ELLIS BROOK VALLEY RESERVE STRATEGIC MANAGEMENT PLAN 2016-2026

ecoscape

CITY OF GOSNELLS

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SUMMARY

Ellis Brook Valley (EBV) has a remarkably spectacular landscape. It is an ecological and tourist feature of the Darling Scarp, and is considered a valuable asset to the City of Gosnells (The City). It is located approximately 20 kilometres out of the Perth CBD and only 2 kilometres from the Gosnells town centre. EBV is located within Banyowla Regional Park and is managed by the City with the support and assistance of the Friends of Ellis Brook Valley (Inc) (FOEBV).

EBV, with its associated foothills and lower reaches, is an important natural asset to the City, with a diverse set of ecosystems, ranging from quartzite headlands to wandoo woodlands whilst also containing several special attractions such as the Sixty Foot Falls, the Barrington Quarry and Ellis Brook itself (Maher Brampton & Associates 1998). The area was identified in the City of Gosnells' Visitor Development Strategy 2004-2006 (RBA Consulting 2004) as a potential visitor icon and is notable for its major feature being Sixty Foot Falls, promoted as the largest waterfall in the metropolitan area.

EBV is situated within easy range and access to the residents of Perth. EBV has all the natural attributes required to be a major attraction to a wide cross section of the community with significant tourism, cultural and recreational potential, particularly with the continued population growth of the Perth metropolitan area. EBV contains a diverse range of attractions, including; expansive views, landscape diversity, wildflowers, bird watching and the Sixty Foot Falls. There is also the potential to expand on the existing attractions with the former Barrington Quarry located in the north eastern section of EBV providing an opportunity for a range of future uses. With the range of current and potential attractions, EBV has the capacity to be a major destination, capable of bringing large numbers of people to the area.

This document provides the City with a strategic guide to the management and further development of EBV area, providing informed guidance to ensure its continued conservation and further development tailoring to environmental, social, cultural and recreational requirements. 52 management recommendations have been made which are summarised in **Table 3**.

One of the key recommendations in this report is the spatial definition of the proposed Ellis Brook Valley Reserve (EBV) and measures to be taken to amalgamate discrete properties into one Crown Reserve for the purposes of conservation and recreation.

1.0 INTRODUCTION

1.1 STRATEGIC PLAN

The area known as the Ellis Brook Valley management area (EBV) is a significant and important natural asset to the City of Gosnells (the City). The impressive bushland site is situated in the outer metropolitan area, which is easily accessed via Tonkin Highway.

EBV possesses unique natural landscape, geological, vegetation and flora attributes. A prime feature and attraction is the spectacular Sixty Foot Falls which is promoted as the largest waterfall in the metropolitan area (**Plate 1**). EBV appeals to a wide cross section of the local and broader community with tourism, cultural and recreational opportunities. EBV has the potential to evolve, beyond its current status of being relatively unknown, to be an important visitor hub for the City and the region.

The aim of this document is to support the City's plan for EBV with management principles that provide strategic guidance to the City for the development and management of EBV. This plan should align with the City of Gosnells' Community Plan, in particular its goal to 'enhance our natural environment by protecting and improving our natural assets and to promote a proud and harmonious community'. This goal can be supported through the expansion of the visitor base and recreational activities and opportunities in this unique area to create a positive sense of place that brings people together (City of Gosnells 2011).

Importantly, this report aims to define the EBV management area and proposes the creation of a single Crown Reserve across a number of land parcels (the proposed Ellis Brook Valley Reserve, referred to as EBV herein) with conservation reservation as its purpose.

Plate 1: Sixty Foot Falls

The following points from three of the City's strategic plans relevant to the area summarise the vision for the City and specifically natural environment areas such as EBV (**Table 1**).

Table 1: The City of Gosnell's current strategic plans

CITY VISION
CoG 10 YEAR COMMUNITY PLAN • Promote a proud and harmonious community. • Enhance the natural environment. • Protect and improve natural assets. • Integrate natural assets with community activity. • Encourage community action to protect the environment.
VISITOR DEVELOPMENT STRATEGY • Promote a vibrant City with a strong community identity. • Provide an attractive, friendly, clean and safe environment with a reputation for caring for our natural environment, cultural diversity and heritage.
FOOTHILLS RURAL STRATEGY • Improvements to The Valley will enhance landscape character and provide more tourism opportunities in the area.

1.2 PROJECT SCOPE

The aim of this document is to provide the City with a current and informed plan providing new strategies to ensure the continued conservation, further development, promotion and management of EBV.

Key objectives for the Ellis Brook Valley Reserve Strategic Management Plan are:

- to capture EBV's management history
- to clearly define EBV's management area
- to recommend directions for the future development and management of EBV.

1.3 STUDY AREA

EBV is located in the suburb of Martin approximately 20 kilometres south-east of the Perth CBD and 2 kilometres north east from the Gosnells town centre. EBV is located within Banyowla Regional Park and is managed by the City of Gosnells with the support and assistance of the Friends of Ellis Brook Valley (Inc) (FOEBV).

EBV is located on the Darling Scarp on the Murray Valleys and Forrestfield Soil Landscape Systems (DAFWA, 2012). The Murray Valleys deeply incise the Darling Plateau System, with rocky outcrops and a mixture of Jarrah, Marri and Wandoo woodland and mixed shrublands. The Forrestfield System comprises undulating footslopes at the base of the Murray Valleys System, and consists of Jarrah, Marri, Wandoo and Banksia woodland (**Map 1**). The elevation of the study area ranges from 35 - 255 m above sea level which affords visitors expansive views over the Swan Coastal Plain below.

EBV contains Perth's largest waterfall, the Sixty Foot Falls, which flows during the winter months. The views from the top of the Falls are expansive, overlooking the Valley towards the city skyline.

The study area is well signposted from Tonkin Highway and is accessed via Gosnells Road East, Pitt Road, Hayward Road, Quarry Road and Rushton Road (**Figure 1**). The gated entry is open between 8 am – 5pm every day of the year, except when the Fire Danger Rating is Very High or greater.

A key output of this study is to spatially define EBV, whose proposed boundaries are illustrated in Figure 1 below and, in more detail on **Map 2**.

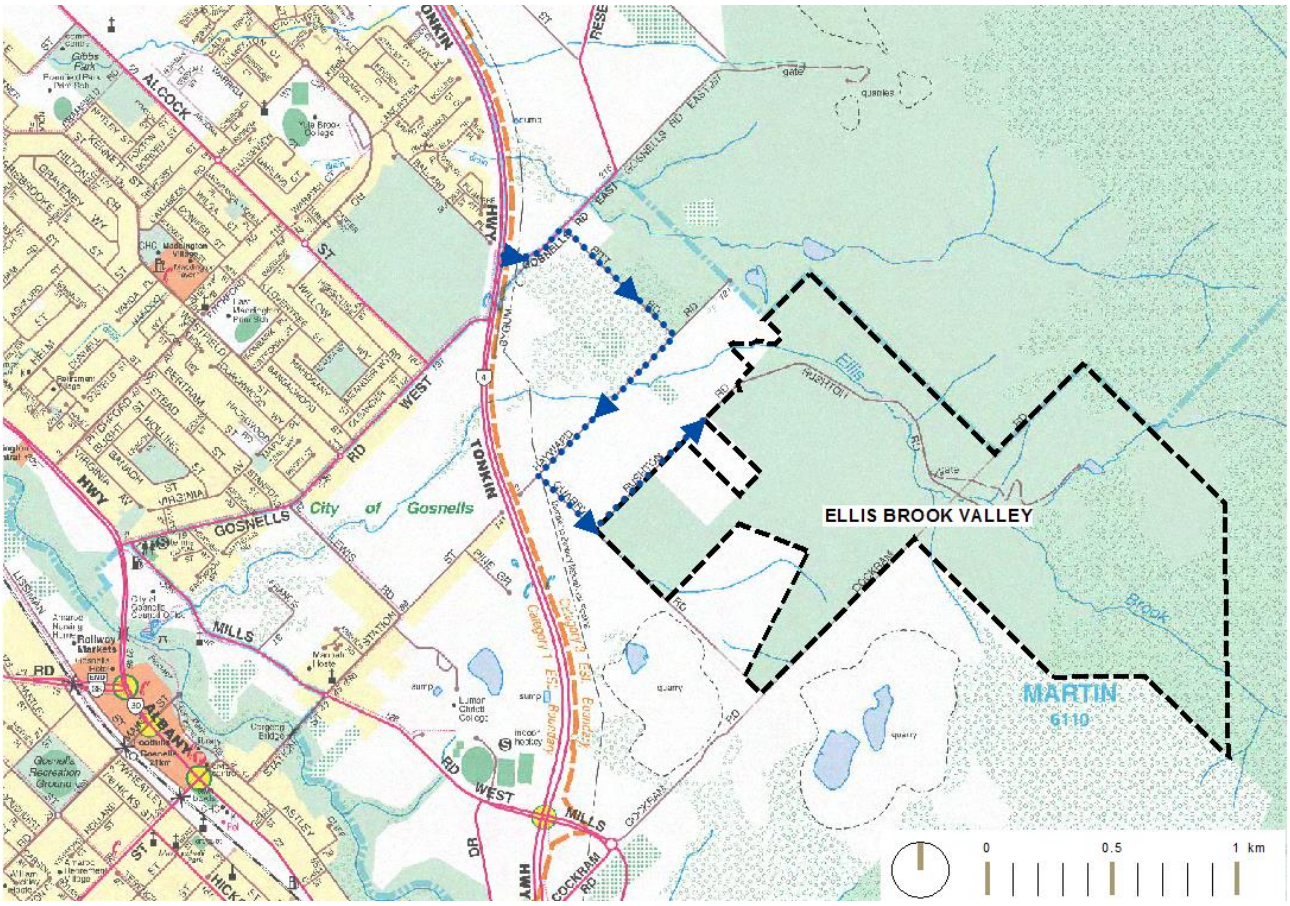

Figure 1: Travel route to EBV

1.4 STUDY METHODOLOGY

1.4.1 Background Document Literature Review

A literature review was undertaken of documents relevant to the study area that were considered important in formulating the Ellis Brook Valley Reserve Strategic Management Plan. The two previous management plans for the site, Ellis Brook Valley Reserve Management Plan (Dames & Moore, 1990) and Ellis Brook Valley Reserve Management Plan and Environmental Study (Ecoscape, 1997), and other environmental and social studies were reviewed in order to provide an updated Ellis Brook Valley Strategic Plan.

These documents provided background information and commentary on the historic and current management of the EBV:

- Birds Australia (2003). Bird Survey-Rushton Road Lots 1 and 2
- Cardno (WA) Pty Ltd (2010). Lots 4 and 5 Rushton Road, Martin: Spring Flora and Vegetation Assessment
- Chameleon Creative (2006). Ellis Brook Valley Signage Strategy Manual
- City of Gosnells (1996). Fire Management Plan Darling Escarpment and Environs
- City of Gosnells (2004). Foothills Rural Strategy
- City of Gosnells (2010b). Ellis Brook Valley, Banyowla Regional Park (pamphlet)
- City of Gosnells (2010a). Biodiversity Conservation Management Plan.
- City of Gosnells (2011). City of Gosnells Community Plan: Future 10 point/10 Year Commitment
- City of Gosnells (2012). Eco Walks and Talks from City of Gosnells website.

- Dames & Moore (1990). Ellis Brook Valley Reserve Management Plan
- Department of Environment and Conservation (1983). The Darling System-System 6
- Ecoscape (1997a). Ellis Brook Valley Reserve Review of Management Plan and Environmental Study Volume 1
- Ecoscape (1997b). Ellis Brook Valley Reserve Review of Management Plan and Environmental Study Volume 2-Technical Appendices
- ENV Australia (2008). Flora and Vegetation Survey, Weed and Vegetation Condition Mapping of Lots 9, 10, 11, 12 and 3 Rushton and Quarry Roads, Martin.
- Glevan Consulting (2008). Ellis Brook Reserve Dieback Assessment
- Glevan Consulting (2012). Rushton Road Woodland-Ellis Brook Valley, *Phytophthora* Dieback occurrence assessment.
- Groundspeak (2014). Geocaching 101, online resource.
- Hobbs (1995). Fire in Managing Perth's Bushlands: Perth's bushlands and how to manage them.
- Holmes-Roddam, B. (2011). The Effects of Domestic Dogs (*Canis familiaris*) as a disturbance agent on the natural environment.
- Lenth, Knight and Brennan (Lenth *et al*. 2008). The effects of dogs on wildlife communities.
- Maher Brampton and Associates (1998). Ellis Brook Valley Reserve Trails Assessment.
- Perth Trail Series (2015). Perth Trail Series
- Perth Urban Bushland Fungi (2009). Bushland Fungi of Ellis Brook Valley Reserve.
- Pidgeon, R (2006). Geological Features of the Ellis Brook Park
- RBA Consulting (2004). Visitor Development Strategy.
- RBA Consulting (2005). Tourism Product Development Audit on the Ellis Brook Valley
- Stephens (1994). Ancient Origins: A Natural History of Ellis Brook Valley Reserve, Martin.
- Transplan (2014). Ellis Brook Valley: Sixty Foot Falls Walk Trail Assessment.
- WalkGPS (2013). *Ellis Brook – Bickley Brook Walk (Walk #3a)*
- WAPC. Metropolitan Development Program 2005/2006 to 2009/2010
- WOW Wilderness Projects (2013). Phyto Fighter 1000-Dieback Boot Cleaning Station (pamphlet).

1.4.2 Site Visit and Analysis

A site visit was undertaken on May 20 2014 where an appreciation of the site's values was obtained. An assessment of the landscape characteristics was undertaken to identify the features that are most important to the experience and enjoyment of visitors.

EBV was mapped into six Landscape Character Units. A Landscape Character Unit (LCU) is a geographic area sharing common characteristics such as landform, vegetation, waterform and cultural land use patterns relevant to human interaction and experience (CALM 1994). Using aerial imagery provided by the City, broad woodland and shrubland vegetation types were identified. Using Geographic Information Systems (GIS), contour data was used to identify valleys, steep terrain and high points, which are shown on **Map 4** as steep slopes and key viewpoints. Through the interpretation of landform, land use and vegetation, EBV was divided into the following six LCUs which are described in more detail in **Section 4**:

- Picnic Area (land use)
- Quarry (land use)
- Shrubland Hills (vegetation and landform)
- Enclosed Woodland (vegetation)
- Woodland Valley (vegetation and landform)
- Rocky Slopes (landform)

The purpose of mapping landscape character is to gain an understanding of how people perceive the environment which helps to inform management strategies to enhance the visitor experience of EBV.

Section 4.1 provides more detail of the landscape characters that were identified and how they relate to the future management of EBV.

1.4.3 Community and Stakeholder Engagement

The Ellis Brook Valley Reserve Strategic Management Plan was prepared in close consultation with the City. Input was provided by the FOEBV and the Department of Parks and Wildlife's (DPaW) Regional Parks unit. Input was also obtained from key stakeholder Holcim (Australia) Pty Ltd, the operator of the Gosnells Hard Rock Quarry immediately abutting the southern ridge of EBV. A consultation template identifying the main management issues (as seen in **Section 6**) was sent to all stakeholders asking for information and ideas they may have relating to each of the issues. Follow up consultation was undertaken via telephone and email.

The draft report was open to stakeholder comments from June 8 – July 3 2015. The City responded to these comments which are provided in **Appendix 2**.

2.0 MANAGEMENT HISTORY

2.1 THE VALLEY'S JOURNEY INTO THE CITY'S MANAGEMENT

The Sixty Foot Falls have been so named since the 1900s and for many years local residents used the area for bush-walking and picnicking. Until the Barrington Quarry closed, access by car was difficult and most people were obliged to walk to the area (Dames & Moore, 1990).

Quarrying began in EBV in the late 1920s and ultimately expanded to form the Barrington Quarry, which operated until 1982.

Negotiations by the City resulted in a historic agreement in 1984 which saw the state government exchange with the Readymix Group (now Holcim Australia) 143 hectares of nearby land for 255 hectares of land including Ellis Brook Valley. This set the scene for the ultimate conservation of EBV, and the establishment of the current quarry (Gosnells Hard Rock Quarry) in the valley to the south of EBV.

A threat to the area's conservation arose in 1987 when an application by Bedrock Mining to explore EBV for gold was lodged. Vigorous public campaigning and more than 100 objections lodged with the Mining Warden's Court saw the application withdrawn. 1988 saw an application to re-open the closed Barrington Quarry to extract granite. Public pressure again contributed to the withdrawal and refusal of this application.

The City formed a Steering Committee in 1990 to guide the preparation of a Management Plan for the recreational use and the preservation of native flora and fauna of a broad area of the Scarp from Hardinge Road in the north to Chevin Road in the south (Dames and Moore, 1990). The Ellis Brook Valley Advisory Committee was subsequently formed to oversee the implementation of the Management Plan.

A significantly reduced EBV management area was defined in a subsequent Management Plan (Ecoscape, 1997), proposed as the Ellis Brook Valley Reserve and extending beyond EBV proper to include land along Rushton Road to Quarry Road.

2.2 THE FRIENDS OF ELLIS BROOK VALLEY (INC)

The City's management of the EBV is assisted and/or supported by partnerships. The key relationship amongst these is the long-standing partnership with the FOEBV.

The FOEBV was formed in 1992 by a group of local residents and interested people who saw a unique section of the Darling Scarp in need of management and preservation. They joined with the City in the planning, management, development and promotion of EBV, and have contributed to its current high standard of conservation and presentation through many initiatives, including:

- membership on the Ellis Brook Valley Advisory Committee (since disbanded)
- the preparation and promotion to the City of management and development initiatives
- lobbying to promote and preserve EBV
- a significant amount of FOEBV led development and management projects
- membership on the Parks of the Darling Range Community Advisory Committee
- a Regional Herbarium of flora collected, identified and curated by members
- participation in the City's Eco Walks and Talks program

The initiatives and efforts of the FOEBV, in a mutually cooperative and respectful partnership with the City, have helped to secure a significant asset for the community.

The Group has maintained its proactive role to the present time, however, key membership is ageing and despite an induction of some new members, there may be future difficulties in attracting and retaining new and younger members. The City will need to monitor and factor this circumstance into its management and project considerations for EBV.

Plate 2: Friends of Ellis Brook Valley Header

2.3 BANYOWLA REGIONAL PARK AND IMPLICATIONS FOR MANAGEMENT

Banyowla Regional Park is part of a network of regional parks known as the Parks of the Darling Range. Regional Parks provide for conservation and appropriate recreational activities. Banyowla Regional Park is approximately 2,615 hectares in extent, straddling the Shire of Kalamunda and the Cities of Gosnells and Armadale. About 1,760 hectares of the Park is located in the City of Gosnells, with EBV occurring within the central area of the Park (**Map 3**).

The majority of the Regional Park is managed by the Department of Parks and Wildlife (DPaW), although management arrangements exist with other landholders within the Park. These arrangements are to be formalised in a Management Plan to be developed by DPaW with stakeholder input. The City manages EBV within the Regional Park, and intends to maintain this role. The City is represented on the Parks of the Darling Range Community Advisory Committee and will have input into the future Management Plan for Banyowla Regional Park.

The City's management objectives are congruent with those of the DPaW. The City's management initiatives of EBV are widely accepted as best practice and of the highest quality.

2.4 LAND USE IN THE MARTIN AREA

The Rural-zoned area to the west of EBV up to Tonkin Highway falls within the City's Foothills Rural Strategy (2004), in an area defined in the Strategy as Rural Planning Precinct 3 – Tonkin Highway East (**Appendix 1**). This Precinct accommodates rural-residential, hobby farms, agricultural lots and rural industrial uses on a variety of lot sizes ranging from 0.4 ha up to 5.0 ha, with a prevailing settlement pattern of approximately 2.0ha lots. A minimum lot size of 1.0 hectare is prescribed within this Precinct.

The Foothills Rural Strategy also mentions that the City will not generally support subdivision proposals within 1 kilometre of the operations of the Gosnells Hard Rock Quarry, although the WAPC has been known to support subdivision previously.

The subdivision in recent years of rural-zoned lots in Hayward and Rushton Roads, close to EBV, has seen the start of a shift from rural activity, generally equestrian-based, to residential lifestyle.

Lot 5 Rushton Road, a largely cleared property nestled within EBV and owned in fee simple by the City, was subdivided and made available for sale in 2012. The subdivision created separate titles for the Rural-zoned,

and Parks and Recreation-zoned, portions of the property. These are now respectively Lot 15, which is now privately owned, and Lot 14 (Crown Reserve 51314). **Map 2** shows the tenure of EBV.

2.5 ADJACENT LAND USE

Holcim Australia Pty Ltd operates the Gosnells Hard Rock Quarry on Lot 3 Cockram Road and a number of other Lots on Quarry and Cockram Roads, immediately to the south of EBV. Included in the quarry's landholdings is Lot 233 Quarry Road which has been used in the past as an overflow storage area. This is no longer its current use and Holcim has worked with the City to control off-road vehicle access through this property to EBV. The relocation of an existing gate and reinforcement of rock barriers has gone a long way to preventing access to EBV from this adjacent lot.

The northern portion of Lot 3 Cockram Road is leased by Holcim to Downer EDI, who operate an asphalt plant whose main access is from Quarry Road.

Properties adjacent to Rushton Road are predominantly rural lifestyle, as are those on Hayward Road.

The Darling Range Wildlife Shelter is located on the southern portion of Lot 800 Hayward Road, with Hillside Farm Education Centre on adjacent Lot 801 Hayward Road. The land is leased to the Shelter by the Western Australian Planning Commission (WAPC) and is not part of Hillside Farm although they share a main access road. Hillside Farm Education Centre is operated by the Department of Education. Both are located within the boundaries of Banyowla Regional Park.

Adjoining lands to the north are located within the Regional Park, managed by others for the purposes of conservation and recreation. Korung National Park adjoins the management area's eastern boundary.

Adjacent land use is shown on **Map 3**.

3.0 EXISTING ENVIRONMENT

3.1 BIOPHYSICAL ENVIRONMENT

3.1.1 Geology and Soils

The geology of EBV is characteristic of the Darling Scarp. A lateritic plateau, which is a remnant of the peneplain, occupies the eastern part. On the western edge of the plateau the Darling Scarp has eroded westwards. A steep slope (a small breakaway) occurs on the Plateau/Scarp interface. The laterite duricrust sometimes forms broken low cliffs or boulder screes at this point. A small area of Ridgehill Shelf/Pinjarra Plain geology, which is mostly alluvial and colluvial, occupies the cleared section south-west of the Gosnells Hard Rock Quarry formerly Bell Basic Quarry (Ecoscape, 1997).

Early gold exploration pits are evident in the area of the Easy Walk Trail. Although not dated, these diggings are thought to be early gold prospects. Small shafts have been sunk on quartz veins or, in the case of the pits in this vicinity, on veins of barite. There is no record of any gold being found in this area although there is unsubstantiated report of gold in the Maddington Gold mine, a more extensive set of workings on a quartz dyke about two kilometres to the north (Pidgeon, 2006)

A cutting (costean) was made in the past in the underlying Cardup slate in the vicinity of the Easy Walk trail to probably evaluate the location as the site of a possible quarry. The Cardup slate is part of a series of sediments of Proterozoic Age that occurs along the western edge of the Darling Scarp. The slates are dominated by micaceous minerals and have been used in brick making since the early 1900s. Rocks of the Cardup Series underlie this point and the north-south strike of the rocks is evident from the orientation of the strong cleavage in the rocks of the cutting. A large quarry in the Cardup Series rocks, now abandoned (the 'Old Shale Quarry'), occurs about one kilometre north on the bridle trail between Honeyeater Hollow and Hillside Farm (Pidgeon, 2006).

The occurrence of a series of parallel quartzite dykes seen as white rocky outcrops on the tops of hills is a striking feature of the proposed Ellis Brook Valley Reserve. These have not been dated but are relatively late features in geological terms as they are seen to cut across the dolerite dykes. Present interpretation is that they represent migration of silica (quartz) into fault planes generated during stresses accompanying one or more of the movements on the Darling Fault (Pidgeon, 2006).

Soil formation in EBV is influenced by the laterite mantle on the plateau, ridges and valleys which show considerable variation depending on the local relief, the degree of stripping of the weathered mantle and the geological nature of the substrate (Ecoscape, 1997). Soil depth is also an important feature as it results in a greater variety in plant community structure.

3.1.2 Surface Water

Ellis Brook, a tributary of the Canning River, travels some 4.5 kilometres from Sixty Foot Falls, passing through EBV and then through the rural area of Martin and into the City of Gosnells Civic Centre gardens before entering the Canning River. The Brook flows in winter and spring and is a spectacular sight as it cascades over the Falls and through EBV.

Irrigation dams associated with extensive horticultural areas in the Brook's catchment area, some 1.5 kilometres east of the Sixty Foot Falls, have altered the Brook's flow period, with first flows significantly reduced and full flow delayed until dams have reached capacity.

The current alignment of the Brook in EBV is reflective of the watercourse's relocation in the course of industrial development in the mid-twentieth century. Historical air photographs indicate that its natural path in the Waterfall Gully car park area and Honeyeater Hollow area was amended to facilitate quarrying and associated activity.

Several minor ephemeral watercourses are to be found in small gullies radiating out from the Brook. These contribute to the Brook's winter flow.

In addition to the watercourses, a permanent "pool" is located in the old Barrington Quarry.

3.1.3 Vegetation

The vegetation of EBV is highly mosaic, depending on drainage, soil depth, slope and location. Field studies undertaken for the original management plan (Dames and Moore 1990) revealed that the vegetation of the study area comprises five basic associations:

- Lateritic Plateau Woodland
- Mixed Woodland
- Wandoo Woodland
- Lithic Complex (Heath communities)
- Creeklines.

Most vegetation associations in the study area are in good to excellent condition as they have had minimal disturbance. Key disturbance factors in other areas include inappropriate human use, particularly off-road vehicle use, *Phytophthora* Dieback Disease (*Phytophthora cinnamomi*), Marri Canker (*Quambalaria coyrecup*) and a drying climate.

Cardno (2010) identified several Threatened Ecological Communities (TECs) within the Forrestfield vegetation complex along Rushton and Quarry Roads. The rear of Lot 14 (previously Lot 5) Rushton Road contains vegetation that closely matches Floristic Community Type (FCT) 3c-*Corymbia calophylla-Xanthorrhoea preissii* woodlands and shrublands, as well as FCT 3a- *Corymbia calophylla-Kingia australis* woodlands on heavy soils, while Lot 4 Rushton Road also contains vegetation that closely aligned with FCT 3c. Both these FCTs are classified as TECs at both state and federal level.

A survey of Lots 9, 10, 11, 12 and 3 Rushton and Quarry Road identified FCT 3b-*Corymbia calophylla-Eucalyptus marginata* woodlands on sandy clay soils and FCT 20b-*Banksia attenuata-Eucalyptus marginata* woodlands of the Eastern side of the Swan Coastal Plain as occurring. FCT 3b is listed as Vulnerable by the State and FCT 20b is listed as Endangered by the State, neither is listed at the federal level (ENV, 2008).

Besides the TECs, EBV also contains a number of communities that were identified by Ecoscape (1997) as being significant. These associations are known to be sensitive to recreational or management activities, and include:

- lots 1-3 Rushton Road, where one of the last remnants of Jarrah/Banksia woodland on Ridge Hill Shelf Sands is found. Twenty four of the plant species found within this community are not represented anywhere else in EBV
- the Heathlands (Lithic complex) to the south of Honeyeater Hollow, which support nine priority listed species
- the Mixed Woodland community, which contains the Priority Four species *Pimelea rara*
- the areas surrounding the granite outcrops, which are rich in herbaceous plants, including orchids, sundews and trigger plants
- the riparian vegetation of Ellis Brook.

3.1.4 Flora

EBV is widely acknowledged as one of the richest floristic sites in the Perth Metropolitan area, having a very high level of plant species richness (**Plate 4**) which is due to the variations in elevation as well as a range of underlying rock types and soil depths (Stephens, 1994).

EBV has been identified as a floristically important area within the Darling System 6 document by the former Department of Conservation and Environment (1983). A total of 550 flora species have been identified in EBV; one of these species is Threatened and 17 are Priority species. These records have been compiled from the WA Naturalists Club and the FOEBV, who maintain a regional herbarium acknowledged by the State Herbarium.

Plate 3: Flower species common to heathlands in Ellis Brook Valley

Weed Species

73 weed species were recorded by the FOEBV at the time of the 1997 Management Plan. Of these, four were identified as Declared species under section 35 of the Agriculture and Related Resources Protection Act, 1976 (Ecoscape 1997), these include:

- Cape Tulip (*Moraea flaccida*)
- Narrow Leaf Cottonbush (*Gomphocarpus fruticosus*)
- Paterson's Curse (*Echium plantagineum*)
- Sour Sob (*Oxalis pes-caprae*)

Significant management effort by the City and the FOEBV has seen the control of many weed problems in EBV.

The condition of the vegetation in EBV area is very good, and no major environmental weed issues exist. This does not detract from the need for ongoing weed management and the need for a detailed weed survey to assist in the prioritisation of weed management initiatives.

3.1.5 Fungi

A winter survey of fungi in EBV (Perth Urban Bushland Fungi Project, 2009) recorded 37 species of fungi. The fungi observed in the Ridge Hill Shelf area differed from those observed in other parts of EBV. There were 18 species observed in the Ridge Hill Shelf area, of these only 5 were observed in both areas.

The majority of fungi observed in the Valley area are decomposer fungi such as the puffball (*Bovista* sp) and the rarely-seen wood-inhabiting, decomposer fungus Judy's Sugar Cap (*Mycenajudithiana judithiana*). This fungus was discovered only in 2008 and was subsequently published as a species new to science. Aside from EBV, it is currently only known from Bold Park and the Leeuwin- Naturalist National Park near Augusta.

Eight species of mycorrhizal fungi were recorded during the survey. They form partnerships with native plants such as Eucalypts, Acacias and Sheoaks, assisting the plants to obtain nutrients from the soil while receiving sugars in return. Species observed in the Valley area include *Amanita umbrinella* and *Cortinarius* cf. *sublargus*, which produce mushroom fruit bodies, and *Scleroderma* sp. and *Pisolithus* sp., which form puffball or earthball types of fruiting bodies.

Far more fungi are likely to occur in EBV than the 37 species recorded in the inaugural 2009 survey. Fewer fungi than expected were found in that survey due to very dry weather conditions in the weeks preceding the survey. Future biological surveys of EBV should also include fungi, to obtain a better understanding of this important ecological group.

3.1.6 *Phytophthora* Dieback

The plant pathogen *Phytophthora cinnamomi* is a present threat to the vegetation and ecology of EBV.

A *Phytophthora* Dieback survey of approximately 50km of tracks in and around the Valley area found that its occurrence on tracks could be as high as 76% (Ecoscape, 1997). The 1997 Management Plan advised that the management of *Phytophthora* Dieback would be extremely difficult due to:

- existing infections providing sources for the spread of the disease within and outside EBV
- the difficulty of controlling public access over most of the area
- the difficulty in controlling disease spreading activities such as off-road vehicle use.

Ecoscape (1997) concluded that disease spread will certainly continue, and may ultimately result in serious long-term consequences for the area. The City has assessed and mapped dieback within EBV since 2007, (**Map 5**) which has provided a basis for prioritisation of disease treatment (Glevan 2012 *et al*).

Plate 4: 60 Foot Falls trail head 'phytofighters'

Various disease management initiatives have been undertaken in EBV by the City and the FOEBV, including the application of phosphite fungicide by aerial spraying using a crop duster, stem injection and foliar application by backpack spray units.

In cooperation with the Dieback Working Group, Dieback information has

been posted at key locations on walk trails. In October 2014, four 'Phytofighter' boot scrubbing units (**Plate 4**) were installed at strategic locations on walk trails, at the edge of dieback infected areas (locations shown on **Maps 4-5**).

3.1.7 Fauna

European settlement and clearing of the Swan Coastal Plain has affected many of the fauna species, with a great majority of species having declined in numbers due to the clearing of vegetation, fragmentation of the landscape and the too-frequent burning of both creekside thickets and the understorey heath of woodlands (Ecoscape, 1997). This makes the relatively undisturbed EBV an important refuge hosting a good assemblage of fauna species which are fast disappearing from the suburbs.

From the previous management plan it was recognised that EBV contains a variety of fauna species as well as some rare and endangered species. At least three species of conservation significance are known to occur (**Plate 6**), these include:

- Baudin's Cockatoo (*Calyptorhyncus baudinii*) –Endangered (Wildlife Conservation Act 1950), Vulnerable (EPBC Act 1999)
- Peregrine Falcon (*Falco pereginus*) Schedule 1 (EPBC Act 1999)
- Southern Brown Bandicoot (*Isoodon obesulus fusciventer*) -Priority 5 (Wildlife Conservation Act 1950)

The Peregrine Falcon and Baudin's Cockatoo have been recorded in the area, although they are not considered residents (Ecoscape, 1997).

No recent fauna monitoring has been undertaken, but historical surveys have provided an understanding of the site's fauna richness.

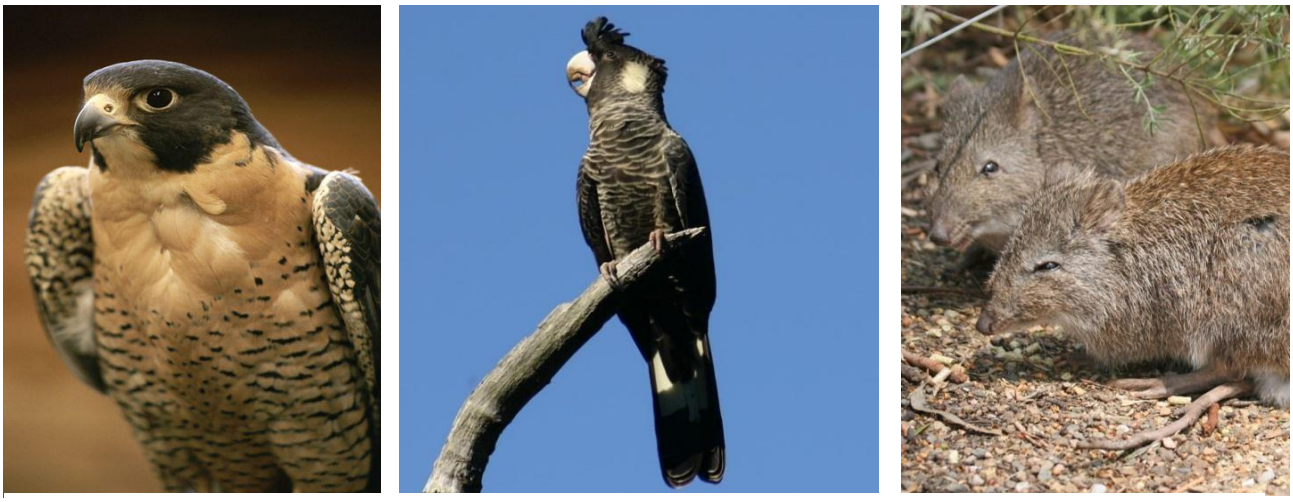

Plate 5: Peregrine Falcon, Baudin's Black Cockatoo, Southern Brown Bandicoot

Amphibians and Reptiles

Fifty one species of reptile and amphibians (10 frogs, 1 tortoise, 7 geckos, 6 legless lizards, 2 dragons, 11 skinks, 3 monitors, 3 blind snakes, 2 pythons and 6 elapid snakes) are known from the Darling Scarp and the vicinity of EBV (Ecoscape, 1997).

Birds

116 species of birds have been identified in EBV estimated as occurring within the Darling Scarp area with 65 species identified from EBV itself by the FOEBV (**Plate 6**).

Birds Australia (2003) conducted monthly surveys for a year in the Forrrestfield vegetation complex on Lots 9, 10, 11, 12 and 3 Rushton Road. A total of 50 bush bird species was recorded, with 20 (38%) considered significant under Bush Forever. These included resident species such as Common Bronzewing, Splendid Fairy-Wren, White-Browed Scrubwren, Western and Yellow-Rumped Thornbills, Scarlet Robin, Grey Shrike-Thrush and the Red-Eared Firetail, which is extinct on the Swan Coastal Plain and restricted in the Perth Metropolitan Region to the Darling Range.

Plate 6: Ellis Brook Valley Fauna-Tawny Frog-mouth

More mobile significant species recorded at the site included Wedge-Tailed Eagle and the Endangered Carnaby's Black-Cockatoo. The Varied Sittella has a large home range and would also use the adjacent bushland. A number of remnant-dependent mobile species such as Cuckoos and White-Winged Triller were also recorded.

Although the Rushton Road site is small, its connectedness with the broader Scarp contributes to the high degree of bird diversity and high numbers of significant species there.

Mammals

Plate 7: Western Grey Kangaroos in Ellis Brook Valley

Twenty three species of native mammals are known from the Darling Scarp, with 11 species having been recorded from EBV by the members of the FOEBV group. Among those species common to EBV is the Western Grey Kangaroo (*Macropus fuliginosus*) (**Plate 7**), Brushtail Possum (*Trichosurus Vulpecula*) and Southern Brown Bandicoot (*Isoodon obesulus fusciventer*). Bandicoots are known to inhabit the dense heath understorey of Jarrah Woodlands (Ecoscape, 1997).

A mob of Western Grey Kangaroos frequents the Heathland area above Eagle View Walk Trail, where a seasonal spring and shady trees provide refuge as EBV dries out over summer.

Feral Fauna

Foxes, rabbits, cats and pigs present a potentially significant environmental threat to EBV. Foxes prey on medium sized native fauna. Cats, both domestic and feral, are known to have an equal if not greater impact on native fauna than do foxes, and likely to be more common in the area. Pigs are likely to occur, and have been infrequently reported rutting in moist areas.

3.2 CULTURAL ENVIRONMENT

3.2.1 Aboriginal Heritage

The Ellis Brook area was home to a local group of the Noongar Tribe. Areas like EBV were mainly used as an opportunistic resource for food and implements, due to the good source of stone. Camps were more likely to be confined to the Swan Coastal Plain where living conditions would have been more comfortable for the majority of the year (Stephens 1994).

Banyowla Regional Park is named after the Noongar elder Banyowla, who resided in the area for a period at the time of colonial settlement (City of Gosnells 2010b). The land of Banyowla's people extended from Rockingham to the Darling Range and south to the banks of the Murray River in Pinjarra.

The history of Banyowla and his people is linked to the infamous 1834 "massacre of Pinjarra" which was a punitive expedition by mounted police and settlers against local Noongar clans. There are government census records which suggest that Banyowla and his group took refuge near EBV at the time following the Pinjarra clash.

The contemporary link between the name Banyowla and the name Ellis arose coincidentally in the separate naming of the Regional Park and the Brook. Captain Theophilus Tighe Ellis was the Resident Magistrate in Kelmscott in 1830. He later became the Superintendent of the mounted police and joined Captain Stirling, Governor of Western Australia, in the Pinjarra expedition. He was wounded in the fighting and died of his injuries a few weeks later to become the only European casualty of the action.

3.2.2 European Heritage

The first European sighting of Ellis Brook Valley has been recorded as occurring in 1829. Shortly afterwards the first lots of land were allocated to settlers.

Early gold prospecting in the area is apparent by old diggings in the area off the Easy Walk Trail on Lot 6 Rushton Road. The small shafts have been sunk on quartz or barite veins. There is no record of any gold being found in this area although there is an unsubstantiated report of gold in the Maddington Gold mine, a more extensive set of workings on a quartz dyke about two kilometres north (Pidgeon, 2006).

EBV was a favourite picnic area for Gosnells and Maddington residents from the 1920s until the mid-1950s when quarrying activity commenced.

Barrington Quarry was established in 1956/57 to mine granite and diorite in the Valley. Rushton Road was constructed to service the quarry. The quarry closed as a result of public pressure regarding its dust emissions and their negative impact on the quality of life and, particularly, orchards. Following the closure, local residents used Rushton Road to access the Valley.

The old Barrington Quarry site and remnants of associated infrastructure remain from this period of industrial activity. (**Plate 8**)

Plate 8: Quarry mining in Ellis Brook Valley

4.0 VISITOR EXPERIENCE

4.1 LANDSCAPE CHARACTER AND USER EXPERIENCE

EBV is located on the Darling Scarp, which is characterised by undulating terrain covered in woodland and shrubland. The Scarp landscape is dissected by valleys with rocky outcrops and water features. Within EBV there are six Landscape Character Units (LCUs) which are shown on **Map 4** and give an idea of the different user experiences within EBV. These LCUs range from modified landscapes to natural ones with evidence of human alteration. The natural landscapes within EBV are not greatly different from each other with regard to visual appearance however there are subtle differences generally relating to terrain and vegetation.

4.1.1 Picnic Area Landscape Character Unit

The Honeyeater Hollow picnic area (**Map 4**) is characterised by a group of shelters with picnic benches and barbecue facilities, with parking for 30 vehicles (**Plate 9**). The picnic infrastructure is part of the New Visitor Experience project, and was built in 2008 along with composting toilet facilities and extensive exploration trails radiating from the site. A key aspect of Honeyeater Hollow is its focus on universal access to all facilities.

The picnic area is located in a previously highly degraded area that is understood to have been used as a quarry spoil dump. It is nestled in at the base of the hills amongst a mixture of trees and shrubs that have largely been planted by the FOEBV to rehabilitate the former soil dump.

The area acts as an information hub about the features of EBV. Excellent information and interpretive signage is provided, although some older signs are yet to be removed. The picnic area is the starting point for the Easy Walk, Blue Wren Ramble and Eagle View Trails as shown on **Map 4**.

The area at the base of the Sixty Foot Falls Trail has also been identified as the Picnic Area LCU which contains the Waterfall Gully carpark and can accommodate up to 25 vehicles including 2 coaches and also includes 2 universal car parking bays. There is also a picnic shelter that contains information about the nearby trails and wildlife (**Plate 10**).

Plate 9: Honey Eater Hollow Picnic Area

Plate 10: Waterfall Gully carpark and shelter

4.1.2 Quarry Landscape Character Unit

The former Barrington Quarry is located north east of the Waterfall Gully carpark. The Quarry pit is closed to the public however it is visible when walking along the Sixty Foot Falls trail as shown on **Map 4**. The Quarry contrasts with the surrounding woodland vegetation where the view opens towards the quarry with steep high rock faces with a blue green pool below (**Plate 11**). Graffiti is visible on the rock face which indicates a degree of public access even though it is fenced off and closed to the public for safety and health reasons.

Plate 11: Lake and steep cliff at the Quarry

Other areas of the old quarry, mostly large open expanses of compacted rock dust, are publicly accessible. A section of the Sixty Foot Falls Trail passes through this area.

4.1.3 Shrubland Hills Landscape Character Unit

This is a natural area that occurs south of Honeyeater Hollow and is characterised by mixed shrubland on hilly terrain with a few taller species standing out such as *Xanthorrhoea preissii* and *Nuytsia floribunda*. The 430m return Eagle View Trail traverses the Shrubland Hills LCU with good vantage points along the trail that offer expansive views across the landscape towards the city skyline in the distance (**Plate 12**). The blue metal trail winds through the landscape with interpretive signage located along its course. A few bench seats provide an opportunity to sit and enjoy the view.

Plate 12: Views from the Shrubland Hills

4.1.4 Woodland Valley Landscape Character Unit

This is a natural landscape that occurs along the Elllis Brook watercourse (**Map 4**). The Blue Wren Ramble Trail and the road to the Waterfall Gully carpark wind through this LCU. The view is enclosed by the undulating terrain on either side of the road and trail and the taller woodland trees.

The 1.4 kilometre Blue Wren Ramble Trail crosses Ellis Brook several times, passing through open woodland and dense thickets of *Calothamnus rupestris*. This trail is particularly rich in birdlife, as the thickets and woodland of *Eucalyptus wandoo* provide excellent bird habitat.

The beginning of the Sixty Foot Falls Trail also traverses this unit as shown on **Plate 13** where the tall woodland and dense understorey create an enclosed sense of space.

Plate 13: Part of the Falls Trail along the Woodland Valley Landscape Character Unit

4.1.5 Enclosed Woodland Landscape Character Unit

The Enclosed Woodland unit occurs over a greater area than the Woodland Valley LCU where woodland occurs on flatter terrain near the entrance to EBV and also on the upper slopes. The 500m universal access Easy Walk Trail opposite Honeyeater Hollow winds through this LCU as do parts of the Blue Wren Ramble and Sixty Foot Falls Trails. The entrance to EBV on Rushton Road gradually transitions from a rural character to the Enclosed Woodland LCU with the view experience varying from enclosed along the Easy Walk Trail and near Honeyeater Hollow (**Plate 14**) to filtered views through the woodland.

Plate 14: Enclosed Woodland on the upper slopes above Sixty Foot Falls

4.1.6 Rocky Slopes Landscape Character Unit

The Rocky Slopes natural landscape occurs on the steepest slopes within EBV as shown on **Map 4**. This landscape is characterised by a mix of taller trees and low shrubs on the rocky soils. There are also large areas of exposed granite rocks which are particularly evident near the top of the Sixty Foot Falls (**Plate 15**). The Sixty Foot Falls Trail traverses this landscape and becomes a challenging walk trail in some areas where it goes across narrow and steep terrain (**Plate 18**). From the trail and the two lookouts the waterfall is visible and there are views across EBV towards the City skyline (**Plate 19**).

Plate 15: Granite Rocks at the top of the Falls

Any further developments within EBV should consider the landscape character and view experience to ensure that improvements are sensitive to the surrounding landscape and do not detract from existing views or that they enhance the existing view experience.

4.2 ELLIS BROOK VALLEY TRAILS

One of the best ways to experience EBV is along the trails that traverse the various landscape character units offering a range of user experiences such as bird watching, wildflower spotting and scenic views. The trails within EBV are a major reason for people visiting the area. The development of current tracks and trails was based on pre-existing tracks to avoid further degradation and clearing of native vegetation. There are no other pre-existing tracks remaining within EBV to provide for additional walking tracks without damaging bushland, the one exception being the potential link between Eagle View and the Blue Wren Ramble trail. However due to dieback issues (Map 5), the City considers trail development in this area to present an unacceptable risk in terms of spreading the disease.

The following section describes each of these trails which are also shown on **Map 4**.

4.2.1 Easy Walk Trail

The Easy Walk Trail is a 500 metre loop that traverses the Enclosed Woodland LCU and can be accessed from Honeyeater Hollow. The terrain is relatively flat and the vegetation consists of tall woodland trees such as Jarrah, Marri and Banksia which provides an easy walk beneath an enclosed bushland canopy. This trail also caters for wheelchair access and is ideally located near the carpark and facilities at Honeyeater Hollow.

4.2.2 Eagle View Trail

The Eagle View Trail can also be accessed from Honeyeater Hollow with the start of the trail on the opposite side (south eastern) of the road. This is a 430 metre return trail that traverses the Shrubland Hills LCU which consists of steeper slopes and low shrubland (**Plate 16**). From this trail there are extensive views over the Swan Coastal Plain below and there are a few benches that allow walkers to stop and take in the view.

Plate 16: Eagle View Trail and signs along the trail

4.2.3 Blue Wren Ramble

The Blue Wren Ramble trail winds along the Ellis Brook in the Woodland Valley LCU and is 1.4 kilometres one way. The trail can be accessed from Honeyeater Hollow or from the Waterfall Gully carpark. The Woodland Valley LCU is generally enclosed by tall thickets of *Calothamnus rupestris* and medium sized trees and the steeper terrain on either side of the valley which result in a trail that is generally shaded and one that presents a low degree of difficulty.

4.2.4 Sixty Foot Falls Trail

This is the most challenging trail within EBV as it traverses the steep slopes of the Rocky Slopes LCU (**Plate 17**). The trail is a 2 kilometre loop that can be accessed from Waterfall Gully carpark. The trail has many narrow sections and challenging surfaces that wind through the diverse vegetation. There are two lookouts along the trail, the southern most lookout has views across the valley below and of the 60 Foot Falls (**Plate 18**), the trail then winds its way towards the top of the waterfall and then through tall woodland towards the

former Barrington Quarry. There are interesting views across the quarry even though it is fenced; the geology and the contrasting blue green pool below provide a view that is different from the other landscapes of EBV. The trail then starts descending towards another lookout which has views towards the falls and the city skyline, from here it is a short but rather steep decent back to Waterfall Gully carpark.

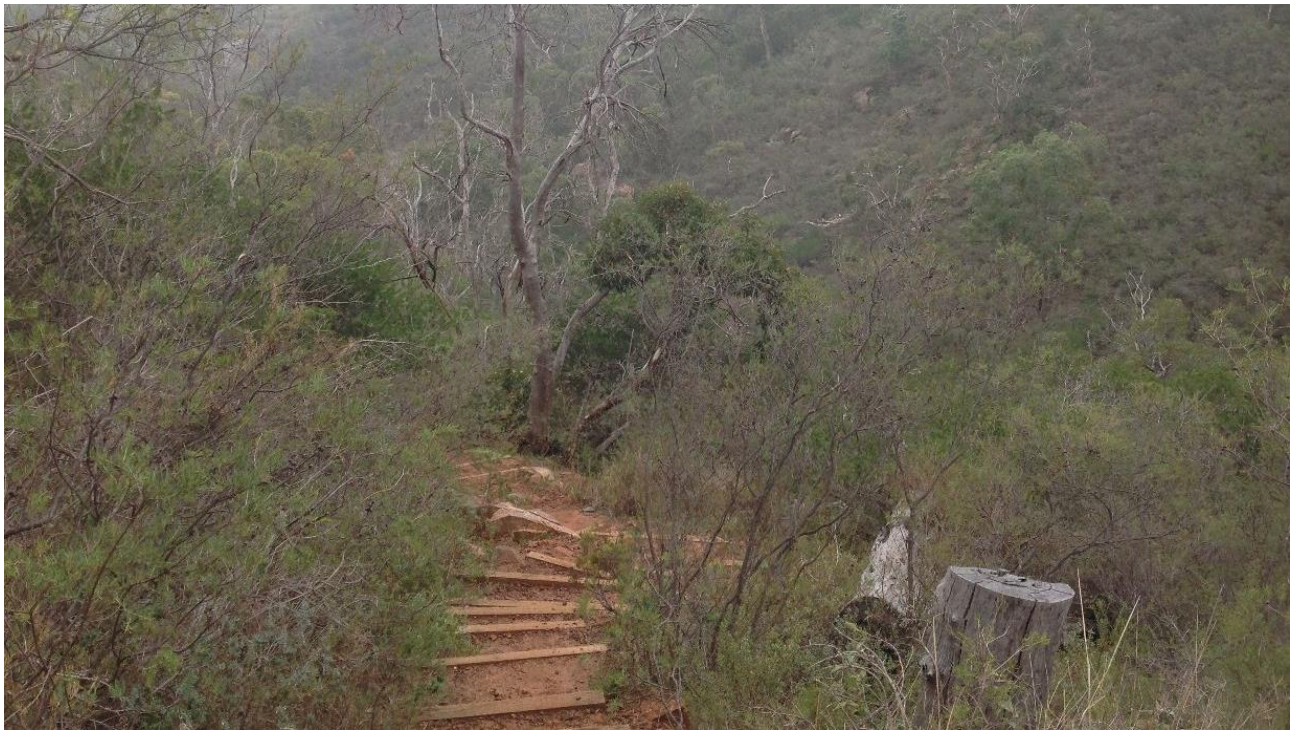

Plate 17: Challenging Sixty Foot Falls Trail

Plate 18: Expansive views at the top of the Sixty Foot Falls

4.2.5 Trails extending beyond EBV

There are other trails which connect EBV to Bickley Brook Reservoir, Victoria Reservoir and Lesmurdie Falls. An overall map of these trails is shown on **Map 1**, and **Map 4** shows where the trails are located within EBV. Detailed descriptions and maps of these trails can be found on the WalkGPS website (WalkGPS, 2013).

4.2.6 Perth Trail Series

Moonshadow is a 12 km night run held in November at EBV. This event is part of the Perth Trail Series which are held in the summer months and consist of five races between 9-19 kms that are held at various locations of the Perth Hills (Perth Trail Series).

4.3 NEW VISITOR EXPERIENCE

The City's Visitor Development Strategy (RBA, 2004) highlighted the potential of EBV as an economic growth opportunity for the City.

Following detailed evaluations and extensive planning, the New Visitor Experience (NVE) at EBV was initiated in 2005. The project aims to improve visitor infrastructure and facilities, and to establish the EBV as a premier nature-based visitor destination in the metropolitan area.

Stage one of the NVE was completed in 2007. The $360,000 development was funded by the City, the Western Australian Planning Commission and the Federal Government's Regional Partnerships program. In addition to this, a considerable amount of in-kind contributions were made by the City, the FOEBV and the Australian Technical College, South Perth.

Stage one saw the development of the entry statement to EBV (**Plate 19**) and the Honeyeater Hollow precinct, which included new parking facilities, barbecues, picnic tables and shelters and composting toilet facilities (**Plate 20**). Nearby the Eagle View and Easy Walk Trails were both substantially improved.

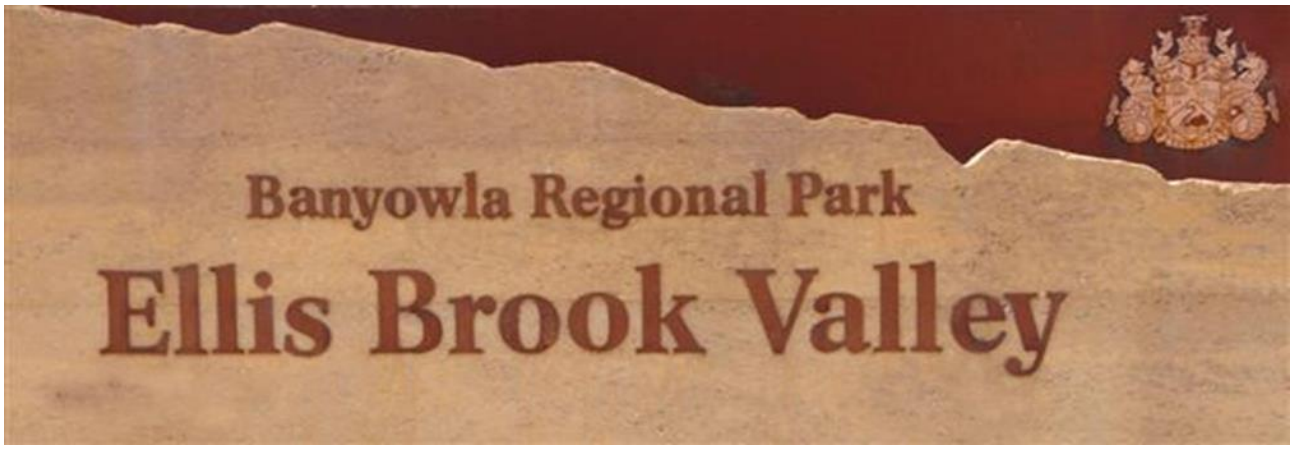

Plate 19: Ellis Brook Valley entry sign

Guided by the EBV Signage Strategy Manual (Chameleon Creative, 2006), the developments set a very high standard with a substantial rammed earth entry statement, informative trail head, interpretive signage and universal access to all built facilities and the Easy Walk Trail. The development of these facilities significantly adds to the site's value as a welcoming destination and demonstrates the City's commitment to sensitive and appropriate development of EBV.

Plate 20: Barbeques, Shelter and Toilet facilities in Honeyeater Hollow, part of New Visitor Experience

The implementation of stage two of the NVE is currently under way. The construction of Waterfall Gully car park, the information gazebo and additional picnic tables have enhanced visitor facilities. A series of eight information panels in the gazebo provide a comprehensive interpretation of the area. New trail head signage and the proposed autumn 2015 upgrade of the Sixty Foot Falls Trail will substantially improve the experience of that challenging walk.

Four 'Phytofighter' units have also been installed at dieback disease fronts on the Sixty Foot Falls, Eagle View and Blue Wren Ramble trails to assist in reducing the spread of the disease and raising public awareness of the issue (**Maps 4 – 5**).

Total funding of $212,000 has been provided for stage two by the City, Lotterywest, and the State Natural Resource Management Office. Once again, in-kind contributions from the City and FOEBV provided significant additional value to the project.

5.0 PROPOSED ELLIS BROOK VALLEY RESERVE RESERVATION, MANAGEMENT AND DEVELOPMENT

EBV is a diverse natural environment, ranging from quartzite headlands to wandoo woodlands, whilst also containing several special attractions, such as the Sixty Foot Falls, the former Barrington Quarry and Ellis Brook itself (Maher Brampton.& Assocs, 1998). These special attributes, combined with EBV's proximity to residential areas and the Perth metropolitan area, its diverse walk trails and outstanding views and spectacular wildflower display underscore the site's potential to be a major attraction, capable of attracting large numbers of visitors.

The popularity of EBV has grown since the City commenced management and development initiatives in the early 1990s. This is anticipated to grow, with an increasing local and regional population, and interest and growth in ecotourism. A large number of international visitors are brought to EBV by tour operators to view spectacular wildflower displays in springtime.

The main activities enjoyed by visitors are hiking on established walk trails, observing wildflowers and picnicking in the established picnic areas.

Equestrian access is limited to the gazetted reserve of Rushton Road, the trail to Barrington Quarry and Honeyeater Hollow, from where a bridle/walk trail connects to an established 6km trail leading to Bickley Reservoir in Orange Grove (Map 4). Parking is provided at this location for horse floats.

Off-road vehicles are prohibited in the Valley area. Subject to the Control of Vehicles (Off Road Areas) Act 1978 the city successfully sought gazettal of the valley area as an off-road vehicle prohibition area.

Abseiling and rock climbing, although supported by the City in the past, are not activities that are currently authorised due to safety issues, and no facilities are provided. It is understood, though, that these activities do occur on an informal basis at the former Barrington Quarry.

With growing visitor numbers, pressure on the environmental and recreational values of the area will increase. Given that EBV will become a destination of regional value, management and visitor infrastructure will be critical to its sustainability.

The following discussion and recommendations are proposed to guide the City in the management of EBV into the future.

5.1 TENURE

The lands that comprise EBV, where the City currently applies management resources and has developed assets, cross a number of tenures as follows (**Map 2**):

- land owned in fee simple by the City
- WAPC-owned land leased to the City
- Crown Reserve with Management Order in favour of the City
- Rushton Road reserve

- Cockram Road reserve (unmade).

All of the above lands are currently under the care and control of the City of Gosnells.

5.1.1 Reserve Boundary and Reservation

The Dames & Moore (1990) and Ecoscape (1997) management plans made recommendations to the City with regard to the EBV boundary and the treatment of lands within the boundary collectively as a single Crown Reserve for the purpose of conservation under the City's management by way of a Management Order in favour of the City. These recommendations have not yet been realised.

For improved future planning and management, and to establish a clear spatial identity for EBV, this study concurs with previous recommendations that EBV should be defined by a formal external boundary where all lands are amalgamated to create one single Crown Reserve with the purpose of Conservation and Recreation, with a Management Order in favour of the City.

Amalgamation would provide for common purposing of the single reserve (most likely Conservation and Recreation), and the creation of a single-lot reserve would provide an unambiguous statement of intent. It is recognised that a cost will be associated with the surveying of the external boundary of the proposed single Reserve.

Illustrated on **Map 2** are:

1. the boundary recommended by Ecoscape (1997) (black line)
2. the boundary proposed by this study (red line)

This study proposes a revised management boundary for EBV from that proposed by Ecoscape (1997). The new boundary was developed in consultation with the City and the FOEBV. The earlier boundary recommendation (Ecoscape, 1997) has been examined in the context of the development and management of EBV and the City's future management intentions.

The EBV boundary proposed by this study is approximately 202.1 hectares. The main spatial contractions from Ecoscape's (1997) proposed 397.9 hectare boundary are evident in the north and east (**Map 2**), where the City has no assets or managed walk trails, undertakes no management activities and, with one exception, the properties are in the ownership/management of third parties:

- lot 582 Gosnells Road East, owned by the WAPC
- part of Crown Reserve 39259, managed by the City
- lot 3001 Cockram Road, owned by the State of WA
- part of Crown Reserve 47881, which is owned by the State of WA and managed by the Department of Parks and Wildlife as part of Korung National Park.

The amended Rushton Road management boundary also addresses:

- the exclusion of Lot 15 (the bulk of the former Lot 5) Rushton Road, which was subdivided by the City and is now in private ownership. The balance of the former Lot 5 (now Lot 14, Crown reserve 51314) remains within the management boundary.

It is recommended that the City adopts the proposed EBV boundary and undertakes the necessary administrative tasks to merge the discrete properties within the boundary under a single property title and create a single Crown Reserve known as the Ellis Brook Valley Reserve as listed in **Table 2** and shown on **Map 2**.

A future Management Order for the proposed EBV Reserve should contain a power to lease to cater for future possible needs.

Two further matters for consideration in the creation of EBV as a single Crown Reserve are:

- the existing easement in favour of Western Power along Rushton Road beneath the 330kVA powerlines. This should be taken into account in the land administration processes involved in the creation of the single Reserve, as should any other easements within the proposed Reserve boundary
- the dedication as a public road of the constructed extension of Rushton Road from the end of the current Rushton Road reserve into Waterfall Gully car park.

Table 2: Properties recommended for inclusion into the proposed EBV boundary

Property	Ownership/Management	Approx. Area	Zone
Lot 3 Rushton Road	CoG (fee simple)	48,897m2	General Rural / Parks and Recreation
Lot 4 Rushton Road	CoG (fee simple)	48,945m2	
Lot 6 Rushton Road	CoG (fee simple)	49,104m2	Parks and Recreation
Lot 7 Rushton Road	WAPC, leased to CoG	245,087m2	
Lot 9 Rushton Road	CoG (fee simple)	24,324m2	
Lot 10 Rushton Road	CoG (fee simple)	24,431m2	
Lot 11 Rushton Road	CoG (fee simple)	24,403m2	
Lot 12 Rushton Road	CoG (fee simple)	24,463m2	
Lot 14 Rushton Road (Crown Reserve 51314)	Management Order in favour of CoG	10,210m2	
Lot 100 Rushton Road	WAPC, leased to CoG	435,458m2	
Part Lot 502 Cockram Road (Crown Reserve 39529)	Management Order in favour of CoG	797,280m2	
Part Crown Reserve 11681	Department of Planning	259,360m2	
Part Lot 113 Hayward Road (Crown Reserve 48076)	Management Order in favour of CoG	9,731m2	Parks and Recreation
Cockram Road (northern 975m unmade road reserve)	City of Gosnells	19,208m2	Parks and Recreation
	TOTAL AREA (hectares)	**202.1 ha**	

Of particular note amongst the properties recommended for inclusion in the proposed EBV boundary are Lot 3 and Lot 4 Rushton Road as discussed below.

Lot 3 Rushton Road

Owned in fee simple by the City and zoned part General Rural and part Parks and Recreation, this property is highly environmentally constrained and unlikely to present any current or future development opportunity to the City. ENV (2008) identified two Threatened Ecological Communities (TEC) on Lot 3:

- Floral Community Type (FCT) 3b *Corymbia calophylla* - *Eucalyptus marginata* woodlands on sandy clay soils of the southern Swan Coastal Plain
- FCT 20b *Banksia attenuata* - *Eucalyptus marginata* woodlands of the eastern side of the Swan Coastal Plain.

FCT3b is listed as Vulnerable by the State, and Endangered by the Commonwealth; FCT 20b is listed as Endangered by the State and not listed by the Commonwealth.

Lot 3 also belongs to the Forrestfield vegetation complex, which has less than 10% of its pre-European extent remaining (9%). It is therefore considered to be under-represented within the Swan Coastal Plain Interim Biogeographic Regionalisation for Australia (IBRA) region.

It is also possible, based on a survey of adjoining Lot 4, that Lot 3 is contaminated to some extent by Asbestos Containing Material (ACM). It is recommended that investigations be undertaken to ascertain the level of contamination and to assist in a management response to the matter.

Given these constraints, the City has advised that it does not envisage the sale or development of the General Rural portion of Lot 3. Given its identified high biodiversity value and protected vegetation, it is recommended that it should be included in the proposed EBV boundary.

Council has yet to determine its intention for this property and for the proposed Reserve boundary to be subsequently finalised, based on Council's determination. Subsequent potential rezoning of this property can be considered if Council considers its development potential fatally compromised, and endorses its inclusion in the proposed Reserve.

Lot 4 Rushton Road

Owned in fee simple by the City and zoned part General Rural and part Parks and Recreation, this property is highly environmentally constrained and presents little opportunity for development. Cardno (2010) identified a TEC on the Rural-zoned portion of Lot 4, namely FCT 3a *Corymbia calophylla – Kingia australis* woodlands on heavy soils. This FCT is classified as a TEC at both a state and federal level and is protected by legislation.

Cardno (2010) identified waste materials across Lot 4, including suspected ACM. As a first step, Cardno recommended re-instating the site boundary fences to prevent unauthorised access to the site, to restrict potential receptors coming into contact with the wastes present at the site.

The waste observed at the surface of Lot 4, including broken glass, metal fragments, metal wire and asbestos pieces presents a risk to human health and to fauna. Cardno recommended a full clean-up of Lot 4.

Given these constraints and the prohibitive cost to remediate the site for human use, the City has advised that it does not envisage the sale or development of the General Rural portion of Lot 4. Given its identified biodiversity value, it is recommended that it should be included in the proposed EBV Boundary and managed for conservation purposes along with Lot 3.

The contamination identified on Lot 4 may also be present on at least part of Lot 3 as it occurs next to Lot 4 and is similar in appearance.

Council has yet to determine its intention for this property and for the proposed Reserve boundary to be subsequently finalised, based on Council's determination. Subsequent potential rezoning of this property can be considered if Council considers its development potential fatally compromised, and endorses its inclusion in the proposed Reserve.

The following recommendations are to help establish and manage EBV as a single Crown Reserve.

Recommendations:

1. The area described by the proposed EBV boundary as shown on **Map 2** should be endorsed by the Council of the City as the formal boundary of the proposed EBV Reserve.
2. The individual properties within the proposed EBV Reserve boundary should be amalgamated to create one property, and a single Crown Reserve created, to be vested by Management Order with the City. The reservation purpose should be Conservation and Recreation.
3. A future Management Order for the proposed EBV Reserve should contain a power to lease to cater for future possible needs.

4. The City should apply to have the entire unmade portion of Cockram Road reserve degazetted and the portion within the proposed Reserve boundary amalgamated into the proposed single Crown Reserve for inclusion in the proposed EBV Reserve boundary.
5. The City should dedicate as a public road reserve the existing extension of Rushton Road from the end of the current Rushton Road reserve into Waterfall Gully car park.
6. The City should maintain Lot 4 Rushton Road as a fenced area to prevent access due to the confirmed presence of contaminated waste. Consideration should be given to removing waste from the Lot.
7. A contaminated site investigation should be undertaken over Lot 3 Rushton Road to determine whether access restrictions similar to those recommended for Lot 4 should be implemented by the City.
8. The City should investigate the potential development of all or part of the current General Rural zoned portions of Lot 3 and Lot 4 Rushton Road (**Map 2**), acknowledging constraints presented by known and unknown site contamination, for uses compatible with the proposed EBV Reserve that may enhance the user experience and attract visitors. Potential uses might include accommodation, exhibition centre, education establishment and/or café/restaurant.
9. The City should undertake the necessary statutory planning and administrative tasks required to facilitate the creation of the proposed EBV Reserve as a single Crown Reserve from the properties listed in **Table 2** and shown on **Map 2**.

5.1.2 Adjacent Land-use

Adjacent land uses, particularly those within the upper catchment of Ellis Brook, have the potential to impact negatively on the conservation values and visitor experience of EBV.

Planning applications in these areas require particular scrutiny with regard to potential impacts on EBV. Where appropriate and possible, conditions should be applied to protect the environmental values of EBV.

Lot 233 Quarry Road (**Map 2** and **Plate 21**) is zoned General Rural and situated on the south west boundary of EBV opposite the Downer asphalt plant within the boundaries of the Holcim hard rock quarry. It has historically been used by quarry operators as an overflow storage site. While Holcim are currently not extracting material from the site, and have no plant or processing equipment on the Lot to date, any future use of the site by the quarry should be evaluated in the context of the protection of the proposed Reserve's values, and appropriate conditions applied to any planning approvals.

Although Lot 233 is not included in the proposed EBV boundary it has current issues with regard to off-road vehicle access from Quarry Road that require constant monitoring such as breaches of fences and barriers installed to prevent unauthorised access. The current fencing and barriers are the result of a cooperative working relationship between the City and Holcim, a relationship that is mutually beneficial and to be supported.

This study has identified Lot 233 as a potential area that could in the future support uses complementary to the proposed EBV Reserve.

Plate 21: Lot 233 Quarry Road

Recommendations:

10. The City should identify the area of the upper catchment of Ellis Brook as an environmentally sensitive zone in its GIS Constraints module to assist in the assessment of planning applications within that zone.
11. The City should identify any planning applications for the upper catchment of Ellis Brook that propose practices that may be detrimental to the quality or quantity of water flowing into Ellis Brook, and apply appropriate planning controls as relevant.
12. The City should note the potential for Lot 233 Quarry Road to support future activities or development complementary to EBV.

5.2 ACTIVITIES

5.2.1 Potential New Uses/Activities

The City's Community Plan – Our Future: 10 Point/10 Year Commitment (City of Gosnells 2011) provides for the management, planning and development of the City to be a vibrant City with a strong community identity; a great place to live, work, raise children, visit and invest; a place that encourages a range of lifestyles and opportunities; and where the natural environment, cultural diversity and heritage of the City is respected and protected for the enjoyment of current and future generations.

The Community Plan identifies actions to assist the City achieve its vision. Directly relevant to the planning and development of EBV are:

- educate the community on the benefits of protecting our natural assets
- ensure that the public access to natural areas is managed so that use is sustainable and the natural environment does not degrade
- provide opportunities for community members to participate in a diverse range of activities
- develop land to provide income for the City.

While EBV, through its natural attractions and picnic facilities, caters for and attracts a significant number of visitors, visitation is largely seasonal and confined to walk trails and picnic areas. This study has identified opportunities to expand the visitor and user group base, and the range of activities in EBV whilst broadening the seasonal scope of activities.

Specific areas within EBV have been identified as having the potential to provide for a more diverse suite of activities that are complementary to the existing range of recreation activities.

5.2.1.1 Rock Climbing and Abseiling

The former Barrington Quarry hard rock extraction area has been identified as a potential location for rock climbing and abseiling activities. In the past, abseiling in the former Barrington Quarry was a significant activity within EBV, being managed by the City through lease arrangements with recreation service providers, which generated income for the City. The City, some 15 years ago, discontinued this arrangement due to safety aspects associated with the instability of the rock face, and currently prohibits access to the Quarry by fencing and gates. Some infrastructure remains, including the fenced and gated access to the upper benches, and climbing infrastructure at launch points.

Although rock climbing and abseiling are prohibited at this site by the City, an internet search reveals substantial discussion on climbing websites and blogs of (unauthorised) use of the Quarry for this purpose. The nearest established outdoor rock climbing and abseiling venue to EBV is Statham Quarry, 19km to the north (**Map 1**).

A similar unstable rock face issue was encountered by the Department of Parks and Wildlife in their management of abseiling and rock climbing activities at Statham Quarry in Gooseberry Hill National Park and Boya Quarry in Greenmount National Park. Both locations are major abseiling and rock climbing venues. Stabilisation of unstable rock faces has been achieved in these disused quarries by the application of shotcrete coloured to match the existing rock.

This study recommends that the City investigate what appears to be an opportunity to provide a venue for a popular recreational activity whilst, at the same time, increasing visitor numbers and presence. The City had previously received income from the Quarry's use by commercial operators, and it is recommended that this be a consideration in the preparation of a business plan for the Quarry.

The Lower Quarry area, located outside of the prohibited access area of the Quarry proper, is also the subject of rock climbing activity, according to discussion on climbing websites and blogs. It is recommended that this area be included in the scoping of a potential rock climbing and/or abseiling venue in EBV.

5.2.1.2 Performance/Function Venue

The Lower Quarry, with its vertical walls to the north-east and south-west encircling a spacious and relatively flat floor of around 4,000m2, exhibits the qualities of a natural amphitheatre (**Plate 22**). In conjunction with the adjacent 2,000m2 expanse of potential parking space, the Lower Quarry presents an opportunity for development as a performance space in a natural setting. While retaining its natural ambience, it has the potential to host civic, public and/or private events and functions in a unique setting.

The existing access track from Rushton Road to the Quarry will need to be upgraded to facilitate the increased numbers of visitors to the performance venue and the quarry for rock climbing and abseiling. Although a potentially costly exercise, it should not be considered an impediment to development and should be factored into the scoping of these concepts.

Plate 22: Natural amphitheatre, lower Barrington Quarry

5.2.1.3 Geocaching

Plate 23: Geocaching

Geocaching is a worldwide real-world outdoor orienteering treasure hunting game using GPS-enabled devices such as smart phones. Participants navigate to a specific set of coordinates in an attempt to find a hidden container at a particular location (**Plate 23**) (Groundspeak 2014).

Geocachers register online to obtain information on caches in particular areas. The geocache contains a logbook and items left by other geocachers. An item can be exchanged for another of equal or greater value. Geocaching stories and photos are shared online by participants.

At least one geocaching site (GCJBD0 Ellis in Wonderland) is known to be located within EBV, near the top of the climb to Sixty Foot Falls. This cache is located off the designated walk trail and its potential popularity might lead to degradation of the area as a worn path is already evident.

It is recommended that the City investigate the potential of involvement with geocaching. This could help promote the area to the (growing) geocaching community and provide visitors with another enjoyable activity.

It is understood that the Shire of York has established geocaching sites along its tourist drive, and uses the activity to attract visitors and promote the Shire and its attractions (pers. comm. Mike Maher).

Should the City engage with geocaching, it is recommended that locations be chosen to avoid excessive impact through access.

5.2.1.4 Other Potential Activities

Opportunities for collaboration with neighbouring organisations and their activities should also be explored, particularly where cross promotion of activities and facilities may be possible.

The Darling Range Wildlife Shelter is located some 450 metres north of Honeyeater Hollow, just past the old shale quarry dam. A physical connection already exists via the established bridle trail. The City should examine the potential for a symbiosis between activities and visitors in EBV and the Wildlife Shelter.

The Hillside Farm Education Centre is located some 200 metres from the Wildlife Shelter on Lot 801 Hayward Road (**Map 3**). There may also be potential for linking activities with EBV.

Recommendations:

13. The City should investigate the potential for reintroducing rock climbing and/or abseiling activities to the former Barrington Quarry.
14. The City should investigate the potential for creating a function/performance venue in the existing amphitheatre in the lower Barrington Quarry.
15. The City should investigate the potential for the establishment of a geocaching trail within EBV.
16. The City should investigate opportunities for synergistic relationships with the Darling Range Wildlife Shelter and the Hillside Farm Education Centre.

5.2.2 Existing activities

5.2.2.1 Tourism and Marketing

EBV is understood to be a popular destination for tour operators in the wildflower season. However little is known about the number of operators visiting the area, or about the visitors they bring.

A road traffic count survey conducted over two weeks in spring 2008 identified 57 class three vehicles (two axle truck or bus) visiting EBV. A second identical survey in spring 2009 identified 70 class three vehicles. These surveys provide an indication that EBV is well-visited in springtime by tour operators.

It is in the City's interest to gain an understanding of tour operator activity within EBV. This will assist in the area's management and marketing, and potentially assist in targeting information to specific tourist groups. It will also assist in obtaining feedback from tour operators and their clients.

Although the City prints and distributes two Ellis Brook Valley brochures – a pocket-sized map of walk trails and an information brochure with a smaller map – there is no system in place to ensure that the brochures are distributed beyond City facilities to market EBV to a broader visitor demographic.

Local and broader print and electronic media should be used to promote EBV and its attractions. It is recommended that the City establish a protocol and associated responsibility within its organisation for the marketing of EBV.

In addition to geocaching, there is a range of mobile device applications that could be used in the context of EBV visitors. Generically termed "Augmented Reality" apps, they range from games such as Ingress, where the player needs to go to the location to get achievements, to other apps such as Wikitude, which are mainly additional information overlays when using a camera.

It is recommended that the City ensures that information about EBV is in as many online databases as possible (technical information, user reviews and photos), such as Wikipedia and Google Maps, because these are probably the information catalogues that many apps drill down into to get their information.

Recommendations:

17. The City should identify and engage with tour operators using EBV, and seek to obtain data including tour frequencies, visitor numbers and visitor origins, as well as suggestions for improvements to the visitor experience.
18. The City should ensure that information about EBV is provided in as many online databases as possible, because these are understood to be the information catalogues from which many mobile device apps get their information.
19. The City should establish a promotion protocol and schedule for EBV, and assign responsibility within the organisation for its implementation to effectively market the destination to a broad range of visitors.

5.2.2.2 Programmed events

The City's Leisure Services team conducts outdoor activities through their Eco Adventures program. One of the activities on the program is the 10km Valley to Valley trek, which starts in Ellis Brook Valley and proceeds from the top of the Sixty Foot Falls trail to Bickley Reservoir (**Map 1** and **4**).

In partnership with local 'Friends' groups, the City also conducts the Eco Walks and Talks program, which includes springtime night stalks and nature rambles guided by volunteers from the FOEBV.

Perth Trail Series also conducts a 12 kilometre night run event in EBV called Moonshadow (**section 4.2.6**). There is the potential to hold more outdoor events such as this one provided they are managed to minimise environmental impacts on EBV.

The inclusion of more programmed events associated with EBV should be considered by the City, particularly the potential expansion of the activity and visitor base through new activities as discussed above.

Recommendations:

20. The City should investigate the current use of EBV and pursue other events or activities that can widen the target audience and raise the profile of the destination.

5.2.3 Dog Exercise Activities

EBV is not one of the City's designated dog exercise areas, where dogs can be exercised off-leash. As such, dogs must be on a leash at all times. Visitor feedback suggests that this is commonly not the case in EBV. Although owners are required to keep their dogs on a leash, this is difficult to control and enforce.

Ecoscape (1997) recommended that dogs be prohibited from EBV. The recommendation remains outstanding, and the exercising of dogs continues to occur.

EBV is located within Banyowla Regional Park, whose primary functions are conservation and recreation – in that priority. There is concern that the presence of dogs in EBV is having a negative impact on native wildlife. This concern is supported by a number of studies into the impact of dogs on native fauna.

Aside from the impact of direct contact between dogs and native fauna, numerous studies on the impacts of domestic dogs in conservation areas have concluded that the presence of dogs has a significant negative impact on ground-dwelling vertebrate fauna and birds. This has a related impact on vegetation whose pollination and seed dispersal is reliant on faunal vectors (Holderness-Roddam, 2011).

A study into the effects of domestic dogs on native mammals showed that even if dogs are kept on a leash, the sight or smell of a dog may cause fear-based alterations in behaviour, habitat use and physiology among native wildlife (Lenth et al. 2008). Holderness-Roddam (2011) concluded that both the literature and analysis of fauna mortality and injury data strongly indicate that dogs are a major disturbance to native wildlife through predation, feeding and breeding disturbance.

Further, the effects of dogs on other visitors to EBV, particularly hikers on narrow walk trails, can be disconcerting and can disturb the experience of the natural environment. With the exception of Approved Assistance Dogs, dogs are expressly prohibited in most parks managed by DPaW as a consideration of the rights of park users (DPaW, 2015). Banyowla Regional Park is not listed by DPaW as a dog exercise area. Anecdotal evidence suggests that encounters between hikers and unleashed dogs in EBV are not infrequent.

Given the conservation importance of EBV, its natural setting and experiences and its abundance of native wildlife, as well as the City's clear objectives to attract visitors and create a near-to-nature experience, it is recommended that the City take steps to inform the public of the need to keep dogs on a lead at all times and to police the matter of dogs off leads.

It is also recommended that the City, recognising the incompatibility of dog exercise in EBV, investigate the matter with a view to the potential exclusion of dogs from the area.

Recommendations:

21. The City should take steps to inform the public of the need to keep dogs on a lead at all times in EBV, and to police the matter.
22. The City, recognising the incompatibility of dog exercise in EBV, should investigate the matter of dog exercise in high conservation areas with a view to the potential exclusion of dogs from the area.

5.2.4 Equestrian Activities

Equestrian access in EBV is currently limited to the gazetted reserve of Rushton Road, the trail to Barrington Quarry and Honeyeater Hollow, from where a bridle/walk trail connects to an established 6km trail leading to Bickley Reservoir in Orange Grove (**Map 4**). The existing bridle/walk trail information sign located in the Honeyeater Hollow picnic area is extremely dilapidated. It is recommended that a new sign be commissioned and installed to replace it.

Two cavalettis (small jumps), one at the Ellis Brook crossing in Honeyeater Hollow and the other at the base of the Barrington Quarry access track, are maintained by the City.

Equestrian access to Barrington Quarry may need to be revisited in the course of the City's investigations into providing enhanced public access to Barrington Quarry for rock climbing, abseiling and event purposes (see **section 5.2.1.1** and **5.2.2.2**, above).

Recommendations:

23. The City should commission a new bridle/walk trail information sign to replace the current sign within the Honeyeater Hollow picnic area.
24. The City, in the course of its investigations into providing enhanced public access to Barrington Quarry for rock climbing, abseiling and event purposes, should revisit equestrian access to Barrington Quarry.

5.3 MANAGEMENT ISSUES

5.3.1 Natural Resource Management Issues

5.3.1.1 Partnerships

The City's management of EBV is supported by key partnerships. Its management is substantially enhanced by its long-standing partnership with, and support of, the FOEBV (**Section 2.2**).

A good working relationship exists between the City and the DPaW given the location of EBV within Banyowla Regional Park, and through the City's representation on the Parks of the Darling Range Community Advisory Committee. This cooperative arrangement provides the City with the opportunity to obtain advice regarding its management and development of EBV.

Several *Phytophthora* dieback management initiatives have derived from the City's work with the Dieback Working Group and, specifically, the DPaW's Ecosystem Health branch.

EBV's southern neighbour, Holcim, who operate the Gosnells hard rock quarry, have also joined with the City by assisting with management issues and initiatives. Holcim have supported *Phytophthora* dieback management works and assisted with the exclusion of unauthorised off-road vehicle access from their property.

Other recent partnerships include projects with the Perth Urban Bushland Fungi Project (fungus survey), Perth Biodiversity Project (Murdoch University Tar Spot Disease research) and Perth Region NRM (Project Dieback mapping of *Phytophthora* dieback disease).

The importance of partnerships and external financial support to the management and development of EBV cannot be underestimated. The City should continue to seek and engage with such opportunities.

Recommendations:

25. The City should continue to seek and engage with opportunities for partnerships and financial support in the management of EBV.

5.3.1.2 Weed Management

Weed Management and control within EBV over the past twenty years has been largely successful, with works undertaken by the City with the specific assistance of the FOEBV in difficult or complex sites.

Weed management is largely undertaken on a needs basis. It is important that weed management be informed, prioritized and scheduled, particularly in a large area such as EBV. It is recommended that the City prepare a Weed Management Strategy for EBV to provide clear guidance on weed management priorities and issues.

Recommendations:

26. The City should prepare a Weed Management Strategy for EBV.

5.3.1.3 Feral Fauna Management

An understanding of feral fauna activity and appropriate management is important to the management of native landscapes. Feral fauna can cause degradation to native vegetation through feeding and burrowing, and the spread of *Phytophthora* dieback disease as well as weed seeds. They can also present a threat to native fauna through competition for resources and predation.

Foxes, cats, pigs and rabbits may be present in EBV although the presence and extent of feral fauna is largely unknown. However, observations suggest that there are no significant populations or evident environmental impacts from feral fauna.

EBV is contiguous with extensive areas of natural landscape on the broader Darling Scarp. This complicates any potential feral fauna management research or initiatives, given the mobility of the target animals across a large landscape.

It is recommended that the City should respond to reports of feral fauna presence and environmental impact in an appropriate manner by seeking to quantify the specific issue and its potential management on a local and broader scale as a precursor to management intervention.

Recommendations:

27. The City should respond to reports of feral fauna presence and environmental impact in EBV an appropriate manner by seeking to quantify the specific issue and its potential management on a local and broader scale as a precursor to management intervention.

5.3.1.4 Flora and Vegetation Management

EBV exhibits a high diversity of vegetation and flora which is influenced by the complex geology, soil types and micro-climates of the area.

The FOEBV commenced the collection and identification of flora in EBV approximately 20 years ago. The Group subsequently established, with the endorsement of the State Herbarium, the EBV State Herbarium. The FOEBV Group provided the State Herbarium with voucher specimens of more than 500 species collected from EBV for the Ellis Brook Herbarium Collection. At the same time the FOEBV retained an identical 'backup' herbarium. This collection is currently maintained by the Group, and forms a valuable record, along with the Group's extensive photographic record of the flora.

The City has undertaken detailed vegetation and flora surveys on Lots 3, 9, 10, 11 and 12 Rushton Road, but not for the remainder of EBV. Given the size of EBV and the complexity of vegetation and terrain, this will be a sizeable task but very important to the management of the area. It is recommended that the City undertake a vegetation mapping study of EBV with a parallel opportunistic flora survey.

Recommendations:

28. The City should undertake a vegetation mapping study of EBV, which should include the identification and mapping of weed issues and an opportunistic flora survey.

5.3.1.5 Erosion Management

There is a high potential for erosion to occur within EBV resulting from various activities and physical attributes of the landscape such as; historic quarry activities, unauthorised off-road vehicle access, the existence of unauthorised tracks, the steep topography, waterways and soil types. Significant efforts to reduce erosion in priority locations have largely proven successful, particularly on walk trails. Whilst improvements are noticeable, erosion in some areas still remains a problem. The most susceptible areas are the steeper slopes of the Scarp and areas with dolerite soils which are prone to slippage and soil creep (Ecoscape 1997). Erosion sites were identified in the 1997 management plan as being most prevalent around the spoil banks of the quarry sites as well as fire access and walking tracks. The steeper slopes within EBV are shown on **Map 4**.

Recommendations:

29. The City should conduct a survey to identify and map erosion sites within EBV and prioritise these areas for remedial action.

5.3.1.6 *Phytophthora* Dieback Disease

Phytophthora dieback infests significant areas of EBV. Managing infestations and preventing its further spread in a cost effective manner is of a high priority for the City. However, there are some activities within EBV, such as unauthorised vehicle access and visitors walking off designated paths that have the potential to spread dieback disease. These issues can be difficult to monitor and manage (**Plate 24**).

Plate 24: Dieback Sign within the Valley

Previous surveys have revealed that *Phytophthora* dieback disease is widespread through EBV, although significant areas such as higher ground and more remote walk trails do remain uninfested (Glevan, 2013) (**Map 5**).

Management of the pathogen by the City and the FOEBV is ongoing, with significant treatment effort applied to the susceptible Threatened Ecological Community located across the south-western Rushton Road properties. Other treatments, including crop duster application of phosphite, have been applied in EBV.

A more recent initiative has resulted from a partnering effort between the City and the DPaW. In October 2014, four 'Phyto Fighter' units were installed at strategic locations (**Map 4** and **5**). These units are self-contained boot scrubbing stations designed to minimise the spread of dieback, which can be carried in soil on footwear (WOW Wilderness EcoProjects 2013). The installations are permanent, located at dieback fronts on walk trails where hikers pass from infested to uninfested areas. The DPaW proposes to assess the effectiveness of the information campaign accompanying the units, and the public's use of the units, through interviews and remote camera monitoring.

The City, through periodic assessment and mapping of the disease, has a good understanding of the extent of *Phytophthora* dieback in EBV. It is important, though, that the extent of the disease over time is understood to effectively coordinate management interventions and measure their success.

It is recommended that a *Phytophthora* Dieback Management Plan be prepared for EBV. The Plan should conduct disease mapping of EBV on a periodic basis, and identify achievable and prioritised management interventions, including community education.

Recommendations:

30. The City should develop a *Phytophthora* Dieback Management Plan for EBV.
31. The City should continue to seek opportunities for partnership with state government agencies, NGOs and the private sector to assist in the management of *Phytophthora* Dieback disease.

5.3.2 Asset and General Maintenance to meet visitor needs and expectations

The City has developed high quality visitor amenities in EBV. The maintenance of these assets is critical to visitor experience of EBV and the presentation of EBV as well-managed. It is recommended that the City develop an asset register for infrastructure in EBV, which captures all assets, their condition and value, any major maintenance works undertaken, and a date for the asset's renewal.

5.3.2.1 Built infrastructure

The development of the New Visitor Experience (NVE) has seen the construction of a range of picnic shelters, barbecues, composting toilet, information shelter, information gazebo, roadway and parking facilities. It is important that these are well-maintained, particularly in the peak visitor season. Instances of graffiti should be reported immediately and cleaned as a matter of priority.

With an increasing number of visitors, the need for a toilet facility in Waterfall Gully car park has been raised. The City should investigate the need for, and feasibility of, installing a composting toilet or similar.

The portion of Rushton Road within EBV should also be listed as an asset to be regularly inspected and maintained.

In addition to regular maintenance visits, the City should undertake programmed inspections of these facilities to identify major works required to ensure their good condition.

Recent traffic monitoring in EBV has identified a significant increase in passenger vehicle traffic in springtime 2015, with 1,312 passenger vehicles visiting EBV in a two-week period from 26 September to 9 October. This represents an increase of 573 vehicles (78%) compared to the previous highest recording (2008) during a similar time of year. The bulk of vehicle access was recorded on weekends and the Queen's Birthday public holiday, although a consistent trend of more than 50 passenger vehicles per weekday on average is also evident.

It is very reasonable to suggest that the reason for the massive increase is the recent completion of the NVE, in particular the Waterfall Gully car park. This car park, and the one at Honeyeater Hollow, is reported as being at capacity on most weekends in the cooler months, and particularly in springtime.

Future considerations with regard to the development of the Barrington Quarry area as a visitor destination should also consider the upper spoil bench as overflow parking in peak periods.

5.3.2.2 Signs

The development of the NVE has provided high quality and informative signage strategically located within EBV. These include internal and external directional signs, entry statement, main information sign and maps, flora and fauna information shelter, environmental information panels in the Waterfall Gully gazebo, general information signs, trail head signs, trail interpretive signs and trail markers. The signs are very durable by design and, at the time of this study, show little sign of wear and tear after eight years in place.

The Ellis Brook Valley Signage Strategy Manual (Chameleon Creative, 2006) provides clear guidance and design parameters for signs and structures in the proposed Reserve. This continues to be a critical element in the development and presentation of the site. It is recommended that the City continue to apply the design guidance provided by this manual.

The Regional Parks Unit of the Department of Parks and Wildlife has prepared and adopted a Regional Parks Sign Manual to guide and coordinate the sign system within regional parks. The Department

recommends that the City gives due consideration to this manual for future sign design within the proposed EBV Reserve.

A number of signs located around Honeyeater Hollow that predate the NVE signs are now redundant and should be removed. Two large, very degraded and outdated fire information signs are also located in Honeyeater Hollow and Waterfall Gully car park. These signs detract from the high standard set by the NVE, and undermine the presentation of EBV as well-managed. It is recommended that the City identify and program the removal and/or replacement of signs that do not conform to the Ellis Brook Valley Signage Strategy Manual.

5.3.2.3 Trails

Four major trails in EBV have been upgraded as a result of the NVE. It is critical that these are well maintained to ensure the safety of visitors and protection of the environment.

Included in trail infrastructure are four Phytofighter units, dieback disease management tools, whose maintenance should also be programmed.

Regular inspections of the trails should be programmed to undertake basic maintenance such as pruning of vegetation overgrowth and simple repair of trail surface wear and tear, and to identify more complex maintenance works such as the management of erosion, which is a significant aspect of trail maintenance in EBV. Required works identified during these inspections should be programmed to occur prior to the peak visitor season. Erosion control should be undertaken prior to winter.

5.3.2.4 Barrington Quarry

Fencing and gates are installed around the main quarry excavations to manage access. These are subject to ongoing vandalism, which generally requires regular maintenance and/or replacement.

This fencing and gates should also be included on the recommended asset register and be subject to programmed inspections.

The very scenic value of the quarry and the lack of access from the Sixty Foot Falls walk trail to a safe viewing area suggest that there may be a need for a viewing platform. The City should investigate the need for, and feasibility of, such a facility in any future upgrade of the walk trail.

Recommendations:

32. The City should identify and program the removal and/or replacement of signs that do not conform to the EBV Signage Strategy Manual
33. The City should develop an asset register for infrastructure in EBV which captures all assets, their condition and value, any major maintenance works undertaken, and a date for the asset's renewal.
34. The City should investigate the need for, and feasibility of, the installation of a composting toilet or similar in Waterfall Gully car park.
35. The City should establish and follow a schedule of programmed inspections of all constructed facilities to identify any major works required to ensure their good condition.
36. The City should undertake major trails repair and upgrade works to occur prior to the peak visitor season.
37. The City should undertake erosion control works on walk trails prior to winter.
38. The City should, in the context of future enhancement of the Sixty Foot Falls walk trail, investigate the installation of a safe viewing platform where the trail approaches Barrington Quarry.

39. The City should continue to use the EBV Signage Strategy Manual (Chameleon Creative, 2006) to guide sign strategy and development in EBV.

5.3.2.5 Barrington Quarry Safety and Access Issues

The Barrington Quarry area is currently an underused area of EBV and in its current condition presents a risk to visitors. There have been measures put in place to restrict visitor access, such as fencing and locked gates. These measures have not been successful in keeping the public out of the Quarry with holes being cut in fences or gates being removed (**Plate 25**). Replacing the fences and gate presents a continuous and unwanted cost to the City.

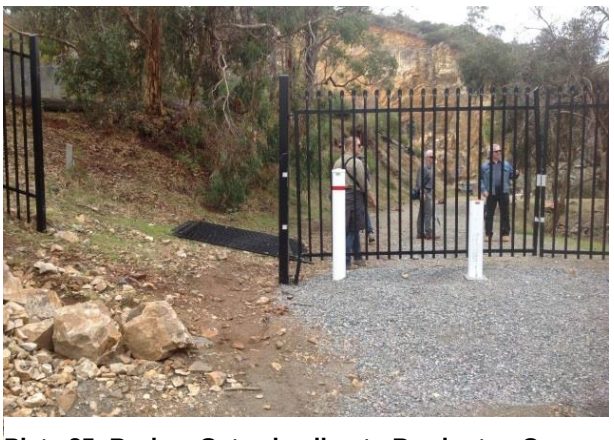

Plate 25: Broken Gates leading to Barrington Quarry

The Barrington Quarry attracts unauthorised visitors due to the attraction presented by a permanent waterbody (**Plate 26**) and climbing opportunities on the Quarry face. However, due to safety concerns such as rock falls from the quarry face, potential health issues associated with stagnant water as well as other issues associated with an open water body, the City has gone to considerable effort to manage public access to the main upper quarry area.

Recommendations:

40. The City should undertake a feasibility study to determine potential recreational and tourism uses and activities within the Barrington Quarry area.
41. The City should also conduct a risk assessment on the potential uses of the Barrington Quarry area.

Plate 26: Barrington Quarry and Fencing to restrict access

5.3.3 Fire Management

Bush fires are a very important aspect of the management of EBV.

Visitor safety in a bush fire situation is a key concern, although this is mitigated in the Valley area considerably by three factors:

- the bush fire season falls outside of the peak visitor period

- hot weather during the bush fire season tends to discourage visitors
- the Rushton Road gate is closed by the City on days when the Fire Danger Rating is Very High or greater

Visitor information on bush fire risk and safety is provided on one of the information panels in the gazebo in the Waterfall Gully car park (**Plate 27**). No information is provided in Honeyeater Hollow picnic area.

Plate 27: Bush fire information provided in Waterfall Gully gazebo and Rushton Road gate closure information sign

The ecological and environmental impacts of bush fire are of equal concern. Fire frequency, in particular, can have a profound effect on the plant and animal species composition of an area. Vegetation communities may find fire beneficial to stimulate regeneration, whilst fauna communities will respond to fire frequency in varying ways, depending on their mobility, feeding habits and ability to recolonise. An important factor for the protection of fauna communities is unburnt sites that can be used for refuge and the harbouring of surviving populations to provide a source for recolonisation of burnt areas (Hobbs, 1995).

Severe bush fire can also result in the removal of protective vegetation cover, increasing erosion potential on sloping sites.

Historical fire records suggest that the EBV area is likely to encounter bush fires on an almost annual basis. Whilst the majority of these fires have been relatively minor in nature, the steep terrain and limited access for firefighting appliances does contribute to the potential for significant fires to develop in the area.

The Rushton Road gate to the Valley proper is closed by the City on days when the Fire Danger Rating is Very High or greater (**Plate 27**). This is understood to have been effective in reducing the incidence of arson, which has in the past been responsible for fires in the Valley. It also addresses visitor safety on days when the risk of bush fire is greatest.

Gate opening and closure is currently performed by contractors. Issues have occasionally arisen where the gates have not been opened and closed at the correct times. Appropriate protocols need to be properly established in order to minimise bush fire risk and to maximise public safety.

EBV forms a small part of the Fire Management Plan for the Darling Scarp and Environs (FMP) (City of Gosnells 2009). The Plan provides for the City to maintain:

- a series of fire compartments
- a network of strategic Fire Access Tracks for use by emergency services
- restrictions to public vehicle access to the area

The FMP's implementation is financially supported by the City of Gosnells, City of Armadale, Water Corporation and Western Power.

It includes a bush fire hazard reduction program to create a mosaic of fuel loads across the area enabling compartments to be bordered by strategic access tracks. By confining fires to established compartments it may minimise the need to install new firebreaks.

It is noted that the FMP is proposed for review, and that there is a need for more location-specific detail with regard to EBV and visitors to the site. It is considered more appropriate that a Fire Management Plan be prepared for the EBV, and that this be incorporated into the revised overarching FMP.

The installation and maintenance of firebreaks is identified as presenting a potential catalyst for the spread of dieback. It is recommended that the installation or upgrading of Strategic Fire Access Tracks in the proposed Reserve be implemented in accordance with available dieback information and the recommended Phytophthora Dieback Management Plan for EBV. Where dieback mapping is considered inadequate to informing such works, that dieback assessment should be undertaken prior to initiation.

Reports of fire in the area during the bush fire season trigger an agency response that provides for enhanced mobilisation of multiple firefighting appliances from the Gosnells Bush Fire Brigade, Department of Parks and Wildlife (DPaW), Fire and Rescue Service (FRS) and aerial firefighting support.

Recommendations:

42. The proposed review of the Fire Management Plan for the Darling Scarp and Environs to ensure that dieback management in the construction and maintenance of Strategic Fire Access Tracks is addressed.
43. The City of Gosnells to develop a detailed Fire Management Plan for the proposed EBV Reserve, for inclusion in an overarching revised Fire Management Plan for the Darling Scarp and Environs and to establish protocols and responsibilities for fire mitigation activities, including:

    - Fire Access Track establishment and maintenance, including gates
    - Public access restriction on days when the Fire Danger Rating is Very High or greater
    - Consideration of a 10-year fuel reduction program to measure and manage bush fire fuel loads
    - Visitor advice with regard to fire and emergency procedures
    - Identification of vegetation, flora and fauna requiring special protection with regard to fire occurrence and frequency, and the development of strategies to protect those assets.

44. An appropriate level of visitor information on bush fire risk and safety should be provided in the Honeyeater Hollow picnic area.

5.3.4 Visitor and Site Security

The entrance to EBV is via a gated entry statement on Rushton Road. Gates are opened at 8:00am and closed at 5:00pm. On days when the Fire Danger Rating is Very High or above, the gates remain locked as a fire prevention strategy.

5.3.4.1 Off-Road Vehicles

The Rushton and Quarry Road perimeter of EBV is fenced and/or blockaded with earth bunds and large rocks. This has proven a reasonably successful tactic to exclude off-road vehicles, although breaches occur from time to time. The majority of breaches in this area occur at the top end of Quarry Road, with vehicles entering the area through Lot 233. Breaches in this area are rectified as soon as possible following discovery.

Off-road vehicle entry is also possible from any of the fire access tracks and historical tracks located on the eastern perimeter of EBV. Entry to EBV from this quarter is generally obtained via Barrington Quarry along the Fire Access Track (which is also the Barrington Quarry access track) that descends to Rushton Road. This entry point is gated and bolstered by two heavy duty removable bollards.

Whether by descending or ascending off-road vehicles, this location is subject to constant unauthorised access and damage to the gate, bollards and nearby vegetation where alternative access is obtained.

It is worth noting that the City and other land managers are virtually powerless to physically exclude trail and quad bikes.

It is recommended that the City continue to repair damage to gates, fences, bollards and other exclusion devices and, where possible, improve access exclusion devices to deter further attempts.

5.3.4.2 Visitor Security

Theft from unattended vehicles is a relatively common occurrence in EBV. It is known to have affected casual visitors, tour buses, the FOEBV, City staff and City contractors. It is frequently mentioned in internet discussion groups and blogs as a factor that would not encourage people to return to EBV.

The City has liaised over time with Gosnells Police in an effort to achieve patrolling of EBV. The police advise that they are not aware of the issue and, as their crime figures do not suggest that the issue exists, the directing of police resources to the area cannot be considered. This is understood to be largely due to the majority of victims not reporting the crime to police.

The City undertook an informal survey over a month in springtime 2011, recording instances of broken window glass in Honeyeater Hollow and Waterfall Gully car parks. Approximately twenty instances were recorded. This was then compared to police crime records, which showed no reports of vehicle break-ins during that period (pers. comm. W van Lieven).

A subsequent survey between February and December 2015 recorded only four instances of vehicle crime. This significant reduction is attributed by the City to:

- a known increase in visitor numbers, which provides for a greater amount of passive surveillance and presence in car parks
- the installation of CCTV cameras in both car parks
- the weekend presence over the spring peak period of a food vendor in Waterfall Gully car park

The 1997 Management Plan mentioned the need for an on-site presence at EBV such as a permanent Ranger. The use of City Ranger resources to police EBV has also been suggested. This is not an option that can be considered by the City. Whilst the City's Rangers undertake various statutory functions as Authorised Officers, they are not registered security officers and do not perform patrol and security services, and do not have any authority in relation to criminal acts.

Recommendations:

45. The City should continue to monitor and record vehicle break-in incidents at EBV.
46. The City should evaluate the impact on vehicle break-ins of the proposed installation of CCTV cameras.
47. The City should continue to liaise with Gosnells Police regarding patrols in the proposed Ellis Brook Valley Reserve.

5.4 RESOURCING AND PROMOTION

5.4.1 Resourcing

The management of EBV, given its environmental sensitivity and increasingly high profile as a visitor destination, broadly involves:

- monitoring and management of the area's ecological aspects
- monitoring, maintenance, repair and replacement of built assets
- monitoring, maintenance and repair of walk trails
- general maintenance.

Day to day maintenance is undertaken by the City's four-member Natural Areas Team Management, although specific elements relating to built infrastructure are undertaken by other City units. Funding for programmed maintenance activities will generally derive from municipal funds:

- recurrent expenditure should be adequate to achieving routine, anticipated or planned maintenance
- provisional funds for the repair of built assets should be budgeted annually, although some repairs caused by vandalism can be effected through the City's asset insurance cover
- the replacement of built assets should be programmed and provision made in the City's budget according to the projected life of each asset.

With regard to day to day maintenance, the City should review its current monitoring and maintenance program to ensure that resource allocation is sufficient to the task. Seasonal fluctuations and opportunities should also be taken into account. Springtime, for example, is the peak visitor period, a time when wear and tear on natural and built aspects could be expected to increase, but also a time when the presentation of the site should be first class, necessitating a higher frequency of monitoring and maintenance.

Non-routine management activities should be programmed where possible and funds sought from a combination of municipal funds and external sources. Projects such as vegetation mapping, revegetation, dieback mapping and walk trail development may be eligible for grants for all or part of the total cost. The City and the FOEBV, both individually and jointly, already have an impressive track record in achieving a significant amount of external funding for projects in EBV.

The City's partnership with the FOEBV is also a significant resource in the conservation, development and management of EBV. Since its formation in 1992, the self-managed, self-funded and dedicated Group has contributed significantly to the planning, development, management and maintenance of EBV, and is regarded by the City as a key player in its management.

Recommendations:

48. The City should review its current monitoring and maintenance program to ensure that resource allocation is sufficient to the task.
49. The City should program non-routine management activities where possible and funds seek funds for these activities from a combination of municipal funds and external sources
50. The City should continue to foster its valued relationship with, and provide support to, the FOEBV.

5.4.2 Visitor Promotion and Tourism

EBV is considered to be a major nature-based attraction within the City of Gosnells with a high potential to draw large numbers of visitors to the area.

User groups comprise of local and metropolitan hikers and commercial tour operations during wildflower season. The City's focus on enhancing the visitor experience and the image of EBV will facilitate future

environmental tourism and broaden the visitor profile, providing economic benefits to the City and its residents through increased nature-based tourism (City of Gosnells, 2006).

EBV's popularity is at its highest during the winter and spring months, when the weather is more suitable, the Sixty Foot Falls flow and the wildflower display is at its best.

As discussed previously in this report, the City prints and distributes two Ellis Brook Valley brochures: a pocket-sized map of walk trails and an information brochure with a smaller map. There is no current strategy to ensure that the brochures are distributed beyond City facilities to market EBV to a broader visitor demographic.

Local and broader print and electronic media should be used to promote EBV and its attractions. It is recommended that the City establish a protocol and associated responsibility within its organisation for the marketing of EBV.

EBV has the potential to be an appropriate venue for a range of ecotourism ventures tailored to the resources and environmental capability of the site. Ecotourism focuses on low volume, low impact, high quality experiences and may encompass the whole or parts of the site. The benefits of encouraging appropriate and well-managed ecotourism ventures include a wider recognition of the values of EBV and a greater understanding and 'ownership' of the proposed Reserve (Ecoscape 1997). It could also potentially provide the City with an opportunity for additional income to help support the management of EBV.

As discussed in **Section 5.2**, EBV has great potential to host other activities, extending the seasonal range of visitation and broadening the visitor demographic which could generate income through fee for service.

Recommendations:

51. The City should establish a protocol and associated responsibility within its organisation for the marketing of EBV.
52. The City should investigate the use of other tourist promotion sites (e.g. Tourism WA) to determine if it would be beneficial to market EBV through these sites.

6.0 MANAGEMENT RECOMMENDATIONS

Table 3: Recommendations Summary Table

NO.	RECOMMENDATION
	TENURE
1	The area described by the proposed EBV boundary as shown on **Map 2** should be endorsed by the Council of the City as the formal boundary of the proposed EBV Reserve.
2	The individual properties within the proposed EBV Reserve boundary should be amalgamated to create one property, and a single Crown Reserve created to be vested by Management Order with the City. The reservation purpose should be Conservation and Recreation.
3	A future Management Order for the proposed EBV Reserve should contain a power to lease to cater for future possible needs.
4	The City should apply to have the entire unmade portion of Cockram Road reserve degazetted and the portion within the proposed Reserve boundary amalgamated into the proposed single Crown Reserve for inclusion in the proposed EBV Reserve boundary.
5	The City should dedicate as a public road reserve the existing extension of Rushton Road from the end of the current Rushton Road reserve into Waterfall Gully car park.
6	The City should maintain Lot 4 Rushton Road as a fenced area to prevent access due to the confirmed presence of contaminated waste. Consideration should be given to removing waste from the Lot.
7	A contaminated site investigation should be undertaken over Lot 3 Rushton Road to determine whether access restrictions similar to those recommended for Lot 4 should be implemented by the City.
8	The City should investigate the potential development of all or part of the current General Rural zoned portions of part Lot 3 and Lot 4 Rushton Road (**Map 2**), acknowledging constraints presented by known and unknown site contamination, for uses compatible with the proposed EBV Reserve that may enhance the user experience and attract visitors. Potential uses might include accommodation, exhibition centre, education establishment and/or café/restaurant.
9	The City should undertake the necessary statutory planning and administrative tasks required to facilitate the creation of the proposed EBV Reserve as a single Crown Reserve from the properties listed in **Table 2** and shown on **Map 2.**
10	The City should identify the area of the upper catchment of Ellis Brook as an environmentally sensitive zone in its GIS Constraints module to assist in the assessment of planning applications within that zone.
11	The City should identify any planning applications for the upper catchment of Ellis Brook that propose practices that may be detrimental to the quality or quantity of water flowing into Ellis Brook, and apply appropriate planning controls as relevant.
12	The City should note the potential for Lot 233 Quarry Road to support future activities or development complementary to EBV.
	ACTIVITIES
13	The City should investigate the potential for reintroducing rock climbing and/or abseiling activities to the former Barrington Quarry.
14	The City should investigate the potential for creating a function/performance venue in the existing amphitheatre in the lower Barrington Quarry.
15	The City should investigate the potential for the establishment of a geocaching trail within EBV.
16	The City should investigate opportunities for synergistic relationships with the Darling Range Wildlife Shelter and the Hillside Farm Education Centre.

17	The City should identify and engage with tour operators using EBV, and seek to obtain data including tour frequencies, visitor numbers and visitor origins, as well as suggestions for improvements to the visitor experience.
18	The City should ensure that information about EBV is provided in as many online databases as possible, because these are understood to be the information catalogues from which many mobile device apps get their information.
19	The City should establish a promotion protocol and schedule for EBV, and assign responsibility within the organisation for its implementation to effectively market the destination to a broad range of visitors.
20	The City should investigate the current use of the EBV and pursue other events or activities that can widen the target audience and raise the profile of the destination.
21	The City should take steps to inform the public of the need to keep dogs on a lead at all times in EBV, and to police the matter.
22	The City, recognising the incompatibility of dog exercise in EBV, should investigate the matter of dog exercise in high conservation areas with a view to the potential exclusion of dogs from the area.
23	The City should commission a new bridle/walk trail information sign to replace the current sign within the Honeyeater Hollow picnic area.
24	The City, in the course of its investigations into providing enhanced public access to Barrington Quarry for rock climbing, abseiling and event purposes, should revisit equestrian access to Barrington Quarry.
	MANAGEMENT ISSUES
25	The City should continue to seek and engage with opportunities for partnerships and financial support in the management of EBV.
26	The City should prepare a Weed Management Strategy for EBV.
27	The City should respond to reports of feral fauna presence and environmental impact in EBV an appropriate manner by seeking to quantify the specific issue and its potential management on a local and broader scale as a precursor to management intervention.
28	The City should undertake a vegetation mapping study of EBV, which should include the identification and mapping of weed issues and an opportunistic flora survey.
29	The City should conduct a survey to identify and map erosion sites within EBV and prioritise these areas for remedial action.
30	The City should develop a *Phytophthora* Dieback Management Plan for EBV.
31	The City should continue to seek opportunities for partnership with state government agencies, NGOs and the private sector to assist in the management of *Phytophthora* Dieback disease.
32	The City should identify and program the removal and/or replacement of signs that do not conform to the EBV Signage Strategy Manual.
33	The City should develop an asset register for infrastructure in EBV which captures all assets, their condition and value, any major maintenance works undertaken, and a date for the asset's renewal.
34	The City should investigate the need for, and feasibility of, the installation of a composting toilet or similar in Waterfall Gully car park.
35	The City should establish and follow a schedule of programmed inspections of all constructed facilities to identify any major works required to ensure their good condition.
36	The City should undertake major trails repair and upgrade works to occur prior to the peak visitor season.
37	The City should undertake erosion control works on walk trails prior to winter.
38	The City should, in the context of future enhancement of the Sixty Foot Falls walk trail, investigate the installation of a safe viewing platform where the trail approaches Barrington Quarry.

39	The City should continue to use the EBV Signage Strategy Manual (Chameleon Creative, 2006) to guide sign strategy and development in EBV.
40	The City should undertake a feasibility study to determine potential recreational and tourism uses and activities within the Barrington Quarry area.
41	The City should also conduct a risk assessment on the potential uses of the Barrington Quarry area.
42	The proposed review of the Fire Management Plan for the Darling Scarp and Environs to ensure that dieback management in the construction and maintenance of Strategic Fire Access Tracks is addressed.
43	The City of Gosnells to develop a detailed Fire Management Plan for the proposed EBV Reserve, for inclusion in an overarching revised Fire Management Plan for the Darling Scarp and Environs and to establish protocols and responsibilities for fire mitigation activities, including: • Fire Access Track establishment and maintenance, including gates • Public access restriction on days when the Fire Danger Rating is Very High or greater • Consideration of a 10-year fuel reduction program to measure and manage bush fire fuel loads • Visitor advice with regard to fire and emergency procedures • Identification of vegetation, flora and fauna requiring special protection with regard to fire occurrence and frequency, and the development of strategies to protect those assets.
44	An appropriate level of visitor information on bush fire risk and safety should be provided in the Honeyeater Hollow picnic area.
45	The City should continue to monitor and record vehicle break-in incidents at EBV.
46	The City should evaluate the impact on vehicle break-ins of the proposed installation of CCTV cameras.
47	The City should continue to liaise with Gosnells Police regarding patrols in the proposed EBV Reserve.
	RESOURCING AND PROMOTION
48	The City should review its current monitoring and maintenance program to ensure that resource allocation is sufficient to the task.
49	The City should program non-routine management activities where possible and funds seek funds for these activities from a combination of municipal funds and external sources.
50	The City should continue to foster its valued relationship with, and provide support to, the FOEBV.
51	The City should establish a protocol and associated responsibility within its organization for the marketing of EBV.
52	The City should investigate the use of other tourist promotion sites (e.g. Tourism WA) to determine if it would be beneficial to market EBV through these sites.

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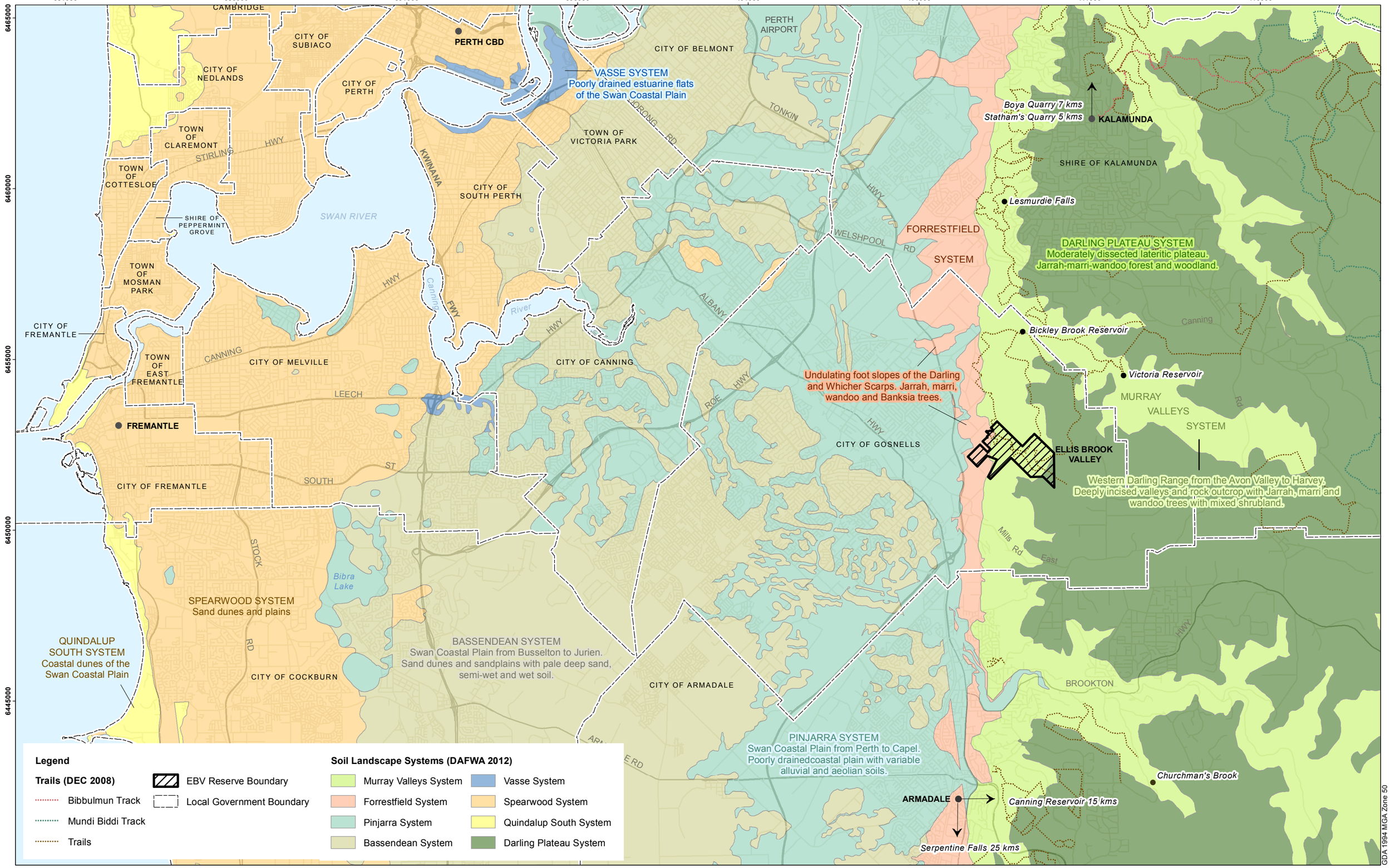
MAPS



ecoscape

AUTHOR: SB
DATE: MAR 2015
CHECKED: JN
PROJECT NO: 3216-14
SCALE:1:100,000 @ A3
0 1 2 3 4 5 km

ELLIS BROOK VALLEY STRATEGIC MANAGEMENT PLAN

CLIENT: CITY OF GOSNELLS

REGIONAL CONTEXT

MAP 1

407000 407500 408000 408500 409000 409500 410000 410500

6453000 6452500 6452000 6451500 6451000

R48076 CoG

R39529 CoG

R47881 Conservation Commission

Lot 582 WAPC

R39529 CoG

R47881 Conservation Commission

Lot 7 WAPC / CoG

Lot 6 CoG

RUSHTON RD

Lot 15 Freehold

Lot 4 CoG

Lot 14 CoG R51314

Lot 100 WAPC / CoG

Lot 3001 State of WA

TONKIN HWY

Lot 3 CoG

Lot 12 CoG

Lot 10 CoG

Lot 11 CoG

Lot 9 CoG

R39529 CoG

Lot 233 Holcim Australia Pty Ltd

QUARRY RD

COCKRAM RD

Lot 3 Holcim Australia Pty Ltd

R11681 DoP

R47881 Conservation Commission

Legend

- Proposed EBV Reserve Boundary
- 1997 Management Plan Proposed Boundary
- Castral Boundary

Tenure within Proposed EBV Reserve Boundary

- Crown Reserve
- Fee Simple (CoG)
- WAPC (leased by CoG)

IMAGERY SOURCE: NearMap 28 March 2014

GDA 1994 MGA Zone 50

ecoscape

AUTHOR: SB
DATE: JAN 2016
CHECKED: JN
PROJECT NO: 3216-14
SCALE: 1:10,000 @ A3

0 100 200 300 400 500 m

ELLIS BROOK VALLEY STRATEGIC MANAGEMENT PLAN

CLIENT: CITY OF GOSNELLS

TENURE

MAP 2

406000 408000 410000 412000 414000 416000

6456000

6454000

6452000

6450000

MADDINGTON

Tonkin Hwy

Albany Hwy

GOSNELLS

ORANGE GROVE

SHIRE OF KALAMUNDA

CITY OF GOSNELLS

Boral Quarry

BANYOWLA REGIONAL PARK

KORUNG NP

WA Police rifle range

Hillside Farm Education Centre

Darling Range Wildlife Shelter

PROPOSED ELLIS BROOK VALLEY RESERVE

Downer EDI Asphalt Plant

Holcim Quarry

Victoria Reservoir

KORUNG NATIONAL PARK

CANNING MILLS

CITY OF ARMADALE

Kaarakin Black Cockatoo Conservation Centre

Legend

- Local Government Boundary
- Proposed EBV Reserve
- Banyowla Regional Park (DPaW 2014)
- Korung National Park (DPaW 2014)

Land Use Zones

- Darling Range Wildlife Shelter
- Hillside Farm Education Centre
- Rural and Horticulture
- Urban
- Industrial
- Extractive Industries

GDA 1994 MGA Zone 50

IMAGERY SOURCE: NearMap 27 October 2014

AUTHOR: AF
DATE: MAR 2015
CHECKED: JN
PROJECT NO: 3216-14
SCALE:1:30,000 @ A3

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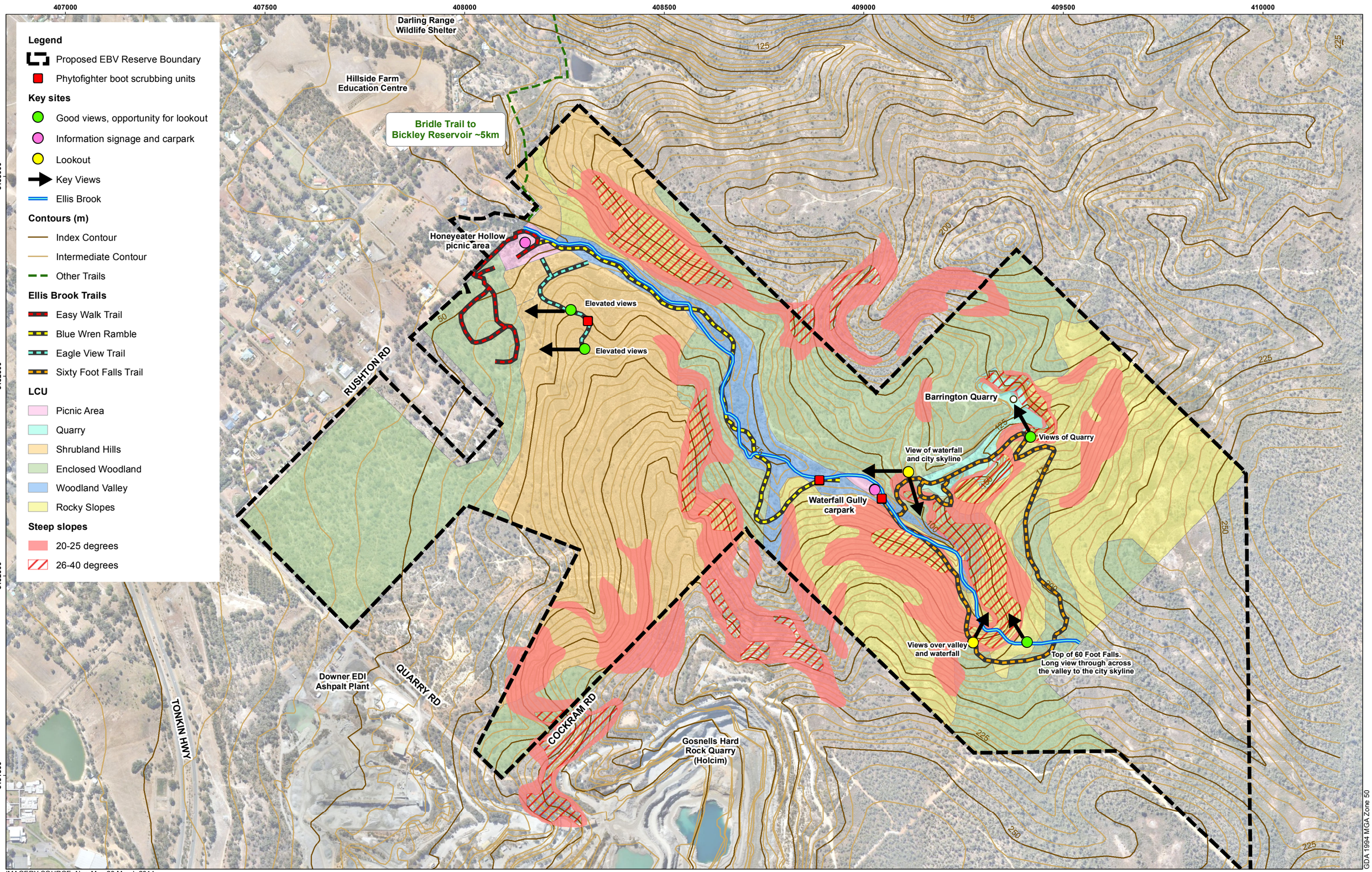
ecoscape

ELLIS BROOK VALLEY STRATEGIC MANAGEMENT PLAN

CLIENT: CITY OF GOSNELLS

ADJACENT LAND USE

MAP 3



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AUTHOR: SB
DATE: JAN 2016
CHECKED: JN
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ecoscape

ELLIS BROOK VALLEY STRATEGIC MANAGEMENT PLAN

CLIENT: CITY OF GOSNELLS

KEY SITES AND USER EXPERIENCE

MAP 4

407000 407500 408000 408500 409000 409500 410000 410500

6453000 6452500 6452000 6451500 6451000

Honeyeater Hollow

RUSHTON RD

TONKIN HWY

Barrington Quarry

Lookout

Waterfall Gully carpark

60 Foot Falls

Lookout

QUARRY RD

COCKRAM RD

Legend

- Phytofighter boot scrubbing units
- Key Sites
- Ellis Brook
- Ellis Brook Trails
- Other Trails
- Proposed EBV Reserve
- Castral Boundary

Dieback Areas (Glevan 2008 and 2013)

- Infested
- Uninfested
- Protectable
- Unprotectable
- Unmappable

IMAGERY SOURCE: NearMap 28 March 2014

GDA 1994 MGA Zone 50

AUTHOR: SB
DATE: MAR 2015
CHECKED: JN
PROJECT NO: 3216-14
SCALE: 1:10,000 @ A3

0 100 200 300 400 500 m

ecoscape

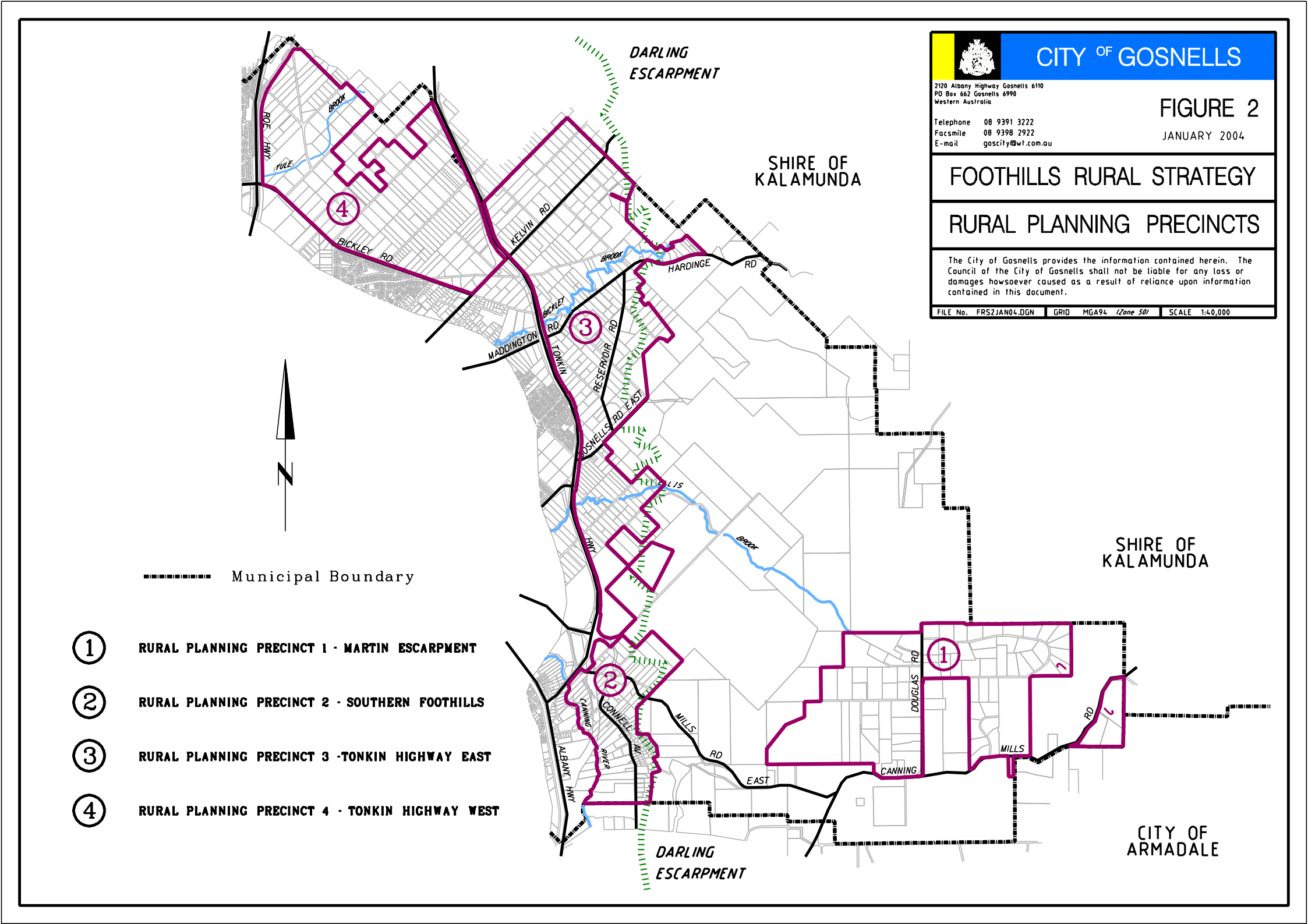
ELLIS BROOK VALLEY STRATEGIC MANAGEMENT PLAN

CLIENT: CITY OF GOSNELLS

***PHYTOPHTHORA* DIEBACK**

MAP 5

APPENDIX ONE: RURAL FOOTHILLS STRATEGY MAP


CITY OF GOSNELLS
2120 Albany Highway Gosnells 6110
PO Box 662 Gosnells 6990
Western Australia
Telephone 08 9391 3222
Facsimile 08 9398 2922
E-mail goscity@wt.com.au
FIGURE 2
JANUARY 2004
FOOTHILLS RURAL STRATEGY
RURAL PLANNING PRECINCTS
The City of Gosnells provides the information contained herein. The Council of the City of Gosnells shall not be liable for any loss or damages howsoever caused as a result of reliance upon information contained in this document.
FILE No. FRS2JAN04.DGN
GRID MGA94 (Zone 50)
SCALE 1:40,000
DARLING ESCARPMENT
SHIRE OF KALAMUNDA
SHIRE OF KALAMUNDA
CITY OF ARMADALE
DARLING ESCARPMENT
ROE HWY
BROOK
YULE
KELVIN RD
BICKLEY RD
HARDINGE RD
MADDINGTON
TONKIN HWY
RESERVOIR RD
GOSNELLS RD EAST
ALBANY HWY
CANNING RIVER
CONNELL AV
MILLS RD EAST
DOUGLAS RD
MILLS RD
CANNING
N
Municipal Boundary
1 RURAL PLANNING PRECINCT 1 - MARTIN ESCARPMENT
2 RURAL PLANNING PRECINCT 2 - SOUTHERN FOOTHILLS
3 RURAL PLANNING PRECINCT 3 -TONKIN HIGHWAY EAST
4 RURAL PLANNING PRECINCT 4 - TONKIN HIGHWAY WEST

APPENDIX TWO: CITY'S RESPONSE TO STAKEHOLDER COMMENTS

The Stakeholder submission period was between June 8 – July 3 2015.

Number	Stakeholder	Comment	Response
1	FOEBV	The boundary of the proposed Ellis Brook Valley Reserve should be mainly in accordance with the 1997 Management Plan recommendation. The upper catchment area is vitally important for the following reasons:	The boundary of the proposed Ellis Brook Valley Reserve will remain as proposed. The arguments for boundary amendment are addressed below:
		Any impacts on the upper catchment have a strong possibility of impacting the whole valley.	Noted and agreed
		This Plan itself (5.1.2) points out the need to manage activity in land adjacent to the upper catchment.	The Plan, in section 5.1.2, discusses the control of activities in the upper catchment through the planning approval process, not through direct management of the area.
		The continuing management and control of a serious weed infestation in the Ellis Brook headwaters is vital. The Friends Group have been performing this function for many years.	Noted, although the area of weed infestation discussed is located within Crown Reserve 47881, which is owned by the Conservation Commission and is part of Korung National Park. Previous assistance to the FOEBV in this area has been in error of this fact, and must now be undertaken with the assistance and permission of the DPaW.
		Black Cockatoo nesting boxes have been installed in this area.	The City is not aware of the installation of nesting boxes in this area, and will seek more detail on the location.
		Vehicle access from the lower valley below the falls to the upper Valley is via a track from Barrington Quarry. This track is a designated fire access track and is an important link for operations in the upper Valley such as weed control. Unauthorised vehicle use also needs to be managed. Most of this track will be excluded from the reserve if the recommended reduced area is adopted.	The Barrington Quarry track is not used by the City for operations such as weed control. Unauthorised use of the track is acknowledged, although entry is from other lands and beyond the scope of the Strategic Management Plan. The spread of dieback through unauthorised use of this Fire Access Track is acknowledged as a threat to the Valley. The Strategic Management Plan will be amended to incorporate notes in section 5.3.3 to ensure that dieback management is included in the scope of the proposed review of the Fire Management Plan for the Darling Scarp and Environs.
		The Upper catchment area has generally been less affected by quarrying and other human impacts than the lower western areas. Flora is generally in better condition. Some species and plant communities only exist here and not below the falls for example Eucalyptus laeliae and Pimelea rara. It is highly likely that a greater fauna diversity exists in the upper catchment area.	Noted. The upper catchment area under discussion is understood to be located within Crown Reserve 47881, which is owned by the Conservation Commission and is part of Korung National Park.
		Long term security and environmental protection will be better served if	As noted above, this area is managed by the Department of Parks

Number	Stakeholder	Comment	Response
		the upper catchment is included in the single EBV Reserve.	and Wildlife as part of Korung National Park.
2	FOEBV	The very significant scenic value of the Quarry should be recognised. An important priority should be given to the creation of a safe viewing platform looking into the Quarry from the point near to where the Falls Trail passes - shown on Map 4 as 'Views of Quarry'.	Agreed. Additional text in section 5.3.2 will identify the opportunity for a viewing platform and recommend its consideration in future enhancement of the Sixty Foot Falls Trail.
3	FOEBV	An additional potential use for Lots 3 & 4 should include a residence and appointment of an EBV Site Manager (Not Ranger). A Site Manager would greatly improve the security of EBV and could also conduct educational programmes.	Given the identified vegetation constraints to development on these two properties, and the potentially prohibitive cost to remediate for use by visitors, it is not considered appropriate that the Strategic Management Plan proposes development on these Lots.
4	FOEBV	With an increasing number of visitors and tour coaches, there is a need for a toilet in Waterfall Gully.	Agreed. The Strategic Management Plan will provide discussion and recommendation in section 5.3.2.
5	FOEBV	Map 4 illustrates the proposed EBV Reserve area as reduced from Maps 2 and 5.	Map 4 is incorrect, and will be corrected to reflect boundaries shown in Maps 2 and 5.
6	FOEBV	Map 4 - Trail marked to "Bickley Reservoir" is now very overgrown and hard to find and follow from the point where it veers north and leaves the Fire Access Track. The currently used route is approximately 1 kilometre further East off the Fire Access Track. In order not to mislead we recommend that this trail reference be removed from this map.	Agreed to remove references to external, non-formalised tracks.
7	FOEBV	Map 4 - Trail marked to "Victoria Reservoir" is also very overgrown and was only a very indirect route to Victoria Reservoir. In order not to mislead we recommend that this trail reference be removed from this map.	Agreed to remove references to external, non-formalised tracks.
8	FOEBV	Page 9 - Friends of Ellis Brook Valley appreciate the recognition given to our Group in the Strategic Plan. Despite some difficulties we have maintained our strong involvement in EBV right to the current time. Consequently we would prefer the first sentence on page 9 to read as follows. The Group has maintained their pro-active role to the present time. However the key membership is ageing and despite an induction of some new members there may be future difficulties in attracting and retaining new and younger members.	Agreed to replace first sentence on page 9 with recommended text.
9	DPaW	The Department is supportive of the plan and the management recommendations within it, including the proposal to amalgamate a number of City of Gosnells-owned/managed properties into one Crown Reserve for the purposes of conservation and recreation.	Noted
10	DPaW	Reference is made on page 30 to "part of Crown Reserve 47881, which is owned by the State of WA. The Department notes that it would have been preferable to clarify that Reserve 47881 is managed by the Department of Parks and Wildlife as part of Korung National Park.	Agreed – amendment to be made to reflect management of Reserve 47881 by the Department of Parks and Wildlife as part of Korung National Park

Number	Stakeholder	Comment	Response
11	DPaW	Reference is made on page 34 to outdoor rock climbing and abseiling at Churchman's Brook. This site is managed by the Department and due to risks associated with the instability of the rock, rock climbing and abseiling is also prohibited at this site in the interest of public safety.	Agreed – reference to Churchman's Brook to be removed.
12	DPaW	The Regional Parks Unit has prepared and adopted a Regional Parks Sign Manual to guide and coordinate the sign system within the regional parks. The Department recommends that the City of Gosnells gives due consideration to this manual for future sign design within the City's managed lands of Banyowla Regional Park.	Agreed – text to this effect will be included in the revised Plan.
13	Holcim	Section 2.0, para 3 – address name change from Readymix to Holcim – "Negotiations by the City resulted in a historic agreement in 1984 which saw the state government exchange with the Readymix Group (now Holcim Australia) 143 hectares of nearby land for 255 hectares of land including Ellis Brook Valley".	Agreed – additional text to be added
14	Holcim	Section 2.5, para 1 – additional information regarding quarry site – "Holcim Australia Pty Ltd operates the Gosnells Hard Rock Quarry on Lot 3 Cockram Road and a number of other Lots on Quarry and Cockram Roads, immediately to…." - "The relocation of an existing gate and reinforcement of rock barriers has gone a long way to preventing access to EBV from this adjacent Lot"	Agreed – additional text to be added
15	Holcim	Section 5.1.2, para 3 – "….an overflow storage site. Whilst Holcim are currently not extracting material from the site, and have situated no plant or processing equipment on the Lot to date, any future use of the site…."	Agreed – additional text to be added
16	Holcim	Map 2 – references to "Rinker Australia" to be changed to "Holcim Australia"	Agreed – amendments to be made
17	Holcim	Map 3 – Lot 233 Quarry Road is still owned and maintained by Holcim	No amendment required - Map 3 illustrates TPS zonings and identifies land use activities. In this instance, Lot 233 houses no land use and is zoned General Rural under the City's Town Planning Scheme.
18	Holcim	Map 3 – Lots 35, 36, 37, 38, 32, 31,30, 5037, 27 and 5000 are part of the Holcim quarry	No amendment required - Map 3 illustrates TPS zonings and identifies land use activities. In this instance, Lots 35, 36, 37, 38, 32, 31,30, 5037, 27 and 5000 are not part of the active quarry, and are zone General Rural under the City's Town Planning Scheme.
19	CoG Community Engagement	Section 5.2.1.1 – 1st Paragraph, 6th line – As a proposed Council adopted document, reference to personal communication with City officer should be removed.	Agreed – personal reference to be removed.
20	CoG Community	Section 5.2.1.4 – Other Potential Activities – The previous section talks about geocaching, which may be just scratching the surface. There is	Agreed – additional text to address Augmented Reality apps.

Number	Stakeholder	Comment	Response
	Engagement	a whole range of mobile device applications that can be used in the context of visiting EBV. These applications are called 'Augmented Reality' apps. These can range from games where the player needs to go to the location to get achievements (Ingress), to other apps which are mainly additional information overlays when you use your camera (Wikitude). It is recommended that the City ensures that information about Ellis Brook Valley is in as many online databases as possible (technical information, user reviews and photos), such as Wikipedia and Google Maps, because these are probably the information catalogues that many apps drill down into to get their info.	Agreed – text to be included in 5.2.2.1 Tourism and Marketing
21	CoG Planning Implementation	Recommendation 1: There is no in-principle planning reason preventing endorsement of a specific boundary for a spatial entity to be known as the EBV Reserve. The actual proposed boundary seems logical enough and the only planning related issue relates to how Council wants to use the zoned portions of lots 3 & 4 Rushton Road. Ideally the zoned land would be designated as P&R MRS reserve for reasons of consistency – but there is actual statutory impediment to the notion of a reserve containing zoned land. The use of the word 'Reserve' is linked to the notion that all its constituent lots should be amalgamated to form one reserve area/land parcel which is to have the purpose of Conservation and Recreation. There are some resource issue with this that should be recognised – see Rec. 2	Noted. The matter of Council's intentions regarding Lots 3 and 4 Rushton Road has also been raised by City Facilities (see comment 28). Additional text to be included in 5.1.1 Reserve Boundary regarding the need for Council to determine its intention for these properties, and for the proposed Reserve boundary to be subsequently finalised, based on Council's determination. Subsequent potential rezoning of these properties can be considered if Council considers their development potential fatally compromised, and endorses their inclusion in the proposed Reserve.
22	CoG Planning Implementation	Recommendation 2: The amalgamation rationale should be made more explicit. Nearly all of the area is already reserved as P&R under the MRS. There is no explicit reason for amalgamation apart maybe from the purposing of the reserve (Conservation and Recreation) and the perception that one reserve area is somehow tidier than a collection of separate lots. The resource issue relates to the need to survey the external boundary in the event of amalgamation (not the internal ones as they are targeted for elimination). It's a long boundary and fairly steep terrain.$$$. Advice from a licensed surveyor would be useful as there may be technicalities pertaining to public land etc. (we are not aware of any though).	Noted. Additional text to be included to expand on amalgamation rationale.
23	CoG Planning Implementation	Recommendation 3: Agree re removal of unconstructed portion of Cockram Road. It's not needed and is messy – especially if someone insisted on exercising a right of access. The whole length of the unconstructed portion of Cockram should be closed ie including the bit outside the proposed EBV reserve This would require OCM report and agreement of State Lands. From a technical perspective I note that Rushton Road reserve actually terminates at Cockram - the constructed carriageway does though continue to the main parking	Noted. Additional text to be included to expand on Cockram Road and Rushton Road reserves as advised.

Number	Stakeholder	Comment	Response
		area south east of the Cockram/Rushton road reserve intersection. This constructed but unreserved extension of Rushton Rd should be dedicated as a public road reserve (there may be liaibility issues if there was an accident and the road reserve was not formalised). This means that the intersection portion of Cockram would not be closed – it would become part of the Rushton St reserve	
24	CoG Planning Implementation	Recommendation 7: See comments at 1 and 2 above	Noted
25	CoG Planning Implementation	Recommendation 8: Agree – I assume we are talking about the gen. rural zoned land to west of EBV - environmental constraints are already a valid planning concern (as you know) and high lighting particular env. matters on GIS seems sensible	Noted
26	CoG Planning Implementation	Recommendation 9: Planning assessment procedures allow for this via your branch's input on DCU	Noted
27	CoG Planning Implementation	I note report commentary re some compatible type of use being established on the zoned land in Rushton – that sounds doable but it would need a DA to be determined and the use would need to be consistent with permissibilities in TPS6 - there's always 'Use not Listed'	Noted
28	CoG City Facilities	There is significant City of Gosnells land that is planned to be transferred to the Crown for environmental purposes. It is appropriate that this be justified before the report is placed before Council. It is also considered possible that objectives of the report could be met without the transfer of City assets to the extent suggested. It is understood that there has been no detailed contamination report on Lot 4 Rushton Road which may or may or not make it economic to remove. Also would the State be prepared to take over possible contaminated land?	Noted – see response to comment 21
29	CoG City Facilities	Any Management Order should contain a power to lease to cater for future possible needs. It is always easier to get approval up front than change it later.	Agreed – additional text to be included to this effect.