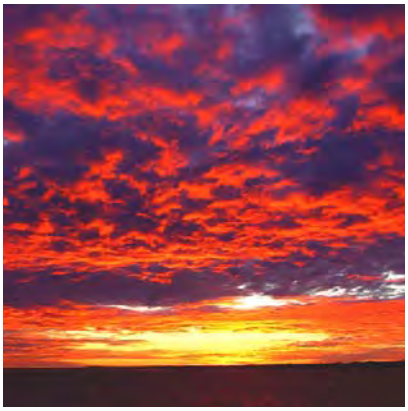
ENVIRONMENTAL ASSESSMENT REPORT

Baldivis East District Structure Plan



ENVIRONMENTAL ASSESSMENT REPORT

Baldivis East District Structure Plan

Prepared by:

RPS

38 Station Street, SUBIACO WA 6008
PO Box 465, SUBIACO WA 6904

T: 618 9211 1111
F: 618 9211 1122
E: environment@rpsgroup.com.au
W: rpsgroup.com.au

Prepared for:

RPS

38 Station Street
SUBIACO WA 6008

Report No: L07386
Version/Date: Rev 0, March 2011

Document Status

Version	Purpose of Document	Orig	Review	Review Date	Format Review	RPS Release Approval	Issue Date
Draft A	Draft for Internal Review	JesOHa	RusHol	11.05.09			
Draft B	Draft for Client Review	RusHol	KriBen	28.05.09			
Rev 0	Final for Issue	JohHal	BenH	08.03.11	SN 09.03.11	J. Halleen	09.03.11

Disclaimer

EXECUTIVE SUMMARY

The District Structure Plan (DSP) for the Baldivis East project area extends over a total area of 383 hectares (ha) is and is located immediately west of the Kwinana Freeway, approximately 40 kilometres (km) south of Perth (Figure 1).

Planning Context

In 2009, the Metropolitan Region Scheme (MRS) Amendments 1127/41, 1128/41 and 1129/41 rezoned the DSP project area from "Rural" to "Urban Deferred". The Environmental Protection Authority (EPA) assessed MRS Amendments, and subsequently advised the appropriate level of assessment was 'Scheme Not Assessed – Advice Given" (Appendix 1).

The EPA in its assessment of MRS Amendments 1127/41, 1128/41 and 1129/41 provided advice on the following environmental factors:

- Wetlands
- Acid Sulfate Soils
- Water Management
- Vegetation and Flora
- Noise
- Potential Land Use Conflict
- Site Contamination
- High Pressure Natural Gas Pipeline.

Purpose of the Environmental Assessment Report (EAR)

The purpose of the Baldivis East EAR is to address the following:

- the key factors outlined in the EPA assessment of the MRS Amendments
- facilitate the lifting of "Urban Deferment".

The EPA assessment identified a number of "other" environmental factors relevant to the re-zoning of Baldivis East landholdings. These factors and the potential environmental impacts were assessed against the relevant legislation, policies and guidelines to identify aspects of the proposal likely to require environmental and planning management measures. The key environmental issues identified by the EPA, including their potential impacts and proposed management commitments are summarised in Table 1.

Baldivis East DSP

The Baldivis East project area DSP facilitates the following:

1. The lifting of "Urban Deferment".

2. The City of Rockingham Town Planning Scheme (TPS) No. 2 requires a DSP to be prepared and submitted for "Residential Development Zones" prior to granting and/or recommending approval of any residential development within this zone.

The Baldivis East DSP has been proposed to provide a number of local and regional benefits including:

- additional high quality residential land for sale within the City of Rockingham
- demonstration of sustainable and affordable housing development concepts in the Baldivis area
- establish a framework for the location of major land uses, district and regional level road network and district level drainage requirements
- respect the identified physical environmental opportunities and constraints of the land and its surrounding context
- consider key infrastructure required for development
- reflect the objectives and aspirations of the local community
- ensure that landowners are dealt with in an equitable manner in terms of the provision of community infrastructure such as roads, schools, parkland and other community facilities
- provide a district level framework incorporating orderly and proper planning upon which more localised Local Structure Plans can be prepared.

Sustainability

It is recognised that going forward, there will be a need to ensure that the future development of the Baldivis East DSP area will meet the needs of current and future generations through integration of environmental protection, social advancement and economic prosperity.

In practical terms, sustainability principles can be readily incorporated into a detailed Local Structure Plan, which will ensure that various measures are implemented at the development stage. Such measures would typically include:

- the retention of existing remnant vegetation within the development area wherever practicable
- environmentally/site responsive design to minimise earthworks and natural ground disturbance

- responsiveness to greenhouse gas emissions and climate change through the implementation of greenhouse gas abatement measures if practical
- preservation of buffers to surrounding wetlands
- minimising the disturbance of Acid Sulfate Soils (ASS)
- incorporating good solar access and orientation in the design of lots
- application of water sensitive urban design to facilitate the integration of the land use and water planning systems
- encouraging water conservation by maximising the retention, detention and reuse of stormwater by maximising local recharge of groundwater, and by waste water reuse and water harvesting.
- response to community needs and identity
- physical and visual access to public open space
- flexibility and robustness in urban design
- recycling and reuse of materials
- use of local materials and services
- accessibility to public transport
- places that encourage cycling and walking
- growth and design of activity centres and transport corridors.

Table 1: Key Environmental Issues, including Impacts and Proposed Management

Environmental Issue	Objective	Potential Impacts	Management Mechanism	Timing
Wetlands	To maintain the integrity and ecological functions of any wetlands within the DSP site.	Earthworks may directly or indirectly impact the Resource Enhancement (RE) wetlands and associated vegetation. Unauthorised access, which may degrade vegetation through weed invasion Drainage, which may alter wetland function and hydrology.	A 30 m buffer will be maintained around all the RE Wetlands within the DSP site, which will be demarcated prior to earthworks commencing to ensure no physical impacts to the wetlands and the associated vegetation. Appropriate fencing will be erected around the buffer to the RE wetlands, to ensure no un-authorised access into the wetland and buffer area during and after construction. Locked access gates will allow emergency vehicle access in case of a fire or other emergency. Wetland management plans will be prepared, which will detail management of the wetland and buffers to ensure no impacts.	Subdivision design. Prior to subdivision. Prior to subdivision approval.
			District Water Management Strategies, which address water flow and hydrology have been prepared and signed off by the Department of Water (DoW). Subsequent Local Water Management Strategies (LWMS) and Urban Water Management Plans (UWMP) for separate stages of the development will be prepared and approved by the DoW prior to earthworks commencing.	LWMS: at local structure plan stage. UWMP: Prior to subdivision approval.
Acid Sulfate Soils (ASS)	To ensure that ASS are not disturbed during earthworks and construction activities.	According to regional DEC mapping and preliminary ASS investigations that have been undertaken across the DSP site, there is a possibility of encountering ASS during ground disturbing activities.	A detailed ASS investigation will be undertaken across the DSP site, and a subsequent management plan will be prepared (if required) to the satisfaction of the DEC.	Prior to subdivision.

Environmental Issue	Objective	Potential Impacts	Management Mechanism	Timing
Water Management	To maintain the quantity and quality of water so that existing and potential environmental values, including ecosystem function, are protected. To ensure stormwater run-off is adequately contained within the development, so as not to impact on the Peel–Harvey Catchment.	Change in hydrological regime as a result of changed landforms (from earthworks), which may alter natural flows. Discharge of stormwater, which may affect water quality and alter the natural keyhole surface topography and landform.	Two Drainage Water Management Strategies (DWMS) have been prepared for the entire DSP site area and addressed the following key issues: ▪ specific issues relevant to the site requiring further investigation or management ▪ water cycle management ▪ maintenance of groundwater quality and quantity ▪ water conservation objectives ▪ delivery of best practice stormwater management to ensure permissible discharges into the catchment drainage system. These DWMSs have been approved by the DoW (Appendix 2). LWMS and UWMP will be prepared at appropriate planning and development stages in accordance with *Better Urban Water Management Guidelines* (WAPC 2008). These plans will provide further detail in respect to water management relevant to detailed planning and engineering of the development design in consideration of the catchments sensitivity and will be prepared to the satisfaction of the DoW.	LWMS: Prior to LSP. UWMPs: Prior to subdivision approval.
Vegetation and Flora	To maintain the abundance, species diversity, geographic distribution and productivity of flora and fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.	Clearing Degradation of retained vegetation through uncontrolled public access and weed invasion Disturbance to vegetation from fire.	Vegetation will be retained where possible across the site, where engineering restrictions allow. Focus will be on the retention of larger trees within the DSP area that retain ecological value and provide fauna habitat potential along with feature amenity. Vegetation will be retained within the Tramway Reserve, with a minimisation in access crossings into the DSP area to allow retention and natural regeneration of vegetation within the Tramway Reserve.	Subdivision design. Prior to subdivision.

Environmental Issue	Objective	Potential Impacts	Management Mechanism	Timing
Potential Land Use Conflicts including adjacent Sand Extraction Operations.	To ensure surrounding land uses do not impact future development of the site.	There are several land uses occurring within the local area that may impact on development and on future residents. Potential impacts from these land uses include: ▪ noise ▪ dust ▪ traffic ▪ vibration ▪ visual amenity.	Where the recommended buffers from surrounding land uses impact on the development site, further investigations will be undertaken regarding the specific characteristics of the land use to establish appropriate buffers (if required). In respect to the adjacent sand extraction operations, investigations as to the life of the operation will be undertaken, to allow development to be staged or designed to ensure there are no impacts.	Subdivision design. Subdivision design.
Site Contamination	To ensure previous land uses within and surrounding the site do not impact on proposed development of the site.	The DEC contaminated sites registrar details five potentially contaminated sites located west and north of the site, which could potentially impact on the site through migration of any contaminating substance via groundwater.	It is considered unlikely that contamination from these sites will impact on the DSP site, based on groundwater flow direction. A Preliminary Site Investigation (PSI) will be undertaken to confirm the presence/absence of contamination at the site prior to ground disturbing activities.	PSI – Individual landowner's responsibility.
High Pressure Natural Gas Pipeline	To minimise potential risk to future residents or construction workers from the high pressure gas pipeline.	There are potential safety concerns related to high pressure gas pipelines if proper setbacks are not observed in respect to planning and development design.	Provided proper structural management measures are put in place, such as a 3 m concrete coverage over the pipeline then residential development is acceptable up to the boundary of the corridor. The landowners with lots affected by the pipeline corridor have commissioned a specialist consultant to undertake a risk assessment of the pipeline in respect to proposed development. This risk assessment will identify any potential safety risks, including proposed mitigation strategies, which will be incorporated into future planning for the DSP site.	Subdivision design. Subdivision assessment.

TABLE OF CONTENTS

Page

TABLES

(contained within report text) **Page**

FIGURES

(compiled at rear of report)

APPENDICES

1.0 INTRODUCTION

1.1 Background

The Baldivis East DSP project area extends over a total area of 383 ha is and is located immediately west of the Kwinana Freeway, approximately 40 km south of Perth (Figure 1).

The site comprises of thirty-two separate landholdings. The dominant land use is broad scale farming, consisting primarily of cattle farming. Other smaller land uses include a veterinary clinic and plant nursery.

An aerial photograph of the site is presented as Figure 2.

The key landowners within the site, including Golden Asset Pty Ltd, Watson Property Group, Peet Limited, Australand Holding Limited and OSWAL Developments are proposing to develop the site for residential purposes consistent with the current "Urban Deferred" zoning. Several private owners are also involved in this venture. Lot ownership is illustrated both below and in Figure 3.

Table 2: Lot Owners and Lots located within the Proposed Baldivis East Development

Lot Owner	Lots
Golden Assets Pty Ltd	Lots 460 to 463 Baldivis Road
OSWAL Developments	Lots 1, 2, 5, 6, 510 to 513 Baldivis Road Lots 515 to 520 Sabrina Road Lots 3 and 4 Zig Zag Road
Peet Limited	Lot 129 Baldivis Road
Australand Holding Limited	Lots 104, 105, 543, 544 and 1000 Baldivis Road
Watson Property Group	Lots 3, 921 and 922 Baldivis Road
Private Landholders	Lots 447 Telephone Lane Lots 459 and 709 Baldivis Road Lots 101 to 103 Zig Zag Road 105 and 9000 Paparone Road Lots 10, 545, 746 to 750 Baldivis Road

1.2 Planning Approval Background

An MRS Amendment to rezone the DSP site from "Rural" to "Urban" was initiated by the Western Australian Planning Authority (WAPC) in 2006, (Amendment No. 1127/41, 1128/41 and 1129/41 – Baldivis East).

In 2009, the combined MRS Amendments 1127/41, 1128/41 and 1129/were formally adopted by the WAPC, post assessment by the EPA.

1.2.1 MRS Amendment Planning Consideration: East Rockingham Waste Water Treatment Plant

The WAPC's decision to rezone the DSP site "Urban Deferred" (instead of "Urban") was premised upon the Water Corporation's submission which stated there was limited capacity of the regional waste water infrastructure to treat any further residential development.

Currently the Woodman Point, Point Peron and Kwinana Waste Water Treatment Plants (WWTPs) service the southern corridor from Kwinana to Singleton. However, both the Kwinana and Point Peron WWTPs were engineered to serve a limited population.

The planned East Rockingham WWTP is planned to cater for this growth and replace the Point Peron WWTP.

Water Corporation expects that the WWTP at East Rockingham will ultimately service about 700,000 people and it may also service a large portion of the East Rockingham industrial area. Water Corporation anticipates that the WWTP would be built in stages over a number of years to cater for the growing southern corridor population inclusive of the Baldivis East area, with the forecasted commissioning date of 2015.

The Water Corporation in July 2010 received approval from the Commonwealth Minister for Sustainability, Environment, Water, Population and Culture (SEWPC) for the construction of the East Rockingham WWTP.

In July 2010 the EPA reviewed and determined not to assess MRS Amendment 1196/57 East Rockingham WWTP. Amendment 1196/57 revised the East Rockingham WWTP Reserve for "Public Purposes", which enables the development of a WWTP within the East Rockingham Industrial Park.

The East Rockingham WWTP infrastructure corridor in 2010 has undertaken all the necessary environmental studies (i.e. vegetation and flora and fauna) to support a referral and assessment in accordance with the *Environment Protection Biodiversity Act 1999* (EPBC Act). A decision on this referral is due mid to late 2011.

Circumstances have changed significantly since the gazettal of the "Urban Deferred", rather than "Urban" zoning over the DSP site. The Water Corporation has advanced the environmental and planning approvals for the East Rockingham WWTP. The Baldivis East DSP site has demonstrated the "Urban Deferred" zoned land has the capacity to support sustainable urban development from a planning, environmental, transport and engineering services perspective.

1.3 Environmental Assessment Background

The EPA assessed MRS Amendments in September-October 2006. The EPA advised that the appropriate level of assessment was 'scheme Not Assessed – Advice Given" (Appendix 1).

The key environmental factors assessed by the EPA which require addressing through structure plan and subdivision process include:

- Wetlands
- Acid Sulfate Soils
- Water Management
- Vegetation and Flora
- Noise
- Potential Land Use Conflict
- Site Contamination
- High Pressure Natural Gas Pipeline.

The management of the key environmental factors are addressed further in Section 6.0.

1.4 Purpose of this Report

This report has been prepared to address the following:

- the key factors outlined in the EPA assessment of the MRS Amendments
- facilitate the lifting of Urban Deferment.

The broad intent of this document is to:

1. Place the proposal in the context of the natural and socio-economic local and regional environments.

2. Adequately describe all components of the DSP such that the WAPC and the City of Rockingham has the required advice to review and consider a well defined DSP.

3. Describe and illustrate how each of the identified environmental impacts are minimised and will be managed.

1.5 Previous Reports

The Baldivis East DSP area landholdings in order to assist the WAPC's and the EPA's consideration of the MRS Amendments for the Baldivis East project area considerable environment studies and reporting were undertaken. Previous reports produced for lots within the Baldivis East DSP project area include:

1. Environmental Assessment Report for Golden Asset Pty Ltd (August 2005)

Covering approximately 195 ha between Millar Road and Zig Zag Road, Baldivis, this report was prepared to accompany a rezoning application and provides detailed information regarding the environmental issues associated with the proposed rezoning based on desktop reviews and site assessments.

2. Assessment of Significant Trees by RPS for SAS Global Property Group (May 2007)

This report identified trees for retention within the subdivision for environmental and aesthetic purposes.

3. Baldivis East District Water Management Strategy by Parsons Brinckerhoff for Australand Holding Limited, Watson Property Group and Peet Limited (October 2007)

This report defined the water management strategy at the district level for the Baldivis East Structure Plan area.

4. North Baldivis East District Water Management Strategy by Parsons Brinckerhoff for SAS Global, Golden Assets Pty Ltd and OSWAL Developments (September 2008)

This report defined the water management strategy at the district level for the North Baldivis East Structure Plan area.

5. Geotechnical Investigation for Watson Property Group by Coffey Geosciences Pty Ltd (June 2006)

This report presents the results of a geotechnical investigation carried out by Coffey Geosciences Pty Ltd for the proposed development at Lots 921, 922 Baldivis Road and Lot 3 Folly Road, Baldivis.

6. Report on Geotechnical and Preliminary Acid Sulfate Soil Investigation for SAS Global Baldivis Ltd by Douglas Partners (January 2008)

This report presents the geotechnical and preliminary Acid Sulfate Soil investigation for a proposed residential subdivision at Lots 447, 449 and 709 Pug Road, Baldivis.

7. Report on Geotechnical and Preliminary Acid Sulfate Soil Investigations for Golden Asset Pty Ltd by Douglas Partners (June 2008)

This report presents the geotechnical and preliminary ASS investigations for a proposed residential subdivision at Lots 460 to 463 Baldivis Road, Baldivis.

8. Report on Geotechnical and Preliminary Acid Sulfate Soil Investigations for OSWAL Developments Pty Ltd by Douglas Partners (June 2008)

This report presents the geotechnical and preliminary ASS investigations for a proposed residential subdivision at Lots 1 to 6, 510 to 513, 515 to 521 and Lot 463 Zig Zag Road and Baldivis Road, Baldivis.

9. Metropolitan Region Scheme Rezoning Environmental Review for Watson Property Group Investments Ltd and Watson Property Group Baldivis Pty Ltd by Cardno BSD (March 2006)

This report documents the investigations undertaken to assess the potential environmental constraints for rezoning and development of Lot 3 Folly Road and Lots 921 and 922 Baldivis Road, Baldivis.

2.0 STRUCTURE PLAN

2.1 Metropolitan Region Scheme Zoning

The study area is zoned "Urban Deferred" under the MRS. The study area is situated immediately west of the Kwinana Freeway road reserve ("Primary Regional Roads") and north of Safety Bay Road ("Other Regional Roads"). Mundijong Road ("Other Regional Road") traverses the centre of the study area. A 50 metre (m) wide portion of the adjacent Baldivis Road Reserve is reserved "Parks and Recreation" reflecting the historic tramway reserve (Figure 4)

2.2 City of Rockingham Town Planning Scheme Zoning

The northern and southern portions of the Baldivis East project area are currently zoned "Rural" under the City of Rockingham TPS No. 2. The central portion of the study area is zoned 'Special Rural" under TPS No. 2.

Upon the lifting of "Urban Deferment" under the MRS is lifted, it is anticipated that the TPS will be consistent with the MRS zoning and be rezoned to a "Development" zoning. This "Development" zoning is consistent with the zoning process of adjacent developments, including the Baldivis Town Centre and Baldivis Central Estates.

Land zoned "Development" under TPS No. 2 requires an approved Local Structure Plan (LSP) by the City of Rockingham and the WAPC. At the LSP and subsequent subdivision stages contributions can be levied for common infrastructure items if required.

2.3 Baldivis East District Structure Plan

The Baldivis East DSP facilitates the following:

- the lifting of "Urban Deferment"
- the City of Rockingham Town Planning Scheme (TPS) No. 2 requires a DSP to be prepared and submitted for "Residential Development Zones" prior to granting and/or recommending approval of any residential development within this zone.

The Baldivis East DSP has been proposed to provide a number of local and regional benefits including:

- additional high quality residential land for sale within the City of Rockingham
- demonstration of sustainable and affordable housing development concepts in the Baldivis area

- establish a framework for the location of major land uses, district and regional level road network and district level drainage requirements
- respect the identified physical environmental opportunities and constraints of the land and its surrounding context
- consider key infrastructure required for development
- reflect the objectives and aspirations of the local community
- ensure that landowners are dealt with in an equitable manner in terms of the provision of community infrastructure such as roads, schools, parkland and other community facilities
- provide a district level framework incorporating orderly and proper planning upon which more localised Local Structure Plans can be prepared.

Figure 5 illustrates the Baldivis East DSP.

2.4 Sustainability

It is recognised that going forward, there will be a need to ensure that the future development of the Baldivis East DSP area will meet the needs of current and future generations through integration of environmental protection, social advancement and economic prosperity.

In practical terms, sustainability principles can be readily incorporated into a detailed LSP, which will ensure that various measures are implemented at the development stage. Such measures would typically include:

- the retention of existing remnant vegetation within the development area wherever practicable.
- environmentally/site responsive design to minimise earthworks and natural ground disturbance
- responsiveness to greenhouse gas emissions and climate change through the implementation of greenhouse gas abatement measures if practical
- preservation of buffers to surrounding wetlands
- minimising the disturbance of ASS
- incorporating good solar access and orientation in the design of lots

- application of water sensitive urban design to facilitate the integration of the land use and water planning systems
- encouraging water conservation by maximising the retention, detention and reuse of stormwater by maximising local recharge of groundwater, and by waste water reuse and water harvesting
- response to community needs and identity
- physical and visual access to public open space
- flexibility and robustness in urban design
- recycling and reuse of materials
- use of local materials and services
- accessibility to public transport
- places that encourage cycling and walking
- growth and design of activity centres and transport corridors.

3.0 LAND USE

The purpose of this section is to identify the historic and current significant land uses within or adjacent to the DSP site.

3.1 Land Use Review

A review of the historical Certificates of Title and aerial photography for portions of the DSP site was conducted by Cardno BSD and RPS in March 2006.

There was evidence of a dairy having existed on Lot 921; however this is no longer in operation. Apart from this historical use, the significant land use within the DSP site has been broad scale farming / agriculture since 1965.

A veterinary clinic and evidence of a plant nursery are also recent land uses within the DSP site.

3.1.1 Surrounding Land Use

The key land uses surrounding the Baldivis East DSP project area are outlined below:

- The landholding is adjacent to the Kwinana Freeway.
- The Rockingham Regional Memorial Park is located immediately west of the site on the corner of Millar Road and Baldivis Road.
- A sand quarry is also located to the immediate south of Memorial Park.
- The existing Dampier to Bunbury high pressure natural gas pipeline is located within a 30 m wide easement which traverses the site.
- A poultry farm and market garden are located on the western side of Baldivis Road adjacent to the southern half of the site.
- The Tramway Nature Reserve is parallel to Baldivis Road along the western boundary of the site, and contains patches of vegetation in Good condition.

4.0 LEGISLATIVE FRAMEWORK

4.1 Commonwealth Legislation

An action which will have, or is likely to have, a significant impact on a matter of "National Environmental Significance" (e.g. black cockatoos) must be referred to SEWPC under the EPBC Act.

The responsibility for determining the significant impact and referral (if required) to SEWPC in accordance with the EPBC Act will be the individual landowners within the Baldivis East DSP project area.

4.2 State Legislation, Guidelines and Standards

4.2.1 State Legislation

The EP Act is the primary legislation on environmental impact assessment and protection in Western Australia. The EP Act also makes provision for the establishment of the EPA for the conservation, preservation, protection, enhancement and management of the environment and prevention, control and abatement of pollution.

Other Acts and regulations and their relevance to the Baldivis East DSP is provided in Table 3 below.

Table 3: State Government Legislation Application to the Baldivis East DSP

Legislation	Proposal Responsible Government Agency	Aspect
Aboriginal Heritage Act 1972	Department of Indigenous Affairs	Archaeological and ethnographic heritage
Agricultural and Related Resources Protection Act 1976	Department of Agriculture	Weeds and feral pest animals
Bush Fires Act 1954	Bush Fires Board	Wild fire control
Conservation and Land Management Act 1984	Department of Environment and Conservation	Flora and fauna / habitat / weeds / pests / diseases
Contaminated Sites Act 2003	Department of Environment and Conservation	Management of pollution
Environmental Protection (Clearing of Native Vegetation) Regulations 2004	Department of Environment and Conservation	Clearing of native vegetation
Land Drainage Act 1925	Department of Water	The use of drains and drainage water
Local Government Act 1995	City of Rockingham	Structure planning and development approvals
Planning and Development Act 2005	Department of Planning	Structure planning and subdivision approval

4.2.2 Applicable Guidelines and Standards

In addition to the above mentioned legislative requirements, the EPA provides direction for environmental protection and impact assessment through published guidelines and position statements. The key position statements and guidelines likely to be of relevance to the Baldivis East DSP are listed in Table 4.

Table 4: EPA Guidance and Position Statements relevant to Baldivis East DSP

Statement No.	Title	Application
Guidance Statements		
18	Prevention of air quality impacts from land development sites	Provides guidance on the control of dust during clearing and earthworks associated with land development projects
33	Environmental Guidance for Planning and Development	▪ Provides an overview of environmental protection processes and information, to assist land use planning and development in Western Australia. ▪ Describe referral and environmental impact assessment processes under Part IV of the *Environmental Protection Act 1986* and, in particular, the procedures applied to schemes. ▪ Provides the EPA's advice on a range of environmental factors in order to assist participants in land use planning and development to protect, conserve and enhance the environment.
Position Statements		
6	Towards Sustainability	Outlines broad sustainability principles and guidance on the relevant issues of sustainable communities, transport and energy efficiency

5.0 MANAGEMENT EXISTING ENVIRONMENT

5.1 Topography, Soils and Geology

5.1.1 Topography and Soils

The site is undulating with several roads dissecting it. The topography of the site ranges from 4 m Australian Height Datum (AHD) to 10 m AHD (Figure 6).

The soils within the Baldivis East DSP are comprise of Serpentine River soil (and landform unit), with a small area of Herdsman and Cottesloe soil (and landform units) (Churchward and McArthur, 1978) (Figure 7). These soil types are described further below:

- Serpentine soils are poorly drained plains with fine textured alluvial soils.
- Herdsman soils are peaty swamps with Bassendean (sand plains with low dunes and occasional swamps; iron or humus podzols; areas of complex steep dunes) and Karrakatta (undulating landscape with deep yellow sands over limestone) units.
- Cottesloe soils are a low hilly landscape with shallow brown sands over limestone (Churchward and McArthur, 1978).

Four geotechnical reports have been carried out for areas within the site. These reports were carried out for:

- Lots 3, 921 and 922 Baldivis Road (Coffey Geosciences Pty Ltd, 2006)
- Lots 447, 449 and 709 Pug Road (Douglas Partners, 2008a)
- Lots 460 to 463 Baldivis Road (Douglas Partners, 2008b)
- Lots 1 to 6, 510 to 513, 515 to 521 and 463 Baldivis and Zig Zag Roads (Douglas Partners, 2008c).

These reports were prepared to guide any proposed construction activities on the site in respect to soil stability and suitability.

5.1.2 Acid Sulfate Soils

Based on existing mapping, the potential for ASS across the site was deemed to be moderate to low risk of occurring within three metres of the surface (Figure 8). The risk of disturbing ASS ultimately depends not only on the risk characteristics but also on the nature of the urban development itself.

Based on risk mapping there is unlikely to be significant ASS issues associated with the upper soil profile. Issues that may become apparent in relation to the installation of underground services or other subdivision earthworks will be adequately managed through the planning process.

Previous reports on the geotechnical and preliminary ASS investigations on sections of the site (Douglas Partners, 2008 a, b and c) concluded the possibility of Actual Acid Sulfate Soil (AASS) or Potential Acid Sulfate Soil (PASS) is high in some areas within the Baldivis East DSP project area that require further investigation prior site works commence. ASS management will be undertaken by individual landholders in accordance with DEC ASS guidelines. This can be managed through the planning assessment and subdivision approvals process.

5.2 Hydrology

5.2.1 Groundwater

Based on existing mapping, the groundwater levels on the site range from 2 m AHD in the south to 4 m AHD in the north-east corner of the site (DoW, 2004). Groundwater flow traverses in a west-south-westerly direction (Figure 9).

Investigations conducted by Douglas Partners in January 2008 between Pug Road and Mundijong demonstrated groundwater levels at depths ranging from 3.6 m AHD to 2.2 m AHD. Further investigations between Mundijong Road and Zig Zag Road demonstrated groundwater levels varying between 3.5 m AHD and 2.3 m AHD (Parsons Brinckerhoff, 2008). These investigations were undertaken during a particularly dry period of time and thus would constitute minimum annual groundwater levels (Parsons Brinckerhoff, 2008).

5.2.2 Surface Water

The site is situated within the Peel–Harvey Catchment. A subsection of the Peel Drain in the vicinity of the site (Lot 922 Baldivis Road) provides a potential pathway for site derived water to the Peel–Harvey Estuarine System. The Peel–Harvey Estuarine System is a regionally significant water body and has been placed on the Register of the National Estate.

Historic issues with nutrient export from its catchment and the directly related water quality and eutrophication issues in the estuary resulted in the construction of the "Dawesville Cut" and a significant focus on the management of the Peel–Harvey Catchment. Conclusions drawn by Parsons Brinckerhoff state that due to the topography of the site, rainfall would sheet flow until encountering either the Peel Main Drain or the culverts surrounding the Kwinana Freeway (Parsons Brinckerhoff, 2008).

5.3 Wetlands

5.3.1 Swan Coastal Plain Environmental Protection Policy Wetlands

While no wetlands identified in the *Environmental Protection (Peel Inlet Harvey Estuary) Policy 1992 (EPP)* are located on the site, one EPP wetland is located in the vicinity. This wetland is located to the east of the Kwinana Freeway (Folly Pool) and as such is not considered to be a constraint to the development of the site, as the groundwater flow direction is generally westerly away from the wetland (DoW, 2004). The location of this wetland is illustrated on Figure 10.

5.3.2 Geomorphic Wetlands

The majority of the site is classified by the Department of Environment and Conservation as a Multiple Use Management Category Wetland (MU) (UFI 14409, UFI 14648 and UFI 15409) (Figure 10). This wetland is in a highly degraded state and appears to be disconnected from any other wetland environments. Several small Resource Enhancement Category Wetlands (RE)(UFI 14406, UFI 14407, UFI 14408 and UFI 16410) are also present within the northern half of the site.

Wetland Reclassification assessments have been conducted for the wetlands located on Lots 447, 459, 462, 463 and 709 Baldivis Road. The boundary of these wetlands were subsequently adjusted and the management category changed to reflect their current condition as appropriate (RPS BBG, 2005 and RPS, 2007).

5.4 Flora and Vegetation

5.4.1 Background Information

A review of aerial photography confirms that there are few areas of remnant vegetation remaining within the site. As a result of the historical land uses (agricultural activities) the majority of the site has either been completely cleared or parkland cleared. The main intact area of remnant vegetation remaining at the site is located within Lots 1 and 2 Baldivis Road. Scattered vegetation is also present in other locations but with limited understorey present (if any). Some larger individual trees are also spread throughout the site.

Situated on the southern section of the Swan Coastal Plain, the site would have originally comprised of two vegetation complexes, Bassendean Complex – Central and South and the Serpentine River Complex. The Bassendean Complex – Central and South is described as vegetation ranging from woodlands of *Eucalyptus marginata – Casurina fraserana – Banksia* spp. to low woodland of *Melaleuca* spp. and sedgelands on the moister sites. This area includes the transition of *Eucalyptus marginata* to *Eucalyptus todtiana* in the vicinity of Perth. The Serpentine River Complex is described as closed scrub of *Melaleuca* spp. and fringing woodland of *Eucalyptus rudis – Melaleuca rhaphiophylla* along streams (Heddle et al. 1980).

5.4.2 Bush Forever

Two Bush Forever sites are located in proximity to the site (Figure 11). One is to the east of the Kwinana Freeway and the other is located to the west of the site. The Bush Forever Site to the east of the Kwinana Freeway is Site 418, Folly Pool, Baldivis. The Bush Forever Site located to the west of the site is Site 356, Lake Colloongup, Lake Walyungup and adjacent Bushland, Hillman to Port Kennedy.

As these sites are not immediately adjacent to the site, they are not considered a constraint upon development.

5.4.3 Tramway Reserve

The Tramway Nature Reserve traverses parallel to Baldivis Road along the western boundary of the site, and contains patches of vegetation in good condition, with some evidence of disturbance and weed growth.

The location of the Tramway Reserve is illustrated in Figure 11.

5.5 Fauna

The majority of the site has been historically cleared and as a consequence significant fauna habitat has been largely removed. Opportunistic fauna may utilise vegetated areas within the site, especially some of the larger tress dotted throughout the site, although surrounding uncleared bushland would provide more significant habitat areas.

An analysis of the matters of NES protected under the EPBC Act reviewed against the habitat present within the project area concluded the likely key species potentially impacted are the three endemic black cockatoo species (Red Tailed, Baudin's and Carnaby's). These species may opportunistically roost / forage in the larger trees at certain periods during the year.

6.0 HERITAGE

6.1 Aboriginal Heritage

A search of the Department of Indigenous Affairs (DIA) Database showed no registered Aboriginal heritage sites within the Baldivis East DSP project area. However, five Aboriginal Sites are located in the vicinity of the site. These are: an Artefacts Scatter Site located within the Folly Pool Bush Forever Site. Three Artefact Scatter Sites located along Baldivis Road and an Artefact Site located to the north of the site.

All contractors working on the development will be made aware of their responsibilities under the *Aboriginal Heritage Act 1972* with regard to finding potential archaeological sites. In the event that a potential site is discovered, all work in the area will cease and the DIA will be contacted.

7.0 POTENTIAL IMPACTS AND MANAGEMENT

The following Environmental Assessment Reports for the Baldivis East landholdings have been submitted to the EPA Service Unit:

- RPS Bowman Bishaw Gorham. 2005. Baldivis Road Landholdings, Baldivis – Environmental Assessment Report (Report No. L05119, August 2005). Report prepared for Golden Assets Pty Ltd

- Cardno BSD. 2006. Lot 3 Folly Road and Lot 921 and Lot 922 Baldivis Road, Baldivis; Metropolitan Region Scheme Rezoning Environmental Review. Report Prepared for Watson Property Group Investments Ltd.

Following review of the MRS Amendments the EPA advised that the appropriate level of assessment was 'scheme Not Assessed – Advice Given". The key environmental factors identified by the EPA included:

- Wetlands
- Acid Sulfate Soils
- Water Management
- Vegetation and Flora
- Site Contamination.

The following identified factors by the EPA are addressed in Section 8:

- Noise
- Potential Land Use Conflict
- High Pressure Natural Gas Pipeline.

7.1 Wetlands

EPA objective:

- To maintain and where possible enhance, the integrity, ecological function and environmental values of wetlands.

7.1.1 Relevant Policies, Guidelines and Standards

The DEC has published a number of guidelines relating to the identification, reporting and management of contaminated sites and ASS in WA, including the Contaminated Site Management Series report and Identification and Investigation of Acid Sulfate Soils and Acidic Landscapes (DEC, 2009).

7.1.2 Relevant Policies, Guidelines and Standards

The key policy and guidance relating to Swan Coastal Plain wetlands include:

- EPA Position 4: Environmental Protection of Wetlands
- EPA Guidance 33: Draft environmental guidance for planning and development
- Environmental Protection (Swan Coastal Plain Lakes) Policy 1992

7.1.3 Potential Impacts

The impacts to the wetlands within the Baldivis East DSP area include:

- clearing of wetland vegetation
- increased weed infestation in and around identified wetlands
- erosion and sedimentation as a result of earthworks
- Acid Sulfate Soils impacts resulting from earthworks or dewatering.

7.1.4 Environmental Management and Mitigation

A review of the available datasets for *Environmental Protection (Peel Inlet Harvey Estuary) Policy 1992* and DEC Geomorphic Wetlands identified wetlands located both on and in the vicinity of the site (Figure 10). The majority of the site is mapped as a MU Management Category Wetland (UFI 14409, UFI 14648 and UFI 15409). Several small RE Management Category Wetlands (UFI 14406, UFI 14407, UFI 14408 and UFI 16410) are also mapped as within the northern half of the site. The MU wetland on site is in an extremely degraded state due to its historical use for agricultural purposes. DEC descriptions and management objectives for RE and MU category wetlands are as follows:

- Resource Enhancement (RE): Wetlands which may have been partially modified but still support substantial ecological attributes and functions. Priority wetlands. Ultimate objective is for management, restoration and protection towards improving their conservation value. These wetlands have the potential to be restored to conservation category. This can be achieved by restoring wetland structure, function and biodiversity. Protection is recommended through a number of mechanisms.

- Multiple Use (MU): Wetlands with few important ecological attributes and functions remaining. Use, development and management should be considered in the context of ecologically sustainable development and best management practice catchment planning through Landcare. Should be considered in strategic planning (e.g. drainage, town/land use planning).

It is proposed to maintain a minimum 30 m buffer to all RE Wetlands present at the site. This will be reflected in detailed design stages and will be demarcated prior to earthworks commencing to ensure no physical impacts to the wetlands and the associated vegetation.

Appropriate fencing will be erected around the buffer to the RE wetlands, to ensure either controlled access, where appropriate or no access into the wetland and buffer area during and post construction in the residential phase. Locked access gates will allow emergency vehicle access in case of a fire or other emergency.

In accordance with the EPA's advice wetland management plans are proposed to be prepared as a condition of subdivision for landholdings containing RE Wetlands. This will be undertaken prior to subdivision approval.

7.1.5 Predicted Outcome

RE Wetlands will be protected from construction activity and managed with fencing and a management plan post residential development. The excavation of ASS and dewatering for the project will be managed in accordance with DEC Guidelines to result in no adverse impacts to the environment.

7.2 Acid Sulfate Soils

EPA objectives:

- to maintain the integrity, ecological function and environmental values of the soil and landform
- to ensure that emissions do not adversely affect environmental values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards
- to ensure that rehabilitation achieves an acceptable standard compatible with the intended land use, and consistent with appropriate criteria.

7.2.1 Relevant Policies, Guidelines and Standards

The DEC has published a number of guidelines relating to the identification, reporting and management of contaminated sites and ASS in WA, including the Contaminated Site Management Series report and Identification and Investigation of Acid Sulfate Soils and Acidic Landscapes (DEC, 2009).

7.2.2 Potential Impacts

According to existing DEC mapping, the risk of ASS occurring within 3 m of the surface is moderate to low.

Previous reports on the geotechnical and preliminary ASS investigations on sections of the site reveal the possibility of the occurrence of ASS is high in some areas and that further investigation should be completed before site works commence.

Based on this, and the advice of the EPA prior to ground disturbing works, an ASS investigation will be undertaken and a Management Plan will be prepared (if required) for submission to the DEC.

7.2.3 Environmental Management and Mitigation

An ASS investigation will be undertaken by each individual landowner prior to subdivision (clearance of titles) to confirm the ASS risk in this area. A DEC guideline compliant ASS and Dewatering Management Plan will, if required, then be developed and implemented to manage:

- all proposed dewatering proposed in association with residential development (in accordance with subdivision and servicing layout)
- any excavation in actual or potential ASS areas.

The ASS Management Plan will prescribe appropriate treatment/and or disposal of ASS materials and abstracted groundwater.

7.2.4 Predicted Outcome

Naturally elevated levels of arsenic in the groundwater of the site are unlikely to pose a threat to human health or safety as a result of the project. The excavation of ASS and dewatering for the project will be managed in accordance with DEC Guidelines to result in no adverse impacts to the environment.

7.3 Water Management

EPA objectives:

- to maintain the quantity of water (surface and ground) so that existing and potential environmental values are protected
- to ensure that the quality of water emissions (surface and ground) do not adversely affect environmental values or the health, welfare and amenity of people and land uses, and meets statutory requirements and acceptable standards

7.3.1 Relevant Policies, Guidelines and Standards

The WAPC has developed the Better Urban Water Management 2008 guidelines as part of a strategy for the implementation of water sensitive urban design, and to provide guidance on the implementation of State Planning Policy 2.9 Water Resources.

7.3.2 Potential Impacts

7.3.2.1 Groundwater Flows and Levels

Groundwater flows and levels refers to the net increase or decrease in groundwater recharge that the development will have on the local aquifer. An example of how a development may impact on the groundwater of a site is that clearing the site could increase recharge to the groundwater system as less water will be utilised in evapotranspiration.

7.3.2.2 Groundwater Quality

The groundwater quality was sampled in 2006–2007. The existing quality of groundwater based on available monitoring bore data indicates reasonable water quality. Potential implications of the Baldivis East DSP and future subdivisions include:

- nutrients, such as fertiliser, entering the groundwater due to the high permeability of soils
- contaminants, such as oils and chemicals, washing into the groundwater during construction and / or residential phases of the project

7.3.3 Environmental Management and Mitigation

7.3.3.1 Overview

A number of management / design measures will be implemented to reduce the impact of the development on groundwater flows, levels or quality, the function and environmental values of the site, or its interconnected areas. Management measures relevant to construction and the residential-living phase are described under the relevant headings below:

7.3.3.2 Urban Water Management

Two DWMSs have been prepared and endorsed by the DoW for the site. The first DWMS was prepared by Parsons Brinkerhoff in October 2007 and covered the southern portion of the site. The second DWMS was prepared by Parsons Brinkerhoff in September 2008 and covers the remainder of the site.

The DWMSs address the following:

- identification of specific issues/areas likely to require specialised investigation and management
- description of constraints to total water management within the proposal area
- interim water-related objectives
- total water cycle management
- discussions of potential water sources for drinking water and other uses
- stormwater management
- assessment of past land use with potential for contamination
- water quality monitoring

Local Water Management Strategies (LWMS) and Urban Water Management Plans (UWMP) are proposed to be prepared at the planning and development in accordance with the Better Urban Water Management guidelines (WAPC, 2008) at subsequent planning stages i.e. at Local Structure Planning and Subdivision.

The LWMS will detail the following:

- the adoption of a treatment train approach to run-off, through the use of Water Sensitive Urban Design (WSUD) Best Management Practices (BMPs) such as permeable pavements, buffer strips, bioretention swales, rain gardens, biofiltration pockets, median swales, gross pollutant traps and infiltration basins, where appropriate
- adopting a maintenance plan for the upkeep of the treatment train.

7.3.3.3 Stormwater Management

The water management strategy will incorporate:

WSUD – the following structural Best Management Practices (BMPs) will be used to address water quality for Baldivis East:

- soakwells within lots and for use as gully pits
- retention/detention basins
- bioretention swales
- vegetated swales.

Flood Management – surface water will be directed to a drainage corridor using existing drainage paths, subject to suitability of site topography and flow path. The following strategies will be considered to provide conveyance for flood events:

- create surface drainage swales either in existing setting or between fill platforms
- use distributor roads as landscaped swale drainage within road reserves

Conceptual Stormwater Management System – a system to maintain post-development flows into the Peel Main Drain to a permissible site discharge of 5 L/s/ha, consisting of the following components:

- use of WSUD BMPs such as bioretention swales to manage water quality (nutrient loads) and flows retention of run-off from storm events of up to 1 year 1 hour ARI within the catchment using detention systems located near the source of run-off in line with WSUD principles conveyance of flood events

- consideration of water conservation options, such as stormwater reuse, rainwater tanks, Waterwise landscaping and Waterwise POS area design use of non-structural practices (e.g. ongoing maintenance programs, soil amendment, public education campaigns in collaboration with local authorities) to ensure the stormwater management system functions as designed.

Groundwater Management – a subsoil drainage system will be considered to achieve sufficient separation between peak groundwater level and proposed lot levels. The controlling groundwater level (CGL) would be assessed to avoid impact on groundwater dependent ecosystems.

7.3.3.4 Catchment Management

The site is located within the Peel Inlet–Harvey Estuary Catchment. This catchment is managed by the Peel–Harvey Catchment Council in collaboration with landholders, community groups, industry, the Australian Government, the state government and local governments.

It is important to note that the project will be connected to a reticulated sewer system that exports potential nutrient loadings from this source.

The management strategies recommended include:

- Proposed developments located outside the floodway were considered acceptable with regards to major flooding, however, a minimum habitable floor level of 5.7 m AHD was recommended to ensure adequate flood protection.

- Proposed developments located within the floodway were considered obstructive to major flows, hence not considered acceptable since it would increase flood levels upstream of the Peel Main Drain.

- A 100 m buffer zone on both sides of the Peel Main Drain should be provided as a precautionary to the potential event of a breakout during a flood event.

In view of the design parameters and drainage management measures proposed, it is concluded that the change of land use from predominantly stock grazing to urban development will significantly reduce the potential for nutrient export to the receiving environment.

7.3.4 Predicted Outcome

Based on the preliminary investigations undertaken and the management measures proposed, it is not expected that any changes to groundwater flows, levels or quality will have an adverse impact on the function and environmental values of the site, or its interconnected areas.

7.4 Flora and Vegetation

EPA objective:

- The EPA's objective for flora is to maintain the abundance, diversity, geographic distribution and productivity of flora at the species and ecosystem levels through the avoidance or management of adverse impacts and through improvement in knowledge.

7.4.1 Applicable Policies, Guidelines and Standards

EPA Position Statement No 2: Environmental Protection of Native Vegetation in Western Australia provides an overview of the EPA position on the clearing of native vegetation in Western Australia. Under the Environmental Protection (Clearing of Native Vegetation) Regulations 2004, clearing native vegetation is prohibited unless:

- a clearing permit is granted by the DEC
- the clearing is for an exempt purpose under Schedule 6 of the regulations
- a proposal formally assessed by the EPA.

7.4.2 Potential Impacts

- The clearing of vegetation that may be important to significant fauna on site.

- an increased risk of weed and dieback spread due to construction activities and increased access to the site during the construction phase

The site's historical use for agriculture and grazing has reduced the native vegetation cover to minimal areas containing patches of trees and scattered individual trees including those located along fence lines, with the understorey vegetation mostly cleared. The remnant vegetation is mapped by Heddle et al. (1980) as belonging to the Southern River Complex. This complex is described as an Open Woodland, composed of a mix of *Eucalyptus marginata* (Jarrah), *Corymbia calophylla* (Marri) and *Banksia* species, with scattered fringing Woodland of *Eucalyptus rudis – Melaleuca rhaphiophylla* along watercourses.

Bush Forever (Government of Western Australia, 2000. Vol 1 p83) shows that 17% of this complex exists in the Perth Metropolitan Region of the Swan Coastal Plain. Six per cent of the original complex extent is located in areas with existing protection (e.g. Parks and Recreation Reserves, DEC reserves) and a further 4% is proposed for protection under Bush Forever.

7.4.3 Environmental Management and Mitigation

The following management measures have been developed and incorporated into the DSP to reduce the likelihood of impacts to vegetation and flora. These measures have been developed with the aim of retaining, building and maintaining the biological values of the site:

- Fauna corridors will be retained Tramway Reserve link the site to surrounding areas of native vegetation. LSP and future subdivision plans to detail the interface between development and Tramway Reserve.

- Retained vegetation in POS areas across the site where possible through structure planning will allow for the retention of some areas of mature trees.

- Clearing will be minimised as far as practicable

7.4.4 Predicted Outcome

Retention of the vegetation within the Tramway Reserve will be undertaken, in accordance with the City of Rockingham's objectives for this area. In addition, significant trees and areas of bushland within the site will be retained wherever possible in structure planning.

7.5 Fauna

The EPA's objective for native fauna is to maintain the abundance, diversity, geographic distribution and productivity of native fauna at the species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.

7.5.1 Applicable Policies, Guidelines and Standards

For the Baldivis East DSP project area the key EPA policies and guidelines relating to the identification and management of potential impacts on fauna are:

- Guidance Statement No 33: Environmental Guidance for Planning and Development.

7.5.2 Potential Impact

- Clearing of vegetation at the site may result in a reduction in available fauna habitat.

However, noting the majority of the site has been historically cleared and as a result, fauna habitat has largely been removed.

7.5.3 Environmental Management and Mitigation

The following management measures have been developed and incorporated into the DSP to reduce the likelihood of impacts to native fauna. These measures have been developed with the aim of retaining, building and maintaining the habitat values of the site:

- Fauna corridors will be retained Tramway Reserve link the site to surrounding areas of native vegetation. LSP and future subdivision plans to detail the interface between development and Tramway Reserve.

- Retained vegetation in POS areas across the site where possible through structure planning will allow for the retention of some areas of mature trees.

- Individual landowners are responsible (if required) to address fauna identified as a matter of NES in consultation with DEWHA.

7.5.4 Predicted Outcome

The proposal may result in a very minor disturbance at a local scale, which is likely to impact on individual animals, mostly transient avifauna (given the historically cleared nature of the DSP area) rather than a population.

7.6 Site Contamination

EPA objective:

To ensure previous land uses within and surrounding the site, do not impact on proposed development of the site.

7.6.1 Applicable Policies, Guidelines and Standards

The applicable Contaminated Sites Management Series includes:

- assessment levels for soil, sediment and water
- general guidance on managing Acid Sulfate Soils.

7.6.2 Potential Impact

The DEC contaminated sites registrar details five potentially contaminated sites located west and north of the site, which could potentially impact on the site through migration of any contaminating substance via groundwater.

7.6.3 Environmental Management and Mitigation

It is considered unlikely that contamination from these sites will impact on the DSP site, based on groundwater flow direction. However a Preliminary Site Investigation (PSI) will be undertaken to confirm the presence/absence of contamination at the site prior to ground disturbing activities. The undertaking of a PSI is the responsibility of individual landowners.

8.0 SURROUNDING LAND USES AND BUFFERS

Figure 12 presents a representation of the current activities and surrounding land uses that may impact upon the development of the site.

8.1 Sand, Clay and Limestone Resource Sites

8.1.1 Sand Extraction

8.1.1.1 Local Sand Extraction Operations

Sand extraction is currently undertaken at the Baldivis Sandpit, located west of the site (Figure 12). The recommended buffer distance between sand extraction activities and sensitive land uses is 300 m to 500 m as prescribed by the EPA (EPA, 2005). It is estimated by the Department of Mines and Petroleum (DMP) that sand extraction will continue for up to four years.

Potential impacts associated with sand extraction include dust, noise, vibration and visual amenity.

8.1.1.2 Management and Mitigation of Potential Impacts

As the recommended buffer for the sand extraction operations does not affect the majority of the landholding, the development is proposed to be staged so as to not intrude within this buffer zone while the quarry is active. If required, further consultation will be undertaken with the DEC to discuss management of interface/separation requirements.

It is anticipated that sand extraction operations will either be completed or will be in the final stages of decommissioning as the staging of the development nears the prescribed buffer. However, if this is not the case, the buffer implemented will, by definition, provide a suitable distance between sand excavation operations and residential development.

8.1.2 Clay Extraction

8.1.2.1 Clay Extraction Operations

A priority resource location for clay extraction has been identified to the north east of the site. Extraction is currently undertaken on an intermittent basis in the area and the DMP has indicated that extraction is likely to continue for the next 10–20 years. Alcoa do not anticipate that they will have issues with regards to noise and dust generation as a result of their operations above that generated by the Kwinana Freeway that separates the clay extraction areas from the site.

Alcoa has indicated that the freeway is used for transportation of clay; however, this is restricted to weekday operations for three months during summer.

8.1.2.2 Management and Mitigation of Potential Impacts

The DMP has identified that Alcoa does not anticipate any noise (over and above the freeway) or dust issues associated with their clay excavation operations. As the site is separated from the clay excavation operations by the Kwinana Freeway, in addition there will be noise abatement measures adopted for the future residents in proximity to the Kwinana Freeway (Section 8.2). Therefore it is not anticipated that noise and dust will impact the Baldivis East DSP area.

Given the Kwinana Freeway and adjoining roads were not constructed solely for the use of the clay excavation industry, it is not anticipated that there will be traffic related issues as a result of developing the site

8.1.3 Priority Limestone and Limestone Sand Resource

8.1.3.1 Limestone and Limestone Sand Extraction Operations

A priority limestone and limestone sand resource has been identified by the DMP, located approximately 400 m from its closest point to the site (Figure 12). It is anticipated that limestone and limestone sand excavation will be partly shielded by topography.

8.1.3.2 Management and Mitigation of Potential Impacts

As with the sand extraction, the recommended buffer for the limestone and limestone sand extraction operations does not affect the majority of the landholding, the development is proposed to be staged so as to not intrude within this buffer zone while the quarry is active. If required, further consultation will be undertaken with the DEC to discuss the management of interface/separation requirements.

It is anticipated that sand extraction operations will either be completed or will be in the final stages of decommissioning as the staging of the development nears the prescribed buffer. However, if this is not the case, the buffer implemented will, by definition, provide a suitable distance between sand excavation operations and residential development.

8.1.4 Management Options and Considerations for Sand, Clay and Resource Extraction Sites

In the event that setbacks and buffers may not fully mitigate potential impacts; and given that it cannot be known what the level of impact will be on residents in regards to excess noise, traffic or dust resulting from nearby priority resource excavation locations, the following is applicable.

8.1.4.1 Noise

- Dwellings can be screened somewhat for noise by batters, prevailing breezes and existing topography.
- Static extractive industry equipment such as crushers is generally located on the quarry floor below ground level which provides acoustic screening.
- Local vegetation and topography act as a barrier to reduce noise.
- Any blasting that may occur would only be conducted on an intermittent basis if used at all. Blasting methodology would need to comply with EP (Noise) Regulations 1997 and relevant Australian Standards.
- Quarrying activities are generally restricted to between the hours of 8.00 am and 5.00 pm from Monday to Saturday excluding public holidays.
- Subdivision design can be altered to incorporate buffers to priority resource locations. This may involve incorporating strategic location of POS and other land uses not sensitive to noise.
- Quiet House design principles can be applied to dwellings considered to be potentially impacted by noise.

8.1.4.2 Dust

- Summer winds are hot, dry morning easterlies and afternoon south-westerlies. Winter winds tend to be cooler, wetter south-westerlies. As the sand quarry areas area located west of the site adjacent to the northern end. These wind directions therefore generally carry dust away from proposed dwellings.
- Vegetation retention within the tramway and elsewhere, along with screening planting would assist to eliminate dust nuisance by slowing wind speeds and filtering out dust particles.
- Water tankers are generally used for dust suppression on the access roads, pit floors and crushing operations of the quarries.
- It is anticipated that dust emissions will be minimised by quarry perimeter bunds and buffers as well as by working below natural ground levels.

8.1.4.3 Aesthetics

- All static equipment such as crushers is generally located on the quarry floor below the natural ground level which provides visual screening. Stockpiles are also generally retained on the floor of the pit to reduce visual impact.

- Quarry screened from outside roads and adjoining land users also occurs through setbacks, bunds and/or retention of existing vegetation.

8.1.4.4 Safety

- Warning signs and fencing to protect the public would be required to be in place at all of the resource areas.

8.2 Kwinana Freeway Noise

Herring Storer Acoustics in 2009 undertook an assessment of freeway noise and proposed future residential development within the Baldivis East DSP area. The results of the acoustic assessment indicate that noise received at residences located adjacent to the Kwinana Freeway, Mundijong and Baldivis Road in the year 2025 will exceed the "Noise Limits" as outlined in the WAPC Planning Policy 5.4 "Road and Rail Transport Noise and Freight Considerations in Land Use Planning". However, the level of exceedance would only be minor i.e. up to 2 dB(A).

Given the possible level of exceedance, Herring Storer concluded in their assessment that compliance with the Planning Policies "Noise Limits" can be achieved by the implementation of earth bunding or noise walls. However, the height of the bunding will depending on the final ground level within the development, and this should be determined as part of the local structure planning.

Herring Storer Acoustics report outlines the extension of the Kwinana Freeway and the construction of the Forrest highway traffic patterns have changed in the area and as part of the development of noise ameliorations, noise monitoring will be undertaken. From this monitoring, together with revised input information, noise management plans can be developed with that of the LSP to ensure compliance with Planning Policy 5.4.

8.3 Other Potential Land Use Conflicts

8.3.1 Water-ski Park Buffer

Noise emissions from the Bonney's Water Ski Park located (east of the Kwinana Freeway) was identified by the City of Rockingham as a potential issue for the proposed residential development north of Mundijong Road.

Subsequently the City of Rockingham has undertaken noise readings in January 2011, during the latest Jet Sprint Club Meet at Bonney's Water Ski Park. The noise readings were done in conjunction with the Town of Kwinana, and focused on three areas of proposed rezoning – Wellard East, Wellard West and Baldivis East. Noise readings were undertaken at a variety of locations in these three areas, as well as at Pug Road (between Bonney's and the freeway).

The emitted noise levels from the Jet Sprint Meet varied depending on the location and the boat. There were some exceedances noted during the noise readings.

The noise readings obtained in Baldivis East were taken along Baldivis Road north of Mundijong Road. The City of Rockingham concluded the following:

- The noise appeared to be as a result of the Freeway and not the Jet Sprint Meet, i.e. the noise from the Jet Sprint Meet was not distinguishable over the freeway noise.

Considering the observations made by the City of Rockingham and the mitigation measures to be adopted to mitigate noise from the freeway, in accordance with WAPC Policy 5.4 the noise buffer zone previously delineated over the area north of Mundijong Road can be lifted, and the restrictions to sensitive noise land uses no longer need to apply.

8.3.2 Cemeteries

The Rockingham Regional Memorial Park is located immediately west of the site on the corner of Millar Road and Baldivis Road. This facility was opened on 12 September 2007. This site does not contain a crematorium and there are no current plans to build one on site. Therefore there are no buffer considerations from this land use to the proposed residential development within the DSP site.

8.3.3 Dampier to Bunbury Gas Pipeline

The existing Dampier to Bunbury high pressure natural gas pipeline is located within a 30 m wide easement that traverses the site. Expansion of this pipeline is planned, with an increase in the easement width of 20 m to be required. The existing and proposed future easement locations are shown on Figure 12.

The Dampier to Bunbury Natural Gas Pipeline Corridor Widening – Kwinana to Bunbury Project Strategic Environmental Review (BBG, 2004) identifies that, for rural and semi rural sections south of Kwinana, if 3 m of concrete covers and maker tape are placed over the existing pipeline, then residential development is acceptable up to the boundary of the corridor. The document also states that future pipelines developed in this corridor will be designed to meet all regulations and planning guidelines. In addition, design will be such that where future subdivisions may be developed in close proximity to the pipeline, modifications such as concrete cover and marker tape will ensure that the pipeline's 1×10^{-6} risk contour line is within the pipeline corridor.

As the Dampier to Bunbury natural gas pipeline traverses the Baldivis East DSP area, a detailed risk assessment and planning will be undertaken in consultation with the Pipeline Owners and Operator and if necessary the Department of Mines and Petroleum as detailed in the Department of Planning's Planning Bulletin 87 as a component of the subdivision assessment phase.

The landowners affected by the pipeline corridor will commissioned a specialist consultant to undertake a risk assessment of the pipeline in respect to proposed development.

8.3.4 Poultry Farm

A poultry farm is located on the western side of Baldivis Road at the southern end of the site (Figure 12). The buffer distance between poultry farms and sensitive land uses prescribed by the EPA is 300 m to 1000 m (EPA, 2005). Odour assessments may be required in specific locations to determine appropriate buffer distances if residential development is proposed within the buffer zone while this facility is still operating.

8.3.5 Horse Stables

Numerous premises containing horse stables are also located within and near the site. The prescribed buffer distance between these facilities and sensitive land uses is 100 m to 500 m (Environmental Protection Authority, 2005) depending upon size. Horse stables within the site will be decommissioned prior to development occurring within 500 m.

8.3.6 Market Garden

A market garden is located to the west of the site, south of the poultry farm. The buffer distances applicable to market gardens are 300 to 500 m depending upon size. If the market garden is still active as development encroaches, consultation will be undertaken with the DEC regarding the buffer zone to discuss any management or interface/separation requirements. The market garden is currently functioning, however it is understood that the owner plans to decommission the operation in the near future due to proposed development occurring over the lot within which the market garden is located.

8.3.7 Tramway Reserve

The Tramway Nature Reserve runs parallel to Baldivis Road along the western boundary of the site, and contains patches of vegetation in good condition, with some evidence of disturbance and weed growth. Access points across the Tramway Reserve have been minimised in the DSP design, in accordance with the City of Rockingham's objectives for protection and retention of vegetation within the Tramway Reserve.

9.0 CONCLUSION

The site is currently zoned "Urban Deferred" under the MRS, and "Rural" under the City of Rockingham TPS No.2. This report has been prepared to accompany the DSP to the City of Rockingham and to assist in facilitating the lifting of "Urban Deferment" over the DSP project area.

Following review of the EAR produced for the site following the initial MRS rezoning application, the EPA advised that the appropriate level of assessment was 'scheme Not Assessed – Advice Given". Several environmental issues were listed by the EPA, to be addressed prior to development, and are summarised below along with the proposed management measures. These are outlined in further detail in the report, and in Table 1.

9.1 Wetlands

A 30 m buffer will be maintained around all the RE Wetlands within the DSP site, which will be demarcated and fenced prior to, and following the commencement of earthworks, to ensure no physical impacts to the wetlands and the associated vegetation.

Wetland management plans will be prepared, which will further detail management of the wetland and buffers to ensure negligible impacts.

9.2 Acid Sulfate Soils

ASS investigation will be undertaken by individual landowners in accordance with DEC guidelines. If required a subsequent management plan will be prepared to the satisfaction of the DEC prior to ground disturbing activities.

9.3 Water Management

Two Drainage Water Management Strategies (DWMS) have been prepared for the entire DSP site area and addressed the key issues relating to water management. These DWMSs have been approved by the DoW.

LWMS and UWMP will be prepared at appropriate planning i.e. LSP and subdivision stages in accordance with BUWM Guidelines (WAPC, 2008).

9.4 Vegetation and Flora

Vegetation will be retained where possible across the site, where engineering restrictions allow. Additionally, vegetation will be retained within the Tramway Reserve, with a minimisation in access crossings into the DSP area to allow retention and natural regeneration of vegetation within the Tramway Reserve.

9.5 Potential Land Use Conflicts

Where the recommended buffers from surrounding land uses impact on the development site, further investigations will be undertaken regarding the specific characteristics of the land use to establish appropriate buffers (if required).

Investigation in respect to the sand extraction site adjacent to the DSP site regarding the life of the operation will be undertaken, to allow development to be staged or designed to ensure there are no impacts.

9.6 Site Contamination

It is considered unlikely that contamination from these sites will impact on the DSP site, based on groundwater flow direction. However a PSI will be undertaken by individual landowners in accordance with DEC contaminated sites guidelines to confirm the presence / absence of contamination at the site prior to ground disturbing activities.

9.7 High Pressure Natural Gas Pipeline

A pipeline risk assessment will be prepared for those Lots impacted by the pipeline corridor.

Provided proper structural management measures are put in place, such as a 3 m concrete coverage over the pipeline then residential development is acceptable up to the boundary of the corridor.

10.0 REFERENCES

Bowman Bishaw Gorham. 2004. Dampier to Bunbury Natural Gas Pipeline Corridor Widening – Kwinana to Bunbury Project: Strategic Environmental Review. Report prepared for Gas Pipeline Working Group (Report No. G02153).

Cardno BSD. 2006. Lot 3 Folly Road and Lot 921 and Lot 922 Baldivis Road, Baldivis; Metropolitan Region Scheme Rezoning Environmental Review. Report Prepared for Watson Property Group Investments Ltd.

Cardno BSD. 2006. Metropolitan Region Scheme Rezoning Environmental Review; Lot 3 Folly Road and Lot 921 and Lot 922 Baldivis Road, Baldivis. Report prepared for Watson Property Group Investments Ltd & Watson Property Group Baldivis Ltd.

Churchwood H.M. and McArthur W.M. 1978. Darling System Landforms and Soils. Department of Conservation and Environment. Perth, Western Australia.

Coffey Geosciences Pty Ltd. 2006. Residential Subdivision; Baldivis Gardens Private Estate; Lots 921, 922 Baldivis Road and Lot 3 Folly Road, Baldivis East; Geotechnical Investigation. Report prepared for Watson Property Group.

Department of Water. 2004. Perth Groundwater Atlas. Available: http://portal.water.wa.gov.au/portal/page/portal/MapsDataAtlases/PerthGroundwaterAtlas. Accessed on 20 April 2009. Department of Water, Perth, Western Australia.

Douglas Partners. 2008a. Report on Geotechnical and Preliminary Acid Sulfate Soil Investigation; Proposed Residential Subdivision; Pug Road, Baldivis, WA. Report prepared for SAS Global Baldivis Ltd.

Douglas Partners. 2008b. Report on Geotechnical and Preliminary Acid Sulfate Soil Investigation; Proposed Residential Subdivision; Lots 460–463 Baldivis Road, Baldivis, WA. Report prepared for Golden Asset Pty Ltd.

Douglas Partners. 2008c. Report on Geotechnical and Preliminary Acid Sulfate Soil Investigation; Proposed Residential Subdivision; Zig Zag Road, Baldivis, WA. Report prepared for OSWAL Developments Pty Ltd.

Environmental Protection Authority. 1992. *Environmental Protection (Peel Inlet Harvey Estuary) Policy*. Environmental Protection Authority, Perth, Western Australia.

Environmental Protection Authority. 2005. Guidance for the Assessment of Environmental Factors (in accordance with the Environmental Protection Act 1986); Separation Distances between Industrial and Sensitive Land Uses; No. 3. Environmental Protection Authority, Perth, Western Australia.

Heddle, E.M., Loneragan, O.W. and Havel, J.J. 1980. Vegetation Complexes of the Darling System, Western Australia. In: Atlas of Natural Resources Darling System, Western Australia. Western Australian Department of Conservation and Environment, Perth.

Parsons Brinckerhoff. 2007. East Baldivis District Water Management Strategy. Report prepared Australand Holdings Limited, Watson Property Group and Peet Limited.

Parsons Brinckerhoff. 2008. North East Baldivis District Water Management Strategy. Report prepared for SAS Global, Golden Assets Pty Ltd and OSWAL Developments.

RPS BBG. 2005. Proposed Reclassification of Existing Wetland Management Category; Lots 462 and 463 Baldivis Road, Baldivis. Report prepared for Golden Assets Pty Ltd.

RPS BBG. 2005. Baldivis Road Landholdings, Baldivis – Environmental Assessment Report (Report No. L05119, August 2005). Report prepared for Golden Assets Pty Ltd.

RPS BBG. 2007. Proposal to modify the Geomorphic Wetlands Swan Coastal Plain dataset: Lots 447, 459 and 709 Baldivis Road, Baldivis. Report prepared for SAS Global Baldivis Ltd.

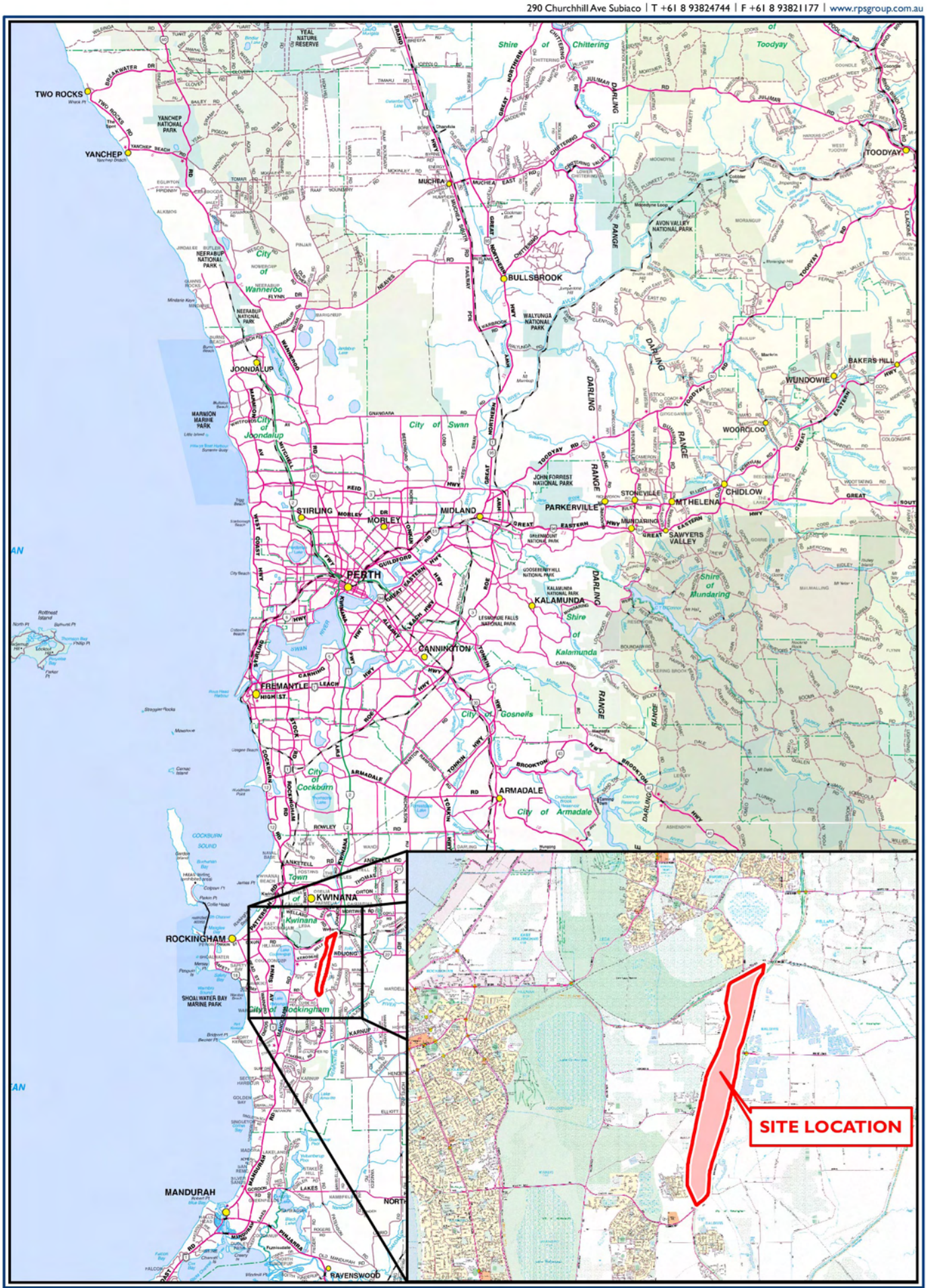
Western Australian Atlas. 2010. Shared Land Information Platform, Acid Sulfate Soils Risk Map, Swan Coastal Plain. Available: https://www2.landgate.wa.gov.au/bmvf/app/waatlas/ accessed on 12 July 2010.

Water and Rivers Commission. 2001. Water and Rivers Commission Position Statement: Wetlands. Water and Rivers Commission, Perth, Western Australia.

Western Australian Planning Commission. 2000. Perth's Bush Forever. WAPC, Perth.

FIGURES

290 Churchhill Ave Subiaco | T +61 8 93824744 | F +61 8 93821177 | www.rpsgroup.com.au



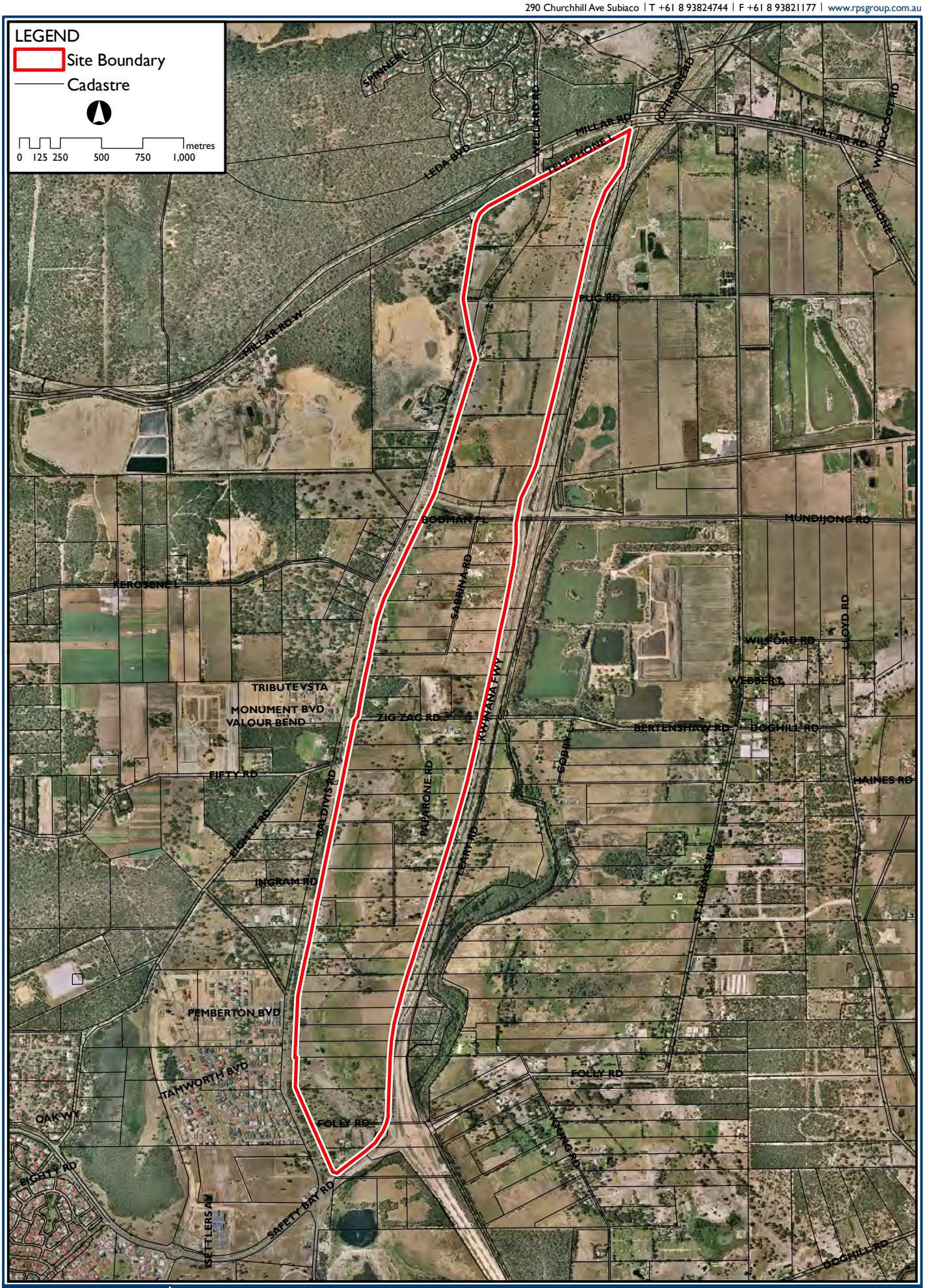
RPS

Job Number: L07386
Date: 04.05.09
Revision: A
Scale: 1:500000 @ A4
Drafted by: SC
Source: Landgate, 2008

Figure 1

Site Location

290 Churchhill Ave Subiaco | T +61 8 93824744 | F +61 8 93821177 | www.rpsgroup.com.au



RPS

Job Number: L07386
Date: 06.07.10
Revision: A
Scale: 1:30000 @ A4
Drafted by: SC
Source: Orthophoto - Landgate, 2009

Figure 2

Aerial of the Site

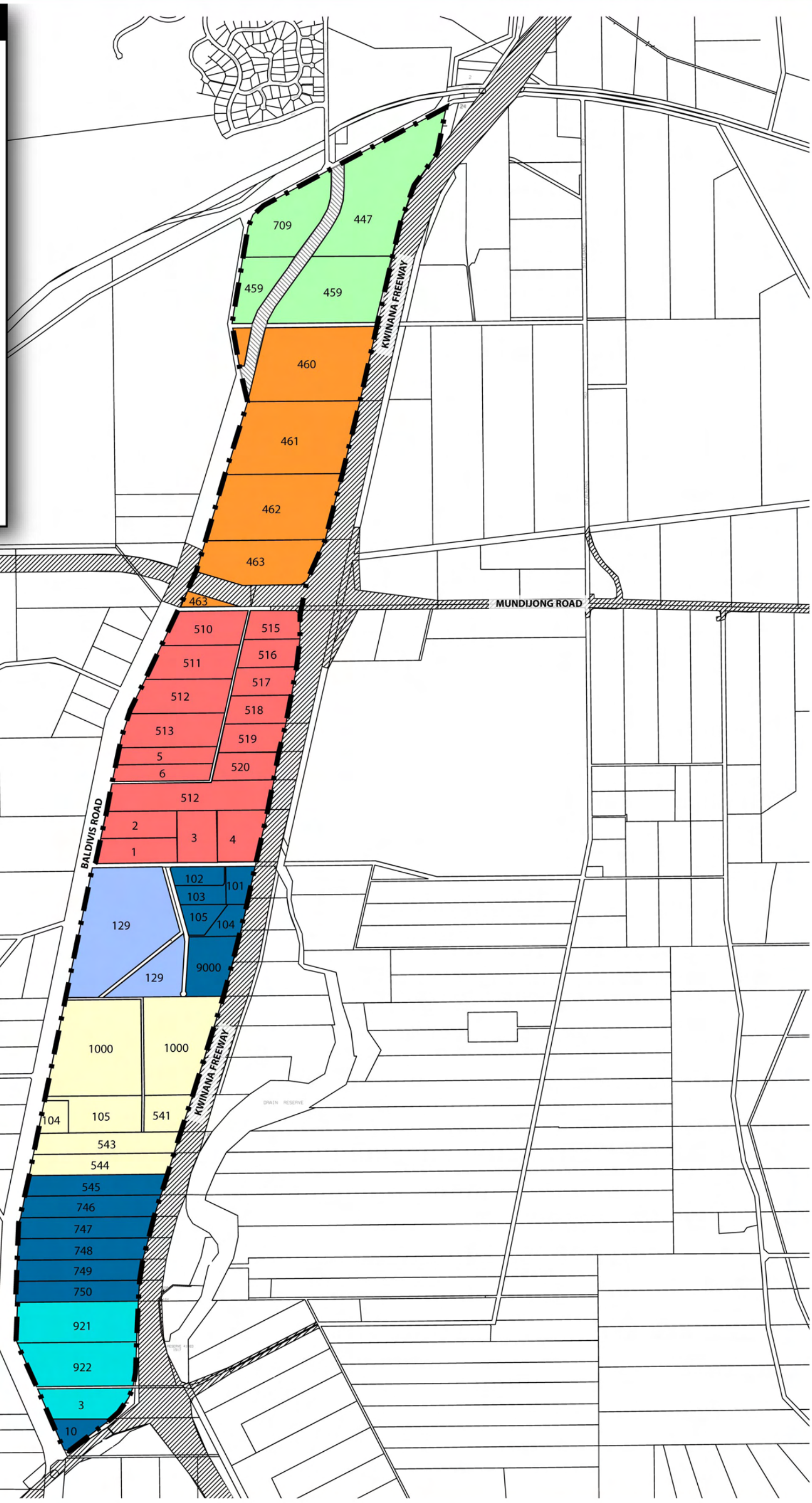
290 Churchill Ave Subiaco | T +61 9 9382 4744 | F +61 8 9382 1177 | www.rpsgroup.com.au

OWNERSHIP LEGEND

- SAS GLOBAL
- GOLDEN ASSETS
- OSWAL GROUP c/o SAS GLOBAL
- PEET
- AUSTRALAND JV
- PRIVATE OWNER
- WATSON

OTHER

- APPLICATION BOUNDARY



RPS

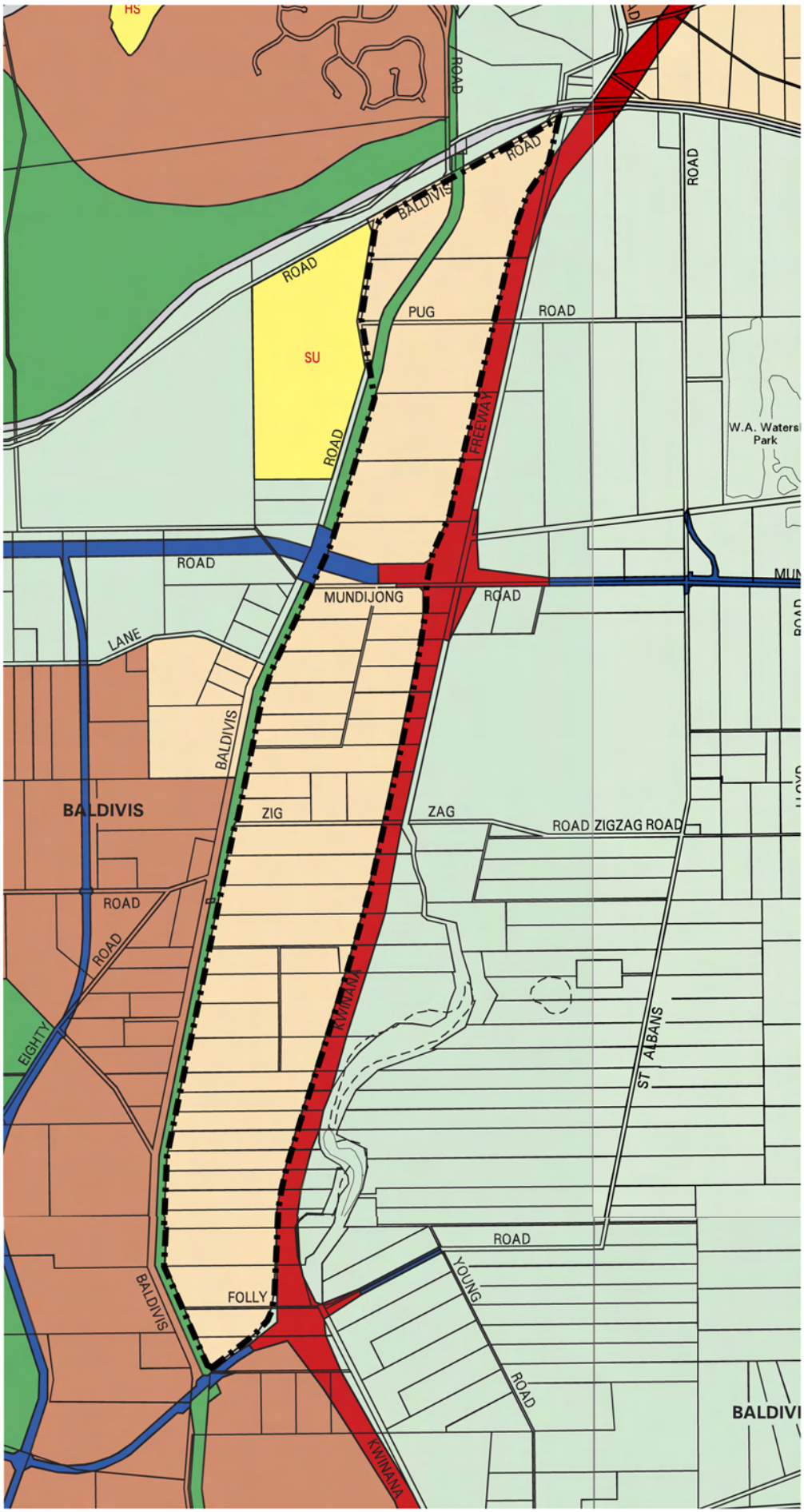
Job Number: L07386
Date: 04.05.09
Revision: A
Scale: @ A3
Drafted by: SC
Source: RPS Koltasz Smith, September 2008

0 125 250 500 750 1000 metres

Figure 3

Lot Ownership

38 Station Street, Subiaco | T +61 8 92111111 | F +61 8 92111122 | www.rpsgroup.com.au



LEGEND

RESERVED LANDS

- PARKS AND RECREATION
- RAILWAYS
- ROADS
  - PRIMARY REGIONAL ROADS
  - OTHER REGIONAL ROADS
- PUBLIC PURPOSES -
  - SU SPECIAL USES

ZONES

- URBAN
- URBAN DEFERRED
- RURAL

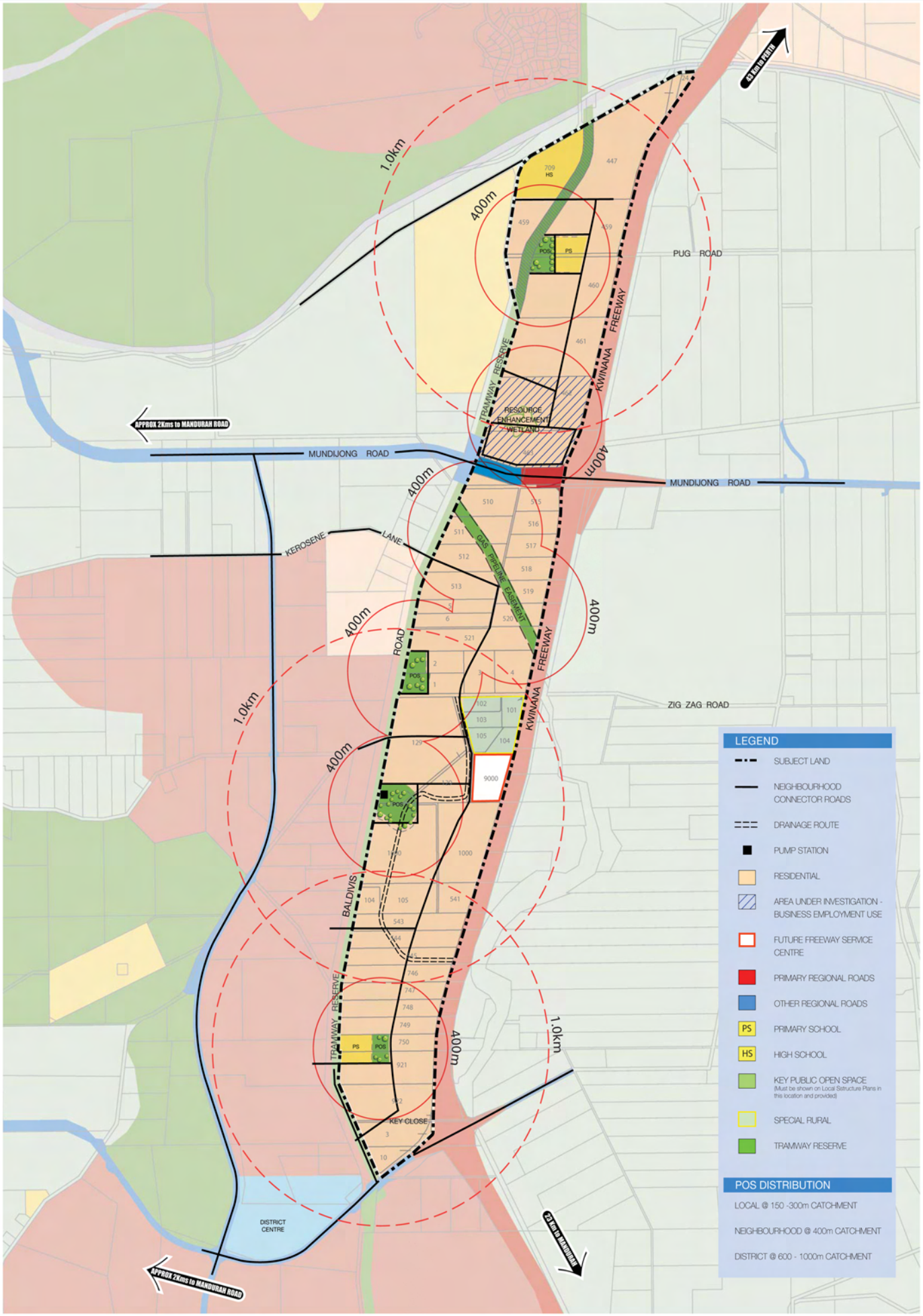
APPLICATION AREA

RPS

Job Number: L07386
Date: 04.03.11
Scale: NTS @ A4
Revision: 0
Drafted by: MA
Source:

Figure 4

Metropolitan Region Scheme



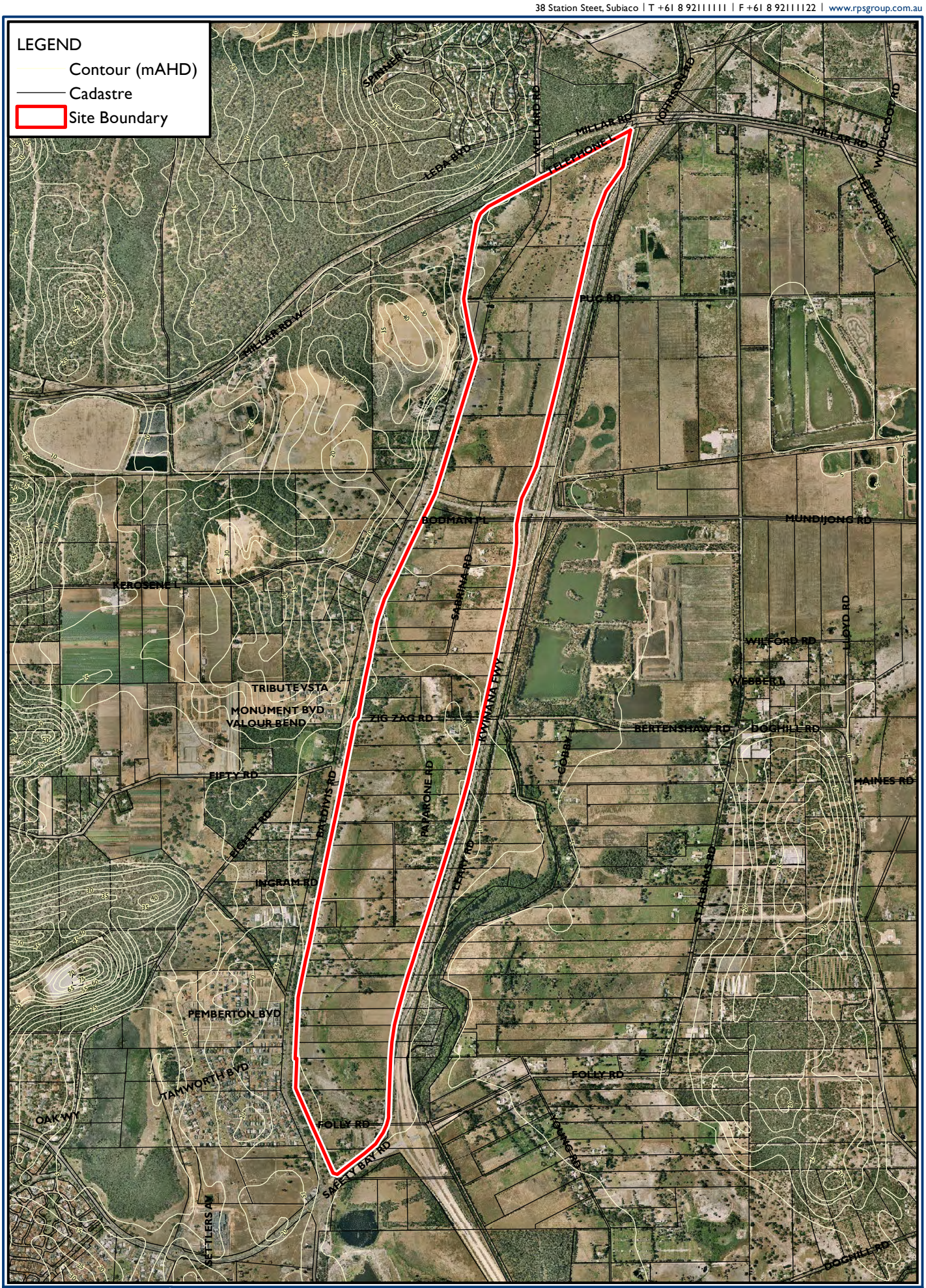
RPS

Job Number: L07386
Date: 04.03.11
Scale: NTS @ A4
Revision: 0
Drafted by: MA
Source: Taylor Burrell Barnett, Development Planning Strategies, RPS Planning

Figure 5

District Structure Plan

38 Station Steet, Subiaco | T +61 8 92111111 | F +61 8 92111122 | www.rpsgroup.com.au



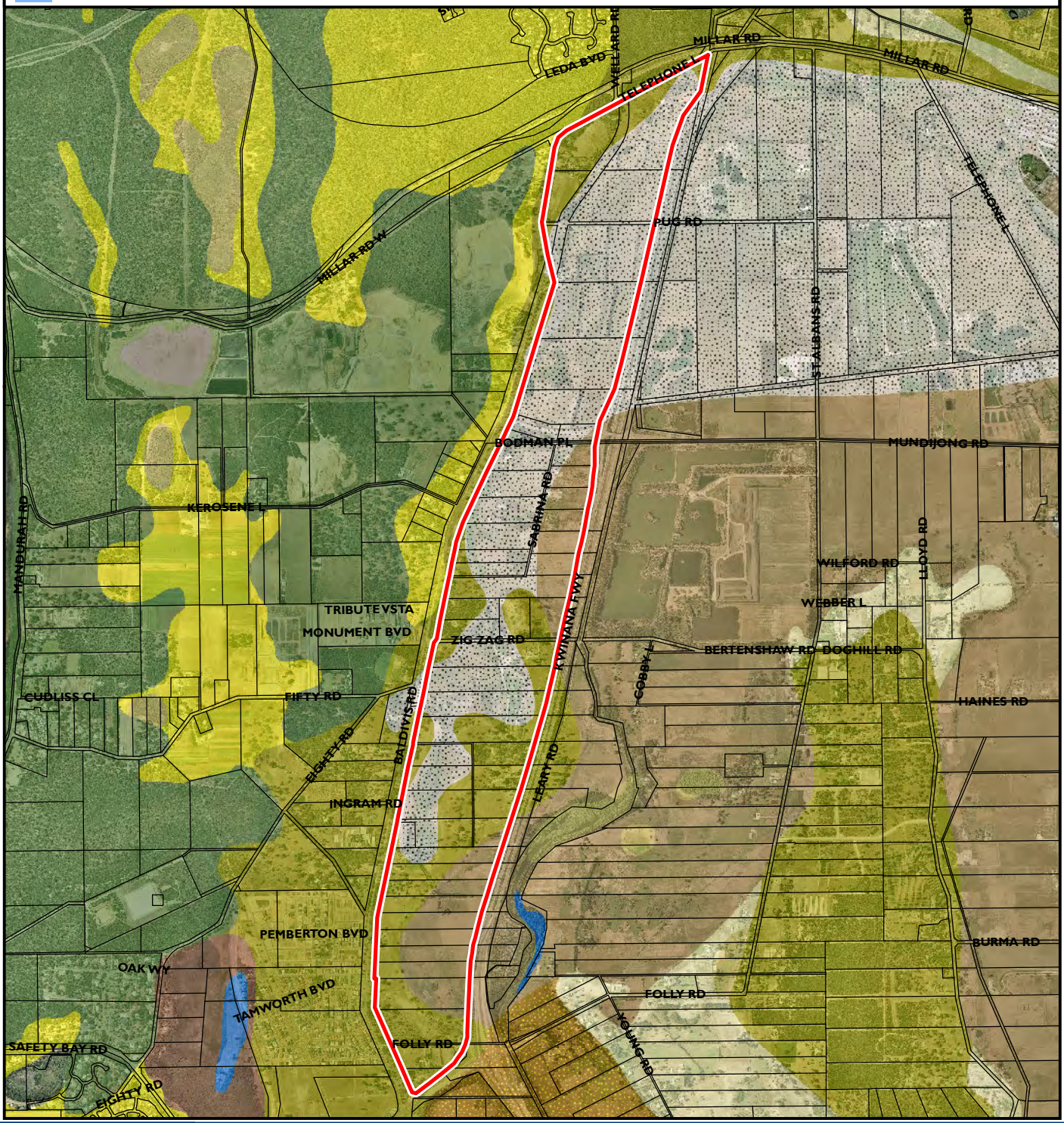
RPS

Job Number: L07386
Date: 03.03.11
Revision: A
Scale: 1:30,000 @ A4
Drafted by: MA
Source: Orthophoto - Landgate, 2009

Figure 6

Topography

38 Station Steet, Subiaco | T +61 8 92111111 | F +61 8 92111122 | www.rpsgroup.com.au



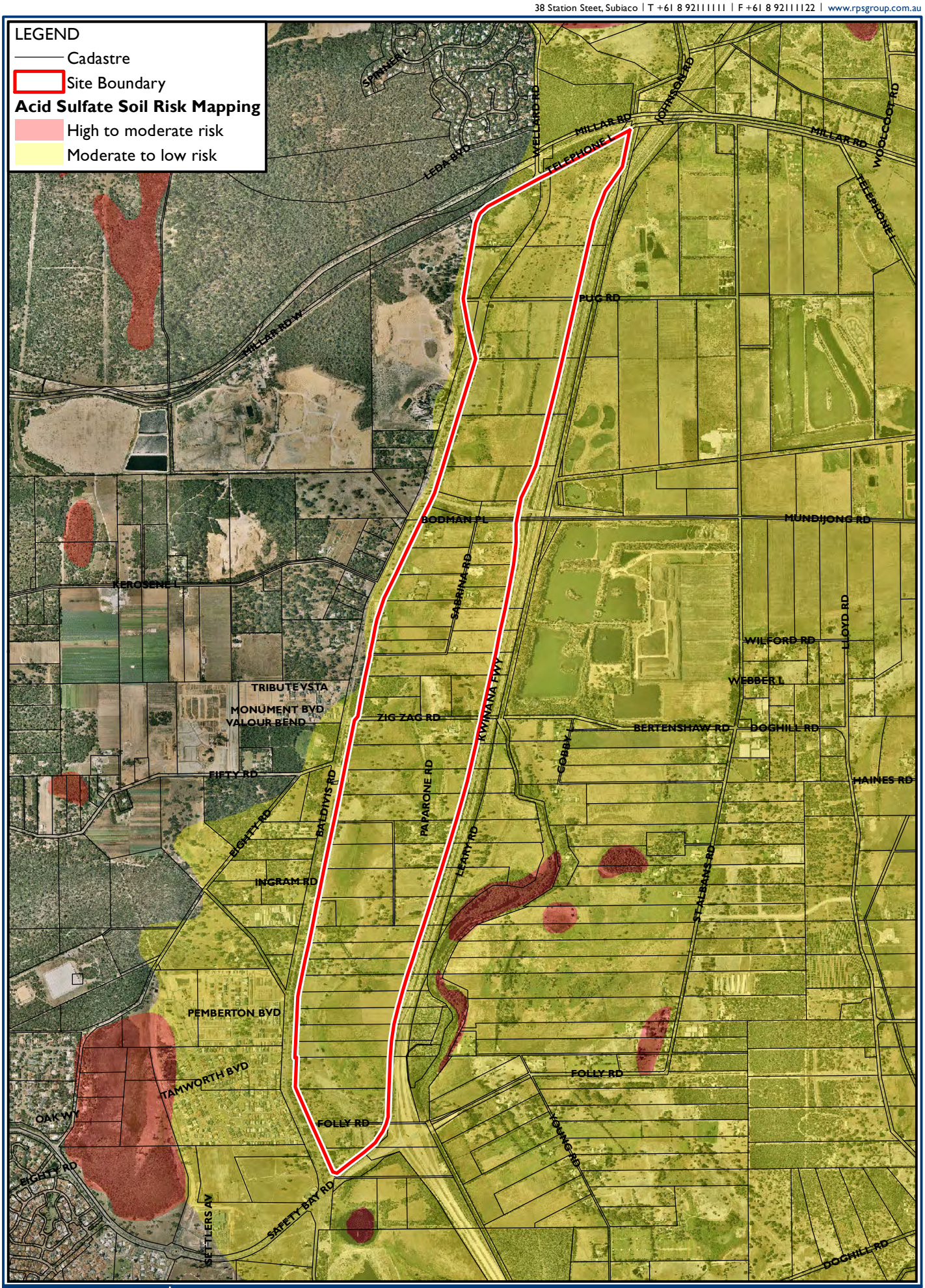
RPS

Job Number: L07386
Date: 03.03.11
Revision: A
Scale: 1:35,000 @ A4
Drafted by: MA
Source: Orthophoto - Landgate, 2009

Figure 7

Geology

38 Station Steet, Subiaco | T +61 8 92111111 | F +61 8 92111122 | www.rpsgroup.com.au



RPS

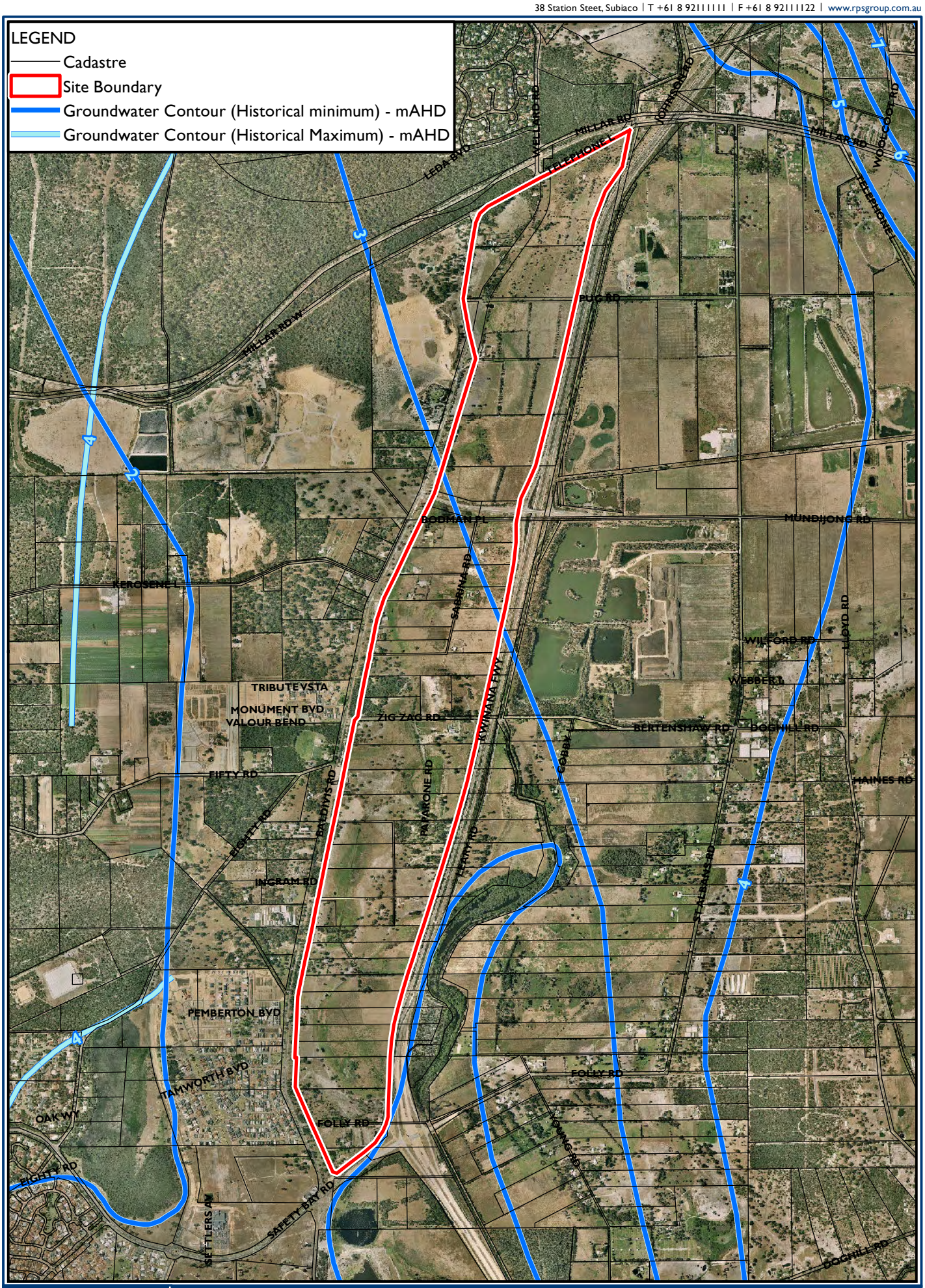
Job Number: L07386
Date: 03.03.11
Revision: A
Scale: 1:30,000 @ A4
Drafted by: MA
Source: Orthophoto - Landgate 2009, DEC 2010

0 125 250 500 750 1,000 metres

Figure 8

Acid Sulfate Soils Risk Mapping

38 Station Steet, Subiaco | T +61 8 92111111 | F +61 8 92111122 | www.rpsgroup.com.au



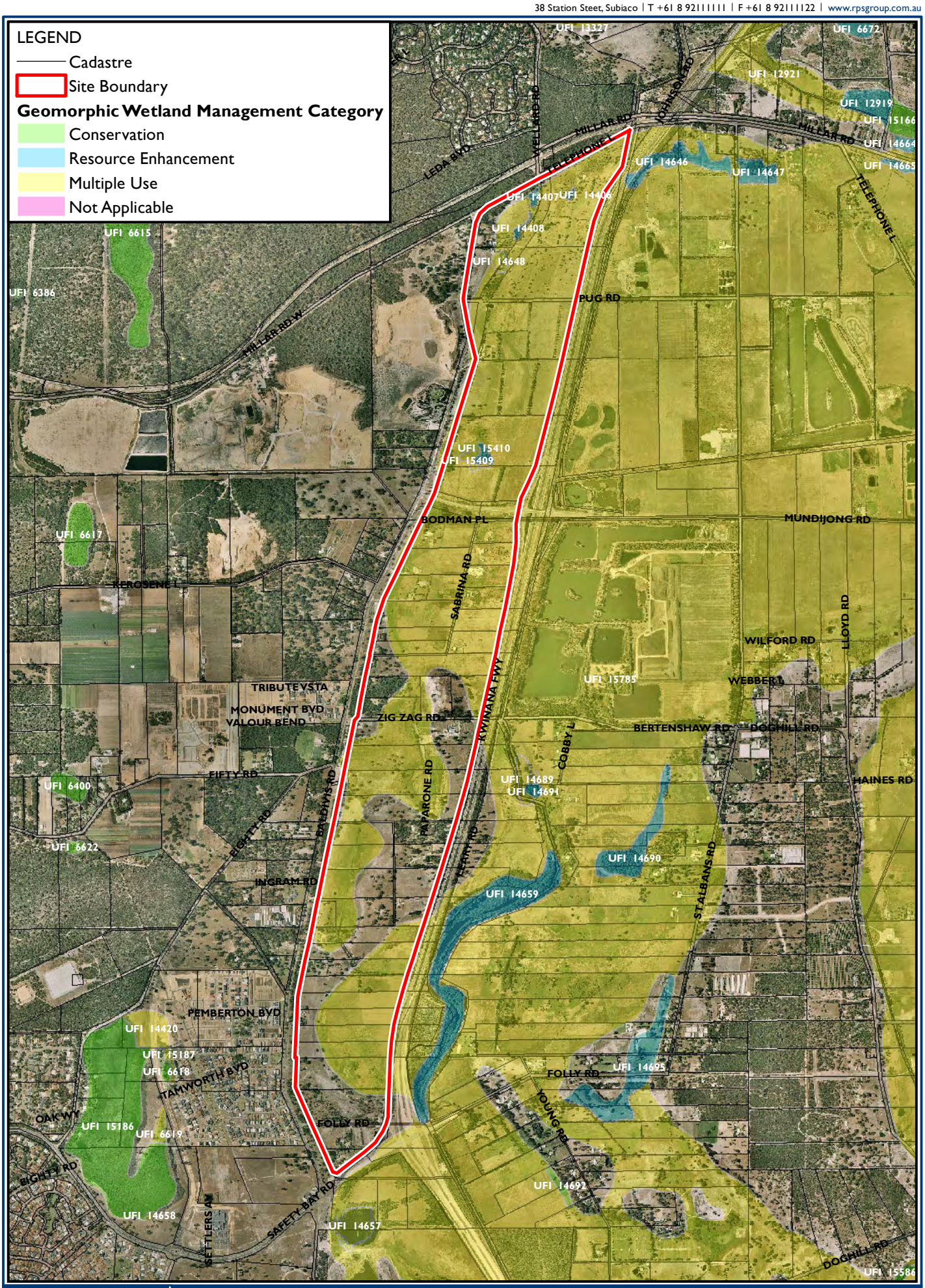
RPS

Job Number: L07386
Date: 03.03.11
Revision: A
Scale: 1:30,000 @ A4
Drafted by: MA
Source: Orthophoto - Landgate 2009, DoW 2006

Figure 9

Regional Groundwater Map

38 Station Steet, Subiaco | T +61 8 92111111 | F +61 8 92111122 | www.rpsgroup.com.au



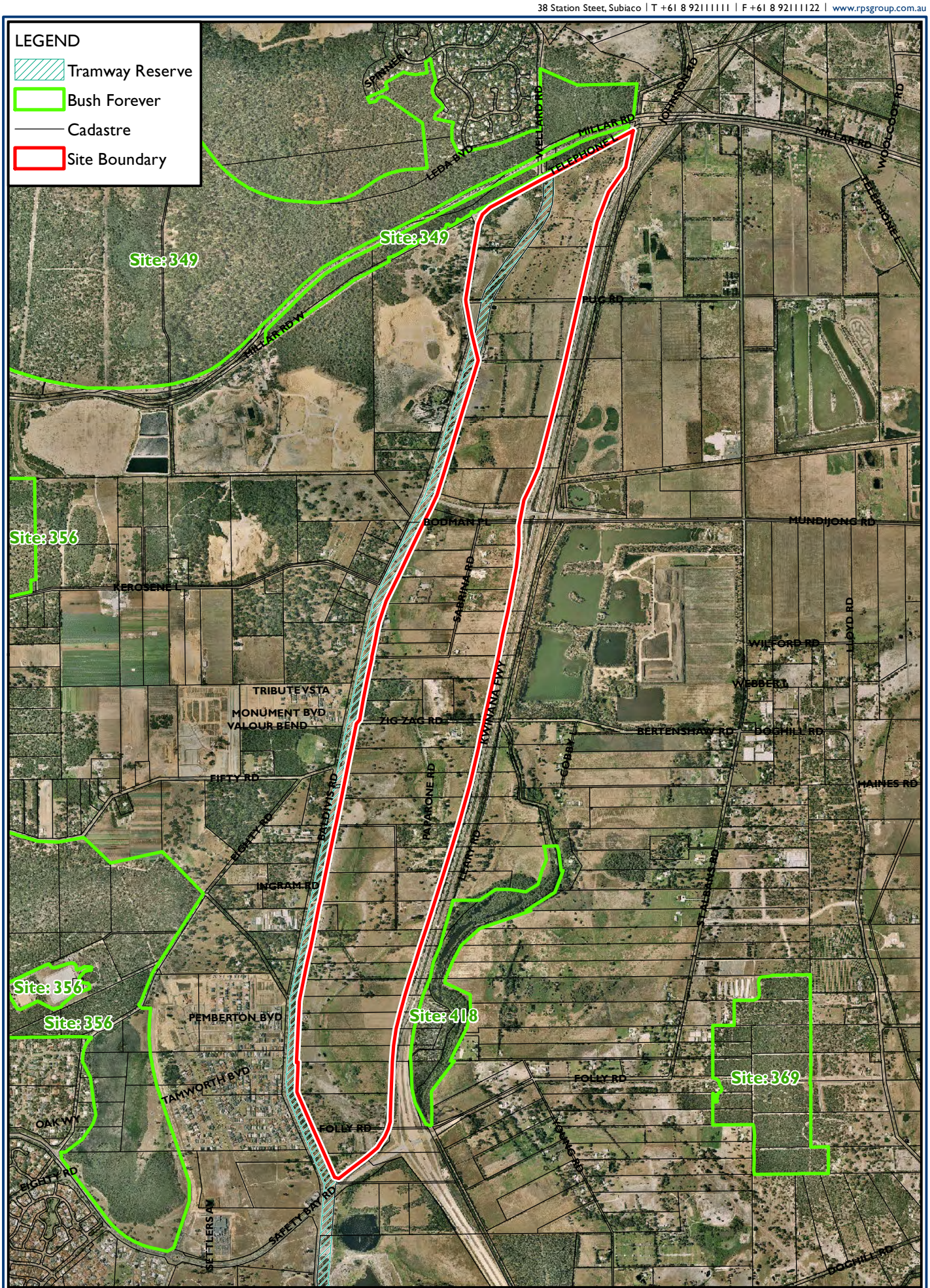
RPS

Job Number: L07386
Date: 03.03.11
Revision: A
Scale: 1:30,000 @ A4
Drafted by: MA
Source: Orthophoto - Landgate 2009, DEC 2010

Figure 10

Geomorphic Wetlands

38 Station Steet, Subiaco | T +61 8 92111111 | F +61 8 92111122 | www.rpsgroup.com.au



RPS

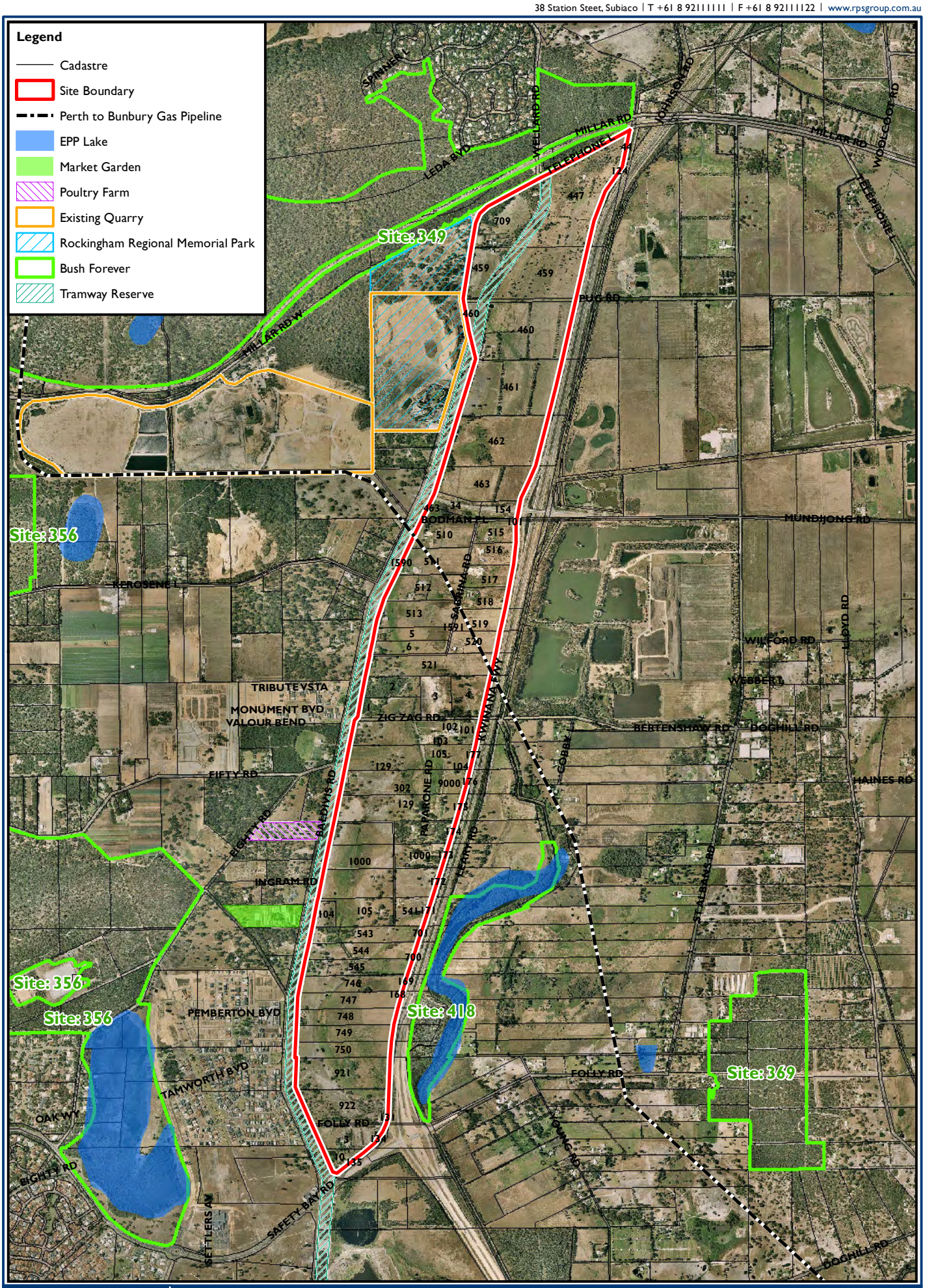
Job Number: L07386
Date: 03.03.11
Revision: A
Scale: 1:30,000 @ A4
Drafted by: MA
Source: Orthophoto - Landgate 2009, DPI 2009,

0 125 250 500 750 1,000 metres

Figure 10

Bush Forever & Tramway Reserve

38 Station Steet, Subiaco | T +61 8 92111111 | F +61 8 92111122 | www.rpsgroup.com.au



RPS

Job Number: L07386
Date: 03.03.11
Revision: A
Scale: 1:30,000 @ A4
Drafted by: MA
Source: Orthophoto - Landgate 2009, RPS 2010

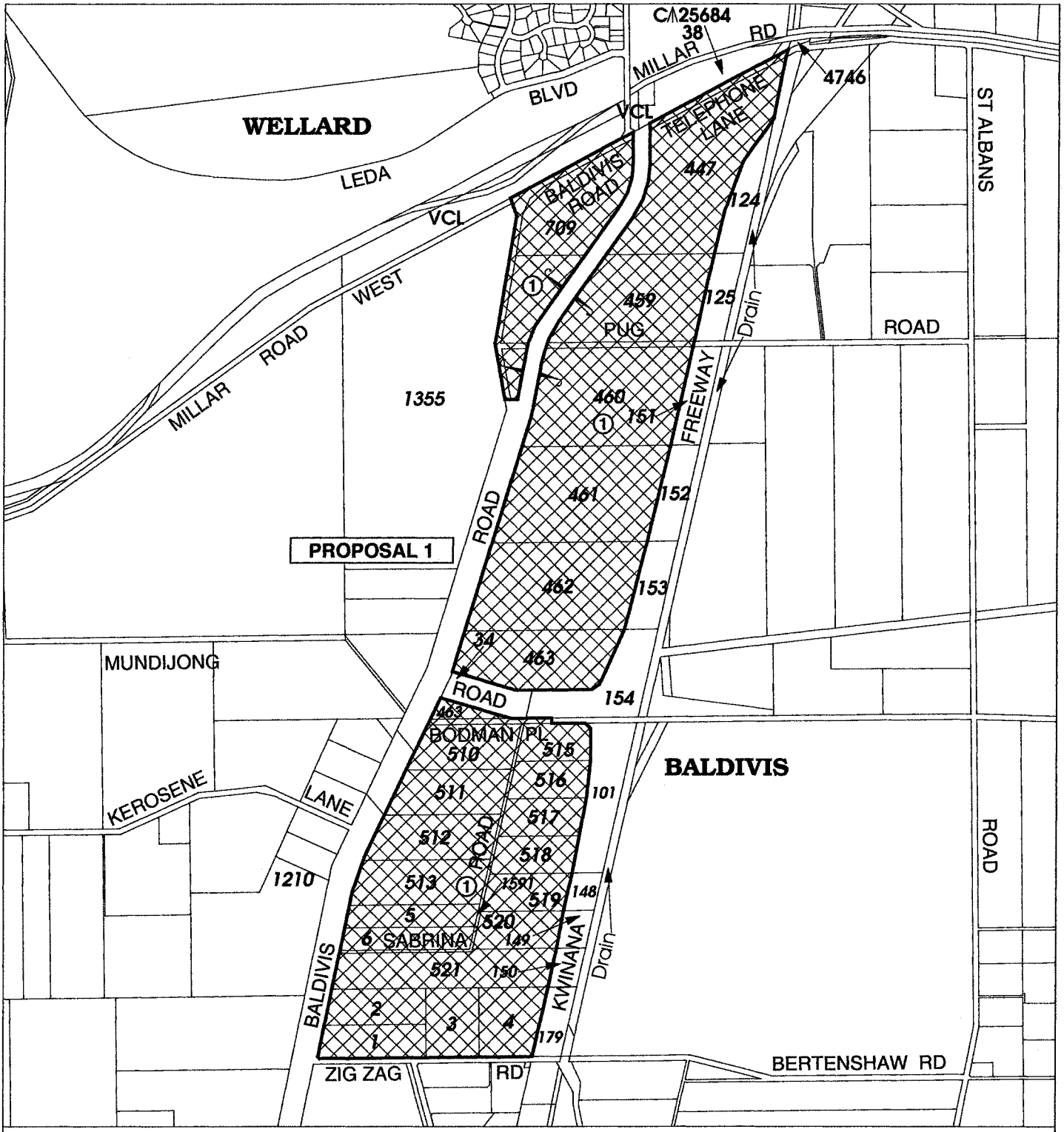
Figure 12

Surrounding Land Uses

RPS

APPENDIX 1

EPA Advice Metropolitan Scheme Amendments 1127/41, 1128/41 and 1129/41



Baldivis (East) - North of Zig Zag Road

12 September 2006

as advertised

Figure 1

Legend

Proposed:

① urban zone

Base information supplied by DLI PA 23-2003

2504bw1.fig
21 Sep 2006
Produced by Statutory Mapping Section, Spatial Information & Research - Mapping & GeoSpatial Data,
Department for Planning and Infrastructure, on behalf of the Western Australian Planning Commission, Perth WA

Government of Western Australia

Western Australian Planning Commission
50 spatial planning years

GDA

N

SCALE 1:20000

0 500 metres

Environmental Protection Authority

The Atrium,
Level 8, 168 St Georges Terrace,
Perth, Western Australia 6000.
Telephone: (08) 6364 6500. Facsimile: (08) 6364 6522.

Postal Address: PO Box K822,
Perth, Western Australia 6842.
Website: www.epa.wa.gov.au

Director General
Department for Planning & Infrastructure
469-489 Wellington Street
PERTH WA 6000

Our Ref CRN220595
Enquiries Glen McLeod-Thorpe

SCHEME AMENDMENT TITLE:	**MRS Amendment 1127/41 Baldivis Urban Area Expansion - Area 1**
SCHEME AMENDMENT LOCATION:	**Lots 3 & 4 Zig Zag Road; 459-463, 510-513, 520, 521 & 709 Baldivis Road; 515-518 Sabrina Road and 447 Telephone Lane**
LOCALITY:	**Baldivis**
RESPONSIBLE AUTHORITY:	**Western Australian Planning Commission**
LEVEL OF ASSESSMENT:	**Scheme Amendment Not Assessed - Advice Given Under Section 48a(1)(A) (no appeals)**

The above scheme amendment has been referred to the Environmental Protection Authority (EPA) for assessment.

Please find enclosed a copy of the EPA's letter to the Western Australian Planning Commission dated 23 October 2006 for your information and records.

W H Tacey
A/Director
Environmental Impact Assessment

23 October 2006

Enc.

Environmental Protection Authority

The Atrium,
Level 8, 168 St Georges Terrace,
Perth, Western Australia 6000.
Telephone: (08) 6364 6500. Facsimile: (08) 6364 6522.

Postal Address: PO Box K822,
Perth, Western Australia 6842.
Website: www.epa.wa.gov.au

Secretary
Western Australian Planning Commission
469 Wellington Street
PERTH WA 6000

Our Ref CRN220595
Enquiries Glen McLeod-Thorpe

SCHEME AMENDMENT TITLE:	**MRS Amendment 1127/41 Baldivis Urban Area Expansion - Area 1**
SCHEME AMENDMENT LOCATION:	**Lots 3 & 4 Zig Zag Road; 459-463, 510-513, 520, 521 & 709 Baldivis Road; 515-518 Sabrina Road and 447 Telephone Lane**
LOCALITY:	**Baldivis**
RESPONSIBLE AUTHORITY:	**Western Australian Planning Commission**
LEVEL OF ASSESSMENT:	**Scheme Amendment Not Assessed - Advice Given Under Section 48a(1)(A) (no appeals)**

Thank you for your letter of 26 September 2006 referring the above proposed scheme amendment.

After consideration of the information provided by you, the Environmental Protection Authority (EPA) considers that the proposed scheme amendment should not be assessed under Part IV Division 3 of the *Environmental Protection Act 1986* (EP Act) but nevertheless provides the following advice and recommendations.

ADVICE AND RECOMMENDATIONS

1. Environmental Issues

- Wetlands
- Acid Sulfate Soils
- Water Management
- Vegetation and Flora
- Noise
- Potential Land Use Conflict
- Site Contamination
- High Pressure Natural Gas Pipeline

2. Advice and recommendations regarding Environmental Issues

Wetlands
The majority of the subject site is identified as a Multiple Use wetland on the Department of Environment and Conservation's (DEC) Geomorphic Wetlands Swan Coastal Plain dataset. To the far north of the site and in the central portion of the site (Lot 462 Baldivis Road) are a number of wetlands identified as Resource Enhancement on the DEC's Geomorphic Wetlands Swan Coastal Plain dataset. Whilst no structure plan has been included in this referral, it is understood that the Resource Enhancement Wetlands on site are to be retained within areas of public open space. This is supported and it is expected that mechanisms for protecting these wetlands and their buffers will be identified as part of the further structure planning and rezoning process. Buffers should be identified using a methodology acceptable to both the DEC and Department for Planning and Infrastructure (DPI), for example the DPI's *Guideline for the Determination of*

Wetland Buffer Requirements, and it is recommended that a management plan be developed and implemented for the wetlands on site.

Acid Sulfate Soils
According to the Western Australian Planning Commission's (WAPC) *Planning Bulletin No. 64 – Acid Sulfate Soils* the subject land is mapped as having a moderate to low risk of Actual Acid Sulfate Soils and Potential Acid Sulfate Soils at depths greater than 3 metres. Regardless of the generic mapping provided, please note that investigation of local site characteristics is needed, and if these lead to the view that there is a risk of disturbing acid sulfate soils, then more detailed site investigations and management in accordance with *Planning Bulletin No. 64* and the DEC's *Acid Sulfate Soils Management Series* are appropriate.

Water Management
The subject land is within the Peel-Harvey catchment and therefore the provisions of the *Environmental Protection (Peel Inlet-Harvey Estuary) Policy 1992* and the *Statement of Planning Policy No 2.1 - The Peel-Harvey Coastal Plain Catchment* shall apply. It is also recommended that stormwater management should be consistent with the DEC's *Stormwater Management Manual for Western Australia.*

Water management is an important issue for the locality, and the broader Peel-Harvey catchment, and the subject site contains areas of low lying land. It is recommended that site planners keep abreast of the initiatives to protect water quality in the Peel-Harvey catchment and the urban water management framework being developed for the Perth metropolitan area. The next stages of planning should be accompanied by water management plans/strategies based on adequate site monitoring and modelling consistent with the urban water management framework and advice of the DEC. In particular, it is expected that there will be negligible nutrient export. There is also an expectation that the site can be serviced by reticulated sewer.

Vegetation and Flora
Aerial photography of the site indicates the subject land is sparsely vegetated. The proponent has previously advised that existing vegetation of good condition will be retained where possible. As discussed, the subject land is located within the Peel Harvey Catchment where remaining areas of native vegetation are very important for protecting water quality and biodiversity. Under the provisions of the *Statement of Planning Policy No 2.1 - The Peel-Harvey Coastal Plain Catchment*, the proponent is encouraged to retain all areas of native vegetation and to protect them from further degradation.

All native vegetation should be preserved so far as practicable during and after clearing for site works and services to accommodate the proposed subsequent urban development. Measures should be taken to ensure the identification, protection and management of any significant vegetation on site worthy of retention prior to the commencement of site works.

Noise
The subject site abuts the Kwinana Freeway and future noise-sensitive land uses may be subject to excessive noise levels. Noise issues should be addressed at the subsequent stages of planning through compliance with the WAPC's *Draft Statement of Planning Policy Road and Rail Transport Noise* and *Draft Statement of Planning Policy Metropolitan Freight Network.*

It is also expected that appropriate studies be carried out to determine noise insulation requirement within future mixed use zones or residential zones adjacent to commercial and/or transport nodes. It should be noted that the accepted methodology for prediction of noise impacts and attenuation due to noise barriers is currently under review by Main Roads WA, and studies should be carried out in accordance with their new guidelines expected to be issued in 2006.

Potential Land Use Conflict
It is noted that the site is located in close proximity to several potentially conflicting land uses such as sand quarries, horse stables, a crematoria and poultry farms. It is considered that the resolution of potential land use conflicts is a key planning issue that planning authorities are best positioned to resolve, having regard for local planning directions and knowledge and the results of accredited technical studies, on advice from appropriate government agencies. In the absence of site specific technical studies, the Environmental Protection Authority's (EPA) *Guidance Statement No. 3 Separation Distances Between Industrial and Sensitive Land Uses* should be utilised as a guide for generic separation distances.

Site Contamination
A previously submitted report regarding the subject land indicates that there may be a possibility of soil and/or groundwater contamination as a result of historical land use. As noted in the report,

a Preliminary Site Investigation (PSI) should be carried out prior to detailed planning. If as a result of the site investigation the site is found to be contaminated, a Site Remediation and Validation Report is to be produced in consultation with the DEC.

Preliminary and detailed site investigation and subsequent management plans should be prepared and implemented in accordance with the DEC's *Contaminated Sites Management Series* and to the satisfaction of the DEC's Land and Water Quality Branch.

High Pressure Natural Gas Pipeline

The Dampier to Bunbury high pressure natural gas pipeline traverses the subject land. Detailed risk assessment and planning should be undertaken in consultation with the Department of Consumer and Employment Protection, who is the lead agency for the consideration of public risk.

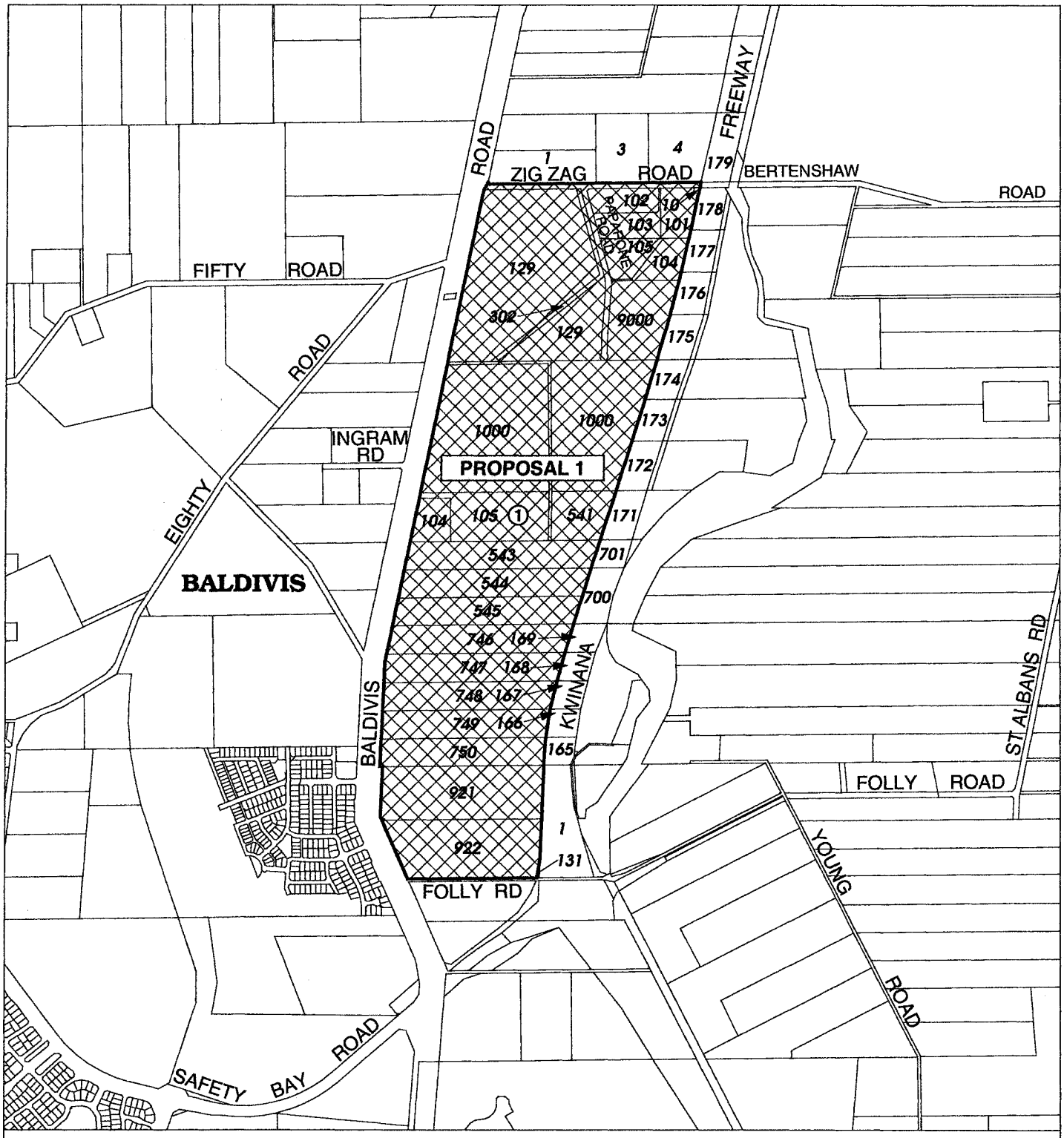
3. General Advice

- For the purposes of Part IV of the EP Act, the scheme amendment is defined as an assessed scheme amendment. In relation to the implementation of the scheme amendment, please note the requirements of Part IV Division 4 of the EP Act.
- There is no appeal right in respect of the EPA's decision on the level of assessment of scheme amendments.
- A copy of this advice will be sent to the relevant authorities and will be available to the public on request.

W H Tacey
A/Director
Environmental Impact Assessment

23 October 2006

cc: Department for Planning & Infrastructure



Baldivis (East) - South of Zig Zag Road

as advertised

12 September 2006

Figure 1

Legend

Proposed:

① urban zone

Base information supplied by DLI PA 23-2003

250Sbw1.fig
21 Sep 2006
Produced by Statutory Mapping Section, Spatial Information & Research - Mapping & GeoSpatial Data,
Department for Planning and Infrastructure, on behalf of the Western Australian Planning Commission, Perth WA

Western Australian Planning Commission 50 spatial planning years

GDA

N

SCALE 1:20000

0 500 metres

Environmental Protection Authority

The Atrium,
Level 8, 168 St Georges Terrace,
Perth, Western Australia 6000.
Telephone: (08) 6364 6500. Facsimile: (08) 6364 6522.

Postal Address: PO Box K822,
Perth, Western Australia 6842.
Website: www.epa.wa.gov.au

Director General
Department for Planning & Infrastructure
469-489 Wellington Street
PERTH WA 6000

Our Ref CRN220603
Enquiries Glen McLeod-Thorpe

SCHEME AMENDMENT TITLE:	**MRS Amendment 1128/41 Baldivis Urban Area Expansion - Area 2**
SCHEME AMENDMENT LOCATION:	**Lots 104 & 105, 532-538, 540 & 541, 543-545, 746-750, 921 & 922 Baldivis Road**
LOCALITY:	**Baldivis**
RESPONSIBLE AUTHORITY:	**Western Australian Planning Commission**
LEVEL OF ASSESSMENT:	**Scheme Amendment Not Assessed - Advice Given Under Section 48a(1)(A) (no appeals)**

The above scheme amendment has been referred to the Environmental Protection Authority (EPA) for assessment.

Please find enclosed a copy of the EPA's letter to the Western Australian Planning Commission dated 23 October 2006 for your information and records.

W H Tacey
A/Director
Environmental Impact Assessment

23 October 2006

Enc.

Environmental Protection Authority

The Atrium,
Level 8, 168 St Georges Terrace,
Perth, Western Australia 6000.
Telephone: (08) 6364 6500. Facsimile: (08) 6364 6522.

Postal Address: PO Box K822,
Perth, Western Australia 6842.
Website: www.epa.wa.gov.au

Secretary
Western Australian Planning Commission
469 Wellington Street
PERTH WA 6000

Our Ref CRN220603
Enquiries Glen McLeod-Thorpe

SCHEME AMENDMENT TITLE:	**MRS Amendment 1128/41 Baldivis Urban Area Expansion - Area 2**
SCHEME AMENDMENT LOCATION:	**Lots 104 & 105, 532-538, 540 & 541, 543-545, 746-750, 921 & 922 Baldivis Road**
LOCALITY:	**Baldivis**
RESPONSIBLE AUTHORITY:	**Western Australian Planning Commission**
LEVEL OF ASSESSMENT:	**Scheme Amendment Not Assessed - Advice Given Under Section 48a(1)(A) (no appeals)**

Thank you for your letter of 26 September 2006 referring the above proposed scheme amendment.

After consideration of the information provided by you, the Environmental Protection Authority (EPA) considers that the proposed scheme amendment should not be assessed under Part IV Division 3 of the *Environmental Protection Act 1986* (EP Act) but nevertheless provides the following advice and recommendations.

ADVICE AND RECOMMENDATIONS

1. Environmental Issues

- Noise
- Acid Sulfate Soils
- Water Management
- Vegetation and Flora
- Potential Land Use Conflict
- Site Contamination
- High Pressure Natural Gas Pipeline

2. Advice and recommendations regarding Environmental Issues

Noise
The subject site abuts the Kwinana Freeway and future noise-sensitive land uses may be subject to excessive noise levels. Noise issues should be addressed at the subsequent stages of planning through compliance with the WAPC's *Draft Statement of Planning Policy Road and Rail Transport Noise* and *Draft Statement of Planning Policy Metropolitan Freight Network.*

It is also expected that appropriate studies be carried out to determine noise insulation requirement within future mixed use zones or residential zones adjacent to commercial and/or transport nodes. It should be noted that the accepted methodology for prediction of noise impacts and attenuation due to noise barriers is currently under review by Main Roads WA, and studies should be carried out in accordance with their new guidelines expected to be issued in 2006.

Acid Sulfate Soils

According to the Western Australian Planning Commission's (WAPC) *Planning Bulletin No. 64 – Acid Sulfate Soils* the subject land is mapped as having a moderate to low risk of Actual Acid Sulfate Soils and Potential Acid Sulfate Soils at depths greater than 3 metres. Regardless of the generic mapping provided, please note that investigation of local site characteristics is needed, and if these lead to the view that there is a risk of disturbing acid sulfate soils, then more detailed site investigations and management in accordance with *Planning Bulletin No. 64* and the DEC's *Acid Sulfate Soils Management Series* are appropriate.

Water Management

A large portion of the subject site is identified as a Multiple Use wetland on the DEC's Geomorphic Wetlands Swan Coastal Plain dataset and is relatively low-lying and subject to seasonal inundation.

The subject land is within the Peel-Harvey catchment and the provisions of the *Environmental Protection (Peel Inlet-Harvey Estuary) Policy 1992* and the *Statement of Planning Policy No 2.1 - The Peel-Harvey Coastal Plain Catchment* shall apply. Careful management of stormwater, nutrients, other contaminants and retention of native vegetation is expected consistent with these policies. There shall not be any direct stormwater discharge into any rural drains or wetlands. Stormwater management should be consistent with the DEC's *Stormwater Management Manual for Western Australia.*

Water management is an important issue for the locality, and the broader Peel-Harvey catchment, and the subject site contains areas of low lying land. It is recommended that site planners keep abreast of the initiatives to protect water quality in the Peel-Harvey catchment and the urban water management framework being developed for the Perth metropolitan area. The next stages of planning should be accompanied by water management plans/strategies based on adequate site monitoring and modelling consistent with the urban water management framework and advice of the DEC. In particular, it is expected that there will be negligible nutrient export. There is also an expectation that the site can be serviced by reticulated sewer.

Vegetation and Flora

Aerial photography of the site indicates the subject land is sparsely vegetated. Existing vegetation, including mature trees, of good condition should be retained within the proposed development where possible. As discussed, the subject land is located within the Peel Harvey Catchment where remaining areas of native vegetation are very important for protecting water quality and biodiversity. Under the provisions of the *Statement of Planning Policy No 2.1 - The Peel-Harvey Coastal Plain Catchment*, the proponent is encouraged to retain all areas of native vegetation and to protect them from further degradation.

All native vegetation should be preserved so far as practicable during and after clearing for site works and services to accommodate the proposed subsequent urban development. Measures should be taken to ensure the identification, protection and management of any significant vegetation on site worthy of retention prior to the commencement of site works. It is noted that the proponent proposes to maintain existing hollow-bearing trees as potential habitat for the Carnaby's Black Cockatoo.

Potential Land Use Conflict

It is noted that the site is located in close proximity to several potentially conflicting land uses including a poultry farm and nursery. It is considered that the resolution of potential land use conflicts is a key planning issue that planning authorities are best positioned to resolve, having regard for local planning directions and knowledge and the results of accredited technical studies, on advice from appropriate government agencies. In the absence of site specific technical studies, the EPA's *Guidance Statement No. 3 Separation Distances Between Industrial and Sensitive Land Uses* should be utilised as a guide for generic separation distances.

It is noted that the subject site is located within the generic separation distances for both the poultry farm and the nursery. With regard to managing potential adverse impacts from the poultry farm, the WAPC's *Statement of Planning Policy No 4.3 – Poultry Farms Policy* should be utilised. Assumptions regarding the size and intended operations of the poultry farm should not be relied upon however, and an assessment should be carried out to demonstrate that any potential impacts can be managed. It is considered that any potential impacts from the nursery can be adequately managed and addressed at the next stages of planning.

Site Contamination

A previously submitted report regarding the subject land indicates that there may be a possibility of soil and/or groundwater contamination as a result of historical land use. It is noted that

a Preliminary Site Investigation (PSI) has been carried out which indicates that samples from the site contain zinc at concentrations greater than the environmental investigation levels and petroleum hydrocarbons at a concentration greater than the human health investigation levels. Accordingly, the proponent should be advised to liaise with the DEC's Land and Water Quality Branch and a Site Remediation and Validation Report should be produced in consultation with the DEC's Land and Water Quality Branch.

Preliminary and detailed site investigation and subsequent management plans should be prepared and implemented in accordance with the DEC's *Contaminated Sites Management Series* and to the satisfaction of the DEC's Land and Water Quality Branch.

High Pressure Natural Gas Pipeline
It is noted that the Dampier to Bunbury high pressure natural gas pipeline is located in close proximity to the subject land. Further advice should be sought from the Department of Consumer and Employment Protection, who is the lead agency for the consideration of public risk.

3. General Advice

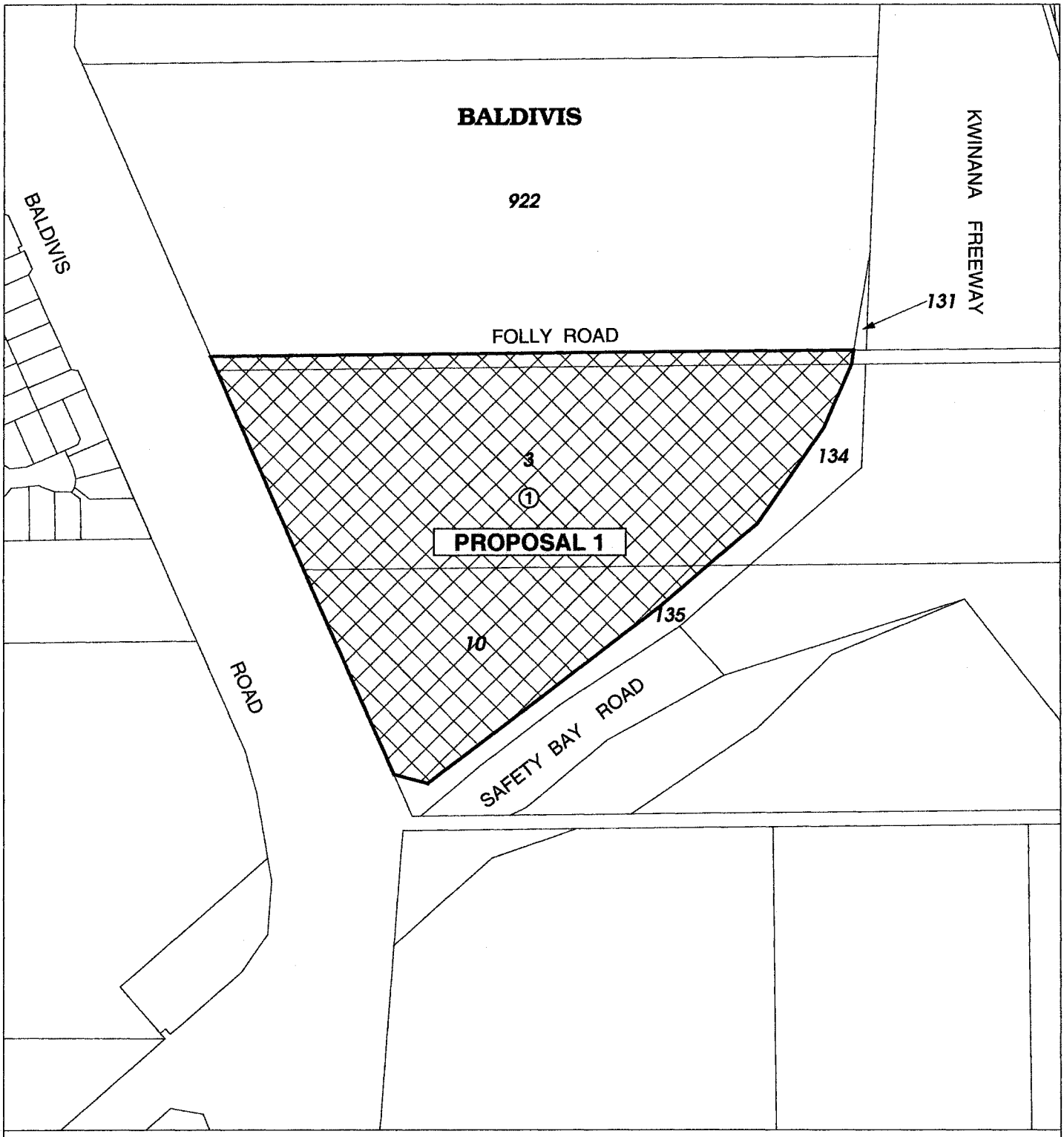
- For the purposes of Part IV of the EP Act, the scheme amendment is defined as an assessed scheme amendment. In relation to the implementation of the scheme amendment, please note the requirements of Part IV Division 4 of the EP Act.
- There is no appeal right in respect of the EPA's decision on the level of assessment of scheme amendments.
- A copy of this advice will be sent to the relevant authorities and will be available to the public on request.

Yours faithfully

W H Tacey
A/Director
Environmental Impact Assessment

23 October 2006

cc: Department for Planning & Infrastructure



Baldivis (East) - Lots 3 and 10 Folly Road

12 September 2006

as advertised

Figure 1

Legend

Proposed:

1 urban zone

Base information supplied by DLI PA 23-2003

2506bw1.fig
21 Sep 2006
Produced by Statutory Mapping Section, Spatial Information & Research - Mapping & GeoSpatial Data,
Department for Planning and Infrastructure, on behalf of the Western Australian Planning Commission, Perth WA

Government of Western Australia

Western Australian Planning Commission
50 spatial planning years

GDA

N

SCALE 1:4000

0 100
metres

Environmental Protection Authority

The Atrium,
Level 8, 168 St Georges Terrace,
Perth, Western Australia 6000.
Telephone: (08) 6364 6500. Facsimile: (08) 6364 6522.

Postal Address: PO Box K822,
Perth, Western Australia 6842.
Website: www.epa.wa.gov.au

Director General
Department for Planning & Infrastructure
469-489 Wellington Street
PERTH WA 6000

Our Ref CRN220604
Enquiries Glen McLeod-Thorpe

SCHEME AMENDMENT TITLE:	**MRS Amendment 1129/41Baldivis Urban Area Expansion - Area 3**
SCHEME AMENDMENT LOCATION:	**Lot 3 Folly Road and Lot 10 Baldivis Road**
LOCALITY:	**Baldivis**
RESPONSIBLE AUTHORITY:	**Western Australian Planning Commission**
LEVEL OF ASSESSMENT:	**Scheme Amendment Not Assessed - Advice Given Under Section 48a(1)(A) (no appeals)**

The above scheme amendment has been referred to the Environmental Protection Authority (EPA) for assessment.

Please find enclosed a copy of the EPA's letter to the Western Australian Planning Commission dated 23 October 2006 for your information and records.

W H Tacey
A/Director
Environmental Impact Assessment

23 October 2006

Enc.

Environmental Protection Authority

The Atrium,
Level 8, 168 St Georges Terrace,
Perth, Western Australia 6000.
Telephone: (08) 6364 6500. Facsimile: (08) 6364 6522.

Postal Address: PO Box K822,
Perth, Western Australia 6842.
Website: www.epa.wa.gov.au

Secretary
Western Australian Planning Commission
469 Wellington Street
PERTH WA 6000

Our Ref CRN220604
Enquiries Glen McLeod-Thorpe

SCHEME AMENDMENT TITLE:	**MRS Amendment 1129/41Baldivis Urban Area Expansion - Area 3**
SCHEME AMENDMENT LOCATION:	**Lot 3 Folly Road and Lot 10 Baldivis Road**
LOCALITY:	**Baldivis**
RESPONSIBLE AUTHORITY:	**Western Australian Planning Commission**
LEVEL OF ASSESSMENT:	**Scheme Amendment Not Assessed - Advice Given Under Section 48a(1)(A) (no appeals)**

Thank you for your letter of 26 September 2006 referring the above proposed scheme amendment.

After consideration of the information provided by you, the Environmental Protection Authority (EPA) considers that the proposed scheme amendment should not be assessed under Part IV Division 3 of the *Environmental Protection Act 1986* (EP Act) but nevertheless provides the following advice and recommendations.

ADVICE AND RECOMMENDATIONS

1. Environmental Issues

- Noise
- Acid Sulfate Soils
- Water Management
- Vegetation and Flora
- Site Contamination

2. Advice and recommendations regarding Environmental Issues

Noise
The subject site abuts the Kwinana Freeway and future noise-sensitive land uses may be subject to excessive noise levels. Noise issues should be addressed at the subsequent stages of planning through compliance with the WAPC's *Draft Statement of Planning Policy Road and Rail Transport Noise* and *Draft Statement of Planning Policy Metropolitan Freight Network.*

It is also expected that appropriate studies be carried out to determine noise insulation requirement within future mixed use zones or residential zones adjacent to commercial and/or transport nodes. It should be noted that the accepted methodology for prediction of noise impacts and attenuation due to noise barriers is currently under review by Main Roads WA, and studies should be carried out in accordance with their new guidelines expected to be issued in 2006.

Acid Sulfate Soils
According to the Western Australian Planning Commission's (WAPC) *Planning Bulletin No. 64 – Acid Sulfate Soils* the subject land is mapped as having a moderate to low risk of Actual Acid Sulfate Soils and Potential Acid Sulfate Soils at depths greater than 3 metres. Regardless of the generic mapping provided, please note that investigation of local site characteristics is needed, and if these lead to the view that there is a risk of disturbing acid sulfate soils, then more detailed

site investigations and management in accordance with *Planning Bulletin No. 64* and the DEC's *Acid Sulfate Soils Management Series* are appropriate.

Water Management
The subject land is within the Peel-Harvey catchment and the provisions of the *Environmental Protection (Peel Inlet-Harvey Estuary) Policy 1992* and the *Statement of Planning Policy No 2.1 - The Peel-Harvey Coastal Plain Catchment* shall apply. Careful management of stormwater, nutrients, other contaminants and retention of native vegetation is expected consistent with these policies. There shall not be any direct stormwater discharge into any rural drains or wetlands. Stormwater management should be consistent with the DEC's *Stormwater Management Manual for Western Australia.*

Water management is an important issue for the locality, and the broader Peel-Harvey catchment, and the subject site contains areas of low lying land. It is recommended that site planners keep abreast of the initiatives to protect water quality in the Peel-Harvey catchment and the urban water management framework being developed for the Perth metropolitan area. The next stages of planning should be accompanied by water management plans/strategies based on adequate site monitoring and modelling consistent with the urban water management framework and advice of the DEC. In particular, it is expected that there will be negligible nutrient export. There is also an expectation that the site can be serviced by reticulated sewer.

Vegetation and Flora
Aerial photography of the site indicates the subject land is sparsely vegetated. Existing vegetation, including mature trees, of good condition should be retained within the proposed development where possible. As discussed, the subject land is located within the Peel Harvey Catchment where remaining areas of native vegetation are very important for protecting water quality and biodiversity. Under the provisions of the *Statement of Planning Policy No 2.1 - The Peel-Harvey Coastal Plain Catchment*, the proponent is encouraged to retain all areas of native vegetation and to protect them from further degradation.

All native vegetation should be preserved so far as practicable during and after clearing for site works and services to accommodate the proposed subsequent urban development. Measures should be taken to ensure the identification, protection and management of any significant vegetation on site worthy of retention prior to the commencement of site works.

Site Contamination
A previously submitted report regarding the subject land indicates that there may be a possibility of soil and/or groundwater contamination as a result of historical land use. It is noted that a Preliminary Site Investigation (PSI) has been carried out which indicates the absence of any contaminants, although it is not known if this has been reviewed by the DEC's Land and Water Quality Branch. Preliminary and detailed site investigation and subsequent management plans should be prepared and implemented in accordance with the DEC's *Contaminated Sites Management Series* and to the satisfaction of the DEC's Land and Water Quality Branch.

3. General Advice

- For the purposes of Part IV of the EP Act, the scheme amendment is defined as an assessed scheme amendment. In relation to the implementation of the scheme amendment, please note the requirements of Part IV Division 4 of the EP Act.
- There is no appeal right in respect of the EPA's decision on the level of assessment of scheme amendments.
- A copy of this advice will be sent to the relevant authorities and will be available to the public on request.

W H Tacey
A/Director
Environmental Impact Assessment

23 October 2006

cc: Department for Planning & Infrastructure

RPS

APPENDIX 2

Department of Water Approval of the Baldivis East District Water Management Strategies

Department of Water
Government of Western Australia

Yourref: 200921260:LT4:21126:wc
Our ref: RF2680
Enquiries: Brett Dunn

11 May 2009

PB
15 MAY 2009
RECEIVED

Parsons Brickeroff Pty Ltd
PO Box 1232
Subiaco WA 6904

Attn: Werner Corbe

Dear Werner,

RE: Revised North East Baldivis District Water Management Strategy

Thank you for the revised version of the aforementioned District Water Management Strategy (DWMS) for North East Baldivis Structure Plan Area, received with correspondence dated 30 April 2009.

The Department of Water (DoW) has reviewed the revised DWMS and wishes to advise it is satisfied with the documents content to support an amendment to the Metropolitan Region Scheme for rezoning to 'Urban'.

If you would like to discuss the above, or require any further information, do not hesitate to contact the DoW's Mandurah Office on (08) 9550 4222.

Yours Sincerely,

Brett Dunn
A/Program Manager – Catchment and Waterways Management
Kwinana Peel Region

CC: Chief Executive Officer
City of Rockingham
PO Box 2142
Rockingham DC WA 6967

Jo Barkla
Western Australian Planning Commission
Albert Facey House
469 Wellington Street
PERTH WA 6000

Kwinana Peel Region
Suite 6 Sholl House 21 Sholl Street Mandurah Western Australia 6210
PO Box 332 Mandurah Western Australia 6210
Telephone (08) 9550 4288 Facsimile (08) 9581 4269
www.water.wa.gov.au
wa.gov.au

Department of Water
Government of Western Australia

Your ref:
Our ref: RF2680
Enquiries: Brett Dunn

13 November 2007

Parsons Brickeroff
PO Box 1232
Subiaco WA 6904

Attn: Tung Nguyen

Dear Tung

RE: East Baldivis District Water Management Strategy

Thank you for the revised version of the aforementioned document received 3rd October 2007.

The Department of Water (DoW) has reviewed the East Baldivis District Water Management Strategy (October 2007) and wishes to advise that the document satisfies the Department's requirements with regard to water sensitive design.

Please contact Brett Dunn on 9550 4222 if you wish to discuss further.

Yours Sincerely

Adrian Parker
Program Manager – Catchment and Waterways
Kwinana Peel Region

Kwinana Peel Region
Suite 6 Sholl House 21 Sholl Street Mandurah Western Australia 6210
PO Box 332 Mandurah Western Australia 6210
Telephone (08) 9550 4288 Facsimile (08) 9581 4269
www.water.wa.gov.au