=26, 13 with visible entrance holes), then areas of dense undergrowth (n = 11), followed by scratch marks upon 10 trees. The scratch marks were largely attributed to possums or gliders, but some appeared to be koala scratch marks. No koala scat was observed, but 8 records of macropod scat was noted, as well as macropod tracks. Four trees contained a total of six hollows (1 large, 4 medium and 1 small). None of the hollows or animal nests were identified as occupied during the survey.

These features and fauna signs are displayed in **TABLE 4** and **FIGURES 5 – 8.** The detailed results with identification numbers that correspond with the maps can be found in **Appendix 1**.

TABLE 4 - HABITAT FEATURES & FAUNA SIGNS

Habitat features	Count
Arboreal termite mound	26
Dense vegetation	11
Hollow log	4
Hollow-bearing tree	4
Loose bark	4
Woody debris	5
Total	54
Fauna signs	
Diggings	3
Scat	8
Scratch marks	10
Tracks	2
Total	23
Nests	
Possum drey	2
Stick nest	2
Woven nest	1
Total	5
Grand total	**84**

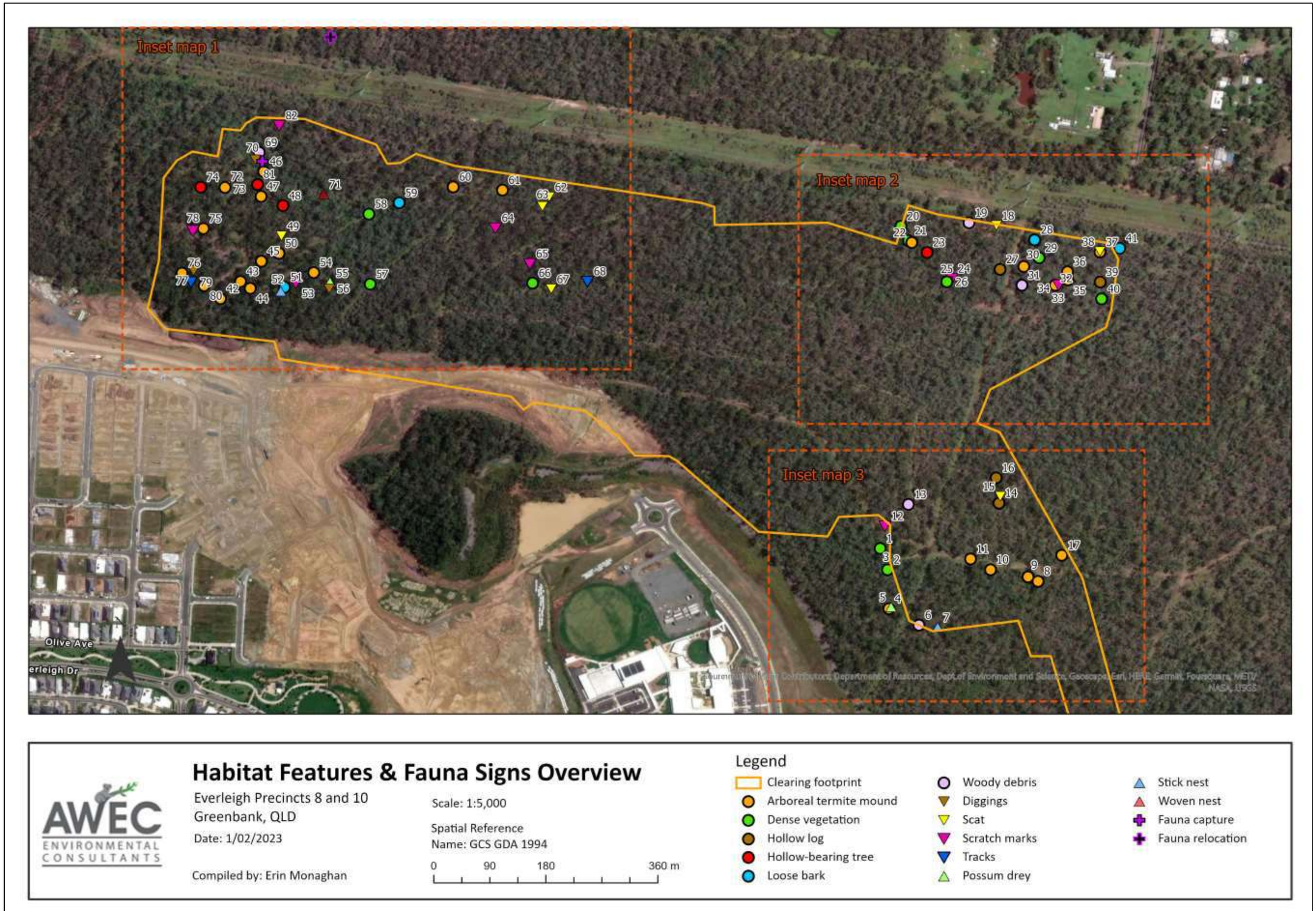

FIGURE 5 – HABITAT FEATURES & FAUNA SIGNS OVERVIEW MAP

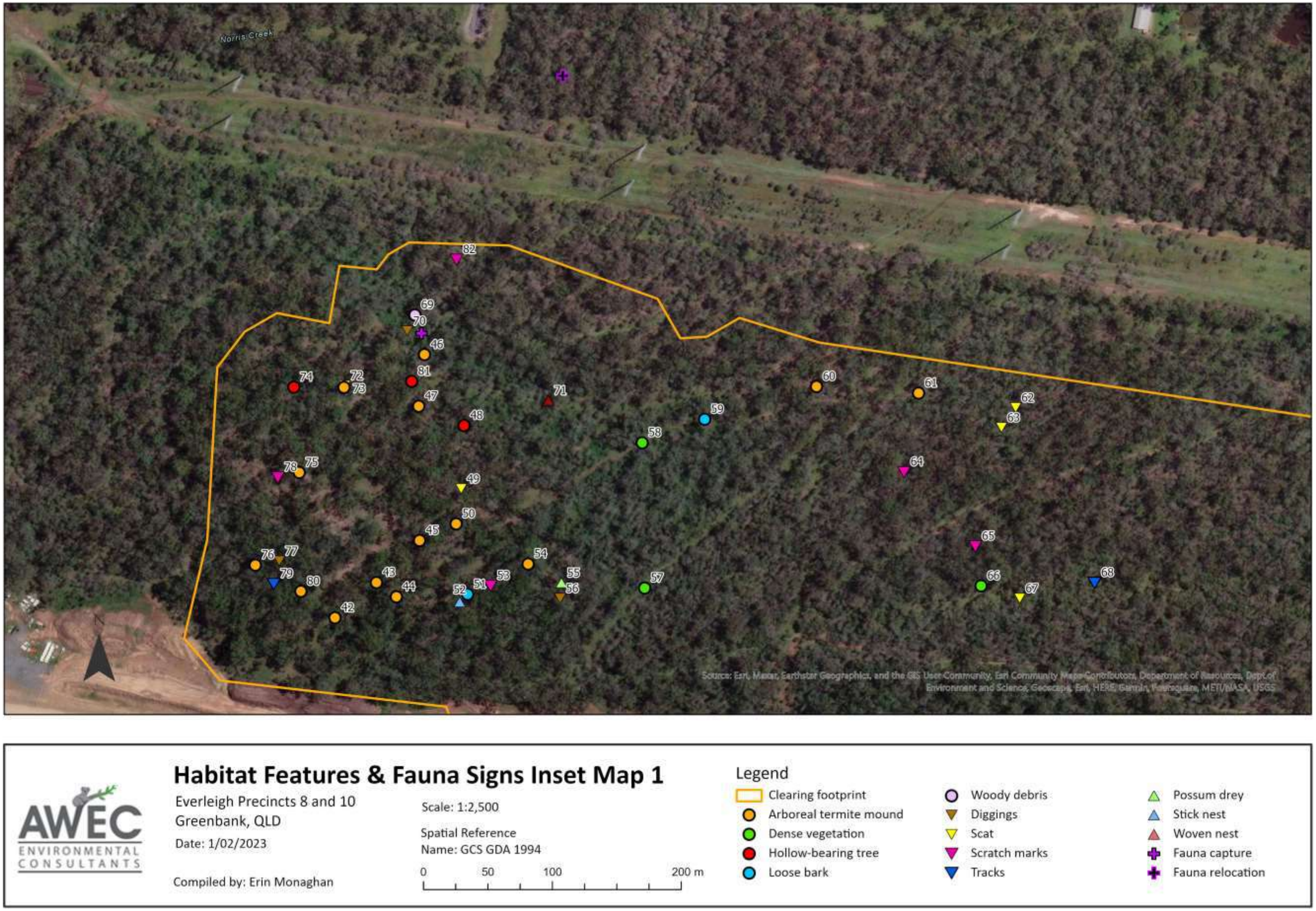

FIGURE 6 – HABITAT FEATURES & FAUNA SIGNS INSET MAP 1

FIGURE 7 – HABITAT FEATURES & FAUNA SIGNS INSET MAP 2

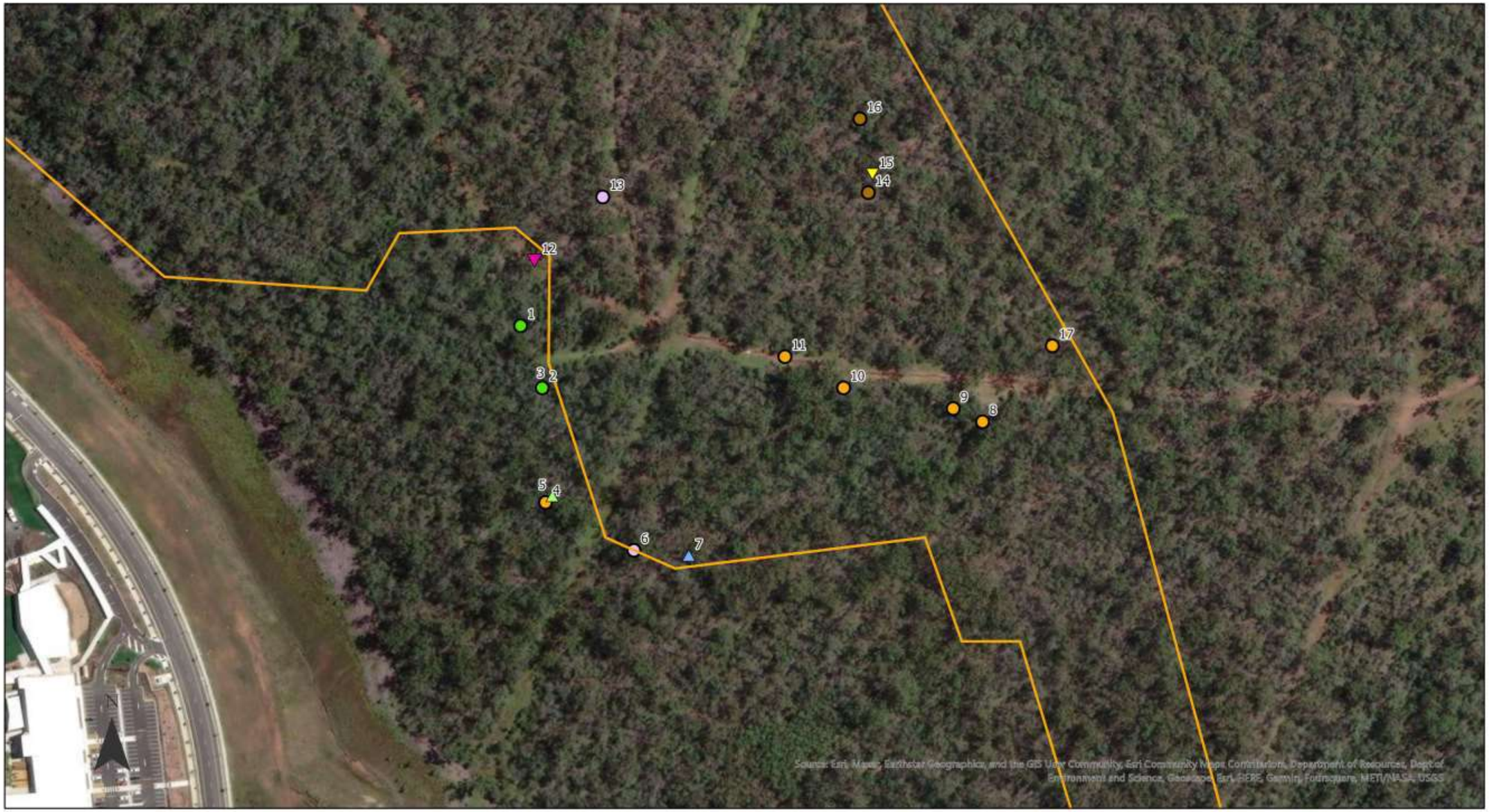

FIGURE 8 – HABITAT FEATURES & FAUNA SIGNS INSET MAP 3

4.2.1 Fauna assemblage

The fauna recorded during the pre-clearance survey consisted entirely of Least Concern bird, mammal, and reptile species (**TABLE 5**). One bearded dragon was relocated into nearby vegetation (FIGURE 5 and 6).

TABLE 5 -SIGHTED FAUNA BIODIVERSITY

Common name	*Scientific name*	Conservation Status
Bird species		
Australian magpie	*Gymnorhina tibicen*	Least Concern
Crested pigeon	*Ocyphaps lophotes*	Least Concern
Laughing kookaburra	*Dacelo novaeguineae*	Least Concern
Noisy friarbird	*Philemon corniculatus*	Least Concern
Noisy miner	*Manorina melanocephala*	Least Concern
Rainbow lorikeet	*Trichoglossus moluccanus*	Least Concern
Sulphur-crested cockatoo	*Cacatua galerita*	Least Concern
Tawny frogmouth	*Podargus strigoides*	Least Concern
Tawny grassbird	*Megalurus timoriensis*	Least Concern
Torresian crow	*Corvus orru*	Least Concern
Variegated fairy-wren	*Malurus lamberti*	Least Concern
Mammal species		
Eastern grey kangaroo	*Macropus giganteus*	Least Concern
Red-necked wallaby	*Notamacropus rufogriseus*	Least Concern
Reptile species		
Bearded dragon	*Pogona barbata*	Least Concern
Elegant snake-eyed skink	*Cryptoblepharus pulcher pulcher*	Least Concern
Lace monitor	*Varanus varius*	Least Concern
Open-litter rainbow skink	*Carlia pectoralis*	Least Concern

5 IMPACTS TO FAUNA

5.1 Proposed Disturbance

This development proposes to clear 57.2 Ha of vegetation, which includes 27.99 ha of mapped Of Concern RE 12.9-10.2/12.9-10.7 and 0.41 ha of Endangered RE 12.9-10.12/12.9-10.7a. The ecosystems are considered essential habitat for the Endangered koala and Vulnerable glossy black-cockatoo, and another 9 threatened species have been identified as local to the area. Within the clearing footprint the pre-clearance survey recorded 54 habitat features and 5 animal nests:

- 26 arboreal termite mounds, 13 with visible entrance holes,
- 11 patches of dense undergrowth vegetation,
- 9 woody debris piles (including 4 hollow logs),
- 4 hollow-bearing trees with a total of 6 hollow,
- 4 trees with loose or fissured bark,
- 2 possum dreys, and
- 3 bird nests.

5.2 Prospective Implications for Fauna

The development works will potentially impact:

- Arboreal mammals, reptiles and birds utilising trees, tree hollows, and arboreal termite mounds,
- Ground-dwelling species inhabiting the dense undershrub,
- Wildlife survivability, species may become injured or killed during clearing,
- Alter animal behaviour due to clearing activities, like loud machinery, lights, dust,
- Fauna access to foraging resources.

Specific implications for fauna are likely to include:

- Loss of grazing habitat and potential for vehicular fatalities for the kangaroo population residing on site.
- Loss of hollows for hollow-utilising species on site, which could include several significant species (greater glider, glossy black-cockatoo, yellow bellied glider, and powerful owl) who rely on very old trees with large hollows for breeding. The loss of hollows could therefore affect their future population survival rate.
- Loss of suitable habitat for the koala. Although no koalas were identified at this site, the destruction of this habitat could affect the local koalas ability to move between habitats.
- Loss of fissured bark could impact small reptiles, like cryptic gecko species.
- With such a large number of arboreal termite mounds on site, and evidence of diggings, there is signs of Special Least Concern short-beaked echidna utilising the area and loss of resources could negatively impact local populations.

To minimise the implications of this development upon local wildlife, the measures outlined in the associated AWEC report “Wildlife and Habitat Mitigation Plan” should be adhered to.

6 CONCLUSION

AWEC were commissioned by Shadforth Civil Contractors to compile a Wildlife Protection and Management Report for the clearing of Precincts 8 and 10, Everleigh, Greenbank, Queensland (approximately 57.2 ha).

This site includes non-remnant vegetation and 28.4 ha of mapped regional ecosystems, which are also considered core koala habitat and essential habitat for the glossy black-cockatoo. Koala scratch marks were observed on one tree, but no further evidence of koalas was noted. No significant species were observed, but the habitat on site is considered suitable for six out of the eleven species. Small scratch marks were observed on five trees, attributed to possum or glider, so these could belong to either of the two threatened gliders local to the area.

As well as scratch marks, other fauna signs on site included scat, tracks and diggings, with a total of 23 signs recorded and 5 animal nests observed. This site displays clear use by a variety of fauna, including resident macropods. The habitat features on site consisted largely of arboreal termite mounds, many of which were observed to contain entrance holes, providing refuge and breeding habitat for some animals. There were records of 20 patches of either dense undershrub or woody debris, appropriate refuge habitat for fauna. Six hollows were observed within four trees.

This site does appear to provide habitat for a number of local animal species, so to reduce the potential negative impacts outlined in SECTION 5, it is recommended that the measures included in the associated AWEC report "Wildlife and Habitat Mitigation Plan" are followed.

7 REFERENCES

Department of Environment and Science, (2021), Spatial modelling for Koala's in South East Queensland: Report, version 2.0, Brisbane: Department of Environment and Science, Queensland.

Eyre Tj, Ferguson Dj, Hourigan Cl, Smith Gc, Mathieson Mt, Kelly, Al, Venz Mf & Hogan, Ld. 2012. Terrestrial Vertebrate Fauna Survey Guidelines For Queensland. Qld.Gov.Au. (2018), From Https://Www.Qld.Gov.Au/__Data/Assets/Pdf_File/0022/68224/Fauna-Survey-Guidelines.Pdf.

Mcelroy C, Ingleby S, Tipping J, Stokes J, Barclay S. 2004. Survey Guidelines For Australia's Threatened Mammals. Environment.Gov.Au. (2011), https://www.awe.gov.au/sites/default/files/documents/survey-guidelines-mammals.pdf

Nature Conservation and Other Legislation Amendment Act 2016, Queensland Government, https://www.legislation.qld.gov.au/view/html/asmade/act-2016-022/lh

Nature Conservation and Other Legislation (Koala Protection) Amendment Regulation 2020, Queensland Government, https://www.legislation.qld.gov.au/view/pdf/asmade/sl-2020-0009

The State of Queensland (Department of Resources), (2021), Queensland Spatial Catalogue, https://qldspatial.information.qld.gov.au/catalogue/custom/index.page

Triggs, B., (2004). Tracks, Scats, And Other Traces. 2nd Ed. South Melbourne, Vic.: Oxford University Press.

8 APPENDICES

Below in **Appendix 1** is the details of the survey results, including ID numbers which correspond to **FIGURES 5 to 8**.

APPENDIX 1 – DETAILED SURVEY RESULTS RECORDS

ID	Feature	Latitude	Longitude
1	Dense vegetation	-27.73727417	152.9984331
2	Dense vegetation	-27.73757935	152.9985408
3	Dense vegetation	-27.73757935	152.9985408
4	Arboreal termite mound (with entrance hole)	-27.73814392	152.9985568
5	Possum drey	-27.73810919	152.99859
6	Woody debris	-27.73838004	152.9989926
7	Stick nest	-27.73840134	152.999262
8	Arboreal termite mound (with entrance hole)	-27.73774719	153.0007088
9	Arboreal termite mound	-27.73768206	153.0005655
10	Arboreal termite mound (with entrance hole)	-27.73757935	153.0000243
11	Arboreal termite mound	-27.73742676	152.9997355
12	Scratch marks (possum or glider)	-27.73695374	152.9985023
13	Woody debris	-27.73663905	152.9988388
14	Hollow log	-27.73661804	153.0001472
15	Scat (macropod)	-27.73653103	153.000167
16	Hollow log	-27.73625559	153.0001057
17	Arboreal termite mound (with entrance hole)	-27.7373733	153.0010526
18	Scat (macropod)	-27.73262024	153.000111
19	Woody debris	-27.73257278	152.9997136
20	Dense vegetation	-27.73262166	152.9987344
21	Dense vegetation	-27.73283041	152.9988441
22	Arboreal termite mound	-27.73285855	152.9988892

ID	Feature	Latitude	Longitude
23	Hollow-bearing tree (1 medium hollow on a large tree, DBH > 80cm)	-27.73300171	152.9991085
24	Scratch marks	-27.73338318	152.999465
25	Scratch marks (possum or glider)	-27.73342639	152.9993951
26	Dense vegetation	-27.73342639	152.9993951
27	Hollow log	-27.73324585	153.0001629
28	Loose bark	-27.7328186	153.0006623
29	Dense vegetation	-27.733078	153.000725
30	Arboreal termite mound	-27.73320288	153.0005056
31	Woody debris	-27.73347473	153.0004793
32	Scratch marks (monitor lizard)	-27.73352051	153.0009418
33	Arboreal termite mound	-27.73347473	153.0009587
34	Scratch marks (possum or glider)	-27.73347473	153.0010074
35	Arboreal termite mound	-27.73339844	153.001141
36	Arboreal termite mound	-27.73328139	153.0011364
37	Arboreal termite mound	-27.73299667	153.0016041
38	Scat	-27.73299667	153.0016041
39	Hollow log	-27.73342896	153.0016066
40	Dense vegetation	-27.7336731	153.0016285
41	Loose bark	-27.73294067	153.001888
42	Arboreal termite mound	-27.7336671	152.9889156
43	Arboreal termite mound	-27.73342065	152.9892039
44	Arboreal termite mound	-27.73352051	152.9893421
45	Arboreal termite mound	-27.73312875	152.9895051
46	Arboreal termite mound (with entrance hole)	-27.73183432	152.9895383

ID	Feature	Latitude	Longitude
47	Arboreal termite mound (with entrance hole)	-27.73219299	152.989498
48	Hollow-bearing tree (1 large hollow)	-27.73232736	152.9898139
49	Scat (macropod)	-27.73277283	152.9897943
50	Arboreal termite mound (with entrance hole)	-27.7330126	152.9897586
51	Loose bark	-27.73350308	152.9898382
52	Stick nest	-27.73355103	152.9897837
53	Scratch marks (possum or glider)	-27.73344421	152.9899996
54	Arboreal termite mound (with entrance hole)	-27.73329163	152.9902601
55	Possum drey	-27.73341733	152.9904928
56	Diggings	-27.73353579	152.990484
57	Dense vegetation	-27.73345947	152.9910724
58	Dense vegetation	-27.73244752	152.991056
59	Loose bark	-27.73228455	152.9914921
60	Arboreal termite mound (with entrance hole)	-27.73205566	152.9922706
61	Arboreal termite mound (with entrance hole)	-27.73210144	152.9929817
62	Scat (macropod)	-27.73220794	152.9936586
63	Scat (macropod)	-27.73234589	152.9935599
64	Scratch marks (koala)	-27.7326525	152.9928809
65	Scratch marks (small, so likely possum or glider)	-27.73316956	152.9933781
66	Dense vegetation	-27.73344421	152.9934169
67	Scat (macropod)	-27.73353579	152.9936872
68	Tracks (macropod)	-27.73342468	152.9942084
69	Woody debris	-27.7315573	152.9894712
70	Diggings	-27.731673	152.989419
71	Woven nest	-27.73214676	152.9904013

ID	Feature	Latitude	Longitude
72	Scat (macropod)	-27.7320538	152.9889832
73	Arboreal termite mound (with entrance hollow)	-27.7320615	152.9889779
74	Hollow-bearing tree (1 medium hollow)	-27.7320606	152.9886273
75	Arboreal termite mound (with entrance hole)	-27.7326557	152.988665
76	Arboreal termite mound	-27.7332991	152.9883594
77	Diggings	-27.7332757	152.9885267
78	Koala scratch marks	-27.7326901	152.9885165
79	Tracks (kangaroo rest area)	-27.7334323	152.9884883
80	Arboreal termite mound (with entrance hole)	-27.7334824	152.9886766
81	Hollow-bearing tree (1 small hollow and 2 medium hollows)	-27.73202004	152.9894491
82	Koala scratch marks	-27.7311732	152.9897617
	Bearded dragon captured	-27.73168589	152.9895172
	Bearded dragon released	-27.72989252	152.9905026

Attachment 7

Wildlife and Habitat Impact Mitigation Plan

300-SCC2301-D

WILDLIFE AND HABITAT MITIGATION PLAN

EVERLEIGH
PRECINCTS 8 AND 10
GREENBANK
QUEENSLAND

Prepared for client:

SHADFORTH CIVIL CONTRACTORS

Pre-clearance survey date:

JANUARY 2023

AWEC
ENVIRONMENTAL CONSULTANTS

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Revision History

Rev. #	Issue Date	Revision Details	Prepared By	Reviewed By	Approved By
0	JAN 23	For Use	Erin Monaghan	Yolande Venter	Joel Keady

Document Approval

Approved:	Name:	Signature:	Date:
Company Director	Yolande Venter		JAN 23

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1 INTRODUCTION

1.1 Background

Australia Wide Environmental Consultants (AWEC) were commissioned by Shadforth Civil Contractors to compile a Wildlife Habitat and Impact Mitigation Plan for the clearing of Precincts 8 and 10, Everleigh, Greenbank, Queensland.

This site is approximately 57.2 ha and is located in Logan City Council on Lots 9004 SP327213 and 9003 SP331503.

1.2 Ecologist and Qualifications

The AWEC nominated Ecologist is Yolande Venter who is a degree qualified ecologist/environmental coordinator with over 15 years of field experience within the ecology and environmental sectors.

1.3 Scope

A. See TABLE 1 for a non-exhaustive list of the statutory requirements and guidelines this project adheres to.
B. This report will aim to minimise and mitigate any risks to fauna raised in the Wildlife Protection and Management Plan.
    a. Measures required to be completed to minimise wildlife and habitat impacts during operational works.
    b. Wildlife capture and removal plan.
    c. Contingency plan for wildlife requiring euthanasia, other veterinary procedures, or captive care.
    d. Wildlife storage and housing plan
    e. Wildlife release and disposal plan.
    f. Post works measures to minimise impacts on wildlife.

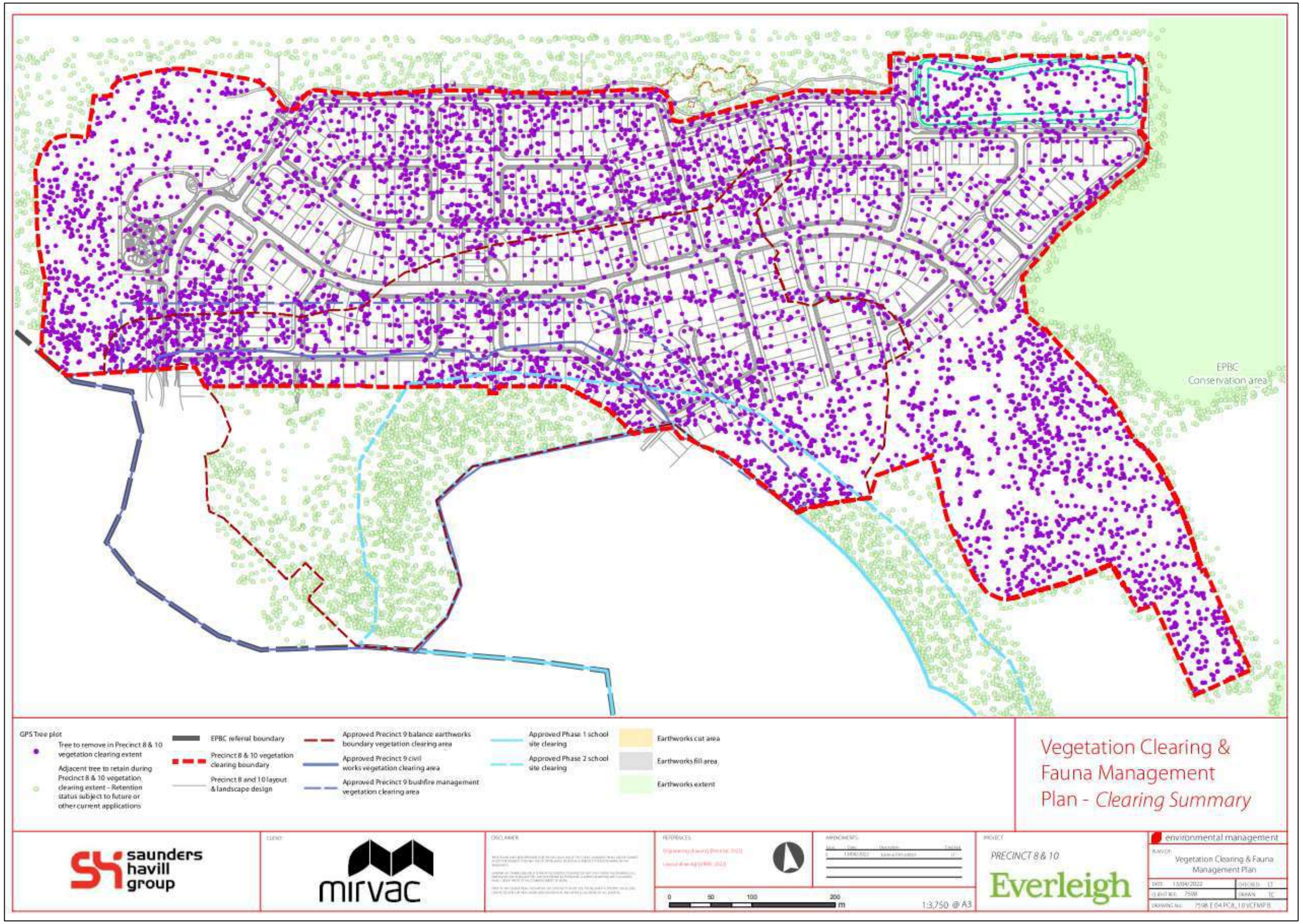


FIGURE 1 – DEVELOPMENT CLEARING PLANS

2 STATUTORY REQUIREMENTS AND GUIDELINES

See TABLE 1 below for the relevant statutory requirements and guidelines.

TABLE 1– STATUTORY REQUIREMENTS AND GUIDELINES

Legislation	Purpose of Legislation	Impact on Project personnel
Environmental Protection Regulation 2019	Gives legislative support to various national guidelines, plans and Australian Standards. This regulation also outlines requirements for the management of fauna and flora.	To abide by the regulations within the DES.
Environmental Protection and Biodiversity Conservation Act 1999	The EPBC Act 1999 focuses Australian Government interests on the protection of matters of national environmental significance, with the states and territories having responsibility for matters of state and local significance.	To comply with the relevant sections of the Act that relate to matters of national significance which are present in the vicinity of the project works.
Nature Conservation and Other Legislation Amendment Act 2016	The Act provides for the legislative protection of Queensland's threatended biota. It is aligned with the IUCN redlist which categorises biota into their current status in the wild.	To comply with the relevant sections of the Act and regulations and the Environmental Authority administered by the DES.
Nature Conservation (Wildlife) Regulation 2006	This Regulation lists the plants and animals considered presumed extinct, endangered, vulnerable, rare, common, international, and prohibited. It discusses their significance and states the declared management intent and the principles to be observed in any taking and use for each group.	List those animals that may be potentially found on sites being developed as part of the project and limitations for management.
Nature Conservation (Wildlife Management) Regulation 2006	This Regulation provides for the management of wildlife (including taking, keeping and using wildlife including protected plants).	Provides guidance for the management of wildlife on site, particularly in relation to the interference with native wildlife during the clearing process.
Nature Conservation and Other Legislation (Koala Protection)	Guideline for identifying and managing Koala habitat	Provides guidance on where Koala spotter/ Endorsed FSC are legally required and how

Legislation	Purpose of Legislation	Impact on Project personnel
Amendment Regulation 2020		they are to manage Koala habitat.
Animal Care and Protection Act 2001	Animal Welfare	Outlines that animal ethics approval is needed for research, survey and/or monitoring involving vertebrates, where activities such as trapping, census leading to disturbance of animals (such as spotlighting or call play-back), abnormal interruption of behaviour or marking/tagging are involved.
Australian code for the care and use of animals for scientific purposes 8th edition (2013)	Ethical framwork for animals used for scientific purposes	Governing principles set out in the Code provide guidance for investigators, teachers, institiutions, animal ethics committees and all the people involved in the care and use of animals for scientific purposes.
Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (2018)	Guidelines for Fauna Surveys	Detailed guidelines on designing a survey, the different survey methadologies and the ethical considerations that need to be made for each methadology.
Queensland Hygiene protocol for handling amphibians	Protocol for handling amphibian species	Outlines how to handle and manage amphibian species to prevent the spread of diseases among specimens and colonies.
Code of Practice-Care and rehabilitation of orphaned, sick or injured protected animals by wildlife carers(2013)	Provides guidelines on the rehabilitation and care of wildlife	Detailed guidelines, in regards to hygiene, housing, capture and release, euthanasia and relevant legistation

Legislation	Purpose of Legislation	Impact on Project personnel
Seqwater- Guideline- Fish Stranding and Salvage	The purpose of this guidance document is to ensure native fish recovery operations are conducted in a timely and safe manner to minimise or eliminate loss of fish from stranding.	Guideline on managing aquatic fauna during dewatering works.
Fisheries Act 1994	The main purpose of the *Fisheries Act 1994* is to provide for the use, conservation and enhancement of the community's fisheries resources and fish habitats in a way that seeks to apply the principles of ecologically sustainable development.	Outlines fish habitats and fish movement and migration (regulation of waterway barriers). Guidelines on commercial, recreational and indigenous fishing.
Biosecurity Act 2014	The *Biosecurity Act 2014* provides a framework for an effective biosecurity system for Queensland, to ensure the safety and quality of agricultural inputs, and to align responses to biosecurity risks in the state with national and international obligations.	Under the *Biosecurity Act 2014*, pest species must not be kept, fed, given away, sold, or released into the environment without a permit. Under the *Biosecurity Act 2014*, everyone has a general biosecurity obligation (GBO) to take reasonable and practical steps to minimise the risks associated with restricted plants and animals.
DAF Guidelines for Fish Salvage, 2018	Purpose of these guidelines is to minimise the risk to aquatic fauna during dewatering works.	These guidelines provide detailed instructions for dewatering waterbodies and slavaging aquatic fauna.

Australia Wide Environmental Consultants (AWEC) holds a current DES rehabilitation permit (Permit #WA0027769), with an extended authority issued by the Department of Environment and Science specifying that the holder may take, keep, or use an animal whose habitat is about to be destroyed by human activity.

3 OCCUPATIONAL HEALTH AND SAFETY

Before commencement of work on the site all inductions including client, inductions must be completed; all onsite requirements outlined in the inductions must always be adhered to.

Before handling any venomous snakes, you must have completed a Venomous snake relocation course and an acceptable level of attainment must have been achieved.

3.1 Personal Protective Equipment (PPE)

The PPE required on site must always be worn. As a minimum a long sleeve high visibility work shirt, long work pants, hard hat with sun brim, lace up work boots, safety glasses and suitable gloves for your planned task are to be worn.

3.2 First Aid

It is a requirement of your position as a Fauna Handler that you have a current first aid certificate and first aid kits have been placed in every vehicle for your use. If working in the field and are situated away from your site vehicle you must carry a snake bit kit.

3.3 Biosecurity/ Hygiene Measures

Biosecurity/hygiene measures include-

Zoonotic diseases (those that affect both animals and humans and may be passed between them) are known to be present in Australian native wildlife e.g., Australian bat lyssavirus. Diseases may also be transferred between animals. Fauna handlers should therefore take basic precautions to prevent animal-animal, animal-human and human-animal transfer of disease. Such precautions should include the following:

- High levels of personal hygiene.
- Using personal protective equipment such as gloves, boots etc.
- Not eating, drinking, or smoking while handling wildlife, also disinfecting before eating or drinking.
- Washing field clothes and equipment that has encounter animal's blood or body fluids and cleaning all trapping equipment between surveys.
- Basic first aid for treatment of cuts, bites, and scratches.
- Observe conditions in Queensland Hygiene protocol for handling to avoid spreading Chytrid fungus.
- Obtaining vaccinations against Australian bat lyssavirus before handling bat species.
- Knowledge and familiarisation with C3 bat protocol
- Should anyone who handled animals become ill within two months of a survey, the attending medical practitioner should be informed of the potential exposure to zoonosis.

3.4 Working around plant

3.4.1 Placement

When working besides plant (Bulldozers and Excavators) a clear line of sight to the machine operator is required. For the operator to maintain line of sight it is important to be on the correct side of the machine, for excavators this is the left side (operator cabin side). For bulldozers, the correct place is on either side, not in front or behind the machine and always maintain positive communication with the operators. When vegetation is being felled it is important to stand well clear (but still within sight of the operator). If further inspection of a tree is required, the operator must be contacted and place the machine in the "safe" position (Stationary with the bucket or blade on the ground) before you can approach the tree.

3.4.2 Clearing zone

Clearing zone is defined as that area within two tree lengths (50 metres) from the operating machine. This zone is a hazardous area, care must always be taken while working within this zone. The clearing zone is where most of the spotter/catcher's work occurs.

3.4.3 Communication

Communication with the plant operator is to be made via hand help UHF radios. Radios must always be charged and carried on your person. Clear communication with the operator is essential to ensure safety and the required co-operation is achieved. The operator must be informed upon the sighting of any wildlife and of your intentions to catch the animal; you require positive communication before approaching the machinery.

4 FAUNA MANAGEMENT

The following pages are designed to printed and taken into the field to assist on-site crew through clearing works.

4.1 FAUNA MANAGEMENT MEASURES – CLEARING WORKS

Everleigh Precincts 8 and 10, Greenbank, Queensland

4.1.1 Pre-clearing

Objective: Mitigate the risk to native fauna
Responsibility: Fauna Spotter Catcher (FSC)
Timing: Pre-construction

Prior to Work Commencing	
Fauna trapping conducted 1-3 days prior to clearing, aimed at ground-dwelling and arboreal species.	
Arboreal mammals captured relocated into suitable nest boxes	
Ground inspection morning prior to clearing	
Mark habitat features and trees	
Inform clearing crew at pre-start meeting of marked trees, clearing process and approved requirements of FMP	
Any fauna sighted prior to clearing should be relocated	
Where koalas may be present, specific inspection should be conducted the day before, by foot and/or drone	

4.1.2 Fauna Capture and Release

Objective: Mitigate the risk to native fauna
Responsibility: FSC
Timing: All Phases

Where possible, sighted fauna must be captured, responsibly stored, and relocated. See the following section for appropriate capture and storing methods.
Koalas, however, cannot be captured, handled, stored, or removed from site and must be managed in accordance with legislation.

4.1.3 Fauna Handling Procedure

Various methods can be used to safely capture native wildlife in the field. However, capturing wildlife poses a risk to the handler's personal safety and could also cause unnecessary stress and or injury to the animal involved. Before capturing any wildlife: plan your capture, handle the animal as per training and have the correct equipment available.

Capture myopathy is a disease associated with the capture or handling of many species of mammals and birds. Therefore, minimising the stress on any captured fauna is a priority. Emphasis should be on prevention, as treatment of wild fauna has a very low success rate.

The following principals should be applied:

- Remove stressors if possible. Place in a quiet, dark area, in an appropriate temperature for the species until able to be safely released.
- Treat shock if present. Ensure adequate ventilation, replace fluids, correct acidosis, and keep the animal warm.
- Restriction of free movement as a result of muscle injury means a careful watch must be kept on fluid balance. Many animals with capture myopathy will suffer from exposure and /l one of the common features in hot environments is dehydration. Balanced electrolyte replacers may be needed.
- If possible, restrict movement of the animal to reduce the chance of rupturing necrotic muscles.
- Minimizing duration of exposure to stressors. High stress situations include frequent handling, repeated blood sampling, or being left in exposed conditions (such as in a trap enclosure without natural cover)
- If animal is orphaned or injured, store in a secure manner to prevent unnecessary stress or further injury.

4.1.4 Species Specific Handling Procedures

Best practise to avoid injury for crew and wildlife:

Possums and Gliders

Equipment:	Gloves when practical
Technique:	Grab tail and around back of neck
Secure in:	Pet carrier or calico bag; knotted or zip tied. Where multiple gliders are found in one hollow, they should be housed in one large calico bag.

If possum/glider presence is confirmed within a tree by using an EWP or inspection camera, the FSC will decide the best and most practical method for removal. As possums are predominantly nocturnal, they should be released after sunset.

Bats and Flying-foxes

Bats can carry a disease called Lyssavirus which is closely related to the common rabies and therefore should not be handled by staff who are not immunised. If handlers are bitten or scratched it should be reported immediately.

Equipment:	Always gloves, flying-foxes require heavy duty gloves
Secure in:	Calico bag; knotted or zip tied. Where multiple animals are found in one hollow, they should be stored in the same calico bag.

Venomous and Non-venomous Snakes

Caution should be taken when handling non-venomous snakes. If the identification can't be confirmed prior to handling, then the snake should be treated as if it is venomous. Do not handle venomous snakes unless you have completed a venomous snake handling course with a suitably qualified trainer and have been approved by Joel Keady to handle venomous snakes.

Equipment:	Where practical snake hoop bag/hook and bag
Technique:	Where possible hook and bag technique, where this is not possible a *non-venomous* snake can be restrained at the base of the skull with a thumb and forefinger either side of the head and to the rear of the lower jaw.
Secure in:	Snake hoop bag and ziptied.

When a snake is sighted, warn others of its location, and ask them to stand back as you capture and secure the animal. The bag should be placed in safe location and everyone should be made aware not to touch any bags containing fauna. All containers or bags containing a venomous animal should be labelled and closed using zip ties.

Monitors

Equipment:	Catch bag, and where practical gloves.
Technique:	Caught at base of tail, place bag or towel over head, which will allow handler to grab back of neck. Must align this arm along the back of the monitor before lifting. Tilt head/neck back slightly and hold away from body. Beware the strong tail which will be used as defence.
Secure in:	Should be released straight away or when not possible in a suitable sized pet carrier or bag.

Serious caution should be taken with these animals, as they are strong and cause injuries- bites can easily result in severe infections.

Frogs

The spread of disease, such as the chytrid fungus, may occur as a result of handling frogs. Unnecessary handling should be avoided, and the specimen released as soon as possible. When handling amphibians, the handler should wear unused disposable gloves or capture and handle frogs in single use lightweight plastic bags. Bare hands may be used provided they are wiped before each capture with a sterilising alcohol-based hand disinfectant.

4.1.1 Clearing and Grubbing

Objective: Reduce risk to fauna during clearing
Responsibility: FSC & construction/clearing crew
Timing: Earthworks

During Disturbance Works	
FSC must be present for all clearing and grubbing to supervise and respond to fauna encounters	
FSC must hold appropriate rehabilitation permit	
FSC must conduct visual inspection of clearing area daily	
Clearing sequentially towards vegetation in two stages (See Error! Reference source not found.)	
First clearing stage: non-habitat trees, cleared and stockpiled for mulching.	
Second clearing stage: habitat trees, min. 24 hours later, preferably afternoon, assessed for best method (camera, climber, EWP, drone).	
Habitat trees are to be inspected for animal inhabitants	
Occupied trees must be blocked off and fauna relocated	
Trees with unconfirmed occupancy must be soft felled to reduce fauna injury and habitat damage	
Injured animals should be either humanely euthanised or taken to local wildlife hospital or carer (See **SECTION 6.1.5**).	

Clearing must occur towards vegetated areas to allow for wildlife to self-relocate into surrounding vegetation and prevent isolating fauna.

FIGURE 2- ADVISED CLEARING DIRECTION

4.1.2 Checking Hollows

Habitat trees of high importance should be felled last, after surrounding less important vegetation has been cleared to allow easy access of special plant and equipment (such as an EWP), and to allow unhindered lowering of hollow bearing limbs.

If ground conditions do not allow the use of an EWP, a tree climber is to be used to remove the hollows prior to the tree being softly felled using on site machinery.

Whenever possible, the integrity and structure of tree hollows contained in trees which are to be removed should be preserved. These should be relocated to appropriate habitat retained on the site, or to appropriate habitat close to the site.

4.1.3 Second Clearing Stage

This process is detailed following the step-by-step basis below:

1. FSC will work with a chainsaw operator and use an EWP to inspect and remove habitat resources (hollows, dreys etc) prior to felling. Usually with a torch, however fibre-optic camera/bore-scopes can be useful for deep hollows.
2. If fauna is located within a hollow, a piece of towel or rag will be firmly placed in the entrance to prevent the wildlife form escaping. If an occupied ringtail possum drey is encountered, the FSC should quietly approach (i.e., avoid contacting other branches) the drey in the cherry-picker bucket and physically capture the possum by placing the entire drey in a catch bag or only the possum if it emerges from the drey.
3. Once the hollow entrance has been secured the arborist or FSC will cut the entire hollow limb off below the cavity where the branch remains solid. In circumstances where a hollow continues into the main stem of the tree, a small window will be carefully cut into the hollow, allowing the FSC to plug the hollow above and below the window, then the hollow limb removed and lowered to the ground in sections.
4. When the fauna has been safely secured within its hollow, the entire limb can then be placed in the cherry-picker bucket or lowered to the ground using ropes depending on the size of the limb.
5. This limb will then be placed in a cool, quiet location until translocation to the recipient habitat site, when at dusk the follow entrance is re-opened to allow the fauna to emerge of its own accord.

4.1.4 Releasing and Relocating

- Relocation and release must consider the following:
- Suitable habitat with an adequate food and water supply.
- Appropriate weather, season, and time of day for species.
- Appropriate social group. Some animals fare better if released into social groups.
- Within 1km of the site, as per DES guidelines, in a protected location.
- If animals can be re-released on the clearing site once clearing is complete the following criteria must be followed:
- Sufficient habitat retained to support animal's niche, considering factors such as: vulnerability to predation; availability of nesting sites, hollows or microhabitats and the availability of water and sufficient food sources.
- Sufficient connectivity between habitat allowing for normal ecological processes such as immigration, emigration, recruitment, and dispersal.
- Habitat blocks and corridors are of sufficient size to maintain ecological integrity and effectiveness, considering likely edge effects.
- Long-term risk factors assessed and mitigated (E.g., risk from domestic animals, vehicles, swimming pools).

Injuries & Euthanasia

Sometimes euthanasia is required to end suffering of an injured animal. If this is required, it should be done promptly and humanely.

If injured animals have a reasonable chance of recovery, they should be taken to the closest vet for treatment. Any orphaned young or fauna with minor injuries (e.g., concussion) should be taken to the closest carer. Some animals for example koalas will require specialist care and the closest suitable care facility should be contacted.

Recommended Wildlife Surgery-

- RSPCA Wildlife Hospital, Wacol **1300 ANIMAL**
- Wildcare Australia Inc **(07) 5527 2444**

4.1.6 Reporting

Objective: Adhere to DES requirements
Responsibility: FSC
Timing: All Phases

Record these details for each captured animal	
Species	
Sex (M, F or Unknown)	
Approximate Age or Age Class (neonate, juvenile, sub-adult, adult)	
Time and date of capture	
Method of capture	
Exact point of capture (GPS coordinates)	
State of health	
Incidents associated with capture likely to affect health	
Veterinary intervention or treatments	
Time held in captivity	
Disposal method (euthanasia, translocation, re-release) m. Date and time of disposal	
Details of disposal (GPS points of release)	
For released animals, location relative to point of capture	

It is important that correct identification is made for record keeping purposes. If a sighted specimen can't be identified, an ecologist is to be contacted who will direct the onsite staff on the types of images they require to correctly identify the specimen.

4.1.7 Mulching Works

Objective: To reduce project impact on local fauna
Responsibility: FSC & clearing crew
Timing: Clearing works

During mulching works	
Identified hollows should be salvaged from trees and preserved	
Stockpiled vegetation should be inspected by FSC for fauna prior to removal.	

Stockpiled vegetation, topsoil and other materials can quickly become temporary habitat for animals displaced during the actual clearing and earthworks.

4.1.1 Koala Management

Objective: To protect local koala populations
Responsibility: FSC & clearing crew
Timing: All Phases

If a koala is observed within the site, a DES approved koala FSC must be on site to monitor the animal until it has self-relocated off site.

A DES approved koala FSC is a person who holds a relevant tertiary qualification, and/or who is experienced in identification and location of koalas in their natural habitat and has authorisation from DES.

DES approved Koala FSC must	✓
Be present at site of felling	
Identify koala occupied trees/overlapping trees	
Advise crew of precise locations of these trees	

The *Nature Conservation and Other Legislation (Koala protection) Amendment Regulation 2020* outlines that the following measures must be undertaken to minimise, reduce or mitigate impacts to koalas in potential koala habitat areas:

- Sequential clearing to assist fauna in relocating to nearby habitat on their own accord.
- No tree in which a koala is present and no tree with a crown overlapping a tree with a koala present will be disturbed.
- 50m buffer created around such tree - where works are seized until koala has moved off on its own accord.
- Where practical, a vegetation corridor is to be left, to allow koalas to self-relocate to a suitable area not in clearing zone.
- In areas containing a dominance of koala food trees and positively identified koala sightings and/or identified scat or scratch marks, a koala FSC is to be present during clearing activities.
- If a koala is not injured but refuses to move from the clearance area on its own accord after two days, the FSC will liaise with DES and negotiate appropriate methods for removal and relocation.

4.1.2 Native Beehive Relocation

Objective: To reduce project impact on local fauna
Responsibility: FSC & clearing crew
Timing: Clearing works

All native beehives of the genera *Tetragonula* (*syn Trigona*) and/or *Austroplebelia* are to be recovered during vegetation clearing works for relocation into the retained vegetation and/or recovered and "boxed up" (if damaged).

If a native beehive is located on site, its entrance is to be blocked off prior to sunrise. The extent of the beehive within the hollow is to be established using a fibre optic camera. The beehive is then to be cut out and both ends of the hive sealed off using treated wood. The beehive is then to be relocated to a suitable location and left-over night. The next morning at sunrise the entrance is to be opened.

FIGURE 3- EXAMPLE RELOCATED NATIVE BEEHIVE

4.2 Dewatering Management Measures

4.2.1 Pre-dewatering Phase

1. At a minimum, works will be conducted under the following:
   - Rehabilitation Permit by appropriately qualified ecologists.
2. Where significant waterbodies contain a high density of aquatic fauna, load reduction trapping will be conducted. A two day long trapping program will start once the dam is 40% dewatered. With a focus particularly on crustaceans and turtles, due to burrowing nature, making them difficult to find. Traps will also be used to reduce load of small fish and eels from the waterbody.
3. The morning prior to dewatering commencing; fish load will be further reduced using scoop, dip nets and seine nets. Suitable release location has been selected based on its proximity to site, access, similar aquatic values and size.
4. It is the responsibility of the site supervisor to ensure the required erosion and sediment control measures are installed prior to dewatering works commencing.

4.2.2 Water Quality during Dewatering

1. Water quality testing will be done twice daily throughout the dewatering process, to monitor the water quality for things such as: declines in oxygen saturation levels that may have a detrimental impact on the aquatic occupants of the waterbody.
2. Acid sulphate soils may be exposed during the dewatering process and could have a significant impact on the water quality of the waterbody.
3. If the water does not meet the required standard to be released, dewatering works should be suspended until the water has been treated and meet the standard for release.

Acid Sulphate soils should be managed according to the State Planning Policy 2/02, Planning and Managing Development Involving Acid Sulphate Soils, State Planning Policy 2/02 Guideline, Acid Sulphate Soils and Queensland Acid Sulphate Soil Technical Manual, Soil Management Guidelines.

4.2.3 Water Removal

Site Supervisor Responsibilities	✓
To remove the last of the water out of the dam a few sumps will be dug out within the waterbody and the pumps (with fish shields) will be placed into these sumps. This will reduce the risk of fish being left in isolated ponds that are hard to reach and it will also make it easier to relocate the last few fish when all the water is almost drained.	
The water level will then be reduced by increments of 25%, this will allow as many fish as possible to be removed. If the water level drops too fast there will not be enough water or oxygen to support all the fauna within the waterbody.	

4.2.4 Aquatic Fauna Management Measures

Environmental Contractor Responsibilities	✓
All fish are to be removed, stored and released as quickly as possible. Animals will be transported within large, aerated tubs. Storage containers are to be filled with water from the waterbody that the fish were captured out of and are to be sized appropriately to allow for fish to swim comfortably in an upright position. Containers are also to be soft with rounded edges and have a lid to provide a darkened environment for captured fauna. Overcrowding is to be avoided, with approximately 0.2kg of fish per liter of water is considered appropriate. Water conditions within the containers are to be monitored continuously and the water should be changed hourly to ensure appropriate levels of oxygen are maintained.	
Fish are to be released carefully, with the container placed in the water to allow fish to swim away. All fish are to be handled using wet hands or a wet towel and Shimano enviro nets will be used which minimises the risk of removing any of the fish's protective mucus coating and reduces the possibility of split fins or any damage to their eyes. See for potential release sites of aquatic fauna.	
Only native species were relocated, any pest or exotic species captured will be humanely euthanized. Where prohibited or restricted invasive animals or noxious fish listed under the Biosecurity Act 2014 are captured, these will be euthanised. Methods used will be in accordance with relevant authority guidelines and the ANZCCART's Euthanasia of Animals Used for Scientific Purposes (2001).	
Exotic or pest plant species will be disposed of appropriately to avoid the spread of weeds into waterways.	
To further reduce the risk of fatalities in the final dewatering stage due to low levels of dissolved oxygen, there will be several suitably qualified staff on site to ensure that the fish are relocated as fast as practical.	
Tadpoles will be collected with soft handheld dip-nets. Any handling of amphibians will follow the DES Interim Hygiene Protocol for Handling Amphibians.	

4.2.5 Earthworks and Construction Phase

Objective: To reduce project impact on local fauna
Responsibility: Construction crew
Timing: Clearing works

Construction Phase Crew Responsibilities	
The Contractor shall ensure that, to the extent possible, project infrastructure and auxiliary works (laydown areas, stockpile sites, site office) are constructed in a manner that does not create additional hazards for wildlife.	
A FSC is present on site for all clearing works and has informed crew of marked trees prior to clearing.	
Clearing is undertaken sequentially in 2 stages (1st stage clear non-habitat trees, 2nd stage, at least 24 hours later, clear habitat trees) in the clearing direction advised.	
Clearing of koala habitat trees follows the Koala Management Section requirements.	
To minimise impacts and conflicts between native animals, vehicular movement and access during construction, site access should be controlled via a single entry and exit point.	
Inspect open trenches, culverts and other structures prior to works being undertaken within an area to determine whether there are any trapped or injured native fauna species present and act as appropriate.	
Trenches, manholes, excavations for footings, etc. while open pose threats to native animal entrapment and should be backfilled as soon as possible. In some location's barriers may be required overnight to eliminate the accidental capture of animals moving through the site.	
Educate staff, including sub-contractors, in relation to the risk of fauna injury and deaths and how to manage animals which are displaced, including threatened species.	
All native wildlife is protected (including snakes) and shall not be intentionally harmed as a result of work or workers actions.	
All native animal fatalities must be reported immediately to the Environmental Coordinator.	
Where any site staff (contractors or subcontractors) witness or locates distressed, injured, or orphaned animals they should immediately contact the FSC and Environmental Coordinator. Works within the area of the animal must cease until further instruction is provided by one of the above authorities.	
Signed:	
Date:	

4.3 Nest Box Management Measures

The aim of installation of nest boxes is to compensate for the loss of habitat features during the development of the site. The types of nest boxes to be installed will be influenced by the desktop research results within the Fauna Pre-clearance Survey and fauna relocated during clearing works and if a Nest Box Management Plan is available.

4.3.1 Nest Box Calculation

Six hollows were observed during the pre-clearance survey, some of which are large enough to support some of the significant species. AWEC recommends that if during clearing hollows are found unoccupied, nest boxes should be installed at a 3:1 ratio (3 hollows to one nest box), so 2 nest boxes should be installed, however if any hollows are found to be occupied, boxes should be installed at a 1:1 ratio (1 box per occupied hollow). The amount of nest boxes to be used is subject to change according to clearing works and post-clearance survey.

5 CONCLUSION

Australia Wide Environmental Consultants were commissioned by Shadforth Civil Contractors to compile a Wildlife Habitat and Impact Mitigation Plan for the clearing of Precincts 8 and 10, Everleigh, Greenbank, Queensland.

The potential impacts raised in the Wildlife Protection and Management Plan will be mitigated by ensuring the fauna management measures listed in this report are adhered to for the duration of works.

6 RECOMMENDATIONS

Some recommendations to minimise risk to native fauna include:

- A drone is used prior to clearing works to try and locate fauna.
- Any salvageable possum or koala fodder foliage is delivered to local wildlife rescue and rehabilitation organisations.
- Removed hollows are salvaged and attached to retained trees in place of nest boxes, and/or nest boxes are installed to replace the loss of hollow habitat.

7 REFERENCES

Eyre TJ, Ferguson DJ, Hourigan CL, Smith GC, Mathieson MT, Kelly, AL, Venz MF & Hogan, LD.

2012. Terrestrial Vertebrate Fauna Survey Assessment Guidelines for Queensland Department of

Science, Information Technology, Innovation and the Arts, Queensland Government, Brisbane.

Nature Conservation Act 1992 (Qld), http://www.legislation.qld.gov.au/Acts_SL_N.htm

Nature Conservation (Koala) Conservation Plan 2006 (Qld), http://www.legislation.qld.gov.au/Acts_SL_N.htm

Ryan M, 2007, Wildlife of the Greater Brisbane, Queensland Museum, South Brisbane

Wilson S, 2005, A Field Guide to Reptiles of Queensland, Reed New Holland, Sydney

Ryan M, 2007, Wild plants of the Greater Brisbane, Queensland Museum, South Brisbane

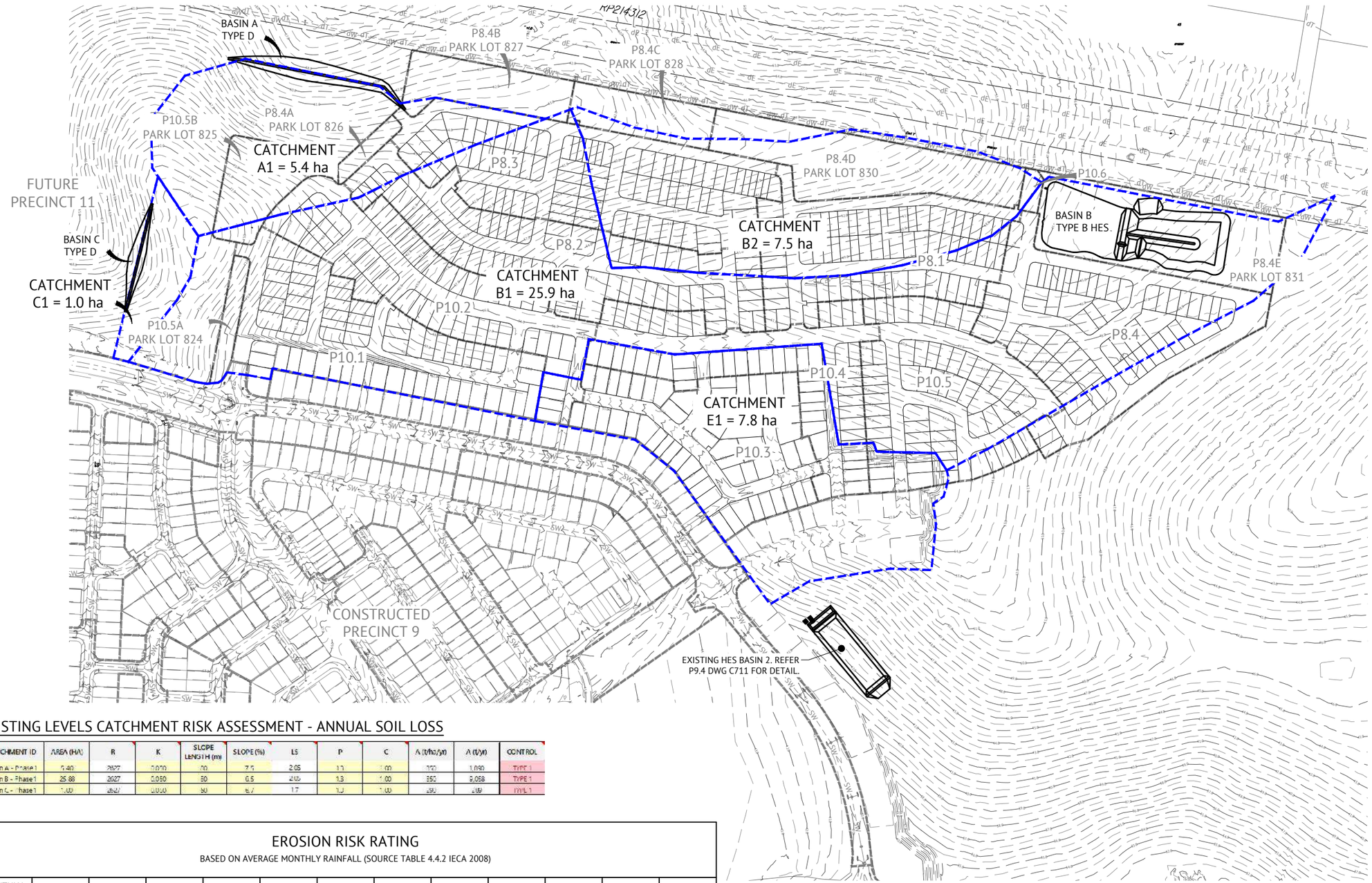
Lee K Curtis & Andrew J Dennis, 2012, Queensland's Threatened Animals, CSIRO Publishing, Collingwood, Victoria

Nita C.Lester, 2008, Woodland to Weeds- Southern Queensalnd Brigalow Belt, Second Edition, CopyRight Publishing, Brisbane

Nick Romanowski, 2011, Australian Grasses, Hyland House Publishing, Australia

Attachment 8

Erosion and Sediment Control Plan



EXISTING LEVELS CATCHMENT RISK ASSESSMENT - ANNUAL SOIL LOSS

CATCHMENT ID	AREA (HA)	R	K	SLOPE LENGTH (m)	SLOPE (%)	LS	P	C	A (t/ha/yr)	A (t/yr)	CONTROL
Basin A - Phase 1	7.40	2627	0.070	70	7.5	2.05	1.1	1.00	720	1,090	TYPE 1
Basin B - Phase 1	25.88	2627	0.050	50	0.5	2.05	1.3	1.00	350	9,058	TYPE 1
Basin C - Phase 1	1.00	2627	0.030	30	6.7	1.7	1.3	1.00	290	289	TYPE 1

EROSION RISK RATING

BASED ON AVERAGE MONTHLY RAINFALL (SOURCE TABLE 4.4.2 IECA 2008)

MONTHLY DATA	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEPT.	OCT.	NOV.	DEC.
MEAN RAINFALL	134.9	152.2	128.3	77.5	71.7	65.8	46.7	35.9	34.3	78.9	97.8	125.7
EROSION RISK	HIGH	HIGH	HIGH	MODERATE	MODERATE	MODERATE	MODERATE	LOW	LOW	MODERATE	MODERATE	HIGH

	VERY LOW RISK: 0 TO 30mm
	LOW RISK: 30+ TO 45mm
	MODERATE RISK: 45+ TO 100mm
	HIGH RISK: 100+ TO 225mm
	EXTREME RISK: >225mm

EROSION RISK RATING

APPLICABLE MONTH	EROSION RISK RATING	ADVANCE LAND CLEARING ALLOWED (WEEKS WORK)	MAX DAYS TO STABILISATION	STAGED CONSTRUCTION AND STABILISATION OF EARTH BATTERS > 6H : 1V	STOCKPILES STABILISED
	VERY LOW	8	30 (60%)		
AUG. SEPT.	LOW	8	30 (70%)		
APR. MAY. JUN. JUL. OCT. NOV.	MODERATE	6	20 (70%)	X	
JAN. FEB. MAR. DEC..	HIGH	4	10 (75%)	X	X
	EXTREME	2	10 (80%)	X	X

NOTE:

PHASE 1 WORKS LIMITED TO CATCHMENT A1 AND B1. NO DISTURBANCE IS TO OCCUR OUTSIDE OF THESE NOMINATED CATCHMENTS, OTHERWISE A REVIEW AND REVISION OF THE PROPOSED CONTROLS ON DRAWING C701 WILL BE NECESSARY, INCLUDING BASIN SIZING.

I CERTIFY THAT THIS EROSION AND SEDIMENT CONTROL DRAWING HAS BEEN DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL EROSION CONTROL ASSOCIATION GUIDELINES.

TERRY CLARK (CPESC 6089)

NOTE:

FOR DISPERSIVE SOILS MANAGEMENT NOTES, REFER TO DRAWING C210.

APPROVAL ISSUE – NOT FOR CONSTRUCTION

DATE	REV	DESCRIPTION	REC	APP
05/12/2022	A	ISSUED FOR APPROVAL	NVT	PB

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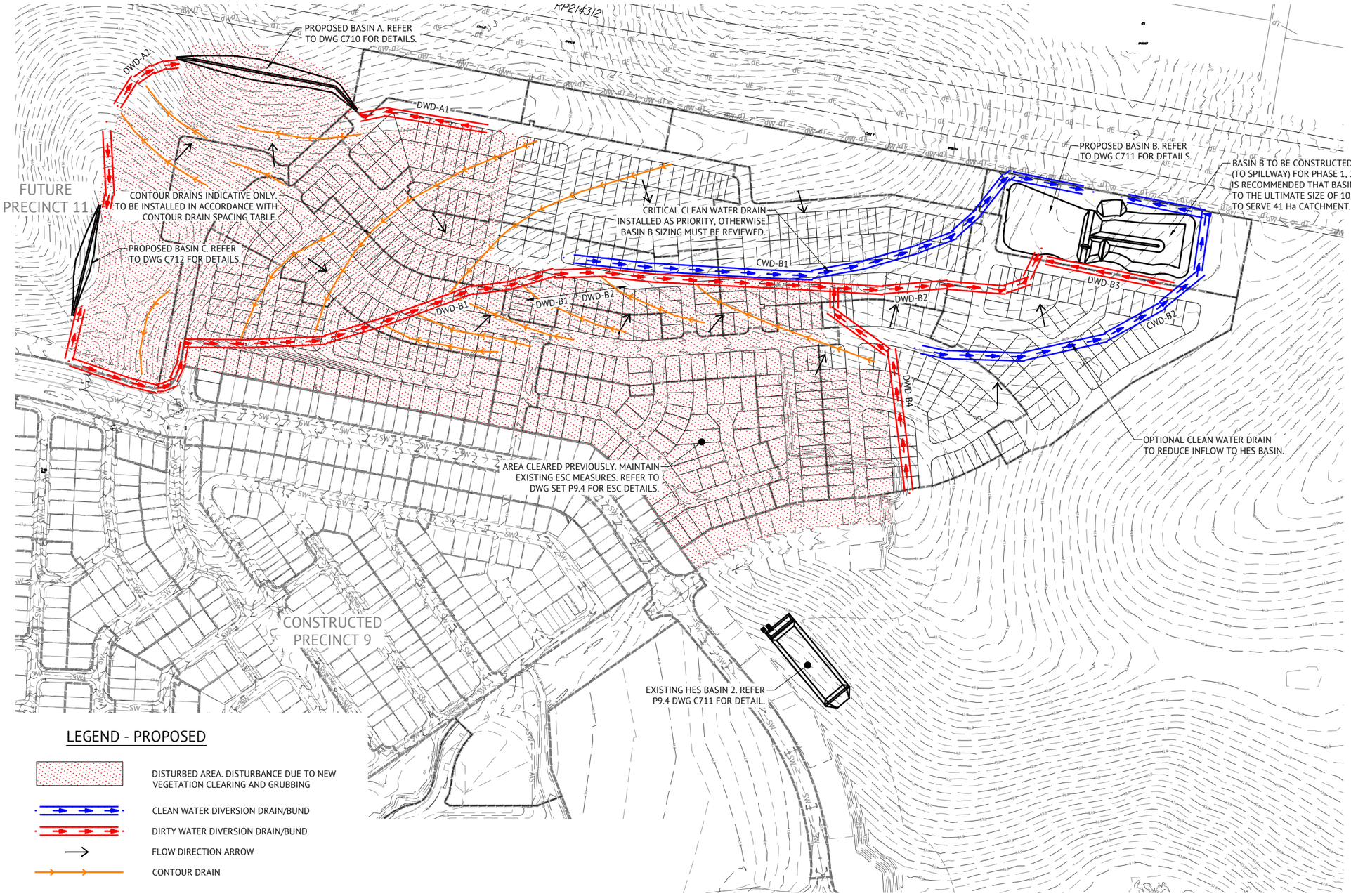
SCALE 0 50 100 150m
SCALE 1:2500 (A1)
ORIGINAL SHEET SIZE A1

CLIENT MIRVAC QLD PTY LTD
PROJECT EVERLEIGH PRECINCTS 8 & 10 BULK EARTHWORKS
LOCATION TEVIOT ROAD, GREENBANK
SHEET TITLE EROSION AND SEDIMENT CONTROL - EXISTING CATCHMENTS PHASE 1

JOB CODE MIR-1010
SHEET NUMBER C700
REV A



CONTOUR DRAIN SPACING TABLE

SLOPE OF EXPOSED SURFACE	MAXIMUM SPACING
1%	80m
2%	60m
4%	40m
6%	32m
8%	28m
10%	25m
12%	22m
15%	19m
20%	16m
25%	14m
30%	12m
35%	10m
40%	9m
50%	6m

LEGEND - PROPOSED

- DISTURBED AREA. DISTURBANCE DUE TO NEW VEGETATION CLEARING AND GRUBBING
- CLEAN WATER DIVERSION DRAIN/BUND
- DIRTY WATER DIVERSION DRAIN/BUND
- FLOW DIRECTION ARROW
- CONTOUR DRAIN

LEGEND - EXISTING

- —12.0— MAJOR CONTOURS (1.00m)
- MINOR CONTOURS (0.50m)

INSTALLATION SEQUENCE PRE-CLEARING AND PRE-BULK EARTHWORKS

STEP 1
- A. INSTALL ALL WEATHER ENTRANCE / EXIT POINT(S).
- B. SET UP SITE OFFICE AND WASTE STORAGE AREAS PARKING AREA FOR VEHICLES AND PLANT;
- C. ERECT BARRIER FENCING FOR "NO GO" AND VEGETATION PROTECTION AREAS AS DIRECTED BY THE SITE SUPERINTENDENT.
- D. MARK OUT THE LIMITS OF DISTURBANCE WITHIN THE SITES BOUNDARIES.

STEP 2
- E. CLEAR AREAS FOR AND CLEAN/DIRTY WATER DIVERSION DRAINS ONLY.
- F. CONSTRUCT "DIRTY WATER & CLEAN WATER" CATCH DRAINS AND LINE AS PER DETAILS ON DRAWING C730.

NOTES

1. REFER EROSION AND SEDIMENT CONTROL NOTES AND DETAILS DRAWINGS.
2. ALL FOOTPATHS RELEVANT TO PROPOSED SUB-PRECINCT ARE TO BE FULLY TURFED AS SOON AS PRACTICAL.
3. THE CONSTRUCTION SITE ENTRANCE ROCK SHAKER PAD LOCATION TO BE DETERMINED BY THE SITE FOREMAN AND CONFIRMED BY SITE SUPERINTENDENT. LOCATION TO BE MARKED UP ON ESC PLANS ONCE CONFIRMED.

CONTOUR DRAIN NOTES:

FORM DRAIN WITH COMPACTED SUBSOIL (OR PINNED COIR LOGS) ALONG THE CONTOUR TO DIRECT SHEET FLOW TO DIRTY WATER DRAIN.

PHASING NOTES:

PHASE 1 (PRE-CLEARING AND PRE BULK EARTHWORKS) UNDERTAKE ONLY WORKS RELATED TO THE PHASE 1 ESC INSTALLATION SEQUENCE.

NOTE:

REFER TO DWG C730 FOR DRAIN SIZING AND DETAILS.

NOTE:

FOR DISPERSIVE SOILS MANAGEMENT NOTES, REFER TO DRAWING C210.

NOTE:

PHASE 1 WORKS LIMITED TO CATCHMENT A1 AND B1. NO DISTURBANCE IS TO OCCUR OUTSIDE OF THESE NOMINATED CATCHMENTS, OTHERWISE A REVIEW AND REVISION OF THE PROPOSED CONTROLS ON DRAWING C701 WILL BE NECESSARY, INCLUDING BASIN SIZING.

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TERRY CLARK (CPESC 6089)

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SCALE 1:2500 (A1)
ORIGINAL SHEET SIZE A1

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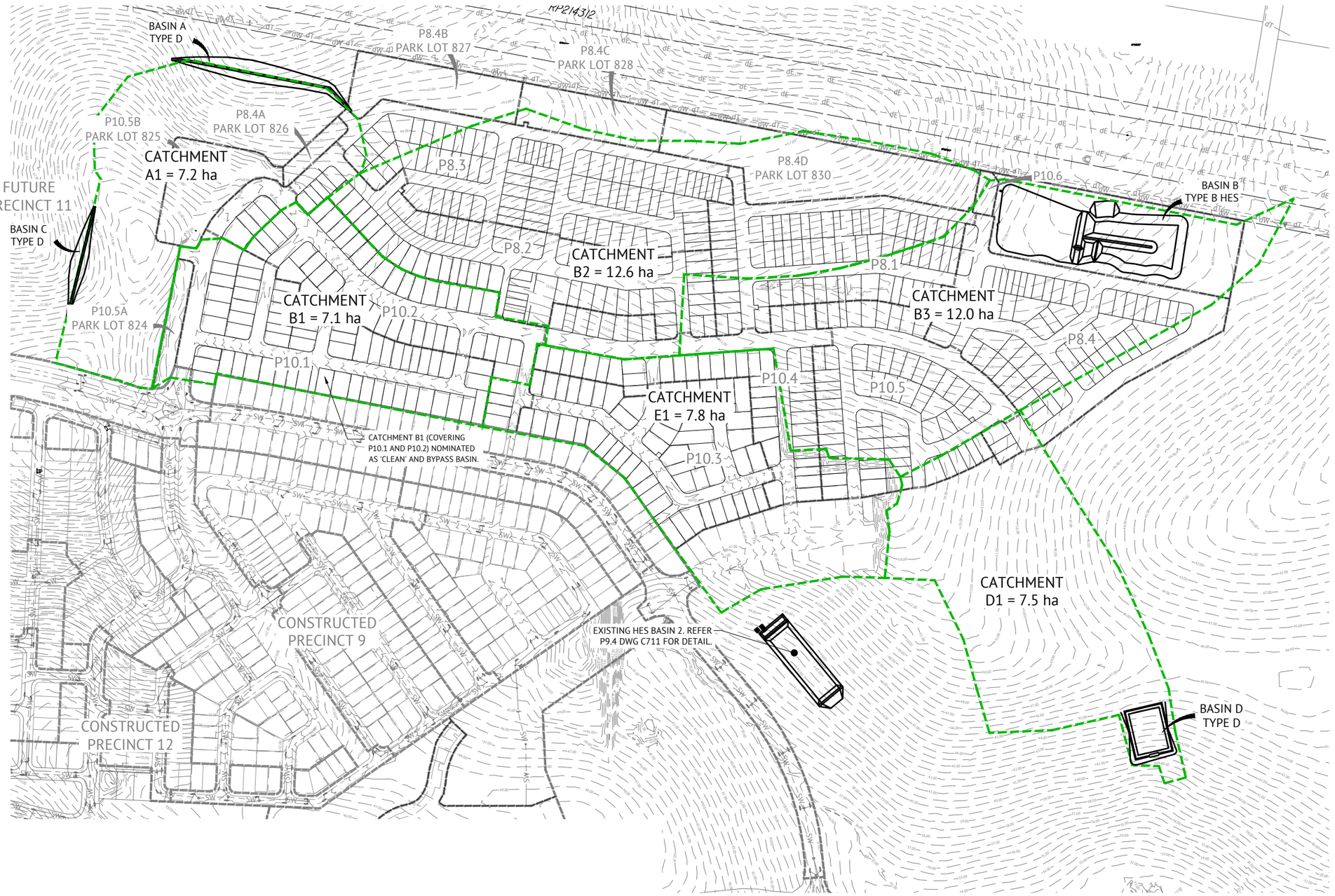
PROJECT EVERLEIGH PRECINCTS 8 & 10 BULK EARTHWORKS
LOCATION TEVIOT ROAD, GREENBANK
SHEET TITLE EROSION AND SEDIMENT CONTROL - CLEAR AND GRUB PHASE 1

JOB CODE MIR-1010
SHEET NUMBER C701
REV A



LEGEND

- CATCHMENT BOUNDARY (FINISHED LEVELS)
- PRECINCT BOUNDARY
- MAJOR CONTOURS (1.00m)
- MINOR CONTOURS (0.50m)

INTERIM LEVELS CATCHMENT RISK ASSESSMENT - ANNUAL SOIL LOSS

CATCHMENT ID	AREA (HA)	R	K	SLOPE LENGTH (m)	SLOPE (%)	LS	P	C	A (t/ha/yr)	A (t/yr)	CONTROL
Basin A - Phase 2	7.15	2627	0.050	80	7.5	2.05	1.3	1.00	350	2,502	TYPE 1
Basin B - Phase 2	21.72	2627	0.050	80	6.5	2.05	1.3	1.00	350	5,663	TYPE 1
Basin D - Phase 2	7.00	2627	0.050	80	4.2	1.19	1.3	1.00	203	1,344	TYPE 1

I CERTIFY THAT THIS EROSION AND SEDIMENT CONTROL DRAWING HAS BEEN DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL EROSION CONTROL ASSOCIATION GUIDELINES.

TERRY CLARK (CPESC 6089)

NOTE:

FOR DISPERSIVE SOILS MANAGEMENT NOTES, REFER TO DRAWING C210.

APPROVAL ISSUE – NOT FOR CONSTRUCTION

DATE	REV	DESCRIPTION	REC	APP
05/12/2022	A	ISSUED FOR APPROVAL	NVT	PB

REVISIONS

Premise

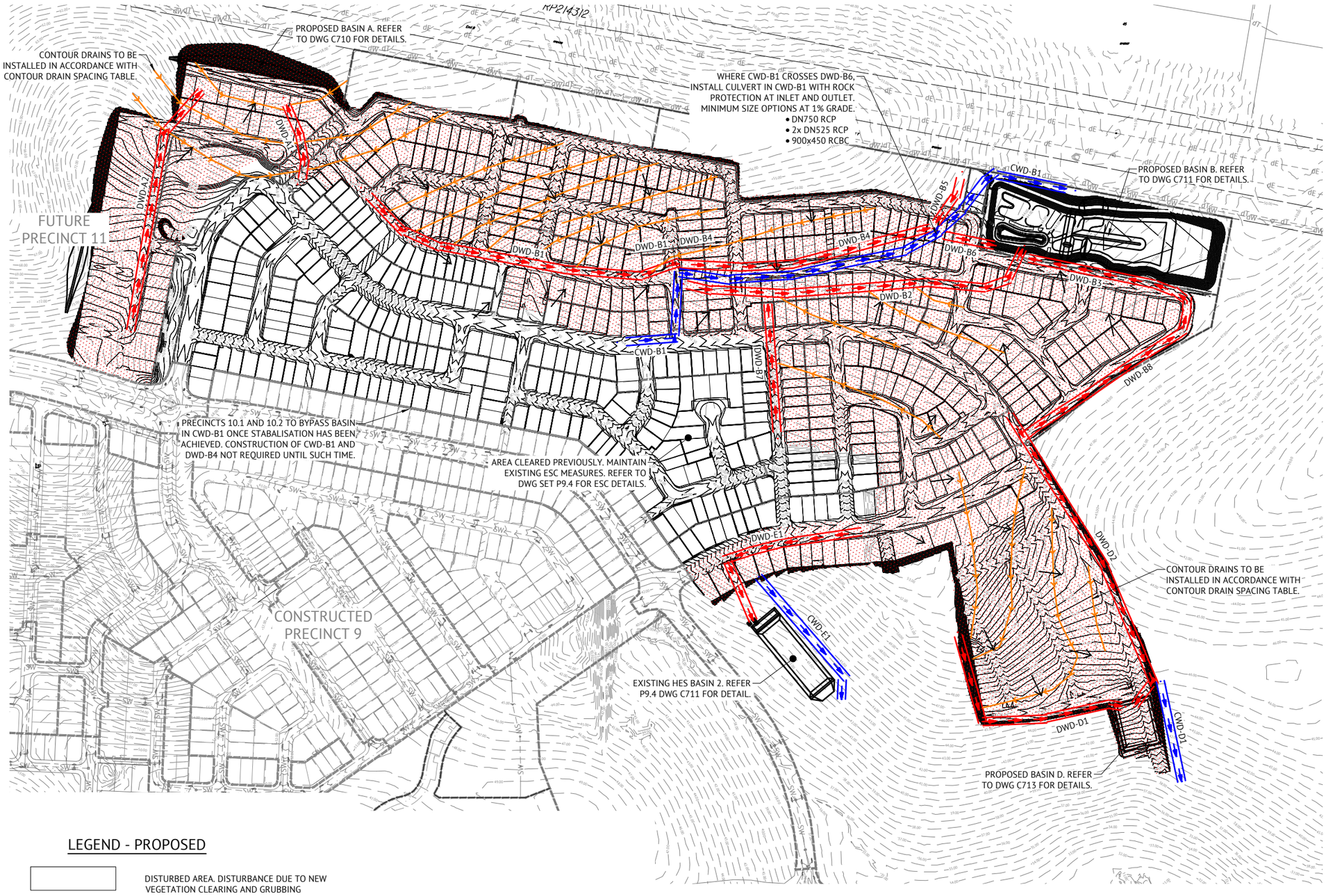
BRISBANE OFFICE
LEVEL 11, 300 ADELAIDE STREET
BRISBANE, QLD 4000
PH: (07) 3253 2222
WEB: www.premise.com.au

DESIGNED: DONNY WANG
CHECKED: MARK DAVIS
PROJECT MANAGER: LAURA CLIFFORD
PROJECT DIRECTOR: PATRICK BRADY RPEQ 7112

SCALE: 0 50 100 150m
SCALE 1:2500 (A1)
ORIGINAL SHEET SIZE A1

CLIENT: MIRVAC QLD PTY LTD
PROJECT: EVERLEIGH PRECINCTS 8 & 10 BULK EARTHWORKS
LOCATION: TEVIOT ROAD, GREENBANK
SHEET TITLE: EROSION AND SEDIMENT CONTROL - INTERIM CATCHMENT PHASE 2

JOB CODE: MIR-1010
SHEET NUMBER: C702
REV: A



NOTE:

BASIN B HAS BEEN SIZED FOR A MAXIMUM CATCHMENT OF 26ha. CLEANWATER DIVERSIONS ARE TO BE USED ON STABLISED CATCHMENTS TO ENSURE THE MAXIMUM CATCHMENT SIZE IS NOT BREACHED. IT IS RECOMMENDED THAT BASIN B BE CONSTRUCTED TO THE ULTIMATE SIZE OF 10,300m³ (TO SPILLWAY) TO SERVE 41 HA CATCHMENT.

CONTOUR DRAIN SPACING TABLE

SLOPE OF EXPOSED SURFACE	MAXIMUM SPACING
1%	80m
2%	60m
4%	40m
6%	32m
8%	28m
10%	25m
12%	22m
15%	19m
20%	16m
25%	14m
30%	12m
35%	10m
40%	9m
50%	6m

LEGEND - PROPOSED

- DISTURBED AREA. DISTURBANCE DUE TO NEW VEGETATION CLEARING AND GRUBBING
- CLEAN WATER DIVERSION DRAIN/BUND
- DIRTY WATER DIVERSION DRAIN/BUND
- FLOW DIRECTION ARROW
- CONTOUR DRAIN

LEGEND - EXISTING

- MAJOR CONTOURS (1.00m)
- MINOR CONTOURS (0.50m)

INSTALLATION SEQUENCE PRE-CLEARING AND PRE-BULK EARTHWORKS

STEP 1
- A. INSTALL ALL WEATHER ENTRANCE / EXIT POINT(S).
- B. SET UP SITE OFFICE AND WASTE STORAGE AREAS PARKING AREA FOR VEHICLES AND PLANT;
- C. ERECT BARRIER FENCING FOR "NO GO" AND VEGETATION PROTECTION AREAS AS DIRECTED BY THE SITE SUPERINTENDENT.
- D. MARK OUT THE LIMITS OF DISTURBANCE WITHIN THE SITES BOUNDARIES.

STEP 2
- E. CLEAR AREAS FOR AND CLEAN/DIRTY WATER DIVERSION DRAINS ONLY.
- F. CONSTRUCT "DIRTY WATER & CLEAN WATER" CATCH DRAINS AND LINE AS PER DETAILS ON DRAWING C730.

NOTES

1. REFER EROSION AND SEDIMENT CONTROL NOTES AND DETAILS DRAWINGS.
2. ALL FOOTPATHS RELEVANT TO PROPOSED SUB-PRECINCT ARE TO BE FULLY TURFED AS SOON AS PRACTICAL.
3. THE CONSTRUCTION SITE ENTRANCE ROCK SHAKER PAD LOCATION TO BE DETERMINED BY THE SITE FOREMAN AND CONFIRMED BY SITE SUPERINTENDENT. LOCATION TO BE MARKED UP ON ESC PLANS ONCE CONFIRMED.

CONTOUR DRAIN NOTES:

FORM DRAIN WITH COMPACTED SUBSOIL (OR PINNED COIR LOGS) ALONG THE CONTOUR TO DIRECT SHEET FLOW TO DIRTY WATER DRAIN.

PHASING NOTES:

PHASE 1 (PRE-CLEARING AND PRE BULK EARTHWORKS) UNDERTAKE ONLY WORKS RELATED TO THE PHASE 1 ESC INSTALLATION SEQUENCE.

NOTE:

REFER TO DWG C730 FOR DRAIN SIZING AND DETAILS.

NOTE:

FOR DISPERSIVE SOILS MANAGEMENT NOTES, REFER TO DRAWING C210.

I CERTIFY THAT THIS EROSION AND SEDIMENT CONTROL DRAWING HAS BEEN DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL EROSION CONTROL ASSOCIATION GUIDELINES.

TERRY CLARK (CPESC 6089)

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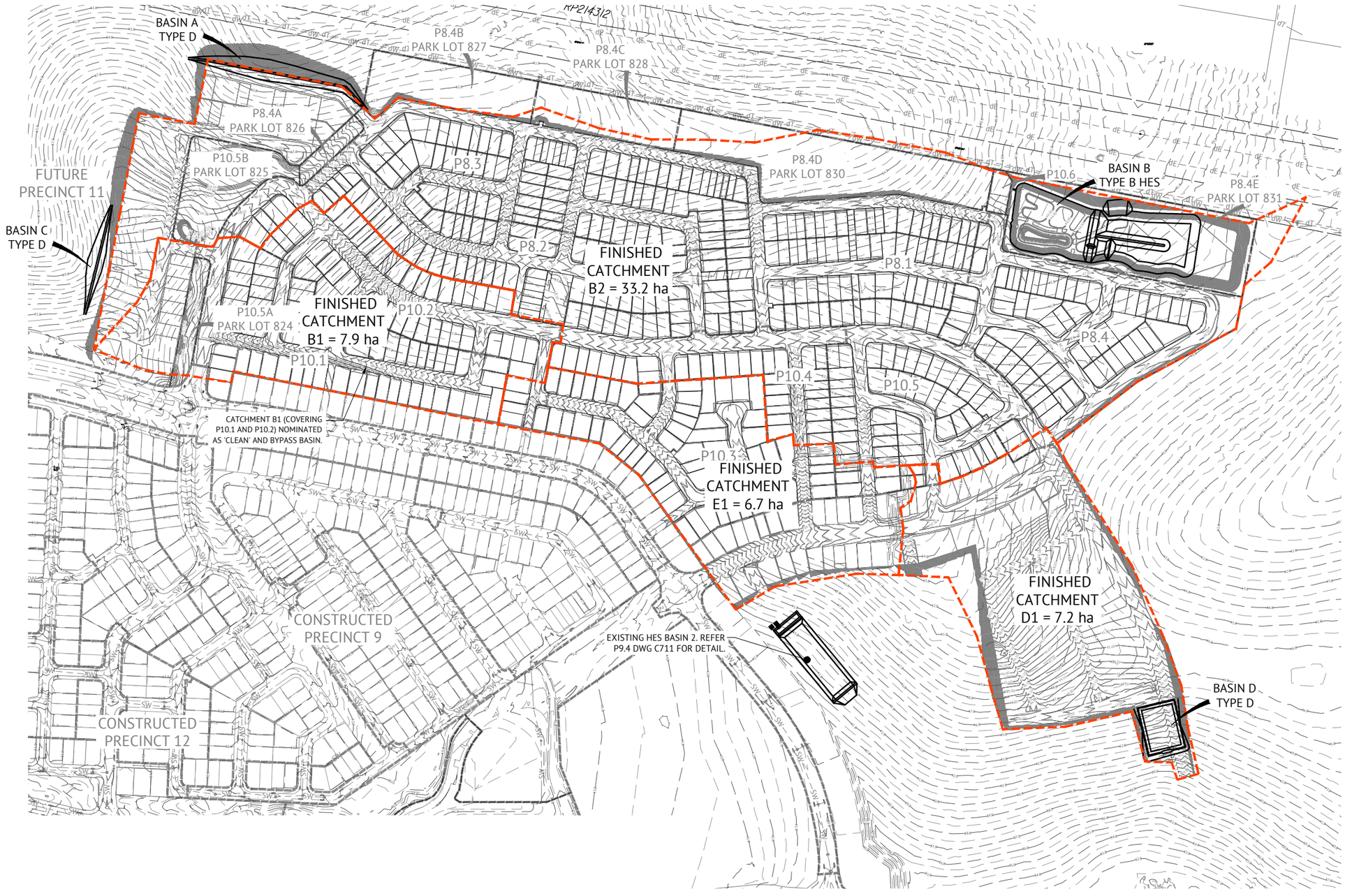
CHECKED MARK DAVIS
PROJECT MANAGER LAURA CLIFFORD
PROJECT DIRECTOR PATRICK BRADY RPEQ 7112

SCALE 0 50 100 150m
SCALE 1:2500 (A1)
ORIGINAL SHEET SIZE A1

CLIENT MIRVAC QLD PTY LTD
PROJECT EVERLEIGH PRECINCTS 8 & 10 BULK EARTHWORKS
LOCATION TEVIOT ROAD, GREENBANK
SHEET TITLE EROSION AND SEDIMENT CONTROL - CLEAR AND GRUB PHASE 2

JOB CODE MIR-1010
SHEET NUMBER C703
REV A



LEGEND

- CATCHMENT BOUNDARY (FINISHED LEVELS)
- PRECINCT BOUNDARY
- MAJOR CONTOURS (1.00m)
- MINOR CONTOURS (0.50m)
- FINISHED MAJOR CONTOURS (0.50m)
- FINISHED MINOR CONTOURS (0.25m)

FINAL LEVELS CATCHMENT RISK ASSESSMENT - ANNUAL SOIL LOSS

CATCHMENT ID	AREA (HA)	R	K	SLOPE LENGTH (m)	SLOPE (%)	LS	P	C	A (t/ha/yr)	A (t/yr)	CONTROL
Basin B - Phase 3	33.26	2627	0.050	80	6.5	2.05	1.3	1.00	350	11,642	TYPE 1
Basin B - MAX	26.00	2627	0.050	80	6.5	2.05	1.3	1.00	350	9,100	TYPE 1

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NOTE:

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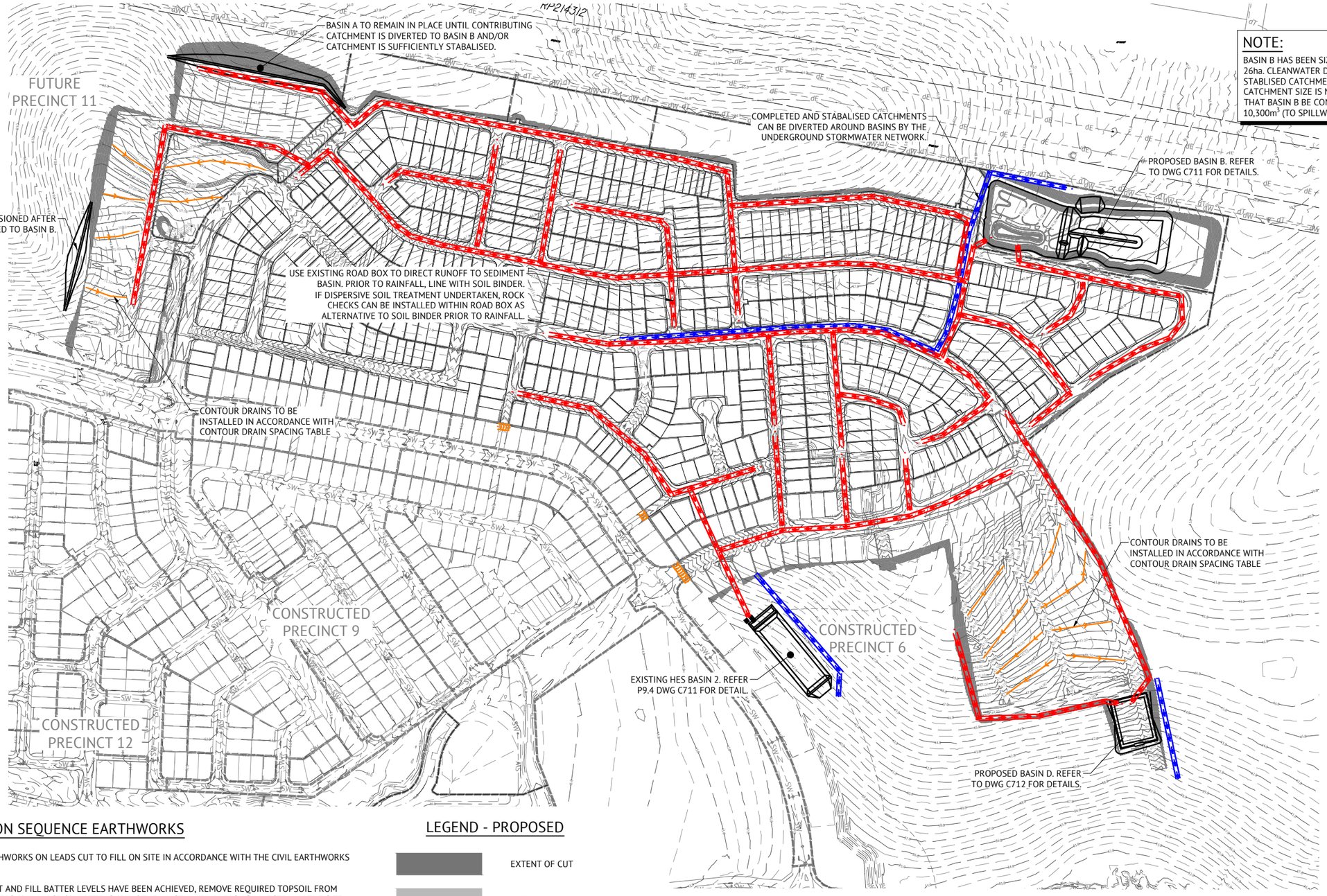
SCALE: 0 50 100 150m
SCALE 1:2500 (A1)
ORIGINAL SHEET SIZE A1

CLIENT: MIRVAC QLD PTY LTD
PROJECT: EVERLEIGH PRECINCTS 8 & 10 BULK EARTHWORKS
LOCATION: TEVIOT ROAD, GREENBANK
SHEET TITLE: EROSION AND SEDIMENT CONTROL - FINISHED CATCHMENTS

JOB CODE: MIR-1010
SHEET NUMBER: C704
REV: A



NOTE:

BASIN B HAS BEEN SIZED FOR A MAXIMUM CATCHMENT OF 26ha. CLEANWATER DIVERSIONS ARE TO BE USED ON STABLISED CATCHMENTS TO ENSURE THE MAXIMUM CATCHMENT SIZE IS NOT BREACHED. IT IS RECOMMENDED THAT BASIN B BE CONSTRUCTED TO THE ULTIMATE SIZE OF 10,300m^3 (TO SPILLWAY) TO SERVE 41 Ha CATCHMENT.

CONTOUR DRAIN SPACING TABLE

SLOPE OF EXPOSED SURFACE	MAXIMUM SPACING
1%	80m
2%	60m
4%	40m
6%	32m
8%	28m
10%	25m
12%	22m
15%	19m
20%	16m
25%	14m
30%	12m
35%	10m
40%	9m
50%	6m

ROCK CHECK DAM NOTE:

INSTALL ROCK CHECK DAM WITHIN ROAD BOX AT MAXIMUM 20m SPACING IN ACCORDANCE WITH IECA DWG RCD-01.

NOTES

1. REFER EROSION AND SEDIMENT CONTROL NOTES AND DETAILS DRAWINGS.
2. ALL FOOTPATHS RELEVANT TO PROPOSED SUB-PRECINCT ARE TO BE FULLY TURFED AS SOON AS PRACTICAL.
3. CONTRACTOR TO ENSURE STORMWATER DRAINAGE IS COVERED AT ALL TIMES DURING EARTHWORKS PHASE.

NOTE:

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INSTALLATION SEQUENCE EARTHWORKS

STEP 1
PERFORM EARTHWORKS ON LEADS CUT TO FILL ON SITE IN ACCORDANCE WITH THE CIVIL EARTHWORKS DRAWINGS.

STEP 2
ONCE FINAL CUT AND FILL BATTER LEVELS HAVE BEEN ACHIEVED, REMOVE REQUIRED TOPSOIL FROM STOCKPILED AREAS AND PLACE ON BATTERS AND OTHER DISTURBED AREAS AS DIRECTED BY THE SITE SUPERINTENDENT.

STEP 3
AS SOON AS POSSIBLE AFTER TOPSOIL HAS BEEN PLACED ON BATTERS AND OTHER DISTURBED AREAS, THESE AREAS SHOULD BE STABILISED PER FINAL DESIGN TREATMENT (REFER DRAWING C702) WITHIN TIMEFRAMES PER 'MAX DAYS TO STABILISATION' BASED ON EROSION RISK (REFER DRAWING C700). IF A RAINFALL EVENT IS FORECAST WHICH IS LIKELY TO CAUSE RUNOFF PRIOR TO DISTURBED OR EXPOSED AREAS BEING STABILISED, A COMBINATION OF MULCH, BINDER OR BIDUM IS TO BE USED TO COVER EXPOSED AREAS. INSTALLATION OF TEMPORARY EROSION CONTROL TO ACTIVE OR INACTIVE WORK AREAS, PRIOR TO RAINFALL EVENTS UNTIL FINAL DESIGN TREATMENT (STABILISATION PER DRAWING C701) IS CRITICAL FOR CATCHMENTS WHICH DO NOT DRAIN TO TYPE 1 CONTROLS.

STEP 4
ALL SEDIMENT AND EROSION CONTROL MEASURES ARE TO REMAIN IN PLACE AND BE MONITORED UNTIL CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. ADDITIONAL EROSION CONTROLS ARE TO BE ERECTED AS REQUIRED BY THE SUPERINTENDENT.

LEGEND - PROPOSED

- EXTENT OF CUT
- EXTENT OF FILL
- MULCH BERM
- SF — SEDIMENT FENCE REFER IECA DRAWING SF-01 & SF-02 FOR DETAILS.
- DIRTY WATER DIVERSION DRAIN/BUND
- CLEAN WATER DIVERSION DRAIN/BUND
- 12.0 — FINISHED MAJOR CONTOURS (0.50m)
- FINISHED MINOR CONTOURS (0.25m)
- CONTOUR DRAIN

LEGEND - EXISTING

- 12.0 — MAJOR CONTOURS (1.00m)
- MINOR CONTOURS (0.50m)

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PROJECT DIRECTOR: PATRICK BRADY RPEQ 7112

SCALE: 0 50 100 150m
SCALE 1:2500 (A1)
ORIGINAL SHEET SIZE A1

CLIENT: MIRVAC QLD PTY LTD
PROJECT: EVERLEIGH PRECINCTS 8 & 10 BULK EARTHWORKS
LOCATION: TEVIOT ROAD, GREENBANK
SHEET TITLE: EROSION AND SEDIMENT CONTROL - BULK EARTHWORKS PHASE

JOB CODE: MIR-1010
SHEET NUMBER: C705
REV: A

SERVICE TRENCH AND ROAD CONSTRUCTION SEQUENCE

STEP 6
- A. PRIORITY SHOULD BE GIVEN TO PLACEMENT OF GRAVELS WITHIN ROAD AS A MEANS TO REDUCE EROSION RISK
- B. PAVEMENT CONSTRUCTION
- C. MAINTAIN ALL EXISTING ESC MEASURES DURING PAVEMENT CONSTRUCTION
- D. GULLY INLET CONTROLS TO BE REINSTATED DURING PAVEMENT AND STORMWATER CONSTRUCTION AND MAINTAINED UNTIL ENTIRE UPSLOPE CATCHMENT HAS BEEN STABILISED.

STEP 7
- A. MAINTENANCE PERIOD
- B. MAINTAIN CONTROL AND ESC AND VEGETATIVE TREATMENTS WHICH CONTROL SEDIMENTATION AND EROSION PRIOR TO THE ESTABLISHMENT OF STABILIZED GRASS COVER.

STEP 8
- A. REMOVE CONSTRUCTION ENTRANCES.
- B. ADDITIONAL EROSION CONTROLS ARE TO BE ERECTED AND MONITORED AS REQUIRED BY THE SUPERINTENDENT

LEGEND - PROPOSED

	100mm THICK TOPSOIL RESPREAD AND DRILL SEEDING. APPLY SOIL BINDER IMMEDIATELY AFTER SEEDING AND CONTINUE TO APPLY BINDER AS REQUIRED TO MINIMISE EROSION)
	100mm THICK TOPSOIL AND TURF
	50mm TOPSOIL AND GRASS SEEDING. APPLY SOIL BINDER IMMEDIATELY AFTER SEEDING AND CONTINUE TO APPLY BINDER AS REQUIRED TO MINIMISE EROSION. ALTERNATIVELY APPLY HYDROMULCH
	TOPSOIL AND STABILISATION DONE BY OTHERS (ESC CONTROLS TO BE REMAIN AND CONTINUE TO BE OPERATED AND MAINTAINED UNTIL AREA IS STABILIZED)
	FINISHED MAJOR CONTOURS (0.50m)
12.0	FINISHED MINOR CONTOURS (0.25m)

LEGEND - EXISTING

12.0	MAJOR CONTOURS (1.00m)
	MINOR CONTOURS (0.50m)
SW	STORMWATER

NOTES

1. REFER EROSION AND SEDIMENT CONTROL NOTES AND DETAILS DRAWINGS.
2. ALL FOOTPATHS ARE TO BE FULLY TURFED AS SOON AS PRACTICAL.
3. CONTRACTOR TO ENSURE THAT GRASS SEEDED AREAS SHOWN ON THIS PLAN ACHIEVE SUFFICIENT STRIKE AND COVERAGE IN ACCORDANCE WITH LOGAN CITY COUNCIL STANDARDS.
4. FOR STABILISATION MEASURES OF FUTURE PRECINCTS, REFER TO MIR-0904 - C703 EROSION AND SEDIMENT CONTROL LAYOUT - STABILISATION PHASE

TURFING AND TOPSOIL NOTE

CONTRACTOR SHALL RESPREAD AMELIORATED TOPSOIL (AMELIORATION REQUIREMENTS AS DIRECTED BY SUPERINTENDENT) TO VERGES AT A THICKNESS OF 100mm. TURFING TO VERGES WITHIN PRECINCT 9.5 WORKS SHALL BE UNDERTAKEN BY THE CIVIL CONTRACTOR.

I CERTIFY THAT THIS EROSION AND SEDIMENT CONTROL DRAWING HAS BEEN DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL EROSION CONTROL ASSOCIATION GUIDELINES.

TERRY CLARK (CPESC 6089)

NOTE:

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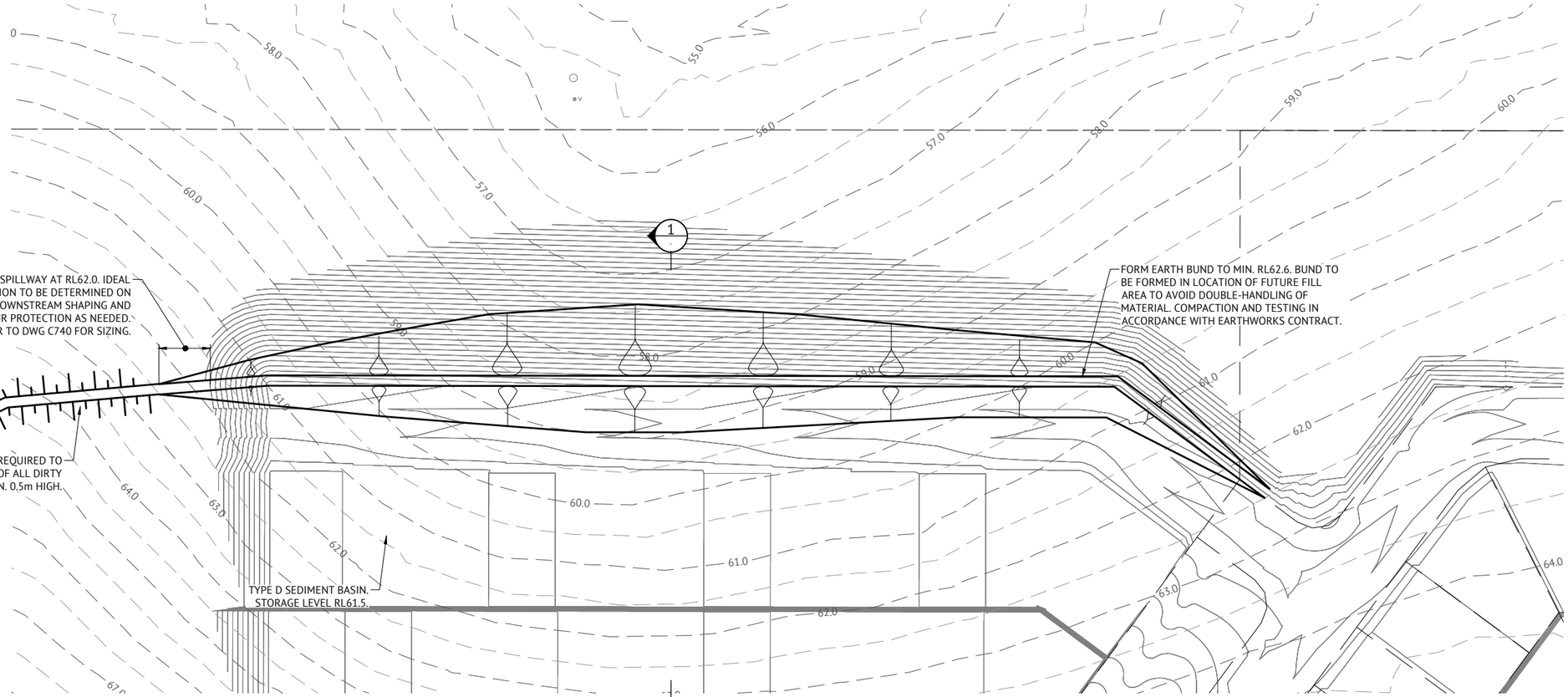
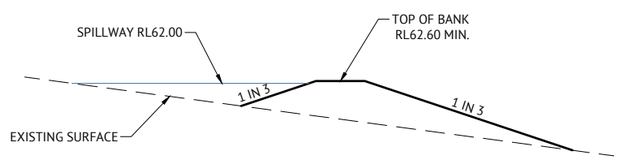
SCALE: 0 50 100 150m
SCALE 1:2500 (A1)
ORIGINAL SHEET SIZE A1

CLIENT: MIRVAC QLD PTY LTD
PROJECT: EVERLEIGH PRECINCTS 8 & 10 BULK EARTHWORKS
LOCATION: TEVIOT ROAD, GREENBANK
SHEET TITLE: EROSION AND SEDIMENT CONTROL - STABILISATION PHASE

JOB CODE: MIR-1010
SHEET NUMBER: C706
REV: A



BASIN A PLAN VIEW
SCALE 1:500



SECTION 1
N.T.S.

BASIN ID	CATCHMENT AREA (ha)	MAIN CELL VOLUME (m^3)	SEDIMENT STORAGE DEPTH (m)
BASIN A	7.15	9100	0.2

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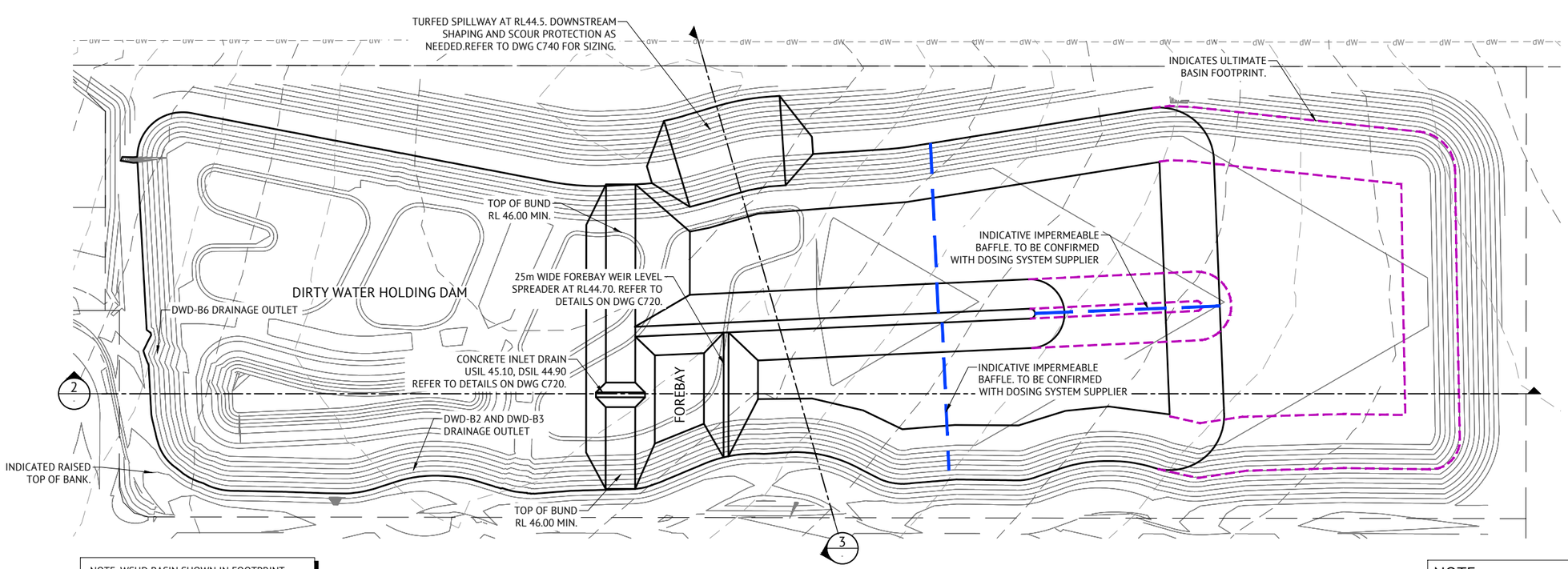
PROJECT DIRECTOR: PATRICK BRADY RPEQ 7112

SCALE: 0 10 20 30m
SCALE 1:500 (A1)
ORIGINAL SHEET SIZE A1

CLIENT: MIRVAC QLD PTY LTD
PROJECT: EVERLEIGH PRECINCTS 8 & 10 BULK EARTHWORKS
LOCATION: TEVIOT ROAD, GREENBANK
SHEET TITLE: EROSION AND SEDIMENT CONTROL - BASIN A DETAILS

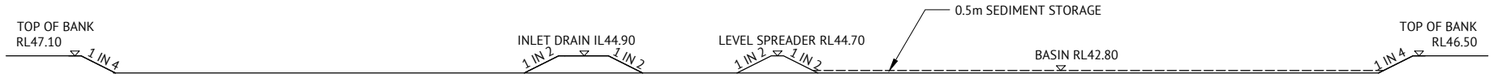
JOB CODE: MIR-1010
SHEET NUMBER: C710
REV: A



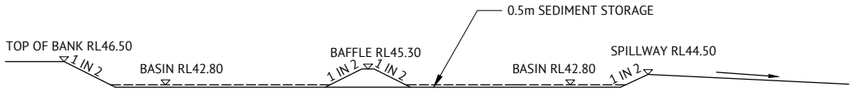
NOTE: WSUD BASIN SHOWN IN FOOTPRINT. CONTRACTOR TO USE DESIGN TOP OF BANK OF WSUD AS THE TOP OF BANK OF THE HES BASIN.

BASIN B PLAN VIEW
SCALE 1:500

NOTE:
BASIN B HAS BEEN SIZED FOR A MAXIMUM CATCHMENT OF 26ha. CLEANWATER DIVERSIONS ARE TO BE USED ON STABLISED CATCHMENTS TO ENSURE THE MAXIMUM CATCHMENT SIZE IS NOT BREACHED. IT IS RECOMMENDED THAT BASIN B BE CONSTRUCTED TO THE ULTIMATE SIZE OF 10,300m³ (TO SPILLWAY) TO SERVE 41 Ha CATCHMENT.



SECTION 2
N.T.S.



SECTION 3
N.T.S.

BASIN ID	CATCHMENT AREA (ha)	MAIN CELL VOLUME (m^3)	MAIN CELL LENGTH (m)	MAIN CELL WIDTH (m)	MAIN CELL DEPTH (m)	SEDIMENT STORAGE DEPTH (m)	FOREBAY LENGTH (m)	FOREBAY WIDTH (m)	FOREBAY DEPTH (m)
BASIN B - PHASE 1	26	6200	VARIES	VARIES	1.7	0.5	16.0	25.0	1.9
BASIN B - ULTIMATE	41	10300	VARIES	VARIES	1.7	0.5	16.0	25.0	1.9

NOTE:
1. SEDIMENT BASIN SIZED BASED ON A SETTLEMENT RATE OF 150mm IN 15 MINUTES. THIS SETTLEMENT RATE HAS BEEN ACHIEVED VIA JAR TESTS IN ADJACENT PRECINCT 9 CATCHMENT AREAS, HOWEVER SHALL BE VERIFIED PRIOR TO CONSTRUCTION OF SEDIMENT BASINS.
2. JAR TESTING USING REPRESENTATIVE SITE SOILS SHALL ALSO CONFIRM THE NOMINATED COAGULANT OR FLOCCULENT PRODUCT AND DOSE RATE PRIOR TO CONSTRUCTION. PRIOR JAR TESTING IN PRECINCT 9 HAS SHOWN ACH AT A DOSE RATE OF 100ppm IS CAPABLE OF ACHIEVING THE NOMINATED SETTLEMENT RATE.
3. SCOUR VELOCITY CALCULATED THROUGH BASINS MAY EXCEED NOMINAL 0.015m/s VELOCITY PER DESIGN PROCEDURE (OPTION 2B WITHIN IECA, 2018). RECOMMENDS THAT PERMEABLE BAFFLES BE INSTALLED IN BASIN AND REGULAR MONITORING BE UNDERTAKEN TO VERIFY PERFORMANCE.

I CERTIFY THAT THIS EROSION AND SEDIMENT CONTROL DRAWING HAS BEEN DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL EROSION CONTROL ASSOCIATION GUIDELINES.

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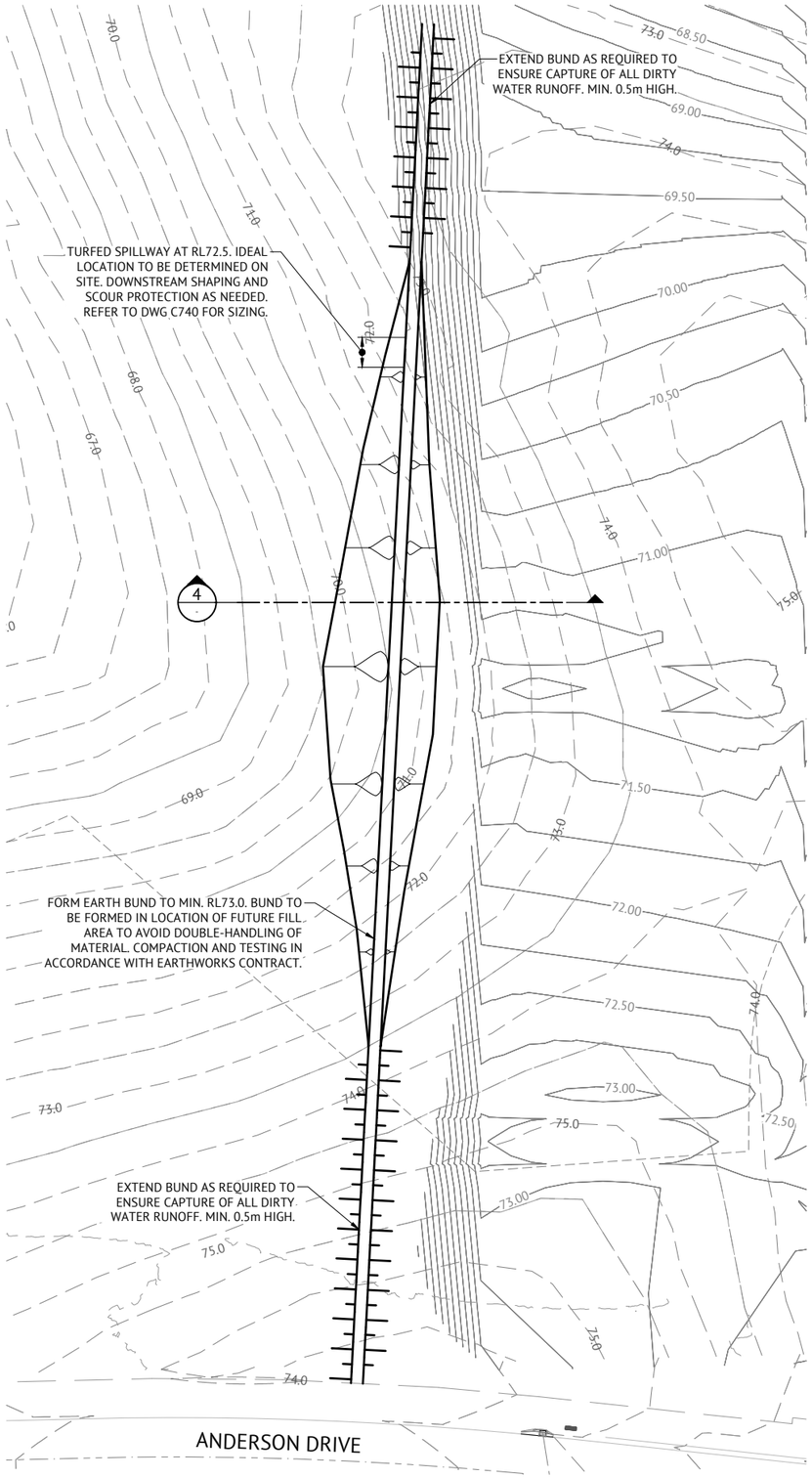
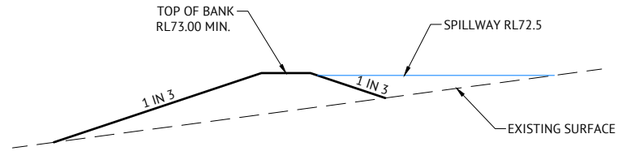
SCALE 1:500 (A1)
ORIGINAL SHEET SIZE A1

CLIENT: MIRVAC QLD PTY LTD
PROJECT: EVERLEIGH PRECINCTS 8 & 10 BULK EARTHWORKS
LOCATION: TEVIOT ROAD, GREENBANK
SHEET TITLE: EROSION AND SEDIMENT CONTROL - BASIN B DETAILS

JOB CODE: MIR-1010
SHEET NUMBER: C711
REV: A



BASIN C PLAN VIEW
SCALE 1:500



SECTION 4
N.T.S.

BASIN ID	CATCHMENT AREA (ha)	MAIN CELL VOLUME (m^3)	SEDIMENT STORAGE DEPTH (m)
BASIN C	1.00	1300	0.2

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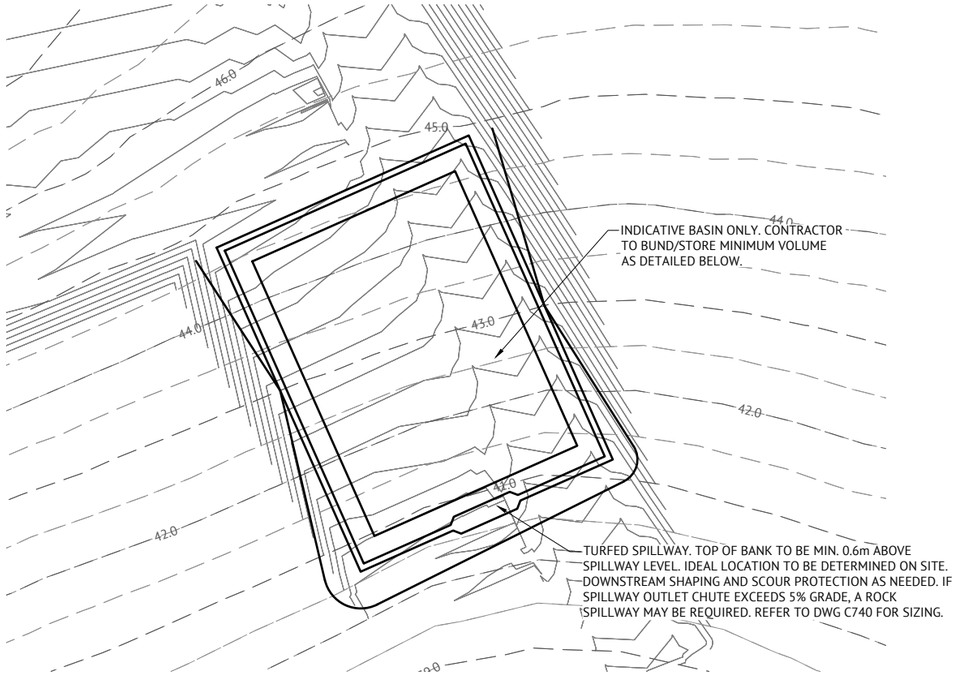
CLIENT MIRVAC QLD PTY LTD
PROJECT EVERLEIGH PRECINCTS 8 & 10 BULK EARTHWORKS
LOCATION TEVIOT ROAD, GREENBANK
SHEET TITLE EROSION AND SEDIMENT CONTROL - BASIN C DETAILS

JOB CODE MIR-1010
SHEET NUMBER C712
REV A



BASIN D PLAN VIEW

SCALE 1:500

BASIN ID	CATCHMENT AREA (ha)	MAIN CELL VOLUME (m^3)	SEDIMENT STORAGE DEPTH (m)
BASIN D	7.60	9500	0.1

I CERTIFY THAT THIS EROSION AND SEDIMENT CONTROL DRAWING HAS BEEN DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL EROSION CONTROL ASSOCIATION GUIDELINES.

TERRY CLARK (CPESC 6089)

APPROVAL ISSUE – NOT FOR CONSTRUCTION

DATE	REV	DESCRIPTION	REC	APP
05/12/2022	A	ISSUED FOR APPROVAL	NVT	PB

REVISIONS

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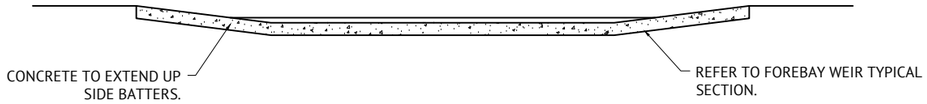
DESIGNED DONNY WANG
CHECKED MARK DAVIS
PROJECT MANAGER LAURA CLIFFORD
PROJECT DIRECTOR PATRICK BRADY RPEQ 7112

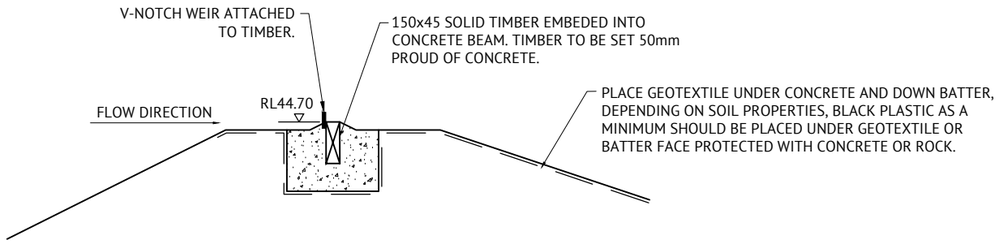
SCALE 0 10 20 30m
SCALE 1:500 (A1)
ORIGINAL SHEET SIZE A1

CLIENT MIRVAC QLD PTY LTD
PROJECT EVERLEIGH PRECINCTS 8 & 10 BULK EARTHWORKS
LOCATION TEVIOT ROAD, GREENBANK
SHEET TITLE EROSION AND SEDIMENT CONTROL - BASIN D DETAILS

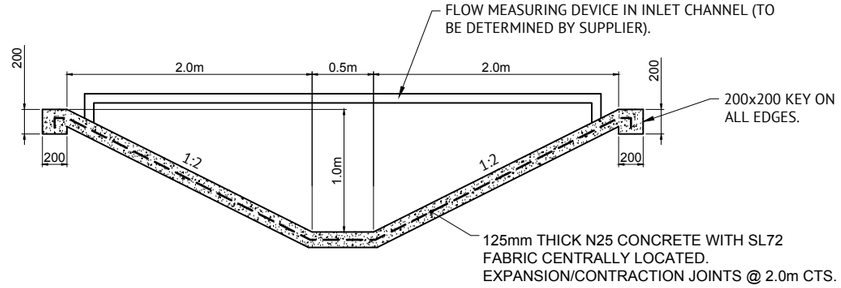
JOB CODE MIR-1010
SHEET NUMBER C713
REV A



FOREBAY WEIR PROFILE
N.T.S.



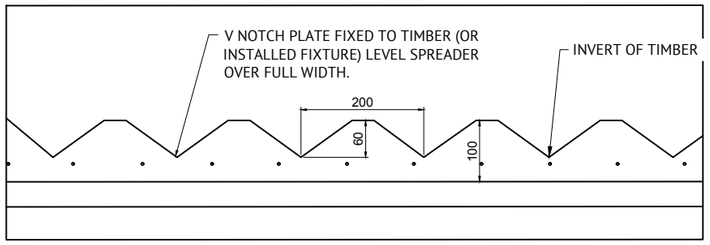
FOREBAY WEIR SECTION
N.T.S.



INLET DRAIN DETAIL SECTION
0 0.5 1 1.5 2 2.5m

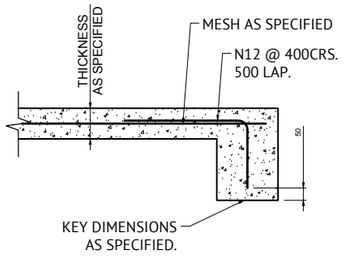
SCALE 1:25

NOTE: INLET DRAIN MUST BE CONSTRUCTED AS PER DESIGN WITH +/- 3mm TOLERANCE TO ENSURE ACCURACY OF FLOW-METER (BY TURBID) ON INLET CHANNEL.



TYPICAL SECTION - V NOTCH PLATE
N.T.S.

IT IS RECOMMENDED THAT A V NOTCH PLATE BE FIXED TO THE LEVEL SPREADER DUE TO THE WIDTH OF THE FOREBAY WALLS.



TYPICAL KEY DETAIL
N.T.S.

I CERTIFY THAT THIS EROSION AND SEDIMENT CONTROL DRAWING HAS BEEN DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL EROSION CONTROL ASSOCIATION GUIDELINES.

TERRY CLARK (CPESC 6089)

APPROVAL ISSUE – NOT FOR CONSTRUCTION

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PROJECT MANAGER LAURA CLIFFORD
PROJECT DIRECTOR PATRICK BRADY RPEQ 7112

SCALE NTS

ORIGINAL SHEET SIZE A1

CLIENT MIRVAC QLD PTY LTD
PROJECT EVERLEIGH PRECINCTS 8 & 10 BULK EARTHWORKS
LOCATION TEVIOT ROAD, GREENBANK
SHEET TITLE EROSION AND SEDIMENT CONTROL - TYPICAL BASIN B DETAILS

JOB CODE MIR-1010
SHEET NUMBER C720
REV A

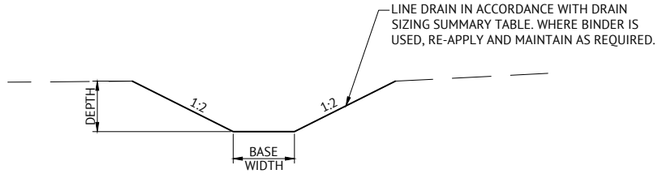
DRAIN CALCULATION TABLE

DRAIN ID	CATCH AREA (HA)	ARI	C_{AU}	TIME OF CONC (MINS)	I_{AU}	FLOW - Q (m^3/s)	LONG. SLOPE (m/m)	BASE WIDTH	SIDE SLOPE 1 (1 in x)	SIDE SLOPE 2 (1 in x)	LINING	MANNING ROUGH COEFF	MAX PERM VEL (m/s)	DESIGN VEL (m/s)	DEPTH OF FLOW (m)	DEPTH WITH F/BOARD (m)	DRAIN TOP WIDTH (m)
PHASE 1 - DWD A1	0.70	2	0.60	17	96	0.10	0.005	0.6	2	2	Vital HR - L/m2	0.02	1.5	0.76	0.14	0.29	1.78
PHASE 1 - DWD A2	2.08	2	0.60	15	91	0.31	0.100	1.7	2	2	Vital HR - 2L/m2	0.02	2.5	2.48	0.07	0.22	2.57
PHASE 1 - CWD B1	7.58	?	0.60	36	56	0.71	0.012	0.6	?	?	Turf	0.04	2	1.09	0.44	0.59	2.95
PHASE 1 - CWD B2	3.07	2	0.60	32	60	0.31	0.005	0.6	2	2	Turf	0.04	2	0.64	0.36	0.51	2.65
PHASE 1 - DWD B1	12.40	?	0.60	26	68	1.41	0.030	2.8	?	?	Vital HR - 2L/m2	0.02	2.5	2.48	0.18	0.33	4.12
PHASE 1 - DWD B2	21.52	2	0.60	60	40	1.43	0.012	0.6	2	2	Vital HR - 2L/m2	0.02	2.5	2.20	0.44	0.59	2.96
PHASE 1 - DWD B3	1.57	?	0.60	16	89	0.23	0.024	0.6	?	?	Vital HR - 2L/m2	0.02	2.5	1.73	0.15	0.30	1.80
PHASE 1 - DWD B4	1.64	2	0.60	12	101	0.28	0.057	0.6	2	2	Vital HR - 2L/m2	0.02	2.5	2.48	0.13	0.20	1.72
PHASE 2 - DWD A1	0.83	2	0.60	15	91	0.13	0.057	0.6	2	2	Vital HR - 2L/m2	0.02	2.5	1.96	0.08	0.23	1.54
PHASE 2 - DWD A2	3.90	2	0.60	22	75	0.49	0.042	0.9	2	2	Vital HR - 2L/m2	0.02	2.5	2.50	0.16	0.31	2.14
PHASE 2 - CWD B1	7.98	?	0.60	32	60	0.80	0.012	0.6	?	?	Turf	0.04	2	1.13	0.46	0.61	3.05
PHASE 2 - DWD B1	7.75	2	0.60	18	84	1.09	0.016	0.6	2	2	Vital HR - 2L/m2	0.02	2.5	2.27	0.36	0.51	2.64
PHASE 2 - DWD B2	8.02	?	0.60	29	64	0.86	0.012	0.6	?	?	Turf	0.04	2	1.15	0.48	0.63	3.11
PHASE 2 - DWD B2 WITH CLEAN WATER	16.00	2	0.60	29	64	1.71	0.012	1	2	2	Turf	0.04	2	1.36	0.58	0.73	3.92
PHASE 2 - DWD B3	1.57	?	0.60	16	89	0.23	0.024	0.6	?	?	Vital HR - 2L/m2	0.02	2.5	1.74	0.15	0.30	1.80
PHASE 2 - DWD B4	11.77	2	0.60	35	57	1.12	0.012	0.6	2	2	Vital HR - 2L/m2	0.02	2.5	2.00	0.39	0.54	2.77
PHASE 2 - DWD B5	0.83	?	0.60	17	86	0.13	0.005	0.6	?	?	Vital HR - L/m2	0.02	1.5	0.82	0.16	0.31	1.83
PHASE 2 - DWD B6	12.00	2	0.60	35	57	1.20	0.020	0.9	2	2	Vital HR - 2L/m2	0.02	2.5	2.48	0.31	0.46	2.76
PHASE 2 - DWD B7	1.89	2	0.60	21	77	0.24	0.033	0.6	2	2	Vital HR - 2L/m2	0.02	2.5	1.97	0.14	0.29	1.76
PHASE 2 - DWD B8	0.99	2	0.60	23	73	0.12	0.007	0.6	2	2	Vital HR - L/m2	0.02	1.5	0.93	0.15	0.30	1.78
PHASE 2 - CWD D1	0.65	2	0.60	11	104	0.11	0.057	0.6	2	2	Turf	0.04	2	1.17	0.12	0.27	1.66
PHASE 2 - DWD D1	2.01	?	0.60	24	73	0.24	0.005	0.6	?	?	Vital HR - 2L/m2	0.02	2.5	1.00	0.23	0.38	2.12
PHASE 2 - DWD D2	5.10	2	0.60	28	66	0.56	0.010	0.6	2	2	Vital HR - 2L/m2	0.02	2.5	1.61	0.29	0.44	2.38
PHASE 2 - CWD E1	1.58	?	0.60	18	87	0.25	0.005	0.6	?	?	Turf	0.04	?	0.60	0.33	0.48	2.50
PHASE 2 - DWD E1	7.80	2	0.60	22	75	0.98	0.030	3.2	2	2	Vital HR - 2L/m2	0.02	2.5	2.49	0.11	0.26	4.26
BASIN B INLET DRAIN	41.10	50	0.81	60	83	7.69	0.020	0.5	2	2	Concrete	0.015	7	5.03	0.76	0.91	4.13

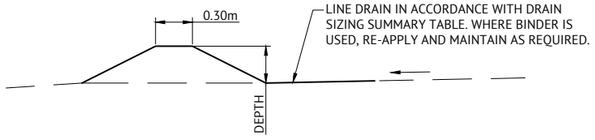
DRAIN SIZING SUMMARY TABLE

DRAIN ID	MINIMUM DEPTH (m)	BASE WIDTH (m)	BATTER SLOPE (1 IN ...)	DRAIN LINING
PHASE 1 - DWD A1	0.30	0.60	2.0	Vital HR - L/m2
PHASE 1 - DWD A2	0.30	1.70	2.0	Vital HR - 2L/m2
PHASE 1 - CWD B1	0.60	0.60	2.0	Turf
PHASE 1 - CWD B2	0.55	0.60	2.0	Turf
PHASE 1 - DWD B1	0.35	2.80	2.0	Vital HR - 2L/m2
PHASE 1 - DWD B2	0.60	0.60	2.0	Vital HR - 2L/m2
PHASE 1 - DWD B3	0.30	0.60	2.0	Vital HR - 2L/m2
PHASE 1 - DWD B4	0.30	0.60	2.0	Vital HR - 2L/m2
PHASE 2 - DWD A1	0.30	0.60	2.0	Vital HR - 2L/m2
PHASE 2 - DWD A2	0.35	0.90	2.0	Vital HR - 2L/m2
PHASE 2 - CWD B1	0.65	0.60	2.0	Turf
PHASE 2 - DWD B1	0.55	0.60	2.0	Vital HR - 2L/m2
PHASE 2 - DWD B2	0.65	0.60	2.0	Turf
PHASE 2 - DWD B2 WITH CLEAN WATER	0.75	1.00	2.0	Turf
PHASE 2 - DWD B3	0.30	0.60	2.0	Vital HR - 2L/m2
PHASE 2 - DWD B4	0.54	0.60	2.0	Vital HR - 2L/m2
PHASE 2 - DWD B5	0.35	0.60	2.0	Vital HR - L/m2
PHASE 2 - DWD B6	0.50	0.90	2.0	Vital HR - 2L/m2
PHASE 2 - DWD B7	0.30	0.60	2.0	Vital HR - 2L/m2
PHASE 2 - DWD B8	0.30	0.60	2.0	Vital HR - L/m2
PHASE 2 - CWD D1	0.30	0.60	2.0	Turf
PHASE 2 - DWD D1	0.40	0.60	2.0	Vital HR - 2L/m2
PHASE 2 - DWD D2	0.45	0.60	2.0	Vital HR - 2L/m2
PHASE 2 - CWD E1	0.50	0.60	2.0	Turf
PHASE 2 - DWD E1	0.30	3.20	2.0	Vital HR - 2L/m2

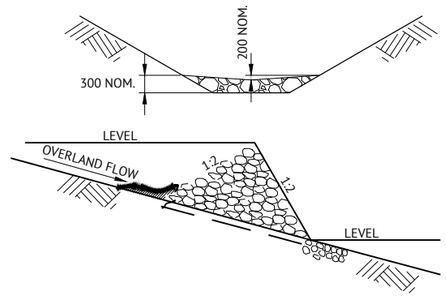
NOTE: DRAIN SIZING (INCLUDING DEPTH NOMINATED ABOVE) DOES NOT ACCOUNT FOR INSTALLATION OF CHECK DAMS. THE NOMINATED DRAIN LINING IS BASED ON CALCULATED VELOCITIES AND IS SUFFICIENT TO FUNCTION IN A NON-EROSIVE MANNER WITHOUT CHECK DAMS. IF CHECK DAMS ARE TO BE INSTALLED, DRAIN DIMENSIONS ARE TO BE INCREASED TO PROVIDE A MINIMUM ADDITIONAL 0.3m DEPTH.



TYPICAL CROSS SECTION
SWALE DRAIN
N.T.S.



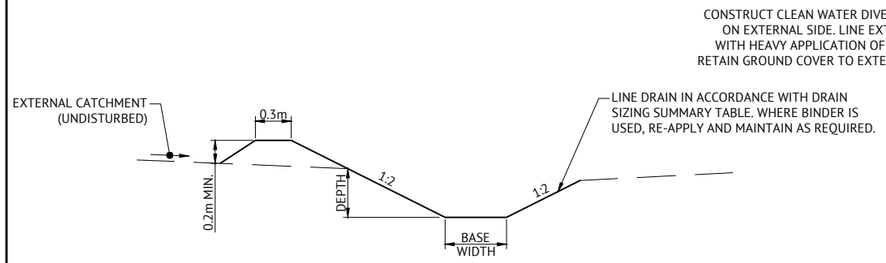
TYPICAL CROSS SECTION
BUND DRAIN
N.T.S.



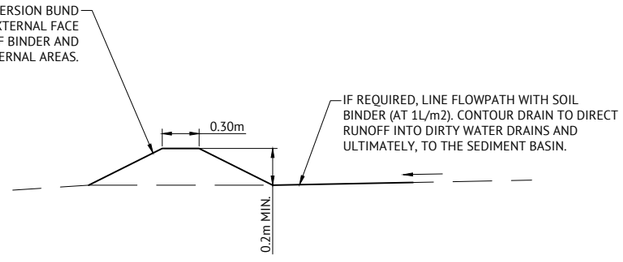
CHECK DAM - TYPICAL DETAIL
NTS

CHECK DAM SPACING - (WHERE ORDERED)

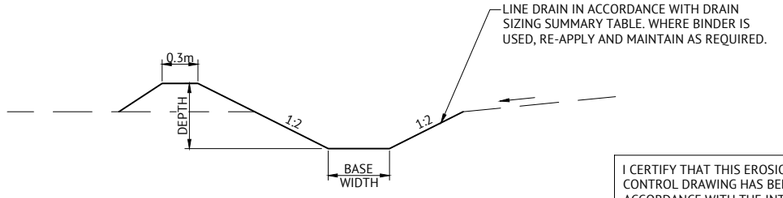
SWALE GRADE (%)	SPACING INTERVAL (m)				
	200mm HIGH	300mm HIGH	400mm HIGH	500mm HIGH	600mm HIGH
0.5	40	60	80	100	120
1.0	20	30	40	50	60
2.0	10	15	20	25	30
3.0	6.7	10	13	17	20
4.0	5.0	7.5	10	13	15
5.0	4.0	6.0	8.0	10	12
10.0	2.0	3.0	4.0	5.0	6.0
15.0	1.3	2.0	2.7	3.3	4.0



TYPICAL CROSS SECTION
SWALE DRAIN WITH EXTERNAL DIVERSION
N.T.S.



TYPICAL CROSS SECTION
CONTOUR DRAIN
N.T.S.



TYPICAL CROSS SECTION
COMBINATION DRAIN
N.T.S.

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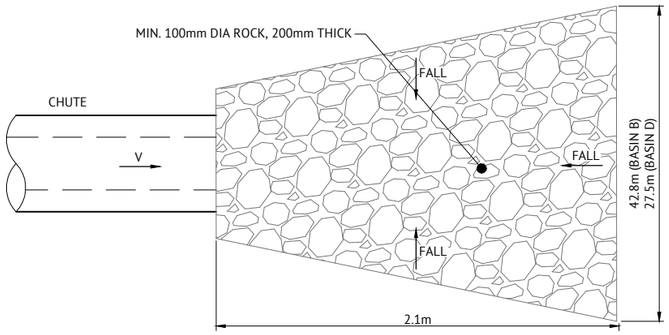
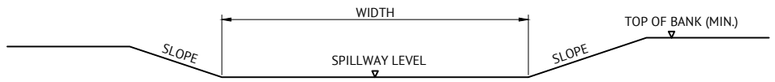
PROJECT DIRECTOR: PATRICK BRADY RPEQ 7112
SCALE
ORIGINAL SHEET SIZE A1

CLIENT: MIRVAC QLD PTY LTD
PROJECT: EVERLEIGH PRECINCT 8 & 10 SUBDIVISION DEVELOPMENT
LOCATION: TEVIOT ROAD, GREENBANK
SHEET TITLE: EROSION AND SEDIMENT CONTROL - DRAIN DETAILS

JOB CODE: MIR-1010
SHEET NUMBER: C730
REV: A



OUTLET ENERGY DISSIPATER DETAILS
N.T.S.



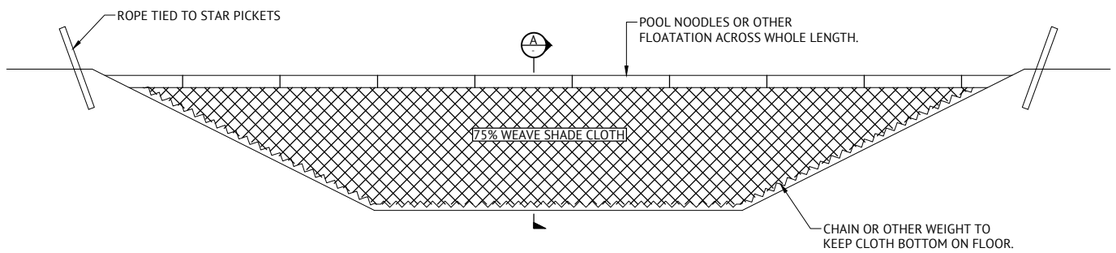
BASIN OUTLET SPILLWAY TYPICAL PROFILE
N.T.S.

SPILLWAY SIZING SUMMARY TABLE

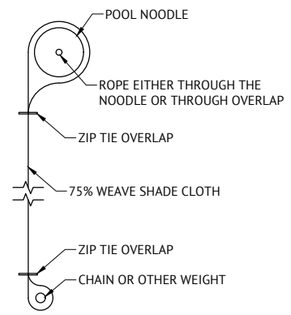
BASIN ID	WIDTH (m)	SLOPE (1 IN ...)	SPILLWAY LEVEL (R.L. m)	MIN. HEIGHT SPILLWAY TO TOB (m)	TOP OF BANK (R.L. m)	LINING
BASIN A	10.0	3.0	62.00	0.60	62.60	TURF
BASIN B	20.0	3.0	44.50	0.70	TBD	TURF
BASIN C	5.0	3.0	72.50	0.50	73.00	TURF
BASIN D	10.0	3.0	TBD	0.60	TBD	TURF

SPILLWAY SIZING CALCULATION TABLE

							WEIR						CHUTE							DISSIPATER			
BASIN ID	CATCH AREA (HA)	ARI	C_{ARI}	TIME OF CONC (MINS)	I_{ARI}	FLOW - Q (m^3/s)	BASE WIDTH	SIDE SLOPE 1 (1 in x)	U/S WATER LEVEL (m)	FREEBOARD (m)	MIN. HEIGHT SPILLWAY TO TOB (m)	TOP WIDTH (m)	LONG. SLOPE (m/m)	LINING	MANNING ROUGH COEFF	MANUAL MANNING ROUGH COEFF	MAX PERM VEL (m/s)	DESIGN VEL (m/s)	DEPTH OF FLOW (m)	DEPTH WITH F/BOARD (m)	OK / NOT OK	MEAN ROCK SIZE - D_{50} (mm)	WIDTH 1 (m)	WIDTH 2 (m)	LENGTH (m)
Basin A	7.15	20	0.74	14	159	2.34	10	3	0.26	0.3	0.56	13.36	0.05	Turf	0.04		2	1.51	0.15	0.45	OK	100	13.3	13.5	2.1
Basin B	41.15	50	0.81	60	83	7.69	20	3	0.36	0.3	0.66	23.99	0.02	Turf	0.04		3	1.41	0.26	0.56	OK	200	24.0	24.5	2.7
Basin C	1	20	0.74	10	182	0.37	5	3	0.12	0.3	0.42	7.53	0.03	Turf	0.04		2	0.90	0.07	0.37	OK	100	7.8	7.8	1.3
Basin D	7.6	20	0.74	22	128	2.00	10	3	0.23	0.3	0.53	13.21	0.05	Turf	0.04		2	1.42	0.15	0.45	OK	100	13.2	13.4	2.1
						0.00			0.04	0.3	0.34	0.00		Turf	0.04		2	0.00	0.01	0.31	OK	100	0.6	0.6	1



PERMEABLE BAFFLE SECTION
N.T.S.



A SECTION
SCALE N.T.S.

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PROJECT EVERLEIGH PRECINCT 8 & 10 SUBDIVISION DEVELOPMENT
LOCATION TEVIOT ROAD, GREENBANK
SHEET TITLE EROSION AND SEDIMENT CONTROL - SPILLWAY DETAILS

JOB CODE MIR-1010
SHEET NUMBER C740
REV A

BASIN MATERIALS

1. EARTH FILL: CLEAN SOIL WITH EMERSON CLASS 2(1), 3, 4 OR 5 AND FREE OF ROOTS, WOODY VEGETATION, ROCKS AND OTHER UNSUITABLE MATERIAL. SOIL WITH EMERSION CLASS 4 AND 5 MAY NOT BE SUITABLE DEPENDING ON PARTICLE SIZE DISTRIBUTION AND DEGREE OF DISPERSION.
   1.1. CLASS 2(1) SHOULD ONLY BE USED UPON RECOMMENDATION FROM GEOTECHNICAL SPECIALIST.
2. SPILLWAY ROCK: HARD, ANGULAR, DURABLE WEATHER RESISTANT AND EVENLY GRADED ROCK WITH 50% BY WEIGHT LARGER THAN THE SPECIFIED NOMINAL (d50) ROCK SIZE. LARGE ROCK SHOULD DOMINATE, WITH SUFFICIENT SMALL ROCK TO FILL THE VOIDS BETWEEN LARGER ROCK. THE DIAMETER OF THE LARGEST ROCK SHOULD BE NO LARGER THAN 1.5 TIMES THE NOMINAL ROCK SIZE. THE SPECIFIED GRAVITY SHOULD BE AT LEAST 2.5.
3. GEOTEXTILE FABRIC: HEAVY DUTY, NEEDLE-PUNCHED, NON-WOVEN CLOTH, MINIMUM 'BIDIM' A24 OR EQUIVALENT.

BAISN CONSTRUCTION

1. NOTWITHSTANDING ANY DESCRIPTION CONTAINED WITH APPROVED PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SATISFYING THEMSELVES AS TO THE NATURE AND EXTENT OF THE SPECIFIED WORKS AND THE PHYSICAL AND LEGAL CONDITIONS UNDER WHICH THE WORKS WILL BE CARRIED OUT. THIS SHALL INCLUDE MEANS OF ACCESS, EXTENT OF CLEARING, NATURE OF THE MATERIALS TO BE EXCAVATED, TYPE AND SIZE OF MECHANICAL PLANT REQUIRED, LOCATION AND SUITABILITY OF WATER SUPPLY FOR CONSTRUCTION AND TESTING PURPOSES, AND ANY OTHER LIKELY MATTERS AFFECTING THE CONSTRUCTION OF THE WORKS.
2. REFER TO APPROVED PLANS FOR LOCATION, DIMENSIONS, AND CONSTRUCTION DETAILS. IF THERE ARE ANY QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
3. BEFORE STARTING ANY CLEARING OR CONSTRUCTION, ENSURE ALL THE NEXESSARY MATERIALS AND COMPONENTS ARE ON THE SITE TO AVOID DELAYS IN COMPLETING THE SEDIMENT BASIN ONCE WORKS BEGIN.
4. INSTALL REQUIRES SHORT TERM SEDIMENT RUNOFF DURING CONSTRUCTION OF THE BASIN.
5. THE AREA TO BE COVERED BY THE EMBANKMENT, BORROW PITS AND INCIDENTAL WORKS, TOGETHER WITH AN AREA EXTENDING BEYOND THE LIMITS OF EACH FOR A DISTANCE NOT EXCEEDING 5m ALL AROUND MUST BE CLEARED OF ALL TREES, SCRUB, STUMPS, ROOTS, DEAD TIMBER AND RUBBISH AND DISPOSED OF IN A SUITABLE MANNER. DELAY CLEARING THE MAIN BASIN AREA UNTIL THE EMBANKMENT IS COMPLETE.
6. ENSURE ALL HOLES MADE BY GRUBBING WITHIN THE EMBANKMENT FOOTPRINT ARE FILLED WITH SOUND MATERIAL, ADEQUATELY COMPACTED, AND FINISHED FLUSH WITH THE NATURAL SURFACE.

AUTO DOSER

1. PROVIDED AS FLOW BASED AUTO DOSER TO MANUFACTURES SPECIFICATION.
2. DOSER AND SUPPLY OF FLOCCULANT TO BE PROVIDED ON LEVEL PAD 4m x 4m WITHIN 10m OF DOSING POINT.
3. ALL-WEATHER ACCESS TRACK TO BE PROVIDED TO DOSER.
4. FLOCCULANT PROVIDED AS TURBICLEAR (ahc). IF ALTERNATIVE FLOCCULANT USED THEN THE BASIN SIZE IS TO BE INCREASED ACCORDING TO JAR SETTLEMENT TEST (REFER TO TABLE BELOW).
5. JAR TESTING UNDERTAKEN BY TURBID WITH REPRESENTATIVE SOIL SAMPLES COMPOSITED OVER THE SUBJECT AREA USED. BASED ON JAR TESTING A DOSE RATE OF 100PPM (100L OF ACH PER 1ML OF BASIN STORAGE VOLUME) IS TO BE ADOPTED. NOMINATED ACH COAGULANT IS TURBICLEAR. IF ALTERNATIVE PRODUCT/S USED THAN JAR TESTING TO BE VERIFIED.
6. GIVEN THE CATCHMENT AREA AND DYNAMIC NATURE OF THE SITE IT IS RECOMMENDED THAT A FLOW BASED AUTOMATED DOSER BE INSTALLED AT THE INLET TO THE FOREBAY.
7. A WELL CONSTRUCTED AND DEFINED OPEN CHANNEL OR PIPE WILL BE REQUIRED TO ACHIEVE EFFECTIVE AND ACCURATE FLOW DEPTH RECORDING BY THE DOSE UNIT. A STILLING POND UPSLOPE OF THE INLET TO THE OPEN CHANNEL OR PIPE IS RECOMMENDED TO IMPROVE ACCURACY AND PERFORMANCE OF THE SYSTEM.
8. ALL WEATHER ACCESS TRACK TO BE PROVIDED TO DOSER.
9. THE DOSE UNIT SUPPLIER SHOULD BE CONTACTED TO DISCUSS SETUP AND INSTALLATION REQUIREMENTS.

EMBANKMENT

1. SCARIFY AREAS ON WHICH FILL IS TO BE PLACED BEFORE PLACING THE FILL.
2. ENSURE ALL FILL MATERIAL USED TO FORM THE EMBANKMENT MEETS THE SPECIFICATIONS CERTIFIED BY A SOIL SCIENTIST OF GEOTECHNICAL SPECIALIST.
3. THE FILL MATERIAL MUST CONTAIN SUFFICIENT MOISTURE SO IT CAN BE FORMED BY HAND INTO A BALL WITHOUT CRUMBLING. IF WATER CAN BE SQUEEZED OUT OF THE BALL, IT IS TOO WET FOR PROPER COMPACTION. PLACE FILL MATERIAL IN 150mm TO 200mm CONTINUOUS LAYERS OVER THE ENTIRE LENGTH OF THE FILL AREA AND THEN COMPACT BEFORE PLACEMENT OF FURTHER FILL.
4. UNLESS SPECIFIED ON THE APPROVED PLANS, COMPACT THE SOIL AT ABOUT % TO 2% WET OPTIMUM AND TO 95% MODIFIED OR 100% STANDARD COMPACTION. EMBANKMENT TO AN ELEVATION 10% HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLING.
5. WHERE BOTH DISPERSIVE AND NON-DISPERSIVE CLASSIFIED EARTH-FILL MATERIALS ARE AVAILABLE, NON-DISPERSIVE EARTH-FILL MUST BE USED IN THE CORE ZONE. THE REMAINING CLASSIFIED EARTH-FILL MATERIALS MUST ONLY BE USED AS DIRECTED BY THE SITE SUPERINTENDENT.
6. WHERE SPECIFIED, CONSTRUCT THE EMBANKMENT TO AN ELEVATION 10% HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLING; OTHERWISE FINISHED DIMENSION OF THE EMBANKMENT AFTER SPREADING OF TOPSOIL MUST CONFORM TO THE DRAWING WITH A TOLERANCE OF 75mm FROM SPECIFIED DIMENSIONS.
7. ENSURE DEBRIS AND OTHER UNSUITABLE BUILDING WASTE IS NOT PLACED WITHIN THE EARTH EMBANKMENT.
8. AFTER COMPLETION OF THE EMBANKMENT, ALL LOOSE UNCOMPACTED EARTH-FILLMATERIAL ON THE UPSTREAM AND DOWNSTREAM BATTER MUST BE REMOVED PRIOR TO SPREADING TOPSOIL.
9. TOPSOIL AND RE-VEGETATE/STABILISE ALL EXPOSED EARTH AS DIRECTED WITHIN THE APPROVED PLANS.

CUT-OFF TRENCH

1. BEFORE CONSTRUCTION OF THE CUT-OFF TRENCH OR ANY ANCILLARY WORKS WITHIN THE EMBANKMENT FOOTPRINT, ALL GRASS GROWTH AND TOPSOIL MUST BE REMOVED FROM THE AREA TO BE OCCUPIED BY THE EMBANKMENT AND MUST BE DEPOSITED CLEAR OF THIS AREA AND RESERVED FOR TOPDRESSING THE COMPLETED EMBANKMENT.
2. EXCAVATED A CUT-OFF TRENCH ALONG THE CENTRE LINE OF THE EARTH FILL EMBANKMENT. CUT THE TRENCH TO STABLE SOIL MATERIAL, BUT IN NO CASE MAKE IT LESS THAN 600mm DEEP. THE CUT-OFF TRENCH MUST EXTEND INTO BOTH ABUTMENTS TO AT LEAST THE ELEVATION OF THE OUTLET SPILLWAY CREST. MAKE THE MINIMUM BOTTOM WIDTH WIDE ENOUGH TO PERMIT OPERATION OF THE EXCAVATION AND COMPACTION EQUIPMENT, BUT IN NO CASE LESS THAN 600mm. MAKE THE SIDE SLOPES OF THE TRENCH NO STEEPER THAN 1:1 (H:V).
3. ENSURE ALL WATER, LOOSE SOIL, AND ROCK ARE REMOVED FROM THE TRENCH BEFORE BACKFILLING COMMENCES. THE CUT-OFF TRENCH MUST BE BACKFILLED WITH SELECT EARTH-FILL OF THE TYPE SPECIFIED FOR THE EMBANKMENT, AND THIS SOUL MUST HAVE A MOISTURE CONTENT AND DEGREE OF COMPACTION THE SAME AS SPECIFIED FOR THE CORE ZONE.
4. MATERIAL EXCAVATED FROM THE CUT-OFF TRENCH MAY BE USED IN THE CONSTRUCTION OF THE EMBANKMENT PROVIDED IT IS SUITABLE AND IT IS PLACED IN THE CORRECT ZONE ACCORDING TO ITS CLASSIFICATION.

NOTE: JAR TESTING RESULTS FROM ADJACENT SITE. ADDITIONAL ON SITE TESTING REQUIRED FOR CONFIRMATION OF BASIN SIZING PRIOR TO CONSTRUCTION.

JAR TEST RESULTS (DOSING CHEMICAL: TURBICLEAR ACH)

DOSE RATE (ml/L)	0.00 CONTROL	0.04	0.06	0.08	0.10	0.12
CLARITY ACHIEVED AFTER 5 MINS	481	199	87.4	61.5	58.5	37.2
CLARITY ACHIEVED AFTER 15 MINS	458	84.8	65.5	54.5	39.8	34.2
CLARITY ACHIEVED AFTER 30 MINS	385	68.2	56.9	42.3	30.9	26.7
CLARITY ACHIEVED AFTER 60 MINS	307	53.0	41.1	26.5	17.3	15.6
FINAL pH	7.4	7.4	7.3	7.3	7.3	7.3
FINAL TURBIDITY	307	53	56	26	17	15
FINAL TEST RESULT						

NOTE: STARTING pH = 7.4 STARTING TURBIDITY = 930

SPILLWAY CONSTRUCTION

1. THE SPILLWAY MUST BE EXCAVATED AS SHOWN ON THE PLANS, AND THE EXCAVATED MATERIAL IF CLASSIFIED AS SUITABLE, MUST BE USED IN THE EMBANKMENT, AND IF NOT SUITABLE IT MUST BE DISPOSED OF INTO SPOIL HEAPS.
2. ENSURE EXCAVATED DIMENSIONS ALLOW ADEQUATE BOXING-OUT SUCH THAT THE SPECIFIED ELEVATIONS, GRADES, CHUTE WIDTH, AND ENTRANCE AND EXIT SLOPES FOR THE EMERGENCY SPILLWAY WILL BE ACHIEVED AFTER PLACEMENT OF THE ROCK OR OTHER SCOUR PROTECTION MEASURES AS SPECIFIED IN THE PLANS.
3. PLACE SPECIFIED SCOUR PROTECTION MEASURES ON THE EMERGENCY SPILLWAY. ENSURE THE FINISHED GRADE BLENDS WITH THE SURROUNDING AREA TO ALLOW A SMOOTH FLOW TRANSITION FROM SPILLWAY TO DOWNSTREAM CHANNEL.
4. IF A SYNTHETIC FILTER FABRIC UNDERLAY IS SPECIFIED, PLACE THE FABRIC DIRECTLY ON THE PREPARED FOUNDATION. IF MORE THAN 1 SHEET OF FILTER FABRIC IS REQUIRED, OVERLAP THE EDGES BY AT LEAST 300mm AND PLACE ANCHOR PINS AT MINIMUM 1m SPACING ALONG THE OVERLAP. BURY THE UPSTREAM END OF THE FILTER FABRIC A MINIMUM 300mm BELOW GROUND AND WHERE NECESSARY, BURY THE LOWER END OF THE FABRIC OR OVERLAP A MINIMUM 300mm OVER THE NEXT DOWNSTREAM SECTION AS REQUIRED. ENSURE THE FILTER FABRIC EXTENDS AT LEAST 1m UPSTREAM OF THE SPILLWAY CREST.
5. TAKE CARE NOT TO DAMAGE THE FABRIC DURING OR AFTER PLACEMENT. IF DAMAGE OCCURS, REMOVE THE ROCK AND REPAIR THE SHEET BY ADDING ANOTHER LATER OF FABRIC WITH A MINIMUM OVERLAP OF 300mm AROUND THE DAMAGED AREA. IF EXTENSIVE DAMAGE IS SUSPECTED, REMOVE AND REPLACE THE ENTIRE SHEET.
6. WHERE LARGE ROCK IS USED, OR MACHINE PLACEMENT IS DIFFICULT, A MINIMUM 100mm LATER OF FINE GRAVEL, AGGREGATE, OR SAND MAY BE NEEDED TO PROTECT THE FABRIC.
7. PLACEMENT OF ROCK SHOULD FOLLOW IMMEDIATELY AFTER PLACEMENT OF THE FILTER FABRIC. PLACE ROCK SO THAT IT FORMS A DENSE, WELL GRADED MASS O ROCK WITH A MINIMUM OF VOIDS. THE DESIRED DISTRIBUTION OF ROCK THROUGHOUT THE MASS MAYBE OBTAINED BY SELECTIVE LOADING AT THE QUARRY AND CONTROLLED DUMPING DURING FINAL PLACEMENT.
8. THE FINISHED SLOPE SHOULD BE FREE OF POCKETS OF SMALL ROCK OR CLUSTERS OF LARGE ROCKS. HAND PLACING MAY BE NECESSARY TO ACHIEVE THE PROPER DISTRIBUTION OF ROCK SIZES TO PRODUCE A RELATIVELY SMOOTH, UNIFORM SURFACE. THE FINISHED GRADE OF THE ROCK SHOULD BLEND WITH THE SURROUNDING AREA. NO OVERFALL OF PROTRUSION OF ROCK SHOULD BE APPARENT.
9. ENSURE THAT THE FINAL ARRANGEMENT OF THE SPILLWAY CREST WILL NOT PROMOTE EXCESSIVE FLOW THROUGH THE ROCK SUCH THAT THE WATER CAN BE RETAINED WITHIN THE SETTLING BASIN AT THE ELEVATION NO LESS THAN 50mm ABOVE OR BELOW THE NOMINATED SPILLWAY CREST ELEVATION.

ESTABLISHING THE SETTLING POND

1. THE AREA TO BE COVERED BY THE STORED WATER OUTSIDE OF THE LIMITS OF THE BORROW PITS MUST BE CLEARED RUBBISH. TREES MUST BE CUT DOWN STUMP HIGH AND REMOVED FROM THE IMMEDIATE VICINITY OF THE WORK.
2. ESTABLISH ALL REQUIRED INFLOW CHUTES AND INLET BAFFLES, IF SPECIFIED, TO ENABLE WATER TO DISCHARGE INTO THE BASIN IN A MANNER THAT WILL NOT CAUSE SOIL EROSION OR THE RE-SUSPENSION OF SETTLED SEDIMENT.
3. INSTALL A SEDIMENT STORAGE LEVEL MARKER POST WITH A CROSS MEMBER SET JUST BELOW THE TOP OF THE SEDIMENT STORAGE ZONE (AS SPECIFIED ON THE APPROVED PLANS). USE AT LEAST A 75mm WIDE POST FIRMLY SET INTO THE BASIN FLOOR.
4. IF SPECIFIED, INSTALL INTERNAL SETTLING POND BAFFLES. ENSURE THE CREST OF THESE BAFFLES IS SET LEVEL WITH, OR JUST BELOW, THE ELEVATION OF THE EMERGENCY SPILLWAY.
5. INSTALL ALL APPROPRIATE MEASURES TO MINIMISE SAFETY RISK TO ON-SITE PERSONNEL AND THE PUBLIC CAUSED BY THE PRESENCE OF THE SETTLING POND. AVOID STEEP, SMOOTH INTERNAL SLOPES. APPROPRIATELY FENCE THE SETTLING POND AND POST WARNING SIGNS IF UNSUPERVISED PUBLIC ACCESS IS LIKELY OR THERE IS CONSIDERED TO BE AN UNACCEPTABLE RISK TO THE PUBLIC.

EROSION & SEDIMENT CONTROL NOTES

1. LOCATION & LEVELS OF ALL EXISTING SERVICES TO BE CONFIRMED ON SITE BY CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
2. REFER EARTHWORKS DRAWINGS FOR ADDITIONAL NOTES.
3. ALL TRENCHES, FOOTPATH EXCAVATIONS & STOCKPILES TO BE PROTECTED BY TEMPORARY SEDIMENT FENCES UNTIL 80% GRASS COVERAGE IS ACHIEVED TO DISTURBED AREAS.
4. EVERY PRECAUTION IS TO BE TAKEN TO PREVENT THE TRANSPORT OF SILT INTO THE NEWLY LAID STORMWATER PIPES THAT ARE CONNECTED TO THE DOWNSTREAM PIPE SYSTEMS, AND ANY EXISTING OPEN CHANNELS.
5. THESE NOTES SHALL BE READ IN CONJUNCTION WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
6. THE EROSION AND SEDIMENT CONTROL WORKS SHALL COMPLY WITH THE REQUIREMENTS OF THE LOCAL AUTHORITIES EROSION AND SEDIMENT CONTROL STANDARDS.
7. THE CONTRACTOR SHALL TAKE ALL REASONABLE AND PRACTICABLE MEASURES TO:
   - ALLOW STORMWATER TO PASS THROUGH THE SITE IN A CONTROLLED MANNER AND AT NON EROSIVE FLOW VELOCITIES;
   - MINIMISE SOIL EROSION FROM WATER AND WIND;
   - MINIMISE ADVERSE EFFECTS OF SEDIMENT RUN-OFF;
   - MINIMISE OR PREVENT ENVIRONMENTAL HARM ASSOCIATED WITH DISCHARGES FROM THE SITE (E.G. THE EFFECTS OF SEDIMENTATION ON THE ENVIRONMENTAL VALUES OF RECEIVING WATERS); AND
   - ENSURE THAT THE VALUE AND USE OF RESIDENTIAL PROPERTIES ADJACENT TO THE DEVELOPMENT (SUCH AS DRAINAGE AND ROADS) ARE NOT DIMINISHED AS A RESULT OF THE MIGRATION OF SEDIMENT FROM THE DEVELOPMENT.
4. THE CONTRACTOR SHALL APPOINT AN APPROPRIATELY EXPERIENCED PERSON TO BE MADE RESPONSIBLE FOR IMPLEMENTATION OF THE ESC.
5. ALL ESC MEASURES SHALL BE INSPECTED:
   - AT LEAST DAILY (WHEN WORK IS OCCURRING ON SITE).
   - AT LEAST WEEKLY (WHEN WORK IS NOT OCCURRING ON SITE).
   - WITHIN 24 HOURS OF EXPECTED RAINFALL.
   - WITHIN 18 HOURS OF RAINFALL OCCURRING.
6. MAINTENANCE OF ESC MEASURES SHALL OCCUR TO ENSURE THEY ARE OPERATING EFFICIENTLY AND IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

ESC MEASURES	MAINTENANCE TRIGGER	TIME FRAME FOR UNDERTAKING MAINTENANCE
ESC MEASURES	WHEN SETTLED SEDIMENT VOLUME EXCEEDS 25% OF THE CAPACITY OF THE ESC MEASURE	BY THE END OF THE DAY

7. INSTALL DIVERSION CATCH DRAINS UPSTREAM OF, AND SILT FENCE DOWNSTREAM OF, STOCKPILES.
8. STOCKPILES ARE TO BE LOCATED AWAY FROM EROSION HAZARD AREAS SUCH AS DRAINAGE LINES AND STEEP SLOPES.
9. STOCKPILES ARE TO BE PROTECTED FROM EROSION BY THE WIND.
10. ADEQUATE SUPPLIES OF EMERGENCY MAINTENANCE MATERIALS, INCLUDING (BUT NOT LIMITED TO) TIE WIRE, STAKES, FILTER CLOTH, WIRE MESH AND CLEAN GRAVEL SHOULD BE AVAILABLE ON-SITE.
11. ESC MAINTENANCE ACTIVITIES ARE TO BE RECORDED IN AN ON-SITE REGISTER. THE REGISTER IS TO BE MAINTAINED FOR THE DURATION OF THE WORKS AND IS TO BE MADE AVAILABLE TO THE SUPERINTENDENT.
12. DISTURBED AREA ARE TO BE STABILISED AS SOON AS POSSIBLE ON COMPLETION OF BULK EARTHWORKS. LOTS TO BE STABILISED FOLLOWING RESPREADING OF TOPSOIL.
13. SUPPLEMENTARY ESC MEASURES SHALL BE DIRECTED BY THE SUPERINTENDENT.

MAINTENANCE

1. INSPECT ALL CATCH DRAINS AT LEAST WEEKLY AND AFTER RUNOFF-PRODUCING STORM EVENTS AND REPAIR ANY SLUMPS, BANK DAMAGE. OR LOSS OF FREEBOARD.
2. CLOSELY INSPECT THE OUTER EDGES OF THE ROCK PROTECTION. ENSURE WATER ENTRY INTO THE ROCK -LINED AREA IS NOT CAUSING EROSION ALONG THE EDGE OF THE ROCK PROTECTION.
3. CAREFULLY CHECK THE STABILITY OF THE ROCK LOOKING FOR INDICATIONS OF PIPING, SCOUR HOLES, OR BANK FAILURES.
4. REPLACE OR REPOSITION THE SURFACE ROCK SUCH THAT THE DRAIN FUNCTIONS AS REQUIRED AND THE DRAIN'S REQUIRED HYDRAULIC CAPACITY IS NOT REDUCED.
5. REPLACE ANY DISPLACED ROCK WITH ROCK OF SIGNIFICANTLY (MINIMUM 110%) LARGER SIZE THAN THE DISPLACED ROCK.
6. ENSURE SEDIMENT IS NOT PARTIALLY BLOCKING THE DRAIN. WHERE NECESSARY, REMOVE ANY DEPOSITED MATERIAL TO ALLOW FREE DRAINAGE.
7. DISPOSE OD ANY SEDIMENT OF FILL IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.

I CERTIFY THAT THIS EROSION AND SEDIMENT CONTROL DRAWING HAS BEEN DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL EROSION CONTROL ASSOCIATION GUIDELINES.

TERRY CLARK (CPESC 6089)

APPROVAL ISSUE – NOT FOR CONSTRUCTION

DATE	REV	DESCRIPTION		
05/12/2022	A	ORIGINAL ISSUE	NVT	PB

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SCALE

ORIGINAL SHEET SIZE A1

CLIENT: MIRVAC QLD PTY LTD
PROJECT: EVERLEIGH PRECINCT 8 & 10 SUBDIVISION DEVELOPMENT
LOCATION: TEVIOT ROAD, GREENBANK
SHEET TITLE: EROSION AND SEDIMENT CONTROL NOTES - SHEET 1

JOB CODE: MIR-1010
SHEET NUMBER: C750
REV: A

ROLES AND RESPONSIBILITIES

ROLE	RESPONSIBILITY
PROJECT MANAGER	• OVERALL RESPONSIBILITY OF ESC IMPLEMENTATION • NOTIFY THE ENVIRONMENTAL MANAGER IMMEDIATELY OF ANY NON-COMPLIANCE WITH ESCP • ENSURE THE PROMPT IMPLEMENTATION OF MEASURES TO MITIGATE EROSION AND SEDIMENT GENERATION
SITE SUPERVISOR / FOREMEN	• MONITOR DAILY RAINFALL • NOTIFY ENVIRONMENTAL ADVISOR/CONSULTANT WHEN RUNOFF GENERATING RAINFALL OCCURS IN THE PREVIOUS 24 HOURS • MAINTAIN CURRENT RECORDS OF RAINFALL, STORAGE VOLUMES, WATER QUALITY, TREATMENT PRACTICES, DISCHARGE VOLUMES (AS APPROPRIATE) • INSTALLATION AND MAINTENANCE OF ESC
ENVIRONMENTAL MANAGER	• PROVIDE DESIGN INFORMATION AS REQUIRED • CONDUCT IN-SITU MONITORING (AS REQUIRED) • COLLECT AND SUBMIT SAMPLES TO LABORATORY (AS REQUIRED) • COLLATE RESULTS AND PREPARE REPORTS (AS REQUIRED) • CONDUCT SITE INSPECTIONS AN AUDITS (AS REQUIRED) • INSPECT ESC INSTALLATION AND MAINTENANCE • INSPECT OFFSITE IMPACTS AND MANAGEMENT • PROVIDE ADVICE REGARDING ESC SITE IMPROVEMENT (AS REQUIRED)
ALL PERSONNEL	• REPORT ANY DAMAGE TO ESC DEVICES AND ANY POTENTIAL OR ACTUAL ENVIRONMENTAL HARM IN LINE WITH DUTY TO NOTIFY UNDER THE REQUIREMENTS OF THE ENVIRONMENTAL PROTECTION ACT 1994

CORRECTIVE AND PREVENTATIVE ACTION

AN ENVIRONMENTAL INCIDENT WITH RESPECT TO THE ESCP IS DEFINED AS ANY OCCURRENCE WHERE SEDIMENT IS RELEASED FROM THE SITE, WHETHER CONTROLLED OR UNCONTROLLED, OR WHERE STORM WATER IS RELEASED (CONTROLLED) FROM SITE WHICH DOES NOT MEET THE WATER QUALITY REQUIREMENTS.

ALL INCIDENTS AND NON-CONFORMANCES ARE TO BE REPORTED, INVESTIGATED AND CORRECTED IN ACCORDANCE WITH THE ESCP TO ENSURE EFFECTIVE SOIL AND WATER QUALITY MANAGEMENT PRACTICES AT ALL TIMES.

BEST PRACTICE SITE MANAGEMENT REQUIRES ALL ESC MEASURES TO BE INSPECTED BY THE CONTRACTORS NOMINATED REPRESENTATIVE AT LEAST DAILY WHEN RAIN IS OCCURRING, WITHIN 24 HOURS PRIOR TO EXPECTED RAINFALL, AND WITHIN 18 HOURS OF A RAINFALL EVENT OF SUFFICIENT INTENSITY AND DURATION TO CAUSE ONSITE RUNOFF (IECA, 2008). SUCH INSPECTIONS MUST CHECK:

- DAILY SITE INSPECTIONS (DURING PERIODS OF RUNOFF PRODUCING RAINFALL)
  - ALL DRAINAGE, EROSION AND SEDIMENT CONTROL MEASURES
  - OCCURRENCES OF EXCESSIVE SEDIMENT DEPOSITION (WHETHER ON-SITE OR OFF-SITE)
  - ALL SITE DISCHARGE POINTS (INCLUDING DEWATERING ACTIVITIES AS APPROPRIATE)
- WEEKLY SITE INSPECTIONS (EVEN IF WORK IS NOT OCCURRING ON-SITE)
  - ALL DRAINAGE, EROSION AND SEDIMENT CONTROL MEASURES
  - OCCURRENCES OF EXCESSIVE SEDIMENT DEPOSITION (WHETHER ON-SITE OR OFF-SITE)
  - OCCURRENCES OF CONSTRUCTION MATERIALS, LITTER OR SEDIMENT PLACED, DEPOSITED, WASHED OR BLOWN FROM THE SITE, INCLUDING DEPOSITION BY VEHICULAR MOVEMENTS.
  - LITTER AND WASTE RECEPTORS
  - OIL, FUEL AND CHEMICALS STORAGE FACILITIES
- PRIOR TO ANTICIPATED RUNOFF PRODUCING RAINFALL
  - ALL DRAINAGE, EROSION AND SEDIMENT CONTROL MEASURES
  - ALL TEMPORARY FLOW DIVERSION AND DRAINAGE WORKS
- FOLLOWING RUNOFF PRODUCING RAINFALL
  - ALL DRAINAGE, EROSION AND SEDIMENT CONTROL MEASURES
  - OCCURRENCES OF EXCESSIVE SEDIMENT DEPOSITION (WHETHER ON-SITE OR OFF-SITE)
  - OCCURRENCES OF CONSTRUCTION MATERIALS, LITTER OR SEDIMENT PLACED, DEPOSITED, WASHED OR BLOWN FORM THE SITE, INCLUDING DEPOSITION BY VEHICULAR MOVEMENTS.

I CERTIFY THAT THIS EROSION AND SEDIMENT CONTROL DRAWING HAS BEEN DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL EROSION CONTROL ASSOCIATION GUIDELINES.

TERRY CLARK (CPESC 6089)

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SCALE
ORIGINAL SHEET SIZE A1

CLIENT: MIRVAC QLD PTY LTD
PROJECT: EVERLEIGH PRECINCT 8 & 10 SUBDIVISION DEVELOPMENT
LOCATION: TEVIOT ROAD, GREENBANK
SHEET TITLE: EROSION AND SEDIMENT CONTROL NOTES - SHEET 2

JOB CODE: MIR-1010
SHEET NUMBER: C751
REV: A

Attachment 9

Bushfire Hazard Assessment Management Plan

Bushfire Hazard Assessment and **Fire** Management Plan

Teviot Road, Greenbank

138-168 Teviot Road, 456-520 Greenbank Road & 96-102 Brightwell Street, Greenbank

Prepared for

Mirvac Qld

By

Rob Friend & Associates Pty ltd

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2016/768

Date: 2 June 2017

Queensland Government

November 2016

Document Management

Quality Assurance Statement				
Revision No.	Author	Status	Approved for Issue	
			Name	Date
01	Rob Friend	Draft	Rob Friend, Director, RF&A Pty. Ltd.	3 November 2016
02	Rob Friend	FINAL	Rob Friend, Director, RF&A Pty. Ltd.	4 November 2016

Photograph cover page – Photograph of a typical Acacia regrowth area covering much of the property.

Table of Contents

Introduction

This Bushfire Hazard Assessment and Fire Management Plan has been prepared for Mirvac Qld with respect to the development application over Area 1 and the immediate vicinity as identified in Figure 1 (see Appendix A). The footprint of Area 1 is located within Mirvac's Greenbank land holding as identified below:

- 96-102 Brightwell Street, Greenbank described as Lot 205 on RP845844 (15.9284 ha.),
- 138-168 Teviot Road, Greenbank, described as Lot 434 on RP845844 (400.8 ha), and
- 456-520 Greenbank Road, Greenbank, described as Lot 9 on S312355 (64.75 ha).

This fire management plan seeks to provide a number of bushfire management actions with regard to Area 1 of the development.

Site description

General location

The property is located to the east of Teviot Road, and north of Greenbank Road, Greenbank. To the east is a Council managed bushland park, Wearing Park, along with rural residential allotments primarily accessible from Greenhill Road, Greenbank. To the north are rural and rural residential allotments around Brightwell Street and Campbell Road. Rural properties also abut the site along its southern boundary and to the west is Teviot Road.

The property has had a history of cattle use prior to the settlement and transfer of land to Mirvac Qld. It is noted that balance areas of the property awaiting future development will continue to be managed for rural residential/agricultural purposes including the grazing of cattle.

Area 1 is located in the south-western portion of the site abutting Teviot Road and Greenbank Road and within an area which has been previous cleared for cattle agistment and as such within an area of low bushfire hazard.

Access to the development will be via a new road from the existing Teviot Road / Pub Lane, Greenbank intersection.

Topography

The landform within this area generally slopes from west to east.

Existing Vegetation

Area 1 is located within a portion of the site that is predominantly clear pastoral land. Such pastoral land is defined as the area to the south and west of the EPBC excision boundary as shown on Figure 2 of Appendix A.

The pastoral areas within the EPBC excision boundary can be classed as grassland, however depending on rainfall and the commencement of bulk earth works within the property, this grassland may grow to become a hazard.

The hazards presented by this grassland, if it is permitted to grow, prior to being developed maybe sufficient to involve the adjacent open forests or other bushlands on neighbouring properties as well as produce significant quantities of

smoke which could be a safety hazard for vehicles on the surrounding road network. Notwithstanding the above, the re-stocking of the property with beef grazing cattle supplemented by slashing (where required) will assist in managing the abovementioned hazards.

Development proposal

The proposal is to undertake the development of an area identified on the proposal plans as "Area 1". Area 1 is located in the western portion of 138-168 Teviot Road, Greenbank (Lot 434 on RP845844 covering an area of 400.8 hectares) (see Figure 1 of Appendix A).

Area 1 consists of two types of residential uses, Residential – Standard and Residential – Interface Lots – South. In addition to the two residential areas, Area 1 will also see part of the Regional Open space/Recreation area established in the eastern and lower portions of this area.

It is noted that the proposal will also see the establishment of a 100-metre-wide maintained buffer around the perimeter of the Area 1 footprint and as such no residential lot will be within 100 metres of any area of mapped potential bushfire hazard area.

All hazardous vegetation within the EPBC excision boundary will be cleared on commencement of site works in Area 1. This clearing is addressed in technical reporting by Saunders Havill Group in support of the Area 1 development application.

Bushfire Hazard Assessment

Existing

The Natural Hazards Risks and Resilience - Bushfire hazard area mapping provided by the State Planning Policy of April 2016, maps areas of High and Medium potential bushfire intensity over some of the area over which Area 1 will be developed (see Figure 2).

Post Clearing

The post clearing area within the EPBC excision boundary can be classified as grassland. Therefore, this area is considered to be an area of low bushfire risk.

However, areas of medium and high potential bushfire intensity remain outside the EPBC excision area after the EPBC excision area has been cleared. A 100m potential hazard buffer is required from such medium and high potential bushfire intensity areas. The post clearing medium and high potential bushfire intensity areas and buffers are shown on Figure 3 of Appendix A.

Figure 3 shows that all residential allotments in Area 1 are outside the potential hazard buffer and are therefore classified as having a low bushfire risk, or not in a bushfire prone area.

Bushfire Management Plan

No residential allotments in Area 1 are in a bushfire prone area in the post clearing scenario. Therefore, no residential allotments within Area 1 will be required to be assessed against the Australian Standard Building in a Bushfire Prone Area, AS3959-2009 once such clearing works are complete.

The following land management specifications have been made to ensure the management of the area within the EPBC excision boundary is such that this area remains as an area of low bushfire hazard.

1. The 100-metre-wide buffer is to be maintained by slashing at regular intervals such that the vegetation within the buffer is maintained at all times, less than 200 mm in height.
2. A 6-metre-wide fire trail is to be established along the outer edge of the 100-metre-wide buffer and setback from that edge by a maximum of 10 metres. This space allows for effective zone within which to conduct any bushfire suppression operations by Emergency Services if and when required.
3. The fire trail is to have access for Emergency Service and maintenance contractors from: -
    a. Teviot Road via a locked gate
    b. Greenbank Road via a locked gate
    c. At least four points from the internal road network including from the end of the main boulevard road. This point is to ensure access is directly available to the north and east of this dead end of the boulevard roadway.
4. In the event of a bushfire commencing within the properties owned by Mirvac Qld, the Property Caretaker is to ensure the locked gates which provide access from Teviot and Greenbank Roads are unlocked. However, a key is to be provided to the Greenbank Rural Fire Brigade for their purpose and to enable access at all times for any purpose involving the management of bushfire within the whole property.

Appendix A – Figures

Figure 1 – Overall Land use plan including Area 1

Legend

- SITE BOUNDARY
- CADASTRE BOUNDARIES
- AREA 1 BOUNDARY
- GREATER FLAGSTONE UDA BOUNDARY
- EXISTING EASEMENTS
- RAIL CORRIDOR
- POTENTIAL TRAIN STATION [1]
- TRUNK CONNECTOR ROAD NETWORK
- NEIGHBOURHOOD CONNECTOR ROAD NETWORK
- RESIDENTIAL ACCESS STREETS

Land Uses

- RESIDENTIAL - STANDARD LOTS
- RESIDENTIAL - INTERFACE LOTS - NORTH
- RESIDENTIAL - INTERFACE LOTS - SOUTH
- NEIGHBOURHOOD CENTRE
- DISTRICT CENTRE (EXTERNAL) [1]
- COMBINED REGIONAL RECREATION AND REGIONAL SPORTS PARK
- INDICATIVE LOCATIONS OF MAJOR LINEAR PARKS
- CONSERVATION PARKLAND
- POTENTIAL ECO LOT PRECINCT (SUBJECT TO FURTHER ASSESSMENT)
- INDICATIVE LOCATIONS OF NEIGHBOURHOOD PARKS
- INDICATIVE LOCATION OF STATE PRIMARY SCHOOL
- COMMUNITY FACILITY

1 Location as nominated in the Greater Flagstone PDA Development Scheme. These items are outside the area controlled by the applicant and are subject to approval and delivery by others.

Note: Locations of Context Plan features are indicative and subject to detailed design.

URBIS

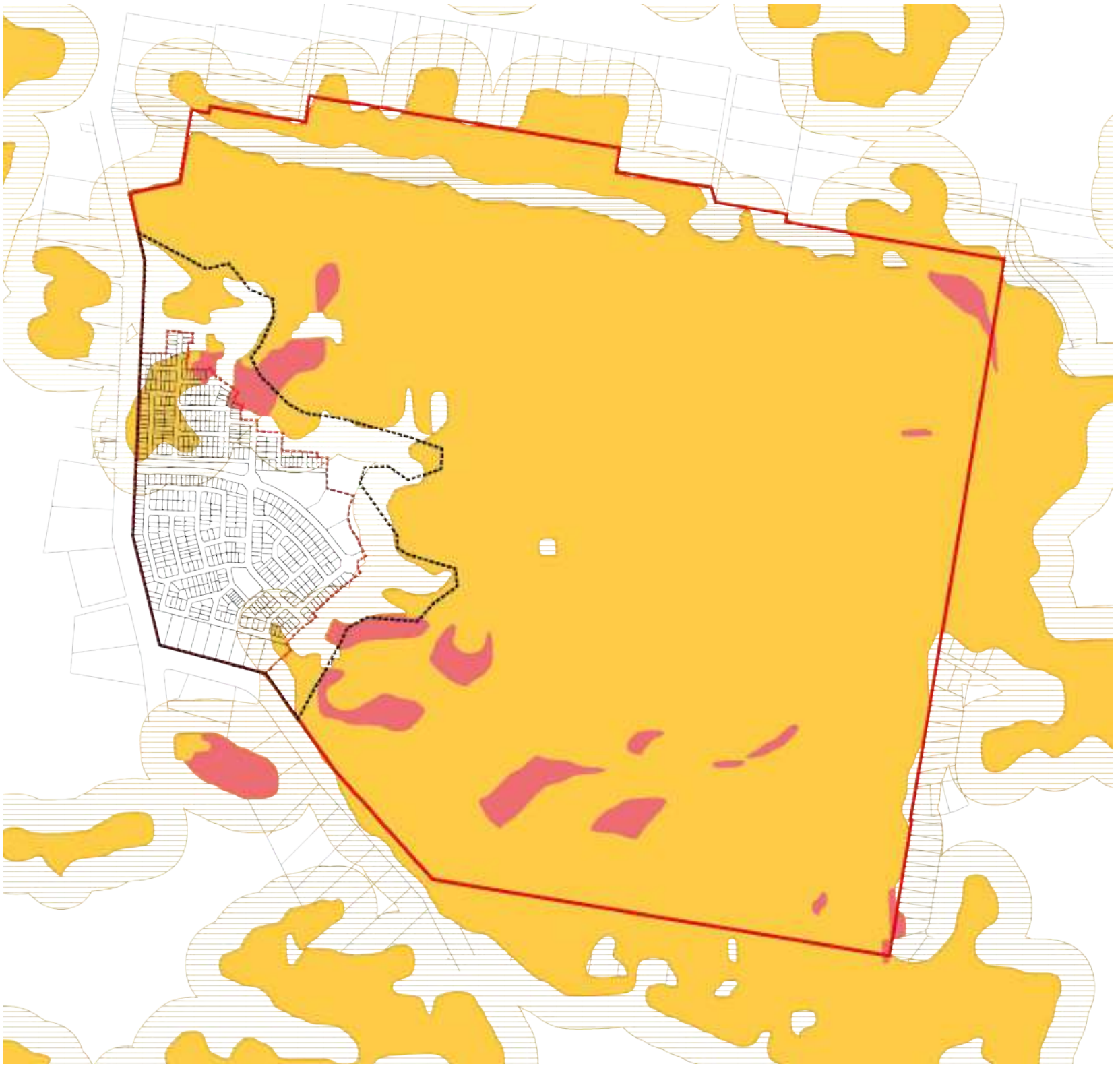
GREENBANK
LAND USE PLAN WITH AREA 1

1:15,000 @ A3

0 200 400 600 800

DATE: 02.11.2016
JOB NO: ND1309
DWG NO: LU:02
REV: 5

Figure 2 – Bushfire hazard plan – Area 1 – Pre-clearing



Legend

- SITE BOUNDARY
- CADASTRE BOUNDARIES
- AREA 1 BOUNDARY
- EPBC EXCISION BOUNDARY
- HIGH POTENTIAL BUSHFIRE INTENSITY
- MEDIUM POTENTIAL BUSHFIRE INTENSITY
- POTENTIAL IMPACT BUFFER (100M)

URBIS

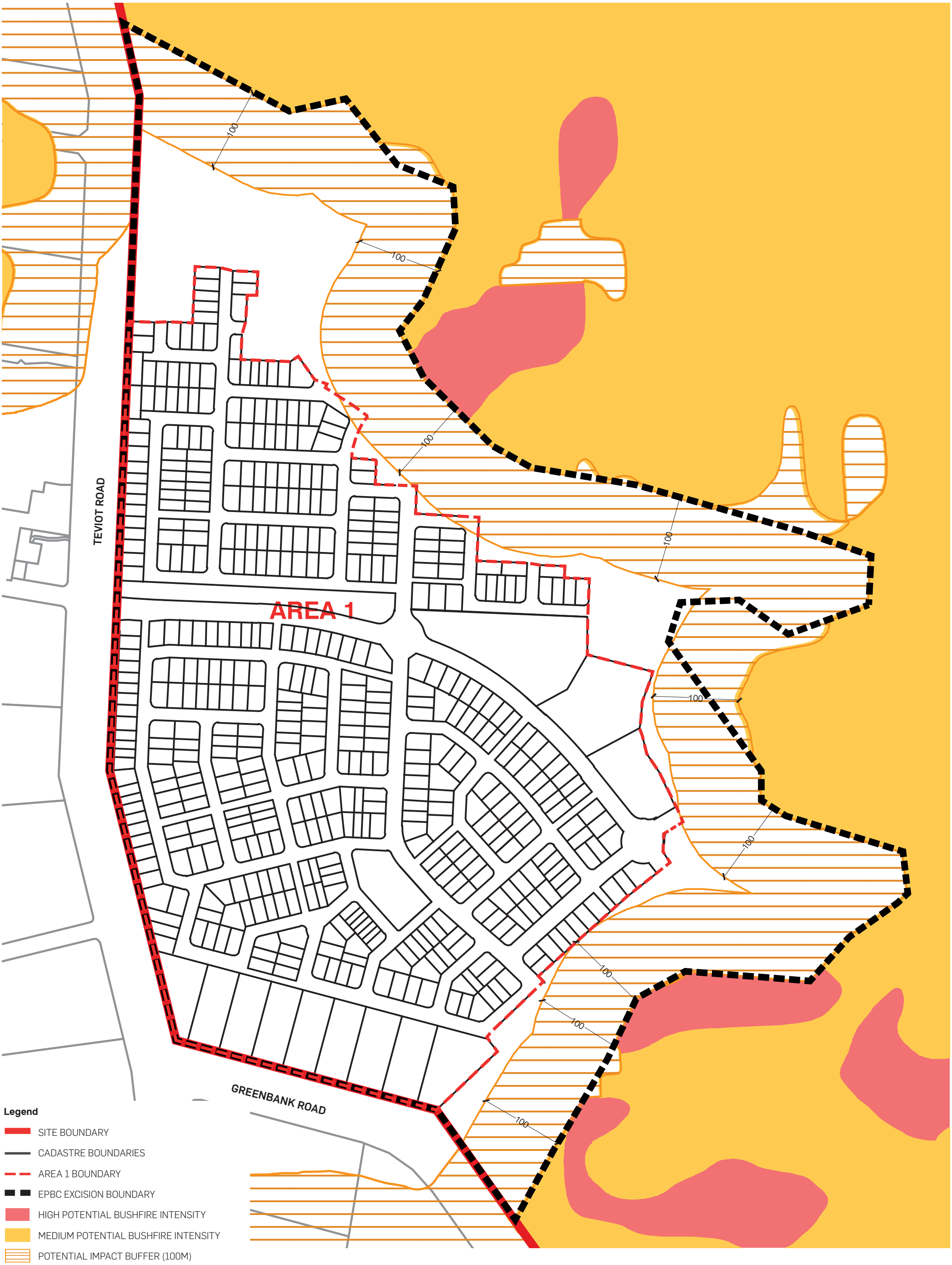
GREENBANK
BUSHFIRE HAZARD PLAN - AREA 1 - EXISTING

1:15,000 @ A3

0 200 400 600 800

DATE: 03.11.2016
JOB NO: ND1309
DWG NO: BF:01
REV: -

Figure 3 - Bushfire hazard plan – Area 1 – Post-clearing land within the EPBC excision boundary



URBIS

GREENBANK

BUSHFIRE HAZARD PLAN - AREA 1 - POST CLEARING

1:4,000 @ A3

0 50 100 150 200

DATE: 03.11.2016
JOB NO: ND1309
DWG NO: BF:03
REV: 1

Attachment 10

Site/Project Induction

shadforth

Project Induction Form

Inductee Name		Project	
Position			

Coronavirus COVID-19 Questions:	Y	N
I declare that I have not returned from any overseas country in the last 14 days.	☐	☐
I declare that in the last 14 days I have not been in contact with a confirmed case of Covid-19 and do not have any symptoms related to COVID-19.	☐	☐
I agree that Shadforth COVID -19 preventative measures have been explained to me and I will always adhere to these measures.	☐	☐

The Following site requirements have been explained to me:	Y	N	NA
Onsite Communication Procedures – UHF Channels on this site -	☐	☐	☐
Daily Pre-start Meeting, Sign in Requirements, Toolbox Talks and Working Hours	☐	☐	☐
VMP, Haul Roads and Parking procedures onsite	☐	☐	☐
Emergency and First Aid Procedures and Locations	☐	☐	☐
Incident, Injury and Hazard procedures and reporting requirements	☐	☐	☐
Site Amenities (Office, Crib room, Toilets, Clean Water)	☐	☐	☐
Site Security Procedures	☐	☐	☐
Safe Work Method Statements- Reviewing and Understanding prior to works	☐	☐	☐
PPE Requirements	☐	☐	☐
High Risk Activities – Procedures and Permits (Confined Space, Hot Works, Excavation and Maintenance)	☐	☐	☐
Plant, Vehicles, Equipment and Machinery (VOC, pre-starts, minimum requirements, maintenance procedure, mobile phones, seat-belts, quick-hitches, vehicle recovery)	☐	☐	☐
Site Specific Hazards and No-Go Zones	☐	☐	☐
Site Specific Environmental Issues, Waste and Stormwater Management and Erosion and Sediment Controls	☐	☐	☐
Site Specific Cultural Heritage	☐	☐	☐

Inductee Acknowledgment			
I acknowledge that I have completed the Online General Workplace Induction and HIRAC training paper, along with having participated in the project specific induction and confirm that I understand the requirements, procedures and standards expected of me and agree to work safely and comply with the site's standards and procedures at all times and all information provided Is true and correct.			
Signature		Date	
Employer		Phone Number	

Shadforth Representative to Complete this Section

Shadforth Representative - Verifications	Y	N	NA
Online General Workplace induction and Construction Card- compliant and verified on Rapid	☐	☐	☐
High Risk Licences, Tickets and VOC's uploaded and verified on Rapid	☐	☐	☐
Person has the correct PPE for works being carried out	☐	☐	☐
Site Specific VOC completed	☐	☐	☐

Shadforth Representative Acknowledgment					
I confirm that I am authorised by Shadforth, to provide this induction and I have explained in detail, the items outlined above. I have checked/verified the inductee has completed the induction requirements to enter/work on this project site.					
Name		**Signature**		**Date**	

Appendix C

Post Wildlife Management Report – Precincts 8 and 10

300-SCC2301-D

POST WILDLIFE MANAGEMENT REPORT

PRECINT 8 & 10 EVERLEIGH GREENBANK QUEENSLAND

Prepared for client:
SHADFORTH CIVIL CONTRACTORS

Report delivered:
MARCH 2023

AWEC
ENVIRONMENTAL CONSULTANTS

Document Prepared by:

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Revision History

Rev. #	Issue Date	Revision Details	Prepared By	Reviewed By	Approved By
0	MAR 2023	For Use	Erin Monaghan	Yolande Venter	Yolande Venter
1					
2					

Document Approval

Approved:	Name:	Signature:	Date:
Company Director	Yolande Venter		MAR 2023

AWEC ENVIRONMENTAL CONSULTANTS

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1 INTRODUCTION

1.1 Background

Australia Wide Environmental Consultants (AWEC) were commissioned by Shadforth Civil Contractors to manage fauna during the clearing of Precincts 8 and 10, Everleigh, Greenbank, Queensland.

This site is approximately 57.2 ha and is located in Logan City Council on Lots 9004 SP327213 and 9003 SP331503. The clearing footprint includes ~28.4 ha of mapped regional ecosystems, which are also considered essential habitat for the glossy black-cockatoo and koala (FIGURE 1).

1.2 Ecologist and Qualifications

The AWEC nominated Ecologist is Yolande Venter who is a degree qualified ecologist/environmental coordinator with over 15 years of field experience within the ecology and environmental sectors.

1.3 Scope

A. See TABLE 1 for a non-exhaustive list of the statutory requirements and guidelines this project adheres to.
B. Wildlife Management Plan which explains the management measures used to control the risk to native fauna during these works.
C. Results from site survey inspecting for fauna and habitat features.

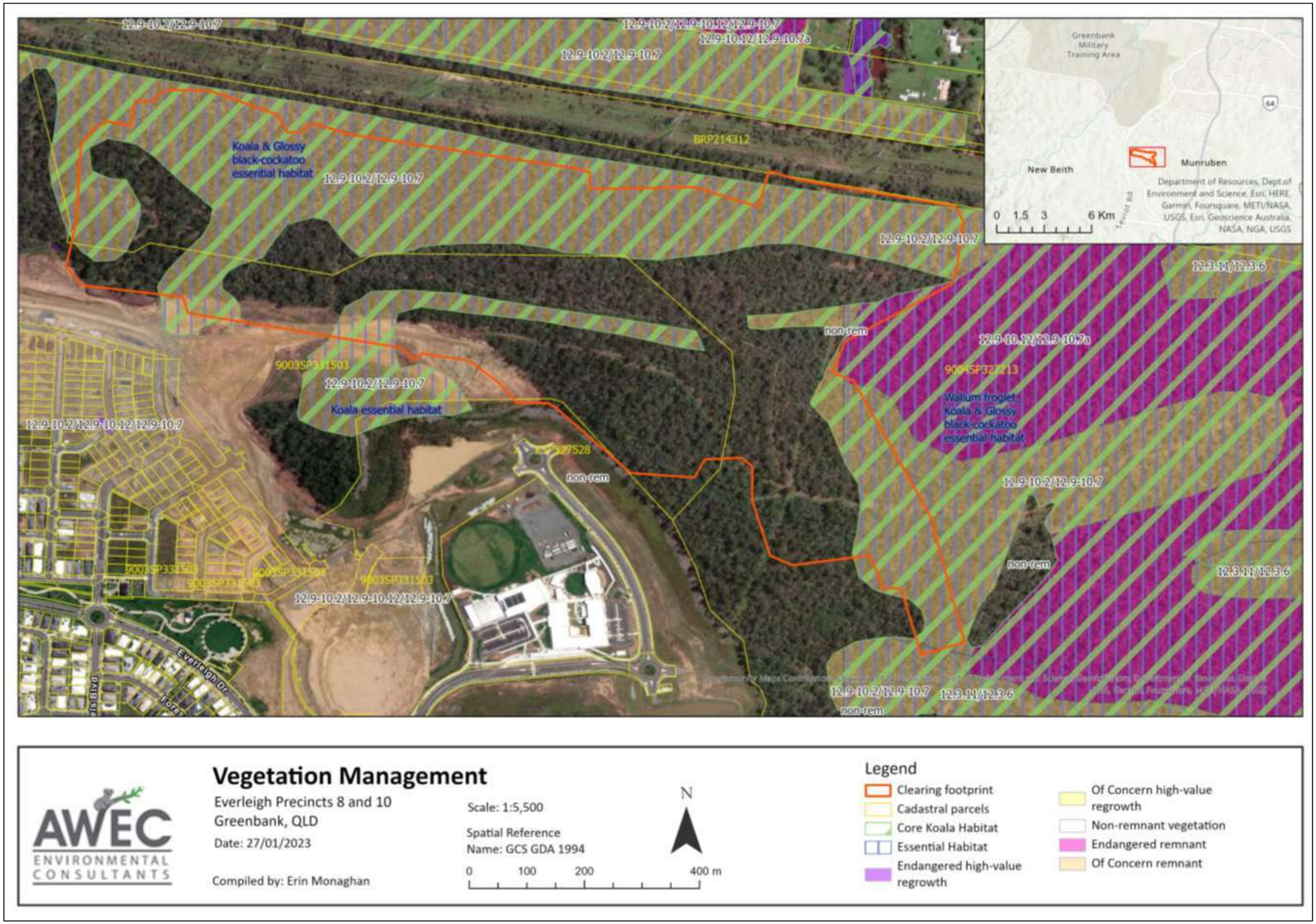

FIGURE 1 – SITE CONTEXT

2 STATUTORY REQUIREMENTS AND GUIDELINES

See TABLE 1 below for the relevant statutory requirements and guidelines.

TABLE 1– STATUTORY REQUIREMENTS AND GUIDELINES

Legislation	Purpose of Legislation	Impact on Project personnel
Environmental Protection Regulation 2019	Gives legislative support to various national guidelines, plans and Australian Standards. This regulation also outlines requirements for the management of fauna and flora.	To abide by the regulations within the DES.
Environmental Protection and Biodiversity Conservation Act 1999	The EPBC Act 1999 focuses Australian Government interests on the protection of matters of national environmental significance, with the states and territories having responsibility for matters of state and local significance.	To comply with the relevant sections of the Act that relate to matters of national significance which are present in the vicinity of the project works.
Nature Conservation and Other Legislation Amendment Act 2016	The Act provides for the legislative protection of Queensland's threatended biota. It is aligned with the IUCN redlist which categorises biota into their current status in the wild.	To comply with the relevant sections of the Act and regulations and the Environmental Authority administered by the DES.
Nature Conservation (Wildlife) Regulation 2006	This Regulation lists the plants and animals considered presumed extinct, endangered, vulnerable, rare, common, international, and prohibited. It discusses their significance and states the declared management intent and the principles to be observed in any taking and use for each group.	List those animals that may be potentially found on sites being developed as part of the project and limitations for management.
Nature Conservation (Wildlife Management) Regulation 2006	This Regulation provides for the management of wildlife (including taking, keeping and using wildlife including protected plants).	Provides guidance for the management of wildlife on site, particularly in relation to the interference with native wildlife during the clearing process.
Nature Conservation and Other Legislation (Koala Protection) Amendment Regulation 2020	Guideline for identifying and managing Koala habitat	Provides guidance on where Koala spotter's and Endorsed FSC are legally required and how they are to manage Koala habitat

Legislation	Purpose of Legislation	Impact on Project personnel
Animal Care and Protection Act 2001	Animal Welfare	Outlines that animal ethics approval is needed for research, survey and/or monitoring involving vertebrates, where activities such as trapping, census leading to disturbance of animals (such as spotlighting or call play-back), abnormal interruption of behaviour or marking/tagging are involved.
Australian code for the care and use of animals for scientific purposes 8th edition (2013)	Ethical framwork for animals used for scientific purposes	Governing principles set out in the Code provide guidance for investigators, teachers, institiutions, animal ethics committees and all the people involved in the care and use of animals for scientific purposes.
Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (2018)	Guidelines for Fauna Surveys	Detailed guidelines on designing a survey, the different survey methadologies and the ethical considerations that need to be made for each methadology.
Queensland Hygiene protocol for handling amphibians	Protocol for handling amphibian species	Outlines how to handle and manage amphibian species to prevent the spread of diseases among specimens and colonies.
Code of Practice- Care and rehabilitation of orphaned, sick or injured protected animals by wildlife carers(2013)	Provides guidelines on the rehabilitation and care of wildlife	Detailed guidelines, in regards to hygiene, housing, capture and release, euthanasia and relevant legistation
Seqwater- Guideline- Fish Stranding and Salvage	The purpose of this guidance document is to ensure native fish recovery operations are conducted in a timely and safe manner to minimise or eliminate loss of fish from stranding.	Guideline on managing aquatic fauna during dewatering works.

Legislation	Purpose of Legislation	Impact on Project personnel
Fisheries Act 1994	The main purpose of the *Fisheries* Act 1994 is to provide for the use, conservation and enhancement of the community's fisheries resources and fish habitats in a way that seeks to apply the principles of ecologically sustainable development.	Outlines fish habitats and fish movement and migration (regulation of waterway barriers). Guidelines on commercial, recreational and indigenous fishing.
Biosecurity Act 2014	The *Biosecurity Act 2014* provides a framework for an effective biosecurity system for Queensland, to ensure the safety and quality of agricultural inputs, and to align responses to biosecurity risks in the state with national and international obligations.	Under the *Biosecurity Act 2014*, pest species must not be kept, fed, given away, sold, or released into the environment without a permit. Under the *Biosecurity Act 2014*, everyone has a general biosecurity obligation (GBO) to take reasonable and practical steps to minimise the risks associated with restricted plants and animals.
DAF Guidelines for Fish Salvage, 2018	Purpose of these guidelines is to minimise the risk to aquatic fauna during dewatering works.	These guidelines provide detailed instructions for dewatering waterbodies and slavaging aquatic fauna.

Australia Wide Environmental Consultants (AWEC) holds a current DES rehabilitation permit (Permit #WA0027769), with an extended authority issued by the Department of Environment and Science specifying that the holder may take, keep, or use an animal whose habitat is about to be destroyed by human activity.

3 WILDLIFE HABITAT MANAGEMENT PLAN

A suitably qualified and licenced fauna spotter catcher (FSC) was on site 7th-10th, 13th, 14th, 22nd and 27th of February and 7th of March 2023.

To minimise impacts upon local fauna the following methods (as outlined in the Wildlife and Habitat Mitigation Plan) were adhered to:

3.1 Prior to Work Commencing

A quick inspection of the site prior to any construction activities commencing every morning. The purpose of this inspection is to check for any fauna (in particular Koalas) are present within the next area to be cleared, if any habitat features or nesting sites are located within the site and that their clearly marked out and that their planned mitigation measures have been discussed with the clearing crew.

3.2 During Disturbance Works

During clearing works a spotter/catcher is to be present to manage the risk to native fauna within the site. The spotter/catcher will ensure that significant habitat features and breeding sites are cleared in a manner that best mitigates the risk to fauna potentially in-habiting them.

The spotter-catcher will also manage the direction of clearing to ensure that fauna is directed into a suitable location.

3.3 Fauna Capture

One of the roles of the fauna spotter/catcher on site is to remove any fauna within the disturbance site. Where practical animals are to be moved out of an area proposed for disturbance before clearing/stripping works commence.

Where there is a risk to native fauna a spotter/catcher is to be present during clearing works and watch out for any fauna, fauna signs and significant habitat features. When an animal is sighted, and it is deemed safe to approach the animal the capture procedure listed below will be adhered to.

This does not apply to the Endangered Koala which cannot be captures, handled, stored or removed from site and must be managed in accordance with the Nature Conservation and Other Legislation (Koala Protection) Amendment Regulation 2020, measures which are featured in SECTION 3.14.

3.4 Fauna Identification

It is important that correct identification (Fauna/Flora) is made for record keeping purposes. If a sighted or captured/collected flora or fauna specimen can't be identified on site an ecologist is to be contacted who will direct the Spotter/Catcher on site on the types of images they require to correctly identify the specimen.

3.5 Fauna Handling Equipment

Various methods can be used to safely capture native wildlife in the field, capturing native wildlife does not only pose a risk to the handler's personal safety but could also cause unnecessary stress and or injury to the animal involved. Before capturing any wildlife plan your capture, handle the animal as per training and have the correct equipment available.

3.6 Fauna Handling Procedure

Capture myopathy is a disease associated with the capture or handling of many species of mammals and birds and minimising the stress on any captured fauna is a priority. Emphasis should be on prevention as treatment of wild fauna has a very low success rate.

The following principal should be applied-

- Remove stressors if possible. Physically separating the animal from the stressors, e.g., by blindfolding the animal, placing it in a darkened area, or moving other activities away from the holding area.
- Treat shock if present. Ensure adequate ventilation, replace fluids, correct acidosis, and keep the animal warm.
- Restriction of free movement as a result of muscle injury means a careful watch must be kept on fluid balance. Many animals with capture myopathy will suffer from exposure and /I one of the common features in hot environments is dehydration. Balanced electrolyte replacers may be needed.
- If possible, restrict movement of the animal to reduce the chance of rupturing necrotic muscles.
- Minimizing duration of exposure to stressors. High stress situations include frequent handling, repeated blood sampling, or being left in exposed conditions (such as in a trap enclosure without natural cover)

Species specific procedures:

3.6.1 Possums

To capture possums on the ground, it is best practice to grab the tail and the back of the neck. This will ensure the best grip on the animal and ensures that the handler is not in danger of being scratched or bitten, where practical the spotter/catcher should wear the appropriate gloves. Once the possum is restrained, it should be placed into an appropriately sized calico bag or pet carrier.

Where the presence of a possum is confirmed within a drey or hollow using an EWP or inspection camera, the spotter/catcher will deem which method is practical and will gain the best outcome for the in-habitant. Potential methods include removal using an EWP where practical or soft felling the tree. As possums are predominantly nocturnal, they should be released after sunset.

3.6.2 Gliders

To capture gliders on the ground it is best practice to grab the tail and the back of the neck. This will ensure the beast grip on the animal and ensures that staff are in no danger of being