



Rural Residential

Ballarat West Employment Zone

MASTER PLAN

Adopted 23 May 2012

Farming



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Section 1.0

Ballarat West Employment Zone Master Plan

PART A: Background

1.0 Ballarat West Employment Zone Master Plan

1.1 Introduction

The City of Ballarat (CoB) has commissioned the preparation a Master Plan, Business Case and Development Strategy for the Ballarat West Employment Zone (BWEZ).

The purpose of the Master Plan is to provide a robust and comprehensive framework for the development of the site for employment generating uses.

The BWEZ Master Plan provides an exceptional opportunity to capitalise on the strategic position of the area, opportunities for alternative energy and water reuse. The unique qualities, such as the planned and established access and movement system and natural environment; in particular combined with the rich heritage attributes and entrepreneurial qualities associated with the Ballarat region confirm the areas unique identity and contribute to a true sense of place for an Employment Zone.

Importantly the BWEZ Master Plan process enables the application of a robust commercial market testing process and the integration of a range of sustainability (economic, social and environmental) considerations to be integrated in a preferred Master Plan outcomes such as water reuse and alternative energy sources.

The development of the Master Plan provides an opportunity to apply an innovative response in integrating a range of environmental, hydrology, transport, energy, activity impacts and commercial form factors affecting BWEZ – now and in the future.

1.2 Vision

“BWEZ is regional Victoria’s premier business innovation precinct, created to provide competitive advantages for a full spectrum of industries and enterprises. The BWEZ precinct is coherent and connected with exceptional access, services and infrastructure. BWEZ delivers viable and

immediate employment activation and development opportunities for small and large business. It combines timeless and sustainable design with entrepreneurial spirit. It enhances environmental features to create a sense of place. It is where innovation meets opportunity.”

1.3 Strategic Context

1.3.1 Ballarat West Employment Zone (BWEZ)

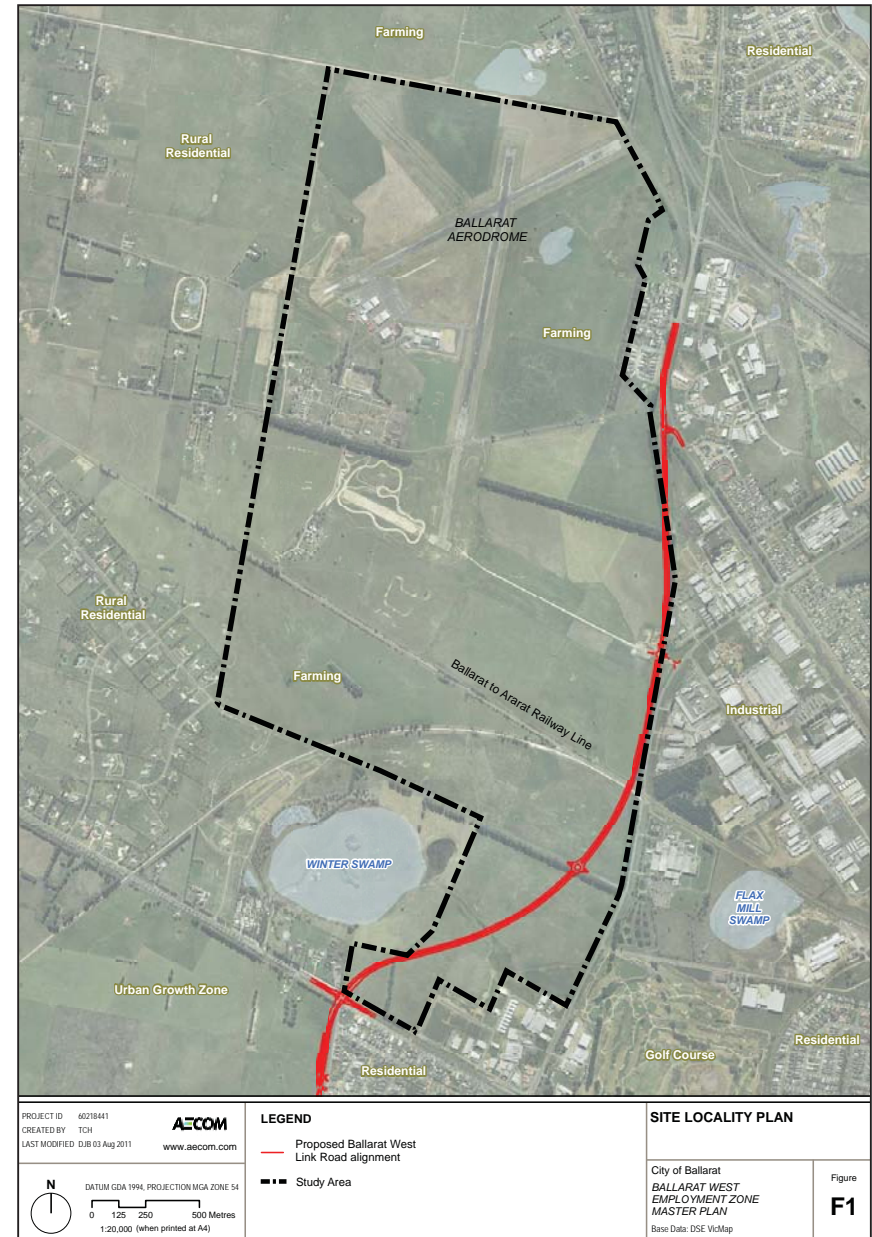
The BWEZ is a 623 hectare precinct to the west of the Ballarat Ring Road and Learmonth Road that has been earmarked as Ballarat’s future industrial area to include industrial, manufacturing, freight, logistics, aviation and other employment generating activities. This large tract of flat, undeveloped land is an ideal site to plan for large scale businesses and industry uses.

The subject site for the BWEZ comprises seven separate land parcels. Six land parcels are owned by the Crown with the remaining parcel (185 hectares) being Council owned freehold land which is occupied by the Ballarat Airport.

The BWEZ is located approximately 7 kilometres from the Ballarat Central Business District. It is close to the Western Highway and is bounded by the Ring Road and Learmonth Road to the east, McCartneys Road to the north, farmland to the west, and Remembrance Drive to the south.

The BWEZ is one of three strategic planning projects in Ballarat West being undertaken by the City of Ballarat which include the Ballarat West Growth Area and the Ballarat Western Link Road.

These three projects have been identified by Council as being critical to the delivery of jobs for the region, which is critical to the economic prosperity and housing for Ballarat’s growing population. The development of BWEZ is a key initiative to drive employment generation for Ballarat the growth areas.



1.3.2 Ballarat West Growth Area

Due to the significant population growth which is anticipated to continue over the coming decades in Ballarat, the CoB is planning the Ballarat West Growth Area which will cater for residential growth and provide services and infrastructure for new communities. The Growth Area comprises 1,675 hectares, approximately 18,000 new houses and a population of over 40,000 people.

It is envisaged that the BWEZ will generate in the order of 9,000 new jobs for the region (Essential Economics 2011) and help maintain economic growth and employment.

A Business Case for BWEZ will be prepared for the staging a delivery with a particular focus on job creation, investment attraction, alternative energy solutions and water reuse opportunities around the central Freight Hub.

1.3.3 Ballarat Western Link Road

The Ballarat Western Link Road will provide a connection between the Western, Glenelg and Midland Highways. It aims to improve the efficiency of logistics, provide an alternative route to the Central Business District for the transportation of freight, and provide access to developable land particularly in the Ballarat West Growth Area and BWEZ.

Figure 1 outlines the Ballarat West Growth Area Projects (indicated in green shading) and the relative BWEZ location (indicated by the purple shading).

1.4 Study Rationale

The Master Plan is being prepared to plan for the future development of the BWEZ site and ensure that its form and staging, is built on a range of existing and future environmental, economic and social considerations.

The BWEZ site has been identified as the preferred location for future industrial land development in many Council strategic documents most notably the Ballarat

Future Industrial Land Strategy. This is primarily because of the large land parcel, flat topography, Crown ownership, and its location on the Western Link Road, Western Highway, Ararat Rail Line, north of the Ballarat West Growth Area (population of 40,000 new residents) and adjacent to the Ballarat Airport and existing industrial areas.

In 2009 Council investigated the feasibility of an Intermodal Freight Hub which identified BWEZ as the ideal site location. In 2010 Council completed a project called the Ballarat Industry Workforce Development Strategy which identified that Council could support the transition and growth of the manufacturing industry by facilitating the development of industrial land that had the ability to reduce input costs (particularly freight and energy).

The City of Ballarat Economic Strategy 2010-2014 nominates BWEZ as a priority project to facilitate economic growth. As a result, Council made a commitment to progress BWEZ with the development of a Master Plan. The Master Plan is designed to enable the application of a robust commercial market testing process and the integration of a range of sustainability (economic, social and environmental) considerations to be integrated in a preferred Master Plan outcome.

The BWEZ Master Plan and its components support a range of design objectives including that:

- The Ballarat West Employment Zone (BWEZ) will be carefully planned
- The BWEZ will encourage investment in Ballarat
- The Master Plan includes stakeholder input to ensure the best community & development outcomes for the BWEZ
- The City of Ballarat's strategy for the BWEZ will strengthen the City's economy

- The BWEZ is a long term project
- Where possible, the Master Plan applies an innovative response in integrating a range of potentially competing site and potential development outcome factors.

1.4.1 Master Plan Approach

The Master Plan approach for BWEZ is to prepare a document that is used to describe a strategy for physical regeneration and development of the study area. It encompasses a multitude of factors which do not only relate to the physical aspect of planning but also to non-physical aspects such as economic, social and environmental issues based on a suite of technical assessments.

The BWEZ Master Planning process is an iterative approach of developing scenarios based on the physical characteristics and structure for the site to form a land use composition that is not only functional but has market appeal and is financially viable. The Master Plan is supported by a development strategy and business case.

1.5 Report Structure

The BWEZ Master Plan report is structured as follows:

- **Part A:** Background - provides a detailed site description, overview of Ballarat and its regional context, strategic policy review, summary of findings from the technical assessments, consultation and key observations for the BWEZ and surrounding area.
- **Part B:** The Master Plan - outlines the Master Planning design and the development of various scenarios, the Master Plan Framework, Components, Innovation and Implementation of the BWEZ.
- **Part C:** The Delivery Strategy - provides an action plan to delivering the vision for the

BWEZ Project.

The Technical Assessment Report findings that underpin this Master Plan are summarised within this document. The final Technical Assessments Reports will remain as separate documents to this Master Plan.



Figure 1
Ballarat West Growth Area (Source: City of Ballarat)

Section 2.0

Site Description

2.0 Site Description

2.1 Introduction

To understand the BWEZ and the area's context, characteristics, opportunities and features a detailed site, environment and economic analysis was undertaken. These characteristics, opportunities and features have been used to inform the master planning approach for this project.

2.2 Site Location

The BWEZ is located approximately 7 kilometres north west of the Ballarat Central Business District (CBD). It is bounded by the Ring Road and Learmonth Road to the east, McCartneys Road to the north, the Airport and farmland to the west, and Remembrance Drive to the south. In the future the site will also share the eastern boundary with the new Western Link Road and in the south will soon be the new Ballarat West Residential Growth Area including the new suburb Lucas.

2.3 Site Characteristics

The following site characteristics are key features of the BWEZ:

2.3.1 Ballarat Aerodrome

The Ballarat Aerodrome is 185 hectares and located 7 kilometres north-west of the Ballarat Township. The Aerodrome's history dates back to the 1930s and was historically known as a RAAF Defence establishment during World War 2.

The Airport is located on the north west corner of the BWEZ site.

The Ballarat Aerodrome is a busy airport (although it has no air traffic control on site). The flight movements generally consist of business, medical, emergency services, general aviation, training and helicopter flights.

Currently there are no regular public transport services (RPT) to the Airport.

The Airport comprises two onsite refuelling stations, specifically for use by aircraft and

operates on three active runways, which connect to two sealed taxiways. The runway extension south of the existing Airport parcel has been earmarked for protection and development is required to be designed and located accordingly.

The buildings within the Airport comprise aprons, hangars, terminal buildings and associated club buildings.

2.3.2 Farm Land and Rural Landscape

An area of land (zoned Farming Zone) located to the east and south of the Ballarat Aerodrome is currently used for agriculture. The land is identified in the City of Ballarat's Rural Land Use Strategy as future industrial land (short to medium term). This land is currently leased for farming purposes and is generally consists of open flat fields that are sparsely vegetated except for windrows along property boundaries and bounded by post and wire fencing.

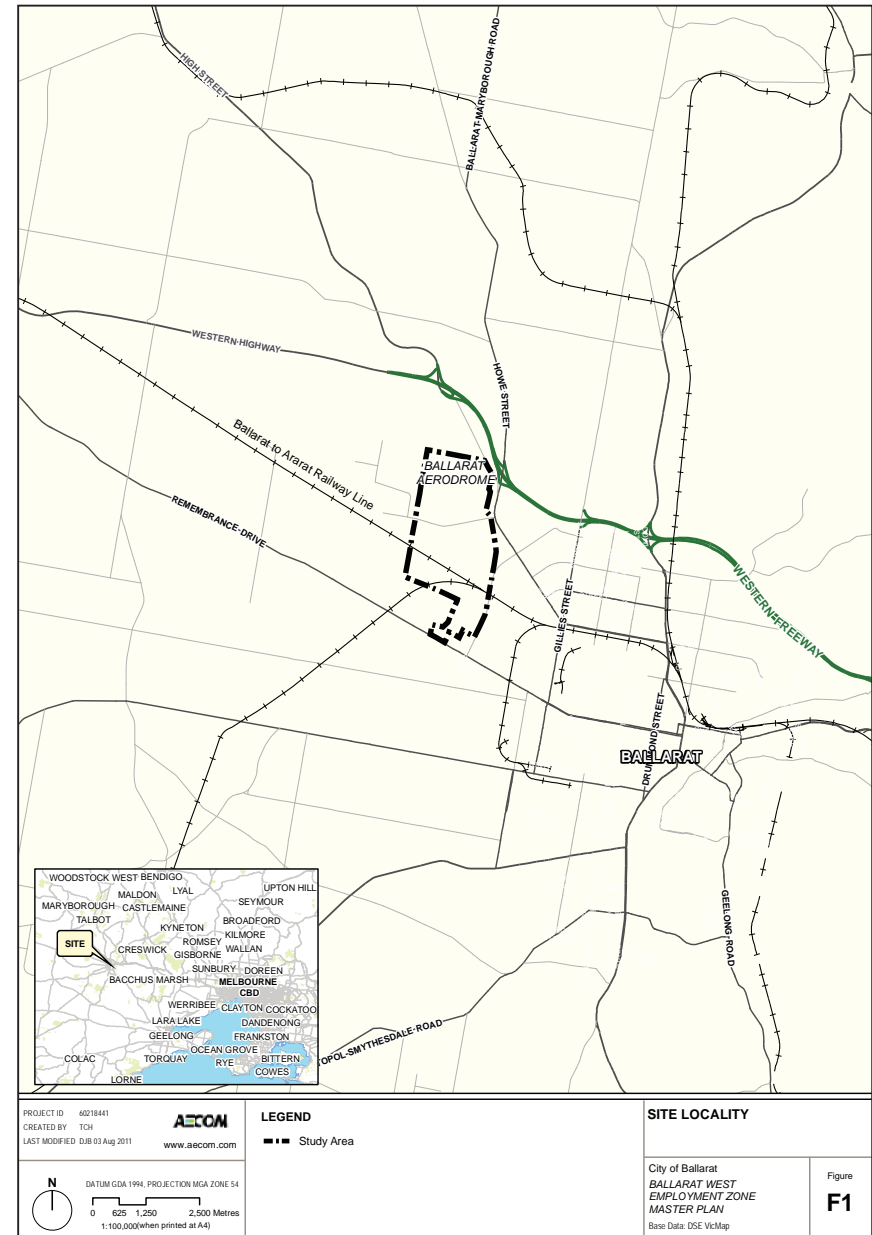
Currently the area is predominately a rural landscape that includes agricultural uses such as grazing and some rural living allotments surrounding the Ballarat Aerodrome.

2.3.3 Ballarat to Skipton Rail Trail

A portion of the 53km Ballarat to Skipton Rail Trail is located within the southern section of the BWEZ. The Skipton Rail Trail is regarded as a having conservation, heritage and tourism values for Ballarat. The trail provides a range of community benefits, particularly for walkers, cyclist and conservationists.

2.3.4 The Ballarat - Ararat Rail Line

The Ballarat - Ararat Rail Line bisects the BWEZ site in an east-west direction. Buffers are required along this corridor. The southern part of the BWEZ site is dissected by the Ballarat-Ararat Rail Line. This Master Plan is obliged to consider a range of design elements including, that the rail line is immovable, the physical barrier to access



to movements south and north of the rail line, hydrology flows underneath the rail line, development setback requirements, and importantly the opportunity to site the proposed Freight Hub.

2.3.5 Topography

The topography of the site is relatively flat. The high point of the local area is within the Winter Swamp area to the south and the site slopes gradually to the north western corner. A depression in the central north south spine of the site creates a natural drainage corridor.

2.4 Surrounding area

2.4.1 Open Space

Public open spaces within and in the vicinity of the site include the Skipton Rail Trail and the Winter Swamp. These areas are generally characterised by a range of native and introduced tree and vegetation species and are habitat for various fauna species.

2.4.2 Industrial Uses

The industrial uses in the area to the south and east of the BWEZ are characterised by a mix of dated and modern industrial building construction methods and generally consist of concrete warehouses, offices and tin sheds. Typically, the built metal clad structures are set back from the road. Other than building setbacks, there is little in the way of a specific 'theme' or 'character' for the industrial area. This outcome is not unusual for industrial development areas.

Existing industrial areas are located to the east of the BWEZ on the eastern side of the Learmonth Road and the Ring Road include several key industries for Ballarat, including McCain Foods Limited, Hanson Concrete, Bartlett Industrial Textile Fabrications, Laminex Group, Mars Chocolate Australia and Maxitrans.

2.4.3 Residential Uses

Residential and rural residential dwellings are located adjoining the BWEZ at the north

eastern edge and at the south western interface. The standard residential areas to the northwest include built structures of a mixed architectural style with a variety of materials being used including brick and weatherboard, with tiled metal cladding roofs. Colours are typically unpainted brick and neutral cream paint tones.

The rural living areas to the southwest are generally one-storey residential buildings on large lots of typically 4,000sqm in area with large landscaped gardens. Houses do not have front fences and typically take advantage of the views over the flat and primarily cleared landscape. Built structures are commonly brick with either tiled or metal cladding roofs. Colours are typically unpainted brick and neutral green and brown paint tones.

To the south of the site the Remembrance Drive land release for the Lucas Subdivision is taking place. On the north east corner of the Lucas subdivision is a neighbourhood activity centre. Further south is the location of three further precincts currently undergoing precinct structure planning. This corridor of residential land is expected to yield over 18,000 homes and a population of over 45,000.

2.4.4 Winter Swamp

Winter Swamp, located to the south of the BWEZ, is known for its expanse of native and exotic vegetation. It contains a large wetland, which is considered as a significant wildlife refuge. Winter Swamp features an isthmus walk with viewing platform and a recently planted woodland area.

Winter Swamp is considered important at a regional level as it is one of the few remaining wetlands on The Victorian Volcanic Plain within Ballarat. The highest habitat values in the vicinity of the BWEZ site are concentrated at the swamp, with native flora and flora located within the swamps surrounds, however much of the swamps



Figure 2 View from McCartneys Road Looking South-East over Ballarat Airport with Windrows in Background



Figure 3 Looking north from the Ballarat to Ararat Rail line to the runway in the distance



surrounding habitat has been impacted upon by previous farming and grazing activities.

Although outside the BWEZ study area, the Master Plan proposes no changes to Winter Swamp and applies an integrated land use solution within the BWEZ to support it.

2.5 Access

The site has multiple existing access points and road frontages. The Airport is accessed via Airport Drive from the Ring Road along the eastern edge of the site. There is a small frontage to Sturt Street / Avenue of Honour at the southernmost point and via Blind Creek Road in central portion within close proximity to the Ballarat - Ararat Rail Line, where there is no existing access to the site in the form of a rail station.

To the north the BWEZ has a long frontage to McCartneys Road. There is no road access currently provided along this frontage.

The access and exposure of the site will improve markedly with the design and delivery of the Ballarat Western Link Road which will incorporate the Ring Road and link up with the Western Highway to the north and the Glenelg and Midland Highways to the south.

The site has some limited pedestrian and cycling access via the existing road network and the Skipton Rail Trail which utilises the former rail spur heading south through the site from the Ballarat to Ararat Rail line.

2.6 Ecology

The ecology of the Ballarat region and the BWEZ site has been substantially modified by European settlement. The subject site is generally characterised by open grasslands, a flat land in profile, an operating airport at the northern end of the site and beyond the southern boundary of the site, the Winter Swamp which forms an important ecological and hydrological feature.

The majority of the site comprises introduced

vegetation. A large proportion of the area proposed for development is considered to be of low ecological value for vegetation communities and flora, with some exceptions, including three habitat zones for threatened species.

There is potential for the nationally and state significant Fragrant Leek-orchid in patches around the aerodrome, but is considered unlikely to be disturbed by the BWEZ development. Additionally, a potential constraint is the Striped Legless Lizard in patches near the aerodrome that is unlikely to be disturbed by the development.

Some remnant vegetation patches are also identified in three habitat zones in the northern section of the site, in and around the airport. Six scattered remnant Swamp Gums are recorded south of Airport Access Road. To the south the BWEZ site, remnant vegetation patches and potential habitats for significant flora are located in and around Winter Swamp. These areas are not within the BWEZ and will, therefore, not be impacted by the development.

Finally, a known constraint for the BWEZ is the Golden Sun Moth which has been identified within the study area in an area to the east of the proposed aerodrome runway extension. However, this is not envisaged to impact the proposed BWEZ uses.

2.7 Heritage

The Ballarat Aerodrome is subject to a Heritage Overlay (Schedule 190) pursuant to the Ballarat Planning Scheme and is registered on the Victorian Heritage Register (H2113) as heritage place and is historically known as the former Ballarat RAAF base. The Conservation Management Plan for the Ballarat Aerodrome outlines the history of the airport site that is summarised as follows.

The history of the Ballarat Aerodrome dates back to the 1930s when aviation activities commenced on an unmade airstrip on the Ballarat West Town Common. In 1934, a corrugated iron hangar was constructed on the site, which formalised the



Figure 4 Airport Road looking west to a residential allotments and farmland



Figure 5 Ballarat to Ararat Railway Line

site as an aerodrome.

In 1940 at the outset of World War 2, the Department of Air established the RAAF No.1 Wireless Air Gunners School at the present aerodrome site. In May 1942 there were 41 officers and 1,918 airmen in residence. The former Ballarat RAAF Base was Australia's No.1 Wireless Air Gunners School (WAGS), the first of three WAGS created under the Empire Air Training Scheme and the only one in Victoria.

When the RAAF vacated the site in 1961, the Department of Air offered the Aerodrome to the then Shire of Ballarat under the terms of the Aerodrome Local Ownership Plan. The Aerodrome became a licensed aerodrome under this plan when licence number 43 was issued to the Shire of Ballarat on 11 September 1962.

The former Ballarat RAAF Base is of historical significance for its ability to demonstrate the importance of military aviation to the defence of Australia and its Allies during the Second World War.

The former Ballarat RAAF Base is an example of a relatively intact Victorian example of the training schools that were rapidly constructed across Australia specifically to train aircrews under the Empire Air Training Scheme in the early years of the Second World War and is of social significance, providing an opportunity to educate about the operations of the Air Force throughout the Second World War.

There is a former east-west runway that runs perpendicular from the southern end of the main runway. The east-west runway is now defunct and only partially discernible on the ground. Portions of the paving remain but the majority has been lost. Its connection with

the extended 18-36 runway is more obvious and still partially paved, but severed by the access road. The runway has been assessed as having some contributory heritage value to the site.

The site has some discrete areas of potential cultural heritage significance that have been identified during the site assessment process. These areas have been acknowledged and incorporated into the Master Plan.

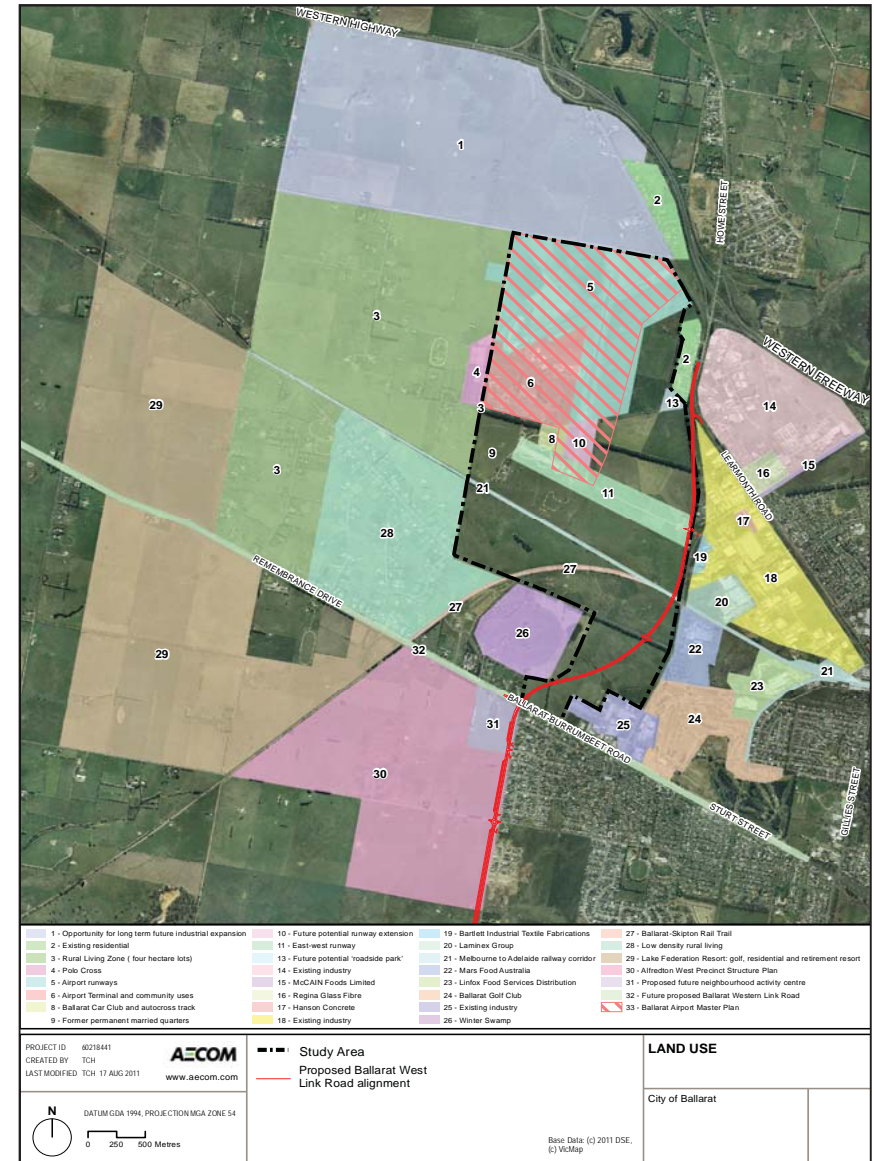
2.8 Native Title / Crown Land

The BWEZ Employment Zone site consists of six parcels of Crown Land. Two parcels are reserved for the purposes of an aerodrome; three parcels are reserved for the Ballarat West Town Common; and one parcel is unreserved Crown Land. Native Title has been extinguished on the two parcels of land reserved for the purposes of an aerodrome.

The Department of Sustainability and Environment (DSE) has assessed the majority of the subject land as Government Land surplus to DSE requirements. To progress the Crown land reorganisation in the BWEZ, Council has submitted a formal proposal to

DSE setting out in broad terms Council's plan for the BWEZ, and the Crown Land dealings that are required.

The BWEZ Master Plan, along with the plans for the proposed Ballarat West Link Road, and the Ballarat Airport Master Plan, will provide the basis for the Council's submission to DSE.



Section 3.0

Regional + Policy Context

3.0 Regional + Policy Context

3.1 Ballarat Context

The subject site is located within the City of Ballarat, which is the third largest city in Victoria and one of the largest inland cities within Australia. The total area of the City of Ballarat is approximately 740 square kilometres. Neighbouring local government areas include the Shires of Hepburn, Pyrenees, Golden Plains and Moorabool.

The City of Ballarat is strategically located within the western area of Victoria and is an important population growth and service centre.

Historically a prosperous mineral and agricultural based settlement, Ballarat is increasingly focused on its key economic sectors including business services, health and community service, education, tourism, retail, manufacturing, information, communications and technology and supporting agricultural industries. The broader area of Ballarat includes large areas of farming and agricultural uses.

In terms of projected population growth and growing labour market, the current estimated population of Ballarat of 96,097 (ABS at. No. 3218.0 - Regional Population Growth, Australia, 2009) and is forecast to reach 130,000 by 2030 (City of Ballarat: 2010-2011 Annual Report). To accommodate the forecast 2.4% growth, there are fundamental strategic planning actions that need to be undertaken, including provision for new housing, community services, facilities and most importantly, employment.

In December 2008, the Small Area Labour Market Publication identified Ballarat's unemployment rate at 8% compared to an average unemployment rate of 4.4% across Australia. The combination of the current population growth estimates and higher unemployment rate, provide key strategic opportunities for the BWEZ to address and facilitate. Alternatively, without appropriate and diverse employment land, Ballarat will continue to have a problem with high levels

of unemployment.

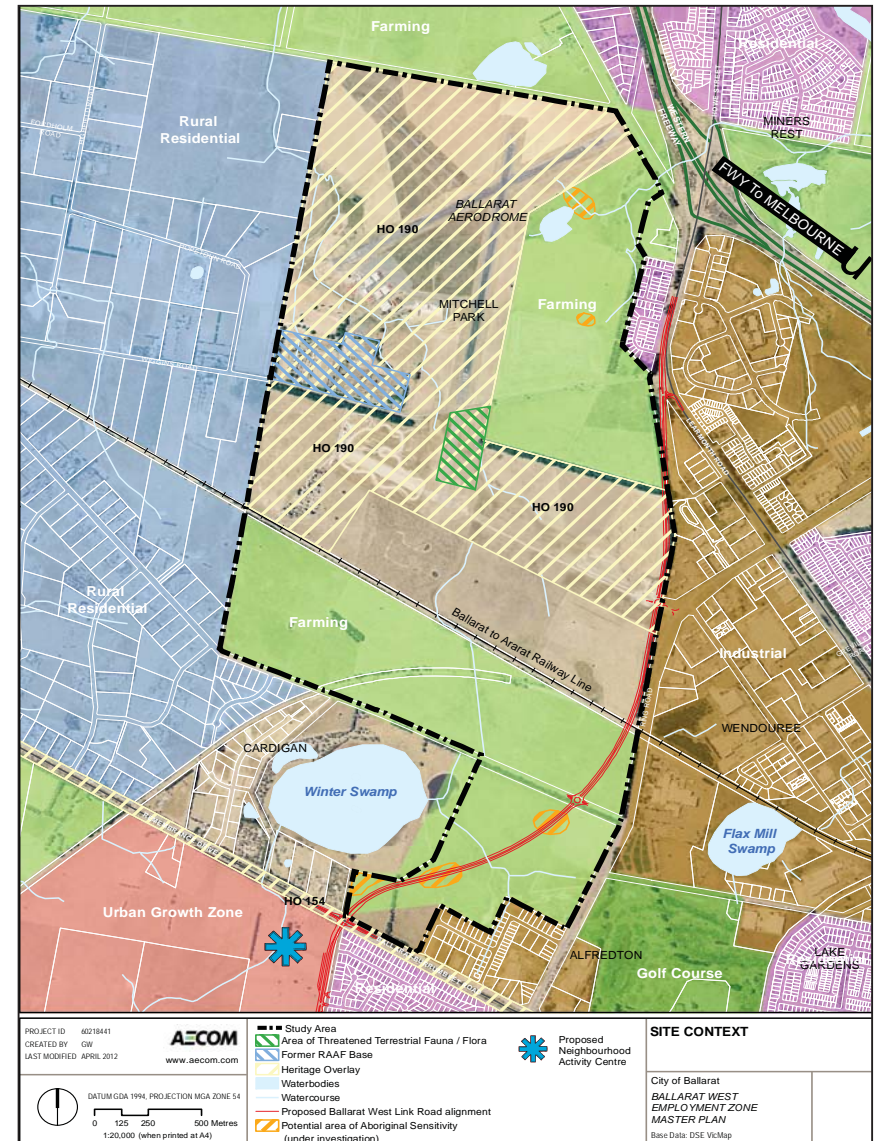
The BWEZ is a natural extension of Ballarat to the west and will be the focal point for future industrial and other employment generating uses, especially industry that requires large lots sizes and buffer separation distances. A primary purpose of BWEZ is to provide a long term industrial/employment precinct that is considered attractive to potential employment outcomes. Key planning and development issues include ensuring development site constraints are minimised and adjoining land use interfaces are effectively addressed and managed. It will also be an important precinct to support the transition to modern manufacturing by making provision for clustering, alternative energy options, water reuse, freight efficiencies and 'Research and Development'.

3.2 Neighbourhood Context

A key advantage for the growth of industry at the BWEZ is access to the State road network. The Western Freeway along the northern boundary of the site provides excellent strategic access to regions to the north, east and west. This road enables the bypass of the Ballarat CAD and links with the Western Highway back to Melbourne. To the west the Ballarat Ring Road links with the Western Highway and the Sunraysia Highway to service Ararat, Stawell, Horsham and Adelaide. The proposed Western Link Road will connect the site to the south with the Delacombe industrial area and onwards to Geelong and to the north with the Western Freeway.

The Ballarat to Ararat Rail Line traverses through the southern end of the BWEZ and links to Melbourne and Geelong to the south-east. The BWEZ provides an opportunity to relocate the existing rail freight terminal from the central area of Ballarat.

Ballarat is a significant regional centre servicing a catchment of approximately 400,000 people. The Site Context Map on



Note: This map was generated at the start of the project to better understand the site opportunities and constraints



this page demonstrates the physical and strategic policy in relation to the BWEZ including rural living, industry and urban growth areas surrounding the site.

3.3 Policy Context

Strategically, the State Planning Policy Framework, under the Victorian Planning Provisions, encourages growth and development within a number of regional cities. Within the western region of Victoria, Ballarat is the key focus. The main aspects of encouraging growth are to promote regional development and employment.

On a more local level, a number of existing Council strategic and statutory planning policies provide more detailed planning context for Ballarat which underpin the BWEZ.

Framing the BWEZ Master Plan, the supporting Economic Assessment report confirmed there was sufficient demand to warrant the staged development of the BWEZ over the next 20 years. The identified demand for industrial land highlighted a mix of organic growth, relocation of businesses from existing industrial areas, and through investment from new entrants to the city.

The formulation of the Master Plan is therefore designed to provide a clear framework for the development of the Employment Zone precinct and to ensure that Council's long term vision for this site can be achieved.

3.3.1 Strategic Policy Overview

The BWEZ and surrounding area will be subject to substantial change in the future. To plan for increased residential and employment generating development, the CoB is undertaking several major strategic planning and infrastructure projects within the area. These projects include the strategic planning for the Ballarat West Growth Area through the Precinct Structure Plans for the areas of Alfredton West Precinct, Carngham Road Precinct and Greenhalghs Road Precincts, the Ballarat Western Link Road and this

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project, the BWEZ. All of these projects will ensure the city accommodates increasing population growth, capitalizes on investment opportunities, creates jobs and provides efficient access and linkages to other areas of Ballarat, regional Victoria and Melbourne.

The BWEZ includes large areas of Farm Zone (FZ) that will require a Planning Scheme Amendment to rezone the land to facilitate industrial development. The Ballarat Airport and land to the northern side of the Ballarat to Ararat Railway Line is zoned Special Use Zone Schedule 6 (SUZ6) for Ballarat Airport and parts of this area, along with select surrounding areas are subject to the Ballarat Airport Design and Development Overlays and the former Ballarat RAAF Base Heritage Overlay.

A substantial part of the BWEZ site is designated for short to medium term industrial use as recognised by the Framework Plan in the City of Ballarat Planning Scheme (MSS).

Similarly, the growth of Ballarat is in line with the Central Highlands Regional Strategic Plan (2010) and Central Highlands Regional Growth Plan (to be completed 2013).

These Plans set out a series of integrated strategic directions and actions that are designed to implement the vision including managing growth, development (including facilitating job creation and investment) and change at the regional scale. There is a need to take advantage of the opportunities that arise from this change and integrate them so as to create a more resilient regional economy and deal with their local level impacts.

3.3.2 Ballarat Strategy Plan

As early as 1998, the Ballarat Strategy Plan earmarked the expansion of Ballarat to the west. This included the designation of the land surrounding the airport for industrial and commercial development of regional importance.

The Strategy Plan stated that the land uses surrounding the airport are suitable for industries requiring large buffer distances from sensitive uses due to the low intensity nature of surrounding uses, the availability of services, large lot sizes and the ability to create rural buffer. The Strategy Plan also highlighted the establishment of industrial areas around the Airport, with emphasis on industrial, commercial and other activity directly associated with or serving the airport and allied activities (area of 120 - 150 ha).

3.3.3 Ballarat West Growth Area Plan

The Ballarat West Growth Area Plan (2005) will guide growth within Ballarat West up to and beyond 2030. The Growth Area will cater primarily for residential growth and has capacity for over 18,000 new households which should accommodate a population of over 45,000.

In terms of employment, the Growth Area Plan proposed industrial land uses up to the western boundary of the existing industrial area (the Carngham Road Precinct), after which residential uses and an activity centre would be located.

The Growth Plan identified that there is a significant trend shift towards land required for manufacturing from 10+ hectare lots in the late 1970s to less than one hectare lots currently, however that one industry consistently requiring large areas of land is the logistics/distribution industry. The report cites examples of sites of between 10 and 22 hectares being required. The logistics industry typically also locates on or close to major road and highway access points.

The conclusion of the analysis is that the demand for extensive land take up is likely to relate to highway access, and that the north/south link along Dyson Drive provides scope to make the Carngham Road area more accessible to the major highways traversing Ballarat.

In summary, the Ballarat West Growth

Area Plan identified large areas of land for residential development and the BWEZ is proposed to provide an area for employment generating uses to support the local population growth.

3.3.4 Industrial Land Use Planning

The City of Ballarat Review of Future Industrial Areas (2009), identifies the BWEZ area as the central location for the future industrial growth of Ballarat. With close proximity to infrastructure and established industry uses, BWEZ has inherent locational strengths. The 2009 report also referred to the Ballarat Aerodrome and West Common Draft Land Use Concept Plan (2008) for the area, with a multitude of land uses including light and traditional industrial, commercial business park uses, open space and community uses designed to complement the existing Ballarat Airport at the northern end of the BWEZ area.

There are a number of key Ballarat industries which are major employment generating uses located to the east of BWEZ. These include McCain Foods Limited, Bartlett Industrial Textile Fabrications, Laminex Group and Mars Chocolate Australia and Maxitrans.

A recent Panel Report by the Victorian Planning Panels is relevant to BWEZ. Amendment C138 proposes to amend the Ballarat Planning Scheme to incorporate the recommendations from the Ballarat Review of Future Industrial Areas (June 2009). The key changes included revisions to the Local Planning Policy Framework particularly in relation to strategic planning for industrial development within Ballarat and key areas for potential industrial growth which included the BWEZ.

In summary, the Panel Report for the amendment recommends the planning for the BWEZ, including land to the north and south of the Ballarat to Ararat Railway line as an area suitable industry and employment based uses whilst recognising the environ-

mental significance of Winter Swamp. It also endorses the reduction of land proposed for future industry in the Carngham Road corridor and Mt. Rowan East.

3.3.5 Economic Strategy 2010 - 2014

Council's Economic Development Strategy (2010-2014) aims to establish Ballarat as the Capital of Western Victoria by building on the existing facilities, infrastructure and services, along with linking these uses to the broader area of regional western Victoria, Melbourne and Geelong. In addition to this, the Strategy seeks to promote Ballarat as the premier high tech and knowledge based regional economy by encouraging higher education uses, health services, and research, manufacturing and information technology business services to attract increased investment in the area. All of these activities will encourage continued growth and diversification of Ballarat's population.

In particular, the Economic Strategy identifies a number of key implementation actions applicable to the consideration of the subject site's future development as follows:

- **Action 1:** Implement the recommendations of the Ballarat Workforce Development Strategy in relation to manufacturing and transport and logistics.
- **Action 2:** Develop a long term vision for manufacturing in Ballarat and leverage the Investment Attraction Plan to grow locally based firms and attract complementary firms which can add value to regional production (food processing, viticulture, industrial equipment and machinery, construction industry based manufacturing, expansion of existing businesses).
- **Action 3:** Secure suitable land adjacent to Ballarat Aerodrome for a future transport and logistics hub.
- **Action 4:** Develop the Ballarat West Employment Zone and advocate for associated infrastructure investments.

- **Action 5:** Undertake a scoping study to identify energy security issues and opportunities (such as smart electricity grids) and explore new renewable energy opportunities.

- **Action 6:** Build on links with local education institutions to improve the research and development capacity of Ballarat's manufacturing industry to support jobs growth and productivity.

3.3.6 Ballarat Airport Master Plan (2012)

The Ballarat Airport Master Plan that is being prepared concurrently with the BWEZ Master Plan identifies several recommended actions to support the long-term viability of Ballarat Airport. The Master Plan suggests that land adjacent to the north - south runway should only be developed for industries that require exposure to aerodrome users. It suggests the location for the road infrastructure including the gateway to the aerodrome and areas of high commercial value.

The development of the BWEZ should provide for a future access road to the airport from the south or the west and allow for aviation development precincts as well as preservation of the North-South runway extension option.

3.3.7 Freight and Logistics Hub

Where the proposed Ballarat Western Link Road intersects with the Ballarat to Ararat Rail, this presents a great opportunity to provide a hub for freight and logistics to service BWEZ and the surrounding area. The CoB identified this site as being ideal for a freight village and have undertaken preliminary design and feasibility studies into the operation of a Freight and Logistics Hub in this location. This has been considered as part of an integrated transport and logistics component of the Master Plan for the BWEZ.

3.3.8 Ballarat West Employment Zone Economic Assessment (2011)

The purpose of this study was to identify opportunities and market constraints to the

future use and development of the BWEZ and to provide recommendations for the optimum future land use mix for the site.

The detailed economic assessment into the Ballarat market and site opportunities identified that the BWEZ has potential to be developed for a range of industrial land uses including manufacturing, construction, transport and logistics, wholesale trade, enabling industries including research and development based uses. The demand for industrial land will come from a mix of organic growth, relocation of businesses from existing industrial areas, and through inward investment from new entrants to the city.

The key implications from the recommendations of this study for BWEZ are that the area can economically support the following land composition:

- 75 hectares of industry land release in the first stage including:
- 20 hectare Freight Village
- 5 hectares of Transport and Logistics
- 10 hectares of Food Processing
- 35 hectares for General Industry
- 3 hectare for Research and Development, and
- 2 hectares for convenience retail node / business support services.

Overall, the assessment estimated approximately 8 hectares per year demand for industry and employment based land uses based on organic growth, however it does suggest that a development strategy based on a market led and intervention approach, this could increase significantly. At full development the site has the potential to generate up to 9,030 direct jobs and \$5.078 billion in economic output per annum. These outputs are based on targeted sectors with a competitive advantage and potential to expand as well as sectors with an ability to capture \$1.9 billion in domestic import replacement annually.

3.4 Activity Centres

Through various land use compositions and land sizes, an Activity Centre hierarchy is established in terms of scale and importance of one centre compared to another.

The hierarchy of Centres of Activity within the context of the BWEZ and Ballarat include the Ballarat CBD as the Principal Activity Centre (7km west), Wendouree Major Activity Centre (2km west) and the proposed Alfredton West (Lucas) Large Neighbourhood Centre (1km south east) and long term proposed Delacombe Major Activity Centre (9km south).

These centres are the main locations for retail, entertainment, services and employment based uses in proximity to the BWEZ. It is noted that as part of the Ballarat West Growth Strategy, Alfredton West is nominated as a future Neighbourhood Activity Centre for retail, services and employment along with Wendouree West which is immediately east of the BWEZ. This will complement the establishment of the BWEZ for employment and based industry uses.

Amendment C151 to the Ballarat Planning Scheme [exhibited in March 2012], will implement the recommendations of the Ballarat Activity Centres Strategy (2011).

The City of Ballarat has experienced significant population growth in the last decade and it is forecast that this population growth will continue in the medium to long term.

With this significant population growth expected over the next 20-30 years, Council needs to be in a position to guide and direct activity centre planning in the City. This will ensure that the future structure and formation of the city's activity centres adequately service not only the current retail and commercial needs, but also the social needs of a growing/changing Ballarat community.

The preparation of the Activity Centres Strategy will provide Council with the required robust policy and assessment criteria to consider new and existing activity centre developments throughout the entire City of Ballarat in the short, medium and long term.



Section 4.0

Technical Assessments

4.0 Technical Assessment Summary

4.1 Introduction

As part of the Master Plan process, AECOM has undertaken a range of technical assessments to detail and characterise the land in order to determine the site opportunities and constraints that will form the development of the BWEZ.

As part of technical analysis, advice and consultation was sought with a range of technical stakeholders. These included the City of Ballarat, various government departments, investors, developers, servicing authorities and extensive community consultation. This process was designed to develop an understanding of each of these stakeholders' specific needs, and technical and service requirements for the Master Plan. Additionally, a range of technical analysis reports were formulated. The following technical assessments were undertaken:

4.2 Strategic Policy

As outlined previously, the Ballarat is a key regional growth area of Victoria (State Planning Policy Framework) and as such, the state is encouraging population and economic growth across all sectors, particularly higher employment generating uses. Ballarat is strategically important to the west and north west regions of Victoria as it provides a gateway to the agricultural, farming and manufacturing land uses within the region.

4.2.1 Overview

The Existing Conditions Assessment primarily focused on the existing Planning Framework applicable to the BWEZ and surrounding land. In particular these include the specific policies and controls, opportunities and constraints under the Ballarat Planning

Scheme as well as the strategic planning direction and assessment of the area outlined in the various strategic planning documents prepared by the CoB and summarized in earlier sections of this report.

4.2.2 Summary of Findings

The planning framework applicable to the BWEZ site is not dissimilar to any large greenfield site on the outskirts of a regional city. The site is zoned Farm Zone surrounded by Residential 1, Rural Living and Industrial 1 zoned land. The Ballarat Airport and land to the south of the Airport is zoned Special Use Zone (Schedule 6) and Winter Swamp is zoned Public Conservation and Recreation Zone.

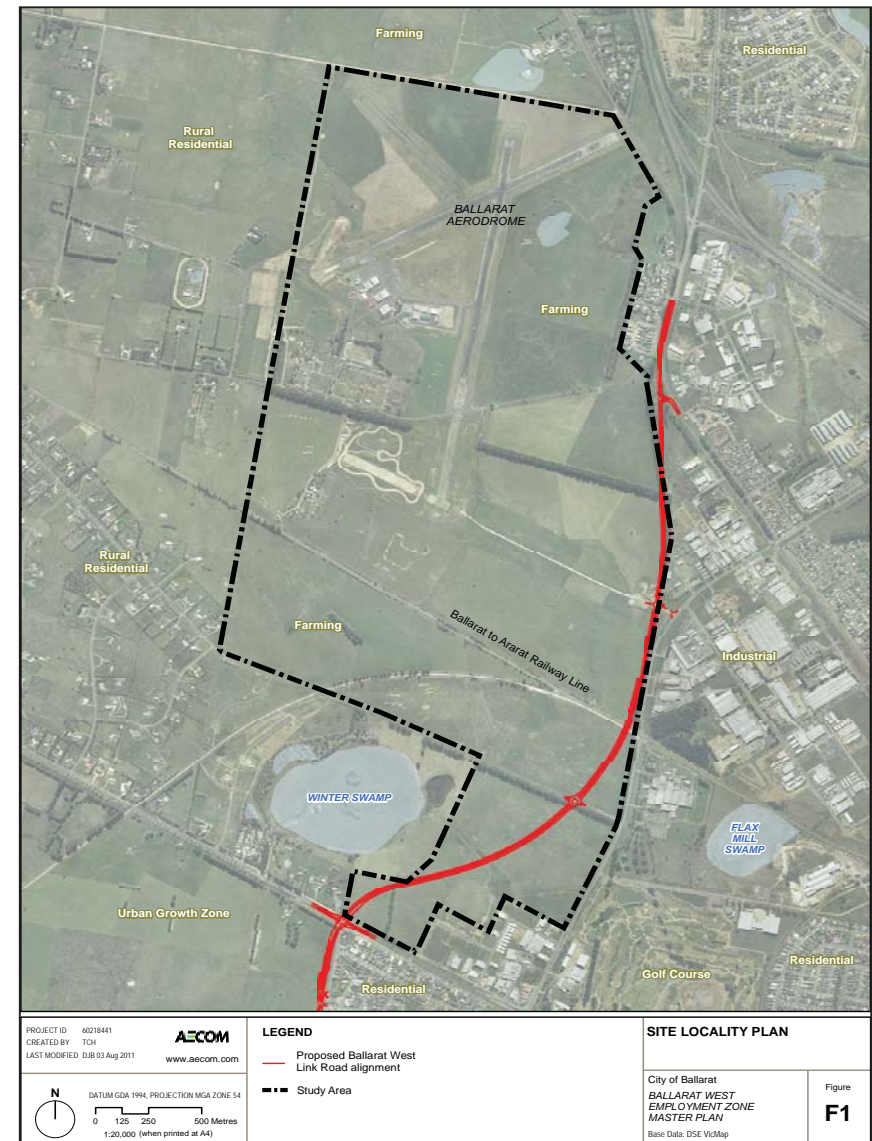
Through several strategic planning documents, such as the Ballarat Strategy Plan (1998), Ballarat West Growth Area Plan (2009) and Review of Future Industrial Areas (2009), the land has been identified for future industry and employment generating land uses.

The Site Locality plan on this page identifies the BWEZ, Ballarat Western Link Road and surrounding land uses including Farm Land, Rural Living, Urban Growth Areas, Residential and Industrial.

4.3 Civil Infrastructure

4.3.1 Overview

The BWEZ and the surrounding area is characterised by a mix of farming land, rural living, residential and a multitude of industrial uses. In determining the civil infrastructure servicing for the site, it was essential to understand the extent of existing services within the area, the capacity of these services, upgrades to infrastructure planned by servicing authorities and the peak demand generated by uses within the BWEZ.



The services considered in this stage of the civil infrastructure assessment were gas, electricity and telecommunications, water, sewage and drainage.

4.3.2 Summary of Findings

The requirements for civil infrastructure to service the BWEZ have been established by identifying the location and capacity of existing services, proposed future upgrades to services and the servicing requirements of the BWEZ based on a land use scenario of up to 1,000,000m² (100Ha) of usable floor space.

Natural Gas

All surrounding gas mains are fully utilised and therefore there is limited scope to connect to the existing infrastructure.

In order to service the site, a new trunk main will need to be constructed. This trunk main will need to extend for a distance of approximately 11km from the BWEZ site to the Anderson Street West regulator. The cost of this network reinforcement it yet to be determined by SP AusNet but will be in the order of \$2M in 2011 prices.

Due to the uncertainty of the ultimate gas demand for the development, SP AusNet is hesitant to confirm that any new services can be provided prior to major augmentation works being carried out. Therefore some or all of the network augmentation will need to be constructed prior to the first natural gas customers coming online.

Internal reticulation of the development will be subject to the final street layout and further refinement of the anticipated demands.

Electricity

There is currently a small capacity 3 phase overhead power line and a 22 kilovolt (kv) line at Blind Creek Road. The initial stages of development can be accommodated through

the existing network however additional supply will be required by PowerCor's 22kV interconnected feeder lines from the Ballarat South (BAS) zone substation.

The exact amount of initial development able to be serviced is currently unknown and subject to a range of variables, including, surrounding development, customer demand, etc.

PowerCor have identified the need for a new zone substation, the Ballarat West (BAW) zone substation, within the vicinity of the BWEZ site. This zone substation will service the needs of the BWEZ and planned residential subdivisions further south as well as other future development. PowerCor proposes to locate this substation on the corner of Ring Road and Blind Creek Road within the boundary of BWEZ.

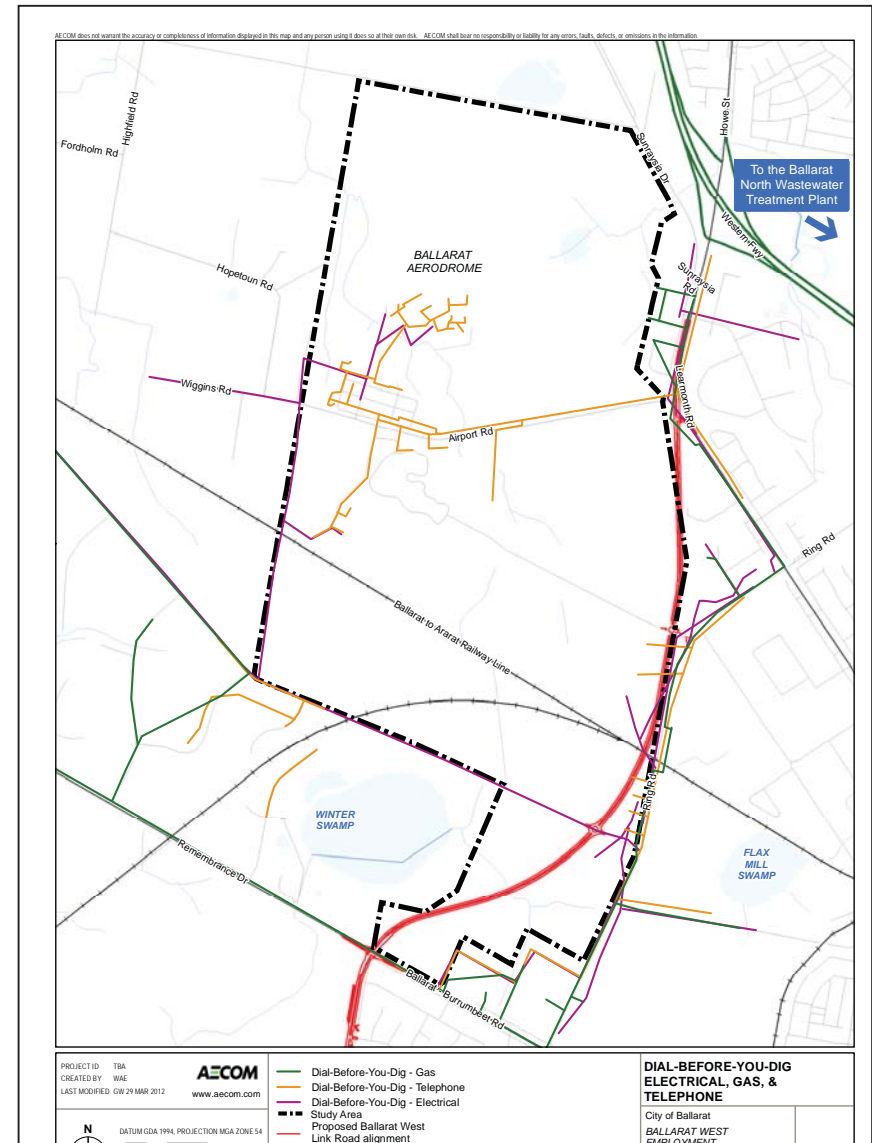
The proposed substation presents a unique opportunity for BWEZ site or on a site with optimised power and alternative energy.

In addition to this, Alternative Energy Opportunities using co-generation have been considered and included in the Master Plan with an 'Energy Precinct' within BWEZ.

Telecommunications

The telecommunications infrastructure in the area consists of copper cabling along the Ring Road, Blind Creek Road and Airport Road. Council has also recently installed fibre optic conduit and cable along Airport Road for future use at the Airport. To service the future development of BWEZ, the physical telecommunications network and wholesale supply will be provided by National Broadband Network (NBN Co.) and consist of fibre optic cable to the premises (FTP) as there will be in excess of 100 lots within the development.

The developer will be responsible for the



design and construction of the “pit and pipe” infrastructure within the road reserves throughout the development. NBN Co. will then take possession of the pit and pipe infrastructure and install the fibre optic cable.

Water + Sewerage

With the exception of the airport precinct, the subject land is not serviced by water and sewer infrastructure. Further, surrounding water and sewer infrastructure is at or near capacity.

As part of the planning for the BWEZ site, AECOM has undertaken a preliminary assessment of the types of development likely within the BWEZ and Central Highlands Water (CHW) has undertaken a high level review on the effects on surrounding infrastructure. It is likely that in addition to normal reticulated water and sewer services within the subject land, upgrading or duplication of the trunk water and sewerage infrastructure may be required. A detailed assessment as to capacity of the Ballarat North Waste Water Treatment Plant may also be required.

The surrounding land uses to the BWEZ are currently serviced by water and sewer except for areas of rural living along the south western and western boundaries of the site. There are sewer mains located along Remembrance Drive and the existing Ring Road with limited capacity. The site can be serviced with water and sewerage services, however, the details of the master plan and its staging need to further considered by CHW and its infrastructure planning processes. It is noted that the service capacity (e.g. piping) to the low density residential area (west and north of Remembrance Drive)

can be extended to service a limited area of residential development in the south-west precinct in the BWEZ study area.

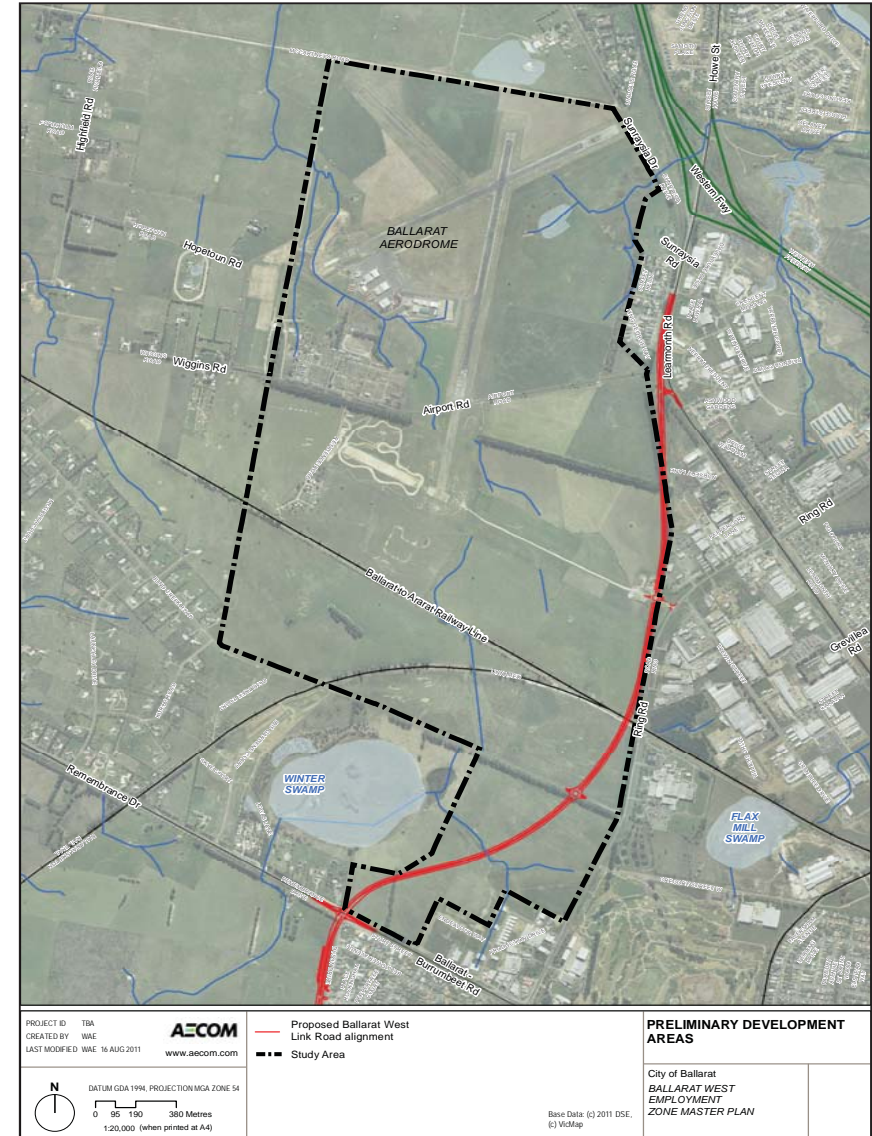
4.4 Transportation

4.4.1 Overview

A Transportation Assessment was undertaken for the BWEZ encompassing vehicular, air, public transport, rail, pedestrian and freight transport and access to and from the BWEZ site under existing and future conditions. The assessment identified existing infrastructure and services as well as potential service upgrades based on the future land uses and areas proposed as part of the BWEZ.

The importance of an efficient freight network on or off site cannot be overstated. An efficient freight network can be a competitive advantage to the site especially given the unconstrained access to the Melbourne port. Ballarat can compete with Dandenong on freight costs due to the existing network.

The Western Freeway is located near the north east border of the site which provides excellent logistical and strategic access to regions to the north, east and west, and is the major regional highway servicing Ballarat. This feature is seen as a key advantage of BWEZ. The Western Freeway is undergoing a number of upgrades between Melbourne and Ballarat as part of the National Highway System with funding from the Federal and State Government. Access to this highway is a key consideration in the transport planning for Ballarat along with the Western Link Road that is currently being designed to link the Midland Highway at Bonshaw Creek to the Western Highway in Ballarat West. Residents to the west of the site currently use Blind Creek Road and Airport Road as key access roads. It is vital that access for residents be maintained.



Through the Master Plan consultation process (including with V-Line and Department of Transport), rail related opportunities were identified.

South of the proposed Freight Hub and near the Skipton Rail Trail and Ballarat - Ararat Rail Line, an area has been identified for further investigations by DoT for rail related opportunities.

4.4.2 Summary of Findings

The BWEZ has a unique advantage in terms of transportation access as it is within close proximity to rail, road and airport infrastructure.

Ballarat is expecting a significant increase in freight volume, with expected volumes doubling over the next twenty years.

The key considerations in planning for transport access for the BWEZ are the two key infrastructure upgrades being the Ballarat Western Link Road and the proposed Freight and Logistics Hub, which is to be located along the Ballarat to Ararat Railway Line adjoining the proposed Western Link Road.

The Ballarat Western Link Road will be the main access connector to the BWEZ as well as a bypass around the western side of Ballarat connecting people from the south to the north and onto the Western Highway.

An integrated design solution was worked together with the respective two design teams (AECOM).

The preferred location for the Freight Hub is on the northern side of the Ballarat to Ararat rail line, adjacent to the proposed Ballarat West Link Road and close to industry in BWEZ. This location affords direct access to the highway and rail networks. The Department of Transport are currently reviewing the Ballarat - Ararat Rail Line reservation at the

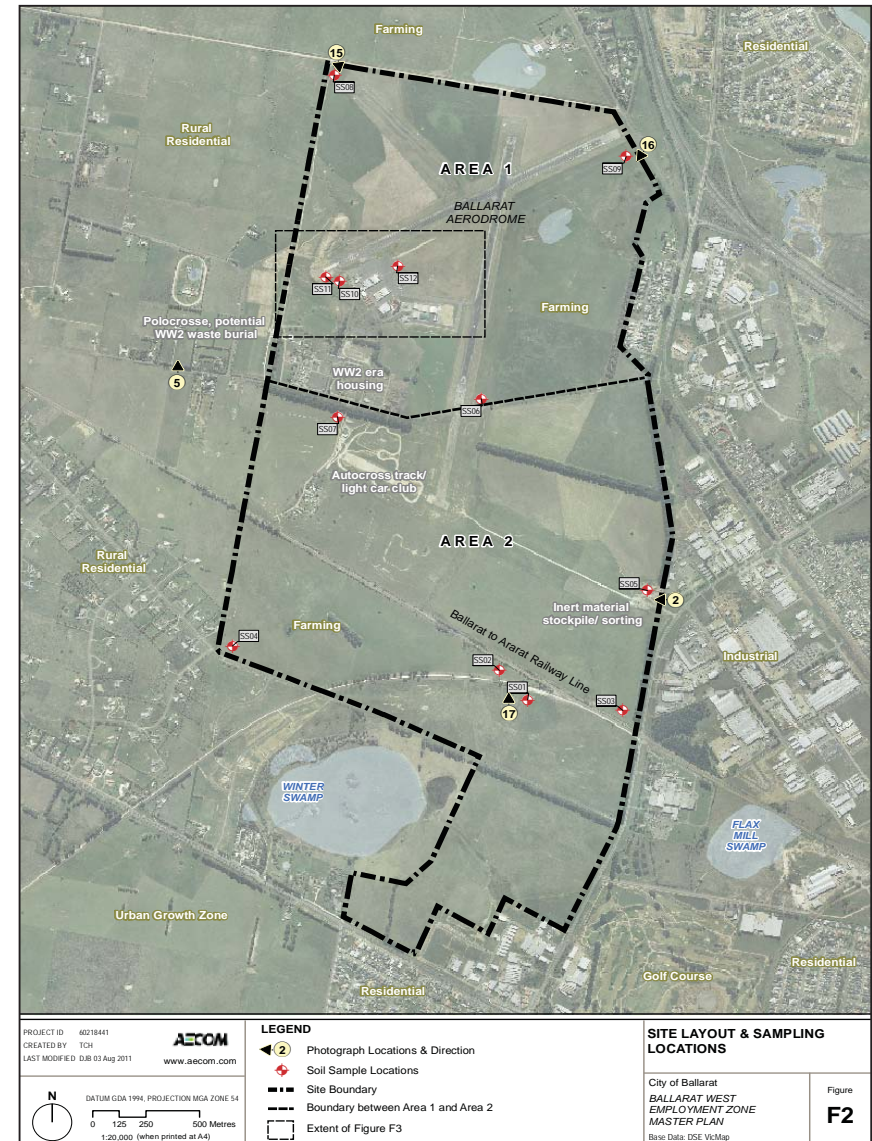
intersection with the proposed Western Link Road. A relatively direct access point into the Freight Hub from the Ballarat Western Link Road is preferred as it will afford freight easy access to road networks within and outside of Ballarat, therefore minimising the number of freight travelling on the local road network. It is considered essential that High Performance Freight Vehicles (HPFV's) can be accommodated with access to and from BWEZ. In the detailed planning of the master plan, it is considered important that the road network be designed to:

- Provide 'good' permeability for all vehicles
- Ensure appropriate turning circles for vehicles
- Ensure appropriate line of sight and radius on intersections for HPFVs

The Freight Hub concept plan suggests three sidings must be planned for as well as the ability to accommodate hard stand, warehousing and other supporting infrastructure. The key benefits identified by a freight hub at this location include:

- Excellent access to national road networks.
- Access to rail for long term freight development.
- Proximity to industry.
- Reduced freight costs for industry.

The specific design criteria testing for the Freight Hub will require further detailing, but it appears to comply with the Department of Transport design criteria. The Western Link Road has been designed to accommodate High Performance Freight Vehicles. In addition to this, access points, roundabouts and internal roads within BWEZ and in particular the Freight Hub will need to be designed to accommodate these particular vehicles. Importantly, the



potential benefits include:

- Improve freight transport times.
- Improved safety
- Removal of freight vehicles from residential streets.

A network of pedestrian, bicycle and public transportation access points linked to existing and planned networks should be provided within the micro stages of future planning for the BWEZ and as a part of the design for roads and other major infrastructure such as the Ballarat Western Link Road.

Supporting active public transport nodes into the Master Plan and its supporting road layout is considered an essential design element.

The Ballarat Aerodrome also provides additional transportation and freight opportunities to BWEZ.

The Preliminary Development Areas plan on page 18 identifies the main transport infrastructure in the area (roads and rail lines).

Through consultation with the Department of Transport, a number of rail related opportunities were identified and these should be further investigated.

4.5 Soil Contamination

4.5.1 Overview

A Soil Contamination (Phase 1) Assessment was undertaken for the BWEZ to identify any areas of potential soil contamination associated with previous land uses of the site such as farming, agricultural, mining and / or airport operations that would prohibit or limit redevelopment of the land for employment based land uses.

The Phase 1 Assessment provided a review of all available data, and included a site inspection, interviews with site users, the

collection of near-surface soil samples (13 locations across the site) and a review of historical aerial photographs and plans to determine potential 'hot spots' within the site.

4.5.2 Summary of Findings

Overall the soil contamination assessment confirmed that the area can be suitably developed for industry and commercial based land uses. From the assessment, the following key conclusions can be provided:

- The Ballarat Airport area (i.e. the area to the north of Airport Road), has several current/historic sources of soil/ groundwater contamination.
- The Ballarat Airport area is classified as Category B under the DSE (2005) guidelines indicating that further assessment is required.
- The area to the south of Airport Road is classified as Category C under the DSE (2005) guidelines, indicating that this area is less likely to be contaminated.

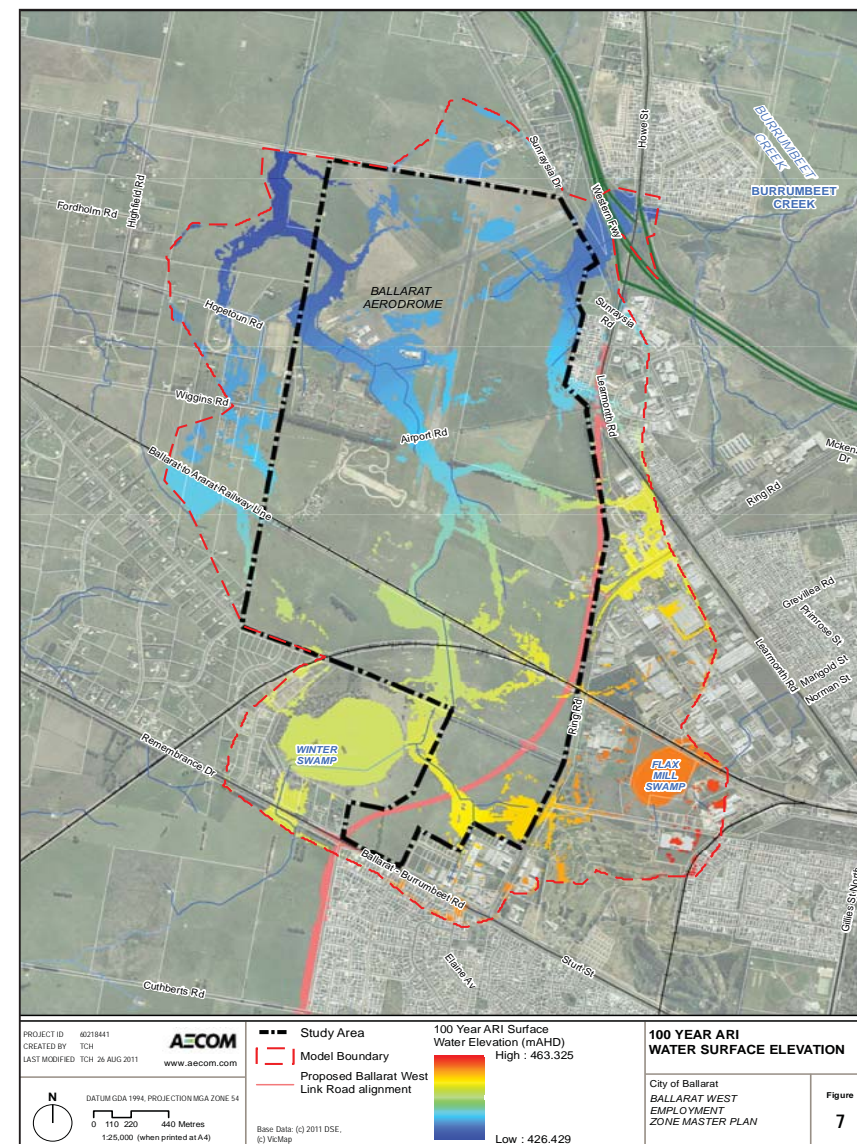
The Site Layout and Sampling Locations plan on this page identifies soil sampling locations.

In summary, the soil contamination issues identified are primarily related to the Airport. Industrial and / or commercial development within the entire BWEZ site will not be precluded by soil contamination issues (subject to appropriate management and mitigation measures).

4.6 Hydrology

4.6.1 Overview

The proposed development, from a hydrology perspective, will result in an increase in impervious area and therefore will increase stormwater runoff from the site. Given the industrial nature of the proposed development,



it is also likely that without appropriate measures, the water quality of the stormwater runoff will deteriorate from existing conditions. The hydrology characterisation of the BWEZ has identified the potential impacts the development might have on the waterway and stormwater runoff from the site. It is important to ensure that both the peak flows and water quality from the site remain the same as existing so as to ensure there isn't any detrimental impact on areas downstream of the site as a result of the new development.

Additionally any solutions are required to have impact consideration to the operations of the airport and related issues such as bird hazard.

At Flax Mill/Winter Swamp, the key features and flowlines are maintained and enhanced in the Master Plan. Current work on drainage at Ballarat Airport has been factored into the Master Plan and as part of the design of the Ballarat Western Link Road.

4.6.2 Summary of Findings

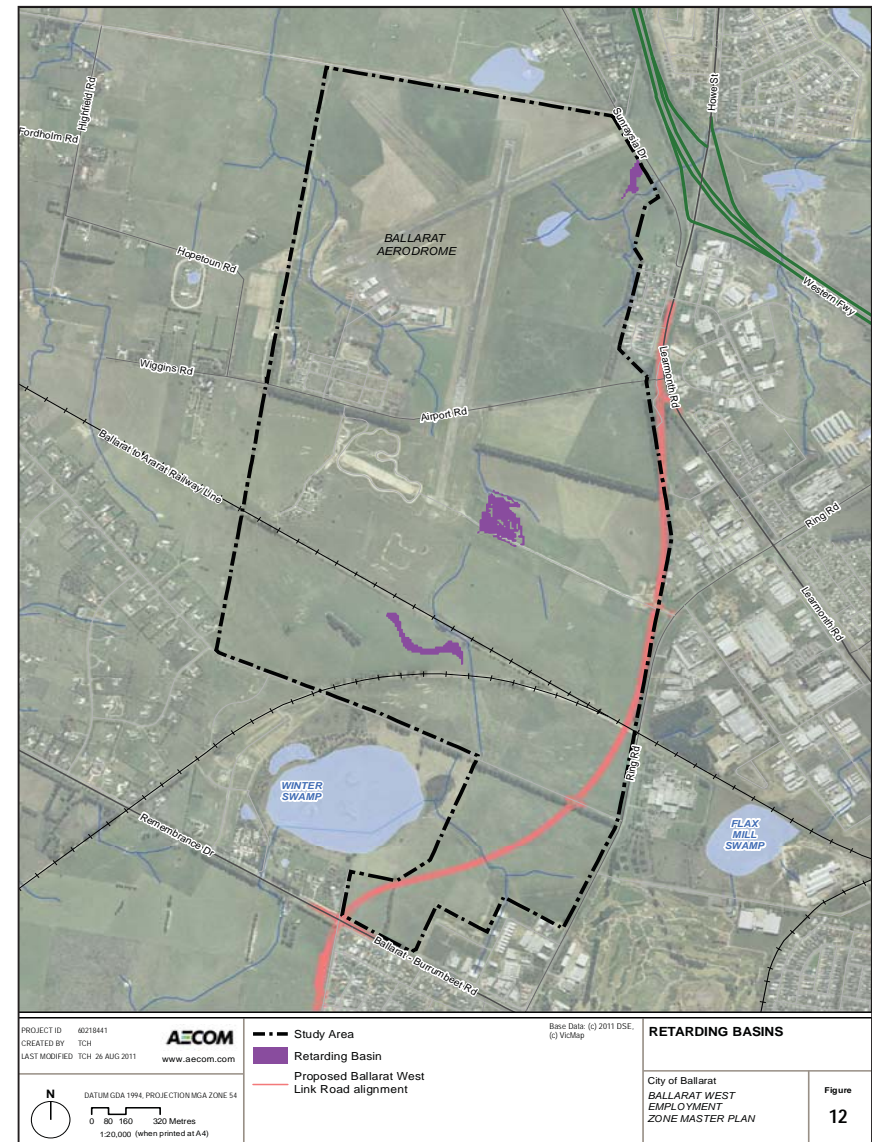
The BWEZ site already experiences flooding during extreme events and the proposed development of the currently permeable area is likely to exacerbate the situation. It should be noted that there are no permanent water bodies on the BWEZ site. An analysis has been undertaken to ensure that flooding is not increased and there is no deterioration in water quality within the surrounding area as a result of the development. A range of analyses has been undertaken and the following features are proposed to be incorporated within the Master Plan:

- Hydrological Drainage and Retardation areas are to be constructed for water retaining and treatment purposes. These require land of approximately 15,000m² immediately to the south of the south-west corner of the airport, 32,000m² to the south of the runway, 17,500m² south of

the railway and 4,200m² in the north-east corner of the site.

- Water Retarding Basins: Three of the proposed wetlands to be utilised as retarding basins. These are the 17,500m² wetland to the south of the railway line, the 32,000m² wetland south-east of the runway and the 4,200m² wetland in the north-east corner of the site, which has been expanded to 7,170m² for the purposes of flood mitigation.
- Floodways: Land within the current 100 year ARI flood extent is to be maintained at existing levels, with the exception of a small section of land immediately to the north-west of the proposed roundabout where the proposed Ballarat West Link Road meets Ring Road. This land is currently raised above natural levels and is to be lowered to allow flow from east of the proposed Link Road to join with the main floodways through the development. Additionally, 10 to 20m wide buffer strips around the development should be reserved to convey the shallow flow that would normally pass through the area proposed for development.
- The retention of water from the Winter Swamp heading north to the airport can be retained and controlled as to not impact the airport which itself has retention basins that are currently under construction.
- DoT provided a submission identifying several options for rail development which will be further investigated.

The 100 Year Average Recurrence Interval (ARI) Water Surface Elevation plan on this page highlights the extent of flooding experienced in the BWEZ and surrounding area during high rainfall events.



4.7 Water Reuse Opportunities

4.7.1 Overview

With water being such a valuable resource it is important that all opportunities for potential water reuse are considered as part of the BWEZ Master Plan. This will also reduce the impact upon the local infrastructure and will help create a sustainable development. A variety of sources were investigated as part of this study and assessed on the basis of their advantages, disadvantages and suitability to the BWEZ site. From the hydrological characteristics of the BWEZ, there are several potential options available for water re-use through planning, design and negotiations with Central Highlands Water, and the Corangamite and the Glenelg-Hopkins Catchment Management Authorities. Certain opportunities for water reuse carry higher risks than others and recommendations have also been made in this regard.

4.7.2 Summary of Findings

The following options are recommended to be detailed as the Master Plan develops as these are seen as being the most appropriate sources of non-potable water for the site:

- Centralised Stormwater Storage for onsite Reuse.
- Localised Stormwater (Rainwater Harvesting), and
- Offsite Treated Sewage Effluent (TSE) Line

It is also recommended that the following should still be considered as potential options although there are greater uncertainties associated with them and further investigation would be required to ascertain their viability:

- Centralised Stormwater Storage for transfer to Lake Wendouree.
- Stormwater Aquifer Storage and Recovery for Onsite Reuse, and
- Tri-Generation.
- The ability to use water from the Ballarat North Waste Treatment Plan, as identified by Central Highlands Water.

The Retarding Basins plan shown in this section identifies the preferred places for water retention within BWEZ.

Through an engineered response to the design of these water retarding basins, they can be relocated to other areas within BWEZ.

Access to water on BWEZ if handled well, may in fact be a competitive advantage for the site both in terms of amenity and environmental credentials but also from input cost reduction for business which will be an advantage for industry uses in BWEZ.

It is likely that the BWEZ site will accommodate food processing industry that typically has a significant impact on water quality demand and the total volume of supply.

There is a strategic advantage for BWEZ to provide efficient water reuse at a lower cost to tenants.

4.8 Alternative Energy Opportunities

4.8.1 Overview

Sources of energy supply and the cost of energy were identified in the strategic market research undertaken by CoB as key barriers to the growth of industry and manufacturing in Ballarat. Accordingly, an Alternative Energy Opportunities Feasibility Assessment has been undertaken to identify

opportunities for alternative and renewable energy sources for BWEZ.

4.8.2 Summary of Findings

The 3 key energy opportunities identified and assessed were mainly centred around gas fired cogeneration are described below;

- Natural-gas fired co-generation which is a cogeneration process fuelled by a natural gas fired gas turbine to produce electricity and heat which is fed into a Heat Recovery Stream Generator to generate steam for an end user. Heating hot water can be provided to nearby areas by a separate natural-gas fired central boiler, distributed through a central heating and hot water network.
- Biogas fired co-generation with anaerobic digestion which is similar in configuration to natural-gas fired co-generation involving a co-generation process which is fuelled by biogas. The biogas can be provided on-site by an anaerobic digester, sized to treat approximately 270,000 tonnes of waste from the precinct and surrounding area, and
- Biomass fuel stock for co-generation involving a co-generational process using a biomass (wood waste) Combined Heat and Power plant. The plant is fed with wood waste and produces both electricity and steam; the latter of which can all be exported to nearby industry. Heating hot water is provided to the area by a separate natural-gas fired central boiler, distributed through a central heating hot water network. Biomass is provided on-site by transporting wood wastes from Ballarat and more regional locations into the precinct.

Based on the outcomes of the scenario identified, the analysis and testing, the

proposed preferred location for a cogeneration facility is proposed along the western side of the proposed Western Link Road adjacent to Mars Chocolate which is within close proximity to the proposed substation and the main electricity demanding existing uses in Mars Chocolate and Laminex. Three sites have been identified in the Master Plan for further investigation.

Using the energy modelling undertaken, there are real opportunities for the implementation of an integrated solution with a gas turbine utilizing both natural gas and biogas (methane) produced from Anaerobic Digestion on site.

The process of this includes the transfer of hot flue gases from the gas turbine into the Heat Recovery Steam Generator (HRSG) to generate steam which is all exported. This is a combination of natural gas-fired cogeneration and biogas fired cogeneration with anaerobic digestion.

The integrated solution enhances the opportunity to utilise the feasibility of a cogeneration system in proximity to industry. It also considers the potential to use existing feedstock available in the region to produce parts of the biogas (methane) used in the cogeneration process.

The integrated solution as a potential alternative energy supply option can reduce energy costs for the planned industrial precinct at the same time as increasing energy efficiency of the operation and reducing the environmental impact of the new precinct.

In summary, an integrated solution of natural -gas cogeneration supplemented by a lesser amount of biogas (subject to a specific industry end user and confirmed supply of



waste feedstock, and excluding a central hot water boiler), is the most viable form of alternative energy supply from the investigated options.

4.9 Visual Amenity

4.9.1 Overview

The development of the BWEZ will alter the existing landscape, amenity and local character of the area. It is inevitable that a project of this scale will result in visual changes as built structures will replace open fields, thereby introducing a new visual element into the landscape.

The type of proposed development is consistent with the strategic vision for the area, as well as the industrial and airport land uses already located in the area. The proposed development will need to address key interfaces with existing visually sensitive residential, heritage and open spaces areas. Although such changes must be acknowledged, and wherever reasonable and possible mitigated, the project area has been designated as a new urban area through strategic planning undertaken by the CoB.

4.9.2 Summary of Findings

The proposed project will result in an altered landscape and will change the visual presentation of the local area. In areas where the industrial precinct interfaces with existing industry and the Ballarat Airport, the proposed built form is consistent with existing structures and would not look out of place within the emerging urban area. In areas where the proposed industrial precinct interfaces with existing residential and rural-residential areas, the proposed built form within BWEZ is identified as requiring suitable design solutions. This is the case even though the site has been strategically assessed and found

to be the preferred location for the future development of large industry in Ballarat for over 20 years.

The potential impacts of the BWEZ can, however, be mitigated through the following design and development measures:

- Buildings: should be designed to minimise their profile when seen from the Winter Swamp walkway. Buildings should be setback from the boundary and appropriately landscaped to integrate with the vegetation within Winter Swamp. These buildings should have a relatively low profile and mass, and natural colour so that they do not dominate the landscape and should face onto a road so that they do not share a common boundary with residential properties.
- It is also recognised that industrial warehouses are typically 13m in height.
- Due to aircraft landing and taking off, the airport also has height limitations on surrounding buildings. These are identified in the Airport Master Plan and the Ballarat Planning Scheme [Design and Development Overlays 17 and 18].
- Landscape: should be treated to demonstrate a consistency in design that is sensitive to the different communities and ecologies of the site. The site should be visually integrated into the local landscape by using similar roadway features (signage, lighting, curb and gutter configurations) as occurs elsewhere within the city.
- Fences: should be discouraged. If fences are required then they should be integrated with the landscape to provide a suitable transition between the natural and urban landscapes.
- Vegetation: removal should be minimised



Figure 6 Existing and future tree lines can provide visual screening from future development



Figure 7 Road site tree lines may provide visual screening from future development

to the greatest extent possible. Where vegetation must be removed, then where appropriate, replacement species should either be indigenous to the region so as to support local biodiversity, or reflect a specific character of cultural significance that needs to be replaced. Plant selection should aim to create self-sustaining landscapes without impact on the airport. They should comprise, wherever possible, indigenous species that do not require irrigation and are capable of regeneration/self-sow. Semi-mature tree planting should be provided in key entrances to and locations within the estate.

The proposed development can be sufficiently mitigated to minimise the most significant effects upon affected viewers and significant landscape elements.

4.10 Noise & Air Quality

4.10.1 Overview

Residual emissions are essentially discharges emanating to air and acoustic environs. Typical examples of residual emissions include noise and odours resulting from industrial/commercial, domestic and transport activity. Generally, residual emissions are regarded as having the potential to adversely impact on the conditions of the surrounding environs, whereby the “liveability” or amenity expectations of individuals in proximity to the sources of emissions may be impacted. The impacts of residual emissions may contribute to broader and potentially further-reaching environmental degradation issues, without appropriate development and activity responses.

4.10.2 Summary of Findings

Noise

The noise output from future commercial and industrial premises can and should be designed to enable compliance State legislation (SEPP N-1 Noise L) which specifically prescribes acceptable noise levels that apply within noise sensitive locations, such as residential areas. These are the statutory required environmental levels used to assess commercial, industrial and trade operations.

It is recommended that any future businesses within the BWEZ are acoustically assessed, such that the overall allowable noise output is achieved, or compliance with the designated noise levels at the nearest residences is achieved.

It has been established that standard industry practices within the BWEZ can be adequately located and developed as to not adversely impact nearby sensitive residential uses as well as established industry uses.

Air Quality

Ballarat has only a few, relatively small industrial sources of pollutants. There were 21 premises reporting to the National Pollutant Inventory in 2009/2010. These premises reported emissions of 35 substances, with the main source of particles in Ballarat is windblown dust, with wood heaters and bushfires also contributing during certain times of the year.

Carbon monoxide and oxides of nitrogen are primarily emitted by motor vehicles. Ozone is not directly emitted by sources, but is formed from the reaction between oxides of nitrogen and other pollutants (volatile organic compounds), which, in Ballarat, are primarily released by vegetation.

Careful consideration should be made regarding potential industrial combinations to be located within the BWEZ in terms of

compatibility with existing industries (i.e Mars Chocolate) in the area and required buffer distances. Emission sources requiring the largest buffer distances should be located as far as possible from sensitive receptors.

As existing facilities are sensitive to odour and particulate emissions, any potential industry to be located within the BWEZ that may emit these pollutants should be thoroughly assessed for potential adverse impacts prior to approval. Any businesses wishing to operate facilities within the area will be required to meet the following requirements when determining locations for specific uses and at a planning permit stage:

- Manage their emissions in accordance with the relevant Protocols for Environmental Management as legislated by the EPA and CoB.
- Pursue continuous improvement in their environmental management practices and environmental performance, and apply best practice to the management of their emissions including greenhouse gas emissions.
- Meet the relevant design ground level concentrations in Schedule C of the Ambient Air Quality SEPP.
- Meet the design criteria specified in Schedule A of the Air Quality Management SEPP.
- Meet the emission limits for the relevant stationary sources described in Schedule D of the Air Quality Management SEPP.
- Facilities requiring the largest buffer distances should be located as far as possible from existing or potential future sensitive receptors, particularly residences, school and hospitals.

- The selection of sites for facilities will need to take note of compatible and incompatible industries such that incompatible industries are not located too close to each other. Discussion with EPA Victoria should be undertaken to determine appropriate assessment guidelines, and
- As pollutants are likely to accumulate in the air shed during calm, stable conditions (typically occurring during cold, clear nights), industries with substantial emissions should be encouraged to manage their processes and emissions at such times so as to not contribute to elevated pollutant concentrations.

4.11 Interface Integration

4.11.1 Overview

The development of the BWEZ in an efficient and sustainable manner will require, where appropriate, mitigation of potential interface issues. Interface management issues arise from land use incompatibility and insufficient physical separation between incompatible land uses. It is most appropriate to address interface issues by establishing a land use framework during the strategic planning process, rather than relying on the planning permit (approval) stage to address specific issues (noise, air and / or visual impacts) relating to specific uses.

The BWEZ Master Plan needs to consider its future interface with existing farming properties to the north, rural living properties to the west, residential properties to the north-east and south-west and industrial land uses to the east. The interface between future industrial areas and existing residential and rural living areas is not unique to this area. It is a complex planning



management challenge that needs to be addressed via long term strategic thinking and empirical data.

The Interface Assessment identified a range of land uses that could establish within the BWEZ, their potential amenity impacts to nearby sensitive uses (i.e. residential) and the required physical buffer areas which could include distance, built form, landscaping and / or other measures.

Similarly, Amendment C138 identified the use of the BWEZ for industry and employment uses subject to appropriate buffer distance and mitigation measures are in place for sensitive adjoining residential properties.

4.11.2 Summary of Findings

Based on these investigations, industry uses and intensities are recommended to be reduced the closer they are located to residential properties.

The buffer requirements outlined in the preceding Sections, the Master Plan recommends an allocation of land uses within the BWEZ that will minimise land use conflicts between industry and sensitive land uses.

There are a range of land use interface integration mitigation measures that can be incorporated into the design and future development of the BWEZ. These mitigation measures will enable industry uses to establish within the BWEZ without impacting nearby residents in terms of air, noise, light spillage and visual amenity impacts.

It is recommended that one or a combination of the following mitigation measures are used to reduce amenity impacts:

- Provide sufficient distance to allow for the dilution of any air emissions based on

the prescribed guidelines so as to provide a buffer against events when equipment failure, accidents or abnormal weather patterns lead to accidental emissions.

- Allocate public open space; landscaping and / or lower intensity uses to screen out the industrial precinct.
- Earth mounds and bunds can be incorporated into the landscape between industrial sites and potential residential areas.
- Undertake assessment of specific sites and industrial precinct. Monitoring to more accurately determine emissions, buffer requirements and further treatment options that industry could be encouraged to adopt.
- Provide tall and/or dense foliage between the BWEZ and residential properties. Dependant on the height of luminaires and the ability to intersect the obtrusive light.
- Install high fencing/ noise barriers between the BWEZ and residential properties.
- Areas between existing industry and potential residential areas may comprise land uses of other types, such as community, commercial and / or business.

To inform the master planning process, a maximum 400m buffer area has been established (see corresponding plan on this page) where the following land uses could occur:

- Within the 400m buffer to residential areas, lower intensity and / or light industry uses could be located within (i.e. typical Industrial 3 Zone and / or Business 3 Zone uses) subject to noise, air and visual amenity mitigation measures, and
- Beyond the 400m buffer area, towards the

centre of the BWEZ, general and heavier industry uses (i.e. Industrial 1 Zone / General Industry uses) could be located.

All uses within the BWEZ would be subject to an assessment against the relevant legislation from the Ballarat Planning Scheme (Clause 52.10) and EPA Guidelines (EPA Publication AQ 2/86.) to identify buffer constraints.

4.12 Ecology

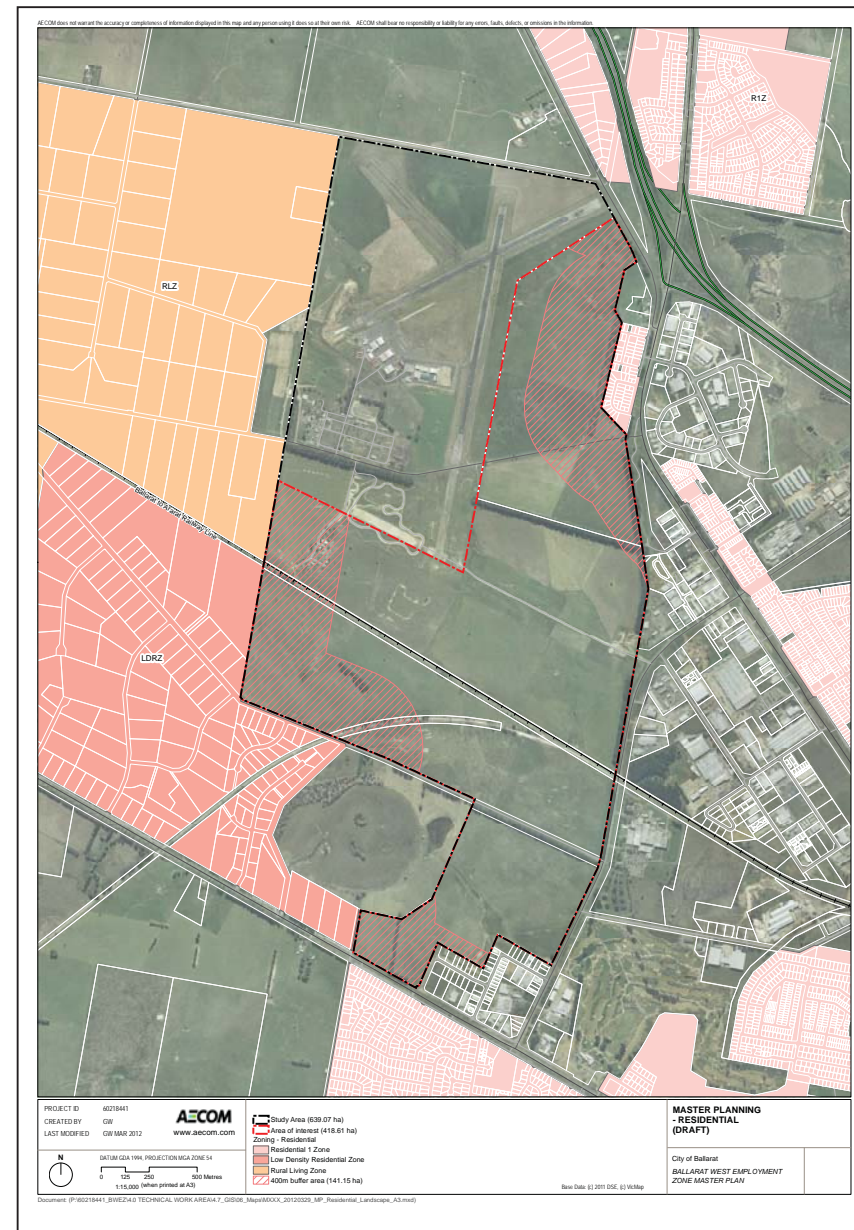
4.12.1 Overview

The ecology of Ballarat West is the undulating volcanic plains that are typically not heavily vegetated historically prior to land clearance by early European settlement. The area is characterised by tussock grasslands, containing Kangaroo and Wallaby grasses with scattered patches of open woodland. The more heavily vegetated areas of the region are typically located near waterways such as creeks and lakes.

4.12.2 Ecology

In summary, the majority of the subject site is considered as having low ecological value for vegetation communities and flora, with the exception of the three habitat zones and one patch of degraded treeless vegetation (DTV).

Previous investigation undertaken on behalf of the City of Ballarat has identified remnant vegetation patches of Heavier Soils Plains Grassland EVC 132_61 of high and very high conservation significance were identified in three habitat zones in the northern section of the site (Biosis 2010). Appropriate approvals may be required for development but these areas are unlikely to be disturbed by the BWEZ proposed development areas. The previous surveys for vegetation communities, scattered trees and significant flora, are considered to have been assessed comprehen-



sively, and no further surveys are considered necessary.

There is potential for the nationally and State significant Fragrant Leek-orchid in patches around the aerodrome, but is considered unlikely to be disturbed by the BWEZ development. Additionally, a potential constraint is the Striped Legless Lizard in patches near the aerodrome that is unlikely to be disturbed by the development.

Some remnant vegetation patches are also identified in three habitat zones in the northern section of the site, in and around the airport and recognised accordingly. Six scattered remnant Swamp Gums are recorded south of Airport Access Road.

To the south the BWEZ site, remnant vegetation patches and potential habitats for significant flora are located in and around Winter Swamp. These areas are not within the BWEZ and will, therefore, not be impacted by the development. However the design of the masterplan in integrating the proposed hydrology and environmental corridor from the Winter Swamp is designed to maximise the environmental relationship with the adjoining BWEZ site.

Initial consultation with the State Government Department of Sustainability & Environment (DSE) indicates that in principle support for the overall direction of the Master Plan. Also, previous Council ecological reports for Winter Swamp and around the airport completed in 2010, as well as for the

BWEZ site, are considered adequate for the initial Master Plan formulation.

- DSE have indicated that they consider it important to ensure that an appropriate management plan is in place to protect what habitat has been identified, and how habitat enhancement will improve corridors/ population growth of identified species.
- DSE consider the corridors proposed in the draft Master Plan to be adequate and provide good linkage between wetlands. However the width of these areas can be reduced subject to further investigation. The Winter Swamp overflow will need to be well managed.
- The Western Link Road running through the BWEZ will need to be designed to take into account the flow corridor between Flax Mill and Winter Swamps.

4.13 Indigenous and Cultural Heritage

The existing Conservation Management Plan (CMP) prepared for the Ballarat Aerodrome (refer page 12), provides comprehensive guidelines for managing heritage values and works within the boundaries of the land, buildings and features in the Former RAAF Base H2113 (refer to map on Page 12).

All works within the study area covered by heritage registration should be undertaken in accordance with the management strategies outlined in the CMP.

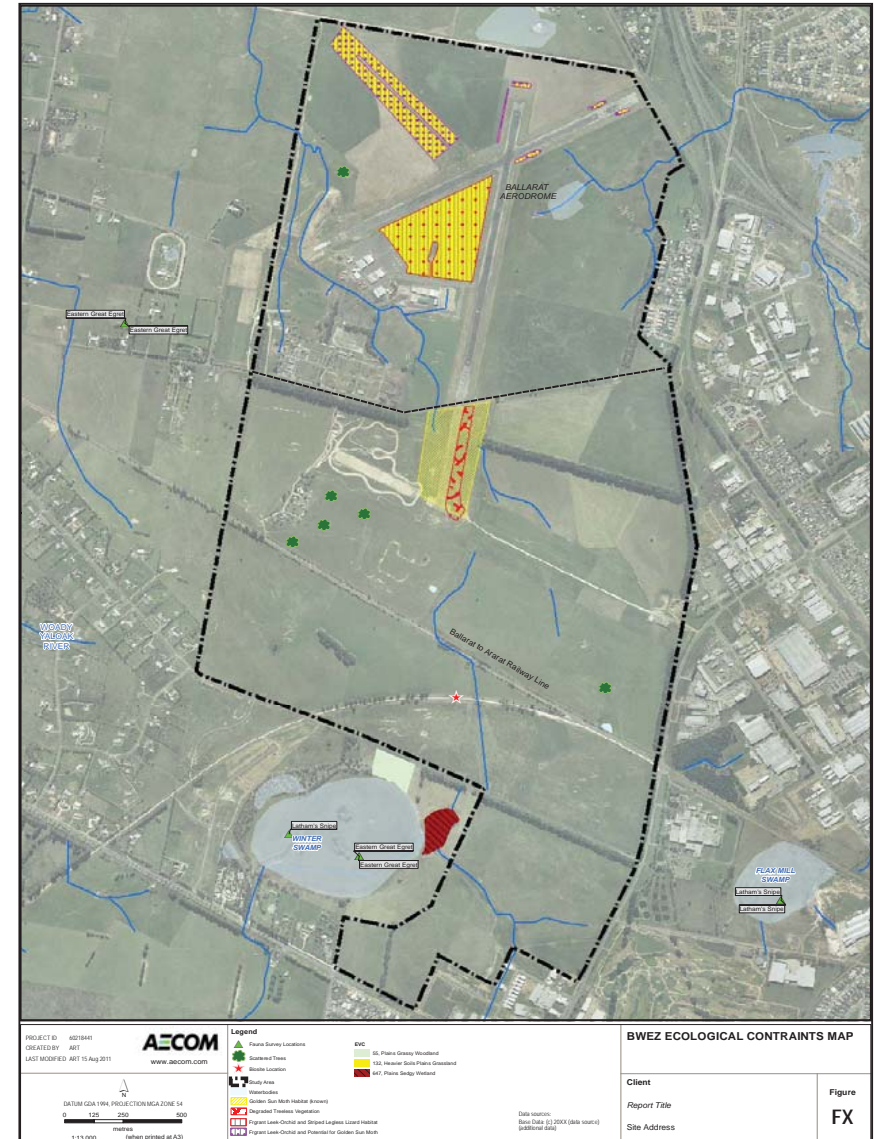
During field surveys, no new historical sites were recorded in BWEZ. However, several components of the Former Ballarat RAAF Base (H2113) site and the wider study area that have the potential for sub-surface remains.

A Cultural Heritage Assessment of the BWEZ site was prepared by Biosis Research Pty Ltd in 2010. Initially, a desktop assessment was undertaken for Historic and Aboriginal places, prior to field surveys. The desktop assessment identified the place types most likely to occur within the study area, and site types associated with these Aboriginal places.

Representatives of the RAP – Wathaurung Aboriginal Corporation trading as Wadawurrung – participated in the field survey. Four Aboriginal Places (VAHR sites) were recorded during the field survey, and six areas of Aboriginal Archaeological sensitivity were identified in the study area. These areas are all rises overlooking drainage lines or swamps. The sites identified were assessed as having low significance, based on the results of surface survey. It was however concluded that additional sub-surface Aboriginal cultural deposits may be present within the study area, which could lead to an increase in the significance of a site.

A mandatory Cultural Heritage Management Plan (CHMP) would be triggered if future development incorporates land within the identified areas of sensitivity, or within 50 metres of any VAHR sites. The preparation of a CHMP would involve further assessment, including sub-surface testing, and the development of management strategies for the sites.

The map on this page identifies the areas of ecological and environmental significance including threatened species, ecological vegetation classes and environmental features.



Section 5.0

Commercial Analysis + Market Consultation

5.0 Commercial Analysis and Market Consultation

5.1 Economic Assessment

To support robust decision making during the BWEZ Master Plan process, the City of Ballarat commissioned the BWEZ Economic Assessment (by Essential Economics) as a separate background report to test the commercial viability of the BWEZ. The Economic Assessment is driving the Master Plan process to ensure that future development of the BWEZ represents the best economic outcome for the regional economy.

The key focus of the Economic Assessment was to understand and identify employment opportunities that could assist Ballarat to be a globally competitive location for industry, creating more jobs and competitive businesses to support growth in the region. It was also guided by the goal to maximise the value for BWEZ to ensure development ready land is suitable and is available for modern industry in Ballarat, both in the short and long term.

5.1.1 Key Findings

The Economic Assessment Report confirmed there was sufficient demand to warrant the staged development of the BWEZ over 20 years. This demand for industrial land is likely to come from a mix of organic growth, relocation of businesses from existing industrial areas, and through investment from new entrants, currently not located in the Ballarat area.

At full development, BWEZ is projected to accommodate 9030 jobs and generate \$5 billion per annum in direct economic output. Additionally, further indirect outcomes would be generated as a result of the BWEZ.

The Economic Assessment highlighted the Ballarat Future Industrial Land Strategy finding that by the end of 2014 there will be approximately 150Ha of industrial land available for development or a shortfall of 50ha of industrial land when measured against the rolling available industrial land supply target of 200ha. BWEZ is considered a critical project to secure

the future supply of employment land for the City of Ballarat and provides a range of lot sizes in a master planned estate. BWEZ needs to be developed in a way that attracts new industry opportunities that fill identified gaps in the economy, builds on Ballarat's competitive advantages, and supports existing businesses as they wish to expand or relocate. It is also important that the precinct supports the attraction of quality workforce.

The Report's Gap Analysis shows that sectors such as transport and logistics, wholesale trade, and construction, present business and employment growth opportunities through capturing a greater share of business that is lost to other Australian suppliers. Total expenditure by Ballarat firms on goods and services from other parts of Australia equates to \$1.9 billion annually. Other key findings included:

- The transformation of the manufacturing sector towards higher-value activities is required to ensure the sector retains a strong employment presence in the municipality.
- Labour force availability and diverse skills are seen as a competitive strengths for Ballarat.
- There is a need to create employment opportunities to attract and retain working residents who commute to Melbourne each day for employment purposes.

Land Use Opportunities

A wide range of potential future industrial and related activities were examined in detail to identify the prospects for development at the BWEZ. This analysis consisted of an examination of wider industry trends and forecasts, typical supply chain linkages, and other factors such as regulatory support, competitive environment, etc. Based on these assessments, the main industry sectors in which future potential has been identified are food processing, machinery and equipment manufacturing, transport and logistics, construction-related services, research and development as well as

a range of enabling and business services.

Development scenarios and staging

A preferred development scenario was selected to provide the basis for preparation of the Master Plan. This preferred scenario combines some elements of a high intervention scenario with aspects of a more market-led development resulting in reduced development risk.

- The Stage 1 development (covering a five-year period 2015-2020) is recommended to comprise approximately 75ha of land, allocated generally as follows; general industry (35ha), Freight village (20 ha), transport and logistics precinct (5ha), food processing precinct (10ha), R&D (3ha), convenience retail node/business support services (2ha).
- The second stage would increase capacity for food processing, transport and logistics (as the freight hub develops) and research and development, and would allow for a more significant activity centre node.

This information has guided the direction and layout of the BWEZ Master Plan and more specifically will guide the Development Strategy.

It is noted that the development scenarios and preferred Master Plan do not indicate development staging.

Implementation

The Economic Assessment analysis highlighted that the successful development of the BWEZ is dependent on the following critical success factors:

- The adoption of an appropriate development model which provides flexibility in meeting demand from tenants wishing to lease space, and those wishing to purchase sites
- Securing government support and investment
- Responding to market needs particularly enhancing local labour force productivity
- Identifying and implementing catalyst projects
- Proactive marketing and branding.

- Through a targeted investment attraction campaign Ballarat could become not only self sufficient but a net exporter of domestic goods and services.

5.2 Commercial Analysis

Following on from the Economic Assessment, a Commercial Analysis of the BWEZ Master Plan was undertaken by Colliers International. This analysis tested the market findings of the Economic Assessment and undertook a commercial test and property consultation process that analysed the current and future market delivery of BWEZ. The outcomes of this Commercial Analysis are embedded into the design and form of the Master Plan.

The approach undertaken by Colliers International included a review and synthesis of available property market information and an iterative consultation process, with key stakeholders, tenants and potential investors / developers. This market consultation process was designed to inform the use, development and delivery of the BWEZ site. Central to this is the robust analysis approach and associated understanding of key commercial market risks and challenges, is the need to ensure that the ultimate Master Plan vision and its "brand" is shaped both by market reality and a desire for leading place making outcomes.

5.2.1 Key findings

Supply

From a local supply perspective, the market analysis and property market consultation revealed that while there is a quantum of both serviced and unserviced land available within Ballarat, there are also some identified land constraints including small land sizing constraints, pricing and non-selling owners. The availability of quality land is a critical factor to attract new investment. Occupiers will seek the best available land at the time of their requirements. If there is no availability of quality suitable land in Ballarat, occupiers will



and are currently are searching elsewhere. Traditionally the demand for large lots in Ballarat equates to 1-2 requirements per annum.

Demand

This analysis showed that while land consumption in Ballarat is currently driven by the sub 5,000sqm requirements, the consultation process highlighted that there are less than 5 lots in excess of 6ha within Ballarat that can accommodate large occupiers. This has resulted in a reduced ability to accommodate larger requirements and lost opportunities in recent times.

Based on the total consumption of industrial land between 2001 and 2009 of approximately 70ha, or at an average of 8.7ha per annum is required by the market.

A more targeted approach as identified through the BWEZ Master Plan is likely to increase the sizing of this industrial land take up.

From a demand perspective, four distinct markets relevant to the BWEZ have been identified:

- Local Organic & Industrial Ecology Driven Demand

The organic & industrial ecology driven demand is the current mainstay of the Ballarat market. This market represents the majority of transaction demand on an annual basis, generating requirements predominately in the smaller 1,000m² to 5,000m² range.

- Regional Relocation – Large Land Requirement

The regional relocation/large land requirement, refers to larger industrial land requirements for parcels above 5ha.

- Ballarat Relocators

Ballarat relocator demand represent relocation businesses from existing industrial areas and while from a net employment perspective offer limit gains, realise significant net community benefit uplift opportunities from unlocking and capitalising on land for a higher and better use.

- Catalyst Development / Anchor Tenant

Catalyst Development / Anchor Tenant requirements differ from the larger regional requirement in that they deliver higher employment outcomes and multipliers for the City of Ballarat.

It is important to note that the analysis highlights the fact that this investment catalyst can take more forms that the traditional 'major occupier' and also includes collaborative educational frameworks (TAFE, Construction Centres of Excellence, R&D Facilities and Incubators etc) and amenity delivering business/Industrial service centres.

Take-up and Staging

The BWEZ site is considered as having excellent locational attributes and meets the general criteria considered critical to attract industrial investment, however the consultation process has also highlighted commercial constraints from an external development perspective.

Discussions with major Melbourne and Sydney based developers, investors and key tenant representatives indicate that securing a 'major occupier' will be difficult in the current market, with the delivery and marketing of a "compelling reason" to establish in Ballarat the critical factor to success.

Most notably, the competition from Melbourne West from a supply, demand and land value perspective will mean that the success of a pure property play on the site is significantly restricted. In this regard, the predominant feedback was that for the development to be successful, it needed strong government support and an economic development focus, rather than a pure property play.

Due to the current excess supply of industrial land in Melbourne it is likely that initial demand will be restricted to local or regional demand for predominately small lots, with the occasional requirement for a larger parcel.

It is considered that the preferred way BWEZ can

respond to these conditions is to promote and preserve its main competitive advantages, complementing an appropriate funding, governance, management and approvals framework.

From a BWEZ development staging perspective, the consultation process revealed the following key considerations:

- Precinct level planning / master planning is critical in providing market certainty and direction regarding timing, staging and delivery;
- Flexibility from a land-use planning perspective to both future proof and remain responsive to ad-hoc demand. IN1Z was the preferred local zoning nominated by developers;
- Capitalise on existing organic growth to build critical mass in Year 1 - 10 to provide a platform and enable end vision;
- Ensure a range of lot sizes are brought to the market that matches market demand;
- Bank land for catalyst projects - provision of land upon the appearance of demand; and
- Early provision of an employment area 'service centre'.

Ultimately changing market conditions and land supply considerations are likely to alter the proposed staging and as such it considered important to monitor and review the concepts outlined in the Master Plan, and its implementation.

Allocation of land for bulky goods is not considered a priority. Given the quantum of available land, there is however potential to bank a high profile site in order to accommodate a 'major anchor' that could not be sited elsewhere.

From a freight and logistics perspective, research suggest that rail freight on the subject site may not viable in the short term for the site. However, provision for road freight at BWEZ should be established to cater for

increasing freight needs of Ballarat.

Delivery Mechanism

In order to maintain affordable price points and ensure market capture, either a government led development or a Public Private Partnership (PPP) joint-venture were the preferred options identified.

Whatever the delivery mechanism, the critical feedback from the market emphasised the importance of a leadership and governance body charged with delivering the vision and objectives for BWEZ. A strategic and well-orchestrated approach at political, administrative, land owner/investor and community levels is considered essential. Without a truly collaborative and cooperative approach, the common view was that BWEZ stands a good chance of not realising its potential for job creation.

Commercial Implementation Action

A number of tasks were identified through this analysis process that will need to be undertaken on an ongoing basis for the full life of the project to maximise development opportunities. These included:

- Maximise the opportunities of capitalising on the new Western Link Road and existing rail link
- Promotion and marketing the location for compatible development opportunities
- Provide a well-formed precinct plan, timing security and incentive potential
- Continue to pursue funding and government support for infrastructure and arterial roads connecting
- Delivery of site infrastructure
- Planning controls must be flexible, to be 'future proof', while providing for improved predictability of process and greater certainty of outcomes
- Complementing new development opportunities with existing industrial activities
- Target key markets with regional 'roots'
- Ensure on-going and continual promotion of the BWEZ site.
- Ensure ongoing promotion of the BWEZ site

Section 6.0

Technical Assessment Summary - Key Findings

6.0 Technical Assessment Summary – Key Findings

Selected technical report findings are outlined as follows:

6.1 Transportation

- A key to the success of the BWEZ is exposure and access from the Western Link Road. The technical assessment phase of the study identified key access points and opportunities to maximise the benefit of this planned infrastructure upgrade, in particular for HPFV's.
- The Ballarat to Ararat Railway is a major constraint of the site but presents an excellent opportunity for the Freight and Logistics Hub (Precinct) presenting a central location of the site with excellent access to the future Western Link Road.
- The grade separation of the Ballarat Western Link Road above the Ballarat to Ararat Railway Line will drastically alter the landscape of the precinct and the surrounds and needs to be taken into consideration in terms of access and visual impact.
- The potential realignment of Blind Creek Road will enable direct access to Wendouree Station and Gillies Street.
- Internal roads must be setback 745m from the existing runway and 270m from the Ballarat to Ararat Railway line (due to aircraft flight limitations) to accommodate aircraft flight paths in the central part of the site.

6.2 Land Use Buffers

- The close proximity of existing residential land uses to the BWEZ is a challenge to locating future employment generating industry uses within the BWEZ. The use and development of the BWEZ should be intensified in areas with extended buffers to residential areas and then sensitively planned and designed within these buffer areas.
- The impact of industry uses on existing uses (i.e. Mars Chocolate Australia) and other conflicting industry uses must be considered in the location of potentially

offensive land uses.

6.3 Residential Interface

The use and development within BWEZ should consider a range of interface issues, depending on the type and location of the development and activity. There are identified residential interface considerations as well impacts on potential development (particularly setbacks and heights) from the operation of the airport. Additionally, the application of buffer is considered an important design and operational element (where possible) to reduce noise and air emissions, and visual impacts.

6.4 Ecological Values

- The ecological link between Flax Mill Swamp, Winter Swamp and the natural drainage line of the site from south to north needs to be retained and reinforced. The Winter Swamp area and connecting flowline north to the airport and east to Flaxmil Swap may provide habitat for some endangered species. The Master Plan proposes to preserve and enhance these habitat areas by creating a habitat link without development impacts.
- No development is planned where endangered species have been located. As previously indicated (refer to page 26 map), most of the identified species are located in the Airport precinct and Winter Swamp. Land use buffers will be provided to these areas.
- The findings of the Soil Contamination Assessment, identified that this will not be a significant issue for the Master Plan.

6.5 Heritage

- There are a number of heritage buildings and other features within the Airport Precinct. These are all proposed to be retained in accordance with the Ballarat Aerodrome Conservation Management Plan.
- Impacts to the Cypress Pine Plantation

should be minimised. Where possible to enable internal connection, approval to remove some trees may need to be sought in order to access land for use and development.

- The former East-West runway should be considered in its context for the Master Plan in an interpretive sense and may include the re-alignment of the runway as an access road and some interpretation provided.

6.6 Watercourses and Site Hydrology

- The flow of water from Winter Swamp at the southern end of BWEZ through the airport land towards the northern end is a major consideration when planning for land uses in the BWEZ. A water flowline through the centre of the site has been provided to allow for a watercourse and an ecological corridor.

6.7 Ballarat Airport

- Ballarat Airport has been subject to a separate Master Plan and although part of the study area, the BWEZ Master Plan has considered the recommendations from this separate Master Plan process and has taken into account the need to setback development and allow for the runway reservation to the south. Provision has also been made for aviation related businesses abutting the north-south runway.

6.8 Commercial Implications

- Competition advantages need to be leveraged through site design and marketability.
- There needs to be some level of government intervention and / or subsidy to attract industrial land uses.
- The planning framework and Master Plan should be flexible and not overly prescriptive to allow a range of uses.
- Design and sustainability elements need to be competitive with surrounding industrial land and not overly restrictive in terms of site servicing and cost per

hectare.

- Preservation of large lots.

6.9 Infrastructure

Agencies supplying major urban infrastructure require some degree of certainty to undertake detailed planning. Effectively the BWEZ Master Plan provides the basis for more detailed planning which will deliver more certainty on cost, timing and location of the infrastructure provision.

With the exception of the airport precinct, the subject site is not developed. At this stage the BWEZ Master Plan does not address water and sewer services to the subject land in detail, however, some high level investigations into servicing based on information supplied by Council's Consultants has been undertaken by Central Highlands Water. As could be expected the proposed form and type of employment development proposed by the master plan, a range of infrastructure servicing improvements will be required. The supporting technical studies have identified the location of feeder piping/connections and provide a preliminary analysis of capacity and connection constraints and opportunities.

Even though only preliminary planning has been undertaken to date, Central Highlands Water has an understanding of the implications and capacity to serve the subject site. The following reflects the current position with regard to the provision of hydraulic infrastructure.

Water

The BWEZ is capable of being supplied with water. This will necessitate the extension of existing water mains and the construction of new trunk infrastructure (including water mains and storage tanks) to service the zone. Specific detail and diameter of the supply mains are not known at this stage but are likely to be of a size that will be able to be accommodated within road and other

Sewer

The sewerage network can be extended to serve the plan area and sewerage mains will need to follow, where possible, natural drainage lines as the aim is to have the servicing network gravity fed.

New trunk infrastructure (including pump station and rising main) will need to be constructed to connect to the Ballarat North Waste Water Plant and depending upon demand capacity upgrades to this plant may be required in the future.

Electricity and Telecommunications

In terms of electricity supply, existing services are identified and the need for a new BWEZ sub-station is identified.

In terms of telecommunications, Telstra have advised their cable connections to the airport in around the Link Road, Blind Creek Road, Airport Road and in and around the existing airport terminal. Telstra have advised that there is no other significant infrastructure that will pose an obstacle to

Section 7.0

Consultation

7.0 Consultation

7.1 Overview

The community and stakeholder consultation, as part of the BWEZ Master Plan is important in understanding the impacts of the proposed development to the surrounding land uses and Ballarat community.

To ensure appropriate consultation and communication for the project, an overarching strategy for delivering a robust program of engagement to all project stakeholders was developed and implemented throughout the current Master Planning phase.

The Strategy is intended as a management tool to build awareness and understanding of the Ballarat West Employment Zone (BWEZ) in general terms as well as to provide specific information about the current Master Planning phase of the project.

Since the project commenced, CoB have continued to provide information, regular updates through website, media releases, radio segments, advertising, direct letters and newsletters.

7.2 Stakeholder Workshops

As part of the consultation and communication process for the BWEZ Master Plan, two Stakeholder Workshops were held with adjoining and impacted residents, local businesses, local interest groups and Airport Users Groups on August 9 and October 13 2011. A total of 90 participants attended over the two sessions and provided input into the Master Plan process by outlining their knowledge of the site and concerns over the future planning for employment uses within the BWEZ.

During the Stakeholder Workshops, the key issues and concerns raised included:

- Requiring appropriate land uses near residential areas along with right zoning and buffers
- Provision for an open space network linking with Flax Mill and Winter Swamps
- Investigate opportunities for Alternative Energy
- Identification and use of sustainable practices
- The Airport operations (both for and against)
- Providing suitable development opportunities whilst maintaining good access and alleviation of traffic congestion, and
- Mitigating potential visual impacts, air and noise emissions from uses on the site

7.3 Technical Working Groups

As part a technical review of the Technical Studies undertaken, a series of Technical Working Groups were convened to review each of the Technical Reports and discuss identified site constraints and opportunities.

The Technical Working Groups included:

- Land Use and Civil Infrastructure Technical Working Group which included representatives from CoB, VicRoads, Department of Planning and Community Development (DPCD), Department of Transport (DoT) and Central Highlands Water (CHW)
- Environmental and Heritage Technical Working Group which included representatives from the CoB, Department of Sustainability and Environment (DSE), DPCD (Heritage Victoria and Aboriginal Affairs Victoria) and CHW

- Social Planning and Community Infrastructure Technical Working Group which included representatives from CoB, Department of Health (DoH), DPCD, and the Country Fire Authority (CFA)
- Economy and Employment Technical Working Group which included representatives from CoB, Regional Development Victoria (RDV), Commerce Ballarat, Committee for Ballarat and DPCD.

7.4 Information Sessions

In addition to the Stakeholder Workshops and Technical Working Groups, drop in Information Sessions were held on 20 November 2011 and 17 January 2012. for the wider Ballarat Community to hear about the BWEZ project and provide comment on the process of the project along with the other Ballarat West Growth Area projects.

In addition, briefings were held for the following groups; Committee for Ballarat, VECCI, Airport Advisory Group, Ballarat Property Industry and CoB Heritage Advisory Committee. Council officers also met with residents of Blind Creek Road and environs and a representative of the Ballarat Environment Network (BEN). Council approved the release of the Draft master Plan for community comment over December 2011 and January 2012.

Using the findings of the Technical Assessments, Community and Stakeholder Consultation outlined earlier, and the other available background material, a Master Plan for future development of the site has been prepared.

From July 2011 to January 2012, Information Bulletins were provided to impacted stakeholders and on Council's website. The

Information Bulletins provided a status update on the Master Planning project as well as key findings identified throughout the various studies and consultation sessions.

7.5 Feedback from Stakeholders & Community

During the Stakeholder Workshops and Community Information Sessions, the following key issues were identified and have been considered in the formulation of the BWEZ Master Plan. These include:

- The treatment of buffers between BWEZ uses and neighbouring residential areas to ensure that noise, air and visual impacts are mitigated
- Access to the airport and surrounding area needs to be retained
- Separate wherever possible, industrial and residential traffic
- Ensure that new development will not exacerbate the flooding that impacts the site and surrounds. Drainage needs to be considered
- The current airport uses should be retained within the BWEZ Master Plan
- The Winter Swamp is an environmental conservation area that should be protected and buffered from industry land uses
- The heritage elements of the Ballarat Aerodrome should be considered and incorporated, where possible, into BWEZ
- Skipton Rail trail is an active public open space and ecological link that should be retained.

The feedback and comments documented through the consultation process have been incorporated, where possible, into the BWEZ Master Plan and supporting documentation.

7.6 Economic Assessment and Commercial Market Testing

One of the key components in the development of the BWEZ Master Plan was a process of industry consultation and understanding of case studies dedicated to project definition and market sounding. Specifically the outcomes of the consultation are aimed at:

- Providing an outline of the project to those parties potentially interested in participating;
- Confirming the functional brief, the design concept and the project scope;
- Gaining insights into the viability and marketability of the project;
- Receiving input into delivery and development strategy; and
- Highlighting any potential commercial constraints and key project risks.

Key consultation participants included a range of commercial agents locally and nationally, major and local developers, potential investors and tenant/occupier representatives

Consultation with Government agencies, local agents, developers, investors, potential tenants and industry groups was undertaken to ensure the commercial viability of the proposed BWEZ and Master Plan configurations (refer to Section 5.2 for further information).

This consultation included relevant testing of preferred indicative development scenarios, location, governance structures, infrastructure provisions, indicative market prices and rents.