Ballarat Line Upgrade

MELBOURNE METRO
RAIL AUTHORITY

BLU-AJM-PWAA-RP-NN-000197
ECOLOGY ASSESSMENT - SECONDARY CONSTRUCTION AREAS

DATE 27 JUNE 2017

REVISION P3

AJM
Joint Venture

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Appendices

Glossary

AJM JV: Aurecon Jacobs Mott MacDonald Joint Venture

BCS: Biodiversity Conservation Strategy

DELWP: Department of Environment, Land, Water and Planning

EHP: Ecology and Heritage Partners

EVC: Ecological Vegetation Class

MNES: Matters of National Environmental Significance

MMRA: Melbourne Metro Rail Authority

MSA: Melbourne Strategic Assessment

NVPP: Native Vegetation Precinct Plan

PSP: Precinct Structure Plan

SCA: Secondary construction area

1 Introduction

1.1 Project Information

The Ballarat Line Upgrade comprises a series of upgrades to the existing Ballarat rail line, involving duplication of track, and installation of passing loops, station upgrades and new stabling facilities. The proposed works are located between Deer Park West, in Melbourne's outer western suburbs and Warrenheip, just outside Ballarat.

Upon completion, the Ballarat Line Upgrade will increase service provision on the Ballarat rail line (with two additional services in the morning and afternoon peaks), improve punctuality to target levels and provide capacity for a 40 minute all day, off-peak frequency along the corridor (west of Bacchus Marsh) increasing from the current 60 minute frequency.

In October 2016, the Victorian Government appointed the Melbourne Metro Rail Authority (MMRA) as the delivery agency for the Ballarat Line Upgrade. Pending the timely provision of planning and environmental approvals, major construction works are expected to start in 2018 with early works starting in the fourth quarter of 2017. The project is expected to be completed in 2019.

1.2 Background

As of May 2017, ecological assessment of the project area has been undertaken by Ecology and Heritage Partners (EHP), '*Existing Ecological Conditions Report, Ballarat Line Upgrade'* (EHP 2017, covering the majority of the project area) and AJM ecologists, '*Ballarat Line Upgrade – Ecology Assessment Additional Areas'* (AJM JV 2017). The scope of these investigations to date has included desktop assessment and field surveys for each of the project elements.

Secondary construction areas (SCAs) are required to support safe construction of the project in a live rail environment. Subsequent to May 2017, project engineers identified 65 potential SCAs within and adjacent to the defined project area. On the 31 May 2017, a workshop was held with project engineers, planners, project managers and AJM JV ecologists to shortlist the most suitable sites for consideration as SCAs. A ranking and preliminary elimination process was implemented during this workshop which resulted in a reduced shortlist of SCAs to be further considered for inclusion in the project area. SCAs in this shortlist that had not been addressed by the previous ecological assessments are the subject of this report.

1.3 Scope of this report

The aim of this AJMJV assessment was to identify ecological values within SCAs not already covered by previous assessments. The results of the assessment will inform final site selection for SCAs and approval requirements.

In line with ecological assessments completed to date, the objectives of this report are to:

- Determine the presence (or likelihood) of Matters of National Environmental Significance (MNES) within the 26 shortlisted SCAs not previously assessed;

- Determine the type, quality and extent of native vegetation present (as Ecological Vegetation Class – EVC) within the SCAs in accordance with the Vegetation Quality Assessment Manual (DSE, 2004);
- Identify and map constraints, including noxious weeds, and areas of environmental value to be avoided; and
- Outline the requirement for further assessments and approvals in relation to impacts to environmental values.

1.4 Study Area

The Ballarat Line Upgrade as shown in Figure 1.1 and in Appendix A is broken into five 'project elements' as confirmed by MMRA on 1 May 2017. These five project element areas are located within, and at some locations adjacent to, the VicTrack rail corridor. Together these areas comprise the 'project area', which has been the subject of the ecological assessments completed prior to May 2017.

SCAs that were shortlisted during the 31 May 2017 workshop, and identified as occurring partially or wholly outside of the previously defined project area, comprise the study area for this ecological assessment.

Details of the scope of work for the new railway and station upgrades and use and locations of the SCAs along the five elements are provided in Table 1-1.

TABLE 1-1 BALLARAT LINE UPGRADE SCOPE OF WORK BY ELEMENT, AND ASSOCIATED SHORTLISTED SCAS FOR CONSIDERATION

ELEMENT	SCOPE OF WORK FOR THE NEW RAILWAY AND STATION UPGRADES	USE AND LOCATION OF THE SECONDARY CONSTRUCTION AREAS[1]
Element 1: Deer Park West and Melton	• Duplication of approximately 18 km of rail line between Deer Park West and to the west of Melton Station. • Rebuilding of platforms at Rockbank station, provision of a pedestrian link between platforms, and a new sealed car park. • Site preparation works for a future station at Toolern, including raised tracks and pedestrian infrastructure.	• #DM-01 Laydown area (0.47 ha) • #DM-02 Access (0.20 ha) • #DM-03 Laydown (1.79 ha) • #DM-04: Rock crushing site (2.52 ha) • #DM-05 Laydown area for stock pile (0.23 ha) • #DM-06 Laydown area (0.43 ha) • #DM-07: Laydown and site office compound (9.89 ha) • #DM-08: Laydown and site office prior to carpark being built (2.61 ha) • #DM-09: Laydown and site office compound (0.72 ha) • #DM-11: Laydown and site office compound (5.30 ha) • #DM-12: Laydown (0.87 ha) • #DM-13 Laydown area across Toolern Creek (0.15 ha) • #DM-14 Laydown area (0.39 ha) • #DM-15 Turnout preassembly pad (0.23 ha) • #DM-18 Laydown area and stabling facilities (0.54 ha) • #DM-19 Laydown area (0.39 ha) • #DM-20 Laydown area (0.07 ha) • #DM-21 Access (0.01 ha) • #DM-22 Laydown area (0.77 ha) • #DM-23 Turnout preassembly pad (0.20 ha)
Element 2: Bacchus Marsh	• Removal of overnight stabling facilities at	• #BM01 Construction pad for turnout preassembly (0.15 ha)

[1] Areas identified are indicative only.

ELEMENT	SCOPE OF WORK FOR THE NEW RAILWAY AND STATION UPGRADES	USE AND LOCATION OF THE SECONDARY CONSTRUCTION AREAS[1]
Second Platform / Maddingley Stabling	Bacchus Marsh station. • Construction of a second platform at Bacchus Marsh station, providing a pedestrian link between original and new platforms, and sealed car parking areas. • Construction of new train stabling and driver facilities at Kerrs Road, Maddingley.	• #BM02 Construction pad for turnout preassembly (0.15 ha) • #BM03 Site compound and high value stock storage (0.65 ha) • #BM04 Laydown area (0.18 ha) • #BM05 Turnout preassembly pad (0.18 ha) • #BM06 Stabling Amenities and temporary site compound (0.27 ha) • #BM07 Stabling Amenities and temporary site compound (1.64 ha) • #BM08 Laydown area (0.26 ha) • #BM09 Stabling amenities and temporary site compound (1.31 ha)
Element 3: Ballan Loop	• Construct approximately 5km of crossing loop situated either » from Ingliston Road to approximately 2km west of Ballan Station ; OR » from Ballan Station to just west of the East Moorabool River crossing • Build a second platform at Ballan station and new pedestrian link between the new and original platform.	• #BP02 Laydown area and turnout preassembly pad (0.17 ha) • #BP01 Laydown area(0.18 ha) • #BP03 Potential bridge construction area on former track formation (1.93 ha) • #BP04 Turnout preassembly area, site compound, high value shock items and bulk materials (1.43 ha) • #BP05 Station construction laydown area (0.20 ha) • #BP07 Laydown area (0.09 ha) • #BP06 Laydown area (0.09 ha) • #BP08 Laydown area (0.21 ha) • #BP09 Laydown area (0.27 ha) • #BP10 Laydown area (0.19 ha) • #BP11 Laydown area (1.02 ha) • #BP12 New haul road (1.04 ha) • #BP13 Bulk material laydown road access (0.56 ha)
Element 4: Spreadeagle (new Bungaree) Loop	• Construct a new 4 km crossing loop between West Moorabool River and Old Melbourne Road • Widen two roads over rail bridges at Peerewerrh and Spreadeagle Roads	• #SP01 Turnout preassembly pad (0.33 ha) • #SP02 Laydown area (1.56 ha) • #SP03 New Haul Road (0.97 ha) • #SP04 Laydown area (0.33 ha) • #SP05 Construction and bulk material laydown (0.31 ha) • #SP06 Turnout preassembly pad (0.33 ha) • #SP07 Turnout preassembly pad (0.24 ha)
Element 5: Warrenheip Duplication	• Duplicate approximately 3 km of rail line east of Warrenheip Road, Warrenheip.	• #WD01 Laydown area (0.27 ha) • #WD02 Turnout area preassembly pad (0.75 ha) • #WD03 New haul road for future maintenance access (3.65 ha) • #WD04 Construction and bulk material laydown (1.05 ha) • #WD05 Culvert construction laydown area (1.05 ha) • #WD06 Former Warrenheip yard site compound and bulk storage yard (2.37 ha)

1.5 Applicability of Strategic Documents

From Deer Park West to Toolern Creek in Melton South, the project is located within the Melbourne Strategic Assessment (MSA) area. Within this MSA area, a portion of the Ballarat Line Upgrade is subject to the Biodiversity Conservation Strategy (BCS) (DEPI, 2013a), and a portion is subject to the Toolern Precinct Structure Plan (MPA, 2011). The applicability of strategic documents to the SCAs is summarised in Table 1-2. A brief description of the strategic documents is provided in Section 1.5.1 and Section 1.5.2.

TABLE 1-2 APPLICABILITY OF STRATEGIC DOCUMENTS WITHIN THE PROJECT AREA

SECONDARY CONSTRUCTION AREA	APPLICABILITY OF THE MELBOURNE STRATEGIC ASSESSMENT (MSA)	REFERENCE DOCUMENT TO DETERMINE ECOLOGY ASSESSMENT REQUIREMENTS
Element 1a DM-01 to DM-08	Within MSA area (no approved Precinct Structure Plan applies)	Biodiversity Conservation Strategy (DEPI, 2013a)
Element 1b DM-11, DM-12 (Partial), DM-13 (Partial)	Within MSA area (Toolern Precinct Structure Plan (MPA, 2011))	Native Vegetation Precinct Plan (MPA, 2011), MSA Prescriptions (DSE, 2010a,b,c) *Permitted Clearing of Native Vegetation – Biodiversity Assessment Guidelines 2013* (DEPI, 2013) applies to vegetation marked as 'to be retained' within the NVPP.
Element 1c DM-09; DM-12 (Partial), DM-13 (Partial); DM-14 to DM-21	Outside MSA area	Permitted Clearing of Native Vegetation – Biodiversity Assessment Guidelines 2013 (DEPI, 2013b)
Element 2: BM-01 to BM-09		
Element 3: BP-01 to BP-13		
Element 4: SP-01 to SP-07		
Element 5: WD-01 to WD-06		

1.5.1 IMPLICATIONS OF THE MELBOURNE STRATEGIC ASSESSMENT

The MSA is the result of an agreement between the Victorian and Commonwealth Environment Departments to simplify the approvals pathway for developments within the expanded Urban Growth Boundary introduced in 2010 (DSE, 2009a). Under this MSA, assessment of the majority of biodiversity values listed at a state and commonwealth level within the area has been completed and the required mitigation measures and offsets for impacts that may be proposed within the area are pre-defined.

Relevant EPBC listed species and communities that have been assessed under the MSA are:

- The threatened communities Native Temperate Grasslands of the Victorian Volcanic Plain (equivalent to Plains Grassland EVC and FFG Listed Western (Basalt) Plains Grasslands Community) and Grassy

Eucalypt Woodlands of the Victorian Volcanic Plains (equivalent to Plains Grassy Woodland EVC and FFG Listed Western Basalt Plains (River Red Gum) Grassy Woodland Floristic Community);

- Threatened fauna species including Golden Sun Moth and Growling Grass Frog; and
- Threatened flora species including Matted Flax-lily, Large-headed Fireweed and Spiny Rice-flower.

The MSA determined the extent of native vegetation and threatened species habitat within the subject area. Areas with high ecological values have been identified as Conservation Areas to be retained in the BCS(DEPI 2013a) whilst important habitats for Growling Grass Frog and Golden Sun Moth have been identified under separate sub-regional strategies endorsed by Department of Environment, Land, Water and Planning (DELWP) and Commonwealth Department of Environment and Energy (DoEE).

Offsets and habitat compensation fees associated with the proposed removal of native vegetation and significant species habitat under the BCS are calculated based on the offset requirements outlined in the various State Government strategies. These strategies include the BCS (DEPI, 2013a), Sub-regional Species Strategy for the Growling Grass Frog (DEPI, 2013c), and Sub-Regional Species Strategy for the Golden Sun Moth (DEPI, 2013d).

1.5.2 PRECINCT STRUCTURE PLANS

Precinct Structure Plans (PSPs) are high level master plans prepared by the Growth Areas Authority. The Toolern PSP was approved in 2011 and is one of the existing 28 urban precincts within the 2005 Urban Growth Boundary that is subject to the MSA. This area is not subject to the BCS, but rather actions within the Toolern PSP Area must take place in accordance the prescriptions. Prescriptions relevant to the Ballarat Line Upgrade are as follows:

- *Final Prescription for Natural Temperate Grassland of the Victorian Volcanic Plain* (DSE, 2010a)
- *Final Prescription for Spiny Rice-flower* (DSE, 2010b)
- *Final Prescription for Grassy Eucalypt Woodland of the Victorian Volcanic Plain* (DSE, 2010c).

The removal and offset of native vegetation within the Toolern Precinct is governed by the Toolern Native Vegetation Precinct Plan contained within the PSP. Since the implementation of the MSA and the BCS, the determination of offsets within the MSA for areas covered by a PSP is advised by the Department of Environment, Land, Water and Planning (DELWP) on a case-by-case basis.

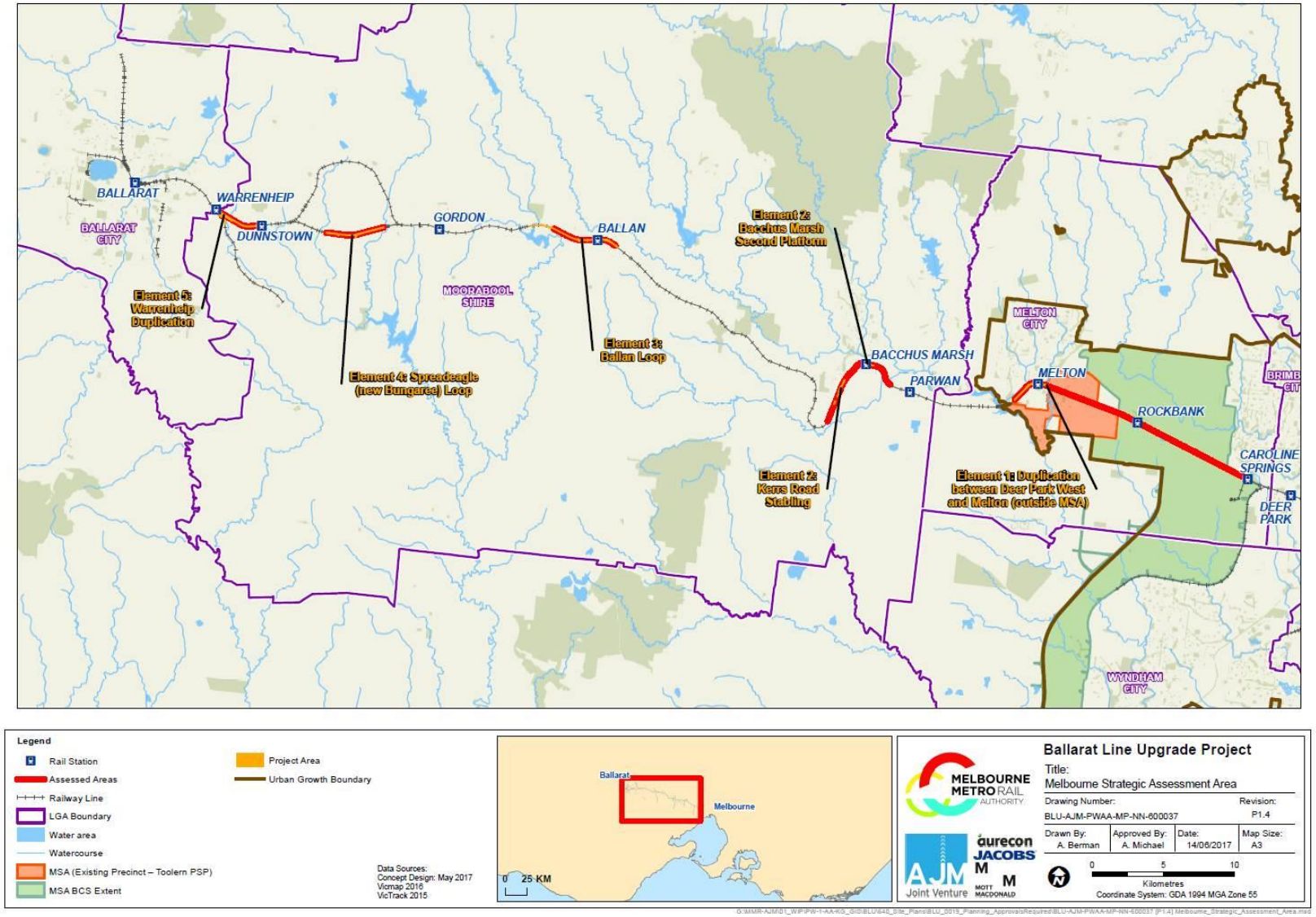

FIGURE 1-1 PROJECT AREA AND WORK ELEMENTS, BALLARAT LINE UPGRADE

1.6 Legislation

A brief summary of the legislation and policies referred to throughout the document is provided in Table 1-3.

TABLE 1-3 DESCRIPTION AND APPLICATION TO PROJECT OF RELEVANT LEGISLATION

POLICY / LEGISLATION	DESCRIPTION
Commonwealth	
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The EPBC Act has significant implications for natural resource and environmental management in Australia. This Act provides for the listing of threatened species, threatened ecological communities and key threatening processes. It also relates to actions likely to have a significant impact on Matters of National Environmental Significance (MNES). There are nine MNES: • World Heritage Sites • National Heritage Places • Ramsar Wetlands
Melbourne Strategic Assessment (MSA)	Streamlines the assessment of impacts under the EPBC Act for urban development within the expanded urban growth boundary. Projects undertaken within the MSA have pre-approved permission for impacts on a range of MNES provided the works are undertaken in line with the approved BCS and relevant Precinct Structure Plans which identify required Habitat Compensation Obligations and areas to be retained for conservation in perpetuity (Conservation Areas).
State	
Environment Effects Act 1978 (EE Act)	Provides for the assessment of actions that are capable of having a significant environmental effect. Actions which might have a significant environmental effect should be referred to the Victorian Minister for Planning, who decides if an Environment Effects Statement (EES) is required. An EES might be required where: • There is a likelihood of regionally or state significant adverse environmental effects • There is a need for an integrated assessment of social and economic effects of a project or relevant alternatives • Normal statutory processes would not provide a sufficiently comprehensive, integrated and transparent assessment
Flora and Fauna Guarantee Act 1988 (FFG Act)	Provides a framework for biodiversity conservation in Victoria. Threatened species and communities of flora and fauna, as well as threatening processes, are listed under this Act. A number of non-threatened flora species are also listed as protected under the FFG Act. A Permit to Take is required to remove these species from public land. NOTE – the FFG Act is currently under review with changes expected in late 2017. This report has been prepared based on the current requirements of the report and these may change prior to the construction of the project.
DELWP (formally DEPI) Victorian Advisory Lists (VicAdv)	Not a statutory list of threatened species, but rather list of species for which conservation management is recommended by DELWP. The VicAdv lists are comprised of the *Advisory List of Rare or Threatened Plants in Victoria – 2014* (DEPI, 2014), the *Advisory List of Threatened Vertebrate Fauna in Victoria – 2013* (DEPI, 2013), and the *Advisory List of Threatened Invertebrate Fauna in Victoria – 2009* (DSE, 2009). The presence, or likely presence, of a species listed on the VicAdv lists is used to determine whether species specific habitat is required to be offset.

POLICY / LEGISLATION	DESCRIPTION
Planning and Environment Act 1987	Applications to remove, destroy, or lop native vegetation in Victoria invoke relevant municipal planning schemes and the *Planning and Environment Act 1987*, which are given authority through the Victoria Planning Provisions (VPP). A range of exemptions apply under this Act. Depending on the scale of the native vegetation clearance, statutory referral to the DELWP may be required.
Permitted Clearing of Native Vegetation – Biodiversity Assessment Guidelines 2013 ('the Guidelines')	The Guidelines determines how impacts on biodiversity are to be considered when assessing an application for a permit to remove, lop or destroy native vegetation. For the purpose of the Guidelines the term 'remove native vegetation' includes to lop or destroy native vegetation. NOTE – the Native Vegetation regulations under the *Planning and Environment Act 1987*are currently under review with changes expected in late 2017, including changes to the Guidelines. This report has been prepared based on the current requirements.
Catchment and Land Protection Act 1994 (CaLP Act)	Defines requirements to: • Avoid land degradation • Conserve soil • Protect water resources • Eradicate and prevent the spread and establishment of noxious weed and pest animal species. The Act defines four categories of noxious weeds: State Prohibited Weeds, Regionally Prohibited Weeds, Regionally Controlled Weeds and Restricted Weeds. Noxious weeds species and the category they are placed in is specific to individual CMA regions.

2 Methods

The assessment included both a desktop and field assessment as per the method outlined below.

2.1 Desktop Assessment

The design team identified a large number of sites for use as potential SCAs. A desktop assessment was completed for each identified SCA to determine the likely presence of ecological values including native vegetation, threatened ecological communities and threatened species. The assessment included a review of relevant literature, online-resources and databases. A summary of sources reviewed for SCAs located within the MSA and those outside of the MSA are provided below.

The desktop assessment provided in the *Existing Ecological Conditions Report* (EHP 2017) addresses a 10 km radius surrounding the project area. As the SCAs are located within this radius, the results of this desktop assessment were considered as part of the desktop assessment for this report.

2.1.1 AREAS SUBJECT TO THE MELBOURNE STRATEGIC ASSESSMENT

Biodiversity mapping (DELWP, 2016a) was reviewed to provide information on threatened flora and fauna species and vegetation communities identified within the area subject to the MSA. The following datasets were reviewed:

- Time Stamped Native Vegetation: the extent and quality of native vegetation within the area subject to the MSA have been mapped. This dataset is used to determine offsets required for the removal of native vegetation within the MSA area. For the area subject to the Toolern PSP this is included in the associated Native Vegetation Precinct Plan (NVPP) (MPA, 2011).

- Habitat Compensation Obligations: All areas not covered by existing roads, buildings or infrastructure have a habitat compensation obligation based on whether the land is considered native vegetation or potential habitat for the following species has been mapped and modelled within the areas subject to the BCS:
  - Growling Grass Frog (*Litoria raniformis)*
  - Golden Sun Moth *(Synemon plana*)
  - Spiny Rice Flower *(Pimelea spinescens* subsp. *spinescens*)
  - Matted Flax-lily (*Dianella amoena*)

2.1.2 AREAS NOT SUBJECT TO THE MELBOURNE STRATEGIC ASSESSMENT

For areas not subject to the MSA a review of the following Victorian DELWP and Commonwealth DoEE databases was undertaken to provide information on threatened flora and fauna species and vegetation communities in proximity to the project area.

- **Biodiversity mapping (DELWP 2017a) –** This database comprises large scale mapping and classification of native vegetation across Victoria.

- **Victorian Biodiversity Atlas (DELWP 2017b) –** This database comprises historical records of flora and fauna species from across the state. Records are added opportunistically, as flora and fauna surveys are conducted within Victoria for a variety of purposes. The mapping of flora and fauna distribution and determination of species' habitat preferences is an ongoing process.

- **Protected Matters Search Tool (DoEE, 2017) –** The Protected Matters Search Tool (PMST) highlights any Matters of National Environmental Significance (MNES) relevant to the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) that are likely to occur within an area.

- Previous ecological or other relevant assessments of the study area.
  - » EHP (2017) *Existing Ecological Conditions Report, Ballarat Line Upgrade*
  - » AJM JV (2017) *Ballarat Line Upgrade – Ecology Assessment Additional Areas*

- Recent aerial photography of each of the SCAs to determine the level of disturbance including urban development and agricultural practices, that is likely to have removed ecological values.

2.2 Classification of SCAs

Based on the results of the desktop assessment, each of the potential SCAs was classified into one of the three categories presented in Table 2-1 below.

TABLE 2-1 CLASSIFICATION AND CRITERIA FOR SECONDARY CONSTRUCTION AREAS

CLASSIFICATION	CRITERIA
Red	Known or expected EPBC issues present based on mapping and our understanding of the local landscape. Will require some field assessment to confirm unless it is stated that the site has been previously assessed and no further assessment required.
Yellow	Native vegetation known or predicted to be present but has low risk of EPBC issues based on our understanding of the local landscape. Will require some field assessment to confirm unless it is stated that the site has been previously assessed and no further assessment required
Green	Known or likely to contain exotic vegetation with no native vegetation or EPBC issues predicted to occur. Will still require some field assessment to confirm unless it is stated that the site has been previously assessed and no further assessment required

The results of the desktop assessment were presented in a workshop held on the 31 May 2017 with project designers, ecologists and project managers. The aim of the workshop was to remove or minimise the extent of sites classified as red or orange, to reduce the likely impact to ecological values through the use of SCAs. Where it was determined that SCAs were critical for use for construction or that SCAs were unlikely to support significant ecological values a shortlist of SCAs was developed that will be incorporated into the Ballarat Line Upgrade Project Area. Field assessment was completed of those SCAs included on the shortlist, that had not been covered by previous field ecology assessments completed by EHP (2017) or AJMJV (2017) and are outside of the MSA area. Field assessment was completed as per the method below.

2.3 Field Assessment

Field assessments were undertaken on the 2 and 6 June 2017 within each SCA that was not covered in previous studies. These assessments aimed to determine the presence of native vegetation, scattered trees and the potential for threatened flora and fauna species within the SCAs. Assessments of native vegetation and scattered trees were conducted in accordance with the *Vegetation Quality Assessment Manual* (DSE 2004). The potential presence of threatened species was assessed by walking over the project site and recording incidental sightings of flora and fauna, any sign of fauna utilisation of the project area (e.g. scats, tracks, etc.) and undertaking a brief assessment of habitat available within the project area. Noxious species, as defined under the CaLP Act, and weed infestations were also recorded across the project area.

3 Results

3.1 Desktop Assessment

3.1.1 DESKTOP REVIEW OF POTENTIAL SECONDARY CONSTRUCTION AREAS

Following initial desktop review of the SCAs using web databases, aerial imagery, as well as data from the previous field surveys, sites were classified as red, yellow or green using the methodology detailed in Section 2.2. Sixty-five SCAs were reviewed as part of the desktop assessment. The results of the desktop review of the 65 SCAs is provided in Appendix A. From the desktop review, five were classified as red, 23 were classified as yellow and 37 classified as green. Based on the outcomes of a workshop held to minimise the inclusion of sites with a high risk of containing significant ecological values, 17 sites were removed from further consideration. This included the removal of two sites classified as red and eight sites classified as orange. Sites were removed for a combination of reasons including the risk of impacting ecological values and private land ownership constraints.

From the workshop, six additional SCAs were added for inclusion to the project area. All six additional SCAs were classified as Green. As such, 53 SCAs were shortlisted to be incorporated into the Ballarat Line Upgrade Project Area. A summary of the 53 shortlisted SCAs is provided in Table 3-1. It was determined from the desktop assessment that ecological field assessment of 24 sites and part of two sites was required to inform approval requirements for SCAs, as the remaining 29 sites fall within the previously assessed surveyed area.

TABLE 3-1 SCAS SELECTED FOR INCORPORATION INTO THE BALLARAT LINE UPGRADE PROJECT AREA

CLASSIFICATION	NO. OF SCAS
Ecology field assessment required	24 (plus part of DM12 and DM13)
No further assessment required. Previously assessed within AJMJV (2017)	7
No further assessment required. Previously assessed within BCS (DELWP 2013)	7
No further assessment required. Previously assessed within EHP (2017)	12
No further assessment required. Previously assessed within Toolern NVPP (MPA, 2011)	3
Total number of SCAs to be incorporated into the Ballarat Line Upgrade Project area	**53**

3.1.2 REVIEW OF ECOLOGICAL VALUES PREVIOUSLY RECORDED FOR SHORTLISTED SECONDARY CONSTRUCTION AREAS

Of the 53 selected SCAs, data as to ecological values present is already available for 29 of the SCAs. A brief review of the ecological values recorded within each of these 29 SCAs is provided below. Mapping of ecological values recorded within each of the SCAs is provided in Appendix B.

3.1.2.1 SCAs located within the MSA and subject to the BCS

As outlined in Section 1.5, SCAs located within Element 1a and 1b are subject to the MSA. Eight of these SCAs located in Element 1a are subject to the BCS. DELWP datasets were consulted, including Time-stamped native

vegetation and habitat compensation obligation mapping, to understand potential offset obligations should these SCAs be cleared (Table 3-2).

TABLE 3-2 HABITAT COMPENSATION AREA FOR EACH SCA UNDER THE BIODIVERSITY CONSERVATION STRATEGY

SCA	NATIVE VEGETATION	GROWLING GRASS FROG	GOLDEN SUN MOTH	NATIVE VEG PATCHES AND SPINY RICE FLOWER
DM-01	132 - Plains Grassland: 0.006 ha	-	0.473 ha	0.006 ha
DM-02	132 - Plains Grassland: 0.214 ha	-	0.002 ha	0.214 ha
DM-03	132 - Plains Grassland: 0.063 ha	-	1.865 ha	0.063 ha
DM-04	132 - Plains Grassland: 0.063 ha	-	2.487 ha	0.063 ha
DM-05	132 - Plains Grassland: 0.227 ha	0.0001 ha	-	0.227 ha
DM-06	132 - Plains Grassland: 0.227 ha	0.426 ha	-	0.007 ha
DM-07	132 - Plains Grassland: 9.568 ha	0.222 ha	0.1243 ha	9.568 ha
DM-08	132 - Plains Grassland: 0.516 ha	0.267 ha	1.824 ha	0.516 ha

From Table 3-2, it is apparent that nearly 10 ha of time-stamped native vegetation (Plains Grassland) occurs within DM-07. Winter and spring targeted flora surveys will be completed at the SCAs listed in Table 3-2, including the large DM-07 site, to identify any threatened flora species requiring salvage and translocation. Targeted surveys are not required to inform approval or offset requirements, but are required to inform salvage and translocation requirements Avoidance, minimisation, and mitigation will be implemented at DM-07 with consideration to the results of targeted survey.

3.1.2.2 Subject to the Toolern PSP Area (Element 1b)

Three SCAs are located within MSA and subject to the Toolern PSP. Native vegetation extent and condition for these sites are detailed in the *Toolern Native Vegetation Precinct Plan* (NVPP) (MPA 2011), in accordance with time-stamped mapping data (DSE 2009a). The extent of native vegetation mapped within these three SCAs will form the basis for calculating offset requirements, with consideration to vegetation that is marked as “to be retained” and “to be removed” in the NVPP (Table 3-3).

Targeted Growling Grass Frog surveys were completed within the Toolern Creek as part of the *Existing Ecological Conditions Report, Ballarat Line Upgrade* Report prepared by EHP (2017). It was concluded that the Growling Grass Frog were highly unlikely to persist within the Project area. Winter and spring targeted flora surveys to inform salvage and translocation requirements will be completed at DM-12 where an extensive area of Plains Grassy Woodland has been mapped.

TABLE 3-3 EXTENT OF NATIVE VEGETATION WITHIN EACH SCA SUBJECT TO THE TOOLERN PSP

SCA	NATIVE VEGETATION
DM-11	None present
DM-12 (Portion inside the Toolern PSP boundary)	68 – Creekline Grassy Woodland: 0.0102ha; Four scattered trees.
DM-13 (Portion inside the Toolern PSP boundary)	68 – Creekline Grassy Woodland: 0.4653ha;

3.1.2.3 Outside of the MSA

Nineteen SCAs shortlisted for inclusion within the Project Area have been previously assessed either within the *Existing Ecological Conditions Report, Ballarat Line Upgrade* prepared by EHP (2017) or the *Ballarat Line Upgrade – Ecology Assessment Additional Areas* prepared by AJM-JV (2017). The original extent of one of the SCAs, BP04 included an area of the EPBC listed community, Natural Temperate Grasslands of the Victorian Volcanic Plain (NTGVVP). A clump of Matted Flax-lily listed as Endangered under the EPBC Act, threatened under the FFG Act and as Endangered on the VicAdv, was also identified within the SCA. The boundary of the SCA has been altered to avoid these significant ecological values. No other listed flora and fauna or communities have been identified within any of the short-listed SCAs located outside the MSA and assessed in previous reports.

Patches of native vegetation and scattered trees have been recorded at eight of the nineteen SCAs previously assessed. Details about the extent of native vegetation recorded is provided in Table 3-4.

TABLE 3-4 SUMMARY OF NATIVE VEGETAION RECORDED IN SCAS FROM EHP (2017) AND AJMJV (2017)

SCA NUMBER	TOTAL AREA (HA)	EVC	BIOREGION	EXTENT OF NATIVE VEGETATION (HA)	EVC CONSERVATION STATUS	SCATTERED TREES
DM-18	0.453	803 Plains Woodland	VVP	0.0022	Endangered	1
BM-04	0.18	803 Plains Woodland	VVP	0.0520	Endangered	
BM-05	0.184	803 Plains Woodland	VVP	0.0032	Endangered	
BM-07	1.504	803 Plains Woodland	VVP	0.0121	Endangered	
BP-03	1.971	55 Plains Grassy Woodland	VVP	0.0182	Endangered	5
BP-04	1.448	132 Plains Grassland	VVP	0.0329	Endangered	1
SP-06	0.328	55 Plains Grassy Woodland	VVP	0.0506	Endangered	2
		821 Tall Marsh	VVP	0.0040	Endangered	
SP-07	0.244	55 Plains Grassy Woodland	VVP	0.0158	Endangered	1
		821 Tall Marsh	VVP	0.0166	Endangered	
Total				**0.208**		**10**

3.2 Field assessment

The results of the field survey for the 26 SCAs located partly or wholly outside of the previous assessment area are presented in Table 3-5. Mapping of ecological values recorded during the field assessment are provided in Appendix B. The results of the assessment will inform subsequent design discussions, with ecological values avoided where possible given other design constraints.

TABLE 3-5 ECOLOGICAL VALUES FOUND BY THE CURRENT STUDY WITHIN SCAS

SCA	ECOLOGICAL VALUES PRESENT	LIKLIHOOD OF IMPACT TO MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE
DM-09	Little vegetation of ecological value present. Site is dominated by exotic pasture grasses.	**Low** – no habitat for possible threatened species or any threatened communities present.
DM-12 (Portion outside the MSA)	Contains one patch of EVC 68: Creekline Grassy Woodland (extent = 0.0001ha), and one patch of EVC 132: Plains Grassy Woodland (extent = 0.0001ha)	**Low** – Habitat present is small and fragmented, recent targeted surveys performed in the vicinity by EHP for threatened flora and fauna predicted to occur in this area. Toolern Creek previously surveyed for Growling Grass Frog by EHP and determined to not be present.
DM-13 (Portion outside the MSA)	Contains one patch of EVC 68: Creekline Grassy Woodland (extent = 0.036ha)	**Low** – Habitat present is small and fragmented, recent targeted surveys performed in the vicinity by EHP for threatened flora and fauna predicted to occur in this area. Toolern Creek previously surveyed for Growling Grass Frog by EHP and determined to not be present.
DM-14	Contains one patch of EVC 68: Creekline Grassy Woodland (extent = 0.043ha), one patch of EVC 803: Plains Woodland (extent = 0.0009ha), and one scattered tree.	**Low** – Habitat present is small and fragmented, recent targeted surveys performed in the vicinity by EHP for threatened flora and fauna predicted to occur in this area. Toolern Creek previously surveyed for Growling Grass Frog by EHP and determined to not be present.
DM-20	Little vegetation of ecological value present. Site is dominated by cover of gravel and bare ground.	**Low** – no habitat for possible threatened species or any threatened communities present.
DM-21	Little vegetation of ecological value present within the SCA. Site is dominated by exotic pasture grasses, particularly Ryegrass (*Lolium perenne*). A scattered River Red Gum tree is present in the vicinity of the SCA.	**Low** – no suitable habitat for possible threatened species or any threatened communities present.
DM-22	Contains one patch of EVC 55: Plains Grassy Woodland (Extent = 0.020ha)	**Low** – poor quality habitat present, recent targeted surveys performed in the vicinity by EHP for threatened flora and fauna predicted to occur in this area.
DM-23	Contained one patch of EVC 132: Plains Grassland (Extent = 0.052ha). This patch meets the criteria to be listed as the EPBC listed threatened ecological community, Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP). The location of this SCA has been moved to avoid the extent of this community.	**Low -** The SCA has been moved to the south west to avoid the extent of this community. Mitigation measures, including fencing the location and signing it as a No Go area will be implemented.
BM-01	Contains one patch of EVC 55: Plains Grassy Woodland (extent = 0.005ha)	**Low** –habitat present is of poor quality and does not qualify as a threatened community
BM-08	Contains two patches of EVC 803: Plains Woodland (combined extent = 0.065ha), and one scattered Grey Box tree.	**Low** –habitat present is of poor quality and does not qualify as a threatened community
BM-09	Contains multiple patches of EVC 803: Plains Woodland (extent = 0.188), four	**Low** –Clumps of Matted Flax-lily will be retained within the BM-09. Mitigation measures, including exclusion fencing, will be implemented to protect the

SCA	ECOLOGICAL VALUES PRESENT	LIKLIHOOD OF IMPACT TO MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE
	scattered trees, and three habitat trees. This patch also contains Matted Flax-lily as shown in attached maps.	location of this individual.
BP-01	Contains two patches of EVC 55: Plains Grassy Woodland (extent = 0.025ha)	**Low** – habitat present is of poor quality and does not qualify as a threatened community.
BP-02	Little vegetation of ecological value present within SCA. Site is dominated by exotic pasture grasses. Scattered Swamp gum (*Eucalyptus ovata*) and Yellow gum (*Eucalyptus leucoxylon* -) trees overhang the SCA from a neighbouring property.	**Low** – no suitable habitat for possible threatened species or any threatened communities present.
BP-08	Contains one patch of EVC 55: Plains Grassy Woodland (extent = 0.162ha) with no canopy. At the time of assessment the SCA had recently been slashed making the extent of the patch difficult to accurately assess. A conservative approach was undertaken in determining the extent of the patch and potentially overestimates the extent of the grassland community.	**Low** – poor quality habitat present, recent targeted surveys performed in the vicinity by EHP for threatened species predicted to occur in this area.
BP-09	Little vegetation of ecological value present. Kangaroo Grass (*Themeda triandra)* present, but site is dominated by exotic pasture grasses and no patches of native vegetation present.	**Low** – poor quality habitat present, recent targeted surveys performed in the vicinity by EHP for threatened species predicted to occur in this area.
BP-10	Contains one patch of EVC 55: Plains Grassy Woodland (extent = 0.069ha) with no canopy.	**Low** – poor quality habitat present, recent targeted surveys performed in the vicinity by EHP for threatened species predicted to occur in this area.
BP-11	Little vegetation of ecological value present. Site is dominated by exotic pasture grasses.	**Low** – minimal habitat present, recent targeted surveys performed in the vicinity by EHP for threatened species predicted to occur in this area.
BP-12	Contains one patch of EVC 55: Plains Grassy Woodland (extent = 0.0125ha).	**Low** – minimal habitat present, recent targeted surveys performed in the vicinity by EHP for threatened species predicted to occur in this area.
BP-13	Contains one patch of EVC 55: Plains Grassy Woodland (extent = 0.003ha).	**Low** – minimal habitat present, recent targeted surveys performed in the vicinity by EHP for threatened species predicted to occur in this area.
SP-02	Little vegetation of ecological value present within SCA. Site is dominated by exotic pasture grasses. Scattered Swamp gum (*Eucalyptus ovata*) overhang the SCA from a neighbouring property.	**Low** – minimal habitat present, recent targeted surveys performed in the vicinity by EHP for threatened species predicted to occur in this area.
SP-04	Little vegetation of ecological value present. Site is dominated by exotic pasture grasses. Juvenile Eucalypts present are planted	**Low** – minimal habitat present, recent targeted surveys performed in the vicinity by EHP for threatened species predicted to occur in this area.

SCA	ECOLOGICAL VALUES PRESENT	LIKLIHOOD OF IMPACT TO MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE
	and are not mature therefore do not constitute scattered trees at the time of assessment.	
SP-05	Little vegetation of ecological value present. Site is dominated by exotic pasture grasses. One Blackwood (*Acacia melanoxylon*) shrub present but does not constitute a patch of native vegetation.	**Low** – minimal habitat present, recent targeted surveys performed in the vicinity by EHP for threatened species predicted to occur in this area.
WD-01	Contains one patch of EVC 125: Plains Grassy Wetland (extent = 0.025ha), and one patch of EVC 821: Tall Marsh (extent = 0.0005ha)	**Low** – habitat present is small and fragmented; recent targeted surveys performed in the vicinity by EHP for threatened species predicted to occur in this area.
WD-02	Little vegetation of ecological value present. Site is dominated by exotic pasture grasses.	**Low** – minimal habitat present, recent targeted surveys performed in the vicinity by EHP for threatened species predicted to occur in this area.
WD-03	Contains one patch of EVC 55: Plains Grassy Woodland (extent = 0.005)	**Low** – habitat present is small and fragmented; recent targeted surveys performed in the vicinity by EHP for threatened species predicted to occur in this area.
WD-04	Little vegetation of ecological value present. Site is dominated by exotic pasture grasses. Native trees in the windrow adjacent to the road reserve are planted and do not constitute scattered trees or a patch of native vegetation.	**Low** – minimal habitat present, recent targeted surveys performed in the vicinity by EHP for threatened species predicted to occur in this area.

A workshop was held on the 9 June 2017 to discuss the results of the field assessment of the shortlisted SCAs. From this workshop it was determined that DM-23 be moved southwest to avoid the mapped area of NTGVVP. The new location for DM-23 was assessed and it was determined that no native vegetation patches or habitat for threatened flora or fauna was present with the new location.

3.2.1 THREATENED ECOLOGICAL COMMUNITIES

The extent of threatened ecological communities identified within the 26 SCA's for which field assessment was completed is provided in Table 3-6. It was noted while accessing DM-23, that additional patches of grassland were present along the access track to the north east. Mitigation measures will be implemented along the track to ensure these areas of grassland are not impacted. This will include fencing of areas of grassland with high visibility bunting.

TABLE 3-6 THREATENED ECOLOGICAL COMMUNITIES IDENTIFIED WITHIN THE STUDY AREA OUTSIDE OF THE MSA.

THREATENED ECOLOGICAL COMMUNITY	CONSERVATION STATUS	LOCATION IDENTIFIED	IMPLICATION OF PRESENCE
Natural Temperate Grasslands of the Victorian Volcanic Plain	**EPBC** Critically Endangered **FFG** Listed as Western (Basalt) Plains Grasslands Community	• 0.07 ha in Element 1c – located north of DM23, at the western end of Torrington Circuit, Melton South.	**Not impacted.** The SCA has been shifted to the south west to avoid the extent of this community. Mitigation measures, including fencing the location and signing it as a No Go area is to be implemented.

3.2.2 THREATENED FAUNA

Targeted fauna surveys within SCAs that are the subject of this assessment are not considered necessary for the following reasons;

- Areas identified as comprising high quality grassland, namely patches of NTGVVP, that may provide habitat for threatened fauna species have been excluded from use as SCAs outside of the MSA area
- Many of the locations of targeted assessment completed by EHP (2017) are in very close proximity to areas identified as SCAs. Given the targeted fauna surveys did not detect any threatened fauna species in similar habitat identified within the SCAs; it is considered unlikely that threatened fauna species are present within the SCAs. This is particularly relevant to the following sites:
  - » DM-13 and DM-14 – adjacent to the Toolern Creek. Targeted surveys completed by EHP (2017) did not detect Growling Grass Frog or Dwarf Galaxias at this location.
  - » WD-01 – marginal wetland habitat identified. Targeted surveys completed by EHP (2017) did not detect Growling Grass Frog in a number of farm dams surrounding this location
  - » BM-08, BM-09 - Grassland identified as low potential habitat for the Golden Suns Moth due to mowing regime identified in road reserve either side of rail corridor. Targeted surveys completed by EHP (2017) within the rail corridor at this location did not detect the Golden Sun Moth. Given the low potential of the habitat and results of previous surveys it is unlikely the Golden Sun Moth persists at this location
- Grassland habitat identified within the secondary construction areas was considered unlikely to support threatened fauna species, given their small, degraded nature within a highly disturbed setting.

No threatened fauna species were identified during the current assessment and it is considered highly unlikely that significant habitat for any threatened fauna species is present within the SCAs included in this assessment. As such it is considered unlikely that project works in these SCAs will have a significant impact on any threatened fauna species.

3.2.3 THREATENED FLORA

Supplementary targeted flora surveys within SCAs assessed in this report were not considered necessary for the following reasons:

- Field assessment associated with this report was completed in June 2017 during the flowering period of the Spiny Rice-flower, and so survey for the presence of this species could be completed at the time of the assessment. No Spiny Rice-flower was identified within any of the SCAs assessed.

- Occurrences of Matted Flax-lily were able to be identified during the current assessment, by the presence of their distinctive leaves.

- Patches of grassland identified during this assessment were small, fragmented patches with a high cover of introduced species, and were considered unlikely to support threatened flora species.

One clump of Matted Flax-lily was identified at BM-09 (Table 3-7). Mitigation measures including fencing with high visibility bunting will be implemented to ensure avoidance of any impact to this species at BM-09.

Only one patch of NTGVVP was identified during the SCA assessment and it will be avoided. All other patches of grassland identified during the assessment were small, fragmented patches with a high cover of introduced species. It is considered unlikely that these patches support threatened flora species.

TABLE 3-7 THREATENED FLORA SPECIES IDENTIFIED WITHIN SECONDARY CONSTRUCITON AREAS

FLORA SPECIES	CONSERVATION LISTING	LOCATION IDENTIFIED	IMPLICATION OF PRESENCE
Matted Flax-lily	**EPBC** Endangered **FFG** Listed **VicAdv** Endangered	• One clump located within Secondary Construction Area BM-09 in Element 2.	**Not impacted. To be retained within BM-09.** Clumps of Matted Flax-lily will be retained within the BM-09. Mitigation measures will be implemented to protect the location of this individual.

3.2.4 NATIVE VEGETATION RECORDED WITHIN SCAS

Patches of native vegetation and scattered trees were recorded at eight of the nineteen SCAs previously assessed. Details about the extent of native vegetation recorded are provided in Table 3-8. As the extent of DM-23 has been shifted to avoid the extent of the mapped native vegetation, it is excluded from Table 3-8. Where native vegetation is removed from these sites, it will be required to be offset in accordance with the *Permitted Clearing of Native Vegetation – Biodiversity Assessment Guidelines* 2013 (DEPI, 2013b). Field assessment mapped an additional 0.674 ha of native vegetation and eight scattered trees within the project area.

TABLE 3-8 EXTENT OF NATIVE VEGETATION MAPPED WITHIN SCAS DURING THE FIELD ASSESSMENT

SCA NUMBER	TOTAL AREA (HA)	EVC	BIOREGION	EXTENT OF NATIVE VEGETATION (HA)	EVC CONSERVATION STATUS	SCATTERED TREES
DM-12	0.089	68 Creekline Grassy Woodland	VVP	0.0134	Endangered	4
		803 Plains Woodland	VVP	0.0001	Endangered	
DM-13	0.151	68 Creekline Grassy Woodland	VVP	0.0359	Endangered	0
DM-14	0.421	68 Creekline Grassy Woodland	VVP	0.0431	Endangered	1
		803 Plains Woodland	VVP	0.0009	Endangered	
DM-22	0.766	55 Plains Grassy Woodland	VVP	0.0204	Endangered	0
BM-01	0.151	55 Plains Grassy Woodland	VVP	0.0054	Endangered	0

SCA NUMBER	TOTAL AREA (HA)	EVC	BIOREGION	EXTENT OF NATIVE VEGETATION (HA)	EVC CONSERVATION STATUS	SCATTERED TREES
BM-08	0.261	803 Plains Woodland	VVP	0.0646	Endangered	1
BM-09	1.313	803 Plains Woodland	VVP	0.1884	Endangered	2
BP-01	0.169	55 Plains Grassy Woodland	VVP	0.0247	Endangered	0
BP-08	0.213	55 Plains Grassy Woodland	VVP	0.1615	Endangered	0
BP-10	0.182	55 Plains Grassy Woodland	VVP	0.0692	Endangered	0
BP-12	1.164	55 Plains Grassy Woodland	VVP	0.0125	Endangered	0
BP-13	0.514	55 Plains Grassy Woodland	VVP	0.0033	Endangered	0
WD-01	0.281	125 Plains Grassy Wetland	VVP	0.0248	Endangered	0
		821 Tall Marsh	VVP	0.0005	Endangered	
WD-03	3.669	55 Plains Grassy Woodland	VVP	0.0052	Endangered	0
Total				**0.674**		**8**

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4 Conclusions

A desktop assessment to shortlist SCAs for inclusion in the project area identified 26 sites that required field assessment to identify ecological values present. The 26 SCAs were assessed to determine the presence of native vegetation, threatened ecological communities and habitat for threatened flora and fauna species.

The current field assessment mapped an additional 0.674 ha of native vegetation and eight scattered trees within the 26 SCAs assessed.

A Matted Flax-lily listed as Endangered under the EPBC Act, threatened on the FFG Act and as Endangered on the VicAdv was identified at BM-09. Appropriate mitigation measures will be implemented in the form of exclusion zones that will ensure that this species is not impacted.

An extent of the threatened community, NTGVVP listed as Critically Endangered under the EPBC Act and as the FFG listed community Western (Basalt) Plains Grassland was identified at DM-23. However, the extent of DM-23 was able to be shifted, so as to avoid the extent of this community. The extent of the community identified is now located outside of the Project area and mitigation measures, including fencing of an exclusion zone, will be implemented to ensure the occurrence of the community is not impacted by project works.

All other patches of grassland identified during the assessment were small, fragmented patches with a high cover of introduced species. It is considered unlikely that these patches support threatened flora species. It is considered unlikely that project works in these SCAs will have a significant impact on any threatened flora species.

No threatened fauna species were identified during the current assessment. Given that native vegetation patches identified within the SCAs are generally small, degraded, and isolated, it is considered unlikely that the SCAs provide suitable habitat for any threatened fauna species. As such it is considered unlikely that project works in these SCAs will have a significant impact on any threatened fauna species.

The actual extent of removal of native vegetation across the entire project area will be determined in conjunction with the findings of the EHP (2017) report and the AJMJV (2017) report and with consideration of the final project construction footprint (which is yet to be determined). However, based on the findings of this assessment, it is not considered that impacts to the ecological values identified within this report would be considered significant. The results of the assessment will inform subsequent design discussions, with ecological values avoided where possible given other design constraints.

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Appendix A

Results of desktop assessment of SCAs

Appendix A

LAYDOWN	NEW NAME	ELEMENT	APPLICABILITY OF STRATEGIC DOCUMENTS	EVC (IF VEGETATION PRESENT)	BIM NATIONAL ANS STATE LISTED THREATENED FLORA WITHIN 300M	BIM THREATENED FAUNA WITHIN 300M	AERIAL PHOTO DESCRIPTION	EHP THREATENED SPECIES/ COMMUNITY WITHIN 300M IN RAIL CORRIDOR	EHP SURVEYED NATIVE PATCHES WITHIN 300M IN RAIL CORRIDOR	KNOWN VALUES	PREVIOUSLY ASSESSED	PREDICTED VALUES	PRELIMINARY RISK ASSESSMENT	CONCLUSION FROM DESKTOP ASSESSMENT
1	Removed	1	MSA (BCS)	132: Plains grassland	*Pimelia spinescens, Senecio macrocarpus, Dianella sp. Aff.longifolia (Benambra), Convovulus angustissimus subsp.omnigracillis, Desmodium varians*		Paddock with shrubs, grasses	Spiny rice flower, Large-fruited fireweed	N		No	Potential Spiny rice flower and NTGVVP	Red	Removed
2	Removed	1	MSA (BCS)	132: Plains grassland	*Pimelia spinescens, Senecio macrocarpus, Dianella sp. Aff.longifolia (Benambra), Convovulus angustissimus subsp.omnigracillis, Desmodium varians*		Grassy paddock area	Spiny rice flower	N	Contains spiny rice flower	EHP	Known Spiny rice flower and likely NTGVVP	Red	Removed - located within BCS conservation area
3	DM02	1	MSA (BCS)	132: Plains grassland			Pasture	N	N		No	Potential Spiny rice flower and NTGVVP	Yellow	Necessary data to be obtained from BCS (DELWP 2013). Targeted surveys to be completed to inform translocation requirements.
4	DM01	1	MSA (BCS)	132: Plains grassland			Pasture	N	N		No	Exotic vegetation	Green	No further assessment required. Necessary data to be obtained from BCS (DELWP 2013)
5	DM03	1	MSA (BCS)	132: Plains grassland			Pasture	N	N		EHP - Partial	Potential Spiny rice flower and NTGVVP	Yellow	Necessary data to be obtained from BCS (DELWP 2013). Targeted surveys to be completed to inform translocation requirements.
6	DM04	1	MSA (BCS)	132: Plains grassland			Pasture	N	N		No	Potential Spiny rice flower and NTGVVP	Yellow	Necessary data to be obtained from BCS (DELWP 2013). Targeted surveys to be completed to inform translocation requirements.
7	Removed	1	MSA (BCS)	132: Plains grassland			Pasture	N	N		No	Potential NTGVVP	Yellow	Removed
8	Removed	1	MSA (BCS)	132: Plains grassland			Pasture	N	N		No	Exotic vegetation	Green	Removed
9	DM05	1	MSA (BCS)	132: Plains grassland			Pasture	N	N		No	Exotic vegetation	Green	No further assessment required. Necessary data to be obtained from BCS (DELWP 2013)
10	DM06	1	MSA (BCS)	125: Plains grassy wetland, 132: Plains	*Dianella sp. Aff.longifolia*	*Gallinago hardwickii,*		N	N		No	Potential NTGVVP	Yellow	Necessary data to be obtained from BCS (DELWP 2013). Targeted

LAYDOWN	NEW NAME	ELEMENT	APPLICABILITY OF STRATEGIC DOCUMENTS	EVC (IF VEGETATION PRESENT)	BIM NATIONAL ANS STATE LISTED THREATENED FLORA WITHIN 300M	BIM THREATENED FAUNA WITHIN 300M	AERIAL PHOTO DESCRIPTION	EHP THREATENED SPECIES/ COMMUNITY WITHIN 300M IN RAIL CORRIDOR	EHP SURVEYED NATIVE PATCHES WITHIN 300M IN RAIL CORRIDOR	KNOWN VALUES	PREVIOUSLY ASSESSED	PREDICTED VALUES	PRELIMINARY RISK ASSESSMENT	CONCLUSION FROM DESKTOP ASSESSMENT
				grassland	*(Benambra)*	*platalea regia, Litoria raniformis, Anas rhynchotis, Delma impar*								surveys to be completed to inform translocation requirements.
11	Removed	1	MSA (BCS)	125: Plains grassy wetland	*Dianella sp. Aff.longifolia (Benambra)*	*Gallinago hardwickii, platalea regia, Litoria raniformis, Anas rhynchotis, Delma impar*		N	N		No	Potential NTGVVP	Yellow	Removed
12	DM08	1	MSA (BCS)	132: Plains grassland				N	N		EHP - Partial	Exotic vegetation	Yellow	No further assessment required. Necessary data to be obtained from BCS (DELWP 2013)
13	DM07	1	MSA (BCS)	132: Plains grassland			Potential for large area of Plains Grassland	N	Y		EHP - Partial	Scattered Trees	Yellow	Necessary data to be obtained from BCS (DELWP 2013). Targeted surveys to be completed to inform translocation requirements.
14	DM09	1	Guidelines	132: Plains grassland		*Pseudomoia pagenstecheri, Aythya australis*	Grassy paddock area	NTGVVP	Y		No	Potential NTGVVP	Yellow	Field assessment required
15	Removed	1	Toolern NVPP	132: Plains grassland		*Stagonopleura guttata*	Clear, uniform paddock	NTGVVP	Y		No	Potential NTGVVP	Yellow	Removed
16	DM11	1	Toolern NVPP	132: Plains grassland	*Diuris basaltica, Dianella sp. Aff.longifolia (Benambra)*			N	Y		EHP - Partial	Potential NTGVVP	Yellow	No further assessment required. Necessary data to be obtained from Toolern NVPP
17	DM12	1	Toolern NVPP	132: Plains grassland				N	Y		No	Native creekline vegetation, unlikely EPBC	Red	Field assessment required (partial)
18	DM13	1	Toolern NVPP	132: Plains grassland				N	Y	Native veg, sensitive creek	No	Native creekline vegetation, unlikely EPBC	Red	Field assessment required (partial)
20	BM01	2	Guidelines	55: Plains Grassy Woodland	*Pimelia curviflora*		Paddock with shrubs, grasses	N	N		No	Exotic vegetation	Green	Field assessment required
21	BM03	2	Guidelines	N	*Pimelia curviflora*		Urban	N	N		EHP	Exotic vegetation	Green	No further assessment required. Necessary data to be obtained from EHP (2017)
22	BM07	2	Guidelines	55: Plains Grassy Woodland			Pasture	N	N	Some planted Plains Woodland	Jacobs	Native vegetation present, no EPBC	Green	No further assessment required. Necessary data to be obtained from AJMJV (2017)
23	BM06	2	Guidelines	55: Plains Grassy			Pasture	N	N	Some	Jacobs	Native	Green	No further assessment required.

LAYDOWN	NEW NAME	ELEMENT	APPLICABILITY OF STRATEGIC DOCUMENTS	EVC (IF VEGETATION PRESENT)	BIM NATIONAL ANS STATE LISTED THREATENED FLORA WITHIN 300M	BIM THREATENED FAUNA WITHIN 300M	AERIAL PHOTO DESCRIPTION	EHP THREATENED SPECIES/ COMMUNITY WITHIN 300M IN RAIL CORRIDOR	EHP SURVEYED NATIVE PATCHES WITHIN 300M IN RAIL CORRIDOR	KNOWN VALUES	PREVIOUSLY ASSESSED	PREDICTED VALUES	PRELIMINARY RISK ASSESSMENT	CONCLUSION FROM DESKTOP ASSESSMENT
				Woodland						planted Plains Woodland		vegetation present, no EPBC		Necessary data to be obtained from AJMJV (2017)
24	BM08	2	Guidelines	55: Plains Grassy Woodland	*Rhagodia parabolica, Lepidum pseudohyssopifolium, Ptilotus erubescens*		Plains grassy woodland disturbed	N	N	Likely Plains Woodland	No	Native vegetation present, unlikely EPBC	Yellow	Field assessment required
25	BM09	2	Guidelines	55: Plains Grassy Woodland	*Rhagodia parabolica, Lepidum pseudohyssopifolium, Ptilotus erubescens*		Plains grassy woodland disturbed	N	N	Current site offices	Jacobs	Native vegetation present, no EPBC	Green	Field assessment required
26	BP03	3	Guidelines	N			Urban	NTGVVP	Y	Scattered trees and small patches of Plains Grassy Woodland	Jacobs	Native vegetation present, no EPBC	Green	No further assessment required. Necessary data to be obtained from AJMJV (2017)
27	BP04	3	Guidelines	55: Plains Grassy Woodland			Degraded grassland	NTGVVP	Y	Plains Grassland and Plains Grassy Woodland	Jacobs	NTGVVP present	Red	No further assessment required. Necessary data to be obtained from EHP (2017)
28	BP05	3	Guidelines	N			Urban	NTGVVP	Y	No native vegetation	Jacobs	Exotic vegetation	Green	Removed
29	BP06	3	Guidelines	55: Plains Grassy Woodland			Pasture	N	Y		EHP	Exotic vegetation	Green	No further assessment required. Necessary data to be obtained from EHP (2017)
30	BP07	3	Guidelines	55: Plains Grassy Woodland			Pasture	N	Y		EHP	Exotic vegetation	Green	No further assessment required. Necessary data to be obtained from EHP (2017)
31	BP08	3	Guidelines	55: Plains Grassy Woodland, 125: Plains grassy wetland			Pasture	N	Y		No	Exotic vegetation	Green	Field assessment required
32	Removed	3	Guidelines	55: Plains Grassy Woodland, 125: Plains grassy wetland			Pasture	N	Y		No	Potential degraded grasslands, unlikely EPBC	Yellow	Removed
34	BP12	3	Guidelines	55: Plains Grassy Woodland, 125: Plains grassy wetland			Pasture	N	Y	Impacted vegetation	EHP - Partial	Potential degraded grasslands, unlikely EPBC	Yellow	Field assessment required
35	BP13	3	Guidelines	55: Plains Grassy Woodland, 125:			Pasture	N	Y		No	Potential degraded	Yellow	Field assessment required

LAYDOWN	NEW NAME	ELEMENT	APPLICABILITY OF STRATEGIC DOCUMENTS	EVC (IF VEGETATION PRESENT)	BIM NATIONAL ANS STATE LISTED THREATENED FLORA WITHIN 300M	BIM THREATENED FAUNA WITHIN 300M	AERIAL PHOTO DESCRIPTION	EHP THREATENED SPECIES/ COMMUNITY WITHIN 300M IN RAIL CORRIDOR	EHP SURVEYED NATIVE PATCHES WITHIN 300M IN RAIL CORRIDOR	KNOWN VALUES	PREVIOUSLY ASSESSED	PREDICTED VALUES	PRELIMINARY RISK ASSESSMENT	CONCLUSION FROM DESKTOP ASSESSMENT
				Plains grassy wetland								grasslands, unlikely EPBC		
36	Removed	3	Guidelines	83: Swampy riparian woodland, 23: Herb-rich foothill forest			Pasture	N	Y		No	Degraded grasslands	Yellow	Removed
37	Removed	3	Guidelines	83: Swampy riparian woodland			Pasture	N	Y	Plains grassy woodland	EHP	Native vegetation present, no EPBC	Yellow	Removed
38	SP01	4	Guidelines	55: Plains grassy woodland			Pasture	N	Y		EHP - Partial	Exotic vegetation	Green	No further assessment required. Necessary data to be obtained from EHP (2017)
41	SP02	4	Guidelines	55: Plains grassy woodland			Pasture	N	N		No	Exotic vegetation	Green	Field assessment required
42	Removed	4	Guidelines	55: Plains grassy woodland			Pasture	N	N		No	Exotic vegetation	Green	Removed
44	SP03	4	Guidelines	55: Plains grassy woodland			Pasture	N	Y		EHP	Degraded grasslands	Yellow	No further assessment required. Necessary data to be obtained from AJMJV (2017)
45	SP04	4	Guidelines	55: Plains grassy woodland			Pasture	N	N		No	Exotic vegetation	Green	Field assessment required
46	SP05	4	Guidelines	55: Plains grassy woodland			Pasture	N	N		No	Exotic vegetation	Green	Field assessment required
47	SP06	4	Guidelines	55: Plains grassy woodland			Pasture	N	Y	Plains grassy woodland	EHP	Native vegetation present, no EPBC	Yellow	No further assessment required. Necessary data to be obtained from EHP (2017)
49	WD02	5	Guidelines	55: Plains grassy woodland			Pasture	N	N		EHP - Partial	Exotic vegetation	Green	Field assessment required
50	WD03	5	Guidelines	55: Plains grassy woodland, 175: Grassy woodland			Pasture	N	N	Plains grassy woodland	EHP - Partial	Exotic vegetation	Green	Field assessment required
51	WD04	5	Guidelines	55: Plains grassy woodland			Pasture	N	N		No	Exotic vegetation	Green	Field assessment required
52	WD05	5	Guidelines	55: Plains grassy woodland, 175: Grassy woodland			Pasture	N	N		Jacobs	Exotic vegetation	Green	No further assessment required. Necessary data to be obtained from AJMJV (2017)
53	Removed	5	Guidelines	55: Plains grassy woodland, 175: Grassy woodland			Pasture	N	N	Plains grassy woodland, Plains grassland	EHP - Partial	Native vegetation present, no EPBC	Yellow	Removed
54	WD06	5	Guidelines	55: Plains grassy				N	Y		EHP	Exotic	Green	No further assessment required. Necessary data to be obtained from

LAYDOWN	NEW NAME	ELEMENT	APPLICABILITY OF STRATEGIC DOCUMENTS	EVC (IF VEGETATION PRESENT)	BIM NATIONAL ANS STATE LISTED THREATENED FLORA WITHIN 300M	BIM THREATENED FAUNA WITHIN 300M	AERIAL PHOTO DESCRIPTION	EHP THREATENED SPECIES/ COMMUNITY WITHIN 300M IN RAIL CORRIDOR	EHP SURVEYED NATIVE PATCHES WITHIN 300M IN RAIL CORRIDOR	KNOWN VALUES	PREVIOUSLY ASSESSED	PREDICTED VALUES	PRELIMINARY RISK ASSESSMENT	CONCLUSION FROM DESKTOP ASSESSMENT
				woodland								vegetation		EHP (2017)
55	DM14	1	Guidelines	132: Plains grassland			Urban	N	Y		No	Exotic vegetation	Green	Field assessment required
56	DM15	1	Guidelines	N			Urban	N	Y	Scattered tree	EHP	Exotic vegetation	Green	No further assessment required. Necessary data to be obtained from EHP (2017)
57	Removed	1	Guidelines	N	*Lathamus discolor*		Urban	N	N	Scattered remnant trees	EHP	Exotic vegetation	Green	Removed
58	Removed	1	Guidelines	N			Urban	NTGVVP	Y		EHP	Exotic vegetation	Green	Removed
59	DM18	1	Guidelines	N			Urban	NTGVVP	Y	Scattered tree	EHP	Exotic vegetation	Green	No further assessment required. Necessary data to be obtained from EHP (2017)
60	DM21	1	Guidelines	132: Plains grassland			Urban	N	Y	Building site	No	Exotic vegetation	Green	Field assessment required
61	DM22	1	Guidelines	132: Plains grassland	*Allocasurina leuhmannii*		Urban	N	N	Scattered Trees	No	Scattered Trees	Green	Field assessment required
62	DM23	1	Guidelines	132: Plains grassland	*Allocasurina leuhmannii*	Gallinago hardwickii, Ardea modesta	Cleared	N	N		No	Exotic vegetation	Green	Field assessment required
63	BM04	2	Guidelines	55: Plains Grassy Woodland			Grassy woodland	N	N	Plains Woodland present	Jacobs	Native vegetation present, no EPBC	Yellow	No further assessment required. Necessary data to be obtained from AJMJV (2017). Avoid 3 Large Old habitat trees
65	Removed	4	Guidelines	55: Plains Grassy Woodland			Pasture	N	Y		No	Exotic vegetation	Green	Removed
66	BM02	2	Guidelines	55: Plains Grassy Woodland	*Pimelia curviflora*		Grass, access track, trees	N	N	Trees	EHP	Exotic vegetation	Green	No further assessment required. Necessary data to be obtained from EHP (2017)
67	BM05	2	Guidelines	55: Plains Grassy Woodland			Grassy woodland	N	N	Plains Woodland present adjacent	Jacobs	Degraded cleared area	Green	No further assessment required. Necessary data to be obtained from AJMJV (2017)
68	BP11	3	Guidelines	55: Plains Grassy Woodland			Pasture, tree windrow	N	Y		No	Potential degraded grasslands, unlikely EPBC	Yellow	Field assessment required
69	Removed	3	Guidelines	55: Plains Grassy Woodland, 125: Plains grassy wetland			Pasture	N	Y		EHP - Partial	Potential degraded grasslands, unlikely EPBC	Yellow	Removed
70	Removed	4	Guidelines	55: Plains Grassy Woodland, 125:			Pasture	N	N		No	Exotic	Green	Removed

LAYDOWN	NEW NAME	ELEMENT	APPLICABILITY OF STRATEGIC DOCUMENTS	EVC (IF VEGETATION PRESENT)	BIM NATIONANS STATE LISTED THREATENED FLORA WITHIN 300M	BIM THREATENED FAUNA WITHIN 300M	AERIAL PHOTO DESCRIPTION	EHP THREATENED SPECIES/ COMMUNITY WITHIN 300M IN RAIL CORRIDOR	EHP SURVEYED NATIVE PATCHES WITHIN 300M IN RAIL CORRIDOR	KNOWN VALUES	PREVIOUSLY ASSESSED	PREDICTED VALUES	PRELIMINARY RISK ASSESSMENT	CONCLUSION FROM DESKTOP ASSESSMENT
				Plains grassy wetland								vegetation		
71	SP07	4	Guidelines	55: Plains Grassy Woodland, 125: Plains grassy wetland				N	Y		EHP - Partial	Degraded grasslands and scattered trees	Yellow	No further assessment required. Necessary data to be obtained from EHP (2017)
72	BP02	3	Guidelines	55: Plains Grassy Woodland, 125: Plains grassy wetland				N	N		No	Exotic vegetation	Green	Field assessment required
Added following Desktop	BP01	3	Guidelines										Green	Field assessment required
Added following Desktop	BP09	3	Guidelines										Green	Field assessment required
Added following Desktop	BP10	3	Guidelines										Green	Field assessment required
Added following Desktop	DM19	1	Guidelines										Green	No further assessment required. Necessary data to be obtained from EHP (2017)
Added following Desktop	DM20	1	Guidelines										Green	Field assessment required
Added following Desktop	WD01	5	Guidelines										Green	Field assessment required

Appendix B

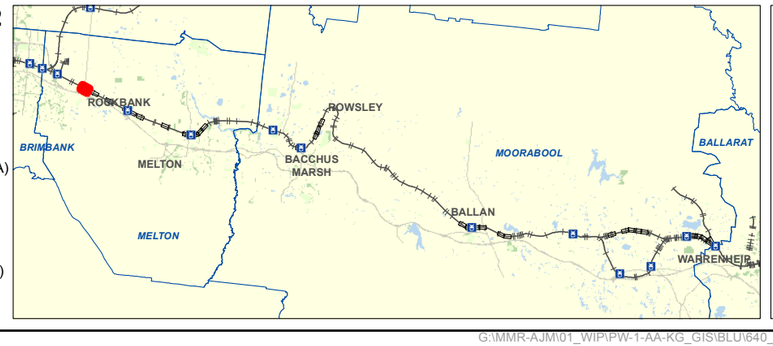
Ecology Mapping

Appendix B

Legend

- VicTrack Reserve boundary
- Watercourse
- Project Land
- Secondary Construction Areas
- MSA BCS Extent

Map 1 of 32



Data Sources:
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- EHP Ecology Assessment (Feb 2017)
- VicTrack (2017)
- DELWP (2016)

MELBOURNE METRO RAIL AUTHORITY

AJM Joint Venture — aurecon JACOBS M — MOTT MACDONALD M

Ballarat Line Upgrade Project

Title:
Secondary Construction Areas - Ecology

Drawing Number:	Revision:
BLU-AJM-PWAA-MP-NF-600050	P1.3

Drawn By:	Approved By:	Date:	Map Size:
A. Berman	A. Michael	23/06/2017	A3

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Metres
Coordinate System: GDA 1994 MGA Zone 55

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GREIGS ROAD

Element 1: Duplication between Deer Park West and Melton

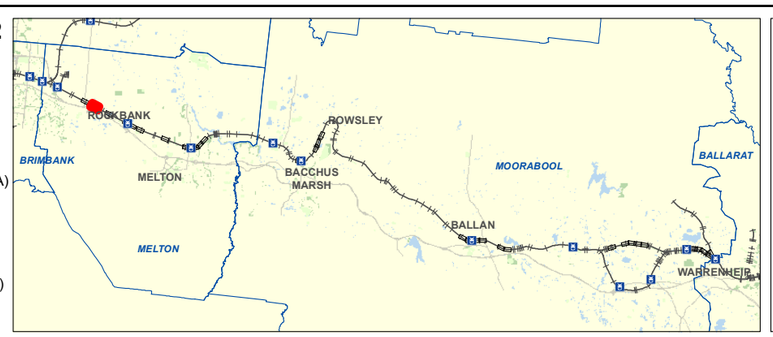
MSA BCS Extent

DM-05

Legend

- VicTrack Reserve boundary
- Project Land
- Secondary Construction Areas
- MSA BCS Extent

Map 2 of 32



Data Sources:
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- Golder Investigation Locations (Mar 2017)
- EHP Ecology Assessment (Feb 2017)
- VicTrack (2017)
- DELWP (2016)

MELBOURNE METRO RAIL AUTHORITY

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Ballarat Line Upgrade Project

Title:
Secondary Construction Areas - Ecology

Drawing Number:			Revision:
BLU-AJM-PWAA-MP-NF-600050			P1.3
Drawn By:	Approved By:	Date:	Map Size:
A. Berman	A. Michael	23/06/2017	A3

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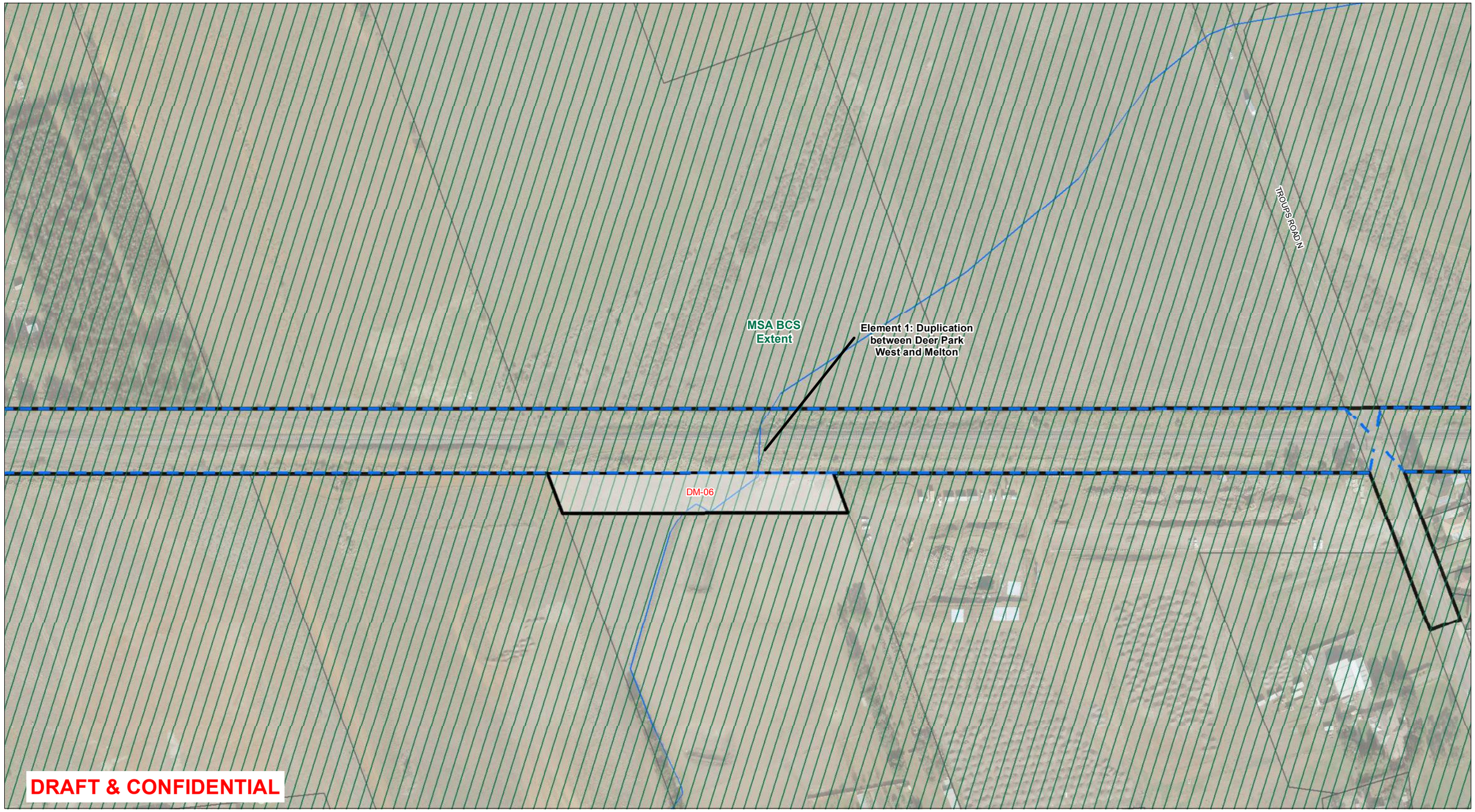
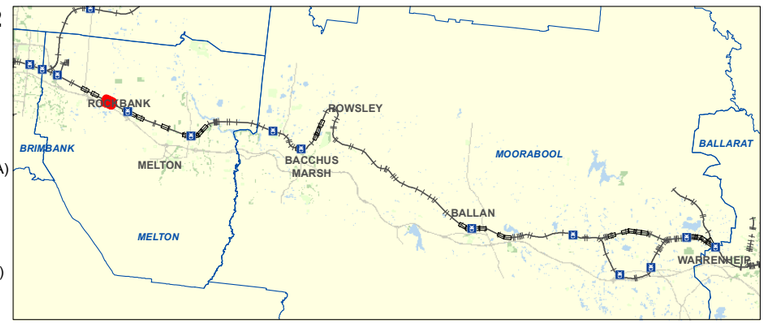


Legend

- VicTrack Reserve boundary
- Watercourse
- Project Land
- Secondary Construction Areas
- MSA BCS Extent

Map 3 of 32



Data Sources:
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- EHP Ecology Assessment (Feb 2017)
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AJM Joint Venture — aurecon JACOBS M MOTT MACDONALD

Ballarat Line Upgrade Project

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Secondary Construction Areas - Ecology

Drawing Number:	Revision:
BLU-AJM-PWAA-MP-NF-600050	P1.3

Drawn By:	Approved By:	Date:	Map Size:
A. Berman	A. Michael	23/06/2017	A3

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Metres
Coordinate System: GDA 1994 MGA Zone 55

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LEAKES ROAD

MSA BCS Extent

DM-07

ROCKBANK

DM-08

Element 1: Duplication between Deer Park West and Melton

WESTCOTT PARADE

OLD LEAKES ROAD

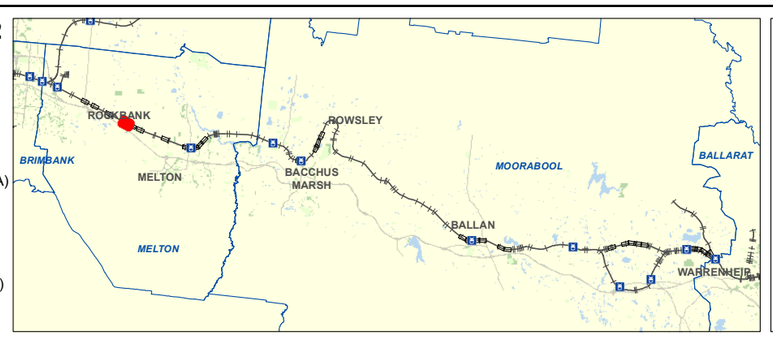
IAN COWIE WAY

DRAFT & CONFIDENTIAL

Legend

- VicTrack Reserve boundary
- Project Land
- Secondary Construction Areas
- MSA BCS Extent

Map 4 of 32



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- DELWP (2016)

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Ballarat Line Upgrade Project

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Secondary Construction Areas - Ecology

Drawing Number:			Revision:
BLU-AJM-PWAA-MP-NF-600050			P1.3
Drawn By:	Approved By:	Date:	Map Size:
A. Berman	A. Michael	23/06/2017	A3

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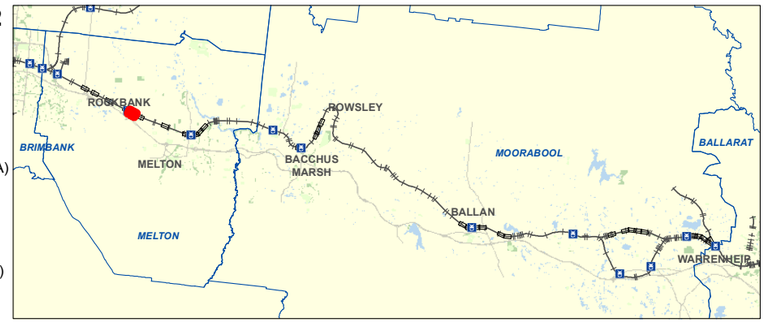
Legend

- VicTrack Reserve boundary
- Project Land
- Secondary Construction Areas
- MSA BCS Extent

Map 5 of 32



Data Sources:
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- EHP Ecology Assessment (Feb 2017)
- VicTrack (2017)
- DELWP (2016)

MELBOURNE METRO RAIL AUTHORITY

AJM Joint Venture

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Ballarat Line Upgrade Project

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Secondary Construction Areas - Ecology

Drawing Number:			Revision:
BLU-AJM-PWAA-MP-NF-600050			P1.3
Drawn By:	Approved By:	Date:	Map Size:
A. Berman	A. Michael	23/06/2017	A3

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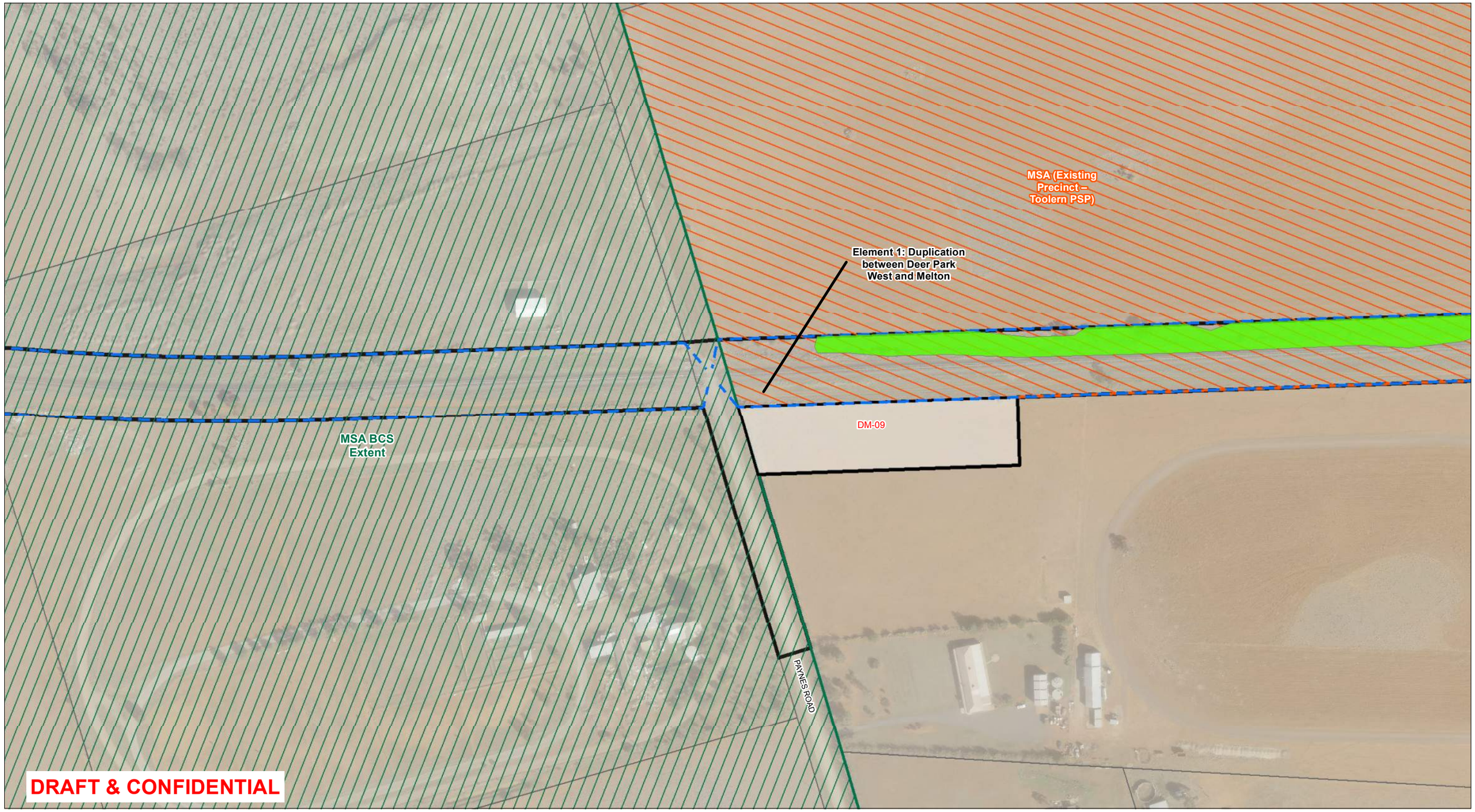
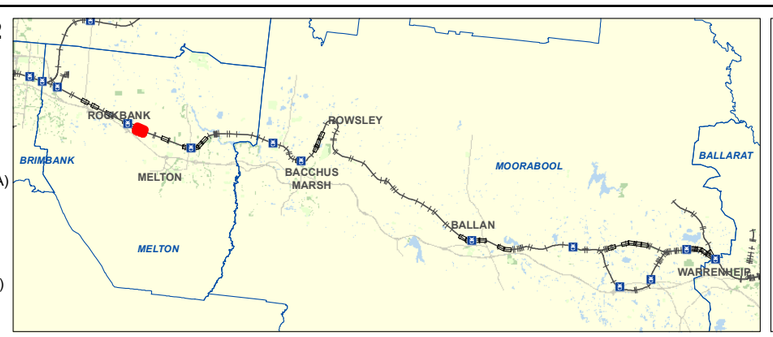


Legend

- VicTrack Reserve boundary
- Project Land
- Secondary Construction Areas
- MSA BCS Extent
- MSA (Existing Precinct – Toolern PSP)
- Plains Grassland

Map 6 of 32



Data Sources:
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- VicTrack (2017)
- DELWP (2016)

MELBOURNE METRO RAIL AUTHORITY

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Ballarat Line Upgrade Project

Title:
Secondary Construction Areas - Ecology

Drawing Number:			Revision:
BLU-AJM-PWAA-MP-NF-600050			P1.3
Drawn By: A. Berman	Approved By: A. Michael	Date: 23/06/2017	Map Size: A3

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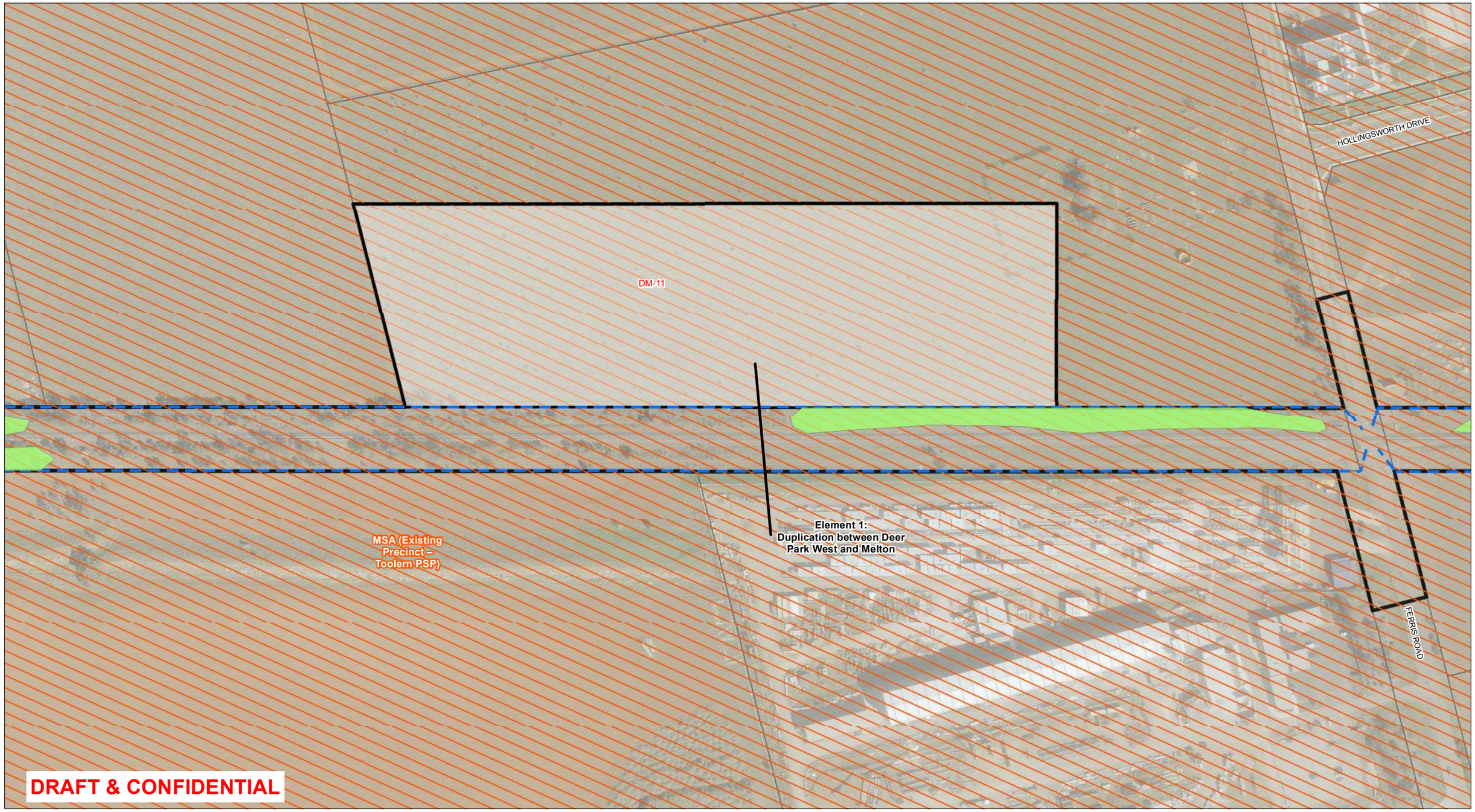
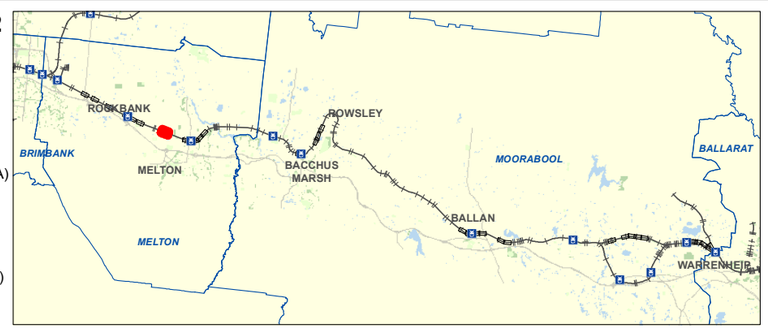


Legend

- VicTrack Reserve boundary
- Project Land
- Secondary Construction Areas
- MSA (Existing Precinct – Toolern PSP)
- Plains Woodland

Map 7 of 32



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MELBOURNE METRO RAIL AUTHORITY

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Ballarat Line Upgrade Project

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Secondary Construction Areas - Ecology

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BLU-AJM-PWAA-MP-NF-600050			P1.3
Drawn By:	Approved By:	Date:	Map Size:
A. Berman	A. Michael	23/06/2017	A3

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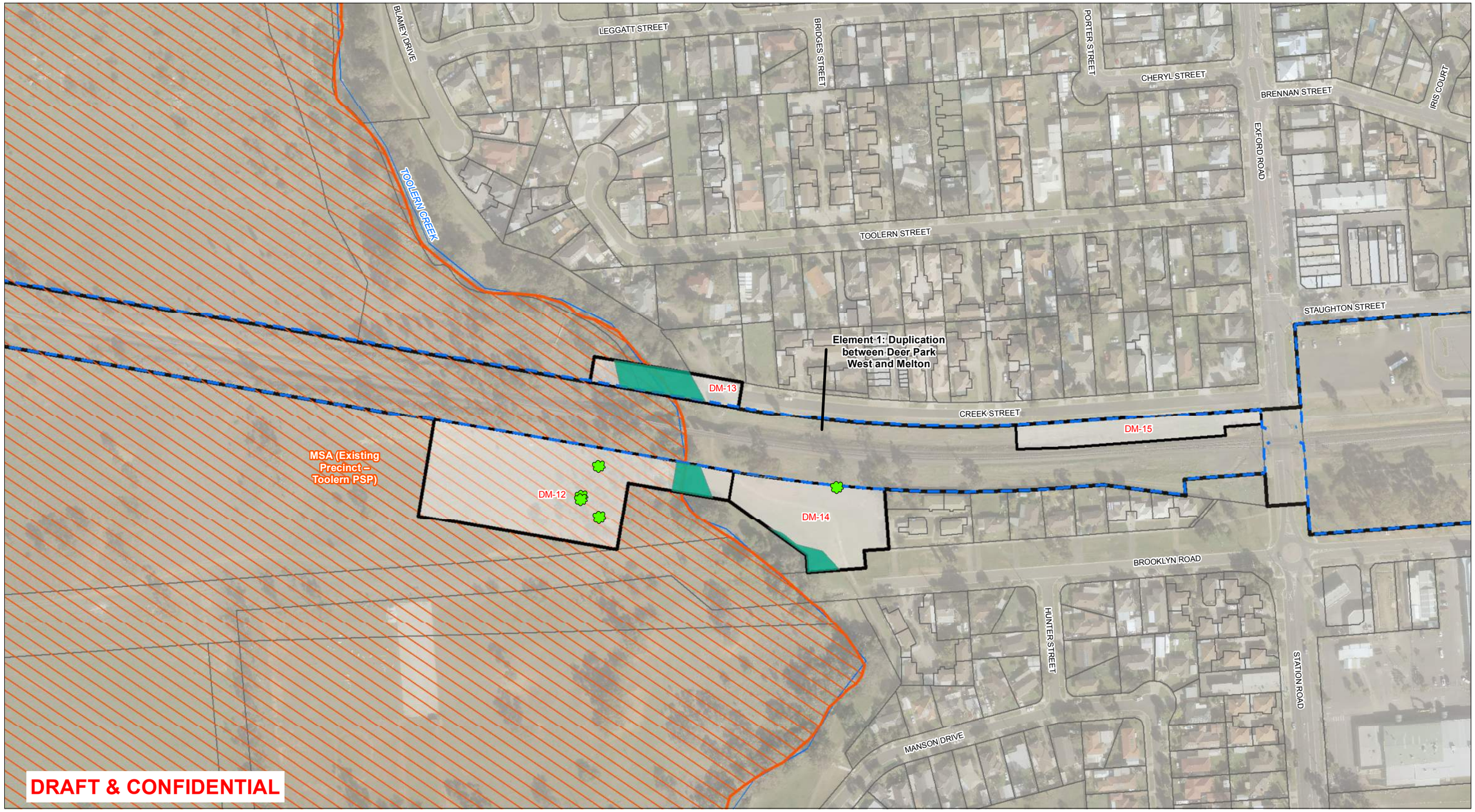
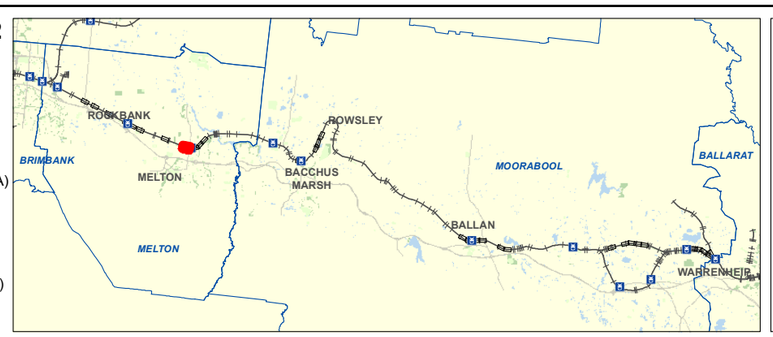


Legend

- VicTrack Reserve boundary
- Watercourse
- Project Land
- Secondary Construction Areas
- MSA (Existing Precinct – Toolern PSP)
- Creekline Grassy Woodland
- Plains Woodland
- Scattered Tree

Map 8 of 32

Data Sources:
- Laydown Areas (MMRA)
- AJMJV Reference Design (May 2017)
- Golder Investigation Locations (Mar 2017)
- EHP Ecology Assessment (Feb 2017)
- VicTrack (2017)
- DELWP (2016)



MELBOURNE METRO RAIL AUTHORITY

AJM Joint Venture — aurecon JACOBS MOTT MACDONALD

Ballarat Line Upgrade Project

Title:
Secondary Construction Areas - Ecology

Drawing Number:	Revision:
BLU-AJM-PWAA-MP-NF-600050	P1.3

Drawn By:	Approved By:	Date:	Map Size:
A. Berman	A. Michael	23/06/2017	A3

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Metres
Coordinate System: GDA 1994 MGA Zone 55

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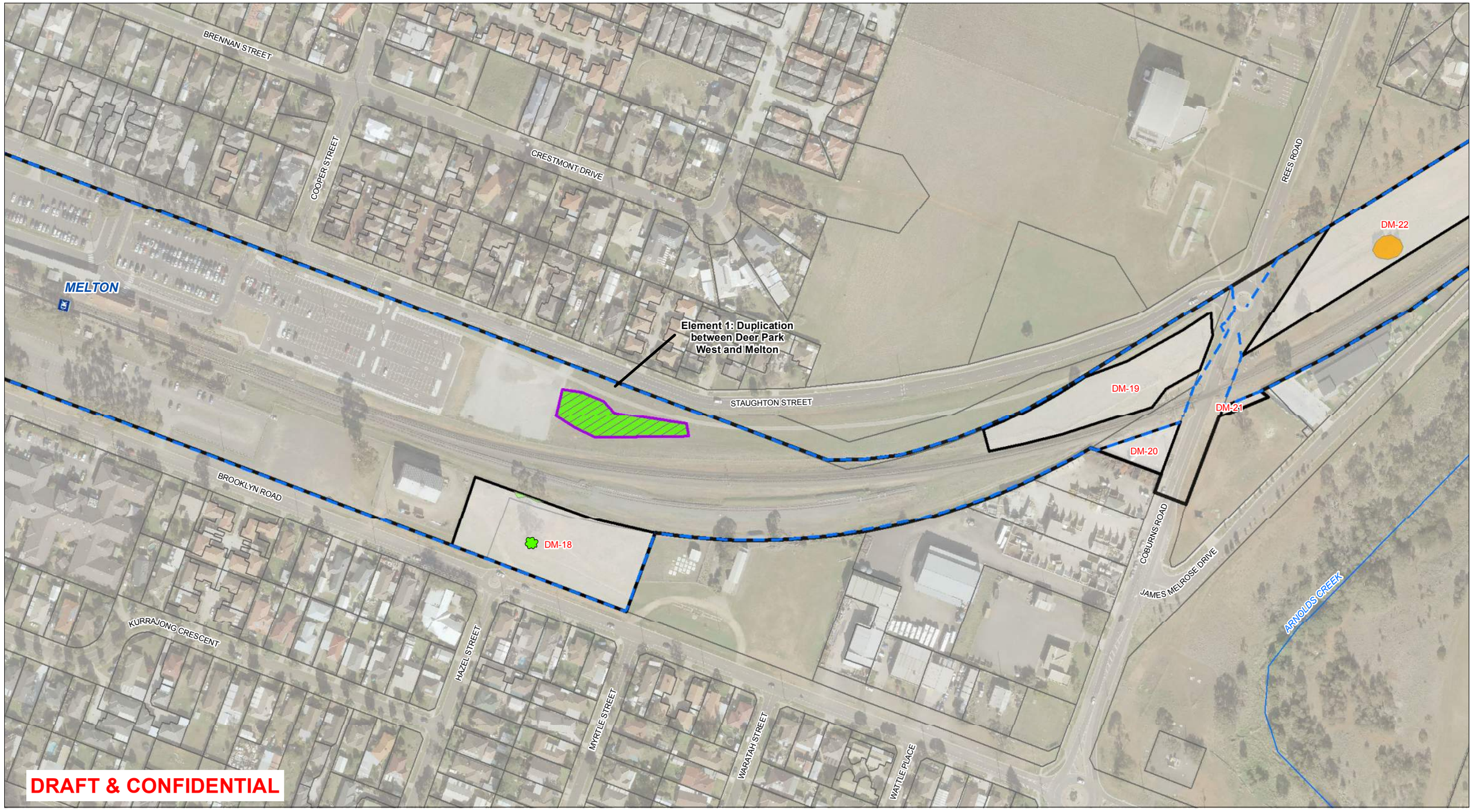
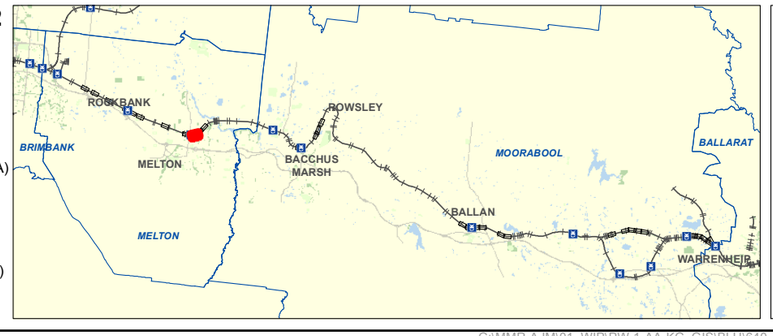


Legend

- VicTrack Reserve boundary
- Watercourse
- Project Land
- Secondary Construction Areas
- Plains Grassy Woodland
- Plains Woodland
- Plains Grassland
- NTGVVP
- Scattered Tree

Map 9 of 32



Data Sources:
- Laydown Areas (MMRA)
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- Golder Investigation Locations (Mar 2017)
- EHP Ecology Assessment (Feb 2017)
- VicTrack (2017)
- DELWP (2016)

MELBOURNE METRO RAIL AUTHORITY

AJM Joint Venture — aurecon JACOBS MOTT MACDONALD

Ballarat Line Upgrade Project

Title:
Secondary Construction Areas - Ecology

Drawing Number:	Revision:
BLU-AJM-PWAA-MP-NF-600050	P1.3

Drawn By:	Approved By:	Date:	Map Size:
A. Berman	A. Michael	23/06/2017	A3

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Metres
Coordinate System: GDA 1994 MGA Zone 55

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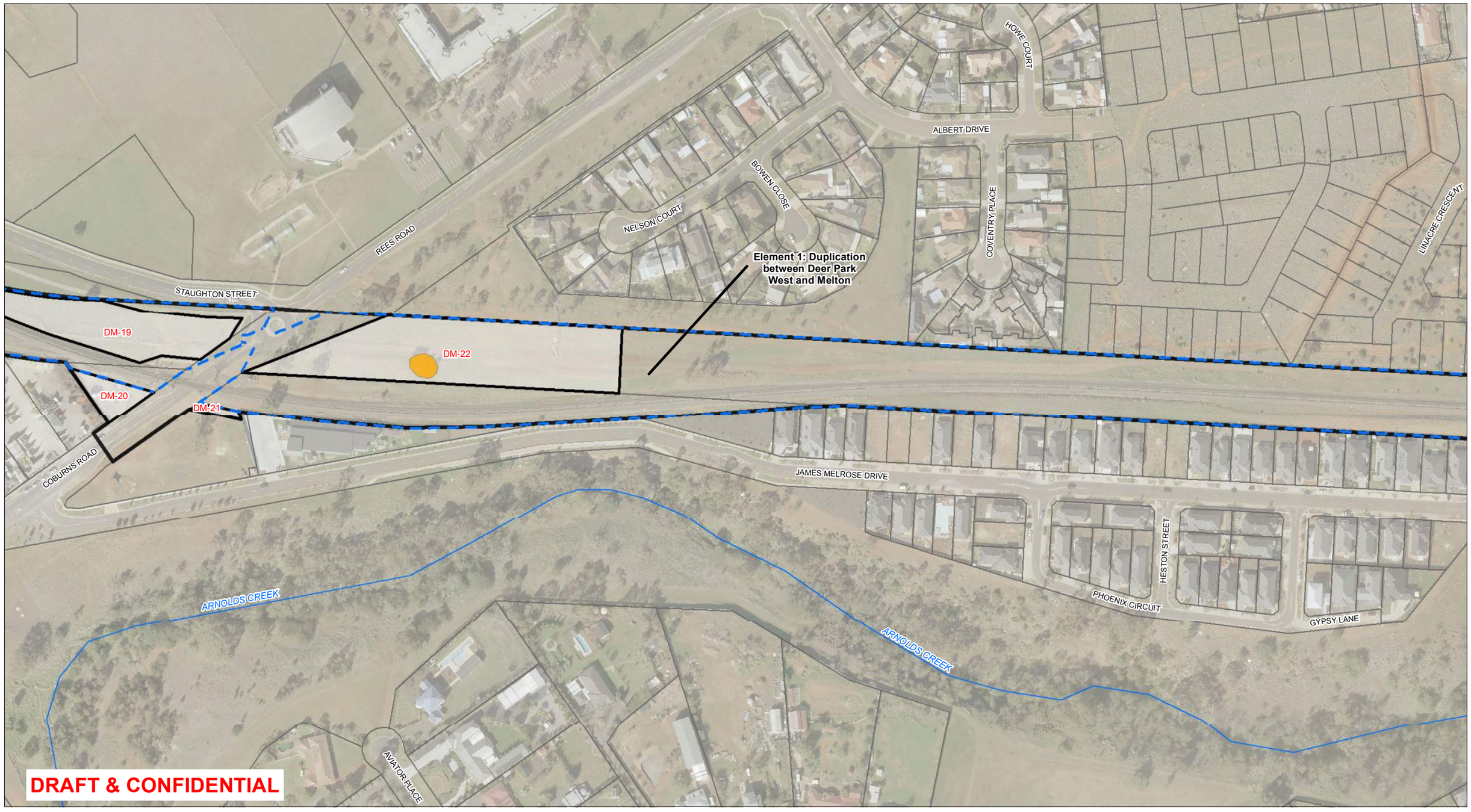
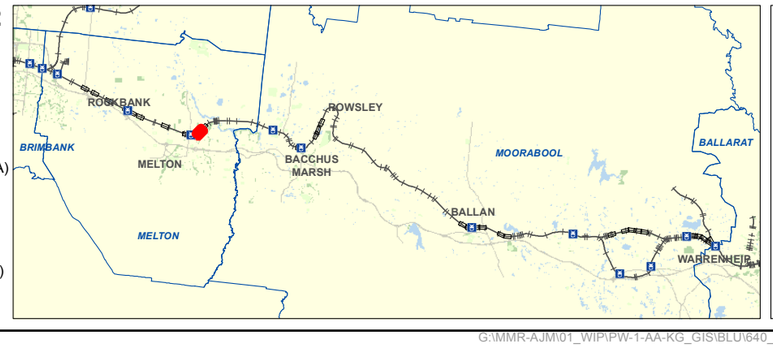


Legend

- VicTrack Reserve boundary
- Watercourse
- Project Land
- Secondary Construction Areas
- Plains Grassy Woodland

Map 10 of 32



Data Sources:
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- Golder Investigation Locations (Mar 2017)
- EHP Ecology Assessment (Feb 2017)
- VicTrack (2017)
- DELWP (2016)

MELBOURNE METRO RAIL AUTHORITY

AJM Joint Venture — aurecon JACOBS M MOTT MACDONALD M

Ballarat Line Upgrade Project

Title:
Secondary Construction Areas - Ecology

Drawing Number:	Revision:
BLU-AJM-PWAA-MP-NF-600050	P1.3

Drawn By:	Approved By:	Date:	Map Size:
A. Berman	A. Michael	23/06/2017	A3

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Metres
Coordinate System: GDA 1994 MGA Zone 55

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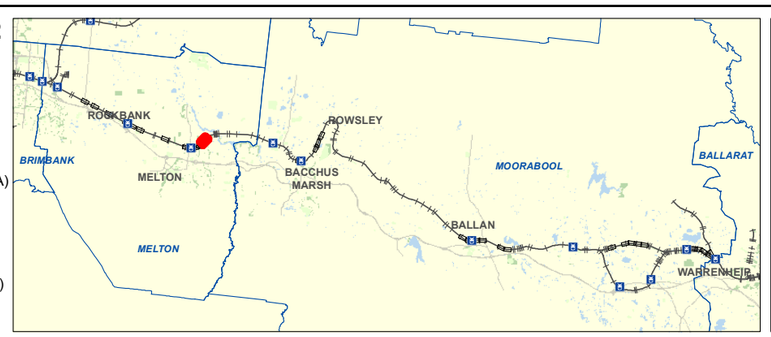
CLEMENT WAY
ABBOTT STREET
MAPLETON BOULEVARD
TORRINGTON CIRCUIT
MONOMEITH MEWS
ALBERT DRIVE
LINACRE CRESCENT
Element 1: Duplication between Deer Park West and Melton
BOLTON AVENUE
MEIGHEN CIRCUIT
DM-23
JAMES MELROSE DRIVE
HESTON STREET
PHOENIX CIRCUIT
GYPSY LANE
ARNOLDS CREEK
HILDA DRIVE
LORES DRIVE

DRAFT & CONFIDENTIAL

Legend

- VicTrack Reserve boundary
- Watercourse
- Project Land
- Secondary Construction Areas
- Plains Grassland
- NTGVVP

Map 11 of 32



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MELBOURNE METRO RAIL AUTHORITY

AJM Joint Venture

aurecon JACOBS MOTT MACDONALD

Ballarat Line Upgrade Project

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Secondary Construction Areas - Ecology

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BLU-AJM-PWAA-MP-NF-600050			P1.3
Drawn By:	Approved By:	Date:	Map Size:
A. Berman	A. Michael	23/06/2017	A3

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Metres
Coordinate System: GDA 1994 MGA Zone 55

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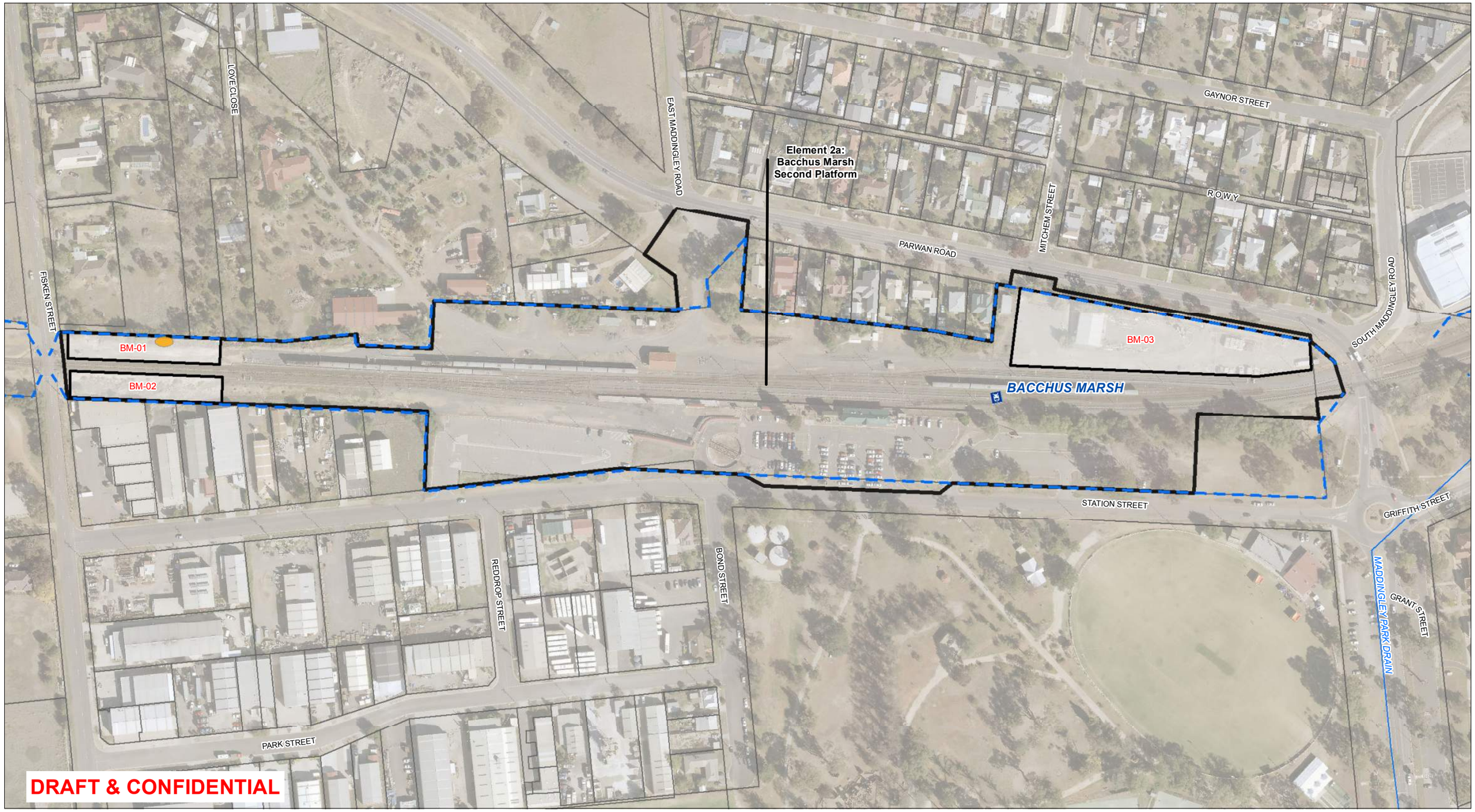

Legend

- VicTrack Reserve boundary
- Watercourse
- Project Land
- Secondary Construction Areas
- Plains Grassy Woodland

Map 12 of 32

Data Sources:
- Laydown Areas (MMRA)
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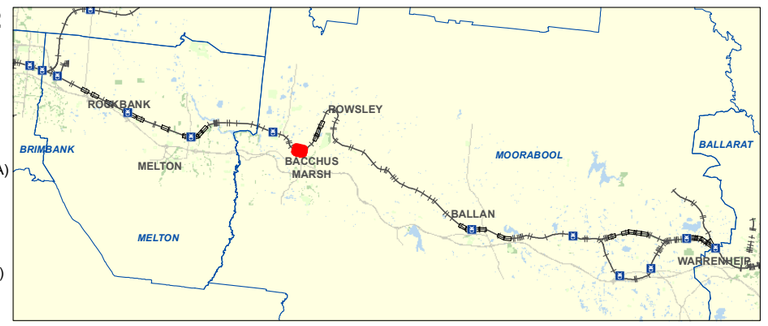

MELBOURNE METRO RAIL AUTHORITY

AJM Joint Venture — aurecon JACOBS M — MOTT MACDONALD M

Ballarat Line Upgrade Project

Title:
Secondary Construction Areas - Ecology

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BLU-AJM-PWAA-MP-NF-600050	P1.3

Drawn By:	Approved By:	Date:	Map Size:
A. Berman	A. Michael	23/06/2017	A3

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Metres
Coordinate System: GDA 1994 MGA Zone 55

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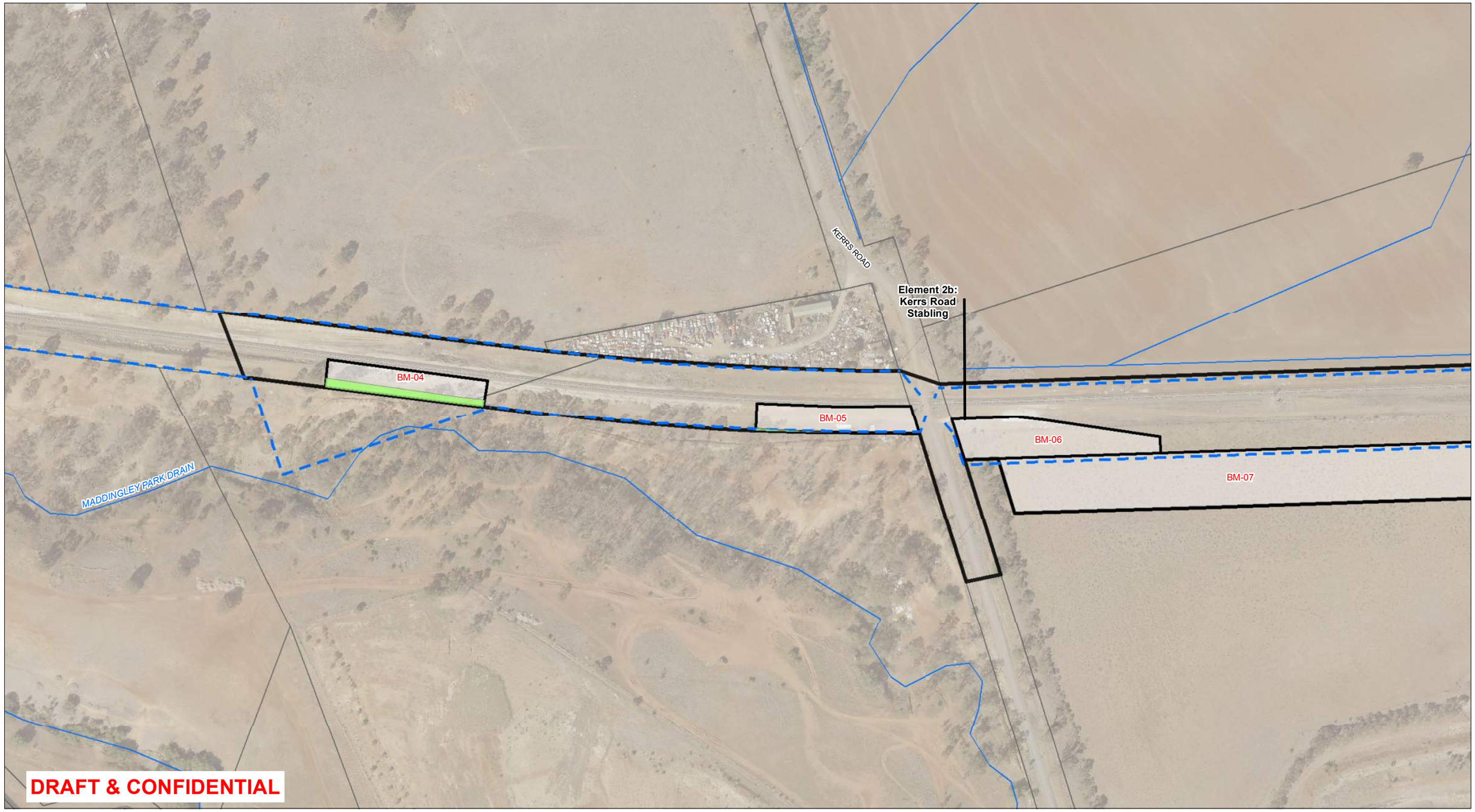
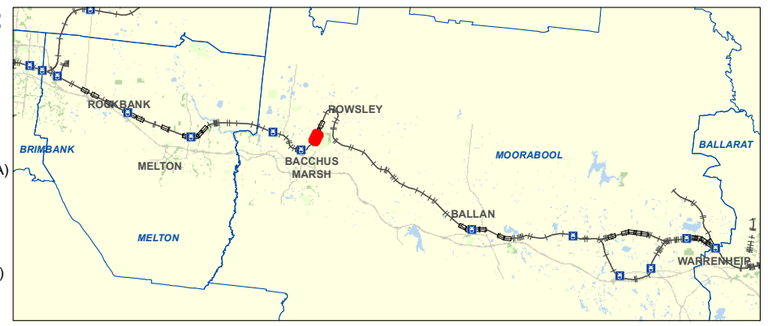


Legend

- VicTrack Reserve boundary
- Watercourse
- Project Land
- Secondary Construction Areas
- Plains Woodland

Map 13 of 32



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MELBOURNE METRO RAIL AUTHORITY

AJM Joint Venture — aurecon JACOBS M MOTT MACDONALD

Ballarat Line Upgrade Project

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Secondary Construction Areas - Ecology

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Drawn By:	Approved By:	Date:	Map Size:
A. Berman	A. Michael	23/06/2017	A3

0 50 100
Metres
Coordinate System: GDA 1994 MGA Zone 55

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Element 2b:
Kerrs Road
Stabling

BM-06

BM-07

BM-08

KERRS ROAD

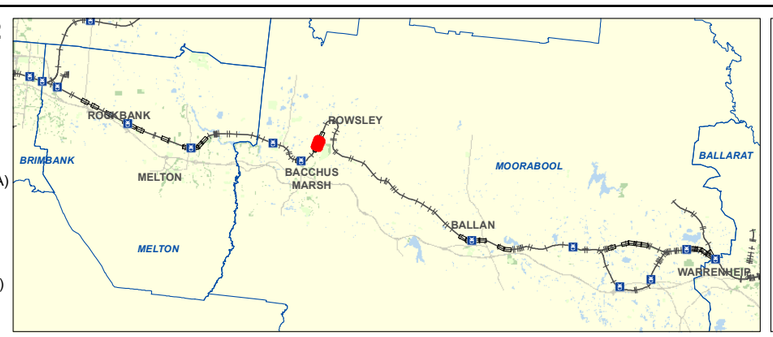
MADDINGLEY PARK DRAIN

DRAFT & CONFIDENTIAL

Legend

- VicTrack Reserve boundary
- Watercourse
- Project Land
- Secondary Construction Areas
- Plains Woodland
- Scattered Tree

Map 14 of 32



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MELBOURNE METRO RAIL AUTHORITY

AJM Joint Venture

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Ballarat Line Upgrade Project

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Drawn By:	Approved By:	Date:	Map Size:
A. Berman	A. Michael	23/06/2017	A3

0 50 100
Metres
Coordinate System: GDA 1994 MGA Zone 55

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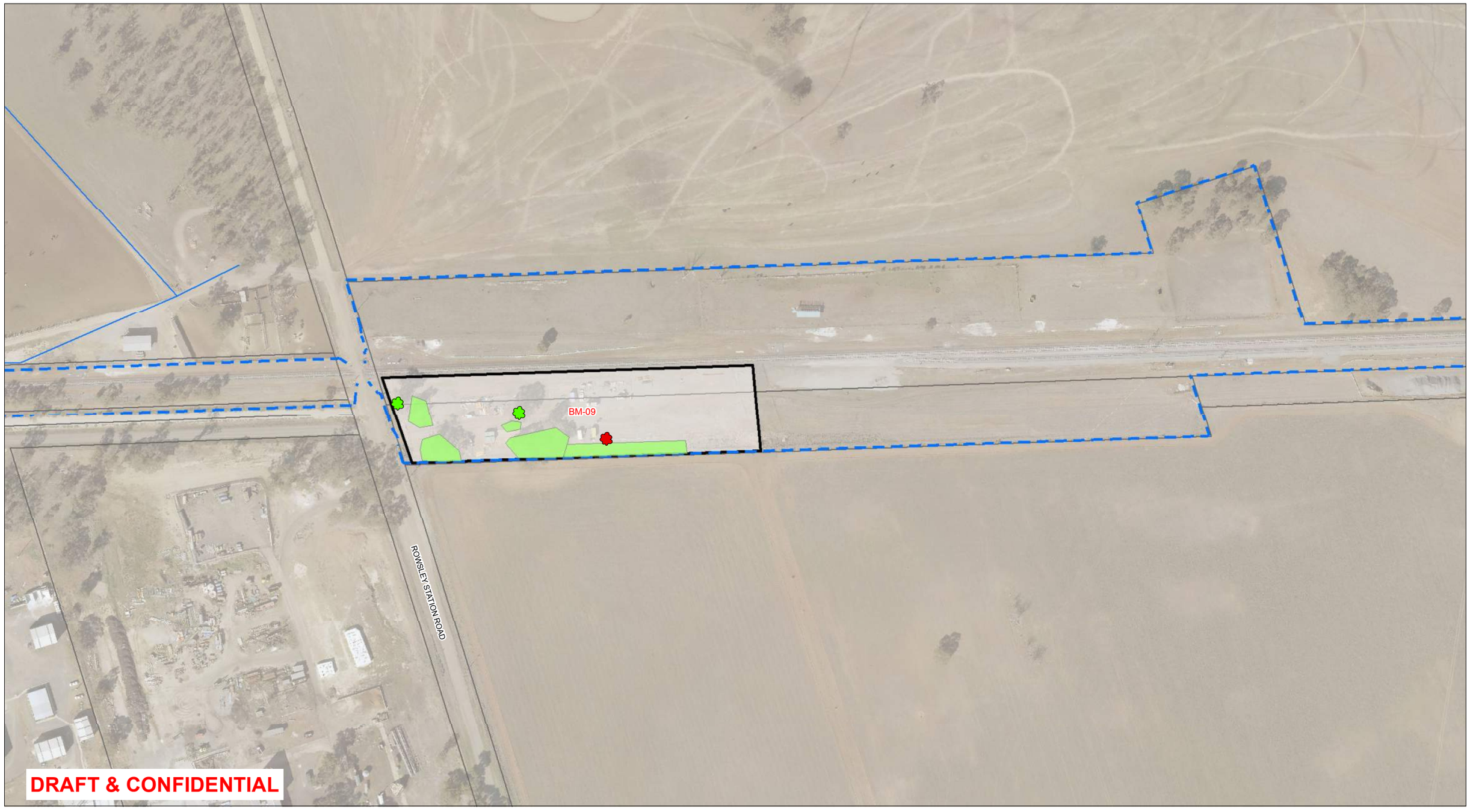
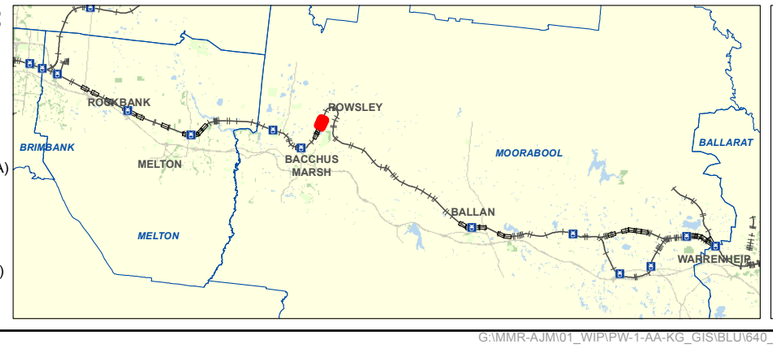


Legend

- VicTrack Reserve boundary
- Watercourse
- Project Land
- Secondary Construction Areas
- Plains Woodland
- Matted flax-lily
- Scattered Tree

Map 15 of 32



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MELBOURNE METRO RAIL AUTHORITY

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aurecon JACOBS MOTT MACDONALD

Ballarat Line Upgrade Project

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Secondary Construction Areas - Ecology

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BLU-AJM-PWAA-MP-NF-600050			P1.3
Drawn By: A. Berman	Approved By: A. Michael	Date: 23/06/2017	Map Size: A3

0 50 100
Metres
Coordinate System: GDA 1994 MGA Zone 55

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