Ballarat West Employment Zone: Environmental Management Plan

FINAL REPORT

Prepared for City of Ballarat

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1. Introduction

1.1 Development of the Environmental Management Plan

Biosis Pty Ltd was commissioned by the City of Ballarat to prepare an environmental management plan (EMP) for the Ballarat West Employment Zone (BWEZ) (Figure 1).

The EMP was prepared in consultation with a range of key stakeholders and in consideration of the objectives of the BWEZ Master Plan (City of Ballarat 2012).

1.2 Ballarat West Employment Zone Master Plan

The BWEZ is a key project to facilitate Council's objective of providing land for future industry and delivering jobs for the growing population of Ballarat. Development of the BWEZ site is considered critical for the future of Ballarat's economy and the project has been identified as a project of state significance.

The BWEZ Master Plan (City of Ballarat 2012), which was adopted by Council on 23 May 2012, has been developed to broadly guide and zone the development of the site. The Master Plan, with a 20 year horizon, is designed to optimise the future development of the 623ha site which is comprised of 438ha of Crown Land and the existing Ballarat Airport which occupies 185ha of Council land.

The BWEZ Master Plan identified constraints on development of the site and included a high level assessment of its ecological features and infrastructure requirements.

One of the guiding principles used in the preparation of the BWEZ Master Plan is:

> *The retention and enhancement of important environmental, heritage, hydrological links and landscape features and attributes, particularly through the central north-south corridor of the site.*

This EMP addresses the environmental issues within the site and specifies management actions with the aim of achieving the stated environmental goals for the site.

1.3 Legislative framework

All management actions and other considerations for the management of the site were assessed in relation to key planning and biodiversity legislation and policy including:

- The City of Ballarat Planning Scheme including Clauses 12.01-2, 52.17 and 66.02 and relevant Overlays.
- Matters listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act); associated policy statements, significant impacts guidelines, listing advice and key threatening processes.
- Threatened taxa, communities and threatening processes listed under Section 10 of the *Flora & Fauna Guarantee Act 1988* (FFG Act); associated action statements and listing advice.
- Victoria's Native Vegetation Management – a Framework for Action (the Framework; DNRE 2002).
- Native Vegetation Management Plans prepared by Catchment Management Authorities.

- *Planning and Environment Act 1987* –Noxious weeds and pest animals lists under the *Catchment and Land Protection Act 1994* (CaLP Act).
- State Environment Protection Policy (Air Quality Management). Environment Protection Authority of Victoria., December 2001;
- State Environment Protection Policy (Control of Noise from Commerce, industry and Trade) Environmental Protect Authority of Victoria, June 2011
- State Environment Protection Policy *waters of Victoria) June 2003 and
- State Environment Protection Policy (Ground waters of Victoria) December 1997.

1.3.1 Development Plan Overlay - Schedule 10

The aim of Schedule 10 to the Development Plan Overlay (DPO10) under the Ballarat Planning Scheme is to guide development in accordance with the Ballarat West Employment Zone Master Plan document. The preparation of an EMP for the BWEZ is a requirement under Section 3 of DPO10.

DPO10 requires the EMP to be prepared to the satisfaction of the Responsible Authority (City of Ballarat) and the Department of Environment and Primary Industries (DEPI).

The EMP informs the DPO10 decision making process with the aim of ensuring that impacts on environmental values are avoided or minimised, and where possible enhanced, and that no long-term on-site or off-site adverse environmental impacts result from the development of the site.

1.4 Responsibility

The City of Ballarat as the Responsible Authority is responsible for the implementation of the EMP.

1.5 Operational period

The EMP is current for a period of 10 years from the date of approval.

1.6 Principles for the EMP

The aim of the EMP is:

- **To develop a management framework that provides for natural processes to continue and appropriate public use while allowing for the majority of the site to be developed for industry.**

The objective of the EMP is to:

- **Ensure that development of the BWEZ is undertaken in a way that:**
  - *Protects or enhances environmental values.*
  - *Avoids areas where there is the highest risk of adverse ecological impacts.*
  - *Minimises adverse impacts on environmental processes within and outside the site.*
  - *Maintains or enhances environmental and hydrological corridors through the site.*
  - *Manages threatening processes including pest plants animals, pollution and fire.*
  - *Allows for public recreation and enjoyment of the site in appropriate locations.*

1.7 Structure of the EMP

The EMP provides succinct and clear directions to the manager of the site regarding what is to be managed, what actions are to be undertaken, when the actions are to be undertaken and what standard is required to successfully complete the action.

Section 2 provides background information and the context for the EMP.

Section 3 identifies issues to be managed, the aims for management of each issue and the management actions required to achieve the aim.

Section 4 provides a consolidated table of management actions. The table includes the action to be undertaken, when it is to be undertaken and the standard to be achieved for it to be successfully completed.

The majority of the issues addressed in the EMP have been previously investigated (see references) and included in the Master Plan (City of Ballarat 2012).

1.8 Adaptive Management

All management activities must adopt an adaptive management approach which includes an integrated process of data collection, review and response. Adaptive management allows for alterations to specific actions outlined in this EMP as new or unpredictable environmental impacts arise or where improved methods for minimising impacts are devised.

On-going data collection (Section 3.5) will be undertaken to determine if each action is achieving the required outcomes. Where the action is not achieving the desired result the EMP will be varied and updated by the City of Ballarat in an attempt to achieve the required result.

Any proposed changes to the EMP actions or schedule of actions must comply with the overall aims of this EMP. Consultation with DEPI and other key stakeholders, where appropriate, will be undertaken should a deviation from the specifications of this EMP be required and only implemented after agreement is reached.

A comprehensive review of the EMP will be undertaken at the end of the 10 year period and a new or revised EMP will be instituted for the ensuing 10 years.

2. Background

2.1 Location and area covered by the EMP

The BWEZ is located on the western edge of the built up area of Ballarat (Figure 1).

The EMP applies to the whole of the BWEZ however, management actions may only apply to particular zones within the BWEZ as identified in the Master Plan. The broad zones within the BWEZ are: Development Area (which incorporates energy, industry, freight, business, research and development and residential components), Retarding Basin, Transport corridor (including existing and proposed road network) and Open Space (Figure 2).

2.2 Local context

The BWEZ marks the interface between the highly developed Ballarat urban area to the east and the sparsely settled open farmland to the west.

The BWEZ is comprised primarily of flat open grassland dominated by introduced grasses with tall old windbreaks of mainly Radiata Pine *Pinus radiata*.

The land surrounding the BWEZ is comprised of developed residential and industrial land to the east; the Ballarat Aerodrome to the north; open farmland and low density residential land to the west; and Winter Swamp to the south.

The BWEZ is well serviced by, and is in is in close proximity to, the Western Freeway to the north; the Sunrasia Highway and Ring Road to the east; and, the Old Western Highway to the south (Figures 1 and 2). The proposed Link Road runs along the eastern boundary and through the southern portion of the BWEZ (Figure 2).

2.3 Previous studies

A variety of studies have been undertaken within the study area.

Documents reviewed were:

- *Ecological Overview Assessment: Ballarat West Employment Zone*. Aecom, September 2011.
- *Environmental Noise Assessment*: Ballarat West Employment Zone. Aecom, February 2012.
- *Soil and Groundwater Contamination Assessment: Ballarat West Employment Zone*. Aecom, September 2011.
- *Hydrology Assessment: Ballarat West Employment Zone*. Aecom, February 2012.
- *Flora and Fauna Assessment: Ballarat Western Link Road*. Aecom, May 2011.
- *Alfredton West Precinct Structure Plan: Growling Grass Frog Targeted Surveys*. Biosis Research, December 2010.
- *Habitat Assessment: Ballarat West Employment Zone*. Biosis Research, March 2012.
- *Ballarat West Employment Zone: Flora and Fauna Assessment*. Biosis Research, September 2010.

- *Additional Flora and Fauna Assessments: Ballarat West Employment Zone*. Biosis Research May 2011.
- *Flora and fauna of the Aerodrome Precinct*. Centre for Environmental Management, April 2007.
- *Ballarat West Employment Zone: Site Drainage Master Plan*. Cardno, November 2013.

Additional documents reviewed:

- *A targeted Raptor and Brolga survey of the Ballarat Aerodrome, Winter Swamp and the Western Link Road.* Biosis, December 2012.
- *Ballarat West Growth Area: Conservation Management Plan for the Growling Grass Frog (*Litoria raniformis*).* SMEC, December 2011.
- *Ballarat Western Link Road Stage 1: Net Gain Assess of Remnant Vegetation between Winter Swamp and Ring Road.* Biosis, February 2013.
- *Ballarat Western Link Road Stage 1: Targeted flora survey.* Biosis, December 2012.

The existing documents provided the basis for the development of the EMP and no additional detailed assessments were undertaken during the development of the EMP.

2.4 Existing environmental values

The environmental values of the site are generally low. No areas of remnant native vegetation remain within the site although a few scattered native species are present along adjacent roadsides, along the Ballarat Skipton Rail Trail and along the drainage line between Flax Mill Swamp and Winter Swamp in the south of the BWEZ (Figure 2).

Overall the site is dominated by introduced grasses which provide only marginal habitat value for a limited number of native species. The Ballarat Environmental Network (BEN) has undertaken revegetation works along and surrounding the drainage line between Flax Mill Swamp and Winter Swamp where species such as Swamp Gum, Snow Gum, Blackwood, Black Wattle and Hedge Wattle have been planted on the higher ground and sedges and rushes within the drainage line. There is an opportunity to extend the revegetation works undertaken by BEN and enhance the environmental values of the BWEZ, particularly within the Open Space north of Blind Creek Road.

2.5 Public use

The area covered by the BWEZ is fenced and, except for a narrow strip of land along the drainage line between Flax Mill Swamp and Winter Swamp, is currently licensed for stock grazing. As a result it is not widely used for recreation. The main current recreational use within the site is centered on the Ballarat Skipton Rail Trail (Figure 2) which is popular for walking and cycling. A slashed walking track is maintained along the drainage line from the Ring Road to Winter Swamp and is used occasionally by bird watchers.

There may be an opportunity in the future to extend the recreational use of the area designated as Open Space and to coordinate visitor use and facilities with the proposed residential area in the south-west of the site and the adjacent Winter Swamp (Figure 2).

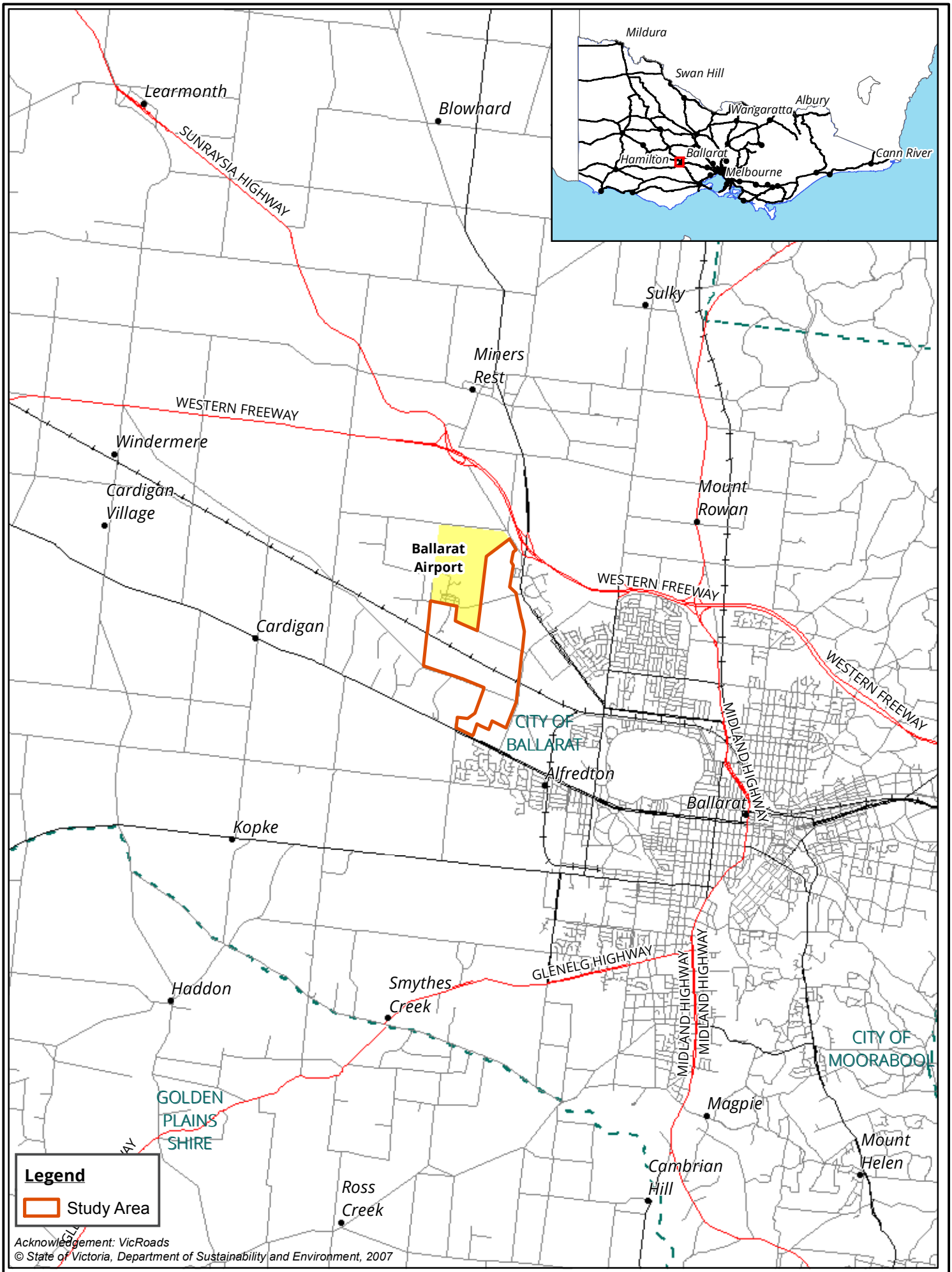

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Figure 1: Location of the Ballarat West Employment Zone (BWEZ), Ballarat, Victoria

Matter: 16478,
Date: 09 May 2013,
Checked by: JM, Drawn by: STF, Last edited by: sflack
Location:P:\16400s\16478\Mapping\Biosis_data\

0 1 2 3 4
Kilometers
N
Scale 1:100,000 @ A4, GDA 1994 MGA Zone 55

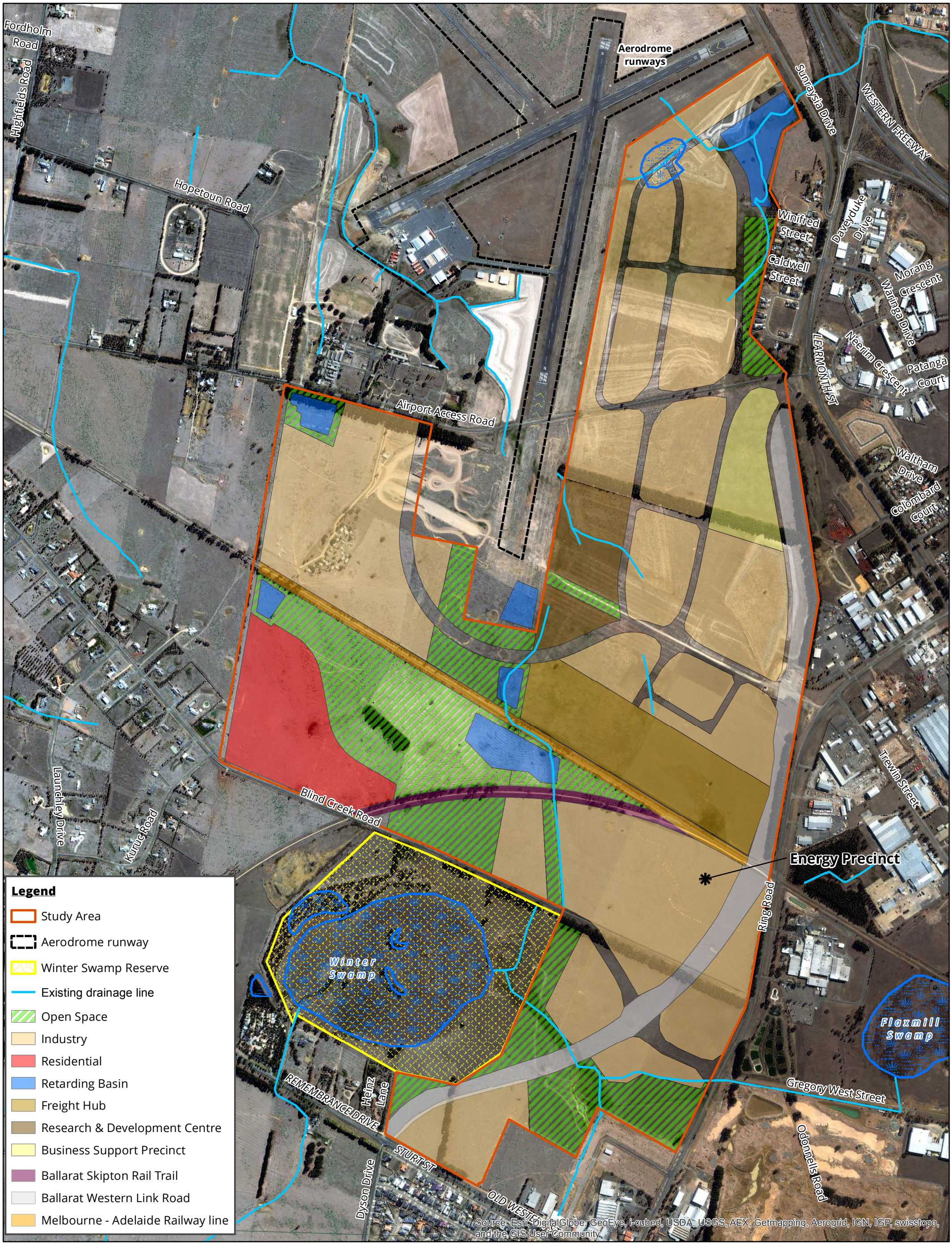

Figure 2: Ballarat West Employment Zone: Master Plan Landuse Zones

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Matter: 16478,
Date: 12 December 2013,
Checked by: JM, Drawn by: STF/SKM, Last edited by: jshepherd
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16478_Figure2_20131212

0 100 200 300 400 500
Metres
Scale 1:12,000 @ A3
Coordinate System: GDA 1994 MGA Zone 54

N

3. The Environmental Management Plan

3.1 Management of environmental values

3.1.1 Delineation of the Open Space environmental corridor

The Master Plan (City of Ballarat 2012) defines areas of Open Space within the BWEZ to include a narrow strip of land in the north-east corner of the site; a broad area between the aerodrome north-south runway and the northern boundary of Winter Swamp; and a strip along the drainage line east of Winter Swamp (Figure 2). The area designated as Open Space provides an environmental corridor through the BWEZ.

The primary purposes of the Open Space environmental corridor are to:

- Protect the primary drainage lines within the BWEZ;
- Provide a clear flight path for aircraft
- Protect the environs of Winter Swamp; and,
- Provide habitat and movement corridors for a variety of generally smaller wildlife including birds, frogs, reptiles and potentially small mammals.

Following consultation with the City of Ballarat, DEPI, Ballarat Aerodrome management, BEN and the Glenelg Hopkins Catchment Management Authority (GHCMA) the boundaries of the Open Space environmental corridors where they interface with Development Areas south of the aerodrome north-south runway, as shown in Figure 3, are to be:

- As wide as possible along defined drainage lines (Figure 2);
- Set back At least 200m from the eastern and northern boundaries of the Winter Swamp Reserve;
- A strip of around 400m width south of the aerodrome runway to be maintained free of infrastructure to ensure aviation safety.

The isolated environmental corridor in the north east of the BWEZ, south of Sunrasia Drive, will abut the retarding Basin and the Development Area as shown in Figure 3.

The Open Space environmental corridors, when established, will be clearly defined on the ground with marker posts. Where land adjacent to the Open Space is to be grazed by domestic stock the boundary of the Open Space will be fenced to ensure wandering stock do not encroach.

Aim

- **To provide Open Space environmental corridors within the BWEZ.**

Actions

- ***Delineate the boundaries of the Open Space environmental corridors with marker posts so it is clear that the primary purpose of the area is an Open Space environmental corridor.***
- ***Fence the boundary of the Open Space environmental corridors with stock-proof fencing where it interfaces with land that is grazed by domestic stock.***
- ***Install gates suitable for management vehicle access, including tractor and slasher, at suitable locations along fenced sections of the boundary as required.***

3.1.2 Restoration of native vegetation

No areas of ecological vegetation class (EVC) or species of national, state or regional significance have been recorded within the BWEZ (Biosis Research 2010a). However, the site supports a few remnant scattered indigenous Swamp Gum and Blackwood trees. Indigenous grasses and small herbaceous species also persist on some roadsides and along fencelines.

The Department Environment and Primary Industries (DEPI) vegetation mapping indicates that the whole site would have formerly supported Plains Grassy Woodland EVC although it is likely that small patches of Plains Grassy Wetland EVC and possibly Plains Sedgy Wetland EVC would have occurred in low-lying depressions. The adjacent Winter Swamp and near-by Flax Mill Swamp are both classified as Plains Sedgy Wetland EVC.

BEN has undertaken revegetation planting along the drainage line to the east of Winter Swamp and along the fenceline interfaces with the existing industrial development in the south-east of the BWEZ. Species planted include Swamp Gum, Snow Gum, Blackwood and Black Wattle and shrubs including Hedge Wattle and robust understorey species such as Common Tussock-grass, Tall Sedge and Tall Rush.

Management of the BWEZ Open Space environmental corridor south of the Ararat to Ararat Railway Line and south of Sunrasia Drive (Figure 3) will aim to restore the overstorey component of Plains Grassy Woodland. The area between the railway line and the interface with the aerodrome will not be revegetated with trees due to aviation safety concerns.

The restoration of the Plains Grassy Woodland vegetation will include the planting of Swamp Gums of local provenance at an irregular spacing and at a density of approximately 50 trees per hectare within the designated Open Space environmental corridors. Scattered clumps of up to 10 Blackwoods and Black Wattles will also be planted at no closer than 100m intervals.

A Site Drainage Plan has been prepared (Cardno, 2013) which specifies the location and configuration of Retarding Basins within the BWEZ (Figure 2). The Basins abut but do not form part of the Open Space environmental corridor and are to be managed primarily for the management of water drainage within the site. However, where consistent with the primary role of the Retarding Basins, revegetation along drainage lines and around the margins of the Basins may be undertaken to improve amenity and habitat value. Revegetation in these areas will be undertaken with robust indigenous wetland species such as Tall Sedge, Poong'ort, Hollow Rush and Tall Rush as well as Common Tussock-grass.

Aims

- **To restore components of the former Plains Grassy Woodland EVC vegetation to designated sections of the Open Space environmental corridor within the BWEZ.**
- **To enhance the amenity and habitat value of the Retarding Basins and drainage lines.**

Actions

- ***Plant Swamp Gum seedlings within the Open Space environmental corridor south of the Ballarat to Ararat Railway Line and south of Sunrasia Drive at irregular intervals at the rate of approximately 50 trees per hectare.***
- ***Plant clumps of up to 10 Blackwoods and Black Wattles within the Open Space environmental corridor south of the Ballarat to Ararat Railway Line and south of Sunrasia Drive.***
- ***Revegetate Retarding Basins and drainage lines with suitable low-growing native species but only where this is consistent with their primary water management role***

- ***Maintain planted species to ensure their survival and replace any mortalities to ensure the overall "woodland" density of overstorey species is maintained within the Open Space environmental corridors.***

3.1.3 Native fauna

Fauna will be managed through the provision and maintenance of suitable habitat, allowance for appropriate setbacks of Development Areas from Open Space and design of infrastructure.

Birds and small native ground species such as frogs and reptiles are the main types of native fauna within the BWEZ. The revegetation of the Open Space environmental corridors will likely lead to an increased variety of native fauna using the site but may also lead to a reduction in some species, such as large birds of prey, that require more open grassland areas.

No fauna species of national or state significance have been found within the BWEZ although a colony of the Critically Endangered Golden Sun Moth, Listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth), has been recorded in the open grassland to the immediate east of the aerodrome north-south runway on Council airport land. There is potential for the nationally Listed Growling Grass Frog to occur within Winter Swamp and nearby drainage lines but it has not yet been recorded within the BWEZ.

Winter Swamp supports a wide variety of water birds and Brolga have been recorded breeding (Nick Jaschenko (DEPI) pers. Com.) on the small wetland to the east of the main swamp area near the junction of the two drainage lines (Figure 2). Threats to Brolga include predation by foxes and cats and collision with hard-to-see elevated structures such as powerlines.

Loud or shock noise may also adversely impact on fauna species. The maximum allowable sound power outputs for uses associated with BWEZ have been defined (Aecom 2012a) and vary with distance to a sensitive receptor. The higher the sound power output of an action or facility the greater the distance required to the sensitive receptor to ensure compliance with the Victorian State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1 (SEPP N-1).

While the sound power output limits are based on human tolerances, they may also apply to wildlife. As such the limits provide a guide for siting industry within the BWEZ. As a principle, more noisy industry should be located near the center of the Development Areas and areas adjacent to the Open Space environmental corridors should be reserved for industries with a lower noise output.

Aims

- **To provide and maintain suitable habitat within the Open Space environmental corridors for a range of native species.**
- **To ensure impacts on native fauna by industry and infrastructure within the Development Areas is minimised.**

Actions

- ***Institute and maintain the revegetation program within the Open Space environmental corridors.***
- ***Delineate the boundaries of the Open Space environmental corridors in accordance with specifications provided in Section 3.1.1.***
- ***Locate all power lines within the BWEZ underground wherever possible.***
- ***Locate noisy industry away from the Open Space environmental corridors wherever possible.***

3.2 Management of threatening processes

3.2.1 Fire

The site is dominated by introduced grasses which may become very dense following years of high rainfall. Currently no fire control measures are undertaken within the BWEZ area. However, grazing by domestic stock, which is undertaken in all areas except along the narrow fenced section along the drainage line to the east of Winter Swamp, helps to reduce fire fuel loads.

It is recommended that Grazing be permitted within the Development Areas until such time as they are developed for industry provided that stock are excluded from the Open Space environmental corridors.

Fire protection within the open Space environmental corridors will be undertaken through strategic annual slashing of a 20m firebreak along boundaries with Development Areas. .

Aim

- **To minimise the risk of unplanned fire entering or leaving the BWEZ.**

Actions

- ***Slash the boundary of the Open Space environmental corridor for a depth of 20m where it adjoins the Development Areas.***
- ***Permit grazing within the Development Areas until such time as they are required for industrial development.***

3.2.2 Pest plants

The BWEZ supports a variety of introduced flora species (Biosis Research 2010a). Most of the introduced species recorded are grasses, small herbs and thistles where there is very little prospect of direct control being successful. Control effort will be directed at noxious and woody environmental weeds.

Priority weeds for control are:

- Blackberry
- Gorse
- Hawthorn
- Sweet Briar
- Radiata Pine (seedlings and saplings).

Annual inspections for, and control of, all of these species will be undertaken throughout the Open Space environmental corridors with the aim being eradication.

Additional noxious or woody weeds may appear on the site following the removal of grazing. Any such species will be recorded and eradicated in addition to the listed priority weeds.

Control of isolated or small infestations of pest plants will be undertaken by removal with hand tools, stem "cut and paint" for woody weeds and spot spraying for larger infestations. Boom spraying will not be undertaken within the Open Space environmental corridor.

To ensure that additional weeds are not introduced to the site during the development of the BWEZ all landscaping in and around the Development Areas will be undertaken with non-invasive native or other species.

Aim

- **To eradicate all noxious and environmental woody weeds within the Open Space environmental corridors.**

Actions

- ***Inspect the Open Space environmental corridors annually for noxious and environmental woody weeds and record the location of any found.***
- ***Treat all noxious and environmental woody weeds within the Open Space environmental corridors at a time optimum for control of the particular species.***
- ***Ensure landscaping in and around Development Areas is undertaken with non-invasive native or introduced species only.***
- ***Record any additional weed species found during inspections and control as required.***

3.2.3 Pest animals

European rabbit, European hare and a few introduced birds have been recorded on the site and while the Red Fox has not been recorded it is undoubtedly present. The numbers of all pest animals is low however and control measures will only be undertaken where it is demonstrated that adverse impacts to native species or surrounding landholders is occurring. Control programs for European rabbits and Red Foxes will be coordinated with DEPI and other adjacent landholders to ensure the wider area is being treated and better control can be achieved.

Aim

- **To control European rabbits and Red Foxes within the BWEZ in cooperation with DEPI and surrounding landholders.**

Actions

- ***Monitor numbers of European rabbits within the BWEZ.***
- ***Destroy any rabbit warrens found within the Open Space environmental corridors.***
- ***Consult with DEPI regarding the need for control programs.***
- ***Coordinate control programs with DEPI and adjacent landholders.***

3.2.4 Soil erosion

The topography of the BWEZ is flat and the likelihood of erosion is very low. However, modification to the drainage lines and construction of Retarding Basins is likely to expose large areas of soil to potential erosion.

Areas of exposed soil will be revegetated quickly or otherwise protected while the sites are stabilizing and re--establishing a vegetated cover.

Aim

- **To ensure soil erosion is minimised.**

Actions

- ***Protect all areas of soil exposed as a result of drainage line and Retarding Basin construction with jute matting or similar until the site is revegetated.***
- ***Expose only the minimum area of bare soil required to complete the construction task.***

3.2.5 Motor vehicle access

The main points of access for motor vehicles to the BWEZ are defined in the Master Plan (City of Ballarat 2012).

Vehicle access to the Open Space environmental corridors will be limited to management vehicles only. Management vehicle access will be via locked gates placed at suitable locations in the surrounding fences.

Aim

- **To limit motor vehicle access to the Open Space environmental corridor to management vehicles only.**

Actions

- ***Fence the boundary of the Open Space environmental corridors where the boundary interfaces with land that is being grazed.***
- ***Install gates suitable for management vehicle access, including tractor and slasher, at suitable locations.***

3.2.6 Stock grazing

To reduce soil damage and ensure revegetation works are protected, domestic stock will be excluded from the Open Space environmental corridors (Figure 3). Stock will be permitted to continue to graze within the Development Areas until such time as they are scheduled for development. The continued grazing will assist with reduction of the grass fire hazard but will be phased out as the Development Areas are developed.

Aim

- **Protect the Open Space environmental corridors from damage by grazing by domestic stock.**
- **Phase stock grazing out of the BWEZ as it is developed.**

Actions

- ***Exclude domestic stock from the areas designated as Open Space environmental corridors when they are established.***
- ***Permit grazing within the Development Areas until such time as they are required for industrial development.***

3.2.7 Fencing

As far as is possible the BWEZ will be maintained as an open space and unfenced however there are a number of requirements for fencing both for management and safety purposes.

Where the Development Areas are to be licensed for stock grazing until such time as they are required by industry a stock-proof fence will be required between the Development Area and the Open Space environmental corridor. Existing fences may be suitable for this purpose but where no fence exists one will need to be erected before grazing is permitted.

To assist the movement of wildlife and visitors through The Open Space environmental corridor existing fences will be progressively removed where they are deemed to serve no purpose. The inception of the Open Space environmental corridor to the east of Winter Swamp means that the boundary fence is no longer required and will be removed. The fence along Blind Creek Road will be maintained to restrict unauthorised vehicle access to Winter Swamp.

Aim

- **To ensure that the BWEZ is adequately fenced.**

Actions

- ***Remove all surplus fences within the Open Space environmental corridors.***
- ***Remove the fence between Winter Swamp and the Open Space environmental corridor to the east of Winter Swamp.***
- ***Erect stock-proof fences between the Open Space environmental corridors and areas licensed for grazing as required.***

3.2.8 Power lines and aerials

Protruding isolated or difficult to see structures such as electricity lines and aerials have the capacity to adversely impact on birds and bats. Powerlines are a known cause of death of larger bird species such as Brolgas.

To ensure that bird and bat death or injuries are minimised within the BWEZ wherever possible powerlines should be installed underground and all aerials and towers should be located as far away as possible from Open Space environmental corridors.

Aim

- **To minimise the likely impacts of powerlines and telecommunication towers on native birds and bats.**

Actions

- ***Install electricity lines underground within the BWEZ as far as possible.***
- ***Locate all telecommunication towers as far as possible away from Open Space ecological corridors.***

3.3 Other issues

3.3.1 Induction of construction and maintenance staff

Works crews undertaking the works must be inducted into the environmental values of the site to ensure impacts are minimised. The induction will be conducted by a responsible officer of the City of Ballarat or other suitable person as determined by the City of Ballarat.

Aim

- **To ensure that adverse environmental impacts from the implementation of the EMP are avoided or minimised.**

Action

- ***Induct all works crews and contractors into the environmental values of the site and expectations for the conduct of their work.***

3.4 Monitoring of the EMP

The EMP specifies a range of actions that are to be implemented to ensure the management of the BWEZ is undertaken appropriately and results in the best environmental outcomes.

To ensure the site is being managed in accordance with the EMP and to a standard that is appropriate to achieve the required outcomes an annual monitoring should be undertaken by an appointed Responsible Officer of the City of Ballarat. The annual audits must be supported by documentation of the management activities undertaken.

Aim

- **To ensure the management actions specified in the EMP are being undertaken in accordance with the EMP and to a standard that is appropriate to achieve the desired outcome.**

Actions

- ***Appoint a responsible officer from City of Ballarat to oversee the annual monitoring.***
- ***Maintain appropriate records for each management action***
- ***Complete annual monitoring reports which will include:***
  - *Evidence of management actions and an assessment of their effectiveness*
  - *Recommendations for remedial actions if necessary*
  - *Recommended changes to the following year's annual works program.*

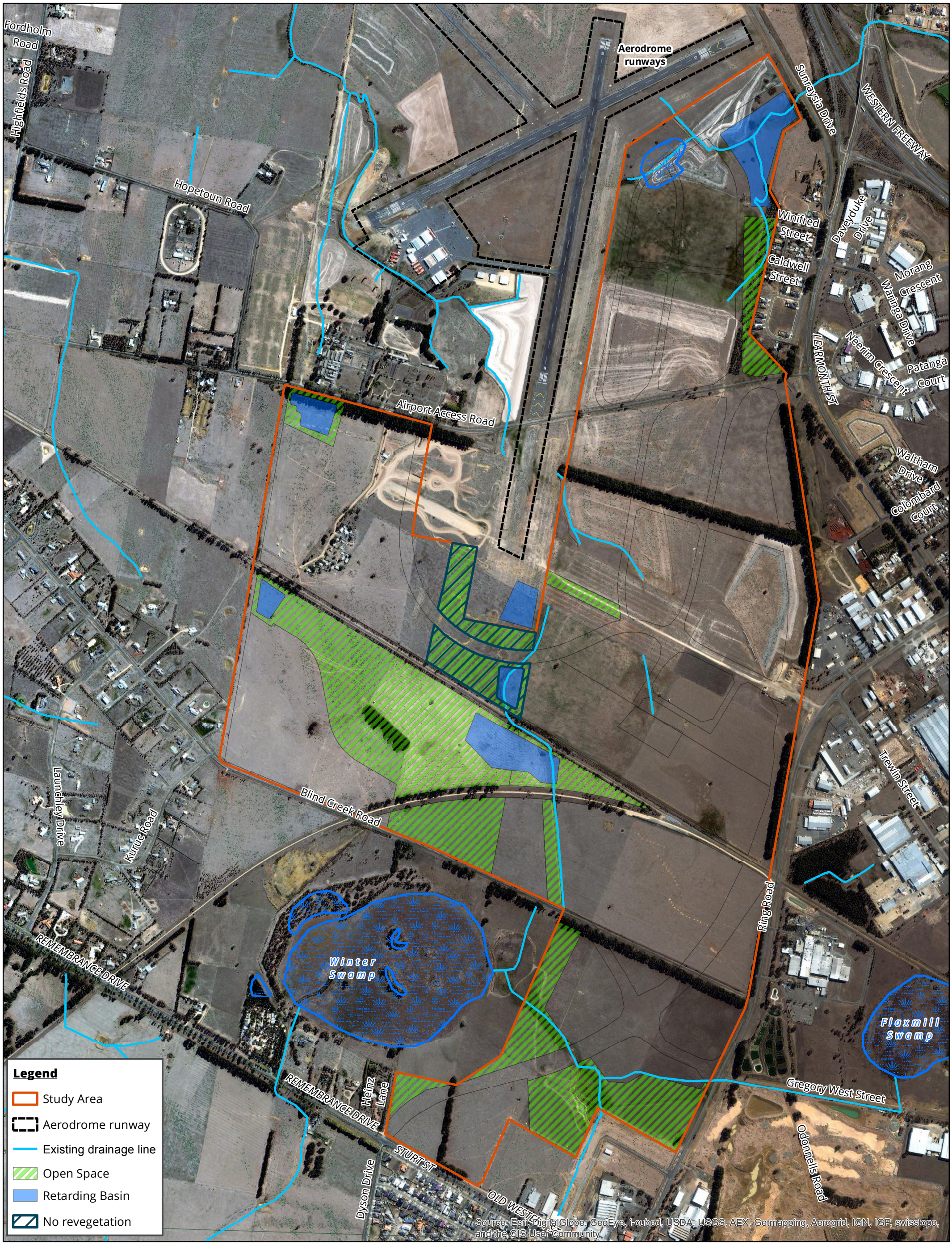

Figure 3: Ballarat West Employment Zone: Open Space Environmental Corridor

Biosis Pty Ltd

Ballarat, Brisbane, Canberra, Melbourne, Sydney, Wangaratta & Wollongong

Matter: 16478,
Date: 12 December 2013,
Checked by: JM, Drawn by: JMS, Last edited by: jshepherd
Location:P:\16400s\16478\Mapping\
16478_Figure3_20131212

0 100 200 300 400 500
Metres
Scale 1:12,000 @ A3
Coordinate System: GDA 1994 MGA Zone 54

N

4. Schedule of actions

Table 1: BWEZ: EMP: Schedule of management actions

Action	Year	Activity Description	Timing	Standard to be achieved
1	**0**	Delineate the boundaries of the Open Space environmental corridors on the ground.	As soon as possible	Clearly marked boundary that can then be used for fence alignments.
2	**0**	Exclude domestic stock from the Open Space environmental corridors.	As soon as possible	No stock grazing.
3	**1**	Remove all surplus fences within the Open Space environmental corridors.	As soon as possible following removal of stock.	No internal fences within Open Space environmental corridors.
4	**2**	Plant Swamp Gum seedlings in the Open Space environmental corridors.	Autumn following autumn break	A density of around 50 trees per hectare within the designated revegetation areas.
5	**2-5**	Revegetate drainage lines and Retarding Basins as required provided it is compatible with the primary water management aim.	Autumn following construction.	Improved amenity and habitat value of the sites.
6	**3**	Plant Blackwoods and Black Wattles.	Autumn following autumn break	Scattered clumps of around 10 trees per clump within the designated revegetation areas.
7	**Annually**	Inspect the Open Space environmental corridors and record/map noxious and environmental weeds.	August	Record all noxious and environmental woody weeds.
8	**Annually**	Slash the boundary of the Open Space environmental corridor where it coincides with Development Areas.	Annually in early summer	20m depth along the boundaries when the ground is dry enough for tractor access.
9	**Annually**	Treat all woody noxious and environmental weeds located within the Open Space environmental corridors.	September/October	No noxious or environmental woody weeds present.
10	**Annually**	Monitor numbers of European rabbits.	August	Record and map all rabbit warrens or other signs of European Rabbit activity.
11	**Annually**	Destroy any European rabbit warrens found within the BWEZ.	As required and in	No warrens within the BWEZ.

Action	Year	Activity Description	Timing	Standard to be achieved
			cooperation with surrounding landholders and DEPI	
12	**Annually**	Maintain planted trees and replace any mortalities.	Autumn	Maintain required density of Swamp Gums and wattles.
13	**Ongoing**	Conduct an induction for all employees who work on the site.	Prior to commencement of works	Every employee inducted prior to commencing work on the site.

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