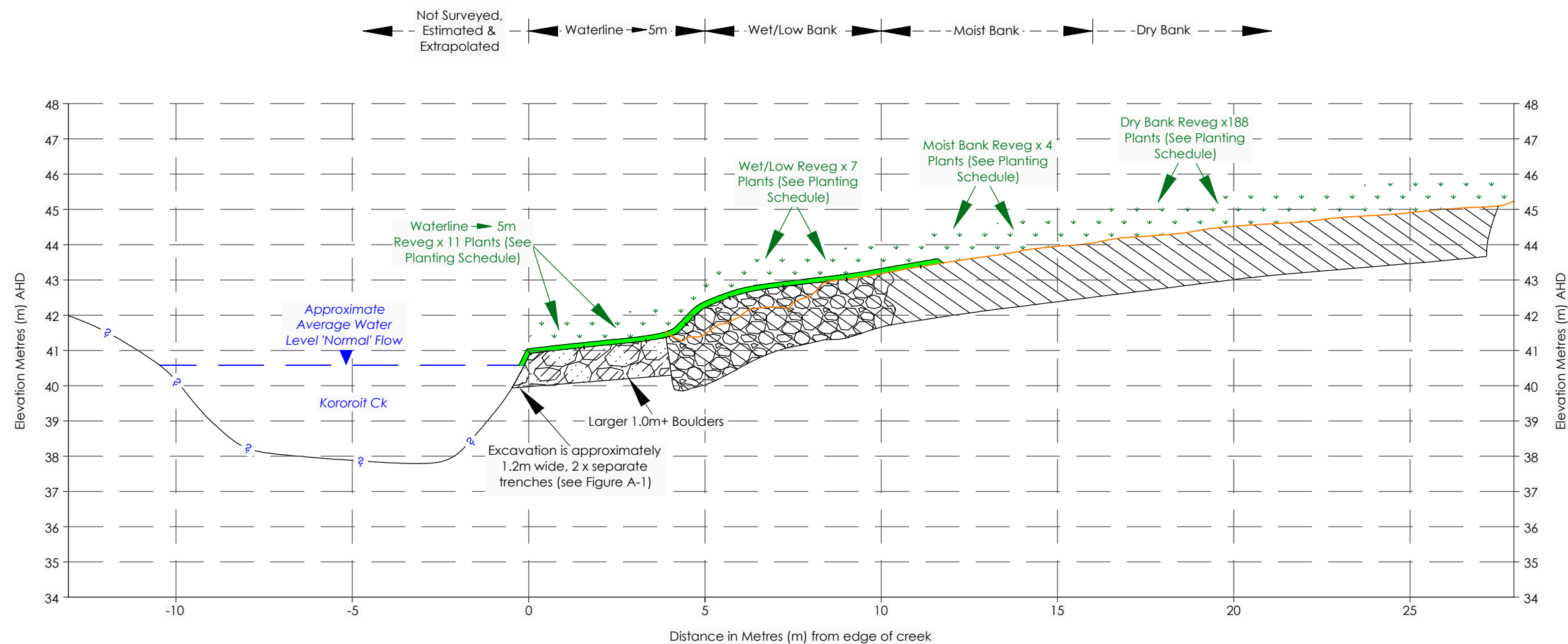
CLIENT : ORICA

LOCATION : Orica, Deer Park, 3023 VIC

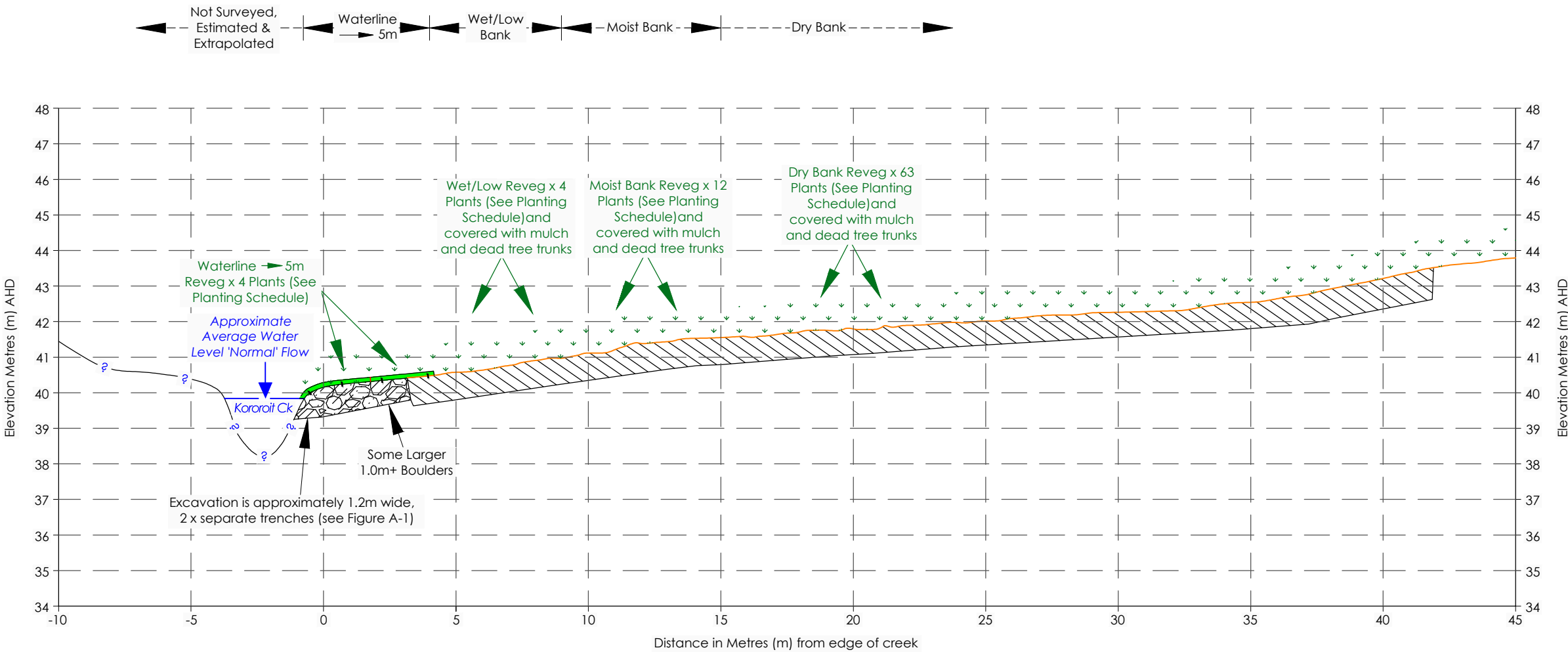
FIGURE TITLE : Area 8, Plan View of Excavation and Rehabilitation

G0913_FigA1(B)_Site Layout & Excavation Plan-Permit Area 8.dwg

AREA 1 - CROSS SECTION OF BACKFILLING AND REVEGETATION



AREA 2 - CROSS SECTION OF BACKFILLING AND REVEGETATION



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LEGEND :

- Existing Vegetation
- Revegetation Proposed for 2023
- Basalt Boulders and Cobbles
- Backfilled with localised basaltic soil
- Backfilling Completed
- Anchored Jute Mat

Project Number : G0913

Drawn By : P.Bazalicki

Checked By : D.Chappell

Data Sources :
- Golder Contour Plan, Oct 2019.
- Landserv Proposed Remediation Areas Plan, Sep 2021.

Figure : A-3 **Date :** 25/10/2022

Revision : B

Vertical Datum : Australian Height Datum

Horizontal Datum: MGA Zone 55 based on GDA94 Datum



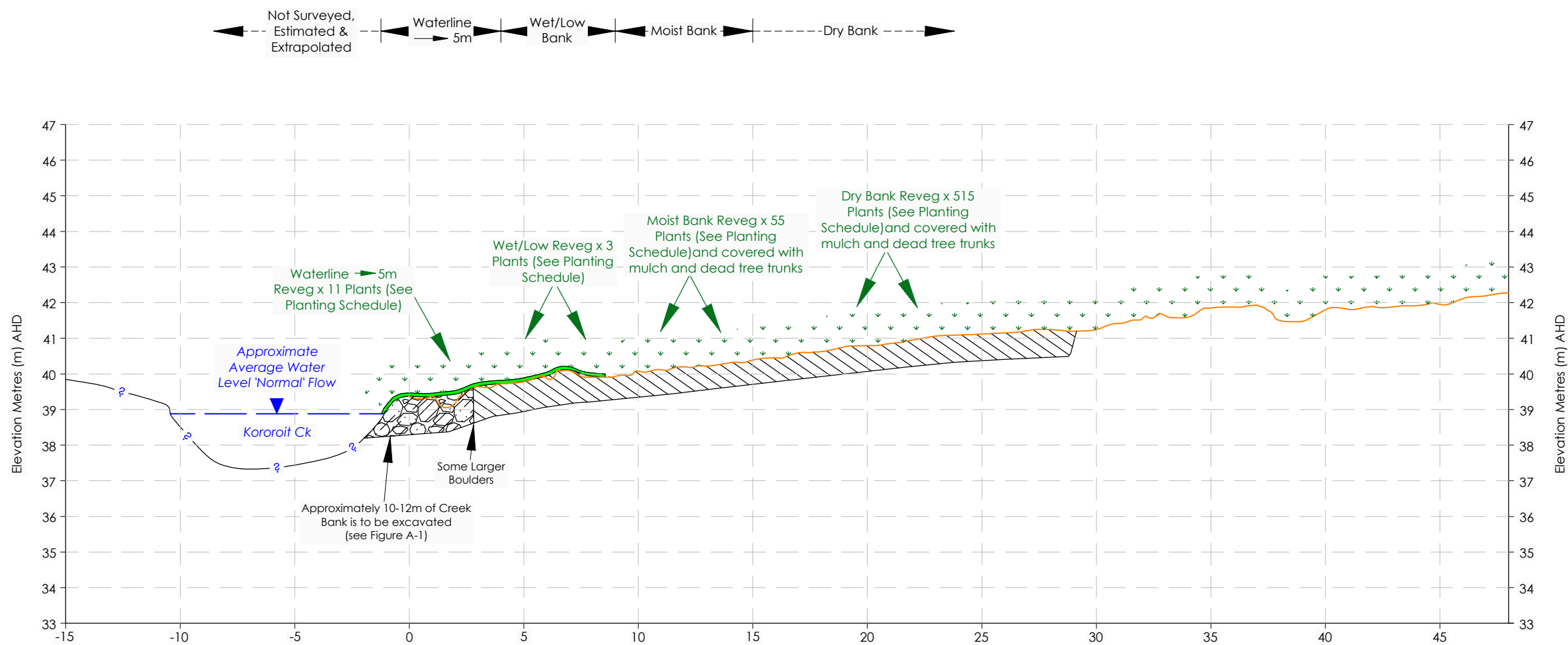
Scale :
0 1 2 3 4 5
Scale in metres

CLIENT : ORICA

LOCATION : Deer Park, VICTORIA

FIGURE TITLE : Area 02, Cross-Section of Backfilling & Revegetation

AREA 3 - CROSS SECTION OF BACKFILLING AND REVEGETATION



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LEGEND :

- Existing Vegetation
- Revegetation Proposed for 2023
- Basalt Boulders and Cobbles
- Backfilled with localised basaltic soil
- Backfilling Completed
- Anchored Jute Mat

Project Number : G0913

Drawn By : P.Bazalicki

Checked By : D.Chappell

Data Sources :
- Golder Contour Plan, Oct 2019.
- Landserv Proposed Remediation Areas Plan, Sep 2021.

Figure : A-4 Date : 10/10/2022

Revision : B

Vertical Datum : Australian Height Datum

Horizontal Datum: MGA Zone 55 based on GDA94 Datum



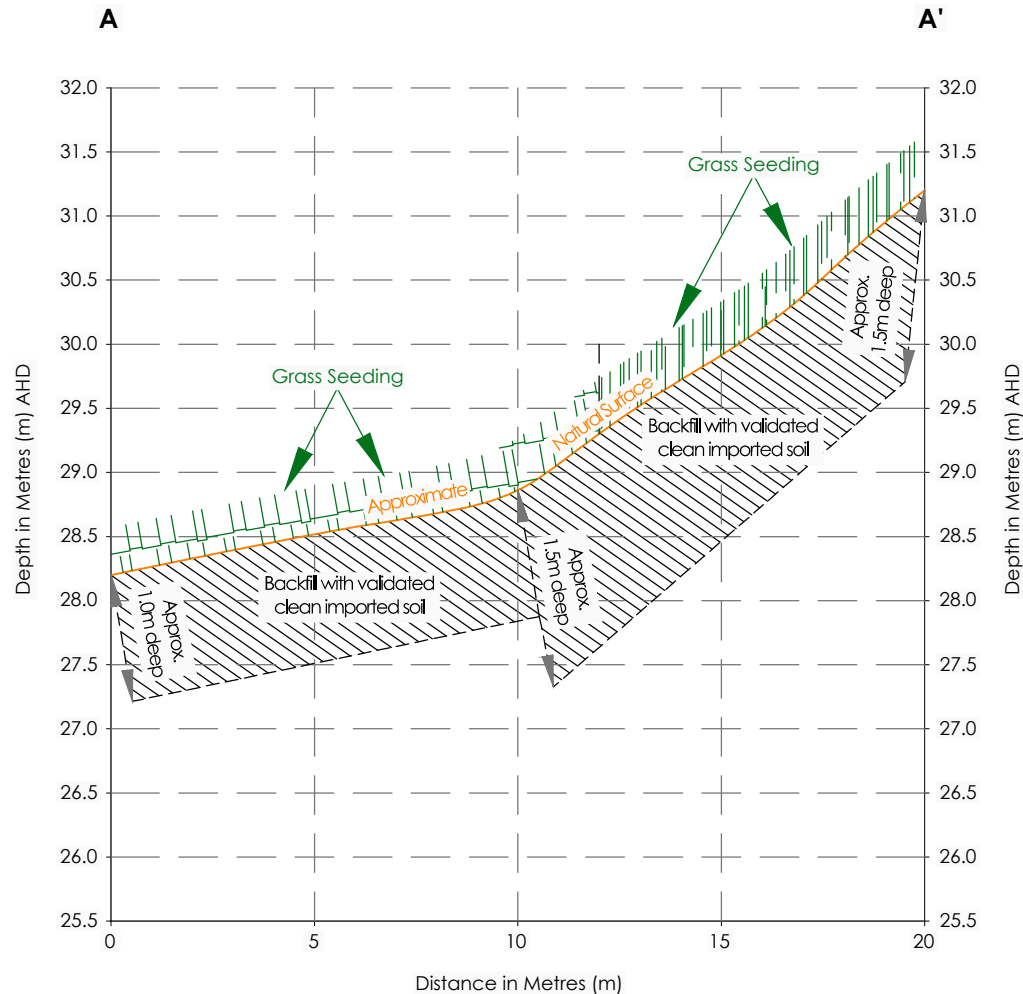
Scale :
0 1 2 3 4 5
Scale in metres

CLIENT : ORICA

LOCATION : Deer Park, VICTORIA

FIGURE TITLE : Area 03, Cross-Section of Backfilling & Revegetation

AREA 8 - CROSS SECTION OF BACKFILLING AND REVEGETATION



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LEGEND :



Grass Seeding

Project Number : G0913

Drawn By : P.Bazalicki

Checked By : D.Chappell

Data Sources :

Mapping Note: All map locations are approximate only.

Figure : A5 Date : 10/10/2022

Revision :

Vertical Datum : Australian Height Datum

Horizontal Datum: MGA Zone 55 based on GDA94 Datum



Zone 55
MGA

Scale :

0 2.5 5 7.5
Scale in metres

CLIENT : ORICA

LOCATION : Orica, Deer Park, VICTORIA

FIGURE TITLE : Area 8 Cross-Section A-A' of Backfilling & Rehabilitation

**LANDSCAPE REHABILITATION PLAN
AREAS 1, 2, 3 & 8, ORICA DEER PARK**

**APPENDIX B
PLANTING SCHEDULE**

Table B1: Planting Schedule - Specification by revegetation area and planting zone

Planting Zone	Species		Planting Specification				Area 1		Area 2		Area 3		Total
			Life Form	Pot Size	Density p/ha	Ratio	Zone ha	Plant Quantity	Zone ha	Plant Quantity	Zone ha	Plant Quantity	
	Botanical Name	Common Name											
Waterline	Muehlenbeckia florulenta	Tangled lignum	MS	Tube stock	6000	100%	0.0018	11	0.0006	4	0.0019	11	26
Subtotal					6000	-	-	11	-	4	-	11	26
Wet/Low Bank	Leptospermum lanigerum	Wooly tea-tree	MS	Tube stock	720	100%	0.0096	7	0.0049	4	0.0044	3	14
Subtotal					720	-	-	7	-	4	-	3	14
Moist Bank	Melicytus dentatus	Tree violet	MS	Tube stock	860	30%	0.0087	2	0.0238	6	0.0757	20	28
	Solanum laciniatum	Kangaroo apple	MS			20%		1		4		13	19
	Bursaria spinosa	Native blackthorn	MS			50%		4		10		33	47
	Acacia implexa	Lightwood	TS		160	70%		1		3		8	12
	Eucalyptus camaldulensis	River red gum	T			30%		0		1		4	5
Subtotal					1020	-	-	9	-	24	-	77	110
Dry Bank	Enchylaena tomentosa	Ruby saltbush	LS	Tube stock	1700	40%	0.1346	92	0.0451	31	0.3675	250	372
	Einadia nutans	Climbing saltbush	LS			40%		92		31		250	372
	Atriplex semibaccata	Australian saltbush	LS			10%		23		8		62	93
	Rhagodia parabolica	Fragrant saltbush	LS			10%		23		8		62	93
	Bursaria spinosa	Native blackthorn	MS		1450	35%		68		23		187	278
	Acacia implexa	Lightwood	TS			16%		31		10		85	127
	Acacia paradoxa	Hedge wattle	TS			16%		31		10		85	127
	Acacia mearnsii	Black wattle	TS			33%		64		22		176	262
	Eucalyptus camaldulensis	River red gum	T		235	50%		16		5		43	64
	Allocasuarina verticillata	Drooping sheoak	T			50%		16		5		43	64
Subtotal					3385	-	-	456	-	153	-	1244	1852
Total					-	-	0.155	482	0.074	184	0.450	1336	2002

Notes:

Life form: G = Graminoid, LS = Low Shrub, MS = Medium Shrub, TS = Tall Shrub, T = Tree

Table B2: Total planting quantity by species

Species		Total
Botanical Name	Common Name	
Muehlenbeckia florulenta	Tangled lignum	26
Leptospermum lanigerum	Wooly tea-tree	14
Melicytus dentatus	Tree violet	28
Solanum laciniatum	Kangaroo apple	19
Enchylaena tomentosa	Ruby saltbush	372
Einadia nutans	Climbing saltbush	372
Atriplex semibaccata	Australian saltbush	93
Rhagodia parabolica	Fragrant saltbush	93
Bursaria spinosa	Native blackthorn	324
Acacia implexa	Lightwood	139
Acacia paradoxa	Hedge wattle	127
Acacia mearnsii	Black wattle	262
Eucalyptus camaldulensis	River red gum	69
Allocasuarina verticillata	Drooping sheoak	64
Total		2002

**LANDSCAPE REHABILITATION PLAN
AREAS 1, 2, 3 & 8, ORICA DEER PARK**

**APPENDIX C
TREE REGISTER**

**Table C1: Tree Register Area 2**

Tree No.	Tree Type (Common Name)	Tree Species (Scientific Name)	Reference Ecology Rep. No.	Within lead Excavation No.	Trees Fully Removed (Y/N)	No. Trees in this group	Trees remaining	Date Tree Removed
1a	Spotted Gum	Corymbia maculata (Spotted Gum)	Galbraith and Assoc. Deer Park Area 2 Report. May 2016					
1b	Spotted Gum	Corymbia maculata						
1c	Eucalypt	Corymbia maculata		A01R098	Y	1	0	21/03/2018
1d	Lemon-scented gum	Corymbia citriodora (Lemon-scented gum)		A01R098	Y	1	0	21/03/2018
1e	Spotted Gum	Corymbia maculata						
2	Bushy Sugar Gum	Eucalyptus cladocalyx 'Nana' (Bushy Sugar Gum)						
3	Prickly paperbark	Melaleuca styphelioides (Prickly Paperbark)		A01R098	Y	1	0	21/03/2018
4	Spotted Gum	Corymbia maculata		A01R098	Y	1	0	9/01/2018
5	Southern Mahogany	Eucalyptus botryoides (Southern Mahogany)		A01R098	Y	1	0	9/01/2018
6	Southern Mahogany	Eucalyptus botryoides						
7	Southern Mahogany	Eucalyptus botryoides		A01R169	Y	2	0	2/05/2018
8	Southern Mahogany	Eucalyptus botryoides		A01R169	Y	1	0	2/05/2018
9	Southern Mahogany	Eucalyptus botryoides		A01R169	Y	1	0	2/05/2018
9A	Pepper Tree	Schinus areira						
10	Southern Mahogany	Eucalyptus botryoides (Dead)						
11	Spotted Gum	Corymbia maculata						
12	Bushy Sugar Gum	Eucalyptus cladocalyx 'Nana'						
13	palm tree	Phoenix canariensis (Canary Island Date Palm)		A01R112	Y	1	0	21/03/2018
14	Pepper Tree	Schinus areira (Pepper Tree)		A01R112	Y	1	0	21/03/2018
15	Pepper Tree	Schinus areira		A01R112	Y	1	0	18/01/2019
16	Southern Mahogany	Eucalyptus botryoides (Dead)		A01R112	Y	1	0	18/01/2019



Table C2: Tree Register Area 3



Tree No.	Tree Type (Common Name)	Tree Species (Scientific Name)	Reference Ecology Rep. No.	Within lead Excavation No.	Trees Fully Removed (Y/N)	No. Trees in this group	Trees remaining	Date Tree Removed
1	Yellow Gum	Eucalyptus Leucoxydon	Galbraith and Assoc. Deer Park Area 3 Report. May 2016	A01R063	Y	1	0	Apr-16
2	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	Apr-16
3	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	Apr-16
4	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	Apr-16
5	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	Apr-16
6	Spotted Gum	Corymbia maculata						
7	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	23/02/2018
8	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	9/01/2018
9	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	1/11/2017
10	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	1/11/2017
11	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	1/11/2017
12	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	1/11/2017
13	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	1/11/2017
14	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	24/11/2017
15	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	9/01/2018
16	Southern Mahogany	Eucalyptus botryoides		57 and 64	Y	1	0	6/09/2017
17	Bracelet Honey-myrtle	Melaleuca armillaris		57 and 64	Y	1	0	6/09/2017
18	Desert Ash	Fraxinus angustifolia (subsp. Angustifolia)		97	Y	1	0	Jan-20
19	Cotoneaster	Cotoneaster glaucophyllus		57 and 64	Y	1	0	6/09/2017
20	Pepper Tree	Schinus areira		57 and 64	Y	1	0	6/09/2017
21	Pepper Tree	Schinus areira						
22	Southern Mahogany	Eucalyptus botryoides		A01R168	Y	1	0	Jan-21
23	Monterey Pine	Pinus radiata		A01R112	Y	1	0	Jan-21
24	Pepper Tree (x3)	Schinus areira						
25	Prickly Paperbark	Melaleuca styphelioides						
26	Pepper Tree	Schinus areira		A01R173	Y	1	0	23/02/2018
27	Pepper Tree	Schinus areira		A01R173	Y	1	0	23/02/2018
28	Pepper Tree	Schinus areira		A01R127	Y	1	0	1/05/2018
29	Willow Bottlebrush	Callistemon salignus		A01R173	Y	1	0	23/02/2018
30	Brush Cherry	Syzygium paniculatum		A01R173	Y	1	0	23/02/2018
31	Pepper Tree	Schinus areira		A01R102	Y	1	0	23/02/2018
32	Pepper Tree	Schinus areira						
33	Cape Chestnut	Calodendrum capense		A01R173	Y	1	0	23/02/2018
34 (x12)	Pepper Tree (x12)	Schinus areira						
35	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	2	0	13/02/2018
36	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	9/01/2018
37	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	9/01/2018
38 (x5)	Pepper Tree (x5)	Schinus areira		A01R063	Y	5	0	13/02/2018
39 (x16)	Pepper Tree (x16)	Schinus areira		A01R163	N	16	2	09/01/2018 13/02/2018



Table C2: Tree Register Area 3



Tree No.	Tree Type (Common Name)	Tree Species (Scientific Name)	Reference Ecology Rep. No.	Within lead Excavation No.	Trees Fully Removed (Y/N)	No. Trees in this group	Trees remaining	Date Tree Removed
40	Southern Mahogany	Eucalyptus botryoides						
41	Southern Mahogany	Eucalyptus botryoides		A01R063	Y	1	0	24/11/2017
42 (x5)	Pepper Tree (x5)	Schinus areira		A01R063	Y	8	0	24/11/2017
43 (x10)	Pepper Tree (x10)	Schinus areira		A01R063	Y	10	0	09/01/2018
44	Pepper Tree	Schinus areira						24/11/2017
45 (x3)	Pepper Tree (x3)	Schinus areira		A01R063	Y	3	0	
46	Sydney Blue Gum	Eucalyptus saligna						1/11/2017
47	Southern Mahogany	Eucalyptus botryoides						
48 (x4)	Pepper Tree (x4)	Schinus areira						
49	White Poplar	Populus alba						
50	Golden Rain Tree	Koelreuteria paniculata						
51	White Poplar	Populus alba						
52	White Poplar	Populus alba						
53	White Poplar	Populus alba						
54	Tasmanian Blue Gum	Eucalyptus globulus						
55	Pepper Tree (x3)	Schinus areira						
56 (x3)	Acacia implexa (x3)	Acacia implexa						
57	No tree	No tree						
58	Corymbia citiodora	Corymbia citiodora		47 and 48	Y	NA	1	Apr-16
59	Fraxinus angustifolia	Fraxinus angustifolia subsp. Angustifolia		47 and 48	Y	NA	1	Apr-16
60	Pepper Tree	Schinus areira		47 and 48	Y	NA	1	Apr-16
61	Smooth Arizona Cypress	Cupressus glabra		47 and 48	Y	NA	1	Apr-16
62	Corymbia citiodora	Corymbia citiodora		47 and 48	Y	NA	1	Apr-16
63	Pepper Tree	Schinus areira		47 and 48	Y	NA	1	Apr-16
64	Pepper Tree	Schinus areira		47 and 48	Y	NA	1	Apr-16
65	Pepper Tree	Schinus areira		47 and 48	Y	NA	1	Apr-16
66	Pepper Tree	Schinus areira		47 and 48	Y	NA	1	Apr-16
67	Cotoneaster	Cotoneaster glaucophyllus		A01R125	Y	0	1	May-19
68	Lombardy Poplar	Populus nigra Italica'		NA	NA	NA	NA	NA
69	Pepper Tree	Schinus areira		A01R112	Y	1	1	6/09/2017

**LANDSCAPE REHABILITATION PLAN
AREAS 1, 2, 3 & 8, ORICA DEER PARK**

APPENDIX D WEED MANAGEMENT PLAN

Appendix D

Weed Management Plan - Orica Deer Park Rehabilitation of Areas 1, 2 and 3
(Schedule Commencing 2022 after Planting is Completed)

Year No	Action No	Required preceding action/s	Activity Description	Timing	Quantity	Units	Standard to be Achieved
1	1.1	Engage environmental contractor or supervisor	Weed Control Monitor and treat all areas for serious weeds. These may be any weeds that inhibit establishment of native ground cover. Works must be done by a professional weed controller with demonstrated skills in native vegetation management This action may include other weed control actions where appropriate.	All year Commence as soon as possible 3-4 visits per year	n/a	n/a	
1	1.3	Engage environmental contractor or supervisor	Weed Control- Serrated Tussock and Chilean Needle Grass (noxious weed): Foliage spray prior to seed set with appropriate herbicide.	Oct to Apr	all	n/a	99% of weeds to show dye marking < 1% adult plant survival
1	1.4	Engage environmental contractor or supervisor	Weed Control-Grassy Weed treatment: Kikuyu Spray among the growing reed areas with appropriate grass selective herbicide. Spray sensitively along the frontage areas. Slash dense growth and allow to reshoot prior to applying to ensure improved uptake	Aug to Dec All year	n/a	n/a	99% of weeds to show dye marking < 1% survival < 3% non-target fatalities

Appendix D

Weed Management Plan - Orica Deer Park Rehabilitation of Areas 1, 2 and 3
(Schedule Commencing 2022 after Planting is Completed)

Year No	Action No	Required preceding action/s	Activity Description	Timing	Quantity	Units	Standard to be Achieved
			and minimal herbicide use. As part of the preparation for revegetation Carefully treat/ spray Sweet Vernal Grass, Veldt Grass, Phalaris, Paspalum and other weed grass species with herbicides or techniques appropriate to the situation Works must be done by a professional weed controller with demonstrated skills in native vegetation management				
1	1.5	Engage environmental contractor or supervisor	Weed Control- Broad-leaved weed treatment: Treat / Spray Artichoke Thistle, Mustard Weed with broad-leaf herbicide or appropriate technique. Works must be done by a professional weed controller with demonstrated skills in native vegetation management	Aug to Sept	All	n/a	99% of weeds to show dye marking < 1% survival < 3% non-target fatalities
1	1.6	Engage environmental contractor or supervisor	Weed Control- Woody weed treatment: Boxthorn, Caster Oil Plant, Blackberry, Peppercorn (seedlings only) Carefully hand-pull any small plants taking care to minimise soil disturbance.	All year as observed / required	n/a	n/a	99% of mature plants to be cut; 100% of cut stems to show dye marking

Appendix D
Weed Management Plan - Orica Deer Park Rehabilitation of Areas 1, 2 and 3
(Schedule Commencing 2022 after Planting is Completed)



Year No	Action No	Required preceding action/s	Activity Description	Timing	Quantity	Units	Standard to be Achieved
			<p>Foliage spray plants < 2 m tall</p> <p>Cut and paint plants > 2 m with glyphosate herbicide.</p> <p>Works must be done by a professional weed controller with demonstrated skills in native vegetation management</p>				<p>< 1% survival</p> <p>no non-target damage</p>
1	1.7	Engage environmental contractor or supervisor	<p>Weed Control- Blanket Weed:</p> <p>Isolated and smaller plants - Carefully rake scrambling foliage and locate root crown and cut and paint or grub this out.</p> <p>Larger infestations – foliage spray with appropriate herbicide</p> <p>Foliage spray plants < 2 m tall</p> <p>Works must be done by a professional weed controller with demonstrated skills in native veg management</p>	All year as observed / required	n/a	n/a	<p>90% of infestation treated</p> <p>< 1% survival</p> <p>no non-target damage</p>
1	1.8	Engage environmental contractor or supervisor	<p>Weed Control- Spiny Rush:</p> <p>Foliage spray with appropriate herbicide during growing period (non-dry spells).</p> <p>Works must be done by a professional weed controller with demonstrated skills in native vegetation management</p>	All year as observed / required	n/a	n/a	<p>90% of infestation treated</p> <p>< 1% survival</p> <p>no non-target damage</p>

Appendix D

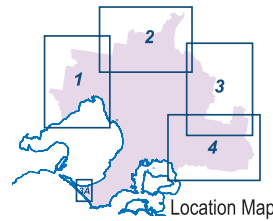
Weed Management Plan - Orica Deer Park Rehabilitation of Areas 1, 2 and 3
(Schedule Commencing 2022 after Planting is Completed)

Year No	Action No	Required preceding action/s	Activity Description	Timing	Quantity	Units	Standard to be Achieved
2	2.1 to 2.8	Engage environmental contractor or supervisor	Same activities as year one, but 50% of the frequency of Year 1.	As per year 1	n/a	n/a	As per year 1
3	3.1 to 3.8	Engage environmental contractor or supervisor	Same activities as year one, but 33% of the frequency of Year 1.	As per year 1	n/a	n/a	As per year 1
4+	n/a	n/a	Incorporate weed control into Orica's broader Land Management controls and obligations for the whole property.	As per year 1	n/a	n/a	n/a

Melbourne

Agricultural Chemical Control Area (ACCA)

Map 1



The Melbourne Agricultural Chemical Control Area is operational all year.

Use of the chemicals listed below is prohibited within the Agricultural Chemical Control Area by the application methods specified:

- any formulation of picloram, sulfometuron methyl, esters of triclopyr, and formulations of hexazinone when applied as a liquid. (These chemicals are prohibited only when applied by aerial application or by mister).
- the ester formulations of MCPA; 2,4-D or 2,4-DB. (These chemicals are prohibited by any method of application).

The following agricultural chemicals may be applied by aerial spraying or mister, but only by the issue of a permit* from DPI:

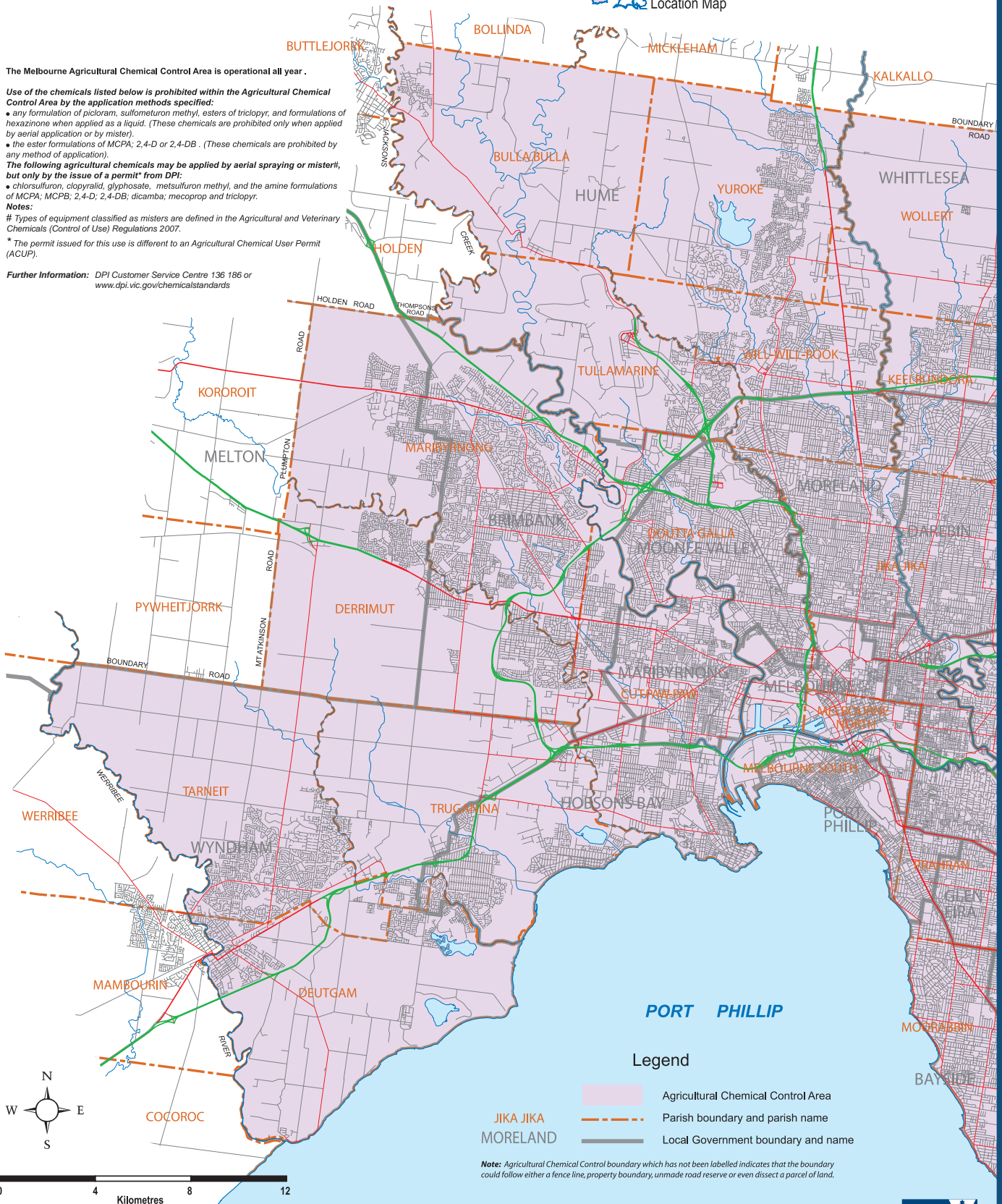
- chlorsulfuron, clopyralid, glyphosate, metsulfuron methyl, and the amine formulations of MCPA; MCPB; 2,4-D; 2,4-DB; dicamba; mecoprop and triclopyr.

Notes:

Types of equipment classified as misters are defined in the Agricultural and Veterinary Chemicals (Control of Use) Regulations 2007.

* The permit issued for this use is different to an Agricultural Chemical User Permit (ACUP).

Further Information: DPI Customer Service Centre 136 186 or www.dpi.vic.gov/chemicalstandards



JIKA JIKA
MORELAND

Note: Agricultural Chemical Control boundary which has not been labelled indicates that the boundary could follow either a fence line, property boundary, unmade road reserve or even dissect a parcel of land.

**LANDSCAPE REHABILITATION PLAN
AREAS 1, 2, 3 & 8, ORICA DEER PARK**



APPENDIX E - NATIVE VEGETATION CREDIT REGISTER, ALLOCATED CREDIT EXTRACT



Department of Environment, Land, Water and Planning

Native Vegetation Credit Register

Allocated credit extract

Credit owner: Orica Australia Pty Ltd

Credits allocated to:

Planning approval type:	Planning permit
Approval reference:	P461/2016
Project name:	Orcia Deer Park Remediation
Responsible authority:	Brimbank City Council

Credits allocated:

General biodiversity equivalence units:	0.041
Strategic biodiversity score:	0.423
Catchment management authority area:	Port Phillip And Westernport
Date of Allocation:	22/03/2018

Credit site identifier:

Property - BCA identifier	BBA-2784-4
Locality:	Newham

This extract provides evidence of an allocation of credits to a planning document with a condition requiring an offset. The specified credits can no longer be traded or allocated for another purpose.

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**LANDSCAPE REHABILITATION PLAN
AREAS 1, 2, 3 & 8, ORICA DEER PARK**

APPENDIX F - PHOTOGRAPHS OF FEB-MARCH 2022 EXCAVATIONS, AREAS 1, 2 AND 3



Landserv
Environment

Photograph 1

Area 1, east excavation

Post-remediation excavation backfilling, 15th March 2022

Orica



Landserv
Environment

Photograph 2

Area 1, east excavation

Post-remediation excavation backfilling, 15th March 2022

Orica



Landserv
Environment

Photograph 3

Area 1, east excavation

Post-remediation excavation backfilling, 15th March 2022

Orica



Landserv
Environment

Photograph 4

Area 1, east excavation

Post-remediation excavation backfilling, 15th March 2022

Orica



Landserv
Environment

Photograph 5

Area 1, west excavation

Post-remediation excavation backfilling, 17th March 2022

Orica



Landserv
Environment

Photograph 6

Area 1, west excavation

Post-remediation excavation backfilling, 17th March 2022

Orica



Landserv
Environment

Photograph 7

Area 1, west excavation

Post-remediation excavation backfilling, 17th March 2022

Orica



Landserv
Environment

Photograph 8

Area 1, west excavation

Post-remediation excavation backfilling, 17th March 2022

Orica



Landserv
Environment

Photograph 9

Area 2 excavation

Post-remediation excavation backfilling, 28th February 2022

Orica



Landserv
Environment

Photograph 10

Area 2 excavation

Post-remediation excavation backfilling, 28th February 2022

Orica



Landserv
Environment

Photograph 11

Area 2 excavation

Post-remediation excavation backfilling, 28th February 2022

Orica



Landserv
Environment

Photograph 12

Area 2 excavation

Post-remediation excavation backfilling, 28th February 2022

Orica



Landserv
Environment

Photograph 13

Area 2 excavation

Post-remediation excavation backfilling, 28th February 2022

Orica



Landserv
Environment

Photograph 14

Area 3 excavation

Post-remediation excavation backfilling, 23rd-25th February 2022

Orica



Landserv
Environment

Photograph 15

Area 3 excavation

Post-remediation excavation backfilling, 23rd-25th February 2022

Orica



Landserv
Environment

Photograph 16

Area 3 excavation

Post-remediation excavation backfilling, 23rd-25th February 2022

Orica



Landserv
Environment

Photograph 17

Area 3 excavation

Post-remediation excavation backfilling, 23rd-25th February 2022

Orica



Landserv
Environment

Photograph 18

Area 3 excavation

Post-remediation excavation backfilling, 23rd-25th February 2022

Orica



Landserv
Environment

Photograph 19

Area 3 excavation

Post-remediation excavation backfilling, 23rd-25th February 2022

Orica