



Enquiries: Scott Haine
Our Ref: SPN/0614
Your Ref: 5/6006

Chief Executive Officer
Shire of Murray
PO Box 21
PINJARRA WA 6208

Shire of Murray	
File No. 5/6006	Reg. No. DIS/
Officer RB	W.F. RB
12 FEB 2015	
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Dear Sir

BEDINGFELD ROAD OUTLINE DEVELOPMENT PLAN

Attached is an endorsed copy of the abovementioned Outline Development Plan (ODP), which reflects the modifications required by the Western Australian Planning Commission (WAPC) decision of 8 January 2015.

If you have any queries regarding this matter, please contact Scott Haine on 9586 4688.

Yours sincerely

for Tim Hillyard
Secretary
Western Australian Planning Commission

6 February 2015

Att.



Harley Dykstra

PLANNING & SURVEY SOLUTIONS

Proposed Outline Development Plan

Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

Prepared by Harley Dykstra Pty Ltd



PERTH

Level 1, 252 Fitzgerald Street, Perth
PO Box 316, Kelmscott WA 6991

T: 08 9228 9291
F: 08 9495 1946

E: perth@harleydykstra.com.au
www.harleydykstra.com.au

ACN 009 101 786
ABN 77 503 764 248

Albany Bunbury Busselton Kelmscott Perth

DOCUMENT CONTROL

Control Version	DATE	Status	Distribution	Comment
A	August 2014	final	Shire of Murray	for Comment and Approval
B	January 2015	final	Shire of Murray	for Comment and Approval
C				
D				
E				

Prepared for: Bedingfeld Park Inc.
Prepared by: TvdL
Reviewed by: DM
Date: 20/01/15
Job No & Name: D12/962
Version: B

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**CERTIFIED THAT THIS OUTLINE DEVELOPMENT PLAN
WAS ADOPTED BY RESOLUTION OF THE
WESTERN AUSTRALIAN PLANNING COMMISSION ON**

Scott Hume Date 6 Feb 2015

Signed for and on behalf of the Western Australian Planning Commission

an officer of the Commission duly authorised by the Commission pursuant to
section 16 of the *Planning and Development Act 2005* for that purpose, in the
presence of:

L. Palermo Witness

6/02/2015 Date

And by
RESOLUTION OF THE COUNCIL OF THE SHIRE OF MURRAY ON

..... Date

And
PURSUANT TO THE COUNCIL'S RESOLUTION HEREUNTO AFFIXED IN THE
PRESENCE OF:

N. Barrett

President, Shire of Murray

[Signature]

Chief Executive Officer, Shire of Murray

28-1-2015 Date

This Outline Development Plan is prepared under the provisions of the
Shire of Murray Local Planning Scheme

Table 1: Table of Modification to Part 1 and ODP Map

Modification No.	Description of Modification	Date endorsed by Council	Date endorsed by WAPC

Executive Summary

Proposed Outline Development Plan Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

The Outline Development Plan (ODP) Area is located on the eastern side of McLarty Road, north of the Murray River, approximately 900m due south of the Pinjarra Town Centre.

The ODP Area comprises of 4.53ha land parcel, being the total Residential Development zoned area of the constituent lots.

The primary purpose of the ODP is to facilitate the development of a Residential Aged Care Facility (RACF) over part of Lots 13 and 14 Bedingfeld Road, Pinjarra.

The secondary purpose of the ODP is to demonstrate the manner by which the RACF can be developed whilst not compromising the future planning and development of the balance land within the ODP area.

The ODP has been prepared by a Project Team comprising:

- A. Scott Hambley Project Manager
- Harley Dykstra Planning Project Planners
- JDA Consulting Hydrologists Water Management Summary
- Bayley Environmental Services Environmental Reporting
- Bushfire Safety Consulting Fire Management Plan
- Brad Goode & Associates Aboriginal Heritage

Complete details of the proposal are provided in the following Report.

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PART ONE

Statutory Section

1.0 Implementation Framework

Proposed Outline Development Plan Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

1.1 Outline Development Plan Area

The Outline Development Plan (ODP) for Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra applies to the land contained within the inner edge of the broken black line shown on the ODP (**Plan 1** –Outline Development Plan) being an area of 4.53ha. The ODP comprises the Residential Development zoned part of the following lots:

Lot No.	Plan / Diagram	Volume	Folio
11	P223049	1540	133
12	P223049	2229	21
13	P223049	2229	22
14	P223049	2079	50
16	P223049	1089	65
123	D17454	1156	454

1.2 Outline Development Plan Content

The ODP comprises:

- Statutory Section (Part 1);
- Explanatory Section (Part 2) and
- Appendices – Technical reports, plans, maps and supporting documents.

Part 1 includes only the ODP Map and statutory planning provisions and requirements.

Part 2 is to be used as a reference guide to interpret and justify the implementation of Part One.

1.3 Interpretations and Relationship to the Town Planning Scheme

1.3.1 Interpretations

Unless otherwise specified in this Part, the words and expressions used in this ODP shall have the meanings given to them under Appendix 1 of the Shire of Murray Town Planning Scheme No.4 (“the Scheme”) including any amendments gazetted thereto.

1.3.2 Land Use Permissibility

Land use permissibility within the Residential Development zone shall be in accordance with the Zoning Table contained within the Scheme.

1.0 Implementation Framework

Proposed Outline Development Plan
Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

1.4 Operation Date

The ODP shall come into operation when it is adopted by the Shire and endorsed by the Western Australian Planning Commission pursuant to Clause 6.5.6 and Clause 6.5.7 respectively. Any future modifications to the ODP shall be prepared under clause 6.5 of the Shire of Murray TPS 4.

1.5 Residential Density

The Outline Development Plan (**Plan 1** of this Part) designates a Residential 40 (R40) density code applicable to the ODP area according to the legend.

The residential density code applies to the land as if it were incorporated into the Scheme.

All provisions, standards and requirements applicable to the residential density code in the Scheme shall apply unless specific provision is made to the contrary in this part of the ODP.

1.6 Development Requirements and Standards

Development is generally to be in accordance with the ODP. Development standards shall be in accordance with the Scheme, the Shire's local planning policies and the requirements of any technical assessments supporting the ODP, including, but not limited to the requirements of an approved Fire Management Plan.

Conditions of Development Approval may include:

- Arrangements for the ceding and /or ongoing management of the Foreshore Reserve; including the preparation and implementation of a Foreshore Management Plan;
- Contributions towards a pedestrian path within the southern side of Bedingfeld Road where it abuts the Application Area.

Development shall be orientated to address both the foreshore reserve and Bedingfeld Road.

1.7 Public Open Space Provision

Public open space contributions may be required in accordance with Liveable Neighbourhoods and Development Control Policy No. 2.3: Public Open Space in Residential Areas.

1.0 Implementation Framework

Proposed Outline Development Plan
Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

1.8 Ceding of Foreshore Reserve

Ceding of the foreshore reserve, generally being the land reserved for Regional Open Space under the Peel Region Scheme is intended to occur in one stage. The timing of these arrangements shall be determined in consultation with the Shire of Murray, having regard to the stage of completion of drainage and foreshore management works associated with subdivision and/ or development within the ODP area.

1.9 Fire Management

A Fire Management Plan has been prepared in support of the ODP. Implementation of the requirements of the Fire Management Plan applicable to each stage of development or subdivision shall be required as a condition of Approval.

1.10 Stormwater Management

Stormwater management shall be undertaken in accordance with the Shire of Murray Water Sensitive Urban Design Policy.

1.11 Servicing

All development and subdivision within the ODP area shall be connected to reticulated water and sewer.

1.12 Operation and Implementation

The operation and implementation of the ODP shall be as set out in **Table 1**

Table 1:

DOCUMENTATION	OUTLINE DEVELOPMENT PLAN	DEVELOPMENT/ SUBDIVISION APPLICATION	RELEVANT AUTHORITY
ENVIRONMENTAL			
Environmental Assessment	Documented in ODP / Report appended	N/A	Shire of Murray / DEC
Foreshore Management Plan	Documented in ODP/Report appended	Condition of development and/or subdivision approval	Shire of Murray/DEC

Table 1 (continued)

ENGINEERING			
Servicing	Documented in ODP Report	Condition of development and/or subdivision approval	Shire of Murray / Water Corporation/Western Power
Water Management/ Hydrology	Documented in ODP / Report appended	Condition of development and/or subdivision approval	Shire of Murray/ DoW
Geotechnical Report		Condition of development and/or subdivision approval	Shire of Murray
FIRE MANAGEMENT			
Fire Management Plan	Documented in ODP/ Report appended	Condition of development and/or approval	Shire of Murray/ DFES
ABORIGINAL HERITAGE			
Aboriginal Heritage Survey	Documented in ODP/ Report appended		Shire of Murray/ DIA

PART ONE – PLAN 1
Outline Development Plan



Notes:

1. The floor levels of development within the flood fringe shall be a minimum of 500mm above the 1 in 100 year flood level.
2. A Fire Management Plan has been prepared in support of the ODP. Implementation of the requirements of the Fire Management Plan applicable to each stage of development or subdivision shall be required as a condition of Approval.
3. Preparation and Implementation of a foreshore management plan shall be required as a condition of Development / Subdivision Approval
4. Ceding of the foreshore reserve, generally being the land reserved for Regional Open Space under the Peel Region Scheme is intended to occur in one stage. The timing of these arrangements shall be determined in consultation with the Shire of Murray, having regard to the stage of completion of drainage and foreshore management works associated with subdivision and or development within the ODP area.
5. Stormwater management shall be undertaken in accordance with the Shire of Murray Water Sensitive Urban Design Policy.
6. The location and alignment of the public road is indicative only and subject to survey and detailed design.
7. The location and alignment of the Pedestrian Foreshore Link is indicative only and subject to survey and detailed design.
8. Land use permissibility shall be in accordance with the zoning table set out in the Shire of Murray Town Planning Scheme No. 4.
9. Prior to development and/or subdivision of land identified as requiring further planning, more-detailed planning will need to be prepared for the whole area so identified. This planning will need to address the extension of the road adjacent to the foreshore and its eventual connection with Bedingfeld Road and coordinate development across both landholdings.

APPROVED / ENDORSED
BY THE WESTERN AUSTRALIAN PLANNING
COMMISSION ON ..8/1/2015..,

OUTLINE DEVELOPMENT PLAN Lots 11-14, 123 & 16 Bedingfeld Road PINJARRA



DRAWN		DRAWING No	
AR 14 January 2015		12962-ODP-P1&F5-121129-D	
SCALE AT A3 1:2500			
REV	DESCRIPTION	DATE	
A	Original Drawing	29-11-12	

0 20 40 60 80 100 120

ALL DISTANCES ARE IN METERS

LEGEND

Zones and Reserves

- Residential R40
- Local Open Space

Other

- ODP Area (4.53ha)
- Residential Aged Care Facility

Pedestrian Foreshore Link
(Indicative Alignment)

Flood Fringe

Extent of Flood Way

Subject to Further Planning

Existing Water Infrastructure

Existing Sewer Infrastructure

Plan 1

PERTH OFFICE:

Level 1, 252 Fitzgerald Street, Perth WA 6000
 T: 08 9228 9192
 E: perth@harleydykstra.com.au
 W: www.harleydykstra.com.au
 Offices also at Albany, Bunbury, Busselton and Kolmscott

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NOTE:

This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey.



PART TWO

Explanatory Section

1.0 Planning Background

Proposed Outline Development Plan Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

1.1 Introduction and Purpose

This submission has been prepared by Dykstra Planning on behalf of Bedingfeld Park Inc. in respect of Lots 11 – 14, 16 & 123 Bedingfeld Road, Pinjarra ("the subject land").

This report represents an application to the Shire of Murray to consider a proposed ODP over the subject land. The adoption of the proposed ODP will facilitate development of a portion of Lots 13 & 14 for a Residential Aged Care Facility (RACF). In addition, the ODP is intended to provide a framework for the potential future use of the balance lots within the ODP area for a range of complimentary uses compatible with the existing medical and special purpose residential uses existing and proposed within this precinct. The proposal also demonstrates the ODP is consistent with the use of adjoining land to the north of the site, and management and conservation objectives of the adjacent Murray River Reserve.

This proposal is accompanied by an ODP Map prepared in accordance with the Shire of Murray Town Planning Scheme No. 4, which is included at Part One (**Plan 1**) of this report.

This ODP Explanatory Report includes a detailed description of the proposal, provides an evaluation of the relevant town planning, environmental and servicing considerations applicable to the land, and details the rationale supporting the proposed ODP.

1.2 Land Description

1.2.1 Location

The subject land is located on the eastern side of South Western Highway, north of the Murray River, approximately 900m due south of the Pinjarra town centre (**Appendix 1 - Figure 1** refers).

1.2.2 Area and Land Use

The subject land comprises of six (6) lots which has a total area of 10.2397 ha. The ODP area reflects the Residential Development zoned part of the subject land which has an area of 4.53ha **Table 2** over page and the Cadastral Plan at **Appendix 1- Figure 2** identify the ODP area in the context of the overall landholdings.

1.0 Planning Background

Proposed Outline Development Plan
Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

Table 2: Lots comprising the ODP Area

Lot No.	Subject Land Area (ha)	ODP Area
11	1.4470	6448m ²
12	1.9047	5730m ²
13	1.7112	7636m ²
14	1.6115	8530m ²
123	1.9071	8729m ²
16	1.6582	8263m ²
TOTAL AREA	10.2397 ha	4.53 ha

Lots 16 & 123 each contain a single dwelling and outbuildings on their south-eastern parts and are used for Rural Living purposes. Lot 14 contains two dwellings and outbuildings adjacent to Bedingfeld Road, with the land otherwise accommodating an orchard.

Lot 13 contains an orchard over its north-western part. Lot 12 is vacant and cleared of native vegetation over its north-western part. Lot 11 contains two dwellings and associated outbuildings and is used for rural living purposes. The nature of existing land use within the ODP area is depicted on the Aerial Photograph at **Appendix 1 – Figure 3**.

1.2.3 Legal Description and Ownership

Table 3 below includes the Title details of the constituent lots within the subject land.

Lot No.	Plan / Diagram	Volume	Folio
11	P223049	1540	133
12	P223049	2229	21
13	P223049	2229	22
14	P223049	2079	50
16	P223049	1089	65
123	D17454	1156	454

Copies of the Certificates of Title are included at **Appendix 2**.

1.0 Planning Background

Proposed Outline Development Plan
Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

1.3 Planning Framework

1.3.1 Zoning and Reservations

1.3.1.1 Peel Region Scheme

The north-western part of the constituent lots is zoned "Urban" under the Peel Region Scheme (PRS) with a narrow band of rural zoned land over Lots 11, 14, 123 & 16. The south-eastern margin of the subject lots fronting the Murray River is reserved for Regional Open Space under the PRS. An extract from the PRS Map for the Pinjarra townsite is included at **Appendix 1 – Figure 4**. Land to the north of Bedingfeld Road is zoned Urban, whilst the land containing the Murray Hospital to the west of the site is reserved for Public Purposes.

1.3.1.2 Shire of Murray TPS 4

The available Town Planning Scheme 4 Mapping correlates with the PRS Map, showing the north-western part of the lots zoned "Residential Development" a central area of "Rural" zoned land and Regional Open Space over the south-eastern part of the lots.

The south-eastern part of the site is identified within a Flood prone Area (100 year flood) and hence is subject to Part XII of TPS 4. Further details are provided under Section 2.1 of this Report.

Future use of Lots 16, 123, 12 & 11 other than for single residential purposes shall be subject to further detailed planning and modification of the ODP. Uses compatible with the proximity of the site to the Murray Hospital and existing Aged Care facilities may be considered in preference to residential subdivision. Some uses may require a Scheme Amendment, i.e. for additional use, as use classes such as medical centre are prohibited uses in the Residential Development Zone.

1.3.2 Murray 2023 Strategic Community Plan

The Shire of Murray has adopted the Murray 2023 Strategic Community Plan which is intended to reflect the community vision for the Shire and identifies various themes, including:

1.0 Planning Background

Proposed Outline Development Plan Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

- Community wellbeing;
- Strategic Land Use Planning;
- Environmental Sustainability;
- Infrastructure and Asset Management;
- Economic Development; and
- Governance and Leadership.

Each of these themes is underpinned by key objectives.

Objective 4.2 under the Infrastructure and Asset Management Theme follows:

<i>OBJECTIVE 4.2 – Facilitate roads, paths and waterways for inter-connectivity</i>
<i>Strategies</i>
<i>4.2.1 Plan and develop a network of cycleways, paths and trails to meet community needs</i>
<i>4.2.2 Ensure an effective future road network</i>
<i>4.2.3 Plan and develop waterways infrastructure</i>

The strategic land use planning process (including preparation of Outline Development Plans) is one mechanism that can be used to facilitate the delivery of the abovementioned objective and strategies.

In the case of the proposed ODP, the provision of a road interfacing with the Murray River foreshore and pedestrian linkages are considered by the Shire of Murray to be critical elements in achieving the above objective.

1.3.3 SPP No.3 – Urban Growth and Settlement

The Western Australian Planning Commission has prepared a Statement of Planning Policy (SPP) No. 3 – Urban Growth and Settlement.

A primary focus of SPP No.3 is to facilitate the development of sustainable communities and, in this regard, the Policy lists a number of key requirements to achieve this aim, including planning for:

- *Sufficient and suitable serviced land in the right locations for housing, employment, commercial, recreational and other purposes, coordinated with the efficient and economic provision of transport, essential infrastructure and human services;*

1.0 Planning Background

Proposed Outline Development Plan

Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

- *Variety and choice in the size, type and affordability of housing to support a range of household sizes, ages and incomes and which is responsive to housing demand and preferences;*
- *Affordable land for housing and affordable housing products in both greenfield and brownfield locations to ensure the housing needs of all the community can be met including those with special needs;*
- *Access for all to employment, health, education, shops, leisure and community facilities by locating new development so as to be accessible by foot, bicycle or public transport rather than having to depend on access by car (whilst recognising the convenience of car travel for some trips and the limited potential to provide alternatives in rural and remote locations);*
- *Supporting higher residential densities in the most accessible locations, such as, in and around town and neighbourhood centres, high frequency public transport nodes and interchanges, major tertiary institutions and hospitals, and adjacent to high amenity areas such as foreshores and parks; and*
- *Good urban design which creates and enhances community identity, sense of place, liveability and social interaction in new and existing neighbourhoods.*

2.0 Site Opportunities and Constraints

Proposed Outline Development Plan
Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

2.1 Foreshore Reserve

A Report titled “*Determination of Foreshore Setback*” has been prepared by Bayley Environmental Services (BES) in support of the proposed RACF over Lots 13 and 14. A copy of the Report by BES is *attached* at **Appendix 3**.

The Report considers the appropriate boundary for a foreshore reserve adjacent to the Murray River and hence has informed the siting and design of the proposed RACF on Lots 13 and 14. The Report concludes the foreshore reserve boundary should coincide with the boundary of the floodway. This achieves a setback of 160m – 180m between the development and the river bank.

The foreshore setback study has regard to the recommendations of a vegetation report which concludes that, within the areas surveyed, there are few native species and plants, with the exception Flooded Gum Trees. The vegetation report advises thinning within the survey area for fire hazard reduction is unlikely to have any significant impact on native vegetation and flora. Conversely, thinning of trees is likely to result in the remaining individuals developing thicker trunks and larger branches.

2.2 Landform and Soils

Over its north-western part the subject land is flat and unremarkable in terms of its topography. The “Residential Development” zoned part of the subject land coincides with this flat/level area. A Feature Survey undertaken over the proposed RACF Site (Lots 13 & 14) is included at **Appendix 4**. From its frontage to Bedingfeld Road the subject land has an average height of approximately 10.2m-10.4m AHD before grading more steeply downwards towards the Murray River floodplain.

The ODP Area site is characterised by a thin veneer of fine to medium grained Bassendean Sands overlying clays of the Guildford Formation. Alluvial deposits occur in the south-eastern part of the Study Area, consistent with the Murray River floodplain. The previous rezoning of the land for Residential Development confirms the soils within the ODP area are suitable for the form of development proposed.

Acid Sulfate Soils Mapping identifies the ODP area as having moderate to low risk of Acid Sulfate Soils (ASS) or Potential Acid Sulfate Soils (PASS) < 3m from the surface. Hence, there is not considered to be a significant risk of disturbing Acid Sulfate Soils at the time the site is developed.

2.0 Site Opportunities and Constraints

Proposed Outline Development Plan
Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

2.3 Ground Water and Surface Water

A Water Management Summary Report has been prepared by JDA Consulting Hydrologists. A copy of the Water Management Summary Report is *attached* as **Appendix 5**. The Water Management Summary Report advises the Annual Average Maximum Groundwater Level (AAMGL) ranges from 5m AHD near Bedingfeld Road to 3 m AHD at the edge of the proposed development area. Clearance between the natural surface and MaxGL ranges from 4m to 6m across the proposed development area. The Water Management Summary identifies the Murray River 100 year ARI flood level within the Study Area is approximately 10.91m AHD. Whilst the proposed building are outside of the 100 year ARI floodway, habitable building levels are to be a minimum of 0.5m above this elevation.

2.4 Bush Fire Hazard

A Fire Management Plan has been prepared by Bushfire Safety Consulting. A copy of the Fire Management Plan is *attached* as **Appendix 6**.

The Fire Management Plan identifies the bushfire hazard level over Lots 13 and 14 as well as the surrounding area. The bushfire hazard level is rated as low over the cleared grassland areas of the site whilst an extreme hazard occurs in the degraded open forest area adjoining the Murray River.

The Fire Management Plan identifies the use of Lots 13 and 14 for a RACF falls within an acceptable level of risk from a fire planning perspective. The Fire Management Plan details implementation requirements including establishment of a minimum Building Protection Zone (BPZ) of 20m around proposed buildings.

The key recommendation of the Fire Management Plan have been reflected in the design of the proposed RACF and depicted on the ODP (**Plan 1**).

2.5 Heritage

2.5.1 Aboriginal Heritage

Brad Goode and Associates, consulting anthropologists and archaeologists, were engaged to examine aboriginal heritage considerations relevant to the ODP Area. Research conducted by Brad Goode & Associates established that the proposed aged care facility may directly affect registered preliminary Aboriginal Heritage Site ID 3786 Battle of Pinjarra.

A copy of the Aboriginal Heritage Report is included at **Appendix 7**.

2.0 Site Opportunities and Constraints

Proposed Outline Development Plan Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

As a consequence of the ethnographic consultations two Aboriginal family groups as nominated by the Gnaala Karla Booja (GKB) working party at the South West Aboriginal Land & Sea Council (SWALSC) were consulted with the view to documenting the Aboriginal informant's opinions on the proponents wish to develop this site for the purpose of building an aged care facility. Subsequently, a ministerial consent notice under section 18 of the Aboriginal Heritage Act 1972 was submitted.

In correspondence dated 7 October 2013, the Minister for Aboriginal Affairs granted consent to the Landowner for the use of the land for a Residential Aged Care Facility subject to various conditions. A copy of the Minister's consent is attached at **Appendix 7**.

It is noted that the consent granted by the Minister relates to use of portions of Lot 12, 13 and 14 Bedingfeld Road for a Residential Aged Care Facility only. The consent does not extend to use of the land for any other purpose nor is it transferable to another landowner.

Separate approval under section 18 of the Aboriginal Heritage Act would be required for any future amendments to the ODP which proposes land use or subdivision over the balance lots within the ODP area.

2.5.2 European Heritage

The Shire of Murray Local Government Inventory identifies the McLernon House and Well, located on Lot 11 Bedingfeld Road. The place is contained within the Shire of Murray Heritage List under Management Category B, meaning:

<i>B Considerable significance</i>	<i>Very important to the heritage of the locality.</i>	<i>Conservation of the place is highly desirable. Any alterations or extensions should be sympathetic to the heritage values of the place. Places identified under this category are recommended to be included within the Heritage List prepared under the Shire's Local Planning Scheme. A requirement for Planning approval is recommended for proposed exterior works, change in land use and demolition.</i>
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The place is not included on the Heritage Council of Western Australia State Register.

Whilst not currently included within the Local Government Inventory, the Inventory identifies the “Bedingfeld Road Dwelling” on Lot 16 Bedingfeld Road as requiring further investigation to determine its heritage significance.

The Murray Hospital, which occurs outside the ODP area, is listed as Management Category “C”.

Given the nature of development between the ODP area and hospital, no impacts would be expected on the heritage conservation values of the Murray Hospital.

The Battle of Pinjarra Memorial Area at Lot 301 McLarty Road is located to the south-west of the ODP area. Further details are provided in the preceding section of this Report.

The purpose of this ODP is to provide a framework to facilitate the development of the overall ODP land. The ODP provides context and demonstrates the opportunity to integrate the proposed development on Lots 13 & 14 with the balance land comprising the ODP area. Hence, the approval of the ODP and subsequent development of the RACF will in no way compromise the heritage values of the dwelling on Lot 11 (and 16).

3.0 Proposed Land Use

Proposed Outline Development Plan Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

3.1 Overview of the Proposal

The purpose of the ODP is to provide a framework for the development and subdivision of the overall land within the ODP area. The ODP is included as **Plan 1** in the Statutory Section of this report

Following approval of the ODP, the proposed development of a Residential Aged Care Facility on Lots 13 & 14 can be considered. The proposed 100 bed RACF and ancillary buildings will be developed in stages, with stage 1 comprising a 20-25 room dementia specific wing. Each resident's room will have its own en-suite. This development will complement the existing Bedingfeld Park RACF which provides 45 beds, administration, service and support areas.

The RACF will also comprise a common lounge and dining areas, staff and utility areas and a secure outdoor courtyard area for use by residents and visitors. External areas will include internal driveways from Bedingfeld Road, car parking, serviced access and landscaping.

The Contextual Development Concept Plan at **Appendix 1 (Figure 5)** in the Explanatory Section of this report depicts the location and scale of development on the site, as well as the relationship of the ODP to surrounding land and development. The Bedingfeld Park Redevelopment Master Plan at **Appendix 8** illustrates the proposed RACF development on Lots 13 and 14 and is included for information purposes only.

3.2 ODP Design and Integration

The ODP design has been driven by the following considerations:

- The interface between relatively unconstrained "Residential Development" zoned land and the Murray River environs;
- Wide frontage of the ODP area to Bedingfeld Road relative to the limited depth of unconstrained zoned land adjacent to the River;
- Existing development of land both within and adjacent to the ODP area including existing dwellings to be retained;
- Fragmented land ownership; and
- The Shire of Murray's objective of achieving an interconnected road and pedestrian network adjacent to the River.

In turn the ODP design provides for the timely development of a much needed aged care facility whilst also recognising detailed planning over adjoining lots within the residential precinct generally defined by Bedingfeld Road and the Murray River has

3.0 Proposed Land Use

Proposed Outline Development Plan Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

not yet been undertaken. Hence, it is necessary to ensure the future planning of balance lots within this precinct will not be compromised.

The proposal represents orderly and proper planning given:

- The proximity of the land to the Hospital, medical services existing independent living units and RACF means it is ideally suited to a complimentary land use focused on residential aged care;
- The Murray River, foreshore reserves and associated site topography result in the land being less suited for conventional residential development;
- Provision has been made for vehicular and pedestrian linkages between the proposed RACF site and adjoining lots to ensure suitable access and connectivity is achieved once planning is advanced over these lots in the future. At such time, a modification to the ODP could be undertaken, as provided for under the Scheme.

In terms of staging, the first stage of development would occur on the northern part of Lot 13 fronting Bedingfeld Road and would comprise a single storey building, addressing the street, of a residential scale, which will ensure no adverse impact on the Bedingfeld Road streetscape. Landscaping would be established to achieve a high level of visual amenity within the streetscape.

Later stages of development will be oriented to address the river foreshore area which will ensure improved passive surveillance and management of this interface.

3.3 Private and Public Open Space

The design of the facility is intended to achieve the following aims:

- Integration with land reserved for Regional Open Space, which shall remain in private ownership under this ODP, to achieve improved efficiencies in terms of maintenance and management. Management of the Regional Open Space shall be achieved via the preparation and implementation of a Foreshore Management Plan, which shall be required as a condition of development approval. Retention of the Regional Open Space within private ownership provides the best opportunity for effective ongoing management until such time as a comprehensive Foreshore Management Plan for the entire length of the Murray River (within the Pinjarra Townsite) is prepared, and a management authority established.
- Provide passive interaction opportunities with other residents within private open space areas, as a means to avoid social isolation and improve wellbeing;

3.0 Proposed Land Use

Proposed Outline Development Plan Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

- Be compatible with local water management requirements and accommodate drainage integrated with landscaping to improve useability and amenity for residents;
- Provide private open space areas for residents of the RACF in convenient and accessible locations.
- Encourage maximum surveillance of the foreshore reserve areas to discourage opportunities for anti-social behaviour.
- Facilitate a pedestrian link adjacent to the Murray River foreshore reserve.

Private Open Space provided within the RACF will comprise of landscaped gardens, an integrated drainage feature and river viewing deck.

Whilst recognising the important role and function of POS provision as part of conventional residential subdivision and development, the proposed development of a RACF does not bring about the same demand for POS as would be required by the general community.

The reasons for this include:

- The RACF itself provides suitable accessible and functional private open space areas and facilities that would not be provided to the residents of conventional residential subdivision; and
- The age, mobility and health of residents means the facility will not place demand on public facilities used for active and passive recreation.

3.4 Movement Networks

3.4.1 Existing Movement Network

The ODP area has a 425 m overall frontage to Bedingfeld Road, which is accessed from McLarty Road, a primary regional road under the PRS, via McKay Street.

Bedingfeld Road is a local road, speed limited to 50 km/hr and is constructed to a sealed and kerbed standard. The north-eastern end of Bedingfeld Road connects to Camp Road, which in turn connects to McLarty Road. The south-eastern part of Camp Road forms the north-eastern boundary to the ODP area and is unsealed.

The main access to the Murray Hospital and existing Bedingfeld Park Independent Living Units and RACF is via McKay Road. Bedingfeld Road currently services residential dwellings opposite the ODP area.

3.0 Proposed Land Use

Proposed Outline Development Plan Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

3.4.2 Proposed Vehicular Access

The ODP area is characterised as having a wide frontage to Bedingfeld Road and relatively shallow depth (approx. 130 m). In assessing the proposed ODP prior to advertising, the Shire of Murray advised it is essential for the ODP to incorporate public road access generally adjacent to the river foreshore.

Access to the RACF will be via Bedingfeld Road, with a staff/visitors car parking area located adjacent to Bedingfeld Road. An internal access is also proposed around the perimeter of the facility linking to the proposed section of public road over Lots 13 and 14. Additional car parking within the road reserve, is also proposed adjacent to the foreshore reserve. Hence access for the RACF can be entirely contained within Lots 13 and 14.

The indicative location and alignment of the proposed road provides the opportunity for future integration with development on adjacent residential development zoned land within the ODP area, however no requirement for the construction of the public road or ceding of the road reserve will be brought about by the adoption of the ODP. The construction of the public road will only be required at the time individual land owners develop or subdivide land with the ODP area.

Anticipated traffic volumes generated by the RACF have been calculated based upon knowledge of the existing facility operated by Bedingfeld Park Inc. A Summary Traffic Impact Statement is included at **Appendix 9**. Approximately 208 vehicle movements per day are anticipated on weekdays and 160 movements per day on Saturday and Sunday are anticipated to be generated by the overall development.

The increase in traffic volumes brought about by the proposed development of a RACF is readily quantifiable and acceptable in the context of the zoning of the subject land and surrounds.

Additional traffic could be anticipated as the balance part of the ODP area is developed, however the future form of development and hence the contribution to traffic volumes cannot be determined at this stage. Traffic impacts associated with any future stage of the development within the ODP area could be assessed when further details are known.

It is anticipated traffic accessing the site would be divided between MacKay Street and Camp Road. No significant increase in traffic is likely to be generated along any of the other local roads in this locality as a result of this proposal. It is anticipated the existing intersections of McKay Street and Camp Road onto McLarty Road are constructed to a suitable standard. Overall, there will be no significant impact on the local road network as a result of this proposal.

3.0 Proposed Land Use

Proposed Outline Development Plan Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

Staff and visitor car parking areas are depicted on the Redevelopment Master Plan. Indicatively, provision for 78 car bays has been made. Further details shall be provided at Development Application Stage.

3.4.3 Pedestrian Access

A pedestrian path would be established along the southern side of the Bedingfeld Road reserve where it abuts the ODP area. A pro-rata contribution towards the construction of the path would be anticipated as a condition of Development Approval.

In addition, a pedestrian link adjacent to the Murray River foreshore is proposed. Similarly, pro-rata contributions towards the foreshore path would be anticipated as a condition of Development Approval.

3.5 Local Water Management

The Water Management Summary (**Appendix 5**) has considered the stormwater management and drainage requirements of the proposed RACF and outlines the stormwater management requirements for the 1 year, 5 year, 20 year and 100 year Annual Recurrence Interval (ARI).

Roof drainage and runoff for the 1 year ARI rainfall event would be retained via on site devices such as soakwells, to promote at source infiltration. Depth to groundwater and the sandy soils indicate infiltration can occur effectively.

A stormwater attenuation area is proposed within Lot 14, as depicted on the ODP to accommodate the 5 year and 20 year rainfall events. An outlet would be provided to allow for overflow for rainfall events exceeding the 20 yr ARI. The outlet would be designed to prevent erosion and scouring prior to stormwater flowing overland to the Murray River. Prior to outflow, treatment to manage the quality of stormwater runoff would be required in accordance with the Shire of Murray Water Sensitive Urban Design Policy.

3.6 Infrastructure and Services

3.6.1 Sewer Reticulation

The Water Corporation has confirmed the reticulated sewer supply located within Bedingfeld Road will need to be extended to service the development. Currently, the reticulated supply ends at the north-western corner of Lot 16 and accordingly an extension of approximately 140m is required, to enable a connection to be provided to the proposed RACF.

3.0 Proposed Land Use

**Proposed Outline Development Plan
Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra**

3.6.2 Water Reticulation

Consultation with the Water Corporation has confirmed the existing scheme water supply located within the Bedingfeld Road reserve is capable of servicing the proposed development.

3.6.3 Power and telecommunications

Overhead power lines installed within Bedingfeld Road adjacent to the ODP area. Hence an underground power connection and telecommunications can readily be provided to service proposed development.

4.0 Conclusion and Implementation

Proposed Outline Development Plan Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

This ODP has been prepared to guide the subdivision and development of the subject land.

The existing planning framework applicable to the Pinjarra townsite has facilitated the preparation of an ODP to guide the orderly and proper planning of this precinct for residential purposes.

The ODP has been compiled in accordance with the requirements of the Shire of Murray TPS 4. Part 6.5.6 and 6.5.7 of the Scheme stipulates the manner in which the ODP will be processed by the Shire of Murray and following its adoption by the local authority, by the WAPC. Following adoption of the ODP, a development application prepared in accordance with the ODP can be approved.

Further details pertaining to the implementation of the ODP are included at **Part 1** (Statutory Section of this Report).

In view of the above considerations, Dykstra Planning respectfully seeks Council's support for the adoption of the ODP and adoption by the Western Australian Planning Commission.

Appendix 1

Plans

Proposed Outline Development Plan
Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

Figure 1 - Location Plan

Figure 2 – Cadastral Plan

Figure 3 - Aerial Photograph

Figure 4 - PRS Map (extract)

Figure 5 – ODP Overlay



Figure 1





CADASTRAL PLAN

Lots 11-14, 123 & 16 Bedingfield Road
PINJARRA



Harley Dykstra

PLANNING & SURVEY SOLUTIONS

DRAWN		DRAWING No	
AR 16 January 2015		12962-CP-F2-121120-B	
DATE		SCALE AT A3 1:2500	
29-11-12		0 20 40 60 80 100 120	
ALL DISTANCES ARE IN METERS			

Legend



-  ODP Area — 4.53 ha
-  Lot Area — 10.24ha

Figure 2

PERTH OFFICE:

Level 1, 252 Fitzgerald Street, Perth WA 6000
T: 08 9228 9192
E: perth@harleydykstra.com.au
W: www.harleydykstra.com.au
Offices also at Albany, Bunbury, Busselton and Kelmscott

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NOTE:

This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey.





AERIAL PHOTOGRAPH

Lots 11-14, 123 & 16 Bedingfeld Road
PINJARRA



Harley Dykstra

PLANNING & SURVEY SOLUTIONS

REV	DESCRIPTION	DATE	DRAWN	DRAWING No
A	Original Drawing	29-11-12	AR 16 January 2015	12962-AP-F3-121025-B
				SCALE AT A3 NTS



Legend

 ODP Area

Figure 3

PERTH OFFICE:

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W: www.harleydykstra.com.au
Offices also at Albany, Bunbury, Busselton and Kelmscott

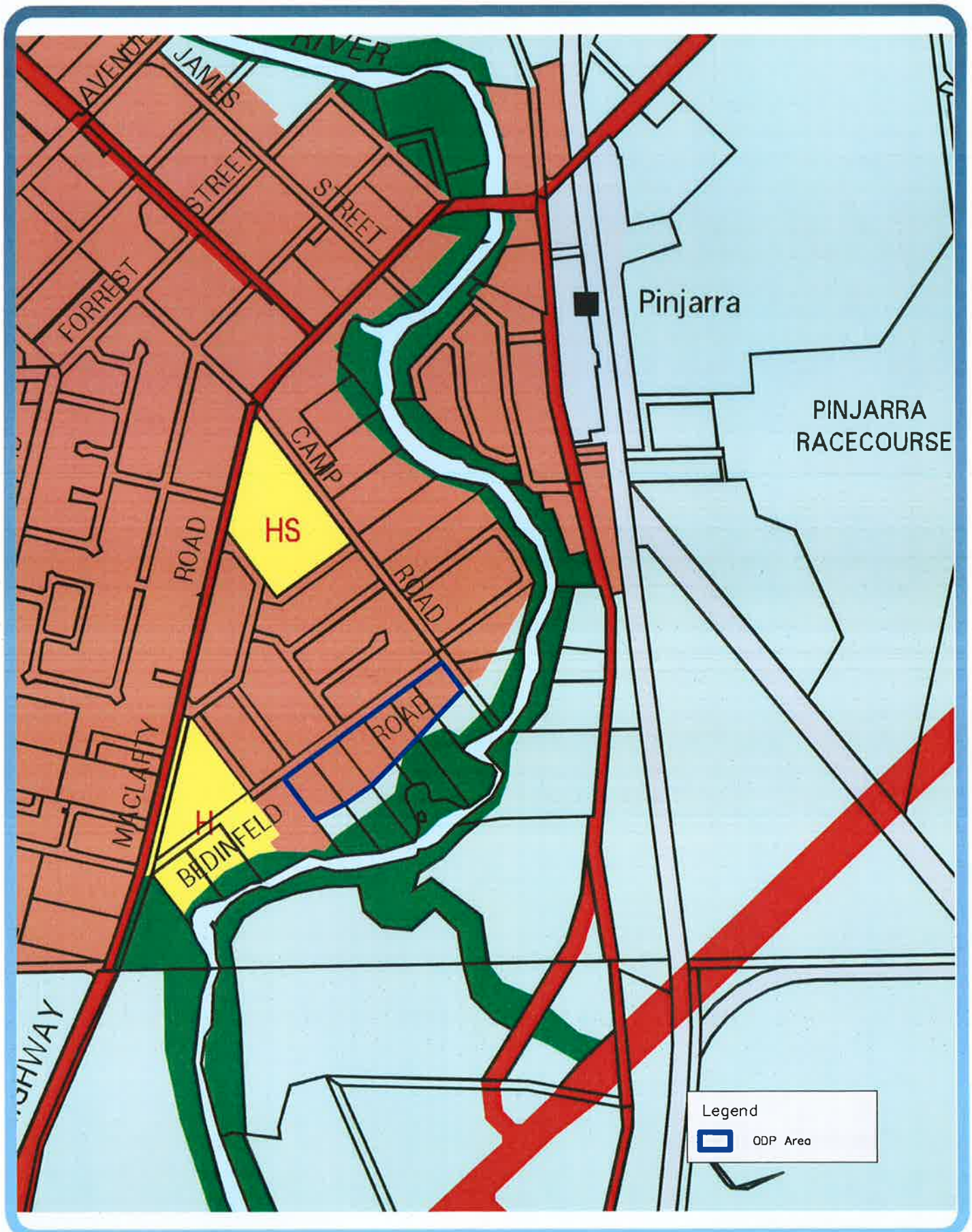
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NOTE:

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PEEL REGION SCHEME MAP

Lots 11-14, 123 & 16 Bedingfield
Road, Pinjarra



Harley Dykstra

PLANNING & SURVEY SOLUTIONS

DRAWN
AR 16 January 2015
REV A DESCRIPTION Original Drawing DATE 25/10/12

DRAWING No
12962-PRS-F4-121025-B
SCALE AT A3 NTS



PERTH OFFICE:

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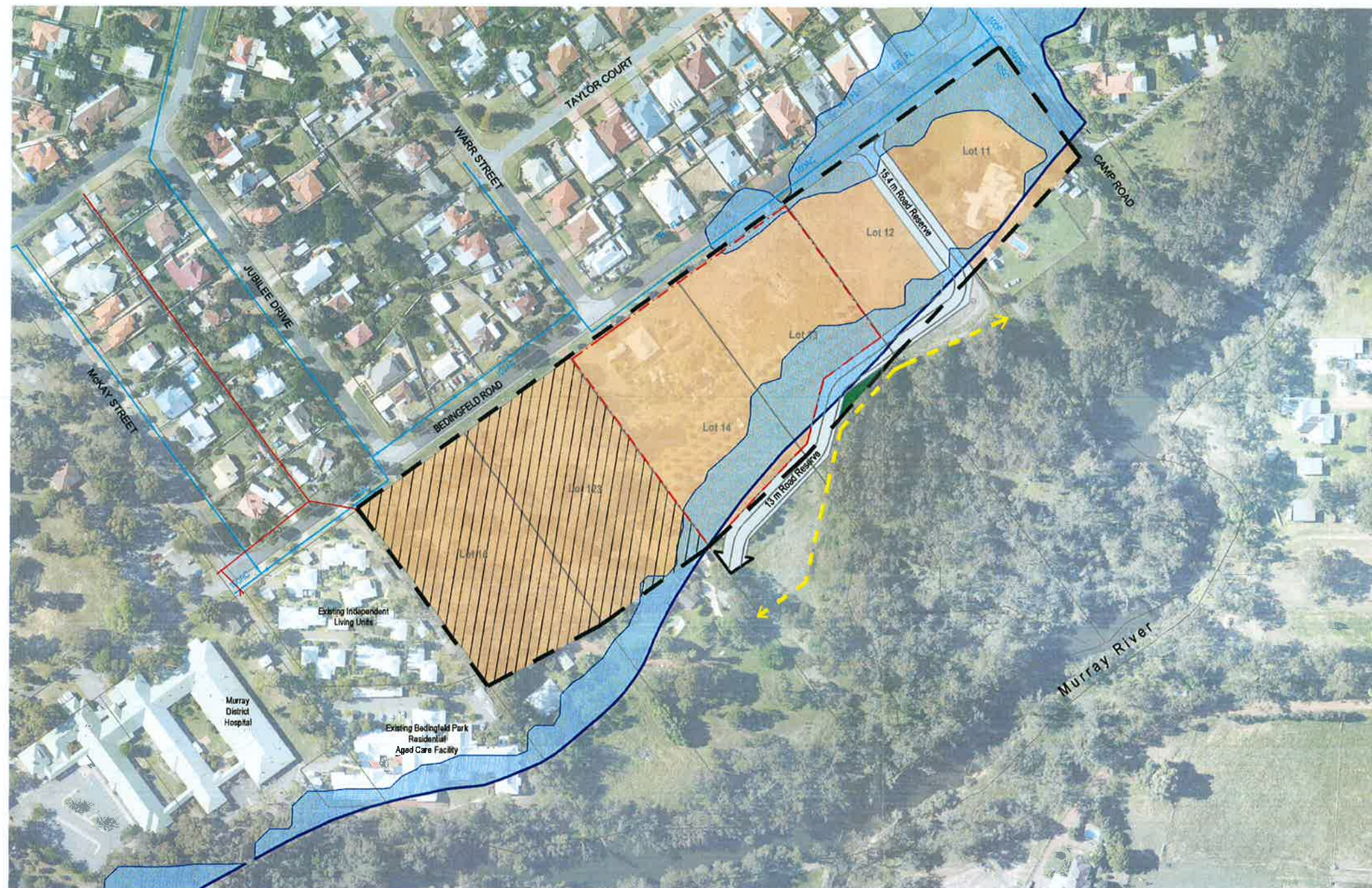
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NOTE:

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Figure 4



Notes:

1. The floor levels of development within the flood fringe shall be a minimum of 500mm above the 1 in 100 year flood level.
2. A Fire Management Plan has been prepared in support of the ODP. Implementation of the requirements of the Fire Management Plan applicable to each stage of development or subdivision shall be required as a condition of Approval.
3. Preparation and Implementation of a foreshore management plan shall be required as a condition of Development / Subdivision Approval.
4. Ceding of the foreshore reserve, generally being the land reserved for Regional Open Space under the Peel Region Scheme is intended to occur in one stage. The timing of these arrangements shall be determined in consultation with the Shire of Murray, having regard to the stage of completion of drainage and foreshore management works associated with subdivision and or development within the ODP area.
5. Stormwater management shall be undertaken in accordance with the Shire of Murray Water Sensitive Urban Design Policy.
6. The location and alignment of the public road is indicative only and subject to survey and detailed design.
7. The location and alignment of the Pedestrian Foreshore Link is indicative only and subject to survey and detailed design.
8. Land use permissibility shall be in accordance with the zoning table set out in the Shire of Murray Town Planning Scheme No. 4.
9. Prior to development and/or subdivision of land identified as requiring further planning, more-detailed planning will need to be prepared for the whole area so identified. This planning will need to address the extension of the road adjacent to the foreshore and its eventual connection with Bedingfeld Road and coordinate development across both landholdings.

AERIAL OVERLAY PLAN

Lots 11-14, 123 & 16 Bedingfeld Road
PINJARRA



DRAWN			DRAWING No		
AR			12962-ODP-P1&F5-121129-D		
19 January 2015			SCALE AT A3 1:2500		
REV	DESCRIPTION	DATE	0 20 40 60 80 100 120		
A	Original Drawing	29-11-12	ALL DISTANCES ARE IN METERS		

LEGEND

Zones and Reserves

- Residential R40
- Local Open Space

Other

- ODP Area (4.53ha)
- Residential Aged Care Facility

Pedestrian Foreshore Link
(Indicative Alignment)

Flood Fringe

Extent of Flood Way

Subject to Further Planning

Existing Water Infrastructure

Existing Sewer Infrastructure

Figure 5

PERTH OFFICE:

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NOTE:

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Appendix 2

Certificates of Title

Proposed Outline Development Plan
Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

WESTERN



AUSTRALIA

REGISTER NUMBER	
16/DP223049	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
1	26/4/2005

RECORD OF CERTIFICATE OF TITLE
UNDER THE TRANSFER OF LAND ACT 1893

VOLUME
1089FOLIO
65

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.



REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 16 ON DEPOSITED PLAN 223049

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

NEIL LEWIS FITCH
JENNIFER ANN FITCH
BOTH OF POST OFFICE BOX 242, PINJARRA
AS TENANTS IN COMMON IN EQUAL SHARES

(T C330179) REGISTERED 29 MARCH 1982

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 1089-65 (16/DP223049).
PREVIOUS TITLE: 55-2.
PROPERTY STREET ADDRESS: 12 BEDINGFELD RD, PINJARRA.
LOCAL GOVERNMENT AREA: SHIRE OF MURRAY.

NOTE 1: A000001A LAND PARCEL IDENTIFIER OF PINJARRA SUBURBAN LOT 16 (OR THE PART THEREOF) ON SUPERSEDED PAPER CERTIFICATE OF TITLE CHANGED TO LOT 16 ON DEPOSITED PLAN 223049 ON 19-JUL-02 TO ENABLE ISSUE OF A DIGITAL CERTIFICATE OF TITLE.
NOTE 2: THE ABOVE NOTE MAY NOT BE SHOWN ON THE SUPERSEDED PAPER CERTIFICATE OF TITLE OR ON THE CURRENT EDITION OF DUPLICATE CERTIFICATE OF TITLE.

Cor. 60/1952
Transfer
Application 2360/1952
From Volume Folio

4 195
8944/83
46830/03



REGISTER BOOK.
Vol. 1156

Fol. No 454

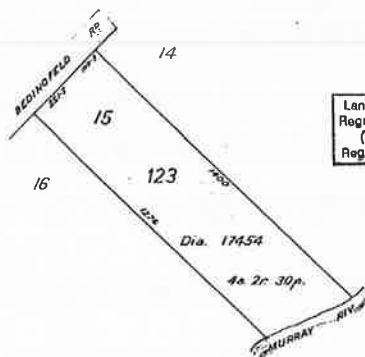
Certificate of Title

CT 1156 0454 F



under "The Transfer of Land Act, 1893" (54 Vic, 14, Sch. 5).

Beatrice Oriel Johnson of Pinjarra, Married Woman, is now the proprietor of an estate in fee simple subject to the easements and encumbrances notified hereunder in all that piece of land delineated and coloured green on the map hereon containing four acres two roods and thirty perches or thereabouts, being Lot 123, the subject of diagram 17454.



Land parcel identifier amended -
Regulation 12 Licensed Surveyors
(Transfer of Land Act 1883)
Regulations. Corr. 1778-2000-01

Dated the twenty-sixth day of March One thousand nine hundred and fifty-three

W. D. Brindley
Registrar of Titles.

Transfer 66819/63 to Albert Edgar Harris of 22 Hyde Street, Narrogin,
Public Accountant, Registered 12th November 1963 at 9.25 o'clock.

Transfer 81402/65 to Katherine Joan McLarty of Pinjarra,
Spinster. Registered 1st December 1965 at 9.58 o'clock.

Transfer 35725/67 to Roger Duncan Boyd, Medical Practitioner and Shirley Elizabeth Boyd,
his wife both of Pinjarra, as joint tenants. Registered 15th May 1967 at 9.07 o'clock.

Transfer B753979 to Peter Foord Wallace, Medical Practitioner and Patricia Ilene Wallace, his wife, both
of Lot 15 Bedingfield Road, Pinjarra, as joint tenants. Registered 25th July 1979 at 9.17 o'clock.

Transfer H386030 to Peter Foord Wallace and Patricia Ilene Wallace both of 10 Bedingfield Road, Pinjarra, as tenants in common in equal shares.
Registered 10th March, 2000 at 15.12 hrs.

44580/1/81-1/1/1/1

For encumbrances and other matters affecting the land see back.

EASEMENTS AND ENCUMBRANCES REFERRED TO

Mortgage 53472 / 67 to Bank
11th July 1961 at 9 59 0 c

DISCHARGED

South Wales Savings Bank Limited Registered

J. B. Kennedy
Asst. Registrar of Titles

Discharge 5154533 of Harborage 53472/67. Registered 24th May 1976 at 7.0102

Mortgage 0154534 to Bank of New South Wales. Registered 24th May 1976 at 9.31.0c

~~DISCONTINUED~~



Current B601861. lodged 10.1978. at 11:21 O'C.

12-1978

Withdrawal B753977 of Caveat B601861. Lodged 25-7-1979 at 9.17 a.m.



Discharge B753978 of Mortgage B154534. Registered 25th July 1979 at 9.17 oc.



Mortgage 6753980 to Australia and New Zealand Savings Bank Limited
Registered 25th July 1979 at 9.17



Mortgage B981096 to Australia and New Zealand Banking Group Limited, Registered 2nd September, 1980 at 9.02 o/c.

2

DISCHARGED

Discharge C75761 of Mortgage R753980. Registered 9th February, 1981 at 9.00 o'clock.



Mortgage E924746 to Australia & New Zealand Savings Bank Ltd. Registered 2nd July, 1992 at 8.09 hrs.

DISCHARGED

Discharge H5119 of Mortgage E924746. Registered 19th January 1999 at 8.43 hrs.

FILE OF TITLE
K

~~Dup CyT not prod.~~

Discharge H02208 of Mortgage B984096. Registered 16th April, 1999 at 8.20 hrs.

Mortgage H82209 to Westpac Banking Corporation. Registered 16th April, 1999 at 8.20 hrs.



REGISTRAR OF TITLES
WESTERN AUSTRALIA



CT 1156 0454 B



CERTIFICATE OF TITLE

Vol.

Fol.

1156

WESTERN



AUSTRALIA

RECORD OF CERTIFICATE OF TITLE
UNDER THE TRANSFER OF LAND ACT 1893

VOLUME
1540FOLIO
133

REGISTER NUMBER 11/DP223049	
DUPLICATE EDITION 2	DATE DUPLICATE ISSUED 24/6/2008

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 11 ON DEPOSITED PLAN 223049

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

SRISONGHAM KHAMHING
SUZANNE LYNN KHAMHING
BOTH OF 26 CAMP ROAD, PINJARRA
AS JOINT TENANTS

(T E515195) REGISTERED 20 DECEMBER 1990

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. K632214 MORTGAGE TO WESTPAC BANKING CORPORATION REGISTERED 20.6.2008.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.

* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 1540-133 (11/DP223049).
PREVIOUS TITLE: 687-164.
PROPERTY STREET ADDRESS: 40 BEDINGFELD RD, PINJARRA.
LOCAL GOVERNMENT AREA: SHIRE OF MURRAY.

- NOTE 1: A000001A LAND PARCEL IDENTIFIER OF PINJARRA SUBURBAN LOT 11 (OR PART THEREOF) ON SUPERSEDED PAPER CERTIFICATE OF TITLE CHANGED TO LOT 11 ON DEPOSITED PLAN 223049 ON 17.02.2004 TO ENABLE ISSUE OF A DIGITAL TITLE.
- NOTE 2: THE CHANGE REFERRED TO IN NOTE 1 MAY NOT BE SHOWN ON THE SUPERSEDED PAPER CERTIFICATE OF TITLE OR ON THE CURRENT EDITION OF THE DUPLICATE CERTIFICATE OF TITLE.
- NOTE 3: LAND PARCEL IDENTIFIER OF PINJARRA SUBURBAN LOT 11 (OR THE PART THEREOF) ON SUPERSEDED PAPER CERTIFICATE OF TITLE CHANGED TO LOT 11 ON

END OF PAGE 1 - CONTINUED OVER

RECORD OF CERTIFICATE OF TITLE

REGISTER NUMBER: 11/DP223049

VOLUME/FOLIO: 1540-133

PAGE 2

NOTE 4:

DEPOSITED PLAN 223049 ON 17-FEB-04 TO ENABLE ISSUE OF A DIGITAL
CERTIFICATE OF TITLE.
THE ABOVE NOTE MAY NOT BE SHOWN ON THE SUPERSEDED PAPER CERTIFICATE
OF TITLE OR ON THE CURRENT EDITION OF DUPLICATE CERTIFICATE OF TITLE.

WESTERN



AUSTRALIA

REGISTER NUMBER	
14/DP223049	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
3	7/2/2012

RECORD OF CERTIFICATE OF TITLE
UNDER THE TRANSFER OF LAND ACT 1893

VOLUME
2079FOLIO
50

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.


REGISTRAR OF TITLES**LAND DESCRIPTION:**

LOT 14 ON DEPOSITED PLAN 223049

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

BEDINGFELD PARK INC OF 4 BEDINGFELD ROAD, PINJARRA

(T L821113) REGISTERED 29 DECEMBER 2011

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 2079-50 (14/DP223049).
PREVIOUS TITLE: 404-195.
PROPERTY STREET ADDRESS: 24 BEDINGFELD RD, PINJARRA.
LOCAL GOVERNMENT AREA: SHIRE OF MURRAY.

NOTE 1: A000001A LAND PARCEL IDENTIFIER OF PINJARRA SUBURBAN LOT 14 (OR THE PART THEREOF) ON SUPERSEDED PAPER CERTIFICATE OF TITLE CHANGED TO LOT 14 ON DEPOSITED PLAN 223049 ON 25-SEP-02 TO ENABLE ISSUE OF A DIGITAL CERTIFICATE OF TITLE.
NOTE 2: THE ABOVE NOTE MAY NOT BE SHOWN ON THE SUPERSEDED PAPER CERTIFICATE OF TITLE OR ON THE CURRENT EDITION OF DUPLICATE CERTIFICATE OF TITLE.

WESTERN



AUSTRALIA

REGISTER NUMBER
12/DP223049DUPLICATE
EDITION
2DATE DUPLICATE ISSUED
7/2/2012**RECORD OF CERTIFICATE OF TITLE**
UNDER THE TRANSFER OF LAND ACT 1893VOLUME
2229FOLIO
21

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.


REGISTRAR OF TITLES**LAND DESCRIPTION:**

LOT 12 ON DEPOSITED PLAN 223049

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

BEDINGFELD PARK INC OF 4 BEDINGFELD ROAD, PINJARRA

(T L821113) REGISTERED 29 DECEMBER 2011

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 1313-337 (12/DP223049).
PREVIOUS TITLE: 2228-205.
PROPERTY STREET ADDRESS: 36 BEDINGFELD RD, PINJARRA.
LOCAL GOVERNMENT AREA: SHIRE OF MURRAY.

NOTE 1: J336603 LAND PARCEL IDENTIFIER OF PINJARRA SUBURBAN LOT 12 CHANGED TO LOT 12 ON DEPOSITED PLAN 223049 ON 27-JUNE-05 TO ENABLE ISSUE OF A DIGITAL CERTIFICATE OF TITLE.
NOTE 2: THE ABOVE NOTE MAY NOT BE SHOWN ON THE SUPERSEDED PAPER CERTIFICATE OF TITLE OR ON THE CURRENT EDITION OF DUPLICATE CERTIFICATE OF TITLE.

WESTERN



AUSTRALIA

RECORD OF CERTIFICATE OF TITLE
UNDER THE TRANSFER OF LAND ACT 1893

REGISTER NUMBER

13/DP223049DUPLICATE
EDITION**2**

DATE DUPLICATE ISSUED

7/2/2012VOLUME
2229FOLIO
22

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.


REGISTRAR OF TITLES**LAND DESCRIPTION:**

LOT 13 ON DEPOSITED PLAN 223049

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

BEDINGFELD PARK INC OF 4 BEDINGFELD ROAD, PINJARRA

(T L821113) REGISTERED 29 DECEMBER 2011

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.

* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.

Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 1313-337 (13/DP223049).
PREVIOUS TITLE: 2228-205.
PROPERTY STREET ADDRESS: 30 BEDINGFELD RD, PINJARRA.
LOCAL GOVERNMENT AREA: SHIRE OF MURRAY.

NOTE 1: J336604 LAND PARCEL IDENTIFIER OF PINJARRA SUBURBAN LOT 13 CHANGED TO LOT 13 ON DEPOSITED PLAN 223049 ON 27-JUNE-05 TO ENABLE ISSUE OF A DIGITAL CERTIFICATE OF TITLE.
NOTE 2: THE ABOVE NOTE MAY NOT BE SHOWN ON THE SUPERSEDED PAPER CERTIFICATE OF TITLE OR ON THE CURRENT EDITION OF DUPLICATE CERTIFICATE OF TITLE.

Appendix 3

Determination of Foreshore Setback

Proposed Outline Development Plan

Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

LOTS 12 - 14 BEDINGFELD RD, PINJARRA
DETERMINATION OF FORESHORE SETBACK

Prepared for

Bedingfeld Park Inc.
c/- Dykstra Planning Pty Ltd
PO Box 316
KELMSCOTT WA 6991

Report No. J120172
25 March 2013

BAYLEY ENVIRONMENTAL SERVICES
30 Thomas Street
SOUTH FREMANTLE WA 6162

INTRODUCTION

Bedingfeld Park Inc. proposes to establish an aged person's home on parts of Lots 12, 13 and 14 Bedingfeld Road, Pinjarra (the subject land). The facility will complement the organisation's existing nursing home located nearby in Bedingfeld Road.

The subject land is the site of a former commercial orchard and is fully cleared of native vegetation. The subject land is located adjacent to and over the foreshore of the Murray River, with the title extending into the watercourse in places. The land consists of a flat, elevated, fully cleared upper part and a sloping (in parts steeply), vegetated lower part within the river channel. The lower part is within the 100-year floodway of the Murray River.

The development area is confined to the flat upper part of the subject land, with the vegetated lower part for the time being remaining in the ownership of Bedingfeld Park Inc. as a foreshore setback. Bayley Environmental Services was commissioned in 2012 to determine an appropriate foreshore setback for the development.

Foreshore reserve requirements for waterways are governed by WAPC Development Control Policy No. DC2.3: *Public Open Space in Residential Areas*. DC2.3 specifies a default foreshore reserve width of 30 metres for waterways but includes provision to vary the default setback for reasons of topography, condition of banks or floodway protection. DEC policy on foreshore setbacks is set out in River Restoration Series No. RR16 – *Determining Foreshore Reserves* (WRC, 2001) and Foreshore Policy 1 - *Identifying the Foreshore Area* (WRC, 2002). These documents also set out a methodology for determining the foreshore setback in each case. The assessment of the foreshore setback for the subject land presented in this report is based on the methodology described in RR16.

Based on this analysis, the boundary of the foreshore reserve has been set to coincide mostly with the boundary of the existing Regional Open Space reservation over the river channel. This setback includes all of the remaining riparian (fringing) vegetation and the steep slopes on the edge of the river channel, and provides a setback of between 120m and 160m from the development area to the river bank.

DETERMINATION OF FORESHORE SETBACK USING THE METHODOLOGY SET OUT IN RIVER RESTORATION SERIES 16

Step 1: Background information and preliminary investigations

Waterway significance and management issues

The Murray River is the major river of the Peel Region and is very significant from ecological, hydrological and amenity viewpoints. The principal management issue facing the river is its water quality, which has suffered as a result of excessive nutrient inputs from development in its catchment. In this respect, the Murray River is in better condition than the other major rivers (Serpentine and Harvey) of the Peel-Harvey system. Other significant management issues for the Murray River are the loss of riparian (fringing) habitat and planning for major floods.

Aerial photography

Figure 1 shows an aerial photograph of the river in the vicinity of the subject land.

Maps of extent of floodway and floodplains, topographical features, cadastral boundaries, soils, underlying geology and vegetation complexes.

These features are shown on Figure 1.

Relevant reports on the river and region

Although a number of published reports make reference to the Murray River as a source of water and nutrients to the Peel Inlet, there is little information dealing specifically with the river and its environs.

Site Visit

A site visit was carried out in October 2012.

Relevant stakeholders

The owner of the site, Bedingfeld Park Inc., is the proponent of the development plan and is involved in the planning of the site.

Step 2: Biophysical criteria of the waterway

Riparian vegetation

The riparian vegetation in the subject land is restricted to the immediate steep banks and flats of the river, with the remainder of the subject land being cleared or covered with orchard trees. The native fringing vegetation extends to between 90m and 175m from the main river channel.

The vegetation in the study area consists mostly of a canopy of Flooded Gum (*Eucalyptus rudis*) over an understorey of alien small trees (including olives and figs) and grasses. The overall condition of the vegetation is Degraded to Completely

Degraded. Appendix A presents more information on the vegetation, based on a site survey by botanist Dr Arthur Weston.

The riparian vegetation in the vicinity of the subject land is mapped by Heddle *et al.* (1980) as Swan Complex, described as "...a woodland of *Eucalyptus rudis*/*Melaleuca raphiophylla*, with localised occurrences of low open forest of *Casuarina obesa* and *M. cuticularis*." Heddle *et al.* (1980) noted that the Swan Complex has been heavily cleared since the beginnings of European settlement due to its fertile soils and good water availability, with the result that little of the complex remains undisturbed. In 1997, when the Peel Region Scheme Environmental Review was being prepared, approximately 15% of the Swan Complex remained in the Peel Region and none was reserved.

The riverine vegetation of the Murray River has been mapped as a Regionally Significant Natural Area under the *Swan Bioplan: Peel Regionally Significant Natural Areas* (EPA Bulletin EPB12, December 2010). This designation has no statutory force but indicates the EPA's view of the vegetation as regionally significant.

Soils that support riparian vegetation

The soils on the north of the river in this vicinity are mapped by the Geological Survey of Western Australia (GSWA, 1978) as Qha: Alluvium (grey or brown silt and clayey sand with minor black, peaty, sandy clay and shingles of laterite and Archaean rock fragments). These soils extend to the upper edge of the steep slope on the edge of the floodway. This soil type supports the Flooded Gum woodland of the floodplain.

The soils of the development site are mapped as Qpb/Qpa: Thin veneer of grey Bassendean Sand over Guildford Formation sandy clay. There is no native vegetation remaining on this soil type in the subject land.

Floodway and floodplain – 1 in 100 yr flood levels, peak flow and river hydrology

Figure 1 shows the 100-year floodway and flood fringe as mapped by the Department of Water. The flood fringe extends over a wide area including all of the subject land, while the floodway is confined to the deeply incised river channel.

Soil types prone to erosion

The Murray River follows a meandering course in the vicinity of the subject land. At the base of the steep slope is a cut-off meander where the river has changed its course to the south-east. It is likely that similar course changes have occurred repeatedly over the preceding millennia.

The cut-off meander forms a series of billabongs where water stands for extended periods during winter and into early summer. It is likely that this area also acts as an overflow channel during high river flows, although such events are now rare. Figure 2 shows the location and extent of the billabongs in December 2011 (source: nearmap.com).

At present the river diverts sharply to the south-east at the downstream end of the subject land, and appears to be cutting further to the south-east and depositing sediment on the inside of the bend adjacent to the subject land. It is likely that, at some point in the future, the meander will reach its limit and the river will cut through the bend to flow on a northerly course again.

Given the height of the bank between the river and the subject land, it is unlikely that the river channel will encroach into the higher part of the subject land without a significant increase in river flows. Aerial photography since 1979 shows that the alignment of the watercourse in the vicinity of the subject land has not changed in that time (source: www.landgate.wa.gov.au/corporate.nsf/web/Aerial+Photography).

Landforms and drainage lines important to watercourse function

The subject land is mostly flat apart from the steep river banks. At the southern end the land slopes gradually down to the river flats, while at the northern end the land falls abruptly at the edge of the floodway. There are no other significant features outside the floodway that would affect the watercourse function.

Habitat areas

There is no native habitat outside of the floodway, although disturbance-tolerant birds such as magpies and crows would use the cleared parts of the site for foraging. The vegetated slope and river flats would offer poor-quality habitat for a very restricted range of native fauna, mostly perching birds.

The river provides habitat for water birds including ducks, swans and other native and introduced species.

Adjacent land use with potential to affect the foreshore

The subject land provides one of the largest setbacks to the main river channel in this section of the Murray River, due to the presence of the steep slope and broad meander. Other properties upstream and downstream, and on the opposite bank, have much less setback, with cleared paddocks extending almost to the water's edge in some cases.

The former orchard on the subject land appears to have had no direct impact on the river, although the heavily degraded state of the fringing vegetation suggests that earlier grazing or even partial clearing had occurred down to the river's edge.

Development of the subject land as planned will have no direct impact on the watercourse. Development will also provide opportunities for rehabilitation of degraded parts of the foreshore.

Aboriginal Heritage Sites

The Department of Indigenous Affairs' Aboriginal Sites Database shows two registered Aboriginal heritage sites covering the watercourse and/or the subject land.

The Murray River and the land within 30m on either side are included in Site No. S02549 (Murray River), which is a mythological site associated with the Waugal mythology. It is expected that, in common with most such sites, the major significance of the registered site is associated with the watercourse itself, and that provision of a setback sufficient to prevent disturbance to the watercourse would avoid any interference with this site.

The subject land is also within Site No. S02125 (Battle of Pinjarra), a site associated with the Pinjarra massacre of 1834. The massacre occurred over an extended area on both sides of the river centred around the junction with Oakley Brook, roughly opposite the subject site. Skeletal remains, believed to be evidence of graves, have been found in several places on both sides of the river.

Consultation is currently being undertaken with the local Aboriginal community by heritage consultants Brad Goode & Associates. This consultation is unlikely to affect the extent of the foreshore setback but may influence its management. Approval under Section 18 of the *Aboriginal Heritage Act 1972* will be required before any ground-disturbing work is carried out in the foreshore area or elsewhere on the subject land.

There is no information currently available regarding the Battle of Pinjarra site that would affect the position of the foreshore setback boundary within the subject land.

Step 3: Other factors

Fire Management

The vegetation in the foreshore zone presents a fire hazard due to the heavy growth of grasses and the steep slope in some areas. Development on the subject land will require protection from this hazard.

A Fire Management Plan prepared for the subject land by Bushfire Safety Consulting (2012) has identified a Building Protection Zone (BPZ) between 35m and 52m around the primary buildings, which extends up to 15m into the foreshore setback area. The BPZ is a zone within which the level of flammable materials is kept below 2 tonnes per hectare. This can be achieved by removal of grasses by slashing and/or herbiciding, removing introduced shrubs and trees such as Olives and Figs from the middle storey and maintaining a spacing of 5-10m between overstorey trees by removing regrowth trees smaller than 15cm diameter. Further details are contained in the Fire Management Plan.

Risks and consequences resulting from the proposed foreshore alignment

The principal consequence of establishing a foreshore setback in this location will be the opportunity to undertake rehabilitation of the foreshore. This will improve the ecological value of the foreshore as well as providing increased social amenity.

The main risk in the proposed alignment is the possibility of flooding above the modelled 100 year flood level, which could affect development outside the foreshore setback. This would equally affect many other developments in the Murray catchment that are designed in accordance with the PWD 1984 Murray River flood model. The risk of this scenario is considered to be acceptably low.

Step 4: Finalisation of the alignment

Rationale for the alignment

The key factors in the delineation of the foreshore setback are:

- Compliance with policy - The WAPC's Development Control Policy 2.3 specifies a default minimum setback of 30m from waterways.
- 100 year floodway - The foreshore setback follows the boundary of the 100-year floodway. This provides a setback of 120m to 160m from the development area to the river bank.
- Vegetation - The foreshore setback includes all remaining riparian vegetation. It also includes all of the vegetation mapped as Peel Regionally Significant Natural Area (RSNA).
- Shoreline processes - The foreshore setback is sufficiently wide to accommodate anticipated variations in the alignment of the watercourse, which are expected to be confined to the incised river channel.
- Fire protection - A Building Protection Zone (BPZ) can be maintained for buildings on the subject land by means of periodic slashing of grasses, removal of exotic understorey species and maintaining a 5-10m separation between trees within 13m of the foreshore setback boundary.
- Aboriginal heritage - Site No. S02549 (Murray River) extends 30m each side of the river banks. Site No. S02125 (Battle of Pinjarra) covers a wide area extending well beyond the subject land.

Map of Foreshore Setback

Figure 2 shows the proposed alignment of the foreshore setback.

FORESHORE TENURE AND MANAGEMENT

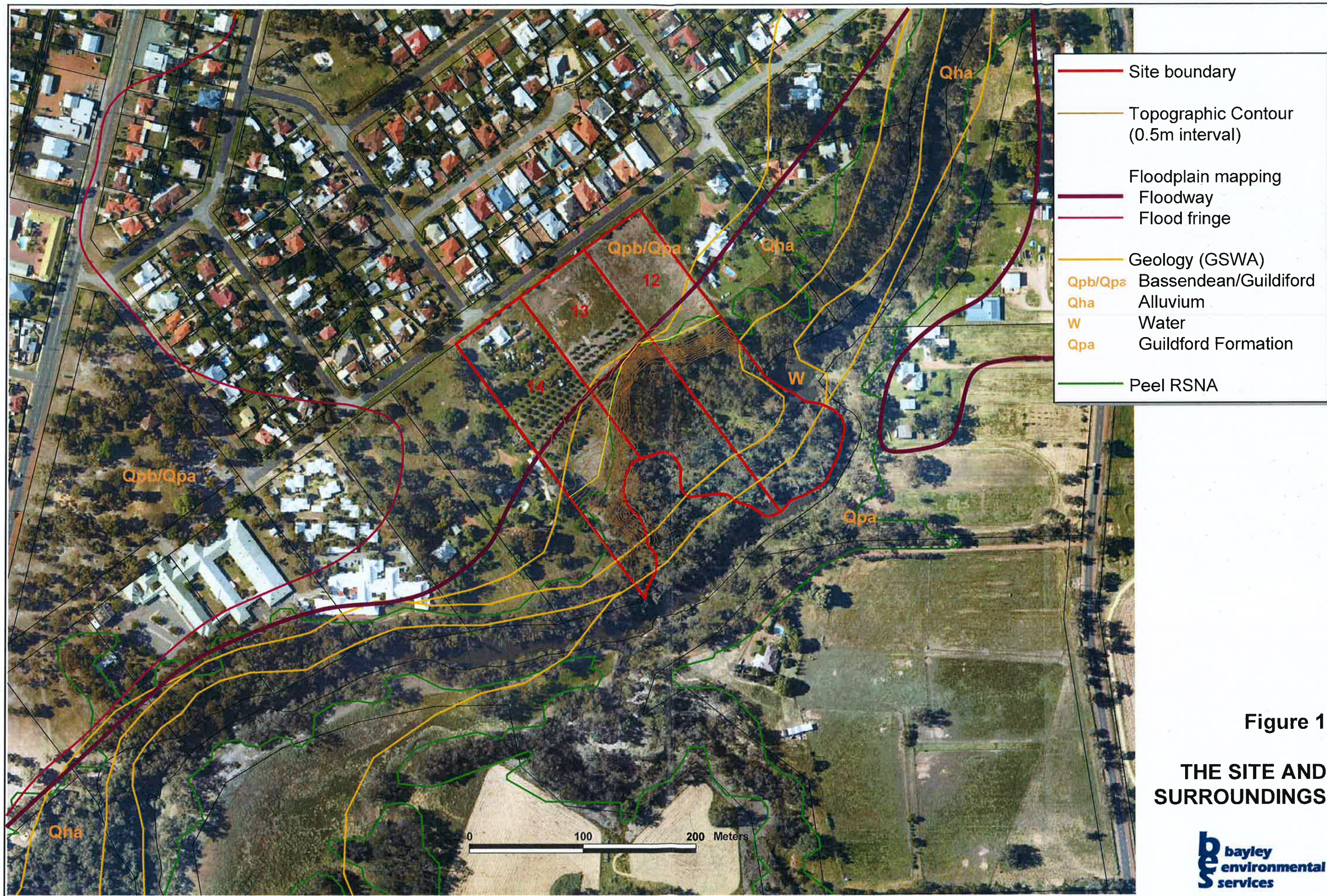
The foreshore area within the subject land is currently privately owned, with the title extending up to and in places beyond the high water mark. The vegetated part of the foreshore is reserved as Regional Open Space in the Peel Region Scheme (PRS) and the Shire of Murray Town Planning Scheme (TPS). The development site is zoned as

Urban under the PRS and Residential Development under the TPS, while the area between the Urban and ROS zones is zoned Rural. Figure 2 shows the zone boundaries.

It is expected that the area zoned as ROS will ultimately be acquired by the WAPC for use as a regional park. The Rural zoned portion within the foreshore setback may be ceded to the Shire of Murray as POS or retained as private open space by the developer. This includes a substantial area (0.35ha) of cleared, gently sloping rural-zoned land in the south of Lot 14.

It is expected that the ROS zoned area will be managed primarily for conservation and landscaping, with native vegetation retained and weeds controlled. This management is expected to also include management of fire hazard. The cleared areas outside of the ROS may be managed for passive recreation, landscaping and revegetation.

Figures





- Site Boundary
- Floodway
- Topographic Contour (0.5m interval)
- Peel RSNA
- ROS Boundary (PRS)
- Urban Zone boundary (PRS)
- - - Building Protection Zone Boundary (see Fire Management Plan)
- Proposed Foreshore Setback

Figure 2
SITE PLAN

Appendix A

Vegetation Report

Arthur S. Weston, PhD (Botany)
Consulting Botanist
Phone (08) 9458 9738
naomiseg@iinet.net.au

ABN/GST No
54 924 460 919

8 Pitt Street
ST JAMES
WA 6102
AUSTRALIA

20 November 2012

Job Name: Assess impact of thinning for fire hazard reduction in Lots 14 and 13

BES Ref: J12017

P. O. Bayley
Bayley Environmental Services
30 Thomas Street
South Fremantle WA 6162
Tel. (08) 9335 9160, 0427 808 633
Email: "Phil Bayley" bayley@iinet.net.au

Dear Phil,

DRAFT
**ASSESSMENT OF NATURE AND SIGNIFICANCE OF IMPACTS ON VEGETATION AND FLORA
OF THINNING VEGETATION FOR FIRE HAZARD REDUCTION
IN CENTRAL PARTS OF LOTS 14 AND 13 BEDINGFELD ROAD, PINJARRA**

Introduction

On 8 and 19 November 2012 I walked through and around the vegetation in Lots 14 and 13 Bedingfeld Road¹ in the area shown in the accompanying figure within the yellow line. With the help of assistant Dr Clem Love I identified dominants in each layer of vegetation and described each layer's structure in terms of height and density according to the table below. In addition, I assessed vegetation condition and recorded names of native understorey species.

The survey area terrain comprises the following three land forms, each with a distinctive, Completely Degraded vegetation unit (or community):

- **W** (western corner) the flat or gently sloping area along the northwest boundary and in the survey area's western corner,
- **S** (slope) a steep slope between the northwest boundary/western corner and an alluvial terrace, and
- **T** (terrace) an alluvial terrace that extends from the bottom of the slope to a cut-off meander, a meander which is a few metres (south to) southeast of the survey area.

The descriptions below of three vegetation units and their condition use the following structural classification, condition scale and botanical terminology. The classification and scale are essentially the same as those in *Bush Forever* (2000, Volume 2, pp. 493-494). The italicized botanical name, a binomial, following an asterisk (*) is that of an environmental weed, an alien. Most of the plant species and individuals in the survey area are aliens. Most of the aliens have not been identified to species; the natives have been identified to species, at least tentatively.

The plate images are views of the three vegetation units described and mapped as being in the survey area. They are photos by Phil Bayley (POB) and Arthur Weston (ASW).

The figure shows locations in the survey area of the three vegetation units and locations in and near the survey area of waypoints. The map abbreviations of the vegetation units are the same as the abbreviations of their respective land forms. The S vegetation unit boundaries are approximate.

Canopy cover / Form, height	100% - 70%	70% - 30%	30% - 10%	10% - 2%
Trees > 10m	Closed Forest	Open Forest	Woodland	Open Woodland
Trees < 10m	Closed Low Forest	Open Low Forest	Low Woodland	Open Low Woodland
Shrubs > 2m	Closed Tall Scrub	Open Tall Scrub	Tall Shrubland	Open Tall Shrubland
Shrubs 1-2m	Closed Heath	Open Heath	Shrubland	Open Shrubland
Shrubs < 1m	Closed Low Heath	Open Low Heath	Low Shrubland	Open Low Shrubland
Herbs	Closed Herbland	Herbland	Open Herbland	Very Open Herbland
Grasses	Closed Grassland	Grassland	Open Grassland	Very Open Grassland
Sedges	Closed Sedgeland	Sedgeland	Open Sedgeland	Very Open Sedgeland

¹ Century 21 Coast Realty – Mandurah listed these two lots and the lot north-east of them as "Lot 24,30,36 24/30/34 Bedingfeld Rd (Residential Land)" and as having been sold on 21 Feb '12 by John Phillips. '8' is the number on the fence in front of the Lot 14 house. The Google map shows street numbers 24 and 30 for the two lots.

The six-point condition scale is, basically:

- | | |
|------------------------|---|
| 1. Pristine | No obvious signs of disturbance, |
| 2. Excellent | Vegetation structure intact, disturbance affecting individual species (plants?), weeds are non-aggressive species, |
| 3. Very Good | Vegetation structure altered, obvious signs of disturbance, |
| 4. Good | Vegetation structure significantly altered by very obvious signs of multiple disturbance; basic vegetation structure or ability to regenerate it is retained, |
| 5. Degraded | Basic vegetation structure severely impacted by disturbance; scope for regeneration but not to a state approaching good condition without intensive management, and |
| 6. Completely Degraded | Vegetation structure not intact; the area completely or almost completely without native species ('parkland cleared'). |

Vegetation Units and Condition

The survey area vegetation units and condition are described below, illustrations of the units are in Plates 1 to 4, and mapping of the units is in Figure 1. The boundaries of the units, especially the boundary between S and T, shown in Figure 1 are approximate. The S/T boundary is the base of the steep slope, which is hidden in the aerial photography by the Flooded Gum canopy. However, the S and T vegetation units are similar in the assessments of their condition and the descriptions of their units. They differ from each other mainly in the diversity of their ground layers and in the variation in spacing and forms of their trees.

W **Olea europaea* (Olive) Low Woodland (or Open Low Forest) over Mixed Alien Closed Grassland to Grassland Plate 1

The lower, eastern boundary of the W vegetation unit shown in Figure 1 coincides with the western edge of the canopy in the S vegetation unit although the S vegetation unit grassland continues down onto the upper part of the slope, where it is a ground layer under the canopy of *Eucalyptus rudis* subsp. *rudis*. The only trees in the W vegetation unit are one broadly spreading low Olive tree close to the survey area's western corner and a smaller tree next to it of another, unidentified alien species. Virtually all of the grasses and other plants in the grassland, the ground layer of vegetation, are alien species, and most are annuals. The mat of **Pennisetum clandestinum* (Kikuyu Grass) on part of the flat at the top of the slope is one of the few perennial species.

The condition of all layers (strata) of this unit is assessed as Completely Degraded.

S *Eucalyptus rudis* subsp. *rudis* (Flooded Gum) Closed to Open Forest over **Olea europaea* (Olive) Open Low Forest over **Pennisetum clandestinum* (Kikuyu Grass) – Mixed Alien Closed Grassland to Grassland Plates 1,2

The S vegetation unit is restricted to the slope. Some Flooded Gum trees in the unit have thick, sometimes divided trunks and others are thin and pole-like, but tall. Most Olives have straight, erect trunks, but some have several stems and tend to be spreading. There are also a few spreading *Melaleuca raphiophylla* (Swamp Paperbark) trees, especially on and next to the lower slope, and fewer, smaller **Ficus carica* (Common Fig) trees. There are many relatively small **Asparagus asparagoides* (Bridal Creeper) climbers.

The distance between trunks varies but is commonly 1.5 m to 2 m (to 5 m).

The ground layer is generally dense mixtures of species of **Avena*, **Bromus*, **Lolium*, **Ehrharta*, **Pennisetum* and other alien grasses, but in some areas there are mats of an **Oxalis* species and in others the vegetation is sparse.

The condition of the uppermost, Flooded Gum layer is assessed as Excellent or Pristine, but the other layers have very few native species or plants and are assessed as Completely Degraded. The overall assessment is Degraded to Completely Degraded.

T *Eucalyptus rudis* subsp. *rudis* (Flooded Gum) Closed Forest over **Olea europaea* (Olive) Open Low Forest to Low Woodland over **Pennisetum clandestinum* (Kikuyu Grass) Closed Grassland Plates 3,4

The T vegetation unit is most consistent on the terrace and may be restricted to it. Most Flooded Gum trees in this unit have relatively thin and pole-like trunks, and there are none with trunks and branches as large or spreading as some of those on the slope. The height of some of them is estimated to be more than 15 m. The Olives in the lower tree layer are much shorter than 10 m and have very thin, straight, erect trunks. There are also a few **Ficus carica* (Common Fig) trees and **Asparagus asparagoides* (Bridal Creeper) climbers.

The distance between trunks is less variable than on the slope and is commonly 1. m to 3 m (to 4 m).

The ground layer is almost 100% Kikuyu Grass.

As with the S unit, the condition of the top, Flooded Gum layer is assessed as Excellent or Pristine, but the other layers have very few native species or plants and are assessed as Completely Degraded. The over-all condition assessment is Degraded to Completely Degraded.

Flora

Most species in the survey area are aliens, and most of them are environmental weeds. The most common alien is Kikuyu Grass. Plants of the reportedly aggressive weeds **Bromus diandrus* (Great Brome), **Ehrharta calycina* (Perennial Veldt Grass), **Asparagus asparagoides* (Bridal Creeper) and **Gomphocarpus fruticosus* (Narrowleaf Cottonbush) were also seen there. There are also a few plants of *Juncus* sp. (a Rush; probably an alien species).

The only common native in the survey area is *Eucalyptus rudis*. Other, much less common natives seen in the survey area are *Melaleuca raphiophylla*, *Acacia pulchella* and *Astartea leptophylla*.

Impacts on Vegetation and Flora of Thinning Vegetation for Fire Hazard Reduction

Thinning survey area vegetation for fire hazard reduction would probably have no significant impact on native vegetation and flora. There are, except for Flooded Gum trees, few native species and plants in the survey area, and the ones that are there are common and widespread, at least on the Swan Coastal Plain. None is rare or a species of Threatened or Priority Flora.

Thinning trees would probably result in the remaining individuals developing thicker trunks and more spreading, larger branches.

Plates. Photos of Vegetation in Lot 14, Bedingfeld Rd, Pinjarra



PI 1 (POB) at WP 404E
Unidentified tree and W vegetation. Looking to top of slope and into S vegetation on slope (in upper right).



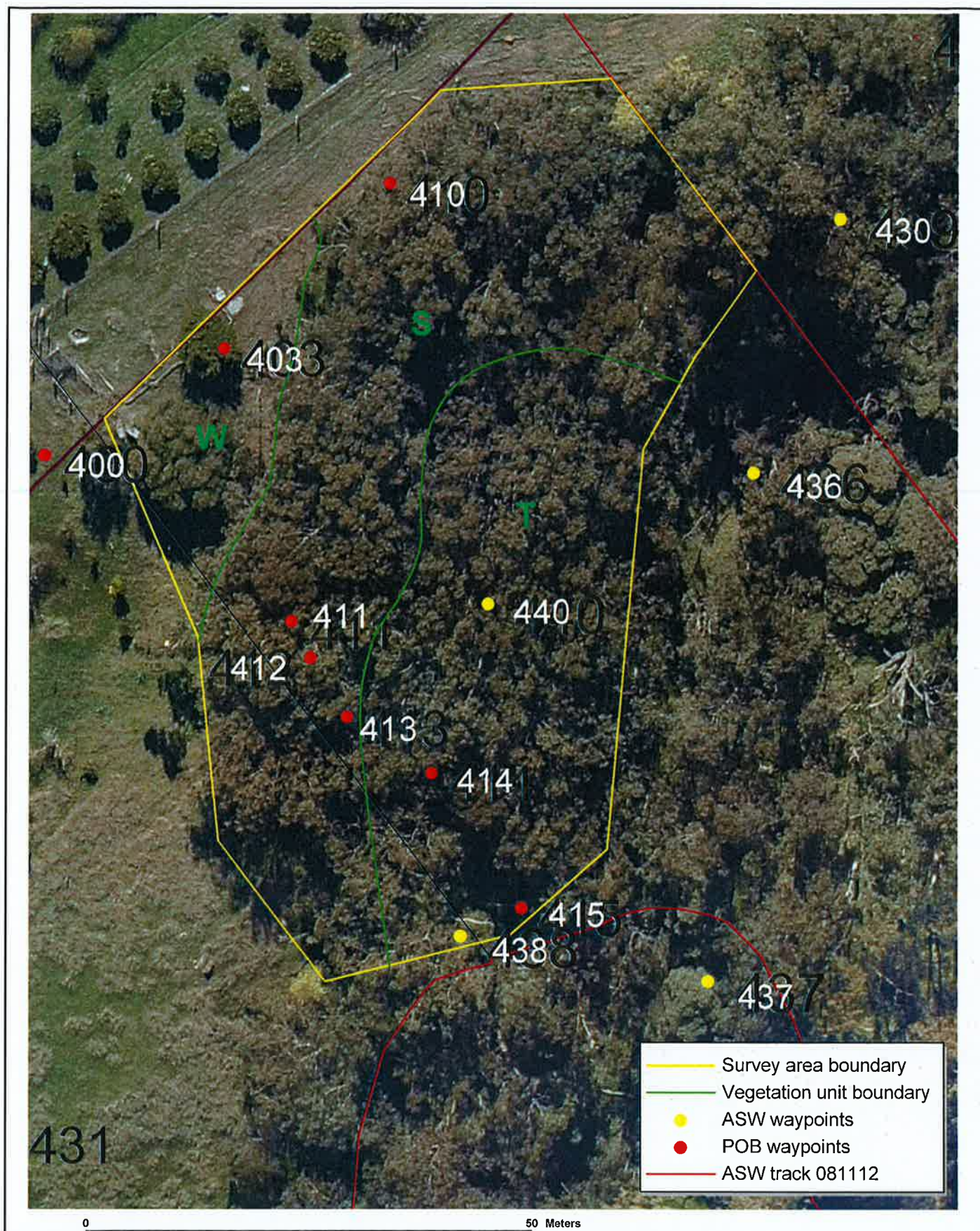
PI 2 (POB) at WP 410W
Looking from top of slope into S vegetation on slope



PI 3 (ASW PB080351 [Medium]) near WP 440
Looking 70° through T vegetation



PI 4 (POB) at WP 413SE
Looking through T vegetation



Vegetation Units

- W** *Olea europaea* (Olive) Low Woodland (or Open Low Forest) over Mixed Alien Closed Grassland to Grassland
- S** *Eucalyptus rudis* subsp. *rudis* (Flooded Gum) Closed to Open Forest over *Olea europaea* (Olive) Open Low Forest over *Pennisetum clandestinum* (Kikuyu) – Mixed Alien Closed Grassland to Grassland
- T** *Eucalyptus rudis* subsp. *rudis* (Flooded Gum) Closed Forest over *Olea europaea* (Olive) Open Low Forest to Low Woodland over *Pennisetum clandestinum* (Kikuyu) Closed Grassland

Figure 1

Vegetation Units

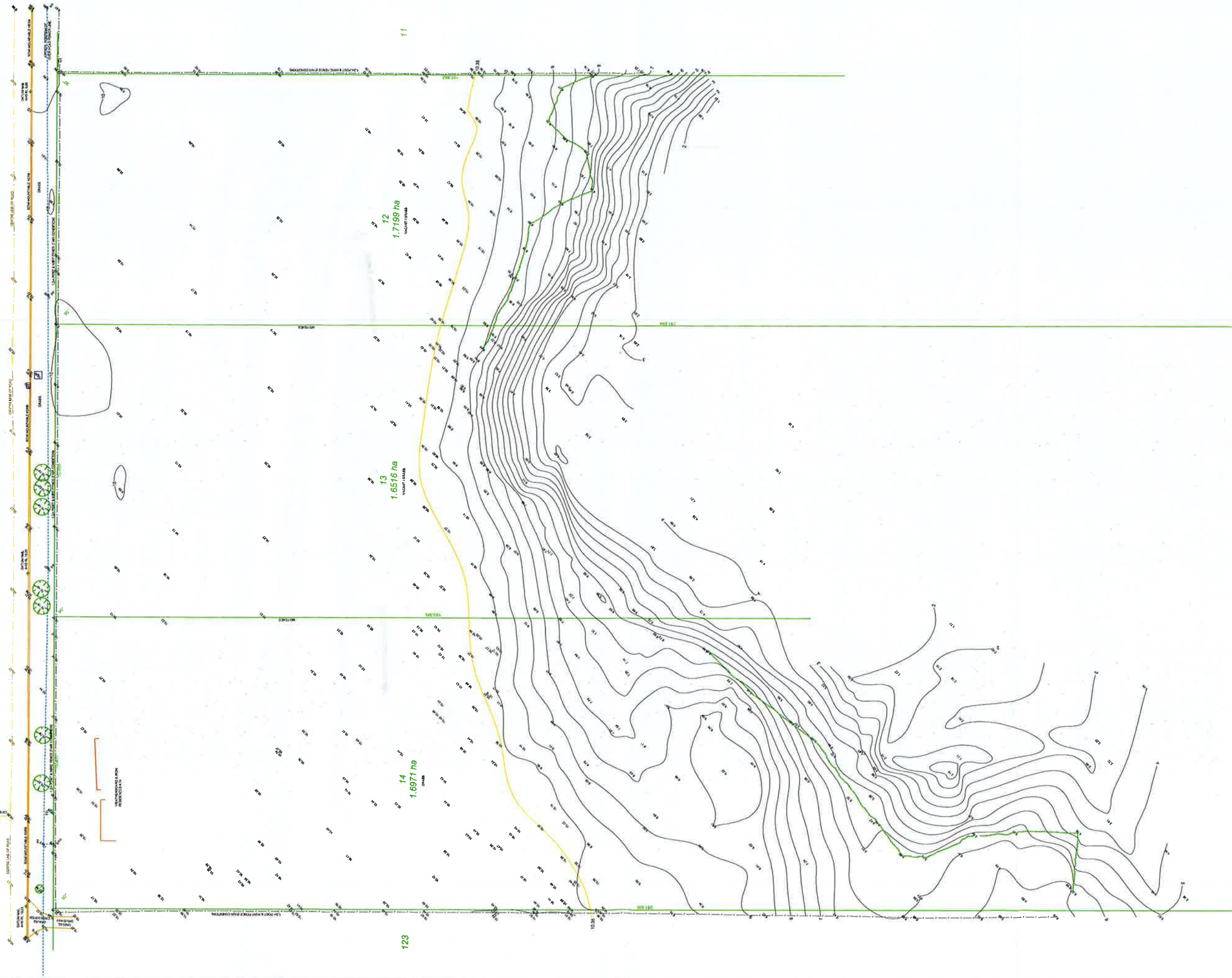
Appendix 4

Feature Survey

Proposed Outline Development Plan
Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

WARR STREET

BEDINGFELD ROAD



DATE	1/11/11
BY	1/11/11
1/11/11	1/11/11
1/11/11	1/11/11

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Appendix 5

Water Management Summary Report

Proposed Outline Development Plan

Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

Our Ref: J5306c

28 March 2013

Bedingfeld Park Incorporated
c/o Scott Hambley
311 Gobby Road
KEYSBROOK WA 6126

Dear Scott,

LOTS 13 & 14 BEDINGFELD RD, PINJARRA: WATER MANAGEMENT SUMMARY

Please find below document prepared by JDA Consultant Hydrologists summarising water management for Lots 13 & 14 Bedingfeld Rd, Pinjarra. The report is presented in the following sections:

1. Introduction
2. Pre-Development Environment
3. Water Management Summary
4. Conclusion
5. References

1 INTRODUCTION

1.1 Background

This document details a brief Water Management Summary for Lots 13 and 14 Bedingfeld Rd, Pinjarra (herein referred to as the Study Area). The location of the Study Area is shown in Figure 1.

An Outline Development Plan (ODP) for the Study Area has been prepared by A.Scott Hambley (2012) that consists of a residential aged care facility (Figure 2).

Advice from the Department of Water (email 18/10/2012 B.Dunn to D.Slack (JDA)) and the Shire of Murray (email 18/10/2012 T.Lerner to D.Slack (JDA)) indicates that a Water Management Summary is required to support the ODP. As such this document is intended to support both the current ODP application and future Development Approval (DA) application, in lieu of a Local Water Management Strategy and an Urban Water Management Plan.

This document has been prepared with consideration of the Better Urban Water Management guidelines (WAPC 2008), the Shire of Murray Water Sensitive Urban Design Policy (SoM 2012) and the Stormwater Management Manual for Western Australia (DoW 2007).

1.2 Reference Documents

The Water Management Summary uses the following key water management documents to inform its principles, criteria and objectives:

- Murray Drainage and Water Management Plan (DoW 2011)
- Better Urban Water Management (WAPC 2008)
- Stormwater Management Manual for WA (DoW 2007).
- Peel-Harvey Coastal Catchment Water Sensitive Urban Design Technical Guidelines (PDC 2006)
- Water Sensitive Urban Design Policy (SoM 2012)

2 PREDEVELOPMENT ENVIRONMENT

2.1 Site Characteristics

The Study Area is approximately 3.3 ha in size with a 1.7 ha development area. The topography is generally flat with elevation at 10 mAHD across the proposed development area and falling with a 1:20 slope to the Murray River on the southern boundary of the Study Area (Figure 1).

The Study Area is predominately cleared with some remnant native vegetation along the southern boundary. Both lots include a portion of land cultivated for orchards (Figure 1). The majority of the Study Area is classified as Multiple Use wetland presenting no constraints within the proposed development area. The southern area of the Study Area is classified as Conservation Category Wetland and also coincides with the Murray River 100 Year average recurrence interval (ARI) floodplain (Figure 3).

Regional description of the soil type, geotechnical information and acid sulphate soils are presented in the Murray Drainage and Water Management Plan (DoW, 2011) and is summarised below. The site is characterised by a thin veneer of fine to medium grained Bassendean Sands (Qpb classification) overlying clays of the Guildford Formation (Qpa classification), with alluvial deposits (Qha classification) in the southern area of the Study Area, consistent with the Murray River floodplain.

Regional Acid Sulfate Soil (ASS) mapping indicates moderate to low risk of ASS less than 3m from natural surface across the majority of the Study Area. The southern area of the Study Area coincides with the Murray River floodplain and is classified as moderate to high risk of ASS less than 3m to soil surface.

A search of the DEC Contaminated Sites database indicates no known contaminated sites within the Study Area.

We note that the ODP proposes development in the northern part of the Study Area, away from the environmentally constrained areas in the southern area.

2.2 Groundwater Hydrology

The Study Area is located within the Murray Groundwater Management Area and Coolup Sub-Area. Superficial groundwater flow direction in the vicinity of the Study Area is south east towards the Murray River.

The regional Annual Average Maximum Groundwater Level (AAMGL) and Maximum Groundwater Level (MaxGL) are shown in Figure 3. Contours are representative of the base scenario (S0) presented in the Murray DWMP (DoW 2011). The AAMGL ranges from 5 mAHD near Bedingfeld Rd to 3 mAHD at the edge of the proposed development area. Clearance between the natural surface and MaxGL ranges from 4m to 6m across the proposed development area (Figure 3).

2.3 Surface Water Hydrology

The Study Area is bound in the south by the Murray River and its floodplain. Department of Water 100 Year ARI Murray River floodplain mapping is shown on Figure 3. Note that although the road along the southern boundary of the proposed ODP coincides with the 100 year ARI floodplain, this infrastructure is considered acceptable as it does not obstruct flow. The natural surface level in this location is approximately 10 mAHD and the flood elevation is approximately 10.91 mAHD.

Runoff from the Study Area currently flows to the Murray River as overland flow via the conservation category wetland area on the margins of the river. In accordance with water sensitive urban design principles, maintenance of the post development surface water regime as close as possible to pre-development conditions is required to maintain the hydrologic regime and water requirements of the wetland and Murray River.

Stormwater runoff from Bedingfeld Road is managed by a local piped stormwater drainage system.

3 WATER MANAGEMENT STRATEGY

3.1 Water Supply & Wastewater

You have advised JDA that the Water Corporation has provided confirmation that the existing potable water supply and wastewater infrastructure along Bedingfeld Rd can be extended to service the proposed development.

3.2 Groundwater Management

The Shire of Murray requires a minimum separation of 1.2m between habitable floor levels and groundwater (SoM 2012).

MaxGL currently ranges between 4m to 6m below the natural surface of the proposed development area (Figure 3). As this separation is greater than the Shire of Murray's minimum requirement of 1.2m, no fill or groundwater management system will be required, if the current natural surface levels are maintained.

3.3 Surface Water Management

3.3.1 Murray River Flood Levels

Floodplain mapping for the Murray River is presented in GHD 2010 *Murray Floodplain Management Plan* (GHD 2010) and indicates the Murray River 100 year ARI flood level at the Study Area is approximately 10.91 mAHD. Whilst the proposed buildings within the development area are outside of the floodplain mapping boundary, habitable building levels are to be a minimum of 0.5m above this elevation.

3.3.2 Stormwater Management and Lot Drainage

Roof drainage and runoff for the 1 year 1 hour ARI rainfall event should be retained on site via devices such as soakwells to promote at-source infiltration, consistent with Peel Development Commission (2006). Published data indicates there is sufficient depth to groundwater across the Study Area and sandy soils for infiltration to occur. However, it is recommended that this is confirmed during detailed geotechnical investigation.

The Shire of Murray standard design for soakwells is to retain a volume of $0.013 \times \text{roof area}$ and this is to be applied to lots in the Study Area. This effectively equates to 13 mm of total rainfall which is similar to a 1 year ARI 1 hour rainfall event (17mm). Note that soakwells sized for this criteria also have some capacity to deal with higher ARI and longer duration events once infiltration is also considered.

First flush runoff up to the 1 year ARI 1 hour storm event from the paved road and/or carparking should be treated by a bio-retention within the stormwater attenuation area. The bio-retention area should be appropriately vegetated and include amended soil with a PRI >5 and a hydraulic conductivity >5m/d as per FAWB (2009) and the WA Stormwater Manual (DoW 2007) recommendations.

JDA has performed conceptual stormwater modelling for the proposed design of the Study Area using XP-STORM model to determine pre-development and post-development flows. Storm durations modelled ranged from 10 minutes to 72 hours for the 5 year and 100 year ARI storm events (EA, 1987).

Pre-development stormwater runoff was modelled as being generated from the proposed development area (1.70 ha) and a runoff coefficient of 30%. Post-development stormwater runoff was modelled as being generated from the proposed development area (1.70 ha), assuming an equivalent impervious area of 66% and an initial loss of 17mm for garden and building areas, equivalent to the 1 year ARI 1 hour storm event for the Pinjarra region with zero continuing loss.

Consistent with the topography of the Study Area all stormwater runoff should be discharged to a stormwater attenuation area located near the southern boundary within the un-vegetated area (Figure 4). No stormwater discharge is to occur to other lot boundaries.

The attenuation area has been designed to detain up to the 20 year ARI from the development, with overflow via a spillway for greater events. Details of the stormwater attenuation area parameters modelled are presented in Table 1.

Outflow from the stormwater attenuation area is via a 100mm diameter low flow outlet pipe. The invert of the outlet pipe is raised 200mm above the storage invert to assist in infiltrating the frequently occurring rainfall events. The outlet pipe is to discharge approximately 10m from the attenuation area and be protected with appropriate rock armouring to prevent erosion and scouring prior to flowing overland towards the Murray River.

The stormwater attenuation area is located within the Murray River 100 year ARI floodplain. Whilst in a 100 year ARI storm event this area is likely to be inundated by flooding of the Murray River, the time of concentration (T_c) for the river is significantly greater than that of the Study Area. The proposed development area has a T_c of 3.32hrs for the 100 year storm event.

Stormwater modelling results for the 5, 20 and 100 year ARI critical duration storm events post-development are presented in Table 1. Note that the modelling conservatively assumes no infiltration occurs through the base of the attenuation area.

TABLE 1: STORMWATER MODELLING RESULTS

POST DEVELOPMENT CATCHMENT DETAIL			
Catchment Data		Runoff Coefficient	Impervious Area
Buildings (ha)		100%	0.69
Road (ha)		80%	0.39
Garden (ha)		10%	0.05
Equivalent Impervious Area (ha) EIA			1.13
1 YEAR 1 HOUR ARI STORAGE REQUIREMENTS			
<u>Soakwells for Building Area</u>			
Shire of Murray Storage Requirement (mm)		13	
Roof Area (ha)		0.69	
Volume to be held in soakwells (m ³)		90	
<u>Bio-retention Area</u>			
Rainfall (mm)		17	
Paved/Carpark Area (ha)		0.39	
Total Required 1 Hour 1 Year ARI Storage (m ³)		66	
STORMWATER ATTENUATION AREA			
Base Storage Area (ha)		0.06	
Side Slopes (v:h)		1:6	
AAMGL (at basin) (mAHD)		3.50	
Storage Invert Level (mAHD)		9.50	
Outflow Pipe Invert (mAHD)		9.70	
Pipe Diam. (mm) (nominal)		100	
5 Year ARI			
Critical Storm Event EIA (m ²)		11,300	
Rainfall (mm)		105	
Runoff Volume (m ³)		1186	
Top Water Level Area (ha)		0.08	
Flood Storage (m ³) ₁		266	
Flood Rise (m) ₂		0.37	
Top Water Level (m)		9.87	
Pipe Flow Rate (m ³ /s)		0.013	
Pre-Development Flow Rate (m ³ /s)		0.015	
Time of Inundation After Storm Event (hrs)		72	
Critical Storm (hrs)		48	
20 Year ARI			
Critical Storm Event EIA (m ²)		11,300	
Rainfall (mm)		134	
Runoff Volume (m ³)		1514	
Top Water Level Area (ha)		0.09	
Flood Storage (m ³) ₁		374	
Flood Rise (m) ₂		0.50	
Top Water Level (m)		10.00	
Pipe Flow Rate (m ³ /s)		0.014	
Pre-Development Flow Rate (m ³ /s)		0.019	
Time of Inundation After Storm Event (hrs)		72	
Critical Storm (hrs)		48	
100 Year ARI Overflow			
Critical Storm Event EIA (m ²)		11,300	
Rainfall (mm)		83	
Runoff Volume (m ³)		938	
Spillway Overflow Volume (m ³)		120	
Pipe Flow Rate (m ³ /s)		0.014	
Spillway Overflow Rate (m ³ /s)		0.010	
Pre-Development Flow Rate (m ³ /s)		0.023	
Time of Inundation After Storm Event (hrs)		24	
Critical Storm (hrs)		6	

3.4 Garden Irrigation

Based on the ODP there is approximately 0.53 ha of proposed garden requiring irrigation. The irrigation requirement is estimated to be 3,952 kL/ha/yr based on the Department of Water's standard application rate of 7,500 kL/ha/yr. A search of the DoW Water Register indicates there is water available in the Superficial Swan aquifer in the Coolup Groundwater Sub-Area. The proponent is currently in the process of submitting a 5C License to Take Water for the purpose of irrigation to the Department of Water.

4 CONCLUSIONS

The Water Management Summary presented in this document for Lots 13 and 14 Bedingfeld Rd, Pinjarra has been prepared to support the proposed Bedingfeld Park Outline Development Plan prepared by A. Scott Hambley (2012).

The Summary has been prepared consistent with principles of water sensitive urban design to satisfy the current ODP application and future Development Approval (DA) application, in lieu of a Local Water Management Strategy and an Urban Water Management Plan on advice from DoW

5 REFERENCES

- A.Scott Hambley (2012) Bedingfeld Park Redevelopment Master Plan – Neighbourhood Plan SK01.02(c).
- Department of Water (2007), Stormwater Management Manual for Western Australia, August 2007.
- DoW (2011) *Murray Drainage and Water Management Plan*. June 2011
- FAWB (2009) *Adoption Guidelines for Stormwater Biofiltration Systems*, Facility for Advancing Water Biofiltration Monash University, June 2009.
- GHD (2010) *Floodplain Development Strategy: Murray Drainage and Water Management Plan and Associate Studies*, prepared for Department of Water, September 2010.
- Engineers Australia (1987) *Australian Rainfall & Runoff*.
- PDC (2006) *Peel-Harvey Coastal Catchment Water Sensitive Urban Design Guidelines*, Peel Development Commission, September 2006.
- Shire of Murray (2012) *Water Sensitive Urban Design Policy*, Local Planning Policy, February 2012
- WAPC (2008) *Better Urban Water Management*, WA Planning Commission October 2008.



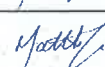
If you have any queries, please do not hesitate to contact Matthew Yan or Kate Smith.

Yours sincerely,



JDA Consultant Hydrologists

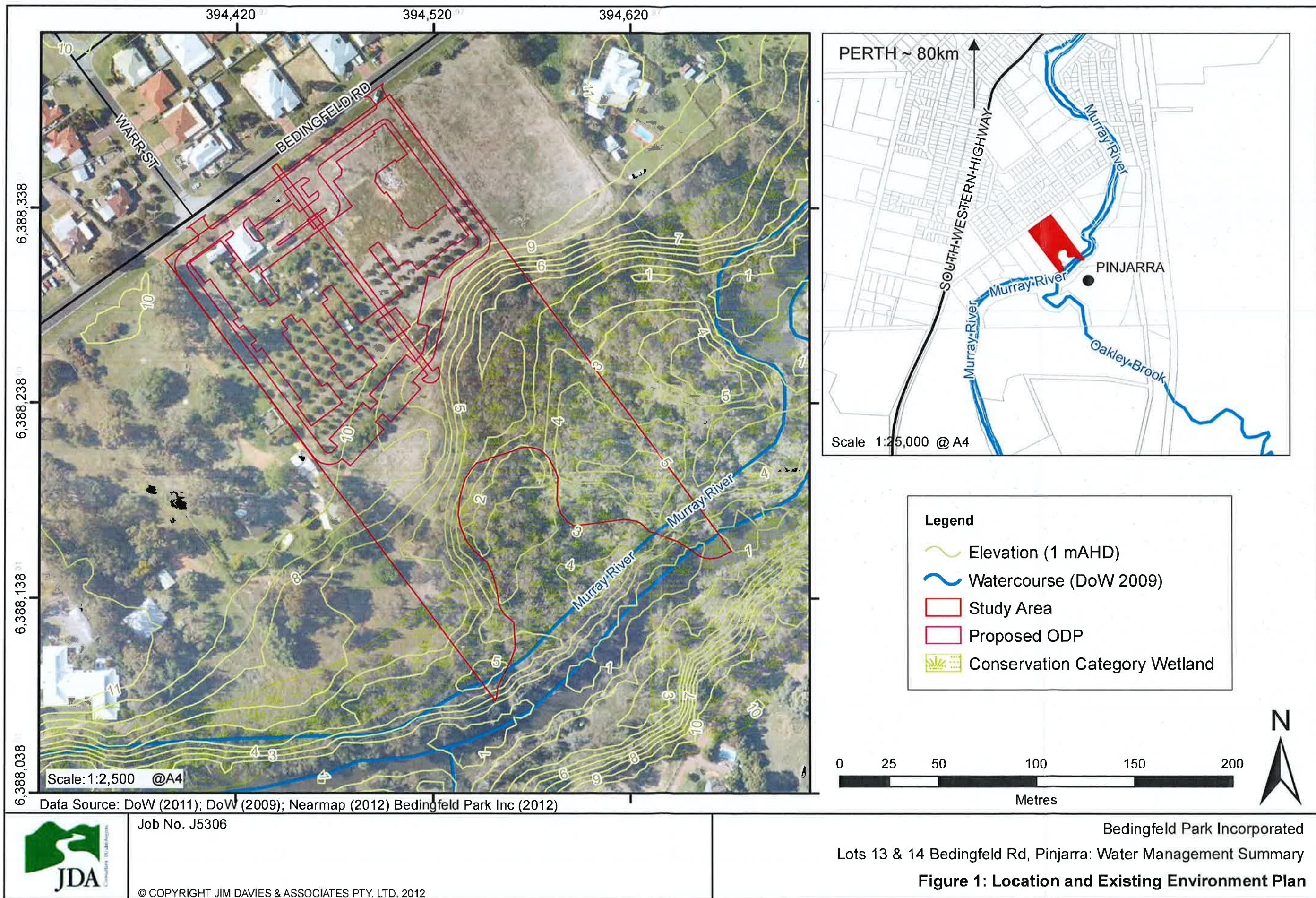
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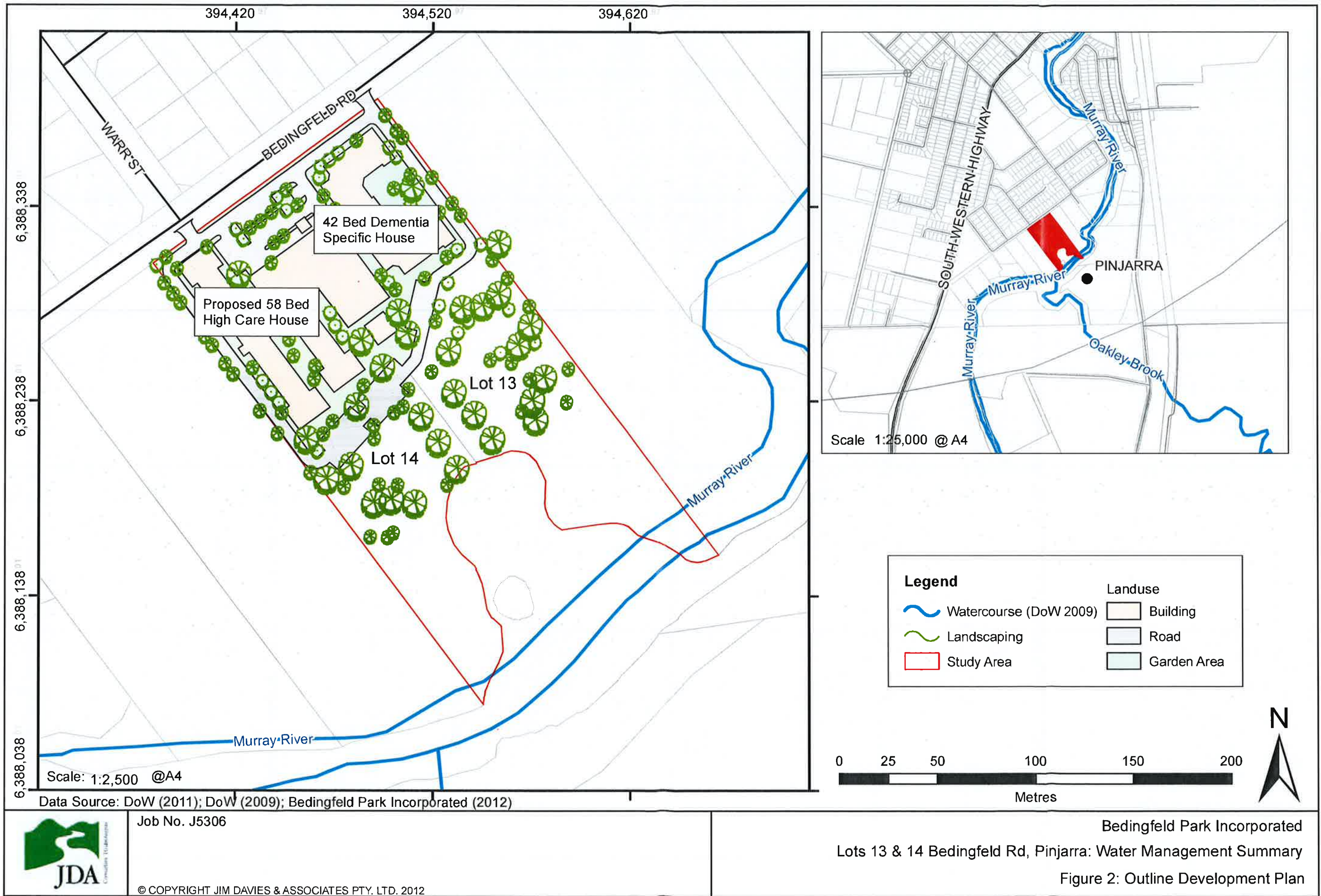
	Name	Signature	Date
Author	Kate Smith		28 March 2013
Checked by	Matthew Yan		28 March 2013
Approved by	Matthew Yan		28 March 2013

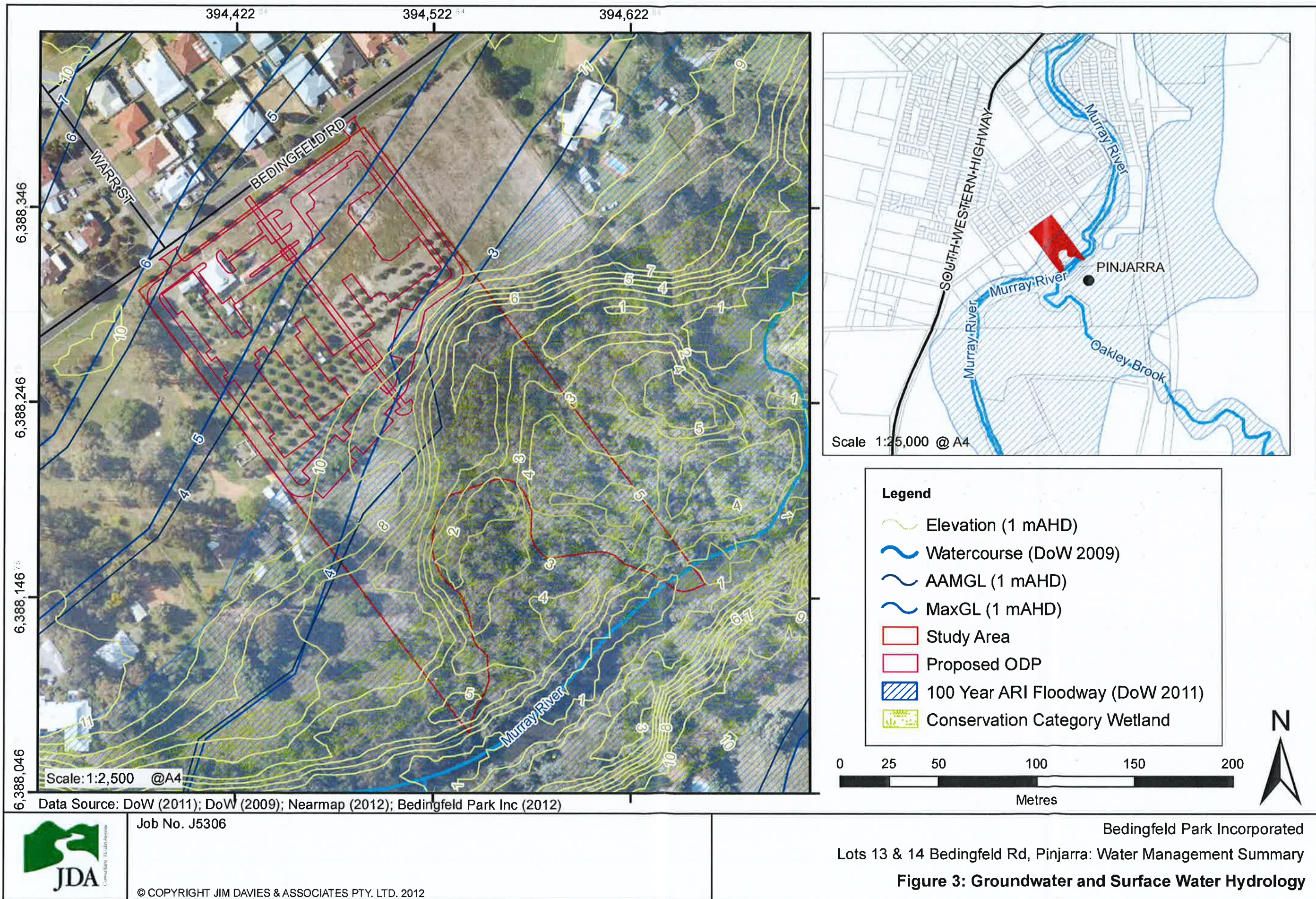
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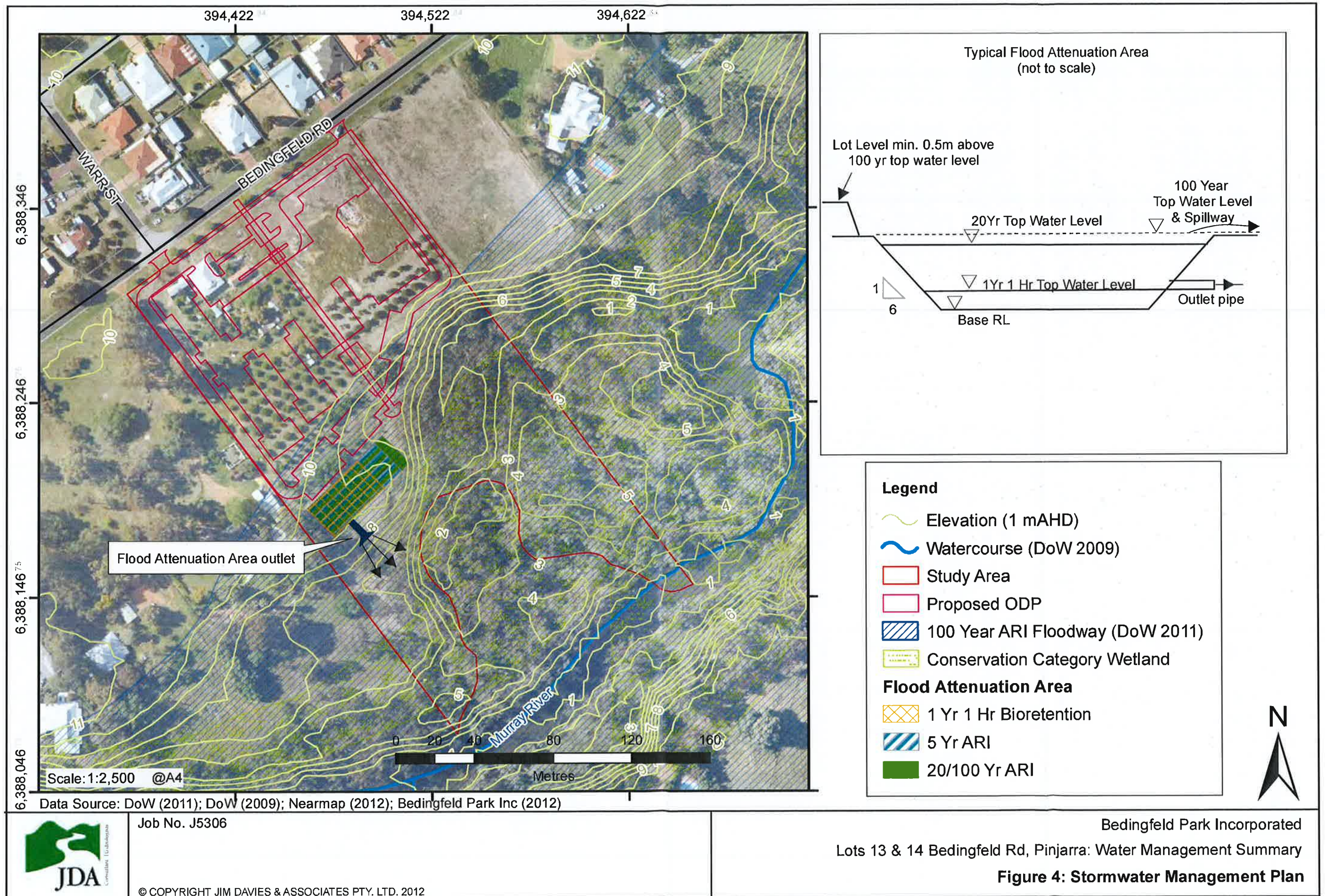
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Appendix 6

Fire Management Plan

Proposed Outline Development Plan

Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

Fire Management Plan



Bedingfeld Park Redevelopment

Lots 13 & 14 Bedingfeld Road, Pinjarra

Shire of Murray
September 16, 2014

Development Proposal
Lots 13 & 14 Bedingfeld Road
Pinjarra
Shire of Murray

Front Cover Photo: Aerial photograph of development site (source: nearmap.com)

Prepared for: A. Scott Hambley C/- Dykstra Planning and Developments

Prepared by:

Rohan Carboon B. App. Sci. G. Cert. (Bushfire Protection)
Managing Director
Bushfire Safety Consulting Pty Ltd
P O Box 84
STONEVILLE WA 6081

Mobile: 0429 949 262
Email: enquiries@bushfiresafety.net
Website: www.bushfiresafety.net

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Executive Summary

This Fire Management Plan has been prepared following the assessment of Lots 13 and 14 Bedingfeld Road, Pinjarra in the Shire of Murray.

The development site has been assessed for vegetation class and bushfire hazard rating levels. It has been determined that the proposed development will fall within the acceptable level of risk. Bushfire Attack Level BAL-29 is not exceeded. The proposed High Care House and Dementia Specific House will have a Building Protection Zone that exceeds the minimum 20m.

This Plan includes a table on page 23 showing responses to the Performance Criteria outlined in the Planning for Bushfire Protection Guidelines - Edition 2 (WAPC et al. 2010).

Currently, the site's bushfire hazard level is rated as low and extreme. The degraded open forest in the Murray River riparian zone is rated as extreme hazard. All other areas of grassland and orchard are rated as low hazard.

Access and egress on and surrounding the site will adequately service the development.

Fire hydrants are located at acceptable spacings on Bedingfeld Road, however the proposal will require further analysis regarding hydrant and fire hose requirements within the facility.

Both the Shire of Murray and DFES have a public education program to raise the community's awareness to its responsibilities regarding bushfire preparation and are expected to work with facility managers and assist with bushfire evacuation strategies. The facility managers are likely to develop a Bushfire Evacuation Plan to comply with legislation.

If there is a bushfire within or near the site, implementing this Fire Management Plan will reduce the threat to employees, employers, facility residents and firefighters.

1. Introduction

The site subject to this Fire Management Plan (FMP) is Lots 13 & 14 Bedingfeld Road, Pinjarra in the Shire of Murray. The site includes an orchard, some grasslands and riparian vegetation adjacent to the Murray River. Similar land use occurs on adjoining properties and residential lots occur north-west of Bedingfeld Road.

Pinjarra was established in the 1830's and is the largest centre in the Shire of Murray. It is located 80 kms south of Perth on the Murray River and the economic base of the Shire is strongly influenced by the Alcoa Aluminium refinery. The development site is located on the south east edge of the townsite (Appendix A)

As part of the Outline Development Plan, the Shire of Murray has requested that a Fire Management Plan be prepared prior to determination.

This FMP has been prepared to satisfy this requirement. This Plan provides responses to the performance criteria that fulfil the intent of the bushfire hazard management issues outlined in the Planning for Bushfire Protection Guidelines - Edition 2 (WAPC et al. 2010).

Community bushfire safety is a shared responsibility between governments, fire agencies, communities and individuals. The planning and building controls outlined in this Plan, if fully implemented, will mitigate the risk to people and property; however, it will not remove the risk. How people interpret the risk, prepare and maintain the property and buildings and what decisions and actions they take (i.e. evacuate early or stay and defend or other) greatly influence the outcome of a bushfire.

1.1 The Proposal

The Development Masterplan (Appendix B) outlines the proposal which includes a 58 bed High Care House and a 42 bed Dementia Specific House. The open space area adjacent to the Murray River will remain in private ownership under this proposal.

The facility will be serviced by a private internal perimeter road and scheme water.

1.2 Objectives

The purpose of this FMP is to address bushfire management issues within the proposed development. If there is a bushfire within or near the site, implementing the FMP will reduce the threat to staff, residents and firefighters.

Achievable and measurable goals of this Plan include ensuring:

- The development is located in an area where the bushfire hazard does not present an unreasonable level of risk to life and property
- Vehicular access to the development is safe, if there is a bushfire occurring
- Water is available to the development so that life and property can be defended from bushfire
- The development is sited to minimise the effects of a bushfire, and
- The development design will minimise the effects of a bushfire.

This document sets out the roles and responsibilities of the developer, site owners and managers, the Shire of Murray and the Department of Fire and Emergency Services (DFES). It is important that the measures and procedures outlined in this FMP are reviewed as necessary.

This FMP includes:

- A description of the site, the surrounding area, fire climate and bushfire history
- A summary of research into the related effects of a bushfire
- A bushfire hazard assessment
- Addressing vehicular access
- Siting buildings to include building protection zones
- Water supply, and
- Maps and plans of fire reduction measures.

2. Statutory and Policy Framework

Relevant key legislation, policy and guidelines include the following:

2.1 Bush Fires Act

The Act sets out provision to diminish the dangers resulting from bushfires, prevent, control and extinguish bushfires and for other purposes. The Act addresses various matters including prohibited burning times, enabling Local Government to require land owners/occupiers to plough or clear firebreaks, to control and extinguish bushfires and establish and maintain Bush Fire Brigades.

2.2 State Planning Policy No. 3.4 Natural Hazards and Disasters

The objectives of this Policy are to:

- Include planning for natural disasters as a fundamental element when preparing all statutory and non-statutory planning documents, specifically town planning schemes and amendments, and local planning strategies, and
- Use these planning instruments to minimise the adverse effects of natural disasters on communities, the economy and the environment.

The Policy determines those areas that are most vulnerable to bushfire and where development is appropriate and not appropriate. The provisions and requirements contained in Planning for Bush Fire Protection Guidelines - Edition 2 (WAPC et al. 2010) were used in this determination.

2.3 Planning for Bush Fire Protection Guidelines (2010)

These Guidelines were prepared by FESA, the Western Australian Planning Commission (WAPC) and the Department of Planning. The document is the foundation for fire risk management planning on private land in Western Australia.

The document addresses important fire risk management and planning issues and sets out performance criteria and acceptable solutions to minimise the risk of bushfires in new subdivisions and developments. It addresses management issues including the location, design and siting of the development, vehicular access and water.

3. Bushfire Impacts

Reliable records began in 1900 and since then there have been 729 civilian fatalities from bushfires in Australia, of those 21 (or 3 per cent of the national total) have occurred in Western Australia. Bushfires have killed more people in Australia than any other natural disaster.

3.1 Building Survival

Buildings survive bushfires due to a number of factors; some relate to the way a bushfire behaves at a site, others relate to the design and construction materials in the building and siting of surrounding elements. Infrastructure, utilities and human behaviour are also factors. Leonard (2009) identified the following factors:

- Terrain (slope)
- Vegetation - overall fuel load, steady state litter load, bark fuels, etc.
- Weather (temperature, relative humidity and wind speed)
- Distance of building from unmanaged vegetation
- Individual elements surrounding the building that are either a shield or an additional fuel source
- Proximity to surrounding infrastructure
- Building design and maintenance
- Human behaviour - ability to be present and capacity to fight the fire
- Access to the building and how that influences human behaviour
- Water supply for active and/or passive defence, and
- Power supply.

It is likely that buildings are lost because of their vulnerability to the mechanisms of bushfire attack. Buildings constructed to Australian Standard (AS 3959) are more likely to survive a bushfire compared to buildings with no construction standards, however building survival is not guaranteed.

3.2 Human Fatalities

The final report from the Victorian Bushfires Royal Commission (VBRC) into the Black Saturday bushfires handed down on 31 July 2010 is the most comprehensive evidence ever assembled about the circumstances surrounding fatalities in an Australian bushfire.

Where people died on Black Saturday contrasts strikingly with studies from previous bushfire fatalities (VBRC 2010). Historically about 32 per cent of people have died in late evacuations (Risk Frontiers et al. 2008); however, on Black Saturday the majority of people (113 out of 173) died inside or close to structures. In a “Black Saturday” type of bushfire, safety can only be assured if people leave early, well before any fire arrives. When the Fire Danger rating is “Catastrophic” most buildings cannot be defended.

Most people die in bushfires from being exposed to radiant heat. Protection is provided by wearing long sleeved natural fibre clothing, having solid barriers and maintaining a long distance between people and the fire (i.e. source of radiant heat).

Bushfires also generate enormous amounts of smoke and wind, and when these factors are combined with the fire, they can cause many trees to come down. If people do not evacuate early before a fire impacts road conditions become extremely hazardous. Many fatalities have occurred during late evacuation or fleeing.

4. Description of the Area

The Shire of Murray is predominantly a rural Shire with a small residential population. Pinjarra is located 80 kms south of Perth and 21 kms south east of Mandurah on the South West Highway. Forestry and agriculture are the dominant land uses.

The Shire of Murray has played a role providing relatively affordable housing for young and established families, retirees and older adults (Shire of Murray website 2013). This trend will generally continue as housing costs in Perth remain high.

4.1 Description of the Subject Land

The subject land is 3.3227 ha in size and is located adjacent to the Murray River.

This FMP focuses on the subject land and immediate surrounding area (Appendix C).

In summary this land is:

- Zoned Residential Development and Regional Open Space in the Shire of Murray TPS No. 4
- Gently sloping over most of the site, with a short steep drop into the Murray River flood zone.
- Surrounded by similar land uses; and
- Rated as low and extreme bushfire hazard.

4.2 Fire Climate

The behaviour of bushfires is significantly affected by weather conditions and they burn more aggressively when high temperatures combine with low humidity and strong winds.

In Perth and surrounding areas, the fire risk is greatest from summer through autumn, when the moisture content in vegetation is low. Summer and autumn days with high temperatures, low humidity and strong winds are particularly conducive to the spread of fire. This threat is enhanced if thunderstorms develop accompanied by lightning and little or no rain. Research indicates that virtually all house losses occur during severe, extreme or catastrophic conditions (i.e when the Fire Danger Index is over 50) (Blanchi et al. 2010).

The Bureau of Meteorology website (www.bom.gov.au/weather/wa/sevwx/perth/bushfires.shtml) states that extreme fire weather conditions in the Perth region typically occur with strong easterlies or north easterly winds associated with a strong high to the south of the state and a trough offshore. Easterly winds represent about 60 per cent of extreme fire weather days (events) compared to less than 5 per cent associated with southerly winds. About 15 per cent of Perth events occurred in a westerly flow following the passage of a trough. Very dangerous fire weather conditions often follow a sequence of hot days and easterly winds that culminate when the trough deepens near the coast and moves inland. Winds can change from easterly to northerly and then to westerly during this sequence of climatic events.

Data from the Dwellingup weather station (19 km east of the study site) indicate the area experiences warm dry summers and cool wet winters (Figure 1), and is classified as a Mediterranean climate. Mean maximum temperatures vary from 42 degrees Celsius in February to 23 degrees Celsius in July and rainfall peaks in June and July.

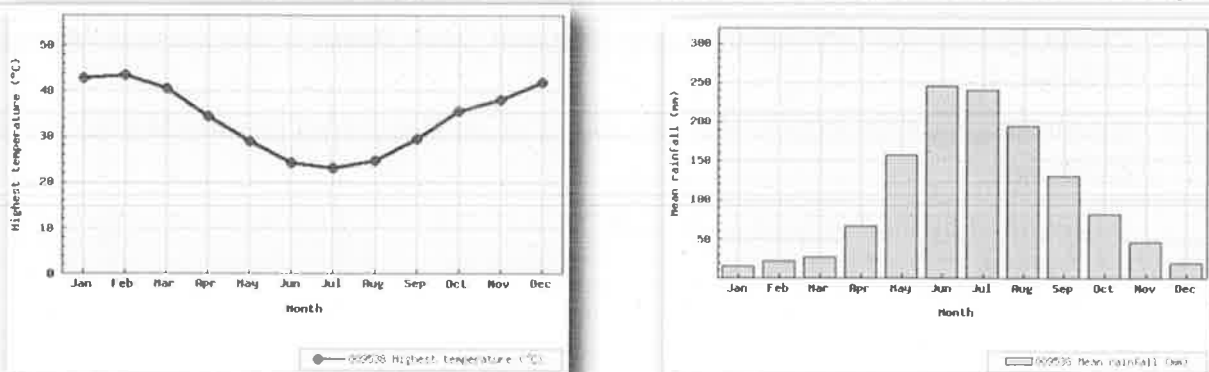


Figure 1: Mean maximum recorded temperatures and mean rainfall for Dwellingup weather station between 1950 and 2011

The site is 20 kms from the coast and can be influenced by land and sea breezes. These are created by the daily heating and cooling of the land surface next to the ocean. The sea breeze occurs when the air over the land heats up and becomes more buoyant and rises, denser moist air over the ocean then flows inland. Sea breezes can strengthen prevailing wind, reduce it or even reverse it, depending on the strength and direction of the two airstreams (Cheney and Sullivan 2008). The land breeze is the opposite and occurs when the land cools and air flows from the land towards the ocean to replace the rising warmer air. These katabatic winds can occur during the night and can be strong and are common in the summer months.

Data from the Dwellingup weather station indicate that the winds can be very variable in the summer months at 3pm near the study site. South-westerlies are most common in December and January however easterlies and westerlies are also common throughout summer (Figure 2).

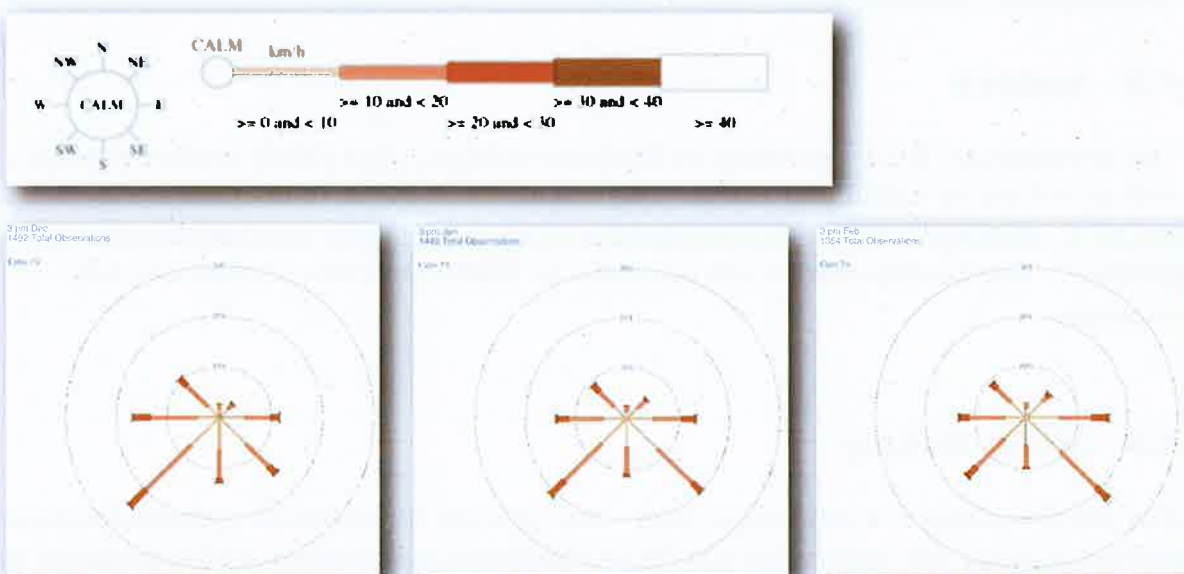


Figure 2: Rose of wind direction and wind speed in km/hr for 3pm at Dwellingup weather station in December, January and February between 1957 and 2011

Interpreting Figure 2 - Wind speed Vs Direction Plot

Wind roses summarise the occurrence of winds at a location, showing their strength, direction and frequency. The percentage of calm conditions is represented by the size of the centre circle - the bigger the circle, the higher is the frequency of calm conditions. Each branch of the rose represents wind coming from that direction, with north to the top of the diagram. Eight directions are used. The branches are divided into segments of different thickness and colour, which represent wind speed ranges in that direction. Speed ranges of 10 km/hr are used. The length of each segment within a branch is proportional to the frequency of winds blowing within corresponding range of speeds from that direction (BOM 2010).

4.3 Bushfire Fuels

The study site is vegetated in grass fuels in the cleared areas and the orchard. The degraded open forest has the heaviest bushfire fuels adjacent to the Murray River. It is extensively invaded by introduced grasses and weeds. The challenge concerning bushfire fuels for this site adjacent to the development is to reduce grass fuel levels and remove or control weeds and smaller regrowth trees to create a compliant building protection zone.

4.4 Assets

A “High Care” and “Dementia Specific” facility is proposed for the site. The facility is located 200m from the Murray Districts Hospital. It is proposed to accommodate a maximum of 100 residents at any one time and it also contains a kitchen, laundry and administration building.

4.5 Access

The development will be serviced by Bedingfeld Road. This public road connects with an extensive network of surrounding public roads in the residential areas of Pinjarra. Within the site, a two-way private internal perimeter road will surround the complex. Two access options are available for staff, residents, visitors and fire services.

4.6 Water Supply

The site is located in a reticulated area. The process to determine hydrant coverage and compliance with Australian and FESA standards is outlined in FESA guideline No: GL-07 which can be downloaded at : <http://www.dfes.wa.gov.au/regulationandcompliance/buildingplanassessment/pages/publications.aspx>

The development is a Class 9C building in the Building Code of Australia (BCA). It requires compliance with the BCA, in particular E1.5 including the specifications and AS2118.4 together with AS2419.1. Hydraulic water supplying both systems (hydrant and sprinklers) will need to achieve flow rates simultaneously.

4.7 Bushfire History

A recent study has concluded that bushfires may have been in the Australian Landscape for 50 million years longer than previously thought. The adaption of

eucalypts that allows them to recover from bushfires has been traced back more than 60 million years (Crisp et al. 2011), indicating fire has been in the Australian landscape since that time.

Anthropological and historical evidence suggests that much of the Swan Coastal Plain was regularly burnt by the Aborigines until the middle of the nineteenth century (Hallam 1975, Abbott 2003).

Bushfires are common in the Shire of Murray and local brigades respond to many bushfires every year.

Perhaps Western Australia's worst bushfire disaster - the Dwellingup fires - occurred in January 1961. An intense cyclone off the north-west coast led to five days (20-24 January) of gusty winds and 40 degree celsius temperatures over the lower south-west. Fires, many started by lightning, burnt uncontrolled through this period. Strong north-west winds on the 24th drove the fires southward, destroying the township of Dwellingup, and many houses in other small settlements. Fortunately there was no loss of human life.

Cyclones played an intimate role both in ignition and re-ignition of the Dwellingup fires. This is not a unique situation in Western Australia, with cyclones also playing an intrinsic role in the cause and spread of the 1937 and 1978 bushfires in the southwest.

In January 2007, a bushfire started north of Dwellingup and travelled on strong easterly winds. It nearly reached the town of Pinjarra. On the 4th of February strong north-west winds pushed a second fire from near the southern edge of the first fire up the Darling escarpment and 16 homes were lost in the one afternoon. It took another week to fully contain.

Areas of native vegetation surrounded by residential areas are susceptible to frequent bushfires due to the high risk of arson and great potential for accidental ignitions (Walker 1981, Burrows and Abbott 2003).

5. Bushfire Hazard Assessment

Assessing bushfire hazards at a strategic level takes into account the predominant class of vegetation on the site and surrounding area for a minimum of 100 metres. The vegetation class map for the site and surrounding area for a minimum of 100 m is shown in Appendix C. Fuel layers in a typical forest environment can be broken down

into 5 obvious segments (Figure 3). These defined fuel layers are used in the following descriptions regarding vegetation types, fuel structure and bushfire hazard levels.

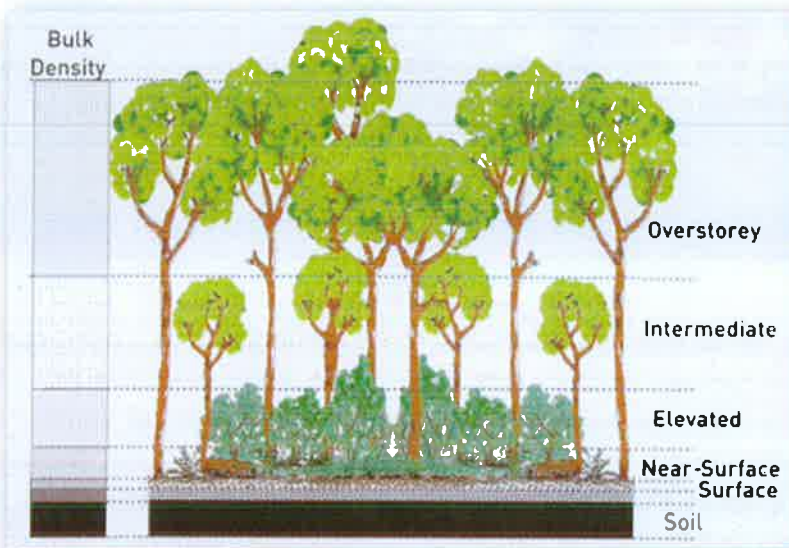


Figure 3 : The five obvious fuel layers in a forest environment that could be associated with fire behaviour (Gould et al. 2007)

5.1 Land Use, Vegetation Classification and Bushfire Fuels

The site has previously been managed as an orchard and contains a residential dwelling. Firebreaks were observed on the property perimeter. Where the land drops sharply into the river valley, a strip of degraded open forest vegetation occurs.

The predominant near surface bushfire fuel on the entire site is grass. Grass fuels occur in the degraded open forest as a 0.5 m high layer (Figure 4) and on the orchard and cleared area of the site (Figure 5).

The area of degraded open woodland in the river valley has minimal elevated or intermediate fuel layers (Figure 6). Olive and fig trees have invaded the site and significantly add to the canopy fuels (Figure 7). The dominant Eucalypt is Flooded Gum (*Eucalypts rudis*) and average canopy heights achieve 12-18 metres. The forest supports a number of regrowth form trees that appeared to be in poor condition growing under the canopy of the mature trees.

There is an increased of canopy fuels on the edge of the degraded open forest. Eucalypt trees typically branch more when increased levels of light are available such as on the edge of a forest area (Figure 8). Fig and olive trees are also common on

the forest edge and fuel loads will be significantly reduced if these weed species can be removed and controlled.



Figures 4 & 5: Grass fuels in the degraded open forest (left) and within the managed portion of the site (right)



Figures 6 & 7: Degraded open forest with minimal elevated and intermediate fuels (left) and introduced olive plants in the forest (right)



Figures 8: Increased canopy fuels occur on the edge of the degraded open forest and olive trees contribute significantly to canopy cover

5.2 Slope

The site is relatively flat where the facility is proposed to be constructed. Following the edge of the open forest, the land slopes sharply over a short distance of 10-15 m. At its steepest the slope ranges between 18-26 degrees. Downhill of the slope, the landscape is again gently undulating for the short distance until the bank of the Murray River is reached. The 0.5m contour lines can be clearly seen on the site plan in Appendix D.

5.3 The Bushfire Hazard Assessment Levels

The vegetation class map (Appendix C) outlines the dominant vegetation types on the study site and surrounding area for a minimum of 100 m. Descriptions of the vegetation class structure and dominant species are outlined in section 5.1 Land-use, Vegetation Classification and Bushfire Fuels. The bushfire hazard assessment levels were determined using Appendix 1 of the Planning for Bushfire Protection Guidelines - Edition 2 (WAPC et al.2010).

The study site has bushfire hazard ratings of low and extreme. Low hazard occurs in grassland areas and in adjoining properties with similarly managed grass fuels. Extreme hazard occurs in the degraded open forest area which adjoins the Murray River corridor. The bushfire hazard rating map for the site and surrounding area is shown in Appendix E.

6. Fire Mitigation Strategies

This report adopts an acceptable solution and performance-based system of control for each bushfire hazard management issue. It is consistent with Appendix 2 of the Planning for Bushfire Protection Guidelines - Edition 2 (WAPC et al. 2010). The management issues are:

- Location of the development
- Vehicular Access
- Water
- Siting of the development, and
- Design of the development.

Acceptable solutions are provided for four out of the five management issues and each illustrates one example of satisfactorily meeting the corresponding performance criteria. A performance-based approach is provided for one management issue.

6.1 Element: Location of the Development

Intent

To ensure that development/intensification of land use is located in areas where bush fire hazard does not present an unreasonable level of risk to life and property.

Acceptable Solution

Bushfire hazard levels are rated as low and extreme on the development site. The maximum Bushfire Attack Level (BAL) for the proposed facility on the site is predicted to be BAL-29. The buildings will have a minimum 20 metre building protection zone between them and the open forest vegetation.

A Hazard Separation Zones (HSZ) cannot be incorporated into the site however construction standards will be increased to compensate for the decreased setback distance and align with the appropriate Bushfire Attack Level (BAL).

The site will be provided with an adequate water supply via the provision of fire hydrants and access to fight fires.

6.2 Element: Vehicular Access

Intent

To ensure vehicular access serving a subdivision development is safe if a bushfire occurs.

Background

The development site is located immediately adjacent to Bedingfeld Road which provides access to and from the site. The facility will also be surrounded by a minimum 6m wide internal road that provides excellent access for fire appliances.

The vehicle access plan is outlined in Appendix F.

This proposal complies with the performance criteria by applying the following acceptable solutions:

Acceptable Solution A2.1: Two Access Routes

Bedingfeld Road is a two-way road and there are two entrances/exits into the site. A complete perimeter road also exists surrounding the entire facility. This complies with the requirements for two access routes.

Acceptable Solution A2.2: Public Roads

All internal roads will comply with the following public road standards:

- Minimum trafficable surface: 6 m
- Horizontal clearance: 6 m
- Vertical clearance: 4 m
- Maximum grades: 1 in 8
- Maximum grades over 50 m: 1 in 5
- Maximum average grade: 1 in 7
- Minimum weight capacity: 15 tonnes
- Maximum crossfall: 1 in 33
- Minimum inner radius of curves: 12 m

Acceptable Solutions A2.9 : Firebreaks

The perimeter road system will provide a permanent compliant firebreak on the site. There are other requirements and responsibilities outlined on the firebreak order that site managers need to be aware of. The Shire of Murray annual Firebreak Notice can usually be downloaded from the Shire website at <http://www.murray.wa.gov.au/Residents/Resident-Services/fire-break-notice.htm>

6.3 Element: Water

Intent

To ensure water is available to the development to enable life and property to be defended from bushfire.

Acceptable Solution : Reticulated Area

The development will be provided with a reticulated water supply, together with fire hydrants, in accordance with the specifications of the Water Corporation and DFES.

A fire engineer will need to be engaged by the proponent to provide details to DFES on how complete fire hydrant coverage will be achieved. An adequate water supply for fire suppression purposes at the facility will be achieved after the satisfactory completion of this process. The process to determine hydrant coverage and compliance with Australian and DFES standards is outlined in DFES guideline No: GL-07 which can be downloaded at : <http://www.dfes.wa.gov.au/regulationandcompliance/buildingplanassessment/pages/publications.aspx>

The development is a Class 9C building in the Building Code of Australia (BCA). It requires compliance with the BCA, in particular E1.5 including the specifications and AS2118.4 together with AS2419.1. Hydraulic water supplying both systems (hydrant and sprinklers) will need to achieve flow rates simultaneously.

6.4 Element: Siting of the Development

Intent

To ensure the siting of the development minimises the level of bushfire impact.

Background

The facility will be constructed on the cleared flat land adjacent to Bedingfeld Road. Some fuel management is required to establish a building protection zone and an arrangement to maintain standards into perpetuity is required.

Acceptable Solution: Building Protection Zone (BPZ)

One of the most important fire protection measures influencing the safety of people and property is to create a BPZ around buildings. The building protection zone is a low fuel area immediately surrounding a building. Non-flammable features such as driveways, roads, road reserves, footpaths, lawn or landscaped gardens (including deciduous trees) can form parts of a BPZ.

World first research into land management and house loss during the Black Saturday Victorian bushfires concluded that the action of private landholders, who managed fuel loads close to their houses, was the single most important factor to determine house survival when compared with other land management practices, such as broad scale fuel reduction burning remote from residential areas (Gibbons et al. 2012).

Creating a BPZ will ensure vegetation and fuels, within close proximity to dwellings, are managed in the long term to maintain low levels of predicted radiant heat flux and improve the survival of buildings.

Managing vegetation in the BPZ has two main purposes:

- To reduce direct flame contact and radiant heat from igniting the building during the passage of a fire front, and
- To reduce ember attack and provide a safer space for people to defend (if required) before, during and after a fire front.

A permanent BPZ will be established between the facility and the extreme hazard. This strategy will result in predicted radiant heat flux levels being maintained below 29kW/m². The management of fuels in the BPZ remains in private ownership within the lot boundary.

The size of the BPZ is outlined in Appendix G and the examples BAL assessments demonstrate that the buildings will achieve compliant predicted radiant heat flux exposure levels. The BAL ratings have been determined and are outlined in Table 1.

The BPZ must be established and maintained to the following standards:

- Width: contained completely within the lot boundary and as outlined in Appendix G
- Fuel load: reduced to and maintained at 2 tonnes per hectare
- All tree crowns (existing and future) are a minimum of 10 m apart
- All trees (existing and future) to have lower branches pruned to a height of 2 m
- All tall shrubs or trees (existing and future) are not to be located within 2 m of a building (including windows)
- No tree crowns or foliage is to be within 2 m of any building, this includes existing trees and shrubs and new plantings
- All fences and sheds are constructed with non-combustible materials (i.e. colorbond, brick or limestone)
- All shrubs to contain no dead material within the plant
- No tall shrubs are to be in clumps within 3 m of the building
- No trees are to contain dead material in the crown or on the bole.

By achieving these standards, it will be possible to construct the buildings to the appropriate standard (i.e. BAL-29 or less) under the Australian Standard (AS 3959-2009) Construction of buildings in bushfire-prone areas.

A site meeting with the Shire of Murray and DFES representatives was conducted on December 6, 2012 and broad agreement was reached on the following fuel management strategy to establish and maintain BPZ standards. The works include:

- mowing / slashing / spraying the grass and weed near surface fuels
- removing all olive and fig shrubs and trees
- removing regrowth eucalypts up to 6 inch diameter at chest height
- removing all dead material, and
- pruning of living branches within 2m above the ground.

This will significantly reduce fuel litter and near surface fuel levels and open up the canopy. As mentioned earlier, elevated and intermediate fuels are largely non-existent. A Hazard Separation Zone (HSZ) is an additional fuel managed zone to

create further separation between dwellings and bushfire hazard. It can extend out to 100 m from buildings. In this development proposal, a HSZ does not fit within the design of the small site however the lack of a HSZ is offset by an increase in construction standards and compliance with AS 3959.

6.4.1 Building Siting and Predicted Bushfire Attack Levels

The following Bushfire Attack Level (BAL) assessment demonstrates that the fuel management surrounding the facility achieves acceptable levels of risk. The AS 3959-2009 has six categories of Bushfire Attack Level, namely BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ. These categories are based on heat flux exposure thresholds.

The method for determining the BAL involves a site assessment of vegetation and local topography. The assumed Fire Danger Index (FDI) for Western Australia is 80. The BAL identifies the appropriate construction standard that applies as a minimum standard in Construction of buildings in bushfire-prone areas (AS 3959-2009).

Methodology and Assumptions

The following BAL assessment examples were determined using the methodology in Appendix A of AS 3959-2009. This methodology is also outlined in the Planning for Bush Fire Protection Guidelines. Example BAL assessments were undertaken for the four most exposed buildings as outlined in Appendix G. The results of these assessments are shown in Table 1.

The criteria to determine the BAL is outlined as follows:

Designated FDI : 80
Flame Temperature : 1090
Slope : Various (See Table 1)
Vegetation Class : Degraded Open Forest
Setback distances : various (See Table 1)

BAL Example Number	Setback Distance (m)	Classified Vegetation	Effective Slope (degrees)	BAL Rating
1	52	Degraded Open Forest	Downslope 16	BAL-29
2	52	Degraded Open Forest	Downslope 16	BAL-29
3	50 35	Degraded Open Forest	Downslope 1 Downslope 1	BAL-12.5 BAL-29
4	40 35 42	Degraded Open Forest	Downslope 1 Downslope 1 Downslope 12	BAL-19 BAL-29 BAL-29

Table 1: Bushfire Attack Level (BAL) Assessment for the four most exposed buildings (See Appendix G for site details)

All example BAL assessments result in a maximum rating of BAL-29. This provides an acceptable solution because construction standards should be increased to mitigate the increased exposure (Table 1).

A Bushfire Attack Level of BAL-29 means the risk is considered to be high. The construction elements are expected to be exposed to a radiant heat flux not greater than 29kW/m². There is an increased risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to an increased level of radiant heat (Standards Australia 2009). The recommended construction sections are 3 and 7 in AS 3959-2009.

This example assessment demonstrates that the proposed facility will fall within the acceptable level of risk (i.e. BAL-29 and lower) and should have construction standards increased to meet AS 3959 requirements. The facility requires a BAL assessment at building licence application stage to confirm accurate construction standard requirements.

Modification of native vegetation associated with implementing a fuel management strategy for the site shall be undertaken on the advice of a suitably qualified environmental consultant having regard to any approved Foreshore Management Plan and the (Clearing of Native Vegetation) Regulations 2004.

Any clearing should ensure slope stability is maintained and erosion is prevented as well as keeping native vegetation cover for environmental and amenity purposes. The minimum clearing required for bush fire protection should be undertaken. The BAL for the future development may be required to be increased to ensure slope stability and minimal removal of vegetation.

6.4.2 Landscaping Considerations

Landscaping can both assist in the survival of the building and be a determining measure in its destruction. Landscaping can protect buildings by forming a barrier or deflector for windborne debris and radiant heat. It can also bring the fire directly to the building so a degree of care needs to be exercised when selecting and locating landscaping.

All plants will burn under the right conditions and plants do not achieve a “fire resistance level” to meet the Building Code of Australia (BCA). Placing plants too close to a building, under timber decks or next to windows will provide a direct threat to the building. Having a clearance around the building will achieve the desired effect of creating a break between the vegetation and the building. The road around the facility will be one way to achieve this requirement. The landscaping can then be provided further out from the building.

Bark chips and combustible mulch near a building is not recommended and is a particular problem when the windows have low sill heights. The DFES document titled “Plant Guide within the Building Protection Zone” provides a useful list of species and spacing requirements to achieve compliance with vegetation within a building protection zone in the Swan Coastal Plain. It can be downloaded at <http://www.fesa.wa.gov.au/safetyinformation/fire/bushfire/BushfireProtectionPlanningPublications/FESA%20Plant%20Guide-BP%20Zone-Final-w.pdf>. It will provide guidance for appropriate garden development of the site. Work from Ramsay and Rudolf (2003) has identified 14 major plant attributes that assist people to determine suitable plant species for gardens surrounding buildings (i.e. in the building protection zone). This is a useful reference book for the development to plan their garden design and select suitable plant species.

6.5 Design of the Development

Performance Criteria

The design of the development is appropriate to the level of bushfire hazard that applies to the site.

Acceptable Solution

All on site development is to comply with the performance criteria or acceptable solutions 1 - 4 in “Planning for Bushfire Protection” Guidelines. The buildings are to comply with AS 3959-2009 Construction of buildings in bushfire-prone areas and the Shire of Murray has the responsibility to ensure the facility meets this standard.

The predicted highest BAL level for the facility is BAL-29 which will be mitigated by compliance with the Australian Standard AS3959.

6.6 Public Education and Community Awareness

Community bushfire safety is a shared responsibility between individuals, the community, government and fire agencies. DFES has an extensive Community Bushfire Education Program including a range of publications, a website and Bushfire Ready Groups. The 30 page booklet Prepare, Act, Survive provides excellent advice on preparing for and surviving the bushfire season. Other downloadable brochures include 'Fire Danger Ratings and what they mean for you' and 'Bushfire Warnings and what you should do'.

The Shire of Murray have developed a comprehensive bushfire information booklet. It was distributed to all residents in their rates notice. It can also be downloaded from their website at <http://www.murray.wa.gov.au/Residents/Resident-Services/fire-break-notice.htm> and local bushfire brigades provide bushfire safety advice to residents.

The Shire also promotes residents to register their mobile numbers through the Shire's Website in order to receive regular notifications when fire restrictions have been put in place. Professional consultants also offer bushfire safety advice and relevant services to facilities in high risk areas.

6.7 Community Fire Refuges and Fire Safer Areas

There are no designated Community Fire Refuges in the Shire of Murray. However, at the time of an emergency, the relevant authorities can select an evacuation centre and DFES, the City and Police will provide this information to residents.

A predetermined centre cannot be nominated because there are no purpose built structures (such as bunkers) designed to withstand the impacts of a bushfire. This means the location of an evacuation centre is not determined until the position of the fire and the characteristics of a specific event are considered by authorities. There would be nothing more dangerous than sending residents to a centre which is in the direct path of a fire.

The safest place to be during a bushfire is away from it. Where to go is an important element when people are relocating during a time of emergency (NSW Rural Fire Service 2004). The preferred option for residents is to designate a destination that is not in a bushfire-prone area and will be safe to travel to before a bushfire attack.

Those who find themselves threatened by a bushfire need options (VBRC 2009). This may be because their plan to leave is no longer possible because they cannot reach a place away from the fire front, or their plan to defend their property fails. Residents may also be caught away from their home when a bushfire threatens.

The concept of a “Neighbourhood Safer Place” and Neighbourhood Safer Precincts” has arisen from recommendations by the Victorian Bushfire Royal Commission into the Black Saturday bushfires.

There are many areas within the Shire of Murray including landscaped open spaces and residential, urban or shopping precinct areas that are not bushfire-prone, but they have not been declared. Obviously a non-bushfire-prone area can provide a safe location for people during a bushfire, but there is no official criteria in Western Australia to determine these areas. As there is no specific criteria to guide this process, DFES’s general advice is for residents, when their household bushfire survival plans have failed, is to go to a safer place such as a local open space or building where people may go to seek shelter from a bushfire (FESA 2010).

7. Conclusion

This plan provides acceptable solutions and responses to the performance criteria that fulfil the intent of the bushfire hazard management issues outlined in Planning for Bushfire Protection Guidelines - Edition 2 (WAPC et al. 2010). However, community bushfire safety is a shared responsibility between governments, fire agencies, communities and individuals.

The planning and building controls outlined in this plan will reduce the risk of bushfire to people and property, it will not remove all risk. How managers of the facility interpret the risk, prepare and maintain the property and buildings and what decisions and actions they take (i.e. evacuation or stay and shelter and defend or other) greatly influence their personal safety. The facility managers need to be self reliant, and not expect warnings or assistance from emergency services.

7.1 Compliance Checklist for Performance Criteria and Acceptable Solutions

Element	Question	Answer
1: Location	Does the proposal comply with the performance criteria by applying acceptable solution A1.1?	Yes
2: Vehicular access	Does the proposal comply with the performance criteria by applying acceptable solution A2.1?	Yes
2: Vehicular access	Does the proposal comply with the performance criteria by applying acceptable solution A2.2?	Yes
	Does the proposal comply with the performance criteria by applying acceptable solution A2.3?	N/A
	Does the proposal comply with the performance criteria by applying acceptable solution A2.4?	N/A
	Does the proposal comply with the performance criteria by applying acceptable solution A2.5?	N/A
	Does the proposal comply with the performance criteria by applying acceptable solution A2.6?	N/A
	Does the proposal comply with the performance criteria by applying acceptable solution A2.7?	N/A
	Does the proposal comply with the performance criteria by applying acceptable solution A2.8?	N/A
	Does the proposal comply with the performance criteria by applying acceptable solution A2.9?	Yes
	Does the proposal comply with the performance criteria by applying acceptable solution A2.10?	N/A

Element	Question	Answer
3: Water	Does the proposal comply with the performance criteria by applying acceptable solution A3.1?	Yes
	Does the proposal comply with the performance criteria by applying acceptable solution A3.2?	N/A
	Does the proposal comply with the performance criteria by applying acceptable solution A3.3?	N/A
4: Siting of the Development	Does the proposal comply with the performance criteria by applying acceptable solution A4.1?	Yes - Construction standards are increased to align with site bushfire attack level.
	Does the proposal comply with the performance criteria by applying acceptable solution A4.2?	No, grassland on adjoining residential development zoned land is generally low hazard.
	Does the proposal comply with the performance criteria by applying acceptable solution A4.3?	Yes
	Does the proposal comply with the performance criteria by applying acceptable solution A4.4?	No - However the proposal does satisfactorily comply with performance criterion P4. The building construction standards are to be increased to comply with AS 3959-2009 to offset the requirement for a Hazard Separation Zone. Construction standards will achieve a maximum of BAL-29.
	Does the proposal comply with the performance criteria by applying acceptable solution A4.5?	N/A - Shielding not applicable.

Element	Question	Answer
5: Design of the Development	Does the proposal comply with the performance criteria by applying acceptable solution A5.1?	No - However the proposal does comply with the performance criterion P5 because building construction standards will be increased to comply with AS 3959-2009 to offset the removed HSZ. BAL-29 is not exceeded.
	Does the proposal comply with the performance criteria by applying acceptable solution A5.2?	Yes - The proposal complies as the development will meet the performance criteria because of compliance with AS 3959 and BAL-29 is not exceeded.

8. Implementing the Fire Management Plan

8.1 Developer's / Owners Responsibilities

To maintain a reduced level of risk from bushfire, the developer's responsibilities are to:

- Install the road network to standards outlined in Element 6.2 Vehicular Access
- Install water supply and hydrant to comply with standards outlined in Element 6.3 Water
- Lodge a Section 70A Notification on the Certificate of Title exposed to AS 3959 construction standards, proposed by this development. The notification shall alert purchasers and successors in title, to this development, of the responsibilities of the Fire Management Plan and bushfire building construction requirements
- Create and maintain the BPZ to standards outlined in Element 6.4 Siting of Development until such time as responsibility is transferred to the Site Managers.
- Comply with the Shire of Murray's Firebreak Order Notice as published, on all vacant land, and
- Supply a copy of this Fire Management Plan and The Homeowners Bush Fire Survival Manual, Prepare, Act, Survive (or similar suitable documentation) and the Shire of Murray's Firebreak Notice to the site managers.

8.2 Site Managers Responsibilities

The owners/occupiers of the site, as created by this proposal, are to maintain a reduced level of risk from bushfire, and will be responsible for undertaking, complying and implementing measures to protect their own assets (and people under their care) from the threat and risk of bushfire. The owners' will be responsible for:

- Complying with the Shire of Murray's annual Firebreak Notice
- Ensuring that vacant lots comply with the Shire of Murray's Fire Control Notice
- Ensure road access areas are constructed and maintained
- Develop a Bushfire Evacuation Plan for the facility as per legislative requirements
- Ensuring construction of the facility complies with AS 3959, and
- Maintaining the BPZ at the property owner's/occupier's own cost.

As part of the building license application, the property owner or the Shire of Murray (at the property owner's expense) shall have the proposed facility re-assessed for Bushfire Attack Level (at the time of construction) with results to be submitted as part of the building licence application.

8.3 Shire of Murray's Responsibilities

The responsibility for compliance with the law rests with individual property owners and occupiers and the following conditions are not intended to unnecessarily transfer some of the responsibilities to the Shire of Murray. The Shire of Murray shall be responsible for:

- Providing fire prevention and preparedness advice to landowners upon request
- Monitoring bushfire fuel loads in road reserves and liaising with relevant stakeholders to maintain fuel loads at safe levels
- Maintaining public roads to appropriate standards and ensuring compliance with the Shire of Murray's Fire Order Notice
- Reviewing the Fire Management Plan may be carried out by the Shire of Murray in consultation with effected property owners as environmental/weather conditions and mitigation strategies change
- Ensuring the facility is constructed to AS 3959 where applicable, and
- Endorsing a section 70A notification on each title affected by this Fire Management Plan.

8.4 DFES's Responsibilities

- DFES is required to maintain district fire fighting capabilities for structural and bush fires.

Applicant Declaration

I declare that the information provided is true and correct to the best of my knowledge.

Full name: **Rohan Carboon**

Applicant signature: 

Date: **16/09/2014**

9. References

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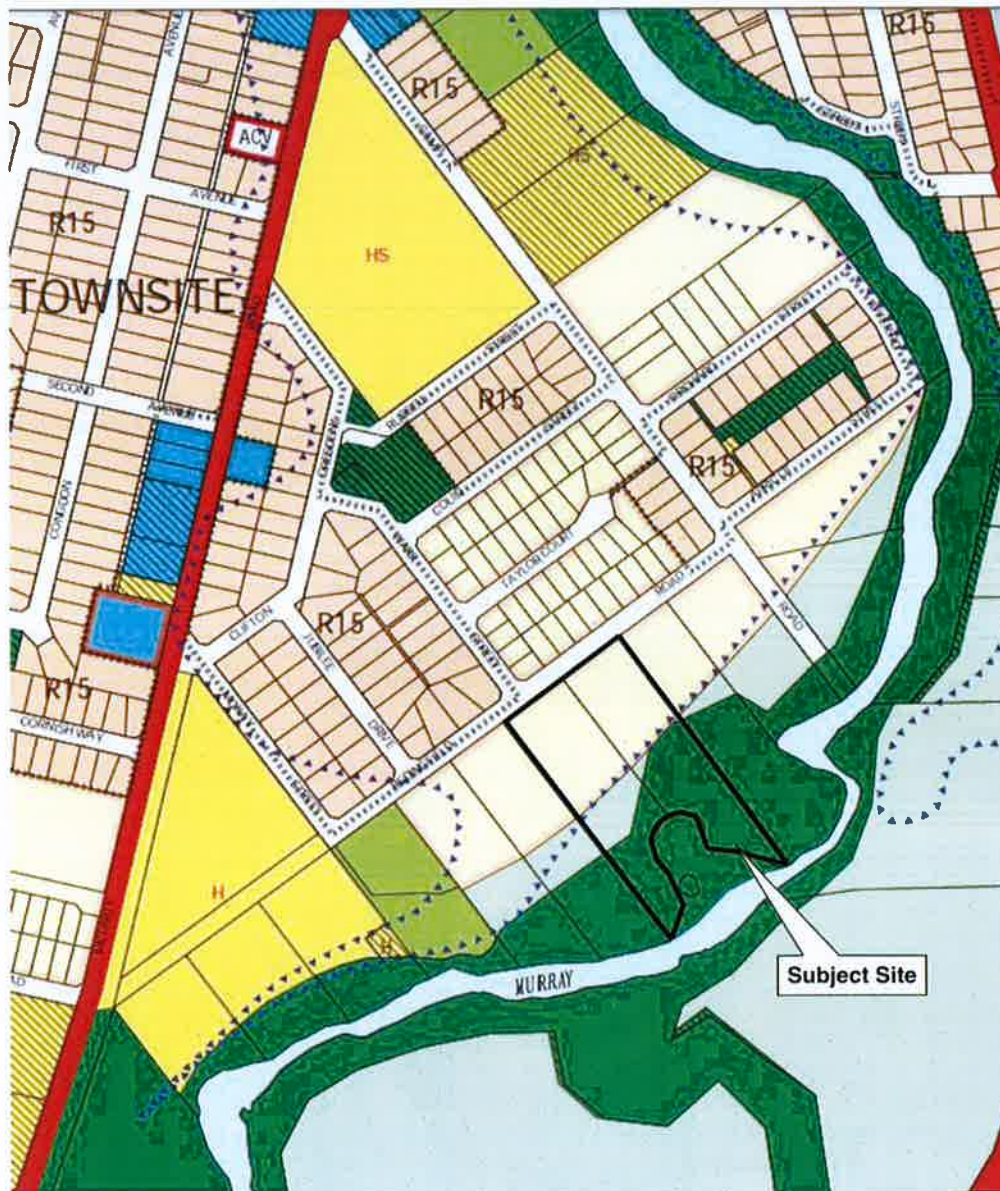
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10. Appendices

Appendix A: Site Location



Residential General Structure
Planning & Design Services
2005-2006 Financial
Year: 2005-2006
2006-2007
2007-2008
2008-2009

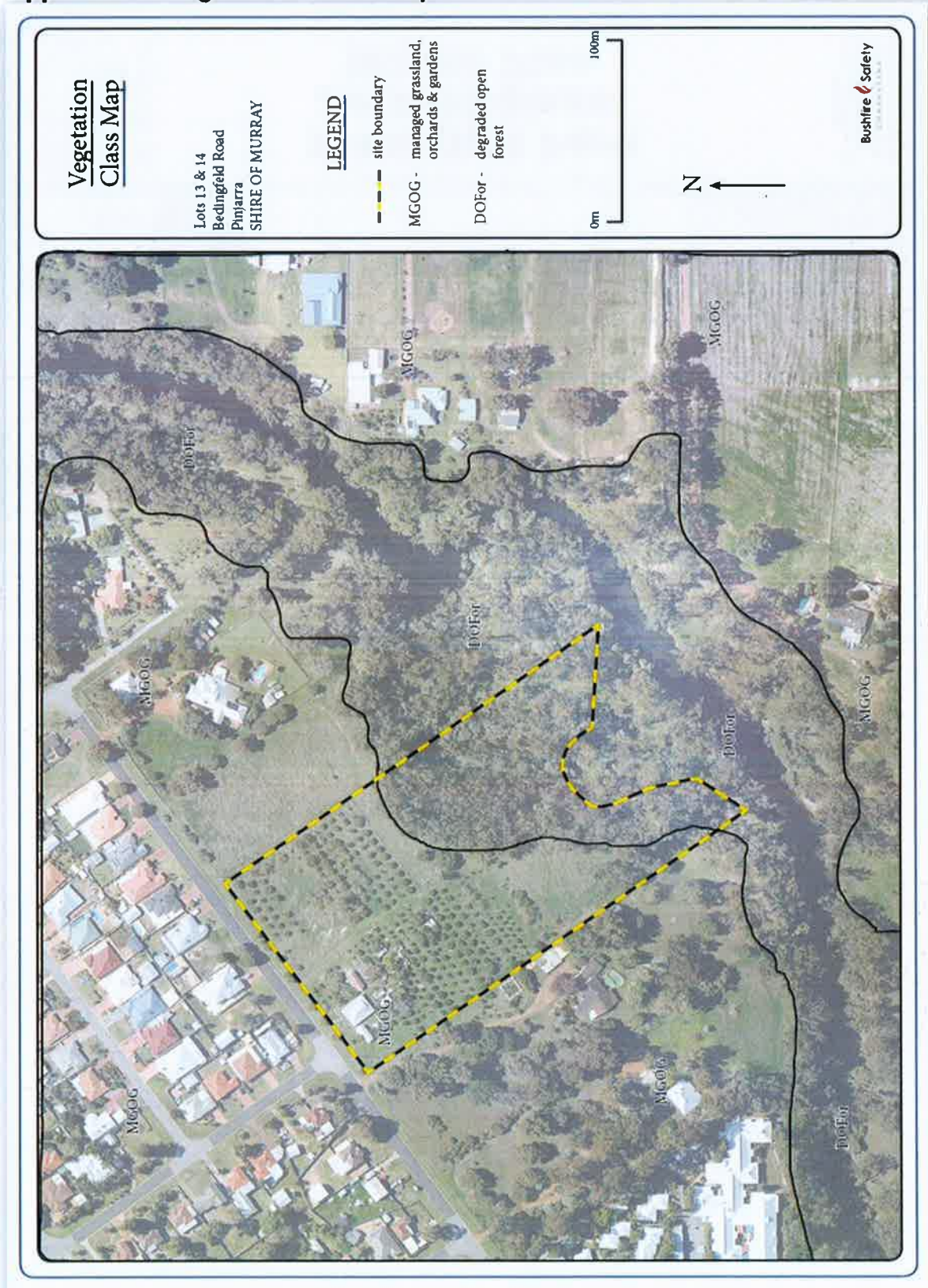
Location Plan
Lots 13 & 14 Bedingfeld Road
PINJARRA



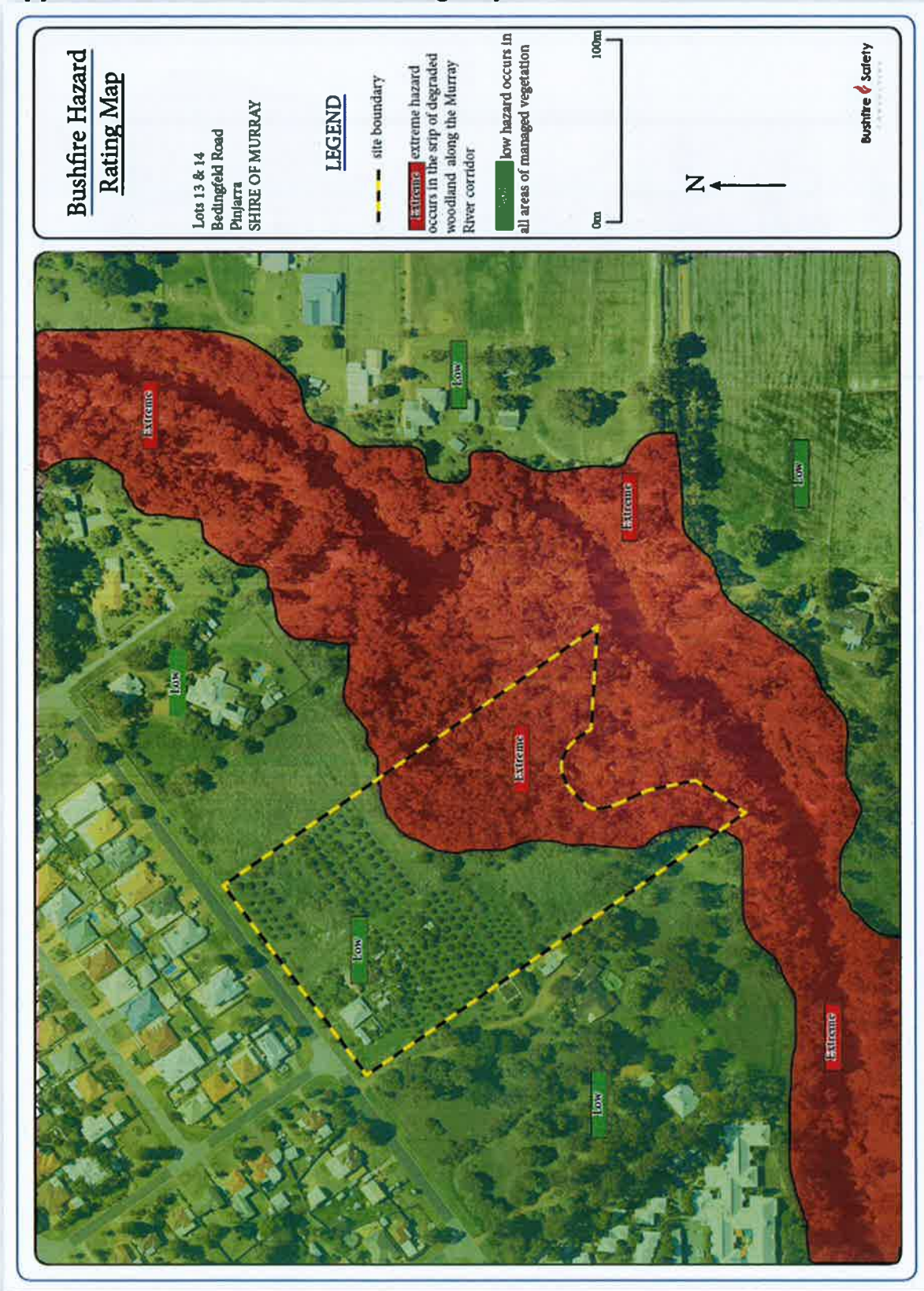
Figure 1

This map is intended to provide a general overview of the site location. It is not intended to be used as a legal document. The map is not to scale. The map is not to be used for any other purpose. The map is not to be used for any other purpose. The map is not to be used for any other purpose.

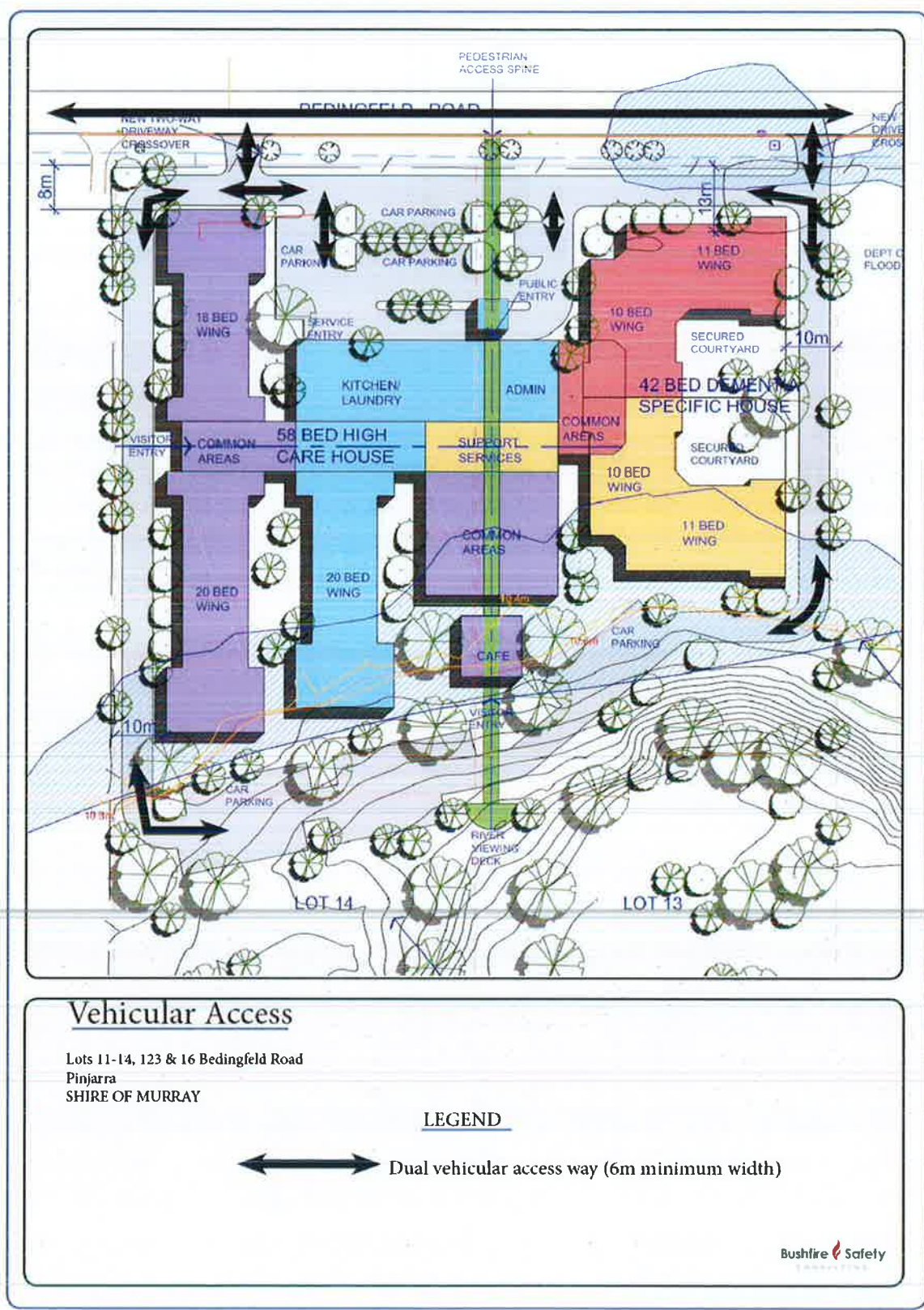
Appendix C: Vegetation Class Map



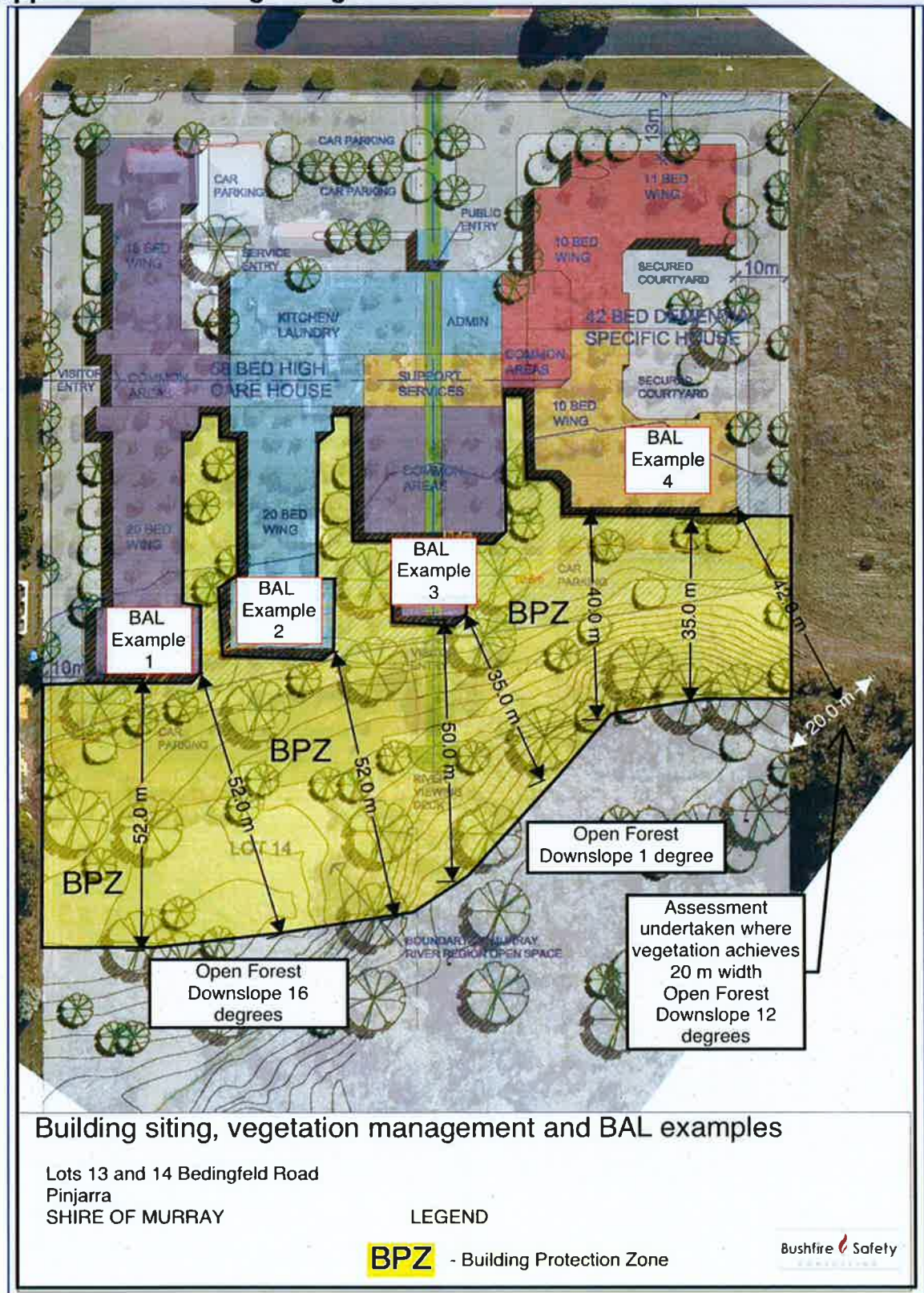
Appendix E: Bushfire Hazard Rating Map



Appendix F: Vehicular Access



Appendix G: Building Siting



Appendix 7

Aboriginal Heritage Report

Proposed Outline Development Plan

Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

**Preliminary Report
Ethnographic Survey & s.18 Consultations at
Proposed Bedingfeld Park Redevelopment, Bedingfeld Rd, Pinjarra,
Tuesday 29th January 2013**

Participants

Aboriginal Spokespersons Group 1 (9.00 am):

Harry Nannup, Gloria Kearing, Karrie Anne Kearing, Franklyn Nannup, George Walley.

Aboriginal Spokespersons Group 2 (2.00 pm):

Clarry Walley, Joanna Corbett, Shannon Kearing, Barbara Abraham.

Brad Goode & Associates:

Bob Chown (Consulting Anthropologist)

Stuart Johnston (Consulting Archaeologist)

Proponent Representatives:

Scott Hambley (Architect)

Phil Bayley (Bayley Environmental Services)

Consultation 1

Bob and Stuart met the Group 1 Aboriginal spokespersons at the Memorial Site then relocated to the proposed development area on Bedingfeld Road. The first consultation formally commenced at 9.35 am. Scott gave an A3 sized *Aerial Overlay Plan* to each of the Aboriginal spokespersons and provided a briefing on the proposed development. Bob outlined the purpose of the ethnographic component of the survey which was to identify any heritage sites that may be disturbed by the development and seek the opinions of the Aboriginal spokespersons about the s.18 Application. Phil provided details of environmental aspects of the development. Scott explained that although the Shire supports the eventual development of all six Lots shown on the Plan, Bedingfeld Park Aged Care Inc. only owns Lots 12, 13 & 14, and Lots 11, 123 and 16 are privately owned. As such the current survey only concerns Lots 12, 13 & 14.

The Aboriginal spokespersons requested an opportunity to talk amongst themselves for approximately 10 minutes. Harry Nannup left the party and drove away in his vehicle but then returned shortly afterwards. After Harry returned the Party walked south east through Lot 13 towards the Murray River and stopped at the rear of the Lot at the edge of the 100 year flood plain where the ground level starts to fall away down to the River.

The spokespersons confirmed the existence of the two previously registered sites, "Murray River" and "Battle of Pinjarra". There was some lack of clarity expressed about the precise boundaries of both these sites.

With respect to the "Murray River" site the spokespersons were not clear if the boundaries of the site, given its mythological associations with the Waugal, extend 30m back from the actual banks or the 100 year flood plain shown on the Plan. Phil stated that he understood the "Murray River" heritage site boundaries were 30m back from the banks of the River and as such the proposed developments would be well clear of the site boundaries. Bob said he will check with the DIA to make sure this was the case. Franklyn suggested that what happens on the ground is different from lines drawn on a map. Bob said that if the spokespersons had concerns about the boundaries of the "Murray River" site this could be reported to the DIA, but the mythological beliefs would have to be documented in detail and reasons clearly stated if the aim was to change the DIA site buffer.

Regarding the "Battle of Pinjarra" site all spokespersons confirmed that the "massacre" of their people occurred in the close vicinity of the proposed development. They explained that what is hurting the people is the lack of certainty about the location of graves of many of the ancestors that were killed in the massacre. Many graves have yet to be found. The spokespersons likened the immediate area to a "graveyard" of their ancestors and as such the proposed development represents an extremely sensitive issue. George said that he and the other spokespersons were not feeling comfortable about any development in the area given the uncertainties about grave locations. Harry commented that he would not be able to sleep that evening after visiting the site. Harry said that he had felt a spiritual unease earlier and that was the reason for his short absence from the survey.

George said that the response to the development proposal, being as close as it is to the documented location of the massacre and purported graves, "as per George Smyth's map of 1836", requires wider input from the Aboriginal community. Although at the outset the spokespersons had requested to be consulted in two separate groups, George and the others now felt that the matter of is of such high importance they did not want to make the recommendations themselves without others' voices being heard. George proposed that he arrange a meeting with the spokespersons from Group 2 so that a unified response can be achieved, and this proposal was supported by all other spokespersons. George left the consultation at 10.30 am.

Bob asked the spokespersons what essential Ministerial conditions would be required in the event that the s.18 application receives Ministerial consideration. Harry said that Aboriginal monitors must be present for all surface excavations and radar surveying over the entire area right down to the River bank. Karrie Anne said that the proposed meeting with the spokespersons of Group 2 "is not about personal matters; it is about the cultural heritage of the whole of the local Aboriginal community".

At the end of the consultation all Group 1 spokespersons signed a written statement which reads as follows:

We are unable to make clear statements and recommendations about the proposed development without consulting more widely with other relevant Nyoongar community members.

Owing to the great importance of these two heritage sites (#3786 and #3537) and sensitivity, we will meet with other families within 2 weeks so that a unified and widely considered response can be drawn up.

We would be grateful for fees to be paid by the developer to assist with the costs associated with convening the community meeting among the families.

Consultation 2

After meeting the Group 2 Aboriginal spokespersons at the Memorial Site the party relocated to the proposed development area on Bedingfeld Road and the consultation formally commenced at 2.45 pm. The briefings provided by Scott and Phil were the same as for Group 1.

Bob advised Group 2 spokespersons that Group 1 spokespersons had requested a meeting with them to develop a unified position. The Group 2 spokespersons said that they would consider the request for a meeting with Group 1 when approached by them at a later date, but they were willing and able to proceed with the survey and express their own group's opinions and recommendations without any further delay.

The spokespersons confirmed the existence of the two previously registered sites, "Murray River" and "Battle of Pinjarra".

Joanna Corbett said she had heard that the Shire wanted to build a pedestrian boardwalk along the top of the bank of the River. Scott said that the Boardwalk idea had been mooted several years ago, however no progress had been made and any firm plans would be subject to approval by other Authorities and several land owners of the Lots along Bedingfeld Road. The spokespersons did not support the Shire's boardwalk proposal because it fails to recognise and respect that their ancestors had been killed in the River and along the riverbanks during the massacre.

The spokespersons were concerned to restrict access to the River banks by the public, including the residents and visitors at the proposed development. They were also concerned that the steep banks could present a hazard to the aged residents. They recommended that the development should have a perimeter fence around its boundaries. Scott stated that the intentions were to have restricted access to the Aged Care Facility.

The Party walked south east through Lot 13 towards the Murray River and stopped at the rear of the Lot at the edge of the 100 year flood plain.

Like the Group 1 spokespersons, the group 2 spokespersons expressed spiritual sensitivities about the area. Barbara for example said that she had once photographed her son close to the River and when the photograph was developed there were faint images of tribal ancestors in the background. Barbara said she was sufficiently concerned that she showed photograph to the local Policeman.

At the end of the consultation all Group 2 spokespersons signed a written statement which reads as follows:

We do not object to the proposed development, but on the basis that the following conditions must be honoured:

- 1). *Before any works proceed a thorough ground penetrating grid survey must be undertaken to ensure that no cultural artefacts, burials, skeletal remains are on the development area.*
- 2). *The development is to be fenced off from general public access around the perimeter.*
- 3). *If any cultural artefacts are found during the grid survey the developers must consult with Clarry Walley regarding the management of these artefacts.*
- 4). *Aboriginal monitors must be employed during any and all surface excavation during the development.*
- 5). *Appropriate signage and recognition of the massacre site should be installed in consultation with Clarry Walley.*
- 6). *Consideration be given to our recommendation that prior to any works conducted in the public open space close to the River by any Authority in future, thorough surveys for cultural materials should be undertaken.*



**Hon Peter Collier MLC
Minister for Education; Aboriginal Affairs; Electoral Affairs
Leader of the Government in the Legislative Council**

Our Ref: 34-27851

Mr Scott Hambley
Member of Management Committee
Bedingfeld Park Incorporated
311 Gobby Road
KEYSBROOK WA 6126

Dear Mr Hambley

I refer to the section 18 notice (the Notice) dated 14 June 2013 submitted by Bedingfeld Park Incorporated (the Landowner) to the Aboriginal Cultural Material Committee (ACMC) pursuant to section 18(2) of the *Aboriginal Heritage Act 1972* (AHA). The Notice was considered at the 14 August 2013 ordinary ACMC meeting.

The Notice advised that you wish to use the land described in Item 4 of the Notice as a portion of Lot 14, a portion of Lot 13 and a portion of Lot 12 Bedingfeld Road, located within the township of Pinjarra, south east of Perth, Western Australia as described in the map titled 'Map of Aboriginal heritage sites and places in relation to the Bedingfeld Park Redevelopment RACF, Pinjarra W.A. Section 18 Consent Notice' dated 30 May 2013 (the Land), for the purpose described in Item 6 of the Notice as the construction of a 100 bed Residential Aged Care Facility (the Purpose).

I am advised that based on current knowledge the Purpose will impact upon one Aboriginal site within the meaning of section 5 of the AHA (Site) on the Land. The Site is DAA 3786 (Battle of Pinjarra).

In accordance with my powers under section 18(3) of the AHA and following consideration of recommendations from the ACMC, I hereby grant consent to the use of the Land for the Purpose subject to the conditions set out below.

Conditions of Consent

That the Landowner:

1. Provides a written report to the Registrar of Aboriginal Sites (the Registrar) within 60 days of the completion of the Purpose, advising whether and to what extent the Purpose has impacted on the Site located on the Land. The final report should include a detailed description of:
 - a. what extent the Purpose has impacted any Aboriginal Site on the Land;
 - b. where any Aboriginal Site has been impacted, whether such Site has been partially or wholly impacted by the Purpose, and the level, effect and type of any such impact – preferably by the provision of photographs taken before and after the impact;
 - c. where any Aboriginal Site has been subject to archaeological or cultural investigation, when and how such investigation took place, who was present at the investigation and where the material was re-located, the results of the salvage and any subsequent analysis conducted; and
 - d. the results and findings of any monitoring of ground disturbing works associated with the Purpose.

The above condition is imposed in order to:

- protect and preserve, whenever possible, Western Australia's Aboriginal heritage;
- ensure the appropriate protection and preservation of the State's Aboriginal heritage; and
- ensure that important relevant information is recorded and the Register of Aboriginal Sites is updated.

The Registrar and the ACMC welcome any advice in writing on all or any of the matters outlined above at any time prior to the completion of the Purpose to bring about comprehensive and updated information about Sites, and objects within the meaning of section 6 of the AHA, in Western Australia.

Failure to comply with these conditions may constitute an offence under section 55 of the AHA. The Department of Aboriginal Affairs (DAA) carries out routine checks on compliance with conditions of Ministerial consent.

Requests and Advice

The ACMC acknowledges and supports the agreements specified in the Notice.

Right of Review of Decision

Where the Landowner (or authorised Agent) is aggrieved by a decision of the Minister made under section 18(3) of the AHA, the Landowner may apply to the State Administrative Tribunal for a review of the decision. The Tribunal's website is www.sat.justice.wa.gov.au.

Other Matters

This consent can only be relied upon by the Landowner (or authorised Agent). Any subsequent owner of the land within the meaning of the AHA must make their own application under the AHA.

Copies of the AHA, the *Aboriginal Heritage Regulations 1974* and the *State Administrative Tribunal Act 2004* may be viewed and downloaded from the website of the State Law Publisher at www.slp.wa.gov.au.

If you have any queries in relation to your application, please contact Mr Aidan Ash, DAA Senior Advice and Approvals Officer, on (08) 6551 8000.

Kind regards



Hon Peter Collier MLC
MINISTER FOR ABORIGINAL AFFAIRS

7 OCT 2013

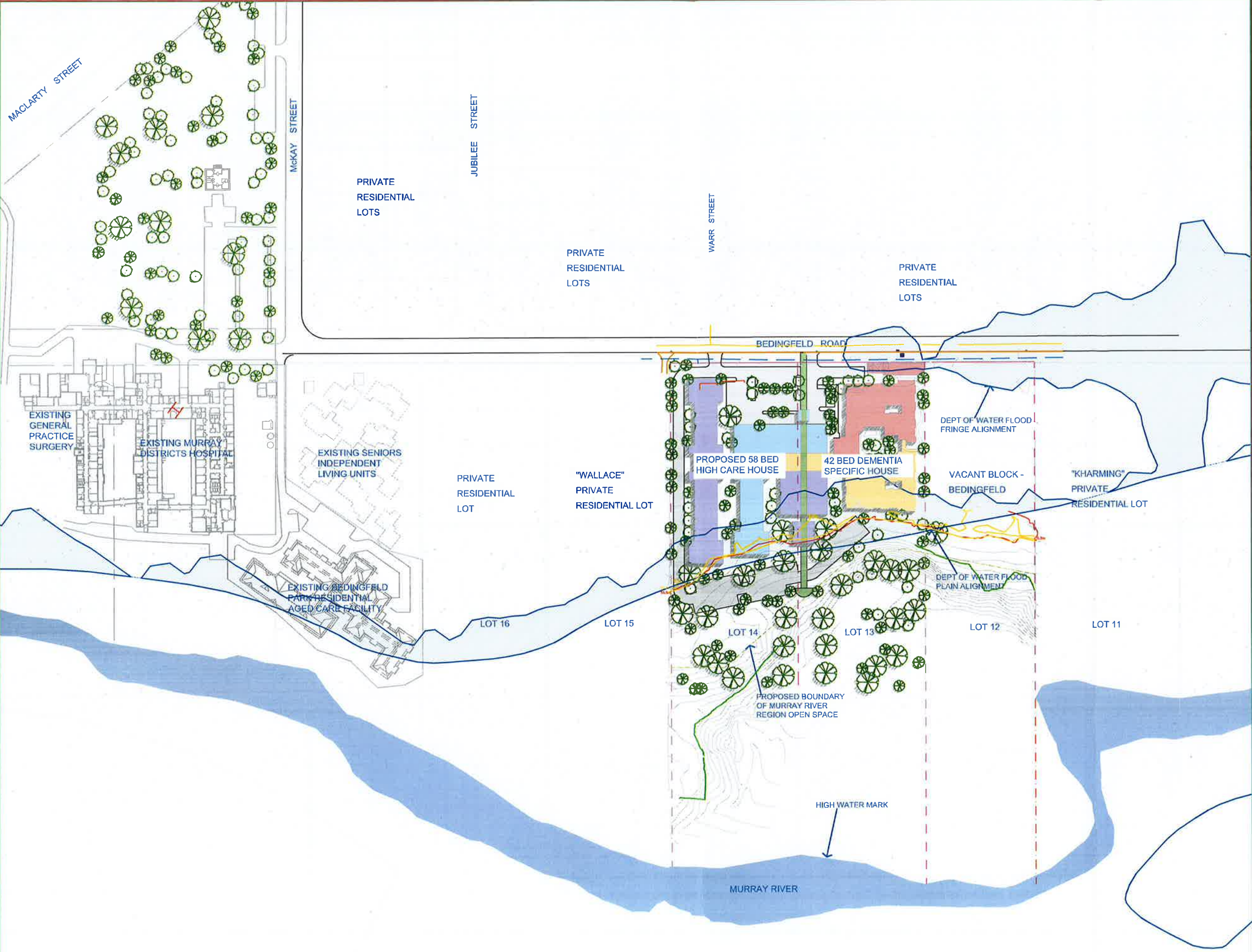
Appendix 8

Bedingfeld Park Redevelopment Master Plan

Proposed Outline Development Plan

Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra

**Neighbourhood
Redevelopment
Master Plan**



BEDINGFELD PARK INCORPORATED
AGED CARE FACILITY

Neighbourhood Plan SK1.02(e)

Date: 25.06.13 Scale: 1:2000 Job No.: 0212

A. Scott HAMBLEY
B. Arch. AS/NZS 4840:2002
On-site AS/NZS 4840:2002
Website: www.ashanblayarchitect.com.au
Email: ash@ashanblayarchitect.com.au
RESIDENTIAL AGED CARE PROJECT MANAGEMENT

ARCHITECT
3111 Gough Road
Perth WA 6002
Phone: 08 9511 1219
Mobile: 0417 175 510

Appendix 9

Summary Traffic Impact Statement

Proposed Outline Development Plan

Lots 11-14, 16 & 123 Bedingfeld Road, Pinjarra



A. Scott HAMBLEY

B.Arch ABN: 60 766 329 274

On behalf of the A.S. & J.L. Hambley Partnership

Website: www.ashambleyarchitect.com.auE-mail: ascotth@oceanbroadband.net

RESIDENTIAL

AGED CARE

ARCHITECT

311 Gobby Road

Keysbrook WA 6126

Phone: (08) 9513 1219

Mobile: 0417 173 410

PROJECT MANAGEMENT

REPORT

Client: Bedingfeld Park Inc.

Job No.: 0212

Attention: Deborah McLeod

Date: 28/03/13

Project: Bedingfeld Park Redevelopment – Pinjarra

Pages: Page 1 of 4

Summary Traffic Impact Statement**Existing Facility**

Bedingfeld Park Inc. currently operate a 45 bed Residential Aged Care Facility at 4 Bedingfeld Road, Pinjarra with onsite parking provided for staff and visitors and some limited parking for the general public. Access to the site is via two single lane roadways with crossovers onto Bedingfeld Road.

Proposed Facility

The proposed new Residential Aged Care Facility will provide for 100 beds and include administration and support service areas. Car parking for all staff, visitors and general public will be provided onsite. None of the residents accommodated in the RACF will have any need for parking of personal vehicles.

Projected Traffic Movements

From the knowledge accumulated from the operation of the existing facility it is possible to estimate the number of vehicles entering and departing from the proposed development over a typical 7 day period.

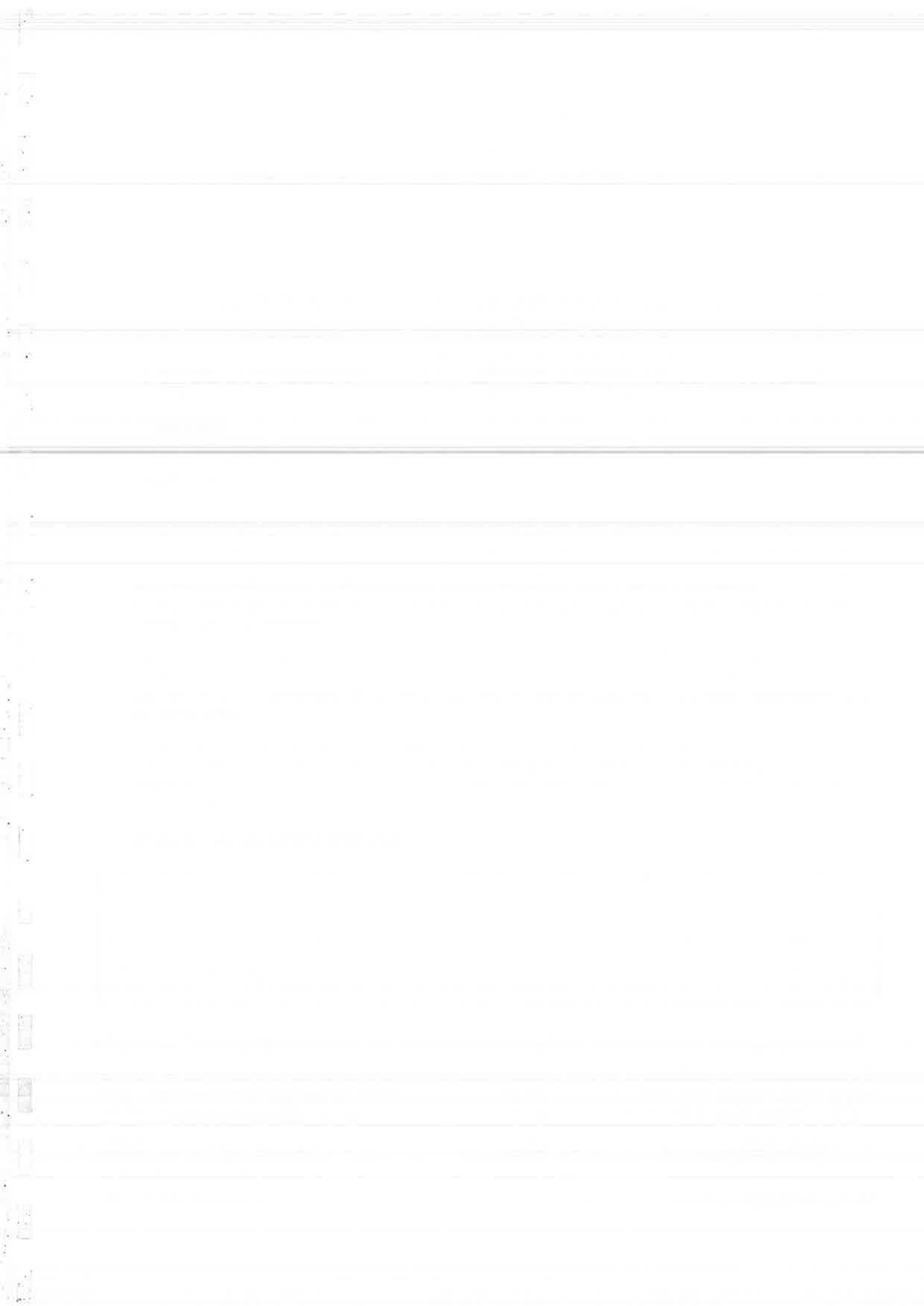
The calculations include all staff traffic movements based on typical work shifts and estimated numbers of visits to the site by resident's families and visitors and other people attending the site by vehicles such as medical support providers, tradesmen suppliers and miscellaneous visitors.

Staffing Numbers

To staff a 100 bed RACF it is estimated that the following shifts will be required;

Weekdays:

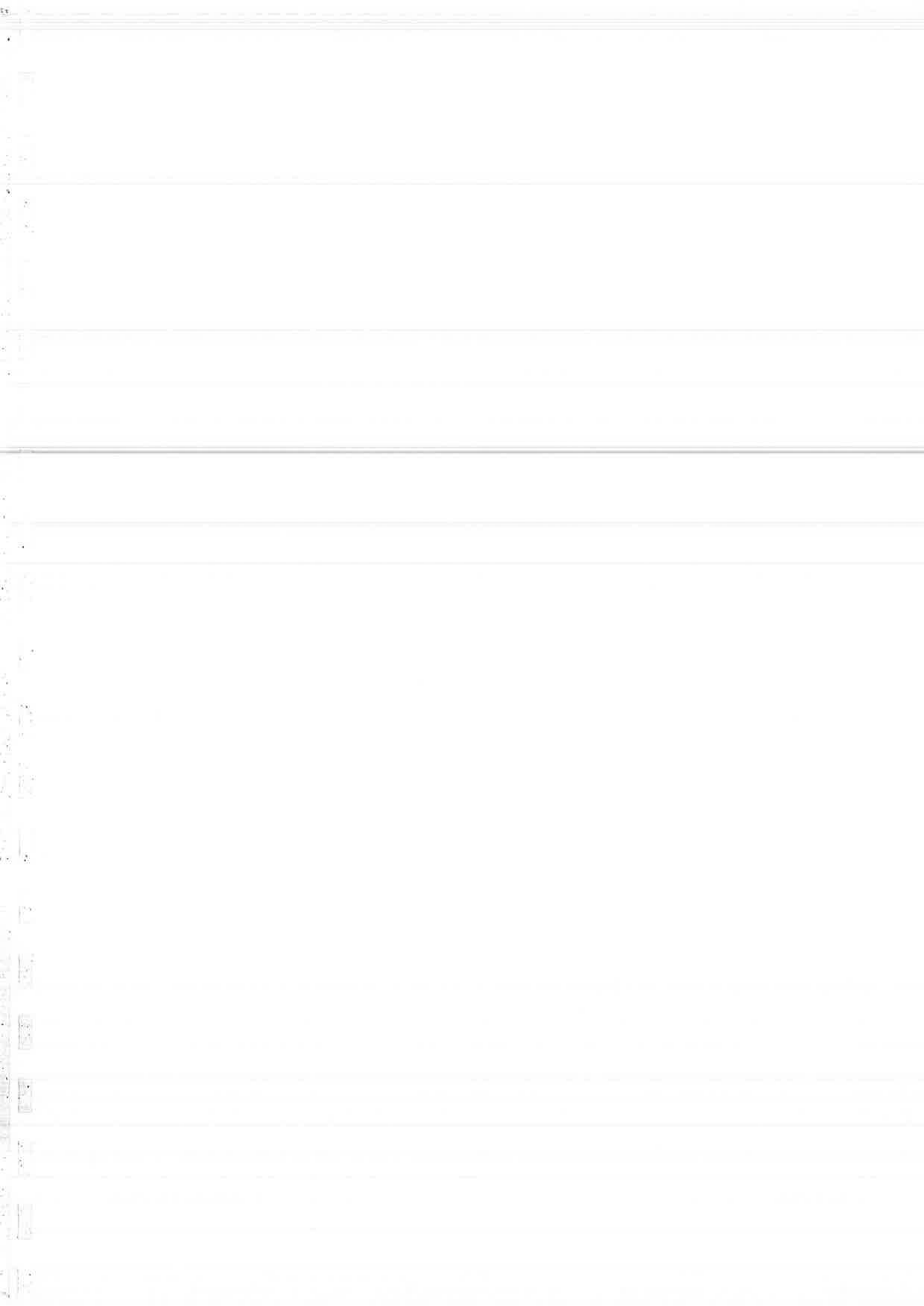
Shift	Staff	No.	Time On	Time Off	Vehicle Movements
Morning	Registered Nurses	4	07:00 hrs	14:30 hrs	8
	Carers	15	07:00 hrs	14:30 hrs	30
	Life Style Staff	6	07:00 hrs	14:30 hrs	12
	Laundry Services	5	07:00 hrs	14:30 hrs	10
	Kitchen Services	6	06:00 hrs	14:30 hrs	12
	Admin Staff	8	08:00 hrs	16:00 hrs	16
	Cleaning Staff	4	08:00 hrs	16:00 hrs	8
	Groundsmen + Orderlies	2	08:00 hrs	16:00 hrs	4
Afternoon	Registered Nurses	2	14:00 hrs	21:30 hrs	4
	Carers	15	14:00 hrs	21:30 hrs	30
	Kitchen Services	4	15:00 hrs	21:30 hrs	8
	Cleaning Staff	1	15:00 hrs	21:30 hrs	2



A. SCOTT HAMBLEY

ARCHITECT





Night	Registered Nurses	1	21:00 hrs	07:30 hrs	2
	Carers	5	21:00 hrs	07:30 hrs	10
Total		78			156 per day
					780 per week

Weekends:

Shift	Staff	No.	Time On	Time Off	Vehicle Movements
Morning	Registered Nurses	2	07:00 hrs	14:30 hrs	4
	Carers	15	07:00 hrs	14:30 hrs	30
	Life Style Staff	0	07:00 hrs	14:30 hrs	0
	Laundry Services	2	07:00 hrs	14:30 hrs	4
	Kitchen Services	4	06:00 hrs	14:30 hrs	8
	Admin Staff	1	08:00 hrs	16:00 hrs	2
	Cleaning Staff	1	08:00 hrs	16:00 hrs	2
	Groundsmen + Orderlies	1	08:00 hrs	16:00 hrs	2
Afternoon	Registered Nurses	2	14:00 hrs	21:30 hrs	4
	Carers	15	14:00 hrs	21:30 hrs	30
	Kitchen Services	4	15:00 hrs	21:30 hrs	8
	Cleaning Staff	1	15:00 hrs	21:30 hrs	2
Night	Registered Nurses	1	21:00 hrs	07:30 hrs	2
	Carers	5	21:00 hrs	07:30 hrs	10
Total		54			108 per day
					216 per weekend

Assuming that all staff travel to and from work in their own vehicles the total number of vehicle movements from staff is estimated to be 780 (weekdays), 216 weekends hence a total of 996 per week. The times of the day when the staff vehicle movements are made are summarised below;

Day	Time Period	Vehicles In	Vehicles Out	Vehicle Movements
Weekday	06:00 – 08:00 hrs	50	6	56
	14:00 – 16:00 hrs	22	50	72
	21:00 – 21:30	6	22	28
Weekend	06:00 – 08:00 hrs	26	6	32
	14:00 – 16:00 hrs	22	26	48
	21:00 – 21:30	6	22	28

The majority of traffic movements are made between 14:00 and 16:00 hrs on weekdays (72 movements), and between 06:00 and 08:00 hrs on weekdays (56 movements).

Visitor Numbers

From previous experience with the existing facility it is estimated that on average there will be 20 visits per day, weekday and weekend, from relatives and others visiting residents.

In addition it is estimated that another 6 visits per day will be made by tradesmen, ambulance, medical support staff and other miscellaneous people.



Therefore there will be approximately 52 traffic movements per day and 364 per week. The large majority of these movements will occur between 09:00 and 16:00 hrs.

Total Traffic Movements

Based on the figures above it is estimated that for each week day there will be a total of approximately 208 traffic movements (156 staff and 52 visitors) in and out of the completed facility. Similarly approximately 160 (108 staff and 52 visitors) movements in and out each weekend day.

Car Parking

Based on the calculations above it is estimated that the most number of vehicles on the completed facility site at any one time will be 78 (50 staff and 18 visitors) between 08:00 and 14:00 hrs on a typical weekday.

On site car parking will be provided to cater for these vehicles and special bays will be provided for disabled drivers, emergency vehicles and service vehicles.

Roadways and Crossovers

All internal roadways within the facility will be 6m wide bitumen sealed two-way carriageways designed to the specifications of the Shire of Murray.

Two 8m wide tapered crossovers will be provided to the requirements of the Shire of Murray and the Main Roads Department.



A. Scott Hambley

