

# **ACE ENVIRONMENTAL**

**DISTRICT STRUCTURE PLAN  
DEVELOPMENT AREA 19  
CITY OF COCKBURN**

**WESTERN AUSTRALIA**

**LIMITED PRELIMINARY SITE ASSESSMENT**

**FOR  
CITY OF COCKBURN**

**JANUARY 2008  
Ref: J07030.01**

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## CONDITIONS RELATING TO THIS REPORT

1. This report has been prepared for the sole use of the City of Cockburn. It has been issued in accordance with the agreed terms and scope detailed in the proposal for the investigation. No responsibility or liability to any third party is accepted for any damages arising out of the use of this report.
2. This report has been prepared by suitably qualified and experienced personnel for the purposes stated herein. Every care is taken with the report as it relates to interpretation of sub-surface conditions, discussion of findings and recommendations given. No responsibility for the consequences of extrapolation by others is accepted by the company.
3. Findings and conclusions produced in the report are based on the investigation of the sub-surface through isolated locations. Conditions between investigated sites are based on extrapolation, interpretation and professional estimates. Unexpected variations in ground conditions often occur which cannot always be anticipated. The conclusions and recommendations in the report were considered accurate at the time of issue and based on certain assumptions at the time. Conditions and assumptions change with time and may affect the accuracy of the report.
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5. These conditions must be read as part of the report and must be reproduced with all future copies.
6. The recommendations of this report should be considered a starting point. Recommendations should be continuously reviewed during the earthworks stage as sub-surface information and results from monitoring become available. It is strongly recommended that the Company be retained to provide consultancy and/or inspections during the earthwork stages.

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## **1 Introduction**

In August 2007, Ace Environmental Pty Limited (Ace) was commissioned by Koltasz Smith on behalf of the City of Cockburn to undertake a Limited Preliminary Site Investigation (PSI) of Development Area 19, Jandakot, Western Australia (the site). Brown Geotechnical and Environmental Pty Limited (BGE) was initially commissioned to undertake the PSI in October 2006, but were not able to complete the investigation. This report includes the findings and data collected during both investigations.

A site locality map is presented in **Figure 1** and detailed site layout maps are included in **Figures 2** and **3**.

This report summarises the findings of the limited PSI conducted at the site from the 26 to 30 March and 31 October 2007 to provide an assessment of the human health and environmental risks associated with the site from past and current activities.

### **1.1 Objectives**

The objective of the scope of work was to provide the client with the results of the desktop study enabling them to have a better understanding of the environmental issues that may need addressing during the development stage.

### **1.2 Scope of Work**

As detailed in BGE's and Ace's proposal dated 4 August 2006 and 6 August 2007, respectively, the following scope of works was undertaken:

- Site inspection
- Collection and review of historical information
- Assessment of the potential contamination status of the site
- Preparation of a report that provides recommendations for any further investigations if potentially contaminating activities are identified.

## 2 Methodology

A limited PSI was undertaken to identify past and present potentially contaminating land use and to determine whether a detailed soil sampling program is required. The following activities were undertaken as part of the PSI:

- Site inspection encompassing interviews with available personnel, identifying neighbouring land use and a site walkover by qualified personnel
- Review of current and historical aerial photography from the Department of Land Information (DOLI)
- Determine likely groundwater elevations and quality near the site including a search of DEC AQWA database bore data
- Review of geological data to determine the topography and geology of the area
- Review of the City of Cockburn's Planning, Health and Environment Departmental records.
- Review of the WAPC Planning Bulletin 64 to determine ASS classification.
- Installation of 6 groundwater monitoring bores to depths of approximately 3 to 4 metres below ground level enabling the bores to be screened from above the watertable to the end of the hole.
- Collection of one groundwater sample from each well and measurement of groundwater level, field pH, conductivity and dissolved oxygen one week after installation.
- Laboratory analysis of 7 groundwater samples (including 1 QA/QC sample) by a NATA accredited laboratory for low level OC/OPs and heavy metals (As, Cd, Hg, Cu, Cr, Ni, Pb and Zn), total petroleum hydrocarbons (TPH) and benzene, toluene, ethyl benzene and xylenes (BTEX).
- Preparation of a report detailing the results of the limited PSI investigation.

### **3 Site Description**

Development Area 19 is approximately 79 ha in size and lies at the northwest corner of the intersection of North Lake Road and the Kwinana Freeway. The land is approximately 16 km south of the Perth central business district and approximately 10 km southeast of Fremantle, within the City of Cockburn. The land adjoins the predominantly developed suburb of South Lake to the west along Semple Court, abuts the Kwinana Freeway to the east, and is bounded by Verna Court to the north and North Lake Road to the south.

The area has previously been used for a mixture of rural lifestyle, horse agistment and similar related activities. Some light industrial and commercial activities have also been present in the area. Immediately to the west there is history of market gardens.

Development Area 19 encompasses 95 Lots including Lots 1, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39 and 40 Verna Court; Lots 11, 12, 13, 14, 15, 16, 17, 18, 41, 42, 43, 44, 45, 46, 47 and 500 Semple Court; Lots 1, 2, 3, 7, 9, 10, 11, 12, 13, 15, 20, 21, 30, 31, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 80, 100(1), 100(2), 101, 102, 130, 200 and 201 Muriel Court; Lots 16, 17, 53, 54 and 55 Tea Tree Close; Lots 1, 2, 3, 4, 5, 6, 7, 8, 18, 19, 32, 33, 50, 52, 53, 71, 73, 74, 75, 76, 81 and 131 North Lake Road and Lot 411 Kentucky Court.

#### **3.1 Site Inspection**

##### *Lot 1 Verna Court*

A partially completed large building is situated in the middle of the Lot. Some building debris, fill and stockpiles were observed.

##### *Lot 30 Verna Court*

Rubbish was seen at the roadside (Verna Court) and rear of the Lot and a stockpile at the front of the Lot containing bricks and rubble.

##### *Lot 31 Verna Court*

Horses and stables and fenced off paddocks

##### *Lot 32 Verna Court*

Rubbish including an old battery and paint tins were observed at the rear of the Lot.

##### *Lot 33 Verna Court*

A residential dwelling is located at the front of the Lot and goats on bare land were observed at the rear of the Lot.

##### *Lot 34 Verna Court*

An old greenhouse is located on the Lot and some sheep.

##### *Lot 35 Verna Court*

Junk and rubbish including old tyres and sand was observed on the Lot.

##### *Lot 36 Verna Court*

Stockpiles and potentially contaminated fill was observed at the front of the Lot and old vehicles and piles of rubbish were scattered around the Lot.

##### *Lot 37 Verna Court*

An old car and piles of rubbish were observed on the Lot.

*Lot 38 Verna Court*

Disused stables and sheds

*Lot 39 Verna Court*

There is development occurring at the front of the Lot and some excavation in the middle of the Lot, which contained some rubbish. Potentially uncontrolled fill may have been brought onto the Lot. Some scrub at the rear of the Lot.

*Lot 40 Verna Court*

Some irrigation risers and an old shed.

*Lot 11 Semple Court*

A residential dwelling is located on the Lot and signs of possible market gardening/nursery activities in the past.

*Lot 12 Semple Court*

A residential dwelling

*Lot 13 Semple Court*

The Lot contains irrigation risers and sheds.

*Lot 14 Semple Court*

Large amounts of stockpiles (sand)

*Lot 15 Semple Court*

Lots of junk including old oil drums

*Lot 16 Semple Court*

A shed and some rubbish was observed on the Lot

*Lot 17 Semple Court*

The Lot contained a residential dwelling, sheds and some garden.

*Lot 18 Semple Court*

A residential dwelling – some rubbish around the Lot.

*Lot 41 Semple Court*

Some old irrigation risers, sheds, junk and old cars were observed.

*Lot 42 Semple Court*

Some old irrigation risers, a shed and bricks in a hollow at the rear of the Lot were observed.

*Lot 43 Semple Court*

An old shed and dead trees were observed.

*Lot 44 Semple Court*

Irrigation risers and horses were observed on the Lot.

*Lot 45 Semple Court*

A derelict house was located at the front of the Lot and a concrete pad and old sheds were observed at the rear of the Lot.

*Lot 46 Semple Court*

Old cars and stockpiles, old batteries and oil/paint drums were observed around the Lot.



*Lot 47 Semple Court*

A workshop was located on the Lot and piles of rubbish, bricks, timber, old vehicles, oil drums and tyres.

*Lot 500 Semple Court*

An operational garden centre with a "Dutch Windmill" was observed.

*Lot 1 Muriel Court*

A residential dwelling was located at the front of the Lot with sheds and horses at the rear.

*Lot 2 Muriel Court*

A residential dwelling was located at the front of the Lot and grape vines and fruit trees at the rear and a large shed.

*Lot 3 Muriel Court*

A residential dwelling was located at the front of the Lot and grape vines at the rear with irrigation.

*Lot 7 Muriel Court*

A residential dwelling was located at the front of the Lot and horses, sheds and stables at the rear.

*Lot 9 Muriel Court*

A residential dwelling is located at the front of the Lot and scrub at the rear of the Lot.

*Lot 10 Muriel Court*

A residential dwelling is located at the front of the Lot and scrub at the rear of the Lot.

*Lot 11 Muriel Court*

A residential dwelling is located at the front of the Lot and trees and vacant land at the rear.

*Lot 12 Muriel Court*

Scrub at the front of the Lot

*Lot 13 Muriel Court*

A residential dwelling is located at the front of the Lot and what appeared to be an asbestos fence was observed.

*Lot 15 Muriel Court*

Lot 15 had old buildings and piles of rubbish, debris and irrigation – potential that welding was undertaken in the past.

*Lot 20 Muriel Court*

A residential dwelling is located at the front of the Lot.

*Lot 21 Muriel Court*

Residential dwelling with irrigation risers for trees, some rubbish and a pile of old steel which were not considered potentially contaminating.

*Lot 30 Muriel Court*

A residential dwelling is located at the front of the Lot and piles of rubbish, tyres and fill were observed at the rear of the Lot.

*Lot 31 Muriel Court*

A residential dwelling is located at the front of the Lot and old sheds, fences and trees were observed at the rear.

*Lot 48 Muriel Court*

A day care centre was located on the corner and piles of sand and fill were observed around the Lot.

*Lot 49 Muriel Court*

A residential dwelling is located at the front of the Lot and sheds and old cars at the rear.

*Lot 50 Muriel Court*

A residential dwelling is located at the front of the Lot and old sheds, fruit trees and irrigation at the rear.

*Lot 51 Muriel Court*

A residential dwelling is located at the front of the Lot and sheds and greenhouse at the rear.

*Lot 52 Muriel Court*

A residential dwelling and shed is located at the front of the Lot and a field was observed at the rear of the Lot.

*Lot 53 Muriel Court*

A residential dwelling is located at the front of the Lot and a shed, rubbish and scrub at the rear.

*Lot 54 Muriel Court*

Vacant land with a few trees.

*Lot 55 Muriel Court*

A residential dwelling is located at the front of the Lot and irrigation and an old vegetable patch at the rear.

*Lot 56 Muriel Court*

A residential dwelling is located at the front of the Lot and sheds and piles of rubbish at the rear.

*Lot 57 Muriel Court*

No site access

*Lot 58 Muriel Court*

A residential dwelling is located at the front of the Lot and some old tyres, sheds, scrub and horses at the rear.

*Lot 59 Muriel Court*

A residential dwelling is located at the front of the Lot and an old car, stables, horses and batteries and tyres were observed at the rear of the Lot.

*Lot 60 Muriel Court*

A residential dwelling is located at the front of the Lot and scrub at the rear with a shed and some rubbish, which did not appear to be potentially contaminating.

*Lot 61 Muriel Court*

A residential dwelling is located at the rear of the Lot as well as a workshop. The site had old oil drums, some junk, rubble, fill and bricks.

*Lot 62 Muriel Court*

A residential dwelling is located at the front of the Lot and a shed at the rear full of rubbish, lots of old vehicles, piles of rubbish, a large number of blue drums and horses and goats were also observed.

*Lot 63 Muriel Court*

A residential dwelling is located at the front of the Lot with a workshop at the back. Two above ground fuel storage tanks were found on the site with obvious signs of fuel leakage. Other observations were a fuel truck at the Lot, oil drums, containers, old vehicles, rubbish and a pile of old batteries.

*Lot 64 Muriel Court*

A residential dwelling is located at the front of the Lot and at the rear was a large shed, sheep, irrigation and a large stockpile of sand overgrown with grass.

*Lot 65 Muriel Court*

Vacant land with trees and sheds. Bricks and rubbish including roofing material that could be potentially asbestos material were observed around the Lot.

*Lot 80 Muriel Court*

No site access

*Lot 100 Muriel Court*

A residential dwelling was at the front of the Lot, which had irrigation for lawn and trees. Part of the site at the back of the Lot had been cleared – stockpiles of soil and vegetation were still present.

*Lot 101 Muriel Court*

A residential dwelling was at the front of the Lot. At the side and back of the Lot were an old car wreck, workshop, old tyres, car parts, oil drums, and a pile of sand. Some oil staining was observed.

*Lot 102 Muriel Court*

Vacant land with scrub

*Lot 130 Muriel Court*

A paddock with a horse and irrigation was observed on the Lot.

*Lot 200 Muriel Court*

No site access

*Lot 201 Muriel Court*

A residential dwelling is located at the front of the Lot and sheds and an old car were at the rear.

*Lot 16 Tea tree Close*

Horse paddocks with irrigation were observed on the Lot.

*Lot 17 Tea Tree Close*

Horse paddocks with irrigation were observed on the Lot.

*Lot 53 Tea Tree Close*

Two Residential dwellings were located at the front of the Lot.

*Lot 54 Tea Tree Close*

It was in the past an operational nursery. The Lot contained stockpiles, old cars and left over plants.

*Lot 55 Tea Tree Close*

A veterinary clinic was located at the front and fibre cable optics are in the vicinity of the Lot.

*Lot 1 North Lake Road*

A hire firm (Delta Handy Hire) is located on the Lot and a workshop is at the rear – possible fuel storage on the Lot.

*Lot 2 North Lake Road*

No access to Lot - residential

*Lot 3 North Lake Road*

No access to Lot - residential

*Lot 4 North Lake Road*

No access to Lot - residential

*Lot 5 North Lake Road*

Piles of sand were observed on the Lot and it is being used as a building site for storage units.

*Lot 6 North Lake Road*

Residential dwelling

*Lot 7 North Lake Road*

A residential dwelling is located at the front of the Lot and sheds at the rear.

*Lot 8 North Lake Road*

A residential dwelling is located at the front of the Lot and sheds at the rear.

*Lot 18 North Lake Road*

A residential dwelling is located at the front of Lot and scrub and rubbish was observed at the rear of the Lot.

*Lot 19 North Lake Road*

Pete's Discount Salvage and Hardware is located on this Lot. A large workshop and storage shed was observed and some rubbish was at the rear of the Lot.

*Lot 32 North Lake Road*

His and Hers Home Garden Supplies is located on the Lot. It consisted of sand, dirt and gravel storage, large shed, house and a rubbish tip was observed at the rear of the Lot.

*Lot 33 North Lake Road*

Two residential dwellings were observed at the front of the Lot and at the rear were trees, irrigation risers and a shipping container.

*Lot 50 North Lake Road*

A liquor store is located on this Lot and there is some shipping containers at the rear of the Lot.

*Lot 52 North Lake Road*

A residential dwelling is located at the front of the Lot and scrub and grass and a large pile of rubbish was observed at the rear of the Lot.

*Lot 53 North Lake Road*

Two residential dwellings are located at the front of the Lot.

*Lot 71 North Lake Road*

A large residential dwelling is located at the front of the Lot and a vegetable garden, sheep, turkeys, some rubbish and sea containers were observed at the rear of the Lot.

*Lot 73 North Lake Road*

A residential dwelling and paddock are located at the front of the Lot and a nursery is located at the rear – some chemical storage on the Lot.

*Lot 74 North Lake Road*

A medical centre is located at the front and at the rear is an old house, sheds, greenhouse and stockpiles, piles of rocks and pushed up mounds of soil and vegetation.

*Lot 75 North Lake Road*

It appears to be used as a place to park large trailers and shipping containers. Piles of rubbish, a large shed/workshop, stable, rubbles and a house that is being demolished was observed on the Lot. Also observed were a truck wash area and some oil staining.

*Lot 76 North Lake Road*

A residential dwelling is located at the front of the Lot and horses at the rear.

*Lot 81 North Lake Road*

The Australian Institute of Holistic Medicine is located on this Lot. There is two main buildings at the front and a car park at the rear of the Lot.

*Lot 131 North Lake Road*

A mechanic is located on this Lot. The Lot contains a mechanical workshop and previously had working underground fuel storage tanks (USTs), which are still in the ground beneath the Lot. LPG storage tanks were also observed on the Lot.

*Lot 411 Kentucky Court*

Horses and stables and fenced off paddocks.

Site photographs taken during the site inspection are included in **Appendix A**.

### **3.2 Neighbouring Land Use**

Land use in the vicinity of the site includes:

North: church, bus depot and undeveloped land

East: Kwinana freeway

South: vacant land; South-east: undeveloped land and Cockburn central town centre

West: residential subdivision; South-west: industrial area

### **3.3 Zoning and Proposed Land Use**

The zoning for the site is Development Area 19; split zoning: mixed business/development. The proposed land use is for a low-high density residential subdivision.

## 4 Site History

### 4.1 Council or Local Government Records

The City of Cockburn found no records relating to current or historical environmental health issues; complaints, cleanup notices, buried waste or applications of fuel tanks for Lots 10, 15, 21, 60, 61, 63, 100, 101, 102 Muriel Court, Lots 16 and 17 Tea Tree Close and 411 Kentucky Court. A copy of the letter is included in **Appendix B**. Records for the remaining Lots were not accessed for this PSI.

### 4.2 Freedom of Information Searches

Records obtained from the Department of Water under the freedom of Information (FOI) Act are included in **Appendix C**. A summary of the information collected is outlined below:

#### *Department of Water*

The Department of Water conducted a thorough search and confirmed that they had no documents relating to the properties. The site is located within a proclaimed groundwater area and a proclaimed surface water area (Murray River Catchment) and licenses would be required to take water.

### 4.3 Historical Aerial Photography Review

Historical aerial photos are shown in **Appendix D** and summarised in **Table 4.1**.

**Table 4.1 Aerial Photography Review**

Date	Observation
	Limit of DOLI supplied aerial photography
17/12/2005- colour	<p><b>Lot 15</b></p> <ul style="list-style-type: none"> <li>▪ Mostly vacant lot, old shed pad, small shed and trees bordering lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Residential house and workshop, Kwinana freeway</li> <li>▪ East- see lot 411</li> <li>▪ South- see lot 102</li> <li>▪ West- see lot 101</li> </ul> <p><b>Lot 16</b></p> <ul style="list-style-type: none"> <li>▪ Stables and paddocks bordered by trees</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- see lot 411</li> <li>▪ East- see lot 17</li> <li>▪ South- Vacant land and cleared land for development</li> <li>▪ West- commercial buildings front of lot, residential house in middle of lot, nursery plants across rest of lot</li> </ul> <p><b>Lot 17</b></p> <ul style="list-style-type: none"> <li>▪ Paddocks bordered by trees</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- see lot 411</li> <li>▪ East- Vacant scrub land, Kwinana freeway</li> <li>▪ South- Vacant land and cleared land for development</li> <li>▪ West- see lot 16</li> </ul> <p><b>Lot 21</b></p> <ul style="list-style-type: none"> <li>▪ Building front of lot, remainder grass and vegetation with bush at back of lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Several buildings front of lot with swimming pool, more</li> </ul>

	<p>buildings on lot some grass/ vegetation</p> <ul style="list-style-type: none"> <li>▪ East- see lot 100</li> <li>▪ South- large industrial building front of lot with car park, bushland at back of lot</li> <li>▪ West- residential property middle of lot, large shed at rear, remainder grass and bushland</li> </ul> <p><b><u>Lot 100</u></b></p> <ul style="list-style-type: none"> <li>▪ Building middle of lot, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- large residential building front of lot, small shed remainder grass and vegetation</li> <li>▪ East- see lot 101</li> <li>▪ South- large commercial building front of lot with car park, bushland at back of lot</li> <li>▪ West- see lot 21</li> </ul> <p><b><u>Lot 101</u></b></p> <ul style="list-style-type: none"> <li>▪ No land development, grass and vegetation comprise lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- vacant lot, front of lot sandy, remainder grass and vegetation</li> <li>▪ East- see lot 15</li> <li>▪ South- large commercial building front of lot with car park, bushland at back of lot</li> <li>▪ West- see lot 100</li> </ul> <p><b><u>Lot 102</u></b></p> <ul style="list-style-type: none"> <li>▪ No land development, grass and bushland covers lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- see lot 15</li> <li>▪ East- see lot 411</li> <li>▪ South- commercial building and residential at front of lots, nursery and vacant bush land at back of lots</li> <li>▪ West- see lot 101</li> </ul> <p><b><u>Lot 411</u></b></p> <ul style="list-style-type: none"> <li>▪ Several buildings between middle and back of lot, remainder grass and vegetation, with a tree border</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Kwinana Freeway, large commercial buildings</li> <li>▪ East- grass and bushland, no evidence of development</li> <li>▪ South- see lot 16 and 17 Tea Tree CL</li> <li>▪ West- see lot 15 and 102</li> </ul> <p><b><u>Lot 10</u></b></p> <ul style="list-style-type: none"> <li>▪ Front of lot has several buildings, back of lot cleared, trees bordering the west edge</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- several residential buildings front of lot, remainder grass and vegetation</li> <li>▪ East- vacant lot, no signs of development</li> <li>▪ South- several industrial buildings, market gardening takes up majority of lot</li> <li>▪ West- several residential buildings front of lot, remainder grass and vegetation</li> </ul> <p><b><u>Lot 60</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, with swimming pool, remainder bushland</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- large industrial building, remainder of lot cleared</li> <li>▪ East- see lot 61</li> <li>▪ South- residential building front of lot, remainder grass and vegetation</li> </ul> <p>West- residential building front of lot, track at rear with grass and vegetation</p> <p><b><u>Lot 61</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house at rear of site, trees across rest</li> </ul>
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	<p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- large industrial building, remainder of lot cleared</li> <li>▪ East- residential building front of lot, track back of lot, remainder grass and vegetation</li> <li>▪ South- residential building front of lot, remainder grass and vegetation</li> <li>▪ West- see lot 60</li> </ul> <p><b><u>Lot 63</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house and swimming pool front of lot, sheds, parking area, grass and trees on boundaries</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Freeway</li> <li>▪ East- building front of lot, remainder grass and vegetation</li> <li>▪ South- large residential building middle of lot, remainder grass and vegetation</li> <li>▪ West- residential building front of lot, track back of lot remainder grass and vegetation</li> </ul> <p><b><u>Lot 54</u></b></p> <ul style="list-style-type: none"> <li>▪ Commercial nursery with many buildings</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant land</li> </ul> <p><b><u>Lot 53</u></b></p> <ul style="list-style-type: none"> <li>▪ Front of site buildings, back of site bush</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South - Vacant land</li> </ul> <p><b><u>Lot 55</u></b></p> <ul style="list-style-type: none"> <li>▪ Front partially cleared, large car park, commercial development, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant land</li> </ul> <p><b><u>Lot 52</u></b></p> <ul style="list-style-type: none"> <li>▪ Front of lot buildings, remainder of lot grass and bushland towards back</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant land</li> </ul> <p><b><u>Lot 81</u></b></p> <ul style="list-style-type: none"> <li>▪ Car park at front of lot and several buildings, car park at back of lot, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant land</li> </ul> <p><b><u>Lot 76</u></b></p> <ul style="list-style-type: none"> <li>▪ One building front of site, grass and vegetation remainder</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant land</li> </ul> <p><b><u>Lot 75</u></b></p> <ul style="list-style-type: none"> <li>▪ Car park and buildings towards centre of site, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant land</li> </ul> <p><b><u>Lot 74</u></b></p> <ul style="list-style-type: none"> <li>▪ Large building and car park front of land, bush back section of site</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant land</li> </ul> <p><b><u>Lot 73</u></b></p> <ul style="list-style-type: none"> <li>▪ Front of site grass and vegetation and a car park, Buildings centre of site, Possible market gardening at rear of site delineated by lines</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant land</li> </ul>
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	<p><b><u>Lot 53</u></b></p> <ul style="list-style-type: none"> <li>▪ Front of site cleared land, small building centre of site, shrub land towards back of site</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant land</li> </ul> <p><b><u>Lot 18</u></b></p> <ul style="list-style-type: none"> <li>▪ Building front of site, remainder cleared land and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant land</li> </ul> <p><b><u>Lot 19</u></b></p> <ul style="list-style-type: none"> <li>▪ Cleared land, small building middle of site</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant land</li> </ul> <p><b><u>Lot 32</u></b></p> <ul style="list-style-type: none"> <li>▪ Car park front of site, buildings middle of site, grass and vegetation back of site</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant land</li> </ul> <p><b><u>Lot 33</u></b></p> <ul style="list-style-type: none"> <li>▪ Buildings front of site, land cleared, trees bordering back of site</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant land</li> </ul> <p><b><u>Lot 71</u></b></p> <ul style="list-style-type: none"> <li>▪ Buildings front right corner, remainder of land cleared, trees neighbouring back of lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant lot</li> </ul> <p><b><u>Lot 131</u></b></p> <ul style="list-style-type: none"> <li>▪ Building at front of site, remainder of site grass and lots of trees</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant lot</li> </ul> <p><b><u>Lot 50</u></b></p> <ul style="list-style-type: none"> <li>▪ Land cleared with large building and car park taking up majority of lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant lot</li> </ul> <p><b><u>Lot 8</u></b></p> <ul style="list-style-type: none"> <li>▪ Building front of lot, small building centre of lot remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant lot</li> </ul> <p><b><u>Lot 7</u></b></p> <ul style="list-style-type: none"> <li>▪ Several small buildings front have of lot, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant lot</li> </ul> <p><b><u>Lot 6</u></b></p> <ul style="list-style-type: none"> <li>▪ Small buildings towards front of lot, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant lot</li> </ul> <p><b><u>Lot 5</u></b></p> <ul style="list-style-type: none"> <li>▪ Most of land cleared except for a few trees around edge of property</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant land</li> </ul> <p><b><u>Lot 4</u></b></p> <ul style="list-style-type: none"> <li>▪ Land cleared, no vegetation or grass</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant lot</li> </ul>
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	<p><b><u>Lot 3</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential Building front of lot, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant lot</li> </ul> <p><b><u>Lot 2</u></b></p> <ul style="list-style-type: none"> <li>▪ Building front and centre of lot, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant lot</li> <li>▪ West- Bushland and grass, no signs of development</li> </ul> <p><b><u>Lot 1</u></b></p> <ul style="list-style-type: none"> <li>▪ Land cleared, car park and large building at front of lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Vacant Lot</li> <li>▪ West- Bushland and grass, no signs of development</li> </ul> <p><b><u>Lot 130</u></b></p> <ul style="list-style-type: none"> <li>▪ No signs of development, lot consists of grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Lot 131, East- Lot 71, West- Lot 3, North- Lot 2</li> </ul> <p><b><u>Lot 3</u></b></p> <ul style="list-style-type: none"> <li>▪ No signs of development, Lot consists of grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ South- Lot 50, East lot 130, North- lot 1, West- Lot 8, 500, 11, 12 ,13, 14, 15</li> </ul> <p><b><u>Lot 500</u></b></p> <ul style="list-style-type: none"> <li>▪ Nursery back of site, front of site buildings and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- Bushland and grass, no signs of development</li> </ul> <p><b><u>Lot 11</u></b></p> <ul style="list-style-type: none"> <li>▪ Front of lot cleared, back of land building with grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- Bushland and grass, no signs of development</li> </ul> <p><b><u>Lot 12</u></b></p> <ul style="list-style-type: none"> <li>▪ Two residential buildings towards centre of lot, remainder grass and trees bordering lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- Bushland and grass, no signs of development</li> </ul> <p><b><u>Lot 13</u></b></p> <ul style="list-style-type: none"> <li>▪ Buildings at the front and back of lot, remainder grass with trees bordering lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- Bushland and grass, no signs of development</li> </ul> <p><b><u>Lot 14</u></b></p> <ul style="list-style-type: none"> <li>▪ South side of lot cleared, North side of lot has a building and grass with trees bordering the lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- grass and bushland, no signs of development</li> </ul> <p><b><u>Lot 15</u></b></p> <ul style="list-style-type: none"> <li>▪ Front of lot residential building, remainder of lot covered in grass and some bushland</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- grass and bushland, no signs of development</li> </ul> <p><b><u>Lot 16</u></b></p> <ul style="list-style-type: none"> <li>▪ One building front of lot, remainder covered in bushland</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- grass and bushland no signs of development, South Lake road</li> </ul> <p><b><u>Lot 17</u></b></p> <ul style="list-style-type: none"> <li>▪ Several buildings north west side of property, remainder cleared land with grass and vegetation</li> </ul>
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	<p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- Residential subdivision</li> </ul> <p><b><u>Lot 18</u></b></p> <ul style="list-style-type: none"> <li>▪ Several buildings front the front to the middle of the lot, remainder grass with a tree border on the north side</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ Residential subdivision</li> </ul> <p><b><u>Lot 200</u></b></p> <ul style="list-style-type: none"> <li>▪ Several buildings on centre of lot and a swimming pool, remainder of lot trees and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- Residential subdivision</li> <li>▪ North- See lot 48</li> </ul> <p><b><u>Lot 201</u></b></p> <ul style="list-style-type: none"> <li>▪ Building on south side of lot, remainder grass with trees bordering entire lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- See lot 48</li> </ul> <p><b><u>Lot 1</u></b></p> <ul style="list-style-type: none"> <li>▪ Building front of lot, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- see lot 48</li> </ul> <p><b><u>Lot 2</u></b></p> <ul style="list-style-type: none"> <li>▪ Buildings front of site, orchard through middle of lot, rest grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- See lot 49</li> </ul> <p><b><u>Lot 7</u></b></p> <ul style="list-style-type: none"> <li>▪ Buildings back of lot and middle of lot, remainder grass and trees with more trees to the back of the lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- See lots 50 and 51</li> </ul> <p><b><u>Lot 30</u></b></p> <ul style="list-style-type: none"> <li>▪ Building front of lot with a swimming pool on the east side, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- See lot 52</li> </ul> <p><b><u>Lot 31</u></b></p> <ul style="list-style-type: none"> <li>▪ Building front of lot, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- See lots 53 and 54</li> </ul> <p><b><u>Lot 9</u></b></p> <ul style="list-style-type: none"> <li>▪ Front of lot has a few small buildings, the remainder is grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- see lots 54,55,56</li> </ul> <p><b><u>Lot 10</u></b></p> <ul style="list-style-type: none"> <li>▪ Front of lot has several buildings, back of lot cleared, trees bordering the west edge</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- See lot 57</li> </ul> <p><b><u>Lot 11</u></b></p> <ul style="list-style-type: none"> <li>▪ No evidence of land development, Land cleared with some grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- See lot 58</li> </ul> <p><b><u>Lot 12</u></b></p> <ul style="list-style-type: none"> <li>▪ Small building front of lot and Several buildings towards back of lot, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p>
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	<ul style="list-style-type: none"> <li>▪ North- See lot 59</li> </ul>
	<p><b><u>Lot 13</u></b></p> <ul style="list-style-type: none"> <li>▪ Building and bushland front of lot, centre of lot cleared land and grass, back of lot bush</li> </ul>
	<p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- See lot 60</li> </ul>
	<p><b><u>Lot 80</u></b></p> <ul style="list-style-type: none"> <li>▪ Two buildings front of lot, remainder grass and vegetation</li> </ul>
	<p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- See lot 61</li> </ul>
	<p><b><u>Lot 20</u></b></p> <ul style="list-style-type: none"> <li>▪ Building middle and back of lot, remainder grass with trees bordering</li> </ul>
	<p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- See lot 62</li> </ul>
	<p><b><u>Lot 65</u></b></p> <ul style="list-style-type: none"> <li>▪ Vacant lot with some trees</li> </ul>
	<p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Freeway</li> </ul>
	<p><b><u>Lot 64</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, small shed, grass and some trees</li> </ul>
	<p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Freeway</li> </ul>
	<p><b><u>Lot 62</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, parking, horse track at rear of site</li> </ul>
	<p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Freeway</li> </ul>
	<p><b><u>Lot 59</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, trees and track at rear</li> </ul>
	<p><b><u>Lot 58</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential, grass and trees at rear</li> </ul>
	<p><b><u>Lot 57</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, small sheds, grass</li> </ul>
	<p><b><u>Lot 56</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, small sheds, possible small orchard in middle of site, scrub at rear</li> </ul>
	<p><b><u>Lot 55</u></b></p> <ul style="list-style-type: none"> <li>▪ Vacant land, grass some trees</li> </ul>
	<p><b><u>Lot 54</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, one shed, trees</li> </ul>
	<p><b><u>Lot 53</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, two sheds, scrub</li> </ul>
	<p><b><u>Lot 52</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, shed, large cleared pad, grass</li> </ul>
	<p><b><u>Lot 51</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, large sheds, possible greenhouses, grass</li> </ul>
	<p><b><u>Lot 50</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, small sheds, small orchard, grass</li> </ul>
	<p><b><u>Lot 49</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, shed, grass</li> </ul>
	<p><b><u>Lot 48</u></b></p> <ul style="list-style-type: none"> <li>▪ Vacant land, grass</li> </ul>
	<p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- new subdivision</li> </ul>
	<p><b><u>Lot 47</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, large shed, fenced paddocks at rear of site</li> </ul>
	<p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- new subdivision</li> </ul>
	<p><b><u>Lot 46</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, shed, trees</li> </ul>

	<p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- new subdivision</li> </ul> <p><b><u>Lot 45</u></b></p> <ul style="list-style-type: none"> <li>▪ Two sheds, vacant land and track</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- new subdivision</li> </ul> <p><b><u>Lot 44</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, trees and track</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- new subdivision</li> </ul> <p><b><u>Lot 43</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, trees and track</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- new subdivision</li> </ul> <p><b><u>Lot 42</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house, significant amount of trees front of property, back of property grass</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- new subdivision</li> </ul> <p><b><u>Lot 41</u></b></p> <ul style="list-style-type: none"> <li>▪ Two buildings front of site, car park and tress with grass remainder of lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ West- new subdivision</li> </ul> <p><b><u>Lot 40</u></b></p> <ul style="list-style-type: none"> <li>▪ West side of lot grass with tree border, east side corner residential house with a swimming pool</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- large block of land, majority grass and vegetation with industrial buildings and car park</li> </ul> <p><b><u>Lot 39</u></b></p> <ul style="list-style-type: none"> <li>▪ Vacant block of land with no signs of development</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- large block of land, majority grass and vegetation with industrial buildings and car park</li> </ul> <p><b><u>Lot 38</u></b></p> <ul style="list-style-type: none"> <li>▪ Several buildings at front of lot, remainder grass with significant amount of bushland</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- large block of land, majority grass and vegetation with industrial buildings and car park</li> </ul> <p><b><u>Lot 37</u></b></p> <ul style="list-style-type: none"> <li>▪ Building at front of property, remainder bushland</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- large block of land, majority grass and vegetation with industrial buildings and car park</li> </ul> <p><b><u>Lot 36</u></b></p> <ul style="list-style-type: none"> <li>▪ Several buildings towards front of property with a swimming pool, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- large block of land, majority grass and vegetation with industrial buildings and car park</li> </ul> <p><b><u>Lot 35</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential building at front of lot, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- large block of land, majority grass and vegetation with industrial buildings and car park</li> </ul> <p><b><u>Lot 34</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential building and tress front of lot, back half of lot grass</li> </ul>
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	<p>with one tree</p> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- large block of land, majority grass and vegetation with industrial buildings and car park</li> </ul> <p><b><u>Lot 33</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential building and trees front of lot, remainder grass and vegetation</li> </ul> <p><b><u>Lot 32</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential building front of lot, remainder grass and bushland</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- large block of land, majority grass and vegetation with industrial buildings and car park</li> </ul> <p><b><u>Lot 31</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential building front of lot, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- large block of land, majority grass and vegetation with industrial buildings and car park</li> </ul> <p><b><u>Lot 30</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential building and trees front of lot, remainder of lot cleared</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- large block of land, majority grass and vegetation with industrial buildings and car park</li> </ul> <p><b><u>Lot 1</u></b></p> <ul style="list-style-type: none"> <li>▪ Large industrial building with track, remainder of grass and vegetation</li> </ul> <p><b>Surrounds</b> North- large block of land, majority grass and vegetation with industrial buildings and car park</p>
06/01/1995- colour	<p><b><u>Lot 15</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential house and sheds, trees bordering lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Small vacant lot with trees</li> <li>▪ East- see lot 411</li> <li>▪ South- see lot 102</li> <li>▪ West- see lot 101</li> </ul> <p><b><u>Lot 16</u></b></p> <ul style="list-style-type: none"> <li>▪ Stables and paddocks bordered by trees</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- see lot 411</li> <li>▪ East- see lot 17</li> <li>▪ South- Vacant scrubland</li> <li>▪ West- commercial buildings front of lot, residential house in middle of lot, nursery plants across rest of lot</li> </ul> <p><b><u>Lot 17</u></b></p> <ul style="list-style-type: none"> <li>▪ Paddocks bordered by trees</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- see lot 411</li> <li>▪ East- Vacant scrub land, Kwinnana freeway</li> <li>▪ South- Vacant land and cleared land for development</li> <li>▪ West- see lot 16</li> </ul> <p><b><u>Lot 21</u></b></p> <ul style="list-style-type: none"> <li>▪ Building front of lot, remainder grass and vegetation with bush at back of lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Several buildings front of lot with swimming pool, more buildings on lot some grass/ vegetation</li> <li>▪ East- see lot 100</li> <li>▪ South- large industrial building front of lot with car park, bushland at back of lot</li> </ul>

- West- residential property middle of lot, large shed at rear, remainder grass and bushland

**Lot 100**

- Building middle of lot, remainder grass and vegetation

**Surrounds**

- North- large residential building front of lot, small shed remainder grass and vegetation
- East- see lot 101
- South- large commercial building front of lot with car park, bushland at back of lot
- West- see lot 21

**Lot 101**

- No land development, grass and vegetation comprise lot

**Surrounds**

- North- vacant lot, front of lot sandy, remainder grass and vegetation
- East- see lot 15
- South- large commercial building front of lot with car park, bushland at back of lot
- West- see lot 100

**Lot 102**

- No land development, grass and bushland covers lot

**Surrounds**

- North- see lot 15
- East- see lot 411
- South- commercial building and residential at front of lots, nursery and vacant bush land at back of lots
- West- see lot 101

**Lot 411**

- Several buildings between middle and back of lot, remainder grass and vegetation, with a tree border

**Surrounds**

- North- Kwinana Freeway, large commercial buildings
- East- grass and bushland, no evidence of development
- South- see lot 16 and 17 Tea Tree CL
- West- see lot 15 and 102

**Lot 10**

- Building front of lot, remainder of lot cleared with track, some vegetation

**Surrounds**

- North- Several buildings front of lot, remainder grass and vegetation
- East- Vacant lot with track around sides
- South- Industrial buildings, nursery

West- Back of lot grass and bushland, front of lot residential building and orchard

**Lot 60**

- Small residential building front of lot with swimming pool, remainder bush and grass

**Surrounds**

- North- Bushland, no signs of development
- East- See lot 61
- South- Small residential property front of lot, remainder grass and vegetation
- West- Residential building front of lot, track through middle of lot, remainder grass and vegetation

**Lot 61**

- Residential building back of lot, remainder grass and vegetation- trees bordering, driveway down centre

**Surrounds**

- North- Bushland, vacant lot with no signs of development

	<ul style="list-style-type: none"> <li>▪ East- Small residential building front of lot, cleared land with track round the lot</li> <li>▪ South- Residential building centre of lot, remainder grass and vegetation with tree border</li> <li>▪ West- see lot 60</li> </ul> <p><b><u>Lot 63</u></b></p> <ul style="list-style-type: none"> <li>▪ Buildings front of lot with swimming pool, remainder of lot cleared</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Kwinana Freeway</li> <li>▪ East- Residential building front of lot, remainder of lot cleared with some vegetation</li> <li>▪ South- Residential property front of lot, remainder grass and vegetation, bushland towards back</li> <li>▪ West- Small residential building front of lot, cleared land with track.</li> </ul>
20/04/1985 Colour	<p><b><u>Lot 15</u></b></p> <ul style="list-style-type: none"> <li>▪ No border between lot 100, 101, 15, 102- large grass oval, several buildings with garden borders/ decorative gardens to eastern side of property</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- two lots- residential property at front remainder grass and bushland, eastern lot has a track</li> <li>▪ East- see lot 411</li> <li>▪ South- joined to lot 102</li> <li>▪ West-joined to lot 101</li> </ul> <p><b><u>Lot 16</u></b></p> <ul style="list-style-type: none"> <li>▪ Vacant lot with no signs of development</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- see lot 411</li> <li>▪ East- Kentucky CT, bushland no signs of development</li> <li>▪ South- Tea Tree CL, bushland no signs of development</li> <li>▪ West- see lot 17</li> </ul> <p><b><u>Lot 17</u></b></p> <ul style="list-style-type: none"> <li>▪ Vacant lot with no signs of development</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- see lot 411</li> <li>▪ East- see lot 16</li> <li>▪ South- Tea Tree CL- bushland, no signs of development</li> <li>▪ West- residential building middle of lot, several buildings front of lot remainder grass and vegetation</li> </ul> <p><b><u>Lot 21</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential building front of lot, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Residential building front of lot, remainder grass and vegetation</li> <li>▪ East- see lot 100</li> <li>▪ South- Several buildings front of lot, remainder grass, bushland at back of lot</li> <li>▪ West- Residential building front of lot with swimming pool, remainder grass/ vegetation with a track</li> </ul> <p><b><u>Lot 100</u></b></p> <ul style="list-style-type: none"> <li>▪ No border between lot 100, 101, 15, 102 large grass oval, several buildings with garden borders/ decorative gardens to eastern side of property</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Residential building front of lot, remainder grass and vegetation</li> <li>▪ East- Joined with lot 101, 15, 102</li> <li>▪ South- Industrial building, car park and swimming pool front of lot, remainder grass and bushland</li> <li>▪ West- see lot 21</li> </ul>



	<p><b><u>Lot 101</u></b></p> <ul style="list-style-type: none"> <li>▪ No border between lot 100, 101, 15, 102- large grass oval, several buildings with garden borders/ decorative gardens to eastern side of property</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Vacant lot, no signs of development</li> <li>▪ East- joined to lot 15</li> <li>▪ South- - Industrial building, car park and swimming pool front of lot, remainder grass and bushland</li> <li>▪ West- Joined with lot 100</li> </ul> <p><b><u>Lot 102</u></b></p> <ul style="list-style-type: none"> <li>▪ No border between lot 100, 101, 15, 102- large grass oval, several buildings with garden borders/ decorative gardens to eastern side of property</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Joined to lot 15</li> <li>▪ East see lot 411</li> <li>▪ South- two residential properties, eastern lot several buildings remainder grass and bushland, western</li> <li>▪ West- residential building front of lot, remainder lot cleared with some bushland at the back</li> </ul> <p><b><u>Lot 411</u></b></p> <ul style="list-style-type: none"> <li>▪ Split into two properties, eastern lot- residential building middle of lot, remainder grass and vegetation, western lot- vacant block of land with grass and vegetation and track round the sides</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Two properties, one vacant lot, western lot- residential building remainder grass and vegetation</li> <li>▪ East- Kentucky CT, bushland no signs of development</li> <li>▪ South- see lots 16 and 17 Tear Tree CL</li> <li>▪ West- see lot 102, 15, 101, 100</li> </ul> <p><b><u>Lot 10</u></b></p> <ul style="list-style-type: none"> <li>▪ Building front of lot, remainder grass and vegetation, track around sides of property</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Several buildings front of lot, remainder grass and vegetation, dense bushland at back</li> <li>▪ East- Vacant land, no signs of development</li> <li>▪ South- Two buildings, remainder grass and vegetation</li> <li>▪ West- Residential building front of lot, evidence of orchard, remainder of lot bushland</li> </ul> <p><b><u>Lot 60</u></b></p> <ul style="list-style-type: none"> <li>▪ Small residential building front of lot with swimming pool, remainder bushland</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Vacant lot, no signs of development</li> <li>▪ East- See lot 61</li> <li>▪ South- Small residential building with swimming pool front of lot, remainder vegetation- track around side</li> <li>▪ West- Small building front of lot, remainder grass and vegetation, track around sides</li> </ul> <p><b><u>Lot 61</u></b></p> <ul style="list-style-type: none"> <li>▪ Small residential building with swimming pool back of lot, remainder bushland with driveway through the middle</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Front of lot building and swimming pool, grass and vegetation remainder of lot cleared</li> <li>▪ East- Residential building front of lot, remainder grass with track around sides</li> <li>▪ South- Residential building front of lot, remainder grass and</li> </ul>
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	<p>vegetation</p> <ul style="list-style-type: none"> <li>▪ West- See lot 60</li> </ul> <p><b><u>Lot 63</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential building front of lot with swimming pool, remainder grass and vegetation, dense bush at back</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Kwinana freeway no longer passes through top of lot, Lot 90- grass and vegetation, residential building front of lot</li> <li>▪ East- Residential building front of lot, remainder grass and vegetation</li> <li>▪ South- Residential building front of lot, remainder grass and vegetation</li> <li>▪ West- Residential building front of lot, remainder grass with track around sides</li> </ul>
11/06/1975 B&W	<p><b><u>Lot 15</u></b></p> <ul style="list-style-type: none"> <li>▪ No distinctive boundaries between lot 100,101,15 and 102, large track around outside, some decorative garden layout left side of lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- several buildings front of lot, remainder grass / vegetation with small lake and back of lot</li> <li>▪ East- see lot 411</li> <li>▪ South- joined with lot 102</li> <li>▪ West- joined with lot 101</li> </ul> <p><b><u>Lot 16</u></b></p> <ul style="list-style-type: none"> <li>▪ Building front of lot, remainder cleared with some grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- see lot 411</li> <li>▪ East- Kentucky CT, bushland, no signs of development</li> <li>▪ South- Tea Tree CL, bushland, no signs of development</li> <li>▪ West- see lot 17</li> </ul> <p><b><u>Lot 17</u></b></p> <ul style="list-style-type: none"> <li>▪ Vacant block of land with no signs of development, small lake middle of lot?</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- see lot 411</li> <li>▪ East- see lot 16</li> <li>▪ South- Tea Tree CL- bushland, with no signs of development</li> <li>▪ West- vacant block of land, with what looks like sheep</li> </ul> <p><b><u>Lot 21</u></b></p> <ul style="list-style-type: none"> <li>▪ Vacant block of land with no signs of development</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Vacant block of land, bushland, no signs of development</li> <li>▪ East- see lot 100</li> <li>▪ South- Large building and car park front of lot, remainder grass and vegetation</li> <li>▪ West- no distinctive border with lot 20, grass and bushland, vacant land</li> </ul> <p><b><u>Lot 100</u></b></p> <ul style="list-style-type: none"> <li>▪ No distinctive boundaries between lot 100,101,15 and 102, large track around outside, some decorative garden layout left side of lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Residential building front of lot, remainder grass and bushland with a track to back</li> <li>▪ East- joined with lot 101</li> <li>▪ South- Large building and car park front of lot, remainder grass and vegetation</li> <li>▪ West- see lot 21</li> </ul> <p><b><u>Lot 101</u></b></p> <ul style="list-style-type: none"> <li>▪ No distinctive boundaries between lot 100,101,15 and 102, large</li> </ul>

	<p>track around outside, some decorative garden layout left side of lot</p> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Vacant lot of land with no signs of development</li> <li>▪ East- Joined with lot 15/21</li> <li>▪ South- Vacant block of land, with what looks like sheep?</li> <li>▪ West- joined with lot 100</li> </ul> <p><b>Lot 102</b></p> <ul style="list-style-type: none"> <li>▪ No distinctive boundaries between lot 100,101,15 and 102, large track around outside, some decorative garden layout left side of lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Joined with lot 15</li> <li>▪ East- see lot 411</li> <li>▪ South- vacant block of land, remains of lake</li> <li>▪ West- joined with lot 101</li> </ul> <p><b>Lot 411</b></p> <ul style="list-style-type: none"> <li>▪ Several buildings back of lot with car park, remainder grass and vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Two lots- western lot- several buildings front of lot, remainder grass and vegetation, eastern lot- vacant lot with no signs of development</li> <li>▪ East- Kentucky CT, Bushland no signs of development</li> <li>▪ South- see lot 16 and 17 Tea Tree CL</li> <li>▪ West- see lot 102 and 15</li> </ul> <p><b>Lot 10</b></p> <ul style="list-style-type: none"> <li>▪ Residential property front of lot, remainder grass and vegetation- back of lot cleared</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Vacant lot, no signs of development</li> <li>▪ East- vacant lot, bushland front of lot, back of lot slightly cleared with track</li> <li>▪ South- Several buildings centre of lot, remainder grass and vegetation</li> </ul> <p>West- several buildings front of lot, remainder bushland</p> <p><b>Lot 60</b></p> <ul style="list-style-type: none"> <li>▪ Residential buildings front of lot, middle cleared, remainder bushland</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Vacant lot, no signs of development- bushland</li> <li>▪ East- See lot 61</li> <li>▪ South- Residential building front of lot, remainder grass and vegetation</li> <li>▪ West- Vacant lot, no signs of development, some land cleared</li> </ul> <p><b>Lot 61</b></p> <ul style="list-style-type: none"> <li>▪ Vacant lot, no signs of development, track through middle of property</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Vacant lot, no signs of development- bushland</li> <li>▪ East- Residential property back of lot, remainder bushland</li> <li>▪ South- Residential building front of lot, remainder grass and vegetation, with track around sides</li> <li>▪ West- See lot 60</li> </ul> <p><b>Lot 63</b></p> <ul style="list-style-type: none"> <li>▪ Front of lot cleared, remainder bushland</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Residential property front of lot, remainder grass and vegetation</li> <li>▪ East- Residential property front of lot, remainder bushland with a track</li> <li>▪ South- Vacant lot with no signs of development</li> <li>▪ West- Residential property back of lot, remainder bushland</li> </ul>
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11/03/1965– B&W

**Lot 15**

- No distinctions between lot 100, 101, 15 and 102, track around land, no signs of development

**Surrounds**

- North- small residential property middle of lot, remainder grass and vegetation
- East- see lot 411
- South- joined lot 102
- West- joined with lot 101

**Lot 16**

- Native vegetation with swamplands

**Surrounds**

- North- see lot 411
- East- Kentucky CT- swamp and bushland
- South- Tea Tree CL, Cleared lot, no signs of development
- West- joined to lot 17

**Lot 17**

- Native vegetation with swamplands

**Surrounds**

- North- see lot 411
- East- joined with lot 16
- South- Tea Tree CL, cleared lot, no signs of development, evidence of swamp further south east
- West- vacant lot, native vegetation with swamp

**Lot 21**

- Vacant block of land, merged with lot 20, no signs of development

**Surrounds**

- North- vacant land, with no signs of development
- East- see lot 100
- South- vacant land, with no signs of development
- West- vacant land, with no signs of development

**Lot 100**

- No distinctions between lot 100, 101, 15 and 102, track around land, no signs of development

**Surrounds**

- North- vacant lot, no signs of development
- East- joined with lot 101
- South- vacant lot, no signs of development
- West- see lot 21

**Lot 101**

- No distinctions between lot 100, 101, 15 and 102, track around land, no signs of development

**Surrounds**

- North- vacant lot no signs of development
- East- joined with lot 15
- South- vacant lot, no signs of development
- West- joined with lot 100

**Lot 102**

- No distinctions between lot 100, 101, 15 and 102, track around land, no signs of development

**Surrounds**

- North-joined with lot 15
- East- see lot 411
- South- vacant lot, no signs of development
- West- joined with lot 101

**Lot 411 Kentucky CT**

- Vacant lot with no signs of development, small lake middle of lot bordering lot 15

**Surrounds**

- North- vacant lot, no signs of development

	<ul style="list-style-type: none"> <li>▪ East- scrubland no signs of development</li> <li>▪ South- see lot 16, 17</li> <li>▪ West- see lot 102, 15</li> </ul> <p><b><u>Lot 10</u></b></p> <ul style="list-style-type: none"> <li>▪ Small residential building front of lot, remainder bushland</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- Several buildings front of lot, driveway down side, remainder grass and vegetation</li> <li>▪ East- residential building front of lot, remainder bushland</li> <li>▪ South- Industrial and small building centre of lot, remainder of lot cleared with some vegetation</li> <li>▪ West- Vacant lot, no signs of development</li> </ul> <p><b><u>Lot 60</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential building front of lot, remainder cleared with some vegetation</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North, East, South, West – Bushland, no signs of development</li> </ul> <p><b><u>Lot 61</u></b></p> <ul style="list-style-type: none"> <li>▪ Bushland, no signs of development</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- bushland, no signs of development</li> <li>▪ East- bushland, no signs of development</li> <li>▪ South- bushland, no signs of development</li> <li>▪ West- See lot 60</li> </ul> <p><b><u>Lot 63</u></b></p> <ul style="list-style-type: none"> <li>▪ Bushland, no signs of development</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North/ East/ South/ West- Bushland, no signs of development</li> </ul>
06/11/1953– B&W	<p><b><u>Lot 15</u></b></p> <ul style="list-style-type: none"> <li>▪ No distinction between lot 100, 101, 15 and 102, vacant block of land, no signs of development, lack bordering eastern side</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- small residential building middle of lot, remainder of lot cleared with some grass and vegetation</li> <li>▪ East- see lot 411</li> <li>▪ South- joined with lot 15</li> <li>▪ West- joined with lot 101</li> </ul> <p><b><u>Lot 16</u></b></p> <ul style="list-style-type: none"> <li>▪ Swamplands, edge of lake on border, no distinction between lot 16 and 17</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- see lot 411</li> <li>▪ East- scrubland, no signs of development</li> <li>▪ South- vacant land, no signs of development</li> <li>▪ West- lake and native vegetation</li> </ul> <p><b><u>Lot 17</u></b></p> <ul style="list-style-type: none"> <li>▪ Swamplands, edge of lake on border, no distinction between lot 16 and 17</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- see lot 411</li> <li>▪ East- joined with lot 16</li> <li>▪ South- Tea Tree CL, vacant land, no signs of development</li> <li>▪ West- lake and native vegetation</li> </ul> <p><b><u>Lot 21</u></b></p> <ul style="list-style-type: none"> <li>▪ Vacant block of land with no signs of development</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- vacant block of land with no signs of development</li> <li>▪ East- see lot 100</li> <li>▪ South- vacant block of land, lake at back of lot</li> <li>▪ West- vacant block of land no signs of development</li> </ul>

	<p><b><u>Lot 100</u></b></p> <ul style="list-style-type: none"> <li>▪ No distinction between lot 100, 101, 15 and 102, vacant block of land, no signs of development</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- vacant block of land, no signs of development</li> <li>▪ East- joined with lot 101</li> <li>▪ South- vacant block of land, swamp at back of lot</li> <li>▪ West- see lot 21</li> </ul> <p><b><u>Lot 101</u></b></p> <ul style="list-style-type: none"> <li>▪ No distinction between lot 100, 101, 15 and 102, vacant block of land, no signs of development, lack bordering eastern side</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- vacant block of land, no signs of development</li> <li>▪ East- joined with lot 15 and 102</li> <li>▪ South- vacant block of land, swamp at back of lot</li> <li>▪ West- joined with lot 100</li> </ul> <p><b><u>Lot 102</u></b></p> <ul style="list-style-type: none"> <li>▪ No distinction between lot 100, 101, 15 and 102, vacant block of land, no signs of development, lack bordering eastern side</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- joined with lot 15</li> <li>▪ East- see lot 411</li> <li>▪ South- vacant block of land with swamp at back of lot</li> <li>▪ West- joined with lot 101</li> </ul> <p><b><u>Lot 411</u></b></p> <ul style="list-style-type: none"> <li>▪ Vacant block of land, swamp bordering lot 15, mostly cleared</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- vacant block of land, with no signs of development</li> <li>▪ East- scrubland, no signs of development</li> <li>▪ South- see lot 16 and 17</li> <li>▪ West- see lot 102</li> </ul> <p><b><u>Lot 10</u></b></p> <ul style="list-style-type: none"> <li>▪ Bushland, no signs of development</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North- bushland, no signs of development</li> <li>▪ East- bushland, no signs of development</li> <li>▪ South- Several buildings centre of lot, remainder grass and vegetation</li> <li>▪ West- bushland, no signs of development</li> </ul> <p><b><u>Lot 60</u></b></p> <ul style="list-style-type: none"> <li>▪ Residential building middle of lot</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North/ East/ South/ West- bushland, no signs of development</li> </ul> <p><b><u>Lot 61</u></b></p> <ul style="list-style-type: none"> <li>▪ Bushland, no signs of development</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North/ East/ South/ West- bushland, no signs of development</li> </ul> <p><b><u>Lot 63</u></b></p> <ul style="list-style-type: none"> <li>▪ Bushland, no signs of development</li> </ul> <p><b>Surrounds</b></p> <ul style="list-style-type: none"> <li>▪ North/ East/ South/ West- bushland, no signs of development</li> </ul>
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## **5 Environmental Settings**

### **5.1 Topography**

The site is predominantly flat at a height of approximately 25 m above Australian Height Datum (AHD) increasing to approximately 27 m AHD in the central south and north east of the site (DoE, 2005).

### **5.2 Geology**

Based on the hydrogeology and Groundwater Resources of the Perth Region Western Australia, surface geology of the site comprises Quaternary aged Bassendean Sand. Underlying this unit at depth is Kardinya member of the Osborne Formation a Cretaceous aged formation of Sandstones and Shales.

The Bassendean Sand Formation which is present over most of the central Perth region unconformably overlies the Cretaceous and Tertiary strata and inter-fingers to the east with the Guildford Clay, which both unconformably overlie the Kardinya member of the Osborne Formation. The stratigraphic relationships of the Bassendean Sand with the Guildford Clay and Gnangara Sand indicate that the formation was deposited under changing and perhaps alternating fluvial, estuarine and shallow-marine environments.

### **5.3 Acid Sulphate Soils**

The Quarternary sands beneath the majority of the site have moderate to low risk of acid generation. Soils containing peat in the south eastern corner of the site have high risk of acid generation, which is likely to be associated with the swamp deposits shown on the geological map ([http://www.wrc.wa.gov.au/infocentre/atlas/atlas\\_html/](http://www.wrc.wa.gov.au/infocentre/atlas/atlas_html/), accessed 27/06/07).

### **5.4 Surface Hydrology**

No surface water bodies were identified within 500 m of the site. The nearest water bodies to the site are Yangebup Lake and Kogolup Lake, which are approximately 1.5 km to the west and southwest of the site, respectively. There are also other unnamed lakes and swamps in the area.

### **5.5 Hydrogeology**

The Perth Groundwater Atlas shows the watertable to be at approximately 23 m AHD at the site, with a groundwater flow to the west.

Water bearing layers and aquifers potentially occurring beneath the site is the superficial aquifer – Jandakot Mound, which has a maximum saturated thickness of approximately 40 m with total dissolved solids of 250-1000 mg/L. The groundwater has potential potable use and the flow direction should be to the west. Based on the depth to groundwater, the vulnerability of contamination to groundwater beneath the site is high.

### **5.6 Groundwater Resources and Beneficial Uses**

Land use in the general area surrounding the site includes residential/semi rural, vacant land, grazing of horses, nurseries and commercial buildings and the Kwinana Freeway is adjacent to the site.

A bore search identified 27 registered bores and 167 registered bores located within 1 and 2 km of the site, respectively. The recorded purpose of registered bores included monitoring, observation, investigation, production, irrigation, livestock and domestic/household.

With respect to the use of groundwater beneath the site the Department of Health (DoH) considers it an unsafe practice to drink or swim in untreated groundwater as experience has shown the groundwater may contain microbiological and chemical contamination. Groundwater should always be tested, assessed by an experienced person and then treated appropriately to ensure that it is safe for the intended use.

Based on a TDS value of 250-1000 mg/L the most beneficial use of groundwater beneath the site is for drinking purposes. However, as discussed above, the use of untreated groundwater beneath the site for drinking water purposes is not advised.

### 5.7 Groundwater Quality

Groundwater quality for the south east portion of the site was obtained from the groundwater investigation undertaken on the site by Ace Environmental in October 2007. A summary of the findings is outlined below:

- The depth to shallow groundwater within monitoring wells across the site ranged from 1.413 to 2.775 m below top of casing. Based on gauging and surveying of wells, the inferred hydraulic gradient is flowing to the west.
- Measured pH values ranged from 5.88 to 6.45
- Electrical conductivity readings ranged from 375 to 1390  $\mu\text{S}/\text{cm}$  (hence approximately 259 to 959 mg/L TDS), thereby indicating that groundwater is suitable for drinking water purposes.
- Dissolved oxygen (DO) levels ranged from 1.47 to 2.15 mg/L.
- Redox potential values ranged from -139 to -10 mV.

**An additional groundwater investigation needs to be undertaken for the entire site as the groundwater investigation undertaken was only for the south east portion of the site encompassing Lots 10, 15, 21, 60, 61, 63, 100, 101 and 102 Muriel Court, Lots 16 and 17 Tea Tree Close and Lot 411 Kentucky Court. The results should not be extrapolated to include the entire site as potentially contaminating activities including the storage of underground fuel tanks were found on other Lots.**

Analytical results and the methodology used for the groundwater investigation have been included in this report for reference only.



## 6 Methodology

### 6.1 Groundwater Methodology

Field activities conducted as part of the groundwater assessment program were undertaken on 27 March and 31 October 2007. Field activities are summarised in **Table 6.1** and grid references of the groundwater monitoring bores are included in **Table 6.2**. Groundwater bore logs and gauging sheets are included in **Appendices E** and **F**, respectively.

**Table 6.1 Summary of Groundwater Assessment**

Activity	Location	Details
Clearance of underground services	MB01 to MB06 inclusive	Service Location survey by MP Electrolocation
Well construction and installation	MB01 to MB06 inclusive	Wells were constructed with 50 mm, class 18, uPVC threaded screen and casing in accordance with BGE well construction procedures.
Well development	MB01 to MB06 inclusive	Wells were purged of 5 well volumes or until bailed dry upon completion of construction
Well gauging	MB01 to MB06 inclusive	Wells were gauged for the presence of phase separated hydrocarbons and standing water levels using oil/water interface probe, which was decontaminated in between each measurement. Field measurements of pH, temperature, dissolved oxygen, redox and EC were taken every 12 L or until the parameters stabilised.
Sampling method	MB01 to MB06 inclusive	Disposable bailers were used to obtain the groundwater samples. A base volatile valve was not used to prevent agitation as it was not deemed necessary since Ace do not invert the bailer when collecting groundwater samples. The sample is collected from the bottom of the bailer, which minimises agitation.
Decontamination procedure	MB01 to MB06 inclusive	New disposable gloves and new strings were used for each well to avoid the risk of cross contamination
Sample preservation	MB01 to MB06 inclusive	Samples were collected in laboratory supplied bottles and immediately stored in an insulated esky chilled with ice bricks upon sampling until transit to the laboratory

**Table 6.2 Grid Reference of Groundwater Bores**

GW Bore	Grid Reference
MB01	115.854985E; 32.120901S
MB02	115.853617E; 32.123196S
MB03	115.852894E; 32.118617S
MB04	115.852417E; 32.117212S
MB05	115.853599E; 32.117722S
MB06	115.850562E; 32.118043S

## 7 Environmental Investigation Levels

Groundwater investigation levels adopted for this PSI are based on *Table 3, Assessment Levels for Water* (DoE, November 2003).

The highest potential beneficial use of groundwater of the superficial aquifer beneath the site is for drinking water purposes as total dissolved solids were approximately 259 to 959 mg/L. The WA Drinking Water guidelines have been adopted and the Long-term Irrigation guidelines adopted in the absence of Drinking Water guidelines. No marine water ecosystems have been identified within 1 km of the site.

The investigation levels adopted for assessing the contamination status of groundwater at the site are provided in **Table 7.1**.

**Table 7.1 Groundwater Investigation Levels**

Analytical Groupings	Analyte	Drinking Water (µg/L)	Long-Term Irrigation (µg/L)	Adopted Guideline (µg/L)
OC/OPs	Aldrin	0.3	-	0.3
	Dieldrin	0.3	-	0.3
	Chlordane	1	-	1
	DDT	20	-	20
	Chlorpyrifos	30	-	30
	Diazinon	3	-	3
	Metals	Lead (mg/L)	0.01	2.0
Arsenic (mg/L)		0.007	0.1	0.007
Cadmium (mg/L)		0.002	0.01	0.002
Chromium (mg/L)		-	0.1	0.1
Copper (mg/L)		2.0	0.2	0.2
Mercury (mg/L)		0.001	0.002	0.001
Nickel (mg/L)		0.02	0.2	0.02
Zinc (mg/L)		3.0	2.0	3.0
TPH, BTEX	C <sub>6</sub> – C <sub>9</sub>	-	-	-
	C <sub>10</sub> – C <sub>14</sub>	-	-	-
	C <sub>15</sub> – C <sub>28</sub>	-	-	-
	C <sub>29</sub> – C <sub>36</sub>	-	-	-
	Benzene	1	-	1
	Toluene	800	-	800
	Ethylbenzene	300	-	300
	Xylenes	600	-	600

Notes:

- No investigation level available

## 8 Results and Discussion

### 8.1 Groundwater Analytical Results

The number of groundwater samples analysed, analytes tested for, minimum/maximum constituent concentrations and samples that exceeded the investigation levels are detailed in **Table 8.1**. Tables of groundwater analytical results, copies of laboratory certificates and signed chain of custody documents are included in **Appendices G** and **H**, respectively.

**Table 8.1 Summary of Groundwater Analytical Results**

Number of Samples Analysed	Analyte	Min Conc. (µg/L)	Max Conc. (µg/L)	Samples Exceeding Investigation Levels
6	Aldrin	<0.010	<0.010	None
6	Dieldrin	<0.010	<0.010	None
6	Chlordane	<0.010	<0.010	None
6	DDT	<0.010	<0.010	None
6	Chlorpyrifos	<0.050	<0.050	None
6	Diazinon	<0.10	<0.10	None
6	Lead (mg/L)	<0.001	0.003	None
6	Arsenic (mg/L)	<0.001	0.003	None
6	Cadmium (mg/L)	0.0001	0.0004	None
6	Chromium (mg/L)	<0.001	<0.001	None
6	Copper (mg/L)	<0.001	0.003	None
6	Mercury (mg/L)	<0.0001	<0.0001	None
6	Nickel (mg/L)	0.001	0.006	None
6	Zinc (mg/L)	0.014	0.024	None
6	TPH C <sub>6</sub> – C <sub>9</sub>	<20	<20	None
6	TPH C <sub>10</sub> – C <sub>14</sub>	<50	60	None
6	TPH C <sub>15</sub> – C <sub>28</sub>	<100	400	None
6	TPH C <sub>29</sub> – C <sub>36</sub>	<50	100	None
6	Benzene	<1	<1	None
6	Toluene	<2	<2	None
6	Ethylbenzene	<2	<2	None
6	Xylenes	<2	<2	None

Field gauging results of the groundwater, with the exception of MB01 did not suggest the presence of phase separated hydrocarbons and the water appeared to be free of sheen.

OC/OPs, metals and BTEX were either reported at below the laboratory detection limits or at concentrations less than the WA Drinking Water and Long Term Irrigation Guidelines for all groundwater samples. TPH was reported above laboratory detection in MB01, but not in any of the other monitoring bores. Western Australia does not currently have guidelines for TPH in water and hence the Dutch guidelines are typically referred to when assessing TPH impacts in groundwater. The concentrations of TPH found in MB01 were well below the Dutch guidelines.

## 8.2 QA/QC and Analytical Data Validation

### 8.2.1 Field Method Validation

Field methodologies were consistent with Ace's field procedures and are summarised in **Table 8.2**.

**Table 8.2 Field Method Validation**

QA/QC Requirement	Yes/No	Comments
Sampling equipment properly decontaminated	Yes	None
Sample preservation following collection in the field	Yes	None
Sufficient field QA/QC samples collected	Yes	None
Samples delivered to laboratory within holding times	Yes	None
Review of field quality control (QC) sample results	Yes	None
Other anomalies	No	None

### 8.2.2 Analytical Data Validation

Relative percentage differences (RPD) calculations for the inter-laboratory field duplicates are shown in **Table 8.3** and analytical data validation interpretations are summarised in **Table 8.4**.

**Table 8.3 Relative Percentage Difference**

Sample Number	QA Type	Aldrin	Dieldrin	Chlordane	Heptachlor	As
MB01	Primary	<0.010	<0.010	<0.010	<0.005	<0.001
QA1	Split sample	<0.010	<0.010	<0.010	<0.005	<0.001
RPD (%)		na	na	na	na	na

Sample Number	QA Type	Hg	Cd	Cr	Pb	Zn	Cu	Ni
MB01	Primary	<0.0001	0.0002	<0.001	<0.001	0.023	<0.001	0.001
QA1	Split sample	<0.0001	0.0002	<0.001	<0.001	0.027	0.002	0.002
RPD (%)		na	na	na	na	16	66	66

Sample Number	QA Type	Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene
MB01	Primary	<1	<2	<2	<2	<2
QA1	Split sample	<1	<2	<2	<2	<2
RPD (%)		na	na	na	na	na

Sample Number	QA Type TPH fraction	C <sub>6</sub> -C <sub>9</sub>	C <sub>10</sub> -C <sub>14</sub>	C <sub>15</sub> -C <sub>28</sub>	C <sub>29</sub> -C <sub>36</sub>
MB01	Primary	<20	60	400	100
QA1	Split sample	<20	100	600	140
RPD (%)		na	50	40	33

RPD Relative Percentage Difference

na Not applicable as primary and/or QC sample are less than Practical Quantitation Limits

**Table 8.4 Analytical Data Validation**

<b>QA/QC Requirement</b>	<b>Yes/No</b>	<b>Comments</b>
Holding times	Yes	None
Laboratory accreditation	Yes	None
Sample preservation methods	Yes	None
Review of laboratory quality control results	Yes	None
Required analytical detection limits met	Yes	None

It is considered that the accuracy and precision of the groundwater data, implied from the field QA/QC information available for this project are of sufficient standard and that the analytical results can be used as a basis for interpretation.

## **9 Conclusion**

Within the limitations of the scope of works, Ace has concluded that:

- The PSI established that farming, poultry farming and a mechanical workshop with an underground fuel storage tank were the only potentially contaminating activities occurring in the proposed development area. However, a site inspection across the entire area found a large amount of materials that are considered potentially contaminating. These included piles of rubbish and uncontrolled Fill, car wrecks, workshops, old tyres, oil drums, signs of oil staining and fuel leakages and piles of batteries.

Based on the information available and within the limitations of the PSI, Ace recommends that Detailed Site Investigations be carried out prior to subdivision and development occurring and site remediation/validation be implemented as required. In addition, Ace did not identify any environmental issues with the exception of the underground fuel storage tank that would prevent the proposed development area from being classified suitable for residential development. Removal of the tank would eliminate the potential risk to human health and the environment and hence make the site suitable for residential development.

**ACE ENVIRONMENTAL**

**GINA PEMBERTON  
MANAGING DIRECTOR**

## 10      **References**

DoE and WAPC (Nov 2003). Planning Bulletin No.64. Central Metropolitan Region Scheme Acid Sulphate Soils.

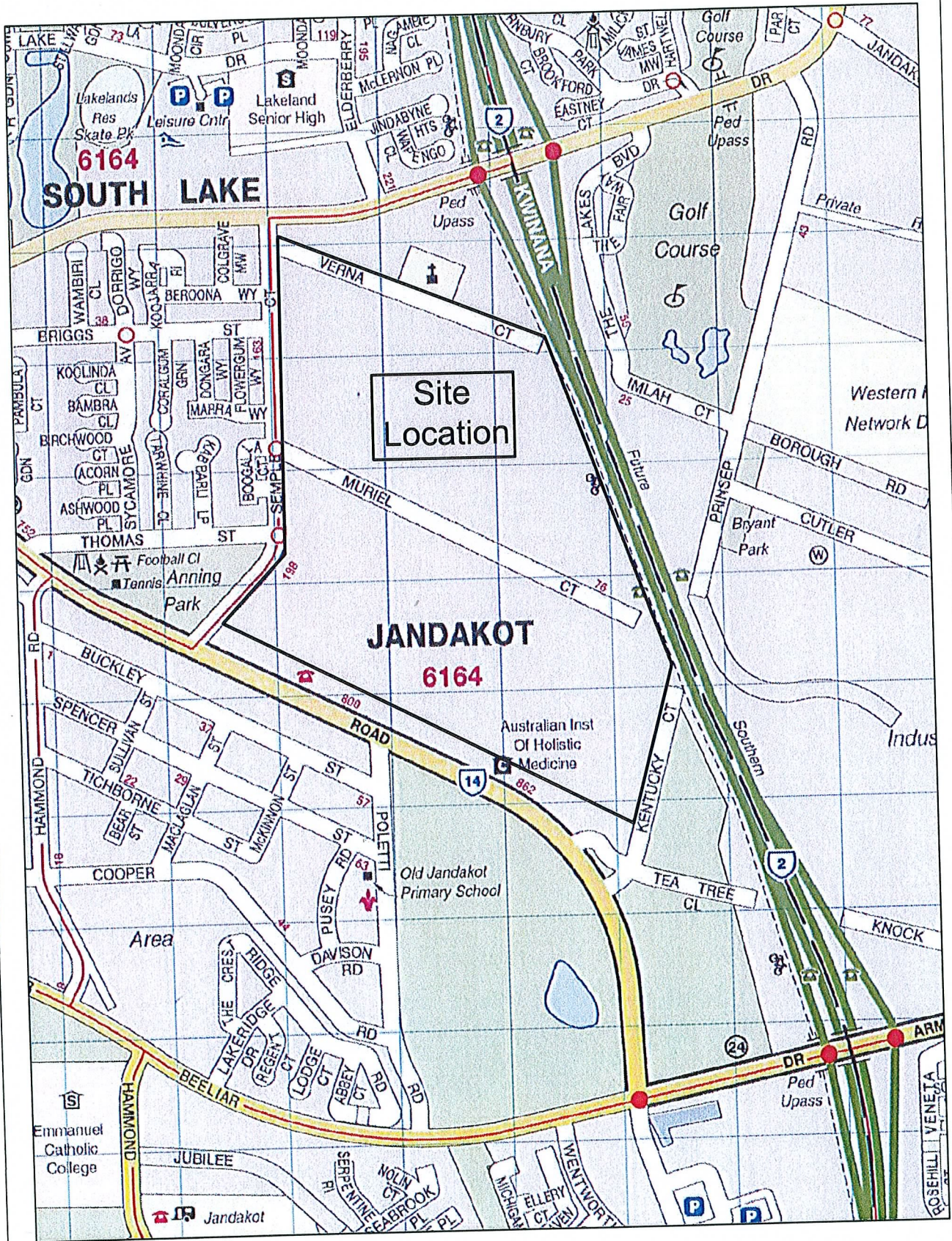
Department of Water (2006): [www.environmental.wa.gov.au](http://www.environmental.wa.gov.au)

Department of Environment. December 2001. Contaminated Sites Management Series. Contaminated Sites Technical Guidelines.

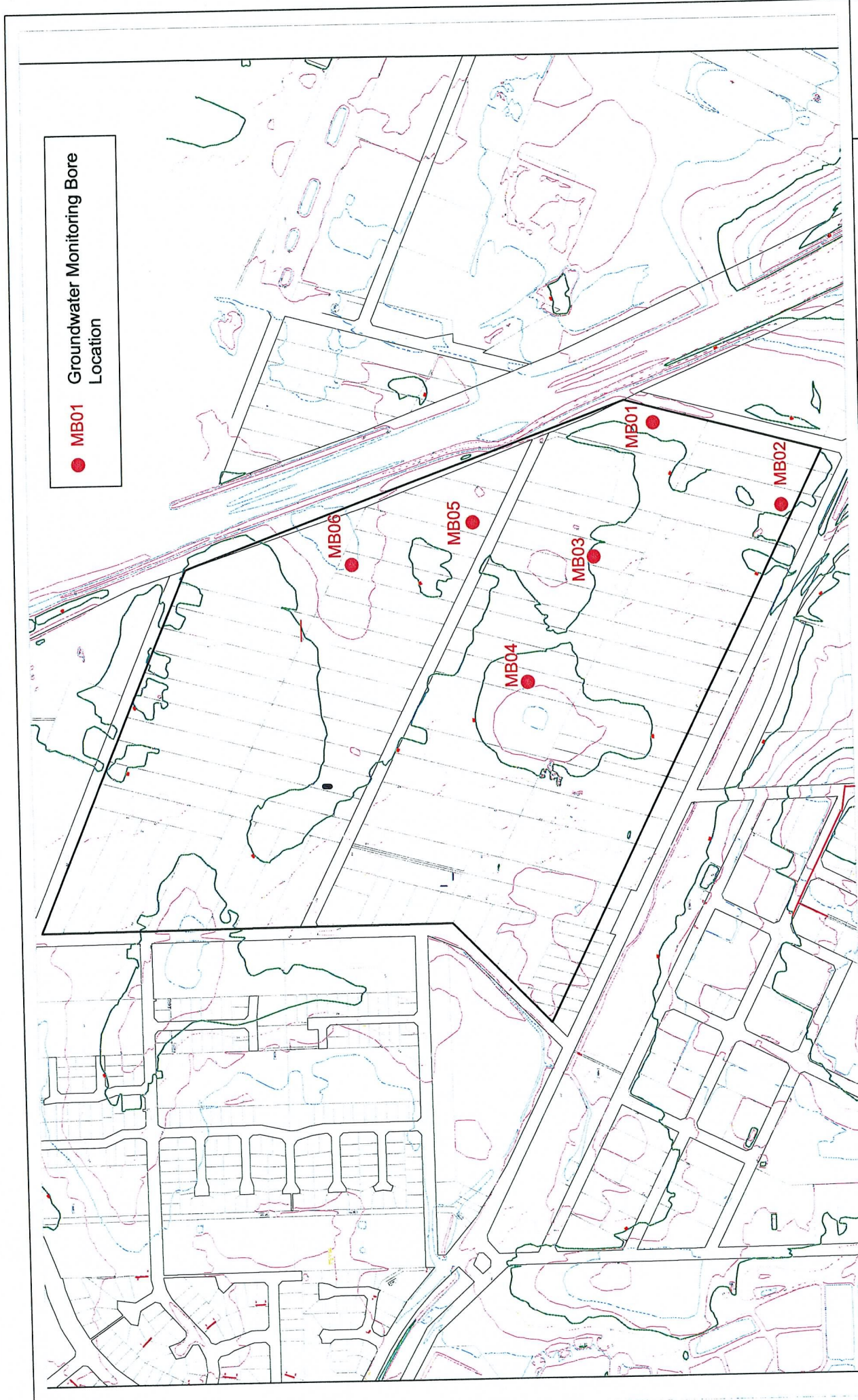
Department of Environment. 2004. Perth Groundwater Atlas (2<sup>nd</sup> ed).

# FIGURES





<b>Ace Environmental Pty Limited</b> Shop 17/2 South Western Hwy Armadale WA 6112 Tel: (08) 9497 5000 Email: gina@aceenvironmental.com.au	Date	Description	Drawn	Checked	Approved	<b>LOCATION PLAN</b>  <b>DEVELOPMENT AREA 19</b> <b>JANDAKOT</b>	<b>CLIENT</b>  <b>KOLTASZ SMITH</b>	Drawing No. 07030.01
	21.06.07	Location Plan	HC	GP				Scale: NTS
								Sheet Size: A4
								Job No. J07030.01
								FIGURE 1



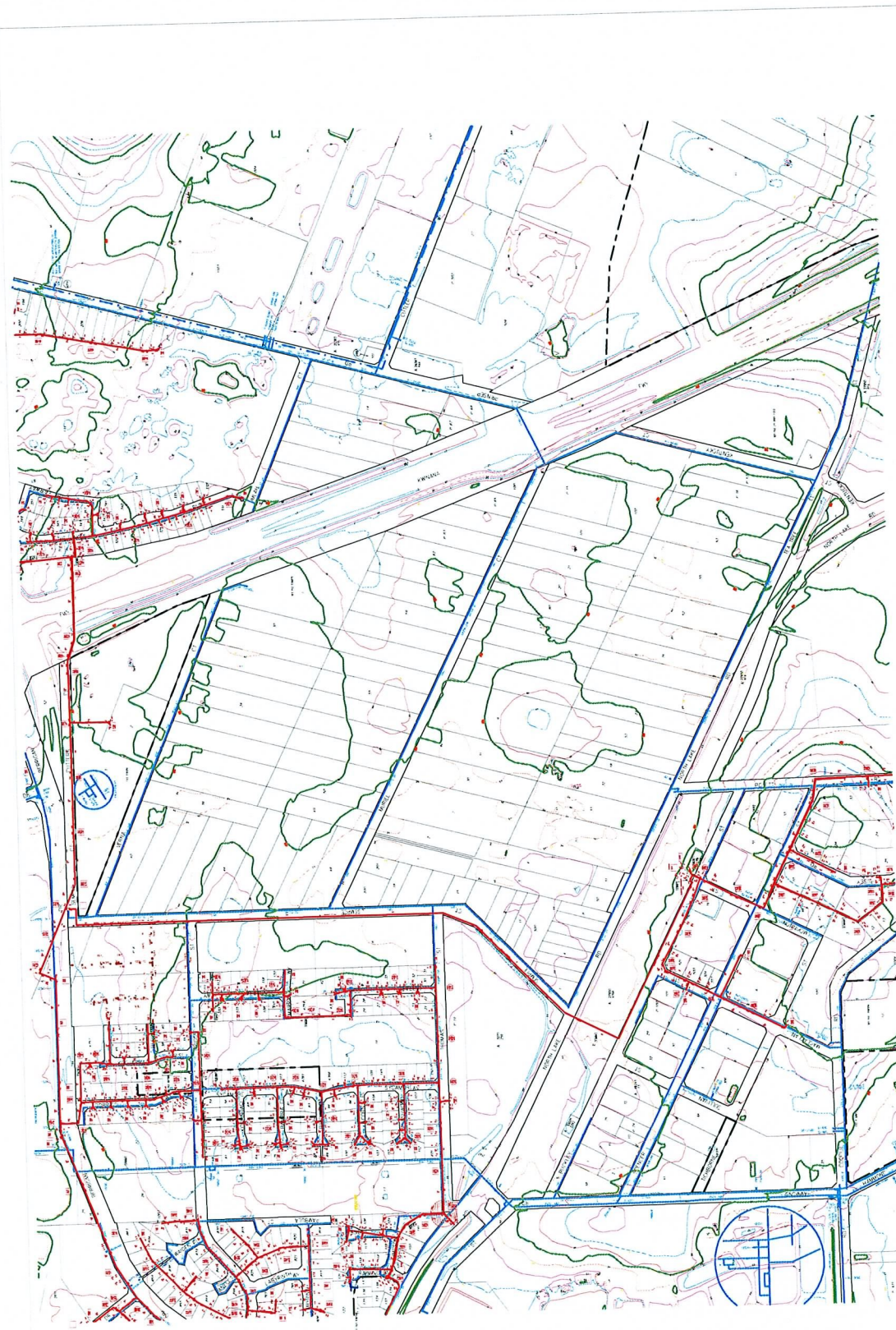
Drawing No. 07030.02  
 Scale: NTS  
 Sheet Size: A4  
 Job No: J07030.01  
 FIGURE 2

CLIENT  
 KOLTASZ SMITH

BORE LOCATION PLAN  
 DEVELOPMENT AREA 19 (MURIEL COURT)  
 JANDAKOT

Date	Description	Drawn	Checked	Approved
21.06.07	Bore Location Plan	HC	GP	

**Ace Environmental**  
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Hospital District - AMH Coordinate System - MGA04

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