AMENDED DRAWING
DATE DRN: 21-03-11

ONE WAY

BOUNDARY PEG
ASSUMED RL 100.00

6m ROAD
ACCESS ROAD TO OVERFLOW SITES
6m ROAD
6m ROAD
3.5m ONE WAY ROAD
2m VEGETATION STRIP
6m ROAD
6m ROAD
PLAY AREA
CAMPERS KITCHEN
4.5m ROAD
4.5m ROAD
6m ROAD
6m ROAD
FOOTPATH
4.5m ROAD
6m ROAD
FOOTPATH
6m ROAD
2m VEGETATION STRIP
6m ROAD
1.7m BUFFER
GAZETTED ROAD
6m ROAD
CONSTRUCTED ROAD (2010)
EXISTING CHALET
EXISTING CHALET
EXISTING CHALET
EXISTING CHALET
OFFICE SHOP
SLIP ROAD
CAFE/ SHOP
CAR PARK
BOOM GATES
MINI GOLF
LAUNDRY & RECEPTION
6m ROAD
EXISTING CHALET
EXISTING CHALET
EXISTING CHALET
EXISTING CHALET
EXISTING CHALET
EXISTING CHALET
COMBINED SERVICES CORRIDOR
OCEAN BEACH ROAD
250m²
250m²
250m²
250m²
250m²
250m²
250m²

NOTES:
PROPOSED ROADS ARE SEALED AND 6m WIDE (KERB TO KERB)

KERBING IS TO BE FLUSH TO FACILITATE VERGE RUN-OFF AND INFILTRATION, OR MOUNTABLE WITH SUFFICIENT TURNOUTS

KERB RADIUS CONFORMS TO AUSTROADS STANDARD FOR A MOTOR VEHICLE

LEGEND

- 20.0 m / 12.5 m — 250m² — PROPOSED PARK HOME LOTS
- RECREATION AND OPEN SPACE
- CARAVAN CAMPING SITES
- NEWLY CONSTRUCTED ABLUTIONS
- PROPOSED SHORT STAY CHALETS
- OVERFLOW SITES (APPROX. 60 SITES)
- ECO-FRIENDLY BIOPOD (WASTE WATER)
- PROPOSED ROADS
- FUTURE WORKS
- VEGETATION STRIP (SEPARATION BUFFER)

N
W E
S

0m 20m 40m 60m 80m 100m

OCEAN BEACH CARAVAN PARK
PROPOSED DEVELOPMENT (March 2011)

OCEAN BEACH CARAVAN PARK
Phone (08) 9848 1105
Fax (08) 9848 1106
Ocean Beach Road Denmark WA 6333
Postal Address: Post Office Box 351, Denmark WA 6333

DATE DRN:	21-03-11
DATUM:	GDA / ASSUMED HT
CCAD JOB:	07OCEAN
AUTHORISED:	R.FOWLER
SCALE:	AS SHOWN
DRG No:	T&P036-11

T & P Design
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16 Hooper Place
Bunbury 6230
0429 159 195
tpdesign@aapt.net.au

Attachment 8.1.1 a)

Risk Management
Community Safety
Wildfire Protection
Project Management

Fire Protection

Ocean Beach Caravan Park

Shire of Denmark

Attachment 8.1.1 b)

Fire Protection

Ocean Beach Caravan Park

Shire of Denmark

9 July 2011

Contact details

ICS Group
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E-mail: kbraun@icsgroup.com.au

Disclaimer

Representations, statements, opinions and advice expressed or implied in this document are based on information contained in the *Planning for Bush Fire Protection Guidelines* (Edition 2, FESA & WAPC, 2010), the *Australian Standard for the Construction of Buildings in Bushfire-prone Areas* (AS3959–2009), the Shire of Denmark Fire Regulation Notice 2010/11 and a field inspection undertaken in April 2011.

Any representation, statement, opinion, or advice expressed or implied in this document is made in good faith, and on the basis that the ICS Group is not liable for any damage or losses whatsoever which may occur as a result of action taken or not taken (as the case may be) in respect of any representation, statement, opinion or advice referred to herein.

ICS Group

ICS Group specialises in risk and emergency management, wildfire protection and community safety. It provides consultancy services in fire preparedness and response planning, wildfire investigation, wildfire behaviour research and fire impact assessment.

Klaus Braun

Klaus Braun, the principal of ICS Group, has completed wildfire risk management and wildfire behaviour projects for State and Local Governments, as well as for corporate clients within the plantation and insurance industry. He assisted with the Council of Australian Governments National Inquiry on Bushfire Mitigation and Management (COAG, 2004), and conducted research in wildfire behaviour and impact in blue gum plantations in Australia and Portugal.

Klaus Braun presented papers on wildfire risk management at State, National and International conferences.

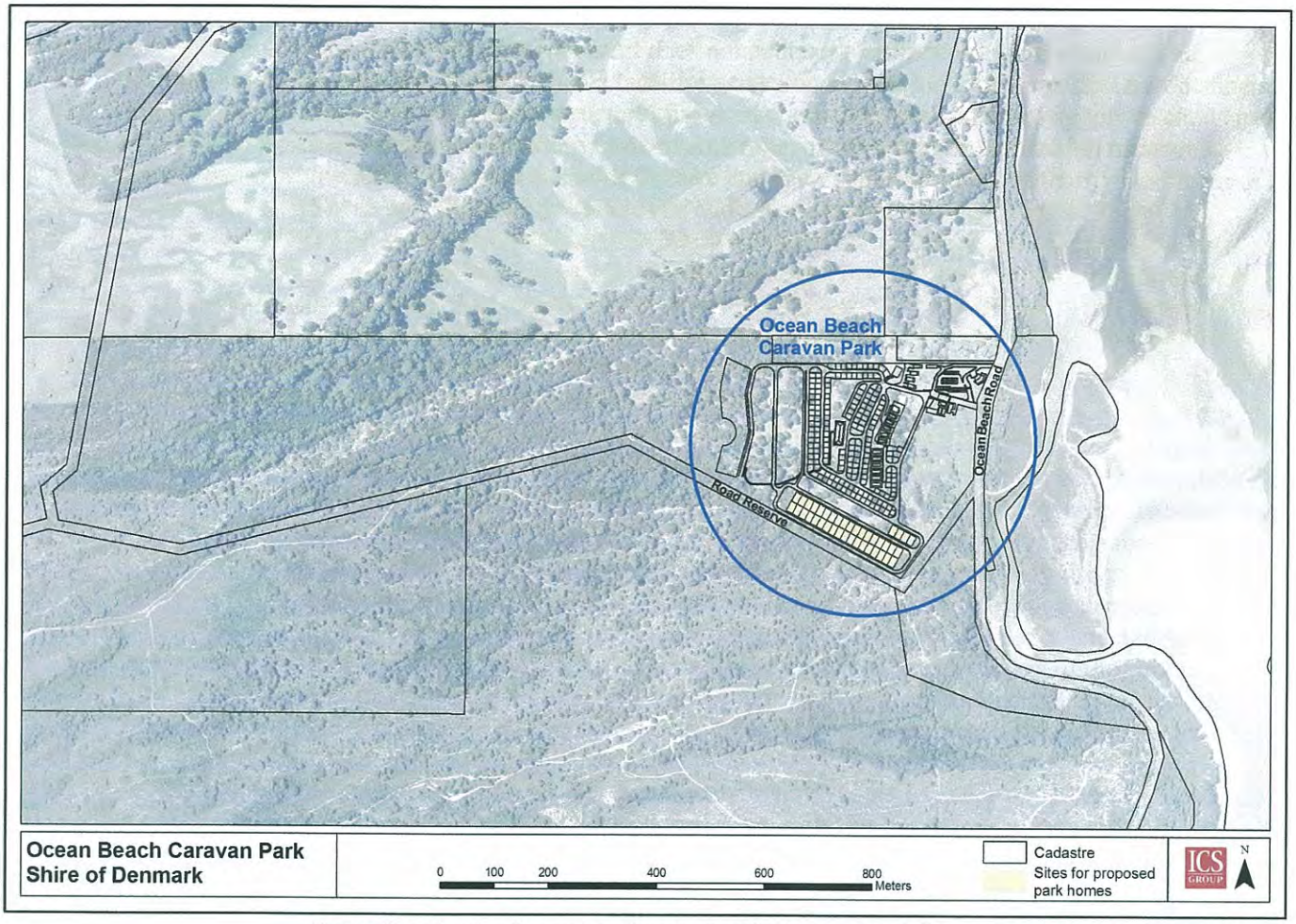
Prior to forming the ICS Group, Klaus has worked as Manager Wildfire Prevention and Environment Branch, Operations Manager, Regional Fire Safety Officer with the Bush Fire Service and the Fire and Emergency Services Authority of Western Australia. During this time he coordinated a number of major fire operations, developed the framework for wildfire mitigation planning in Western Australia, and undertook wildfire investigations.

Contents

1 Introduction

1.1 Location

The Ocean Beach Caravan Park is approximately 8km south of the Denmark townsite. Access to the caravan park is via Ocean Beach Road.



Above: Map showing the proposed upgrade of the Ocean Beach Caravan Park. The proposed park homes are located along the southern boundary of the caravan park.

1.2 Background information

The owners of the Ocean Beach Caravan Park are proposing to upgrade the Ocean Beach Caravan Park. A number of plans for this upgrade have been prepared and have been provided to the Shire of Denmark and the Department of Planning. The proposed upgrade includes sites for 40 park homes adjacent to the southern boundary of the caravan park.

The Shire of Denmark has requested that a site assessment is undertaken to determine the level of bushfire attack on, and the construction requirements for these park homes.

The owners of the Ocean Beach Caravan Park are liaising with the Shire to clarify whether it is possible to maintain bushfire fuels at low levels in the unmade road reserve along the southern and south-eastern boundaries of the caravan park.

A site inspection was undertaken by ICS Group in April 2011.

1.3 Scope

This document addresses bush fire protection requirements for the proposed park homes at the Ocean Beach Caravan Park. It is based on the plan for the proposed upgrade of the Ocean Beach Caravan Park, which was provided by the owners of the park. The fire protection document incorporates the requirements listed in the *Planning for Bush Fire Protection Guidelines* (Edition 2, FESA & WAPC, 2010), the *Denmark Shire Fire Regulation Notice 2010/11*, as well as the Australian Standard for the *Construction of buildings in bushfire-prone areas* (AS3959–2009).

This fire protection document does not address bushfire protection planning and operational aspects when a bushfire occurs on or near the caravan park. This document also does not address structural fire protection measures which may apply to caravan parks under the Building Code of Australia, or structural fire protection measures which the Shire of Denmark and/or the Fire and Emergency Services Authority may request. These aspects can (and should) be addressed separately.

2 Bush fire protection

2.1 General

The preparedness and behaviour of staff and guests at the caravan park, before, during and after a bush fire form an important part of bush fire risk management. This includes aspects such as being well informed about bush fire risk and risk management, leaving well before an area is affected by a bushfire, sheltering from a bush fire in a safe area, actively protecting buildings, being able to deal with small spot fires, the maintenance of buildings and their surrounds, wearing appropriate protective clothing and whether a suitable plan is in place for bush fires. The design and construction of the park homes contributes to bush fire safety. This cannot, however, replace adequate preparedness and the appropriate behaviour of staff and guests in relation to bush fire risk management.

This fire protection report addresses the requirements for a site assessment, setback distances and building construction in line with fire services, planning and local government requirements. It cannot achieve the preparedness and behaviour of staff and guests at the caravan park after the upgrade to the park has been undertaken. People who live, work and visit areas which may be exposed to bush fires must, therefore, take some responsibility to manage bush fire risk.

2.2 Fire suppression response

The Ocean Beach Caravan Park is approximately 2.5km by road from the Ocean Beach Bush Fire Brigade station. The brigade has a 2.4 urban/rural appliance and a fast attack.

The Denmark Fire and Rescue Services Brigade is approximately 8km by road from the Ocean Beach Caravan Park.

This provides an adequate fire suppression response. It meets the requirements of the Shire of Denmark and FESA.

2.3 Bush fire hazard assessment

Slope

The caravan park is located in a low-lying area and has very little or no slope. A coastal reserve is located to the south of the caravan park. Closer to the caravan park, the hills in the coastal reserve are up to 40m high. Further south they are over 100m high.

The caravan park and the sites for the proposed park homes are in the flat land (0°) slope category of AS3959.

Above: The Ocean Beach Caravan Park is in a low-lying area. The highest points in the hills in the coastal reserve to the south of the caravan park are over 100m high.

Bush fire hazard levels

Vegetation cover inside and to the south of the caravan park varies significantly. It includes grassed areas, parkland and woodland.

Above left: Caravan and tent sites in the centre of the existing caravan park.

Above right: a grassed area and paperbark trees near the south-eastern boundary of the Ocean Beach Caravan Park.

Above left: Existing tent sites close to the southern boundary of the caravan park.

Above right: An area of open peppermint woodland in the coastal reserve adjacent to the southern boundary of the caravan park.

Above left and right: Peppermint woodland in the coastal reserve south of the caravan park.

The *Planning for Bush Fire Protection Guidelines* (Edition 2, FESA & WAPC, 2010) contain two bush fire hazard assessment methodologies. Method 1 classifies the bush fire hazard at a strategic level. Method 2 of the guidelines is applied at development level and classifies the bush fire attack level in accordance with the site assessment contained in the Australian Standard for the *Construction of buildings in bushfire-prone areas* (AS3959–2009). The more detailed site assessment contained in the standard was undertaken for the proposed park homes along the southern boundary of the caravan park (see section 2.4 below).

Method 1 of the *Planning for Bush Fire Protection Guidelines* assigns a low hazard level to areas devoid of standing native vegetation (less than 0.25ha cumulative area). The guidelines assign an extreme hazard level to treed areas (this includes woodlands). A shortfall of this hazard assessment model is that it does not provide a reduced hazard rating for treed areas with no understorey vegetation or for treed areas which are hazard reduced.

Method 1 of the *Planning for Bush Fire Protection Guidelines* assigns an extreme bush fire hazard level to the vegetation in the unmade road reserve and in the coastal reserve to the south of the caravan park. An extreme bush fire hazard level is also assigned to the peppermint woodland in part of the existing caravan park.

It should be noted that the *Planning for Bush Fire Protection Guidelines* classify treed areas with no understorey vegetation and woodland areas where bush fire fuels are maintained below 8t/ha as *Hazard Separation Zones*. Many of the treed areas within the existing caravan park generally meet the requirements of a *Hazard Separation Zone*.

2.4 Bush fire attack levels – proposed park homes

As was mentioned above, a detailed assessment was undertaken for the sites for the proposed park homes along the southern boundary of the caravan park. The assessment was undertaken in accordance with the requirements of the Australian Standard for the *Construction of buildings in bushfire-prone areas* (AS3959-2009).

The standard has two assessment methods: *Method 1* which uses a simplified procedure and which applies default values to determine the *Bushfire Attack Level* (BAL), and *Method 2* which applies a more detailed procedure. The following assessment is based on *Method 1*.

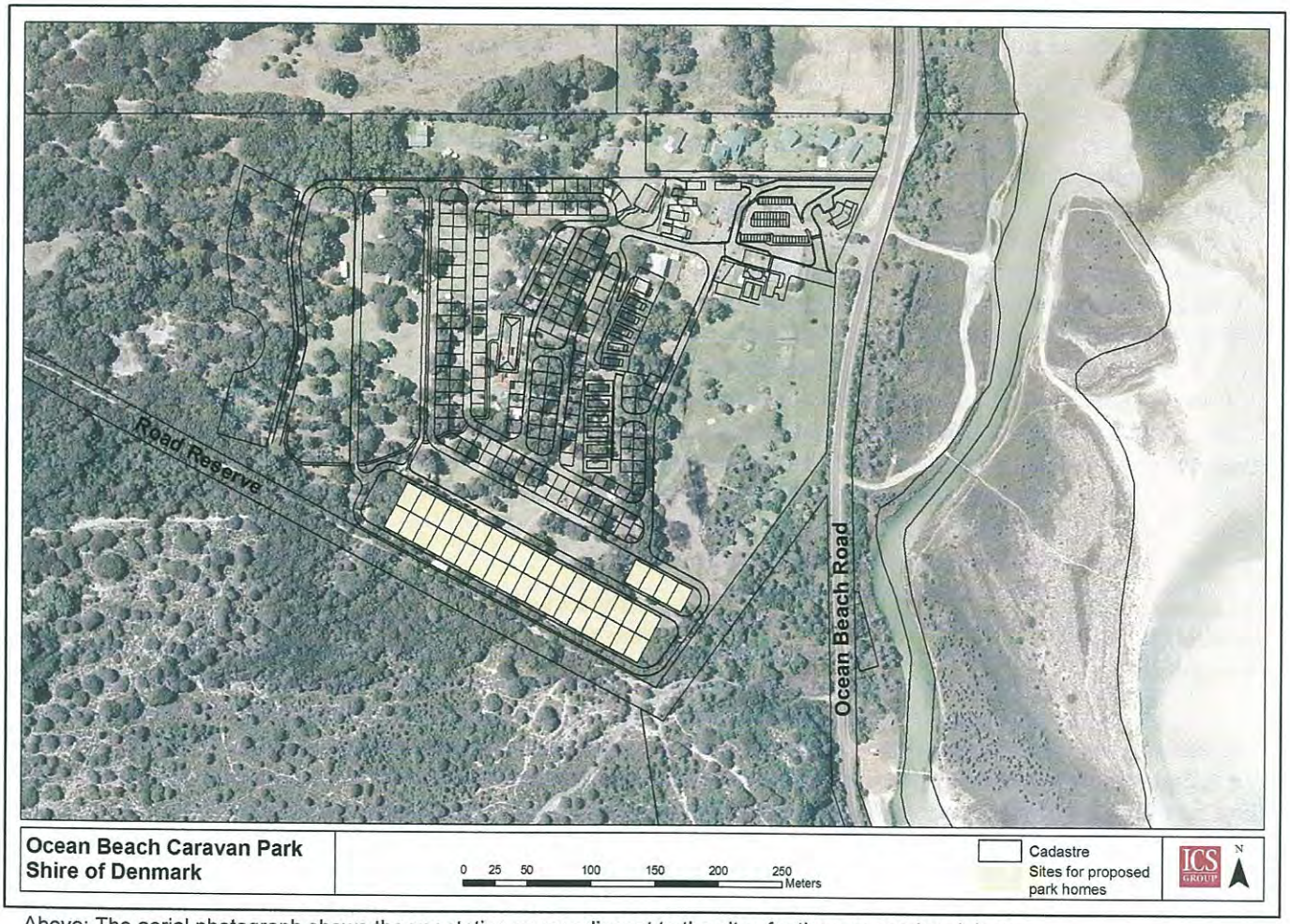
Fire danger index (FDI)

To determine the level of bushfire attack under AS3959–2009, the Australasian Fire and Emergency Service Authorities Council assigned a FDI of 80 to Western Australia.

Vegetation classification

AS3959-2009 requires that where there is more than one vegetation type, each type is to be classified separately and that the level of fire attack under the worst-case scenario should be applied.

The vegetation around the proposed park homes and within adjacent areas in the coastal reserve is peppermint woodland. Bushfire fuels loads in this area vary, but they are generally within the default overall fuel load of 25t/ha, which AS3959-2009 applies to the woodland vegetation class in the site assessment under *Method 1*. Lower bushfire fuel loads are found in the existing caravan park and in some parts of the reserve.



Above: The aerial photograph shows the vegetation cover adjacent to the sites for the proposed park homes.

Distance from vegetation

AS3959–2009 requires that the distance between the site and the classified vegetation is determined. The category of bushfire attack, and in turn the level of construction, is based on the distances between the site and the classified vegetation, as well as the vegetation class, effective slope and the fire danger index (FDI).

The maintenance and extent of a *Building Protection Zone* influences the outcome of a site assessment. Bushfire fuels are maintained at low levels in the *Building Protection Zone*. Where a wide *Building Protection Zone* is maintained, a lower level of construction applies. In cases where a narrow *Building Protection Zone* is maintained, a higher level of construction is required.

A number of solutions have therefore been provided based on different widths of the *Building Protection Zone*, rather than one solution which is based on a specific distance between the site and the classified vegetation. AS3959–2009 lists the following distances for woodland on flat land (0°).

Distance of the site from predominant vegetation class	**<10m**	**10 – <14m**	**14 – <20m**	**20 – <29m**	**29 – <100m**	**≥100m**
Category of bushfire attack	**BAL-FZ**	**BAL-40**	**BAL-29**	**BAL-19**	**BAL-12.5**	**Low**

Compliance with AS3959–2009 can be achieved where:

- The *building protection zone* is <10m wide and the building is constructed to a level which primarily provides protection from flame contact together with ember attack and radiant heat of more than 40kW/m^2 (BAL–FZ).
- The *building protection zone* is between 10m and <14m and the building is constructed to a level which primarily provides protection from an increased likelihood of flame contact, from ember attack and radiant heat greater than 29kW/m^2 and up to and including 40kW/m^2 (BAL–40).
- The *building protection zone* is between 14m and <20m and the building is constructed to a level which primarily provides protection from ember attack and radiant heat greater than 19kW/m^2 and up to and including 29kW/m^2 (BAL–29).
- The *building protection zone* is between 20m and <29m and the building is constructed to a level which primarily provides protection from ember attack and radiant heat greater than 12.5kW/m^2 and up to and including 19kW/m^2 (BAL–19).
- The *building protection zone* is between 29m and <100m and the building is constructed to a level which primarily provides protection from ember attack and radiant heat up to and including 12.5kW/m^2 (BAL–12.5).
- The *building protection zone* is maintained ≥100m, additional construction measures are not required (BAL–LOW).

Notes:

It is generally not recommended that buildings are constructed in areas where bushfire attack levels are very high or extreme – BAL–40 and BAL–FZ (Flame Zone). FESA and the Shire of Denmark are also unlikely to approve buildings in areas where bushfire attack levels are very high or extreme.

The Australasian Fire and Emergency Service Authority Council has advised that AS3959–2009 has a number serious flaws. Furthermore, AS3959–2009 applies a Fire Danger Index of 80 in Western Australia. However, most building losses and fatalities in Australia have occurred when the Fire Danger Index was in excess of 80. A conservative approach to building protection and people's safety should therefore be taken.

Building protection zone

Regulation 3 of the Shire of Denmark *Fire Regulation Notice 2010/11*, which applies to land zoned 'tourist', requires that a *Building Protection Zone* is maintained around all buildings to a width of 20m on level ground. Bushfire fuels within the *Building Protection Zone* must be maintained below 2t/ha.

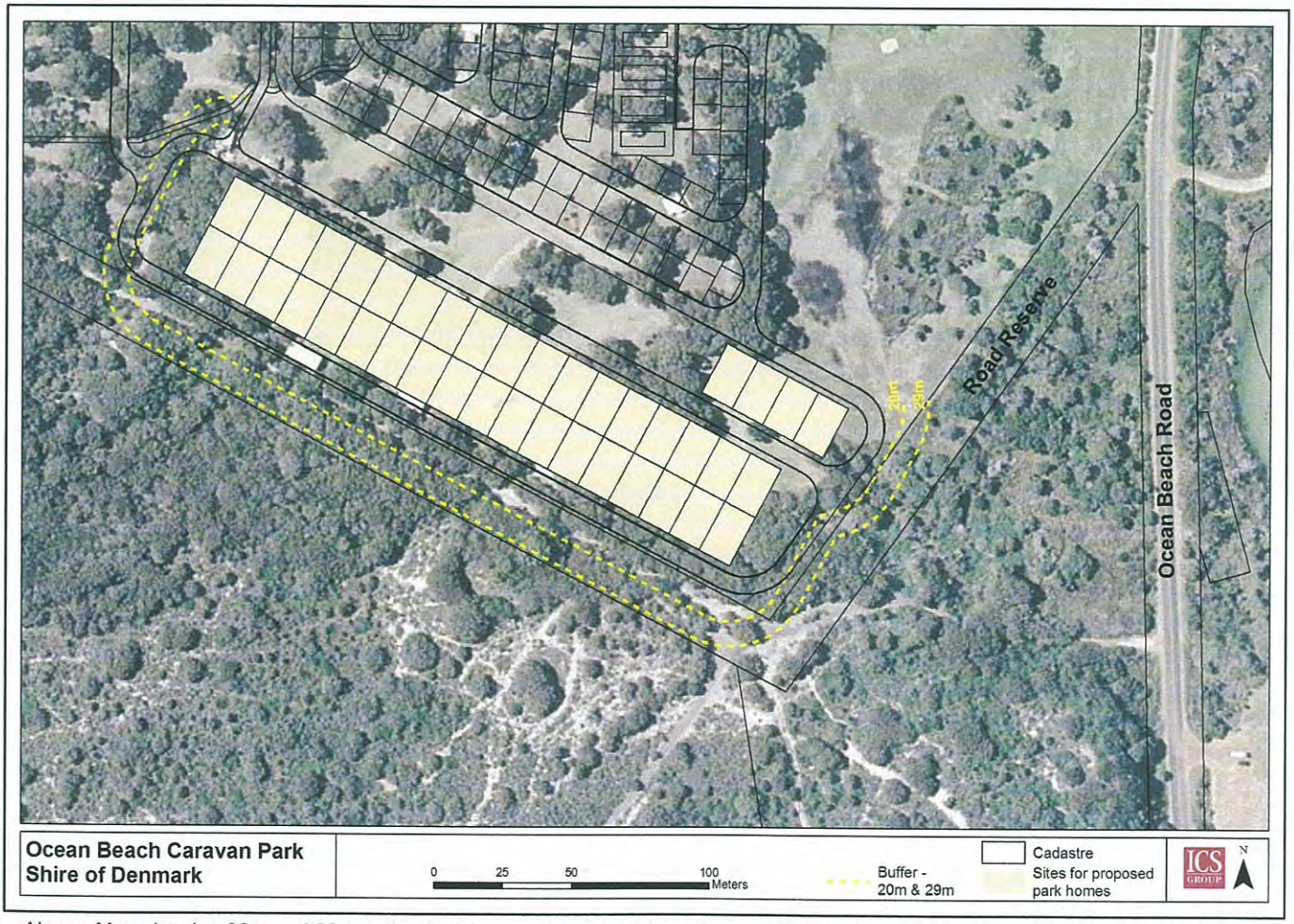
The *Planning for Bush Fire Protection Guidelines* (Edition 2, FESA & WAPC, 2010) also require that a 20m wide *Building Protection Zone* is maintained around buildings.

Hazard separation zone

The glossary of the Shire of Denmark *Fire Regulation Notice 2010/11* refers to *Hazard Separation Zones* where bushfire fuels have to be maintained below 5t/ha. However, the notice does not specifically require that a *Hazard Separation Zone* is maintained on land zoned 'tourist'.

The *Planning for Bush Fire Protection Guidelines* (Edition 2, FESA & WAPC, 2010) list the maintenance of a *Hazard Separation Zone* a minimum of 80m wide, between a *Building Protection Zone* and areas which may have an extreme level of bush fire hazard, as an acceptable solution to meet the performance criteria for the design of the development. The guidelines require that bushfire fuels within a *Hazard Separation Zone* must be maintained below 8t/ha. The guidelines also require that *Building Protection Zones* and *Hazard Separation Zones* are located within the development where the buildings are located.

The guidelines state, however, that the distances for *Hazard Separation Zones* and *Building Protection Zones* may be reduced and that compliance with AS3959 would meet the performance criteria for the design of the development.



Above: Map showing 20m and 29m setback distances, measured from the boundaries of the sites for the proposed park homes.

Road reserve

The plan for the upgrade of the Ocean Beach Caravan Park shows the proposed park homes close to the southern boundary of the caravan park. In order to reduce the level of bushfire attack in this area to BAL–29 or BAL–19, bushfire fuel loads must be maintained low to a distance of around 20m and 29m respectively. The low fuel area can be established by maintaining the current vegetation as open parkland and by maintaining bushfire fuel loads below 2t/ha.

On the south and south eastern sides, the 20m and 29m separation distances extend into the adjacent road reserve.

The owners of the Ocean Beach Caravan Park have advised that they are liaising with the Shire of Denmark to either purchase the road reserve or to put in place a legally binding arrangement which would allow the owners of the caravan park to maintain vegetation within the road reserve adjacent to the park homes in accordance with the requirements of a *Building Protection Zone*. This aspect of the planning process is outside the scope of this document and is not dealt with in this document.

Above: The existing track in the road reserve along the southern boundary of the Ocean Beach Caravan Park.

2.5 Access and egress

Access to the Ocean Beach Caravan Park is via Ocean Beach Road. A number of internal loop roads service the chalets and caravan and tent sites. A 6m wide loop will also be constructed around the proposed park homes (refer to maps on pages 6 and 8). The loop road around the proposed park homes meets the requirements of the *Planning for Bush Fire Protection Guidelines* (Edition 2, FESA & WAPC, 2010).

Work on an improved entry to the caravan park has already commenced. An alternative entry/egress point is currently not proposed.

The owners of the Ocean Beach Caravan Park are prepared to upgrade the unmade road reserve along the southern boundary of the caravan park to provide an alternative emergency access/egress to Ocean Beach Road.

2.6 Fire fighting water supply

A fire fighting water supply will be provided in accordance with the requirements listed in the *Planning for Bush Fire Protection Guidelines* (Edition 2, FESA & WAPC, 2010). Scheme water is available at the park and the fire fighting water supply will be based on below-ground and/or pillar fire hydrants.

Additional fire fighting equipment such as fire hose reels and/or fire extinguishers will also be provided where they are required for structural fire protection under the Building Code of Australia.

2.7 Map

A map and GIS dataset showing the layout of the caravan park, fire access, the location of fire fighting water supply and fire fighting equipment will be prepared and made available to the Shire of Denmark, the Ocean Beach Bush Fire Brigade, the Denmark Fire and Rescue Service and to FESA.

3 Recommendations

1 Park homes – level of construction AS3959

- That the proposed park homes are constructed to meet the requirements of the Australian Standard for the *Construction of buildings in bushfire-prone areas* (AS3959).
- That the vegetation adjacent to the park homes is maintained to a distance of a minimum of 29m in accordance with the requirements for *Building Protection Zones*, and that park homes along the bush interface are constructed to BAL–19. Or
- That the vegetation adjacent to the park homes is maintained to a distance of a minimum of 20m in accordance with the requirements for *Building Protection Zones*, and that park homes along the bush interface are constructed to BAL–29.

Note: At the time of writing the Shire of Denmark has not declared the Ocean Beach area a bushfire-prone area in accordance with the requirements of AS3959 and the Building Code of Australia. The standard should, nevertheless, be applied in the same way as it would be applied in an area which has formally been declared a bushfire-prone area.

2 Park homes – building protection zone

- That *Building Protection Zones* a minimum of 20m or 29m wide (see 1 above) are maintained around the park homes in accordance with the requirements of the Denmark Shire *Fire Regulation Notice* and the *Planning for Bush Fire Protection Guidelines* (Edition 2, FESA & WAPC, 2010).
- Where *Building Protection Zones* extend into the adjacent road reserve, that a legally binding arrangement is in place to ensure that the *Building Protection Zones* can be maintained by the owners of the caravan park. (An alternative solution would be that the owners of the caravan park purchase the section of the road reserve adjacent to the park homes.)

3 Access and egress

- That a 6m wide loop road is constructed around the park homes (see maps on pages 6 and 8).
- That an alternative emergency access/egress is constructed and maintained to Ocean Beach Road via the unmade road reserve along the southern boundary of the park.

4 Fire fighting water supply

- That a fire fighting water supply will be provided in accordance with the requirements listed in the *Planning for Bush Fire Protection Guidelines* (Edition 2, FESA & WAPC, 2010). The water supply will be based on below-ground and/or pillar fire hydrants.
- That additional fire fighting equipment such as fire hose reels and/or fire extinguishers will be provided where they are required for structural fire protection under the Building Code of Australia.

5 Map

That a map and GIS dataset showing the layout of the caravan park, fire access, the location of the fire fighting water supply and fire fighting equipment will be prepared and made available to the Shire of Denmark, the Ocean Beach Bush Fire Brigade, the Denmark Fire and Rescue Service and to FESA.

6 Fire management planning

That a fire management plan is prepared for the whole caravan park. The fire management plan should include the following:

- the location and maintenance of fire fighting equipment;
- the location and maintenance of fire fighting water supplies;
- the location and maintenance of low fuel areas and *Building Protection Zones*;
- the maintenance of buildings in the context of bushfire safety;
- emergency procedures in the event of a bushfire;
- staff training in the context of bushfire safety and bushfire emergencies;
- fire suppression response;
- structural fire safety, emergency procedures and fire suppression response.

4 Information and references

AFAC http://knowledgeweb.afac.com.au/news/newsletters/kw_newsletter/march_2009.

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FESA, 2009. *Prepare. Act. Survive. Your Guide to Preparing for and surviving the bushfire season.*

FESA (Fire and Emergency Services Authority of Western Australia), 2008. *The Homeowner's Bush Fire Survival Manual*.

FESA and Western Australian Planning Commission, 2010. *Planning for Bush Fire Protection Guidelines Edition 2*.

Fire Protection Association Australia and Emergency Management Australia, 2000. *External Water Spray Systems to Aid Building Protection from Wildfire*.

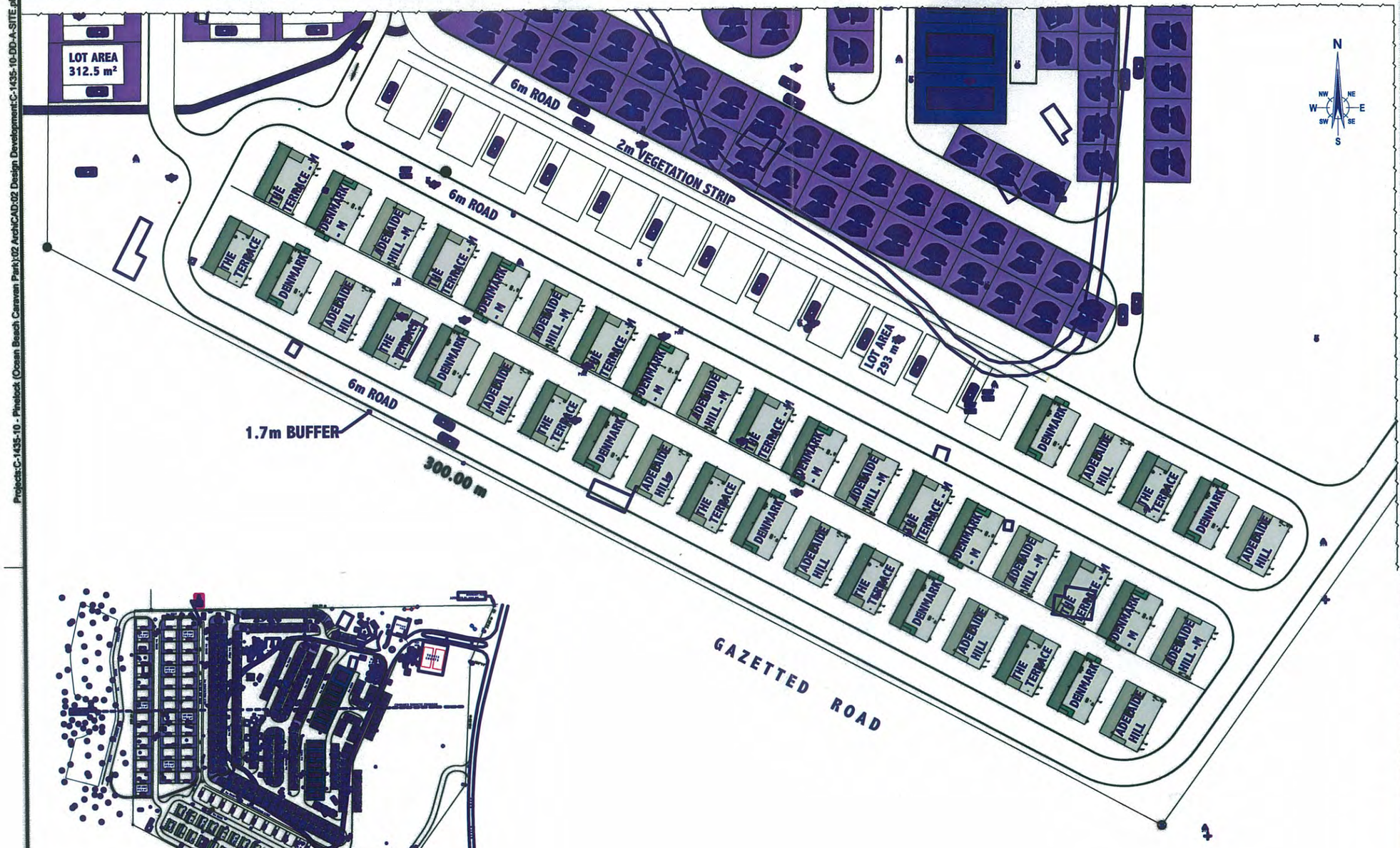
Shire of Denmark, 2010. *Fire Regulation Notice 2010/11*.

Standards Australia, 2009. *Living in bushfire-prone areas – A guide to reducing the threat and impact of bushfire attack and an explanation of the basis of AS3959* (HBB 330–2009).

Standards Australia (2009). *Australian Standard – Construction of buildings in bushfire-prone areas* (AS 3959-2009).

Ramsay, C. & Rudolph, L., 2003. *Landscape and Building Design for Bushfire Areas*. CSIRO Publishing, Collingwood, VIC, Australia.

Project:C-1435-10 - Pinelock (Ocean Beach Caravan Park):02 ArchiCAD:02 Design Development:C-1435-10-DD-A-SITE.pln



LOCALITY PLAN - NTS

SITE PLAN
Scale 1:1000

A3 PDF

listen. interpret. create.
concept building design
innovation in commercial and residential design

338 MIDDLETON LOOP
ALBANY WA 6330
P: +61 (08) 98 421 157
F: +61 (08) 98 425 157

2 / 18 STIRLING HWY
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P: +61 (08) 9386 2266
F: +61 (08) 9389 7221

admin@cbdd.com

MEMBERS OF
BUILDING DESIGNERS ASSOCIATION

REV	PROJECT HISTORY	DWN DATE
A	DESIGN DEVELOPMENT	M SHANKS SEPT 10

PROJECT NAME :
PROPOSED SINGLE STOREY PARK HOMES

CLIENT :
OCEAN BEACH CARAVAN PARK

PROJECT ADDRESS :
OCEAN BEACH RD
DENMARK

SITE PLAN

PROJECT No : C-1435-10-DD-A

SHEET No : 01 / 07

ANNEXURE 1

1) The development being in accordance with the Proposed Development Plan (DRG No: T&P031-09 *Rev 2* dated 14-04-09) as attached other than construction of roads highlighted in pink, including amendments to reflect the additional Council Resolution (Res. 100409 Ordinary Meeting 28/4/2009), being the remodelling of the entrance to the car park with new separate entrance and exit complete with additional hard stand parking, demolishing the existing office/store and construction of a new office/manager's residence with the provision of a coffee shop/restaurant (min floor area 20m^2) to be located at the front of the park closest to Ocean Beach Road, enabling general public access without entering the park.
2) Park home site numbers 22 – 40 are not to be constructed until the amendments to the Proposed Development Plan set out in condition 1 have been carried out.
3) The Applicant is not to construct or place, or allow the construction or placement of any park home on any of the permanent (long-stay) park home sites unless planning consent for the same has been sought from and granted by the Shire of Denmark.
4) The park homes to be setback 20 metres from the side lot boundary and a combination of landscaping/uniform fencing being provided within the setback to provide visual screening to the adjoining property.
5) Submission and implementation of a landscape plan, including formal landscaping between the park home site area and the adjacent camping/caravan sites, using species appropriate to create a visual screen around the park home sites, with some landscaping required between the individual units. The plan to be approved by the Director, Planning and Sustainability.
6) The installation and connection of the park homes to an approved on-site package treatment works effluent disposal system suitable for long-term usage to the satisfaction of the Principal Environmental Health Officer and the Department of Health.
7) The Applicant shall provide to the Shire of Denmark a site plan showing site contours (existing and proposed) at 0.5m intervals and the proposed relative finished floor levels for the units, achieving a maximum build-up height (above natural ground level) of 700mm.
8) The Applicant shall provide evidence, satisfactory to the Shire of Denmark, from a Licensed Surveyor that the ground level for all development shall be at or above 2.5mAHD (Australian Height Datum).
9) The submission and implementation of a stormwater management plan prepared to the satisfaction of the Shire of Denmark. The Plan shall be prepared in consultation with the Department of Water and shall include measures to protect Wilson Inlet and ensure:
   - Flood waters from a 1 in 100 year event to be retained on site
   - 1 in 100 year overland flow path to be demonstrated
10) The land being adequately filled and/or drained to ensure on-site treatment and disposal of stormwater.
11) All access and roadway lighting to be designed so as to be appropriately directed and shielded to prevent spillage outside of the site.
12) The provision of sealed, marked and delineated on-site car parking areas (including access/egress) to the satisfaction of the Director, Infrastructure Services as follows:
   - 2 bays per park home (may be in stacked configuration).
   - Visitor bays as required under the Caravan Parks and Camping Grounds Regulations.

13) The roads accessing the park home sites, marked in blue on the attached plan, to be delineated and sealed to the satisfaction of the Director, Infrastructure Services.

14) The provision of a suitable refuse storage area, screened from public view and readily accessible for service vehicles, including negotiation of a suitable collection regime to the satisfaction of the Director, Infrastructure Services.

15) The following fire protection measures being undertaken to the satisfaction of the Community Fire Manager:

- Establishment and maintenance of a 100m wide hazard separation zone (< 5t/ha fuel loading) and includes the 20m building protection zone (2t/ha fuel loading) around all buildings.
- Application of AS 3959 'Construction of buildings in bush fire prone areas' as required for buildings located within defined fire hazard areas.
- Provision of fire hydrants and hose reels in accordance with Fire and Emergency Services Authority of WA standards.
- Provision of adequate access/egress to the site and buildings suitable for use by a heavy duty fire appliance.

16) An emergency fire exit being constructed along the southern boundary of the caravan park (in the vicinity of the caretaker's dwelling) onto the gazetted road reserve to connect to Ocean Beach Road. This fire exit will require a gate to restrict unwanted access onto the reserve and be secured with an 'H' lock and display a sign stating 'Emergency Access Only'.

17) All advertising and signs are subject to separate application for planning consent.

18) This approval is valid for a period of 24 months from the date of this consent. If development is not substantially completed within that period a fresh approval must be obtained.


AMENDED DRAWING
DATE DRN: 14-04-09
LEGEND
PROPOSED PARK HOME LOTS
RECREATION AND OPEN SPACE
PROPOSED CARAVAN CAMPING SITES
NEWLY CONSTRUCTED ABLUTIONS
PROPOSED SHORT STAY CHALETS
OVERFLOW SITES (APPROX. 50 SITES)
ECO-FRIENDLY BIOPOD (WASTE WATER)
PROPOSED ROADS
VEGETATION STRIP (SEPARATION BUFFER)
ACCESS ROAD TO OVERFLOW SITES
6m ROAD
409.91 m
BOUNDARY PEG ASSUMED RL 100.00
OFFICE SHOP
TENNIS COURTS
MINI GOLF
CAMPERS KITCHEN
COMBINED SERVICES CORRIDOR
257.61 m
73.65 m
148.00 m
159°11'
227.68 m
300.00 m
GAZETTED ROAD
1.7m BUFFER
OCEAN BEACH ROAD
NOTES:
PROPOSED ROADS ARE SEALED AND 6m WIDE (KERB TO KERB)
KERBING IS TO BE FLUSH TO FACILITATE VERGE RUN-OFF AND INFILTRATION, OR MOUNTABLE WITH SUFFICIENT TURNOUTS
KERB RADIUS CONFORMS TO AUSTROADS STANDARD FOR A MOTOR VEHICLE
OCEAN BEACH CARAVAN PARK
PROPOSED DEVELOPMENT
DATE DRN: 14-04-09
DATUM: GDA / ASSUMED HT
CCAD JOB: 07OCEAN
AUTHORISED: R.FOWLER
SCALE: AS SHOWN
DRG No: T&P031-09 Rev 2
T & P Design
Peter Eustace
I.P.W.E.A.
16 Hooper Place
Bunbury 6230
0429 159 195
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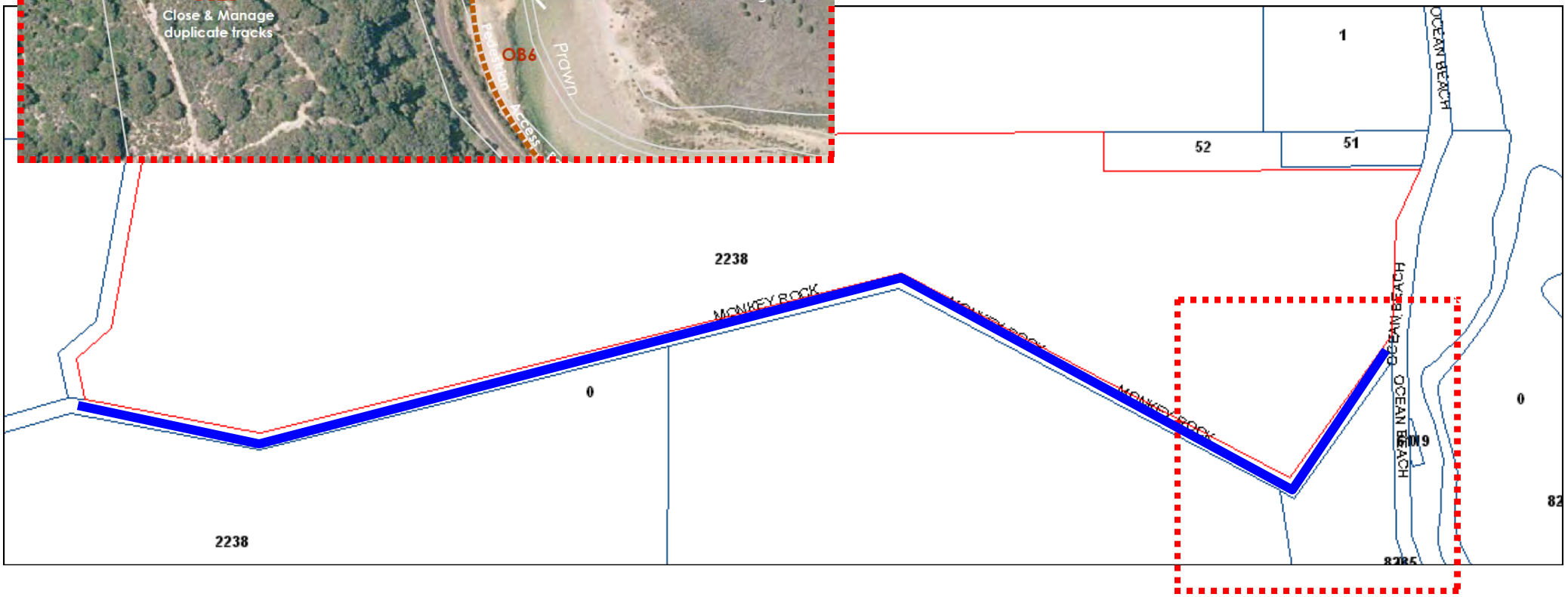
Postal Address: Post Office Box 331, Denmark WA 6333
N
W
E
S
0m 20m 40m 60m 80m 100m

***Left**: Insert from Adopted Coastal Reserves Management Strategy & Action Plan.*

***Below:** Extent of road reserve proposed to be closed and sold (in blue).*



Attachment 8.1.1 d)