# PROPOSED MOTEL DEVELOPMENT

## LOT 62 (NO.20) ROBERTS STREET, JURIEN BAY

SHIRE OF DANDARAGAN

17 JUNE 2022

BURGESS DESIGN GROUP

TOWN PLANNING + URBAN DESIGN

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# 1. INTRODUCTION

Burgess Design Group has been appointed by Aliceville Pty Ltd, the registered owner of Lot 62 (No.20) Roberts Street, Jurien Bay (subject "site" or "land"), for the provision of town planning and urban design consultancy services associated with the preparation of a Development Application and the coordination of planning approvals for a motel development.

This application seeks approval for Stage 1 of a comprehensive mixed-use tourist development for the site. Stage 1 comprises a four-storey motel with 41 short stay rooms.

The enclosed Development Application has been prepared by Burgess Design Group, in collaboration with specialist consultants, who have provided technical input in relation to matters as follows:

| | |
|---|---|
| Scanlan Architects | Architectural Plans and Statement |
| Shawmac | Transport Impact Statement |

## 1.1 ABBREVIATIONS

Abbreviations used in this report are summarised below for ease of reference:

| | |
|---|---|
| CHRMAP | Coastal Hazard Risk Management and Adaptation Plan |
| LDP | Local Development Plan |
| LPP 8.7 | Local Planning Policy 8.7 - Car Parking |
| LPS7 | Shire of Dandaragan Local Planning Scheme No.7 |
| SPP 2.6 | State Planning Policy 2.6 - Coastal Planning |
| SPP 7.0 | State Planning Policy 7.0 - Design of the Built Environment |
| SU4 | Special Use No.4 |
| WAPC | Western Australian Planning Commission |

# 2. SITE DESCRIPTION/DETAILS

## 2.1 LEGAL DESCRIPTION, RESTRICTIONS AND ENCUMBRANCES

Lot 62 is registered in the ownership of Aliceville Pty Ltd.

The site is formally described as:

- Lot 62 on Deposited Plan 207149, Volume 1499, Folio 123.

There is one (1) restriction and/or encumbrance registered on the Title. Refer to Appendix 1 – Certificate of Title.

The site comprises a total legal area of 2.19 ha.

## 2.2 LOCATION

The subject site is located within the central Jurien Bay town site (refer Figure 1 – Location Plan). The site is bounded by Roberts Street to the south west, Heaton Street to the north west, Sandpiper Street to the south east and Lot 63 Heaton Street to the north east (refer Figure 2 – Aerial Photograph). The proposed building is sited on the eastern site boundary with frontage to Sandpiper Street.

The subject site is located less than 2km from Jurien Bay airport, and within 250m of Indian Ocean Drive, being the main road to Perth. The site has a good aspect and outlook, situated within the Jurien Bay Commercial Centre and immediately adjacent to the Jurien Bay Ocean Foreshore. Figure 1 – Location Plan depicts the location of the site.

## 2.3 EXISTING AND HISTORICAL USE AND DEVELOPMENT

The subject site is predominantly vacant with limited existing vegetation. There are currently two buildings on site that are degraded and not currently in use. These buildings will be demolished and/or removed. Refer to Figure 2 – Aerial Photograph.

### 2.3.1 PREVIOUS PLANNING APPLICATIONS AND APPROVALS

#### SHIRE OF DANDARAGAN APPROVAL 2012

In 2012 the Shire of Dandaragan granted planning approval for a proposed mixed-use tourism development over the site. This planning approval was not enacted due to various conditions of approval, including the requirement for a scheme amendment (rezoning) to be prepared and adopted by Council prior to issue of a building licence.

#### JDAP APPLICATION 2017 & SCHEME AMENDMENTS

A JDAP application was lodged in September 2017. However, this application was later withdrawn as the Shire's responsible authority assessment of the application discovered that several of the gazetted conditions of SUZ4 required modification to allow some outstanding issues to be resolved later in the planning process. As such, Scheme Amendments 33 and 34 were initiated and adopted to modify the wording of conditions 5, 6, 10 and 11 of SUZ4.

#### JDAP APPLICATION 2019

In 2019, a revised development application for a mixed-use tourism development consisting of a hotel, motel, retail and other commercial activities, 171 short stay units (inclusive of hotel and motel units) and 122 permanent residential units, and car parking, was submitted to the Midwest Wheatbelt Joint Development Assessment Panel (JDAP).

At the Shire's Ordinary Council Meeting on 28 November 2019 Council endorsed the Responsible Authority Report to the Midwest Wheatbelt JDAP, which recommended development approval of the proposal. The application, however, was later withdrawn from JDAP as a result of unresolved matters regarding coastal storm surge. Subsequently, this application has been prepared for only the motel component of the mixed use development, whilst this matter is resolved separately.

## 2.4 SURROUNDING LAND USE AND DEVELOPMENT

Surrounding land uses are predominantly tourist and commercial activities, including:

- Jurien Bay Commercial Town Centre located immediately east of subject site;
- Jurien Bay Foreshore and small café located immediately west of the site; and,
- Jurien Bay Tourist Park located directly to the southwest of the site.


FIGURE 1

NORTH

0 50 100 150 200 250m

SCALE 1:10,000 (A4)

# LOCATION PLAN
# LOT 62 ROBERTS STREET &
# PART OF HEATON STREET ROAD RESERVE
# JURIEN BAY

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Plan No: ALO JUR 7-02-01 Client: CARL ALOI
Date: 15.06.18 Planner: MS

SHIRE OF DANDARAGAN


FIGURE 2

NORTH

0 20 40 60 80 100m

SCALE 1:2000 (A4)

# AERIAL PHOTO
# LOT 62 ROBERTS STREET &
# PART OF HEATON STREET ROAD RESERVE
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SHIRE OF DANDARAGAN

# 3. PLANNING FRAMEWORK

Outlined below is a summary of the relevant strategic and statutory documents that guide the use and development of the site and/or support the development of a Motel.

## 3.1 STATUTORY FRAMEWORK

### 3.1.1 SHIRE OF DANDARAGAN LOCAL PLANNING SCHEME NO.7

The site is zoned 'Special Use No.4 – Tourist Resort' under the *Shire of Dandaragan Local Planning Scheme No.7* (LPS7) (refer Figure 3 – LPS7 Map).

Pursuant to clause 3.7.1 'Special use zones are set out in Schedule 4 and are in addition to the zones in the Zoning Table.'

Clause 3.7.2 'A person must not use any land, or any structure or buildings on land, in a special use zone except for the purpose set out against that land in Schedule 4 and subject to compliance with any conditions set out in Schedule 4 with respect to that land.'

## 3.2 LOCAL DEVELOPMENT PLAN FOR LOT 62 (NO.20) ROBERTS STREET & PART OF HEATON STREET ROAD RESERVE, JURIEN BAY (2018)

A Local Development Plan (LDP) has been approved by the Shire for Lot 62 (No.20) Roberts Street & Part of Heaton Street Road Reserve. As such, the proposed development must comply with the development standards specified in the LDP. An assessment against the relevant provisions of the LDP is provided in Section 4 of this report.

## 3.3 JURIEN BAY CITY CENTRE STRATEGY PLAN (2012)

The Jurien Bay City Centre Strategy provides a clear direction for future development and management within the Jurien Bay Town Centre.

The relevant aims of the strategy are:

> *"A vision (and possible theme) for the town centre of Jurien Bay looking forward 10-15 years.*
>
> *Where future commercial, tourist, medium density residential and mixed-use development should occur based on physical, social and environmental considerations.*
>
> *Appropriate scale and density of development (residential, commercial, tourist) to achieve a sustainable economic benefit, whilst enhancing the quality of wellbeing, lifestyle and services for the broader community.*
>
> *Consolidation of land use and establish a framework to deliver a more integrated, sustainable, and functional town centre environment."*

The proposed motel development is considered to achieve the vision of the City Centre Strategy, by providing:

- A long-term economic benefit to the town centre;
- Providing jobs for the local community;
- Establishing a central tourist core for Jurien Bay for the future; and
- Providing an active pedestrian link along Sandpiper Street to the Jurien Bay Foreshore.

## 3.4 WAPC POLICIES

The following WAPC Policies are relevant to the proposed development and are discussed in further detail in proceeding sections:

- State Planning Policy 2.6 - State Coastal Planning Policy
- State Planning Policy 7.0 - Design of the Built Environment

### 3.4.1 STATE PLANNING POLICY 2.6 - STATE COASTAL PLANNING POLICY

*State Planning Policy 2.6 - State Coastal Planning Policy* (SPP 2.6) provides guidance for land use and development decision-making within the coastal zone including managing development and land use change; establishment of coastal foreshore reserves; and to protect, conserve and enhance coastal values.

SPP 2.6 has specific measures that relate to tourism development as follows:

5.1 General Measures

*(i) Local and regional planning strategies, structure plans, schemes, subdivisions, strata subdivision, development applications, coastal planning strategies and foreshore management plans, as well as other planning decisions and instruments relating to the coast should comply with the policy measures.*

5.2 Development and Settlement

*(iii) Ensure that when identifying areas suitable for development, consideration is given to strategic sites for coastal access and commercial development that is demonstrably dependent on a foreshore location including ports, boat harbours and regional boat ramps.*

*(iv) Ensure that use of the coast, including the marine environment, for recreation, conservation, tourism, commerce, industry, housing, ocean access and other appropriate activities, is sustainable and located in suitable areas.*

*(v) Ensure that land use and development, including roads, adjacent to the coast is sited and designed to complement and enhance the coastal environment in terms of its visual, amenity, social and ecological values.*

5.4 Building Height Limits

*Maximum height limits should be specified as part of controls outlined in a local planning scheme and/or structure plan, in order to achieve outcomes which respond to the desired character, built form and amenity of the locality.*

5.10 Coastal Strategies and Management Plans

*Any structure plan, zoning, subdivision, strata subdivision or development proposal for public purposes, residential, industrial, commercial, tourist, special rural and similar uses on the coast is only approved based on or in conjunction with a current detailed coastal planning strategy or foreshore management plan (whichever is appropriate for the stage and scale of development).*

The abovementioned measures have been incorporated in the SUZ4 provisions under LPS7, and the approved Local Development Plan, and should be considered in planning decision-making.


**LEGEND**

- Subject Land

**LOCAL SCHEME RESERVES**

- Commercial
- Tourist
- Parks & Recreation

**OTHER**

- Scheme Boundary
- Townsite - Land Act
- Local Government Boundary
- SU — Special Use

NORTH

0 25 50 75 100m

SCALE 1:4,000 (A4)

# LOCAL PLANNING SCHEME NO.7
# LOT 62 ROBERTS STREET &
# PART OF HEATON STREET ROAD RESERVE
# JURIEN BAY

Planner: MS
Client: Carl Aloi

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Date: 15.06.18
Plan No: ALO JUR 7-02-03

SHIRE OF DANDARAGAN

# 4. PROPOSED DEVELOPMENT

The application seeks approval for Stage 1 of a comprehensive mixed-use tourist development, being the development of the Motel (Building D). Generally, the proposal comprises a four (4) storey motel, carparking and associated storage and service areas (refer to Appendix 2 - Architectural Statement).

The details of the proposed development are included in the Development Application Plans, and summarised below.

## BASEMENT

- Storage (allowance for future store rooms)
- Bin store
- Lift lobby, lift and services

## GROUND FLOOR

- Motel reception (comprising; lobby, reception, office, amenities, and maintenance store)
- Lift lobby, lift, services, and linen store
- 10 motel rooms (9 x Type 1 rooms & 1 x Type 4 room)
- 50 car bays, including 1 ACROD bay

## FIRST FLOOR

- 13 motel rooms (11 x Type 1 rooms, 1 x Type 2 rooms, & 1 x Type 4 room)

## SECOND FLOOR

- 12 motel rooms (11 x Type 1 rooms, & 1 x Type 4 room)
- Roof Terrace

## THIRD FLOOR

- 6 motel rooms (4 x Type 5 rooms & 2 x Type 3 rooms)
- Services decks

## 4.1 LAND USE PERMISSIBILITY

The proposed development is best classified as a 'Motel' use under LPS7.

LPS7 defines a 'Motel' as a:

> *"premises used to accommodate patrons in a manner similar to a hotel but in which specific provision is made for the accommodation of patrons with motor vehicles and may comprise premises licensed under the Liquor Licensing Act 1988."*

A Motel is a 'P' use under Schedule 4 – Special Use Zone of LPS7, meaning that the use is permitted providing that the proposed development complies with the relevant development standards and the requirements of LPS7. In this regard, the Shire can consider the proposed use on the site.

## 4.2 DEVELOPMENT STANDARDS

## 4.3 STAGING

The LDP shows indicative stages for future development on the site. Stage 1 is shown as the 'Motel' (Building D) and associated car parking. As such, the proposal is consistent with the indicative staging plan in the LDP.

## 4.4 SHORT TERM ACCOMONDATION

Condition 8 of LPS7, SUZ4 specifies that any proposed 'Hotel' or 'Motel' on the land shall provide 100% short-stay accommodation. The proposal comprises 41 motel rooms. All rooms are proposed to be short-stay accommodation, consistent with LPS7, Condition 8.

### 4.4.1 ROOM TYPE

The Motel will comprise of 41 short stay accommodation rooms with a mix of 1 bed 1 bath, 2 bed 2 bath and universal access rooms (as detailed in Table 1 below).

| TABLE 1: ROOM TYPE | | | | | | |
|---|---|---|---|---|---|---|
| | TYPE 01 (1 BED & 1 BATH) | TYPE 02 (2 BED & 2 BATH) | TYPE 03 (2 BED & 2 BATH) | TYPE 04 - UNIVERSAL ACCESS (1 BED & 1 BATH) | TYPE 05 (1 BED & 1 BATH) | TOTAL |
| | | | | | | |
| Ground Floor | 9 | | | 1 | | 10 |
| First Floor | 11 | 1 | | 1 | | 13 |
| Second Floor | 11 | | | 1 | | 12 |
| Third Floor | | | 2 | | 4 | 6 |
| **TOTAL** | **31** | **1** | **2** | **3** | **4** | **41** |

### 4.4.2 SITE COVERAGE

The proposed floor areas are specified in Table 2 below.

| TABLE 2: PROPOSED FLOOR AREAS | | |
|---|---|---|
| FLOOR | GFA | PLOT RATIO |
| Basement | 324m$^2$ | - |
| Ground Floor | 669m$^2$ | 463m$^2$ |
| First Floor | 635m$^2$ | 485m$^2$ |
| Second Floor | 553m$^2$ | 410m$^2$ |
| Third Floor | 344m$^2$ | 242m$^2$ |
| **TOTAL** | **2525m$^2$** | **1600m$^2$** |

LPS7, Table 2 - Site and Development Requirements, sets out maximum plot ratio of 1.0 for 'Motel' development. In this regard, the proposed development is compliant with this development requirement.

### 4.4.3 BUILDING SETBACKS

LPS7, Table 2 - Site and Development Requirements, prescribes minimum boundary setback standards. An assessment is provided in Table 3 below.

TABLE 3: MINIMUM BOUNDARY SETBACK

| REQUIRED | | PROVIDED | COMPLIES (✓/✗) |
|---|---|---|---|
| Front | 9.0m | Nil (setback to balconies) | ✓ |
| Rear (Ave) | 7.5m | 111.8m (to Heaton Street boundary) | ✓ |
| Sides | 3m per storey | – 70.7m (to north eastern boundary)<br>– 41.6m (to Roberts Street boundary) | ✓ |

As such, the proposal is compliant with the building setbacks prescribed in LPS7.

### 4.4.4 BUILDING HEIGHT

The LDP permits a range of building heights from 2 to 4 storeys adjacent to Sandpiper Street. Additionally, the LDP specifies 'no structure shall exceed 40 metres in height measured from natural ground level, unless it forms part of any telecommunications infrastructure.'

The proposed motel is four (4) storeys and 17.57 metres in height (inclusive of the basement). In this regard, the proposal is compliant with this provision of the LDP.

### 4.4.5 BUILDING ORIENTATION AND STREETSCAPE

Table 4 below sets out the LDP building orientation and streetscape requirements for development.

| TABLE 4: BUILDING ORIENTATION AND STREETSCAPE | | |
|---|---|---|
| REQUIRED | PROVIDED | COMPLIES (✓/✗) |
| In accordance with the R-codes, blank walls shall be minimised at street level, and where practical, active frontages incorporated into the development to ensure a suitable level of casual surveillance of the public domain | The proposed building is oriented to face Sandpiper Street, to provide passive surveillance of the street and outdoor public spaces. | ✓ |
| All buildings must be designed with windows or balconies facing the street. | Windows and balconies are provided to allow a suitable level of passive surveillance of the street. | ✓ |

### 4.4.6 BUILDING COLOURS AND MATERIALS

The colours and materials are reflective of the site's local context and climate, and influenced by similar international coastal developments. Materials include; white and bagged brick, limestone, timber and weatherboard cladding, limewash renders, and large format pavers. Colours include; whites and neutrals (refer Elevations & Appendix 2, Built Form and Materiality).

### 4.4.7 ENVIRONMENTALLY SENSITIVE DESIGN

The motel (Building D), subject to this application, is oriented with its main frontage to the east and south east. In this regard, most rooms will receive morning sun. Any rooms oriented to the west will receive afternoon sun (refer Appendix 3 – Environmental Sensitive Design Review).

The majority of buildings proposed as part of the complete mixed-use tourist development are oriented between 18° east of north to promote morning winter solar gain, and have a longer north-south façade and short east-west façade.

The whole site has been designed to take advantage of free solar heating during the winter months and minimise solar gain to the east and west façade when the sun is low over the horizon in the summer months.

Stage 1 is considered to be acceptable in the context of the complete mixed-used tourist development, given that the majority of the buildings have been oriented to achieve environmentally sensitive design principles. Given the size of the site and other design requirements it is not feasible for all buildings to be oriented for optimal solar access.

### 4.4.8 LANDSCAPING

LPS7, Table 2 - Site and Development Requirements specifies minimum landscape area for 'Motel' development. Table 5 below provides an assessment of the proposal against the LPS7 provisions.

TABLE 5: MINIMUM LANDSCAPE AREA

| REQUIRED | PROVIDED | COMPLIES (✓/×) |
|---|---|---|
| 30% of total site area | Landscaping is proposed for the vehicle parking area adjacent to the Motel. The proposal does not meet the landscaping requirements as the development is for only part (stage 1) of a comprehensive landscaping plan for the site. This application seeks the Shire's discretion to consider the variation, given that additional landscaping will be incorporated in future stages of development. | × |

Refer to Appendix 4 - Landscape Concept Report.

## 4.5 STATE PLANNING POLICY 7.0 - DESIGN OF BUILT ENVIRONMENT

*State Planning Policy 7.0 – Design of the Built Environment* (SPP 7) establishes a set of ten 'Design Principles', providing a consistent framework to guide the design, review and decision-making process for planning proposals. Refer to Table 6 below for an assessment against the ten design principles of SPP7.

TABLE 6: SPP 7.0 DESIGN PRINCIPLES

| SPP 7.0 DESIGN PRINCIPLES | PROPOSAL RESPONSE |
|---|---|
| 1. Context and character<br>Good design responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place. | The proposed building provides a high quality, engaging and dynamic architectural response to its unique local character and will create a significant local presence within Jurien Bay (refer Appendix 2 – Architectural Statement).<br>The proposal responds directly to predicted population growth, future market needs, and achieves tourism outcomes set out in the *Shire of Dandaragan Local Planning Strategy* to develop of a range of tourist accommodation within Jurien Bay. |
| 2. Landscape quality<br>Good design recognises that together landscape and buildings operate as an integrated and sustainable system, within a broader ecological context. | A Landscape Concept Report has been prepared for the whole mixed use tourism development (refer Appendix 4). The Landscape Concept Report identifies the importance of landscaping the streetscape adjacent to the proposed Motel development. |
| 3. Built form and scale<br>Good design ensures that the massing and height of | The proposed building is 17.57m in height (4 storeys) and is consistent with the provisions set out in LPS7 which specifies a 40m maximum |

| | |
|---|---|
| development is appropriate to its setting and successfully negotiates between existing built form and the intended future character of the local area. | building height, and the Local Development 'Building Heights Plan' for the site that specifies a building height of 2-4 stories.<br><br>The third floor is aptly set back to ensure the overall scale of the building complements surrounding development and contributes positively to the pedestrian scale. In this regard, the proposed building's mass and height is considered to be appropriate to its setting. |
| 4. Functionality and build quality<br><br>Good design meets the needs of users efficiently and effectively, balancing functional requirements to perform well and deliver optimum benefit over the full life-cycle. | The proposal has been designed to meet the specific needs of the client whilst providing a building with attractive frontages to Sandpiper Street. The proposed development incorporates high quality materials which will require a standard amount of maintenance over the life cycle of the building. |
| 5. Sustainability<br><br>Good design optimises the sustainability of the built environment, delivering positive environmental, social and economic outcomes. | The proposed design is environmentally sensitive as all room types incorporate both fixed and operable glazing providing natural sunlight, ventilation and airflow. The typical room depth of 6.5m assists in maximizing coverage.<br><br>Sun protection is tailored for orientational and seasonal solar exposure helping to optimize performance and amenity (refer *Appendix 2 – Architectural Statement*).<br><br>The proposed development is a key strategic site that will positively contribute to the local economy and growth of the Jurien Bay |

| | |
|---|---|
| | foreshore. The proposal will also utilise local infrastructure such as the Turquoise Way Path. |
| 6. Amenity<br><br>Good design provides successful places that offer a variety of uses and activities while optimising internal and external amenity for occupants, visitors and neighbours, providing environments that are comfortable, productive and healthy. | The motel is Stage 1 of a comprehensive mixed-use tourist development that will provide a variety of uses and activities for tourists and local residents. In this regard, the proposal is considered to be consistent with this principle. |
| 7. Legibility<br><br>Good design results in buildings and places that are legible, with clear connections and easily identifiable elements to help people find their way around. | The proposal is oriented to face Sandpiper Street to provide a clear connection from the car parking area to the motel reception. |
| 8. Safety<br><br>Good design optimises safety and security, minimising the risk of personal harm and supporting safe behaviour and use. | The proposal is considered to provide appropriate levels of passive surveillance to Sandpiper Street and internal public spaces that optimises safety and security on-site. Additionally, the motel will have staff on-duty to provide assistance for guests as required. |
| 9. Community<br><br>Good design responds to local community needs as well as the wider social context, providing environments that support a | The proposal seeks to provide additional tourism accommodation in the centre of Jurien Bay which is an important contributor to the economic sustainability of the area. |

| | |
|---|---|
| diverse range of people and facilitate social interaction. | |
| 10. Aesthetics<br>Good design is the product of a skilled, judicious design process that results in attractive and inviting buildings and places that engage the senses. | The built form of the proposed development is inspired by the coastal environment, and incorporates classic Australian architectural elements that is reflective of modern early twentieth century architecture (refer Appendix 2 - Architectural Statement). |

## 4.6 TRAFFIC REPORT

A Transport Impact Statement for the proposed development has been prepared by Shawmac (refer to Appendix 5 - Transport Impact Statement). This Transport Impact Statement outlines the transport aspects of the proposed development principally focusing on traffic operations, access, and provision of car parking.

The TIS provides the following key conclusions:

- On a weekday, the development is estimated to generate 137 daily vehicle trips, including 14 during the AM peak hour, and 15 vehicle trips during the PM peak hour. On a Saturday, the development is estimated to generate 373 daily vehicle trips, including 39 during the peak hour of the development. This volume of traffic is low and can be accommodated within the existing capacity of the road network with no modifications required.
- The provision of 50 car parking bays satisfies the minimum requirements calculated according to the Shire's Local Planning Policy 8.7. There is also ample street parking in the vicinity of the site.
- The crash history of the adjacent road network did not indicate any safety issue on the adjacent road network and there is no indication that the development would increase the risk of crashes unacceptably.
- The proposed internal and external path network is considered to be adequate.

- Based on the proposed land use, the only bicycle parking demand is likely to be from staff. The development plans indicate that 6 bicycle racks will be provided along the building frontage which would be sufficient for the likely demand for bicycle parking.

- The demand for public transport is likely to be minimal based on the proposed use and location and so the provision of additional services is not warranted.

### 4.6.1 VEHICLE ACCESS

Vehicle access is proposed via Sandpiper Street. There are two entry and exist points proposed to service the development. The minimum sight distance requirement of AS2890.1 is achieved in both directions from the proposed vehicle exit points along Sandpiper Street.

### 4.6.2 PEDESTRIAN ACCESS WAY

Condition 11 of the SUZ4 requires the ceding of a minimum 11 metre wide street along the north east boundary of the land prior to the commencement of development. This condition is considered to be an administration error as it has always been the intent to provide a 4.5m pedestrian access way. This 4.5m pedestrian access way was reflected in all previous development applications.

A 4.5m pedestrian access way on the north east boundary will be provided as part of a future development stage, and will be ceded to the Western Australian Government. In this regard, we respectfully request the Shire's confirmation that it will use its discretion to vary Condition 11.

### 4.6.3 CAR AND BUS PARKING

LPS7, Table 2 - Site and Development Requirements, and Local Planning Policy 8.7 – Car Parking, specifies the following car parking requirements for a motel. An assessment of the proposed development against LPS7, Table 2 and LPP 8.7 development requirements is outlined in Table 7 below.

| TABLE 7: MINIMUM NUMBER OF CAR PARKING BAYS | | | |
|---|---|---|---|
| REQUIRED | | PROVIDED | COMPLIES (✓/×) |
| Motel<br>1 per unit, plus 3 spaces per 25m$^2$ of service area, plus 1 space per 2 employees | – 41 motel rooms = 41 bays<br>– 41m$^2$ service area (reception/office, maintenance store, cleaners store & linen store) = 5 bays<br>– Employees (TBC)<br><br>TOTAL REQUIRED: 46 | 50 car bays | ✓ |
| 1 bay for every 100 beds | | N/A – less than 100 beds | N/A |

The proposal provides 50 car parking bays, consistent with LPS7, Table 2 and LPP 8.7 requirements.

## 4.7 COASTAL HAZARD RISK MANAGEMENT & ADAPTATION PLAN

LPS7, Condition 6 of SUZ4 states the following:

> *'Prior to approval of development on the site, a Coastal Hazard Risk Management and Adaptation Plan (CHRMAP) is to be prepared in accordance with State Planning Policy 2.6: State Coastal Planning Policy and approved by the local government. The CHRMAP should include but not be limited to consideration of inundation, erosion, finished floor levels, setbacks and drainage. Recommended management and adaptation actions are to be implemented at timings indicated within the approved implementation plan.'*

A Coastal Hazard Risk Management and Adaptation Plan (CHRMAP) for the site was prepared by M P Rogers and Associates in accordance with Condition 6 of SUZ4 and was subsequently adopted by Council on 28 February 2019 (refer Appendix 6 – Coastal Hazard Risk Management and Adaptation Plan). The Council agreed that the strategies to be implemented adequately address the potential coastal hazard risks associated with the development in accordance with State planning policy. In this regard, the proposed development complies with this condition.

## 4.8 SCHEDULE 4 - SPECIAL USE ZONES

An assessment of the proposal against LPS7 Schedule 4, SU4 conditions is provided in Table 8 below.

TABLE 8: SCHEDULE 4 - SPECIAL USE ZONES

| NO | DESCRIPTION OF LAND | CONDITIONS | COMMENT |
|---|---|---|---|
| 4 | Lot 62 (No.20) Roberts Street and a portion of the Heaton Street road reserve, Jurien Bay as designated on the Scheme Map. | 1. Prior to the submission of an application for development approval, a Local Development Plan (LDP) for the land is to be prepared and approved by the local government. | The LDP was adopted by Council on 28 June 2018. |
| | | 2. Development of the land shall be in accordance with a LDP adopted by the local government. | The proposed development is consistent with the provisions of the LDP. |
| | | 3. All development on the land (including change of use) shall be subject to an application to the local government for approval to commence development unless specifically exempted in an approved LDP. | This application seeks planning approval from the Shire of Dandaragan. |
| | | 4. All development on the land shall be connected to a reticulated water supply and | The proposed development will be connected to reticulated water supply and sewerage |

| | | |
|---|---|---|
| | sewerage system. | system. Details will be provided at building permit stage. |
| | 5. Prior to the commencement of development the site is to be remediated to the extent required for its intended use. | The site has been remediated prior to the commencement of development. |
| | 6. Prior to approval of development on the site, a Coastal Hazard Risk Management and Adaptation Plan (CHRMAP) is to be prepared in accordance with *State Planning Policy 2.6: State Coastal Planning Policy* and approved by the local government. | A CHRMAP has been prepared and endorsed by the Shire of Dandaragan. |
| | 7. The only permitted land use on the portion of the site divided by the realignment of Heaton Street (the western portion) is a 'Hotel' and associated ancillary uses. | N/A - the Hotel development is not included in the Stage 1 of the proposal. |
| | 8. Any proposed 'Hotel' or 'Motel' on the land shall provide 100% short-stay accommodation. For all accommodation units proposed on the land, the maximum proportion of permanent residential units relative to the total number of short stay units on the site shall be equal to or less than 45%. | The proposed motel complies with this condition, and will provide 100% short-stay accommodation. |
| | 9. Any residential unit for use for permanent occupation must:<br>(i) form part of a mixed use development proposal;<br>(ii) form an integrated component of the tourist complex in terms of the type, style and character and the landscaping of the building;<br>(iii) shall be in a concentrated area located to provide a transition between tourism development and | N/A |

| | | |
|---|---|---|
| | surrounding residential uses;<br>(iv) be provided with recreation and amenity facilities; and<br>(v) shall be designed to enable management and use on an integrated basis with the overall tourist resort. | |
| | 10. Prior to the commencement of the hotel development the closure, realignment and land transfers of a portion of the Heaton Street Road reserve must be finalised to the satisfaction of the local government. | N/A – Hotel development not included in the Stage 1.<br><br>The landowner agrees to the closure, realignment and land transfers of a portion of the Heaton Street Road Reserve as a condition of planning approval for a later stage of development that includes the Hotel development. |
| | 11. Prior to the commencement of development, the ceding of a minimum 11 metre wide street along the north east boundary of the land, providing a connection between Heaton and Sandpiper Streets, is to be completed to the satisfaction of the local government. | The landowner agrees to the ceding of a minimum 4.5 metre wide pedestrian access way along the north east boundary of the land. Refer to text in report. |
| | 12. No structure shall exceed 40 metres in height measured from natural ground level, unless it forms part of the telecommunications infrastructure, and the height of individual structures will be in accordance with an approved LDP. | The proposal complies with this condition. |
| | 13. Subdivision of the land will be limited to built or survey strata subdivision. | No subdivision is proposed as part of this application. |
| | 14. A notification to the following effect is to be placed on the certificate(s) of title of any proposed lot(s) identified in the Coastal Hazard Risk Management and Adaptation Plan that may be affected by coastal hazards: *Vulnerable* | Noted. |

| | | |
|---|---|---|
| | *coastal area – This lot is located in an area likely to be subject to coastal erosion/inundation over the next 100 years.* | |
| | 15. For all short-stay accommodation a register of guests showing periods of occupancy is to be kept and made available to the local government on request in order to ensure compliance with the requirement to limit occupation to a maximum of three months in any 12-month period. | The landowner agrees to provide the Shire occupancy details on request. |
| | 16. In accordance with Section 5C of the *Strata Titles Act (1985)* (as amended) a condition of any future built strata subdivision of tourist accommodation shall include the preparation and submission of a management statement and associated agreements for the local governments approval, that includes:<br><br>▪ the establishment of a Schedule 1 by-law that requires, as a minimum, a unit management agreement, lease or alternative arrangement between each owner of a strata unit and the common facility manager/operator to provide for common management of all such units for a minimum period of 25 years as a tourist facility;<br>▪ the ability for a Strata Company to terminate a contract with the facility manager/operator at the end of a 5 year contract or | Noted. |

| | | |
|---|---|---|
| | lesser period based on performance criteria as determined by the Strata Company;<br>▪ the management agreement, lease or alternative shall cover but not be limited to letting agent (manager) arrangements, resort reception, access, security, maintenance, caretaking, refurbishment, marketing and other services reasonably required for the development to operate as a tourism facility; and<br>▪ any other additions the local government considers appropriate to ensure the ongoing sustainability of the proposal for tourism purposes | |

*Note: The conditions in the table above are summarised. Please refer to LPS7 for the exact wording of conditions.*

# 5. CONCLUSION

Burgess Design Group, on behalf of Aliceville Pty Ltd, the registered owners of Lot 62 Roberts Street, Jurien Bay, have prepared the preceding Development Application report to guide the development of a motel on the site.

The proposed development has merit and warrants approval for the following reasons:

- A Motel is a 'P' use under Schedule 4 – Special Use Zone of LPS7 and can be considered by the Shire;
- The proposed development is generally consistent with development standards set out in the LPS7, Local Development Plan, and relevant state and local planning policies.
- The proposal is modern in design, reflects the coastal environment and provides an interesting and activated façade to Sandpiper Street.

In this regard, Burgess Design Group respectfully seeks the Shire's approval for the proposed development.

# APPENDIX 1:
# CERTIFICATE OF TITLE

WESTERN AUSTRALIA

| REGISTER NUMBER | |
|---|---|
| 62/DP207149 | |
| DUPLICATE EDITION | DATE DUPLICATE ISSUED |
| 2 | 14/7/2004 |

VOLUME 1499 FOLIO 123

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

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.

BGRoberts

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

**LAND DESCRIPTION:**

LOT 62 ON DEPOSITED PLAN 207149

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

ALICEVILLE PTY LTD OF 47 THE CRESCENT, MIDLAND

(TP I925472 ) REGISTERED 21/6/2004

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

1. *K969981 MEMORIAL. CONTAMINATED SITES ACT 2003 (CONTAMINATED SITE - REMEDIATION REQUIRED) REGISTERED 11/6/2009.

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: | 1499-123 (62/DP207149) |
| PREVIOUS TITLE: | 1499-123 |
| PROPERTY STREET ADDRESS: | 20 ROBERTS ST, JURIEN BAY. |
| LOCAL GOVERNMENT AUTHORITY: | SHIRE OF DANDARAGAN |

NOTE 1: A000001A LAND PARCEL IDENTIFIER OF JURIEN BAY TOWN LOT/LOT 62 (OR THE PART THEREOF) ON SUPERSEDED PAPER CERTIFICATE OF TITLE CHANGED TO LOT 62 ON DEPOSITED PLAN 207149 ON 09-APR-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.

# APPENDIX 2:
# ARCHITECTURAL STATEMENT

# ARCHITECTURAL STATEMENT

SCANLAN

PROPOSED MOTEL DEVELOPMENT

LOT 62 ROBERT STREET JURIEN BAY WA

DATE | 14/06/2022 |

REV | DA01 |

# CONTENTS

## PROJECT SUMMARY

The overall development proposal for the site comprises of 8 'blocks' or semi-independent buildings, integrating an assortment of functions to form an integrated resort style complex to service visitors, residents, and the wider community.

It is intended that the site is developed over several stages with this applicaiton related to the first stage for 'Block D' a 41 room motel development.

| | |
|---|---|
| **SITE ADDRESS** | LOT 62 ROBERTS STREET, JURIEN BAY, WA. |
| **DEVELOPER** | ALICEVILLE PTY LTD |
| **LOCAL COUNCIL** | SHIRE OF DANDARAGAN |
| **DEVELOPMENT GUIDELINES** | SHIRE OF DANDARAGAN LOCAL PLANNING SCHEME NO. 7<br>APPROVED LOCAL DEVELOPMENT PLAN |
| **ZONE** | MAJORITY - SPECIAL USE – TOURIST RESORT<br>PORTION – LOCAL ROAD |
| **EXISTING USE** | VACANT |
| **SITE AREA** | 21979 $m^2$ |
| **PLOT RATIO** | 1600 $m^2$ (STAGE 1) |
| **PROPOSED USE** | MOTEL |
| **CLASSIFICATION** | CLASS 3 |

SOUTH EAST ELEVATION | SCALE 1:300 / A3

## SITE DETAILS

The subject site is located at Lot 62, Roberts Street within 100 meters of the foreshore and is bound by Roberts Street to the Southwest, Sandpiper Street to the Southeast and Heaton Street to the Northwest.

Being within the Central Jurien Bay Townsite the site is part of the main commercial and tourism hub.

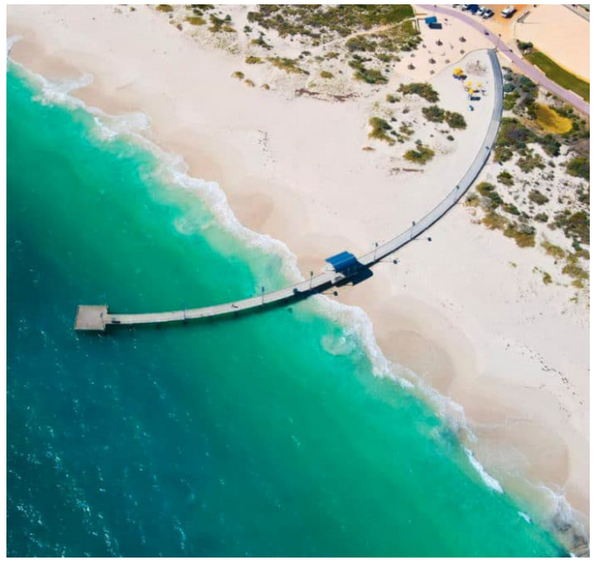
The lot has no distinguishing features, it is currently vacant featuring two degraded buildings and does not accommodate any endemic vegetation or fauna.

## SITE HISTORY

The site has been vacant for over 10 years with its most recent use as the Blue Water Crayshing / processing plant, operational for a period of approximately thirty years before being demolished.

Prior to this the site was strongly related to the Fremantle Fishermen's Co-op Jetty, which was contracted in 1961 on the foreshore opposite Heaton Street. The site was at the centre of the traditional commercial fishing operations in Jurien Bay until the new marina was developed to the north of the town centre.

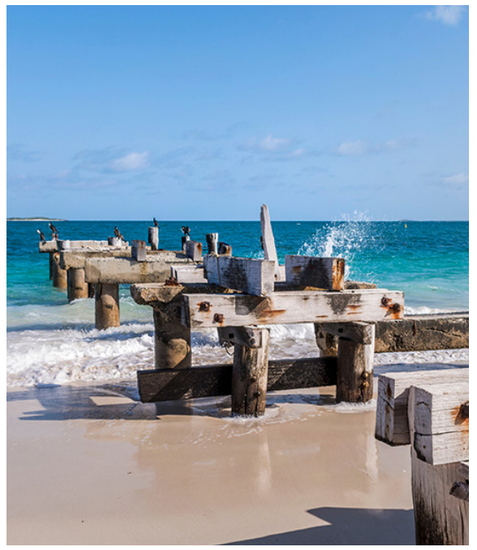
## SITE CHARACTER



HTTPS://PERTHISOK.COM/BEST-OF-WA/JURIEN-BAY/

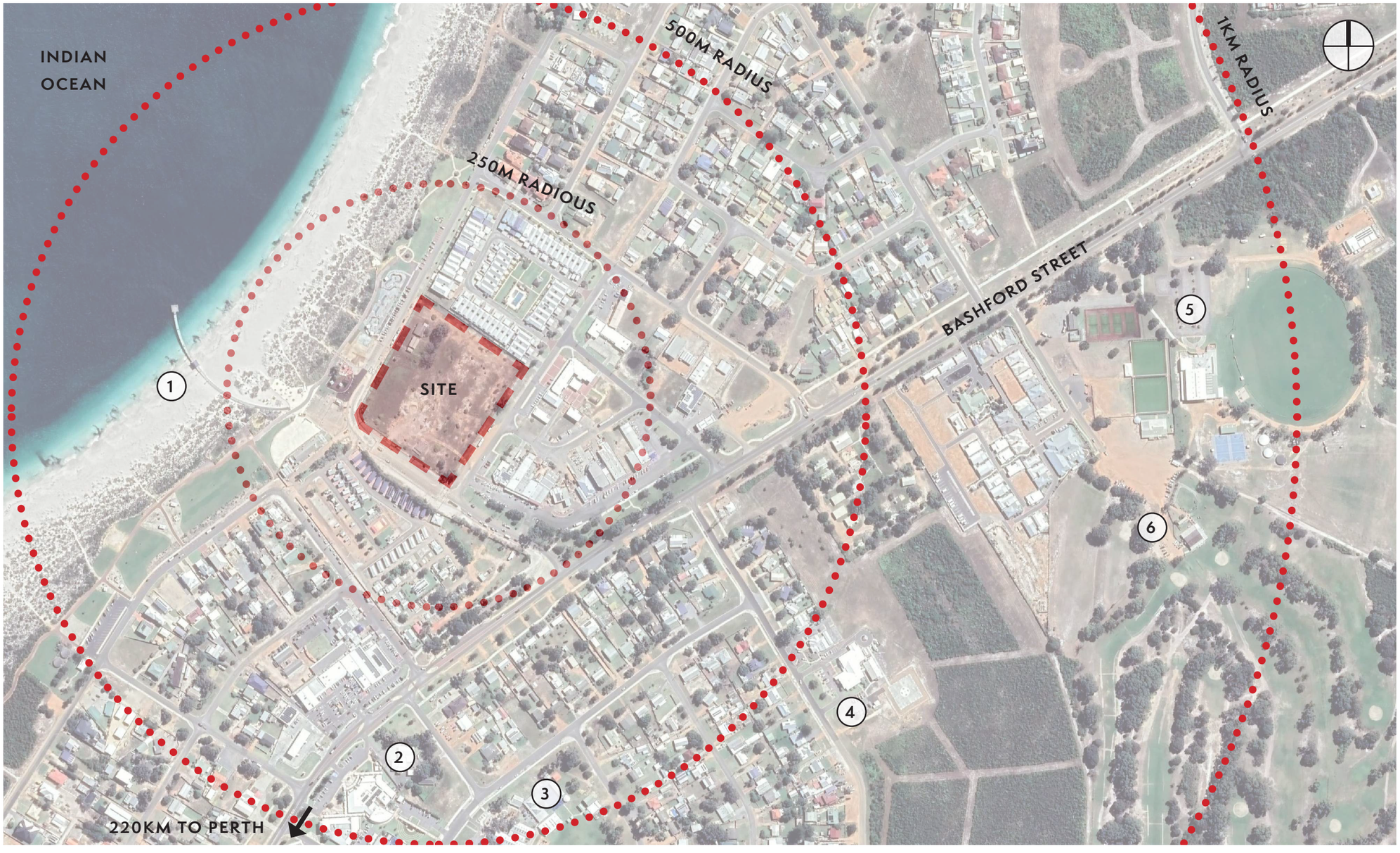
HTTP://JURIENBAYHOLIDAYS.COM/

HTTPS://PARKS.DPAW.WA.GOV.AU/PARK/JURIEN-BAY



HTTPS://PARKS.DPAW.WA.GOV.AU/PARK/JURIEN-BAY

## LOCATION AND CONTEXT

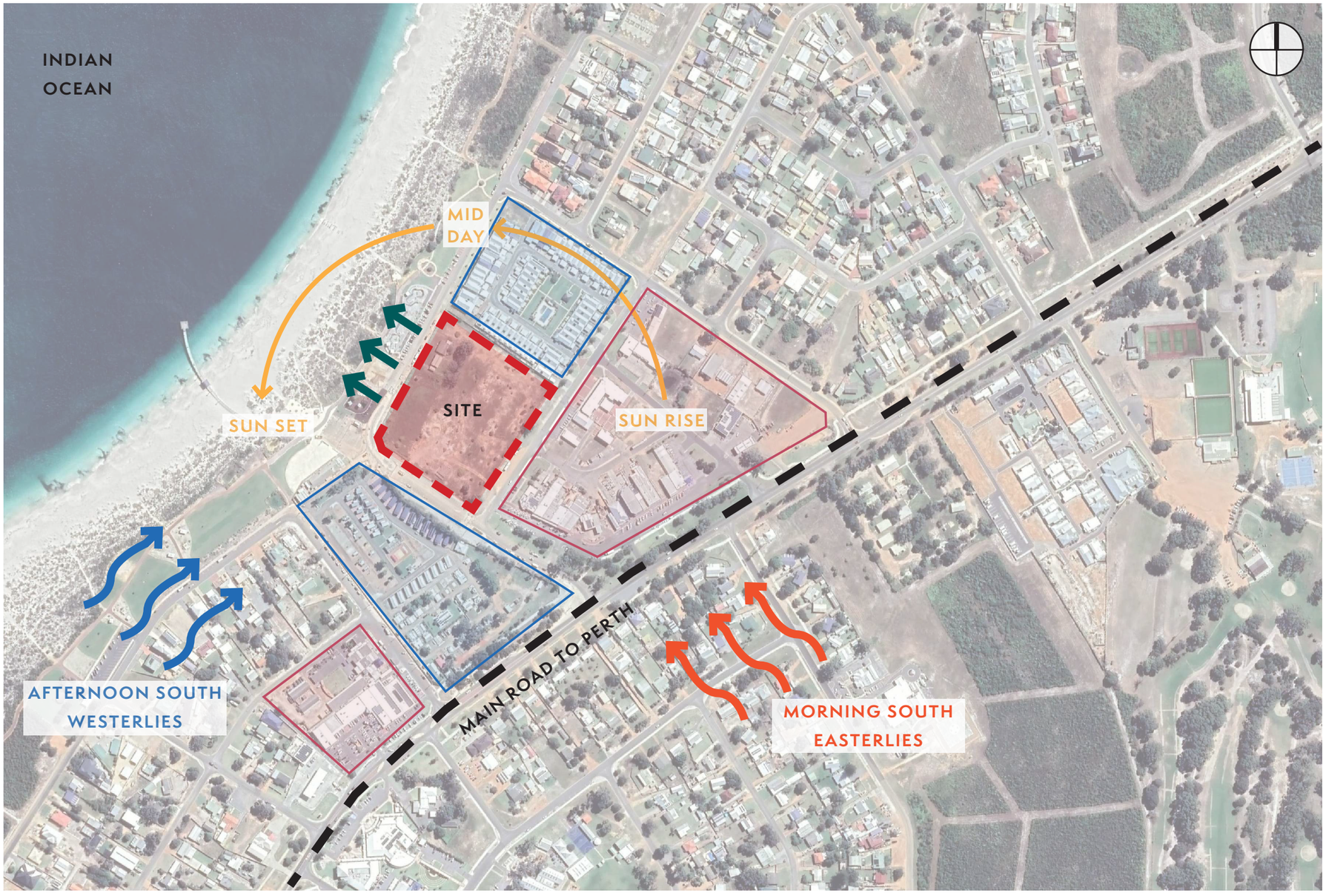



**LEGEND**

1. JURIEN BAY JETTY
2. TURQUISE COAST VISITOR CENTRE
3. DISTRICT HIGH SCHOOL
4. HEALTH CENTRE
5. SPORTS AND RECREATION CENTRE
6. COUNTRY GOLF CLUB

SCALE 1:5000 / A3

## SITE ANALYSIS




**LEGEND**

- MAIN SITE VIEWS
- PREVAILING WIND
- SUN PATH
- MAIN ROAD
- COMMERICAL ZONE
- TOURIST ZONE

SCALE 1:5000 / A3

## COASTAL PLANNING

Additional consideration has been given to the issue of sea level rise with a proposed Lower Ground Level AHD RL of 3.6 and Upper Ground Level ADH RL of 5.2. This is above the current AHD RL between 1.9-2.8 (approximation) at the location of Block D.


**LEGEND**

JURIEN BAY | COASTAL EROSION HAZARD MAP |

INLAND BOUNDARY OF PREDICTED VUNERABILITY

2016
2070
2030
2110

SCALE 1:2500 / A3

## DESIGN GOALS

As part of the first stage in the overall development of the overall site the Motel seeks to:

- Provide a high quality, engaging and dynamic architectural response to a unique site enhancing local character
- Generate a public street interaction and pedestrian interface along Sandpiper Street with an activated street level design utilizing soft and hard landscaping elements to address community needs
- Create a landscaped streetscape with the inclusion of a mature tree canopy to provide mottled shade to kerb side areas
- Add to the range of short stay accommodation options within Jurien Bay and assist in diversifying the range of end users
- Incorporation of a solar power generation system to service the buildings power needs

SOUTH EAST ELEVATION | SCALE 1:300 / A3

## CONTEXT AND PLANNING

The overall development endeavors to balance the issue of functional planning within the existing built and environmental context. With this in mind, Stage 1 – Block D will focus on massing and detail of the site's perimeter.

The motel development also seeks to addresses boarder planning issues encompassing policy and long-term community development with the short stay accommodation to service growing tourism within the region.

Pedestrian footpaths and development of a 'shared zone' for pedestrian/vehicular circulation zone along Sandpiper Street, involving hardscape and signage, is designed to mitigate danger to pedestrians and calm vehicular velocity

Due to the buildings placement, centered along the Sandpiper Street front, it will create negligible overshadowing to neighboring properties.

It is anticipated that the size of the overall development of the site will provide critical mass to assist in promoting Jurien Bay as a regional, national, and international destination.

NORTH EAST ELEVATION | SCALE 1:300 / A3

## DEVELOPMENT PROPOSAL

The overall development proposal consist of 8 'block' or semi-independent buildings which incorporate a variety of functions for an integrated resort complex.

This application relates to Block D which is intended to be the first stage in the site's development. The table below gives an overview of the proposed blocks and their functions.

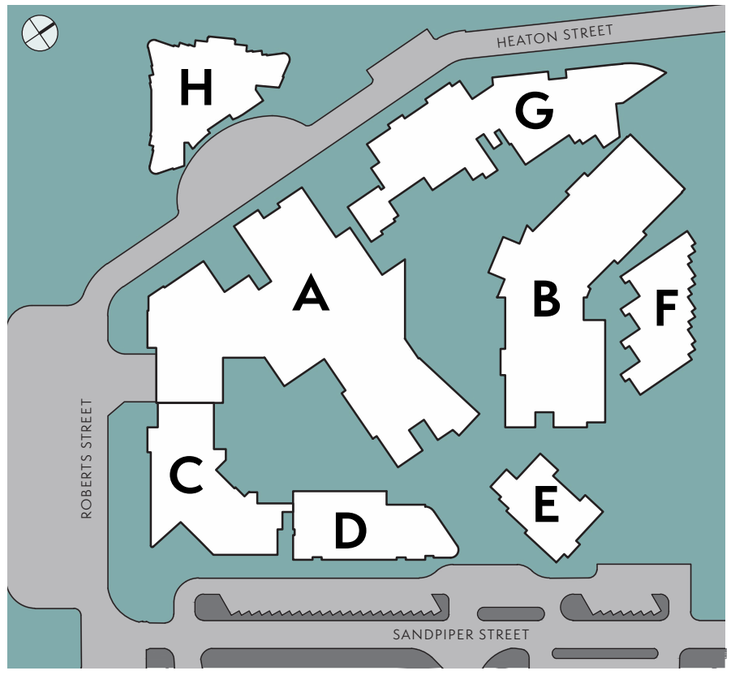
In accordance with LPS7 Schedule 4 -SU4, the proposed motel is a permitted land use.
Out of the 8 'independent' buildings envisioned as part the overall development the Block D Motel has been selected for the first stage as it is intended to serve as an anchor and support the future works.

| STAGE 01 | |
|---|---|
| BLOCK D | Motel – Short Stay Accommodation |

| FUTURE STAGES | |
|---|---|
| BLOCK A | Tavern, Restaurant, Functions, Short Stay Accommodation, Permanent Residences |
| BLOCK B | Spa, Amenities, Short Stay Accommodation, Permanent Residence |
| BLOCK C | Retail, Offices, Health Club, Short Stay Accommodation, Permanent Residence |
| BLOCK E | Reception, Sales, Short Stay Accommodation |
| BLOCK F | Permanent (Terrace Style) Residence |
| BLOCK G | Retail, Permanent Residence |
| BLOCK H | Hotel (Includes Bar, Restaurant, Rooftop Pool, and Gym Facilities) |

Secure and on-street parking, service access, boat parking, podium-level pool, landscaping, and other facilities supporting the functions outlined above.

DIAGRAMATIC BLOCK LAYOUT SCALE 1:1750 / A3



## DEVELOPMENT PROPOSAL

The Motel will comprise of 41 short stay accommodation rooms with a mix of 1 bed 1 bath, 2 bed 2 bath and 3 universal access rooms. All rooms will be self-contained with select rooms having a private courtyard or balcony.

Entry through the main reception is off Sandpiper Street along with general amenities, staff office and services. The building also offers guest a communal roof terrace at Level 2.

| | ROOM TYPE | | | | | |
|---|---|---|---|---|---|---|
| | TYPE 01 | TYPE 02 | TYPE 03 | TYPE 04 | TYPE 05 | TOTAL |
| | \| 1 BED \| 1 BATH \| | \| 2 BED \| 2 BATH \| | \| 2 BED \| 2 BATH \| | \| 1 BED \| 1 BATH \| UNIVERSAL ACCESS | \| 1 BED \| 1 BATH \| | |
| **GROUND FLOOR** | 9 | | | 1 | | **10** |
| **FIRST FLOOR** | 11 | 1 | | 1 | | **13** |
| **SECOND FLOOR** | 11 | | | 1 | | **12** |
| **THIRD FLOOR** | | | 2 | | 4 | **6** |
| **TOTAL** | **31** | **1** | **2** | **3** | **4** | **41** |

## BUILT FORM AND MATERIALITY

The overarching goal of the proposal is to provide a user friendly, welcoming project diversifying and enhancing Jurien Bay's built environment. To ensure the long-term wider appeal of the proposed built form as an alternative to so-called 'contemporary' architecture expressions that, by definition, become obsolete and dated over time.

The four storey volume looks to maximise the site potential without compromising local character and scale. The envelope will assist in spatially defining Sandpiper Street with its distinct character and geometry.

The building design embraces classical and vernacular Australian architectural traditions invoking the idea of growth of place over time.

The hipped roof and weatherboarding elements are reminiscent of holiday bungalows up and down the coral coast between Wedge Island and Greenough.


COLORBOND ROOF


WEATHERBOARD

Walls and arches of local stone and brick evoke early settlements and the past, industrial use of the site.


BAGGED BRICK


WHITE BRICK


LIMESTONE

Anodized aluminum sunshades, solar photovoltaic and high-tech window glazing of twenty first century technology.


METAL SCREENING


AWNINGS

Overall, the design seeks to employ a streamline early twentieth century modern classical detailing found throughout hotel architecture, such as the Cottesloe Beach Hotel.

## SOLAR ACCESS AND NATURAL VENTILATION

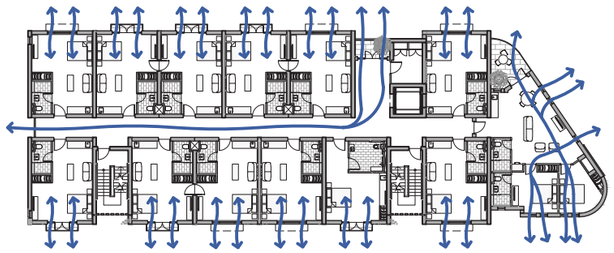
The design proposal seeks to employ a high level of natural amenities to each room facilitating a modern indoor / outdoor lifestyle.

All room types incorporate both fixed and operable glazing providing natural sunlight, ventilation and airflow. The typical room depth of 6.5m assists in maximizing coverage.

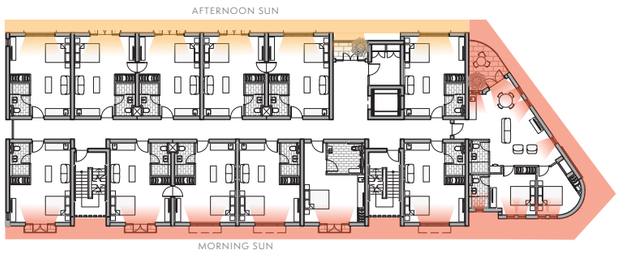
Sun protection is tailored for orientational and seasonal solar exposure helping to optimize performance and amenity.

Each common corridor and lift lobby is also provided with natural light and cross ventilation.

The roof is designed to accommodate photovoltaic panels to contribution in covering the buildings power needs.



NATURAL VENTELATION | SCALE 1:500 / A3 |




NATURAL LIGHT | SCALE 1:500 / A3 |

## PARKING

As part of Stage 1 works a boulevard style footpath and landscaping, incorporating at grade street and service road parking, is proposed along Sandpiper Street. This will include:

- 50 car bays, including 1 disabled bay
- 1 loading bay
- 6 bike racks (to accommodate 12 bikes)

It is intended for these car bays and bike racks to primary service motel guests and staff.

To note, it is envisioned that with future works, when further stages of the overall site have been developed, car bays 21 – 50 will be relocated the secure, central undercroft parking.

For a more detailed overview of parking requirements, please see Shawmac Transport Impact Statement.

## LANDSCAPING

The landscape design seeks to engage with the principle environmental forces and features of the Jurien Bay coastal site and make them part of the soft and hardscape of the project.

In relation to Stage 1 works this will include conjuring the regional dune formation contours and wind expression through the paving design and materials,

An urban street scape will be generated along Sandpiper Street incorporating a mature tree canopy producing dappled shade along the pedestrian walkway facilitating engagement and addressing the lift of the street for visitors, residents, and the community.

Additional soft landscaping is proposed to run the sites entire Sandpiper Street frontage as a temporary feature, until further stages of the site are developed, to extend a comfortable and visually appealing streetscape.

For the overall developments Landscaping Concept Report, please see Appendix 2 of Burgess's Development Application Report.

# APPENDIX 3:
# ENVIRONMENTAL SENSITIVE DESIGN REVIEW

Jurien Bay

Lawrence Scanlan and Associates

15 February 2010

# Jurien Bay - An ESD Review

# Jurien Bay - An ESD Review

Prepared for

Lawrence Scanlan and Associates

Prepared by

**AECOM Australia Pty Ltd**
3 Forrest Place, Perth WA 6000, GPO Box B59, Perth WA 6849, Australia
T +61 8 6430 2000 F +61 8 6430 2999 www.aecom.com
ABN 20 093 846 925

15 February 2010

60140270



## Quality Information

Document Jurien Bay - An ESD Review

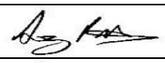
Ref 60140270

Date 15 February 2010

Prepared by Ashley Barnett

Reviewed by Graham Agar

Revision History

| Revision | Revision Date | Details | Authorised | |
|---|---|---|---|---|
| | | | Name/Position | Signature |
| 1 | 09-Feb-2010 | Appendices - DA | Ashley Barnett<br>Associate Director |  |
| 2 | 14-Feb-2010 | Appendices - DA | Ashley Barnett<br>Associate Director |  |
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# Table of Contents

# 1.0 Introduction

AECOM's commission on the Jurien Bay resort is to review the existing design and suggest additional initiatives to assist the design team to ensure that the facility achieves the lowest possible energy usage, whilst maintaining acceptable occupant comfort and not compromising the aesthetics or usability of the space.

The report highlights areas which have been reviewed now and those for further consideration as the design progresses. The project is already significantly developed using proven ESD principles and, as such, macro issues; such as whether natural ventilation or natural lighting strategies will be incorporated are already largely decided. In the future, computer modelling of the resort will assist in quantifying the magnitude of any benefits which can be obtained and the suitability of currently suggested ESD initiatives.

The report reviews issues associated with the site such as landscaping and micro climates, passive building measures such as building form and shading as well as active measures involving air conditioning and lighting services.

The level to which the client responds to the ESD challenge will be subject to the available capital available for the project and the perceived benefits the client expects from each initiative. The benefits from implementing ESD initiatives generally fall into three categories and often encompass more than one. These categories include:

- Direct economic benefits through the reduction in outgoings from incorporating energy efficient equipment. The acceptable simple payback period for many property developers is around three years.
- Improved comfort conditions through incorporating individual occupant control, improved lighting and air conditioning design, higher levels of outdoor air and opportunities to incorporate natural ventilation and natural lighting.
- Increased opportunities for Client to demonstrate environmental credentials to environmentally aware public.

Each strategy in this report will be developed to determine the direct economic benefits of strategies as the design progresses.

## 1.1 Specific Considerations

It is noted that, for the Jurien Bay project, validation of ESD initiatives on purely economic benefits alone would be likely to result in adoption of a minimum number of initiatives.

The usage profile of the building, coupled with its low energy load profile, suggests that more holistic criteria, beyond pure economic objectives, would need to be configured into the decision making process.

It is also suggested that the usage profiles and building loads at the Jurien Bay spa resort would result in greater viability for systems that are more simplistic and intuitive in nature favouring solar passive design principles and low embodied energy principles, as opposed to extensive building services type systems.

The design approach for an eco sensitive design is to actively incorporate synergy between the Architecture, Building Engineering and the Landscape design. Between AECOM and Lawrence Scanlan Architects this realisation has been for filled. This section of the report is to be read in harmony with the built form description and the landscape theme. We draw particular attention to the innovative water sensitive design approach of this project.

# 2.0 Building Form

## 2.1 General

The various building forms of the Jurien Bay resort has, in the majority, been predetermined by site, functional and planning considerations.

Site planning considerations have been defined by the project architects, Lawrence Scanlan, and the following solar passive design considerations will be embraced wherever possible:

## 2.2 Orientation

The building orientations have been arranged to take advantage of free solar heating during the winter months and minimise solar gain to the east and west façade when the sun is low over the horizon in the summer months. On this basis conventional wisdom recommends that the facility be orientated between 18° east of north to promote morning winter solar gain.

## 2.3 Building Shape

With a view to minimise the east west solar penetration, the building form should, and does, express a longer north south façade and short east west façade. Generally a length to width ratio of 1.6:1 provides the optimum floor plan to profit from the volume to façade ratio for a temperate climate. The resort buildings A to F are all significantly longer than this, however, with a relatively narrow aspect it will allow it to have improved natural ventilation and natural lighting performance.

## 2.4 Placement of Mass

To further promote solar gain in winter the peripheral areas such as the building core, stairwells, toilet areas and lift shafts are strategically located. This provides a buffer zone reducing heat gain from the east and west to the occupied space in summer and promotes free solar heating during the winter.

## 2.5 Solar Penetration and Shading

There are a number of solar penetration and shading issues that influence the design. These are mapped below by the landscape team.

The northern façades contains the area in the resort that is used as typical apartments. Part of maintaining a pleasant and attractive environment is to allow natural lighting and long distance views as much as practicable, whilst maintaining the designs integrity as far as external heat loads.

Conventional wisdom suggests that horizontal shading devices above the windows provide the best results for northern facades. This occurs throughout the resort.

The western façade has views on to the ocean. Western facades are treated with shade louvres in the vertical plane.

## 2.6 Prevailing Breeze Study

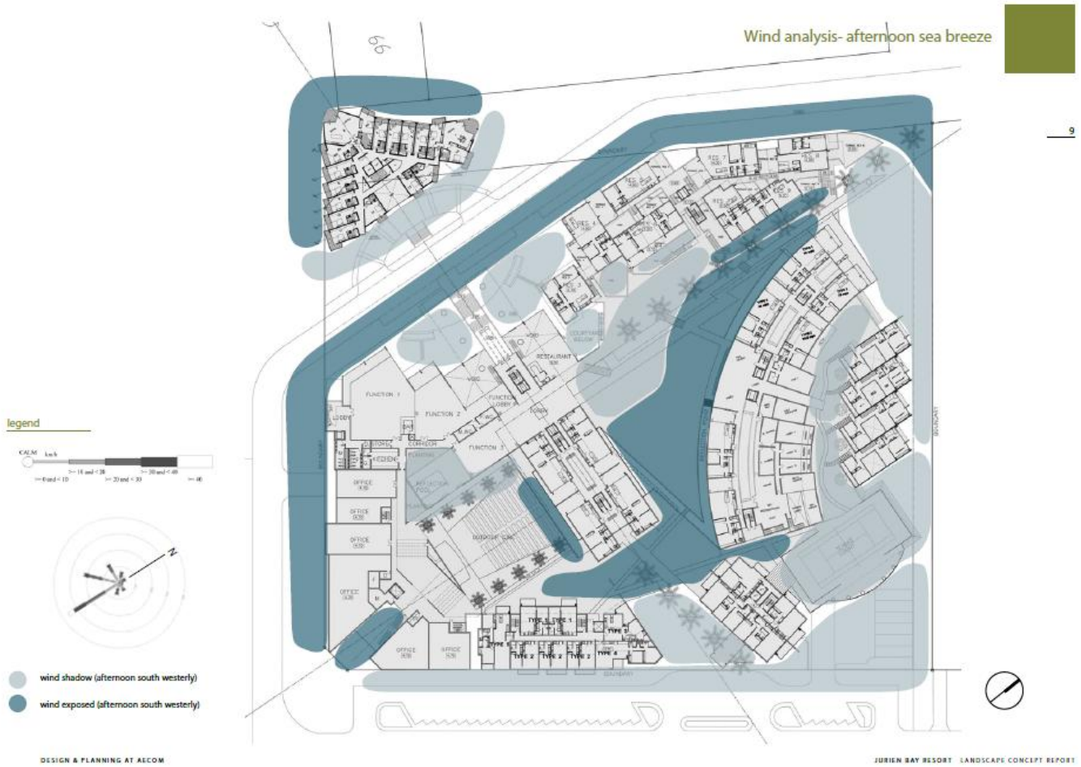
The Jurien Bay climate is dominated by strong breezes, particularly in the mid to late afternoon in the summer months. By locating ventilation openings to take advantage of these breezes it will be possible to obtain significantly improved thermal performance for the spaces.

The naturally ventilated and mixed mode spaces will have louvres on both the north and south facades to encourage cross ventilation and make use of the prevailing winds at the site.

Of note, the combination of the loggia and atrium in building type A and B are designed to take advantage of this free ventilation. The prevailing winds change direction in the afternoon, coming off the ocean. The buildings and landscape combined provide a self protection from the sea breeze.

A site wide wind study, detailed by the landscape design team is shown below. In terms of building design, the areas exposed to morning easterly winds will be closed off. Thus allowing the warm easterly winds to be deflected. All the buildings, with building A and B in particular have been designed with easterly wind protection. This principle is simple yet validates the intent of the ESD approach.


Conversely, In terms of building design, the areas exposed to afternoon south westerly winds will be opened up. Thus allowing the cool south westerly winds to flow through the building. All the buildings, with building A and B in particular have been designed to use the south westerly wind. This principle is simple yet validates the intent of the ESD approach. The benefits are increased natural ventilation, ability to introduce heat transfer from the thermal mass of the building into the natural air exchange. This directional flow will also be used for night cooling.



# 3.0 Building Envelope

## 3.1 Thermal Mass

### 3.1.1 Internal thermal mass

Thermal mass can be used to stabilize the internal temperature of the occupied spaces. In temperate zones where night-time temperatures fall below the daytime maximum and room comfort temperatures, the thermal mass of a naturally ventilated building can be effectively employed as a method to stabilise the internal comfort temperatures. This is effectively achieved through a process known as night cooling.

The Jurien Bay climate provides a high diurnal temperature variation in the order of 15ºC. This high range can be used in conjunction with mixed mode and natural ventilation to minimise the air conditioning requirements of the space.

Home » Climate » Jurien Bay Climate

**Jurien Bay Long-term Averages**

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean Max (°C) | 29.8 | 30.7 | 29.3 | 26.2 | 23.1 | 20.5 | 19.4 | 19.8 | 21.1 | 23.1 | 25.7 | 28.0 | ***24.7*** |
| Mean Min (°C) | 17.0 | 17.8 | 16.5 | 14.0 | 11.9 | 10.3 | 9.5 | 9.4 | 9.9 | 11.1 | 13.5 | 15.5 | ***13.0*** |
| Mean Rain (mm) | 6.6 | 15.4 | 13.5 | 30.8 | 80.8 | 110.8 | 113.6 | 80.6 | 45.0 | 26.2 | 17.4 | 6.5 | ***545.1*** |
| Median Rain (mm) | 1.0 | 3.6 | 7.6 | 24.8 | 78.2 | 106.4 | 112.0 | 82.0 | 43.4 | 24.0 | 13.1 | 2.5 | ***555.0*** |
| Mean Rain Days | 1.8 | 2.7 | 3.4 | 6.8 | 11.7 | 14.8 | 17.0 | 14.9 | 11.9 | 8.0 | 5.4 | 2.9 | ***100.8*** |

**Jurien Bay Daily Records**

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High Max (°C) | 45.2 | 44.7 | 44.0 | 37.3 | 32.1 | 27.8 | 26.2 | 26.9 | 32.8 | 38.2 | 40.5 | 44.7 | ***45.2*** |
| Low Max (°C) | 21.2 | 21.5 | 18.8 | 17.4 | 14.6 | 13.2 | 14.0 | 13.2 | 12.9 | 15.0 | 15.8 | 20.0 | ***12.9*** |
| High Min (°C) | 26.5 | 27.9 | 27.0 | 24.4 | 22.4 | 19.3 | 17.3 | 18.8 | 18.3 | 23.5 | 23.9 | 27.6 | ***27.9*** |
| Low Min (°C) | 8.0 | 8.8 | 5.6 | 1.7 | 2.7 | -1.0 | 0.6 | 1.3 | 1.3 | 2.7 | 4.0 | 6.6 | ***-1.0*** |
| High Rain (mm) | 77.4 | 98.2 | 50.4 | 125.2 | 76.8 | 83.0 | 95.8 | 54.6 | 34.4 | 25.0 | 37.8 | 24.4 | ***125.2*** |

**Jurien Bay Monthly Records**

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High Mn. Max (°C) | 33.3 | 34.8 | 32.0 | 28.7 | 25.4 | 22.2 | 20.9 | 21.2 | 23.3 | 25.0 | 28.2 | 30.5 | ***34.8*** |
| Low Mn. Max (°C) | 26.9 | 27.8 | 27.0 | 24.0 | 21.5 | 18.5 | 17.9 | 18.2 | 19.2 | 21.0 | 22.6 | 24.1 | ***17.9*** |
| High Mn. Min (°C) | 18.8 | 21.1 | 19.0 | 16.6 | 14.8 | 12.6 | 12.0 | 11.8 | 11.8 | 12.8 | 16.6 | 17.9 | ***21.1*** |
| Low Mn. Min (°C) | 15.2 | 15.6 | 14.0 | 11.2 | 10.0 | 6.5 | 7.5 | 7.0 | 7.1 | 9.1 | 10.9 | 13.0 | ***6.5*** |
| High Rain (mm) | 91.6 | 164.4 | 85.0 | 127.8 | 255.8 | 300.2 | 217.0 | 178.8 | 81.0 | 66.6 | 63.6 | 41.9 | ***300.2*** |
| Low Rain (mm) | 0.0 | 0.0 | 0.0 | 1.0 | 14.8 | 25.8 | 33.3 | 16.4 | 8.8 | 0.5 | 0.0 | 0.0 | ***0.0*** |

Buildings A and B have a significant volume and, as such, can make use of cooler night time temperatures to purge any heat that has been trapped within the space. Whilst there is little thermal mass within the space it is believed that night purge of the space, especially during summer, will be of benefit. The natural airflow path is through the louvred façade of the loggia. Combining with the central void atrium, the full use of thermal mass transferring energy to the air can be utilised.

Internal finishes should comprise as much exposed thermal mass as possible. By exposing thermal mass and night purging the space it will be possible to delay the amount of time where air conditioning is required and reduce the peak cooling load when it is.

## 3.2 Thermal Efficiency of Facade

### 3.2.1 Insulation

For all air conditioned and heated areas it is recommended that thermal insulation be provided to walls and ceilings. The thermal insulation assists in reducing the convective and conductive loses from the air conditioned and heated spaces.

In the Jurien Bay climate the internal heat source should be prevented from escaping and reclaimed to provide free heating in the winter and night-time operation of mid-season.

It is noted that the new edition of the BCA requires certain levels of insulation for compliance with part J. Compliance with Part J should be taken as a minimum starting point.

### 3.2.2 Radiant Barrier

For all air conditioned areas it is recommended that radiant barriers be provided to walls and ceiling. The radiant barrier assists in reducing the radiant temperature and thus the comfort temperature within the occupied space. The western elements of Building A and B provide this by means of self shading.

### 3.2.3 Roof and façade colour

Selection of light coloured roofs and walls will reduce the absorption of solar heat in summer. Conversely, the selection of dark coloured walls and roofs will promote heating in winter. As such, colour choices will be made based on the expected usage profile of the different buildings.

## 3.3 Glazing

### 3.3.1 Extent of the glazing

Reduced glazing will reduce the level of heat load in summer and heat loss in winter thereby reducing air conditioning and heating energy costs and plant size. However reduced window sizes will also reduce day lighting decreasing comfort levels and increasing the reliance on electric lighting.

A detailed analysis of the glazing type and shading scheme will be carried out for the western façade in particular. It should be noted that direct solar radiation on glass will be avoided wherever possible and, if the exposed glass is in close proximity to occupants, internal operable shading will be provided to reduce radiant heat and coolth and to reduce the impact of glare.

### 3.3.2 High performance glazing

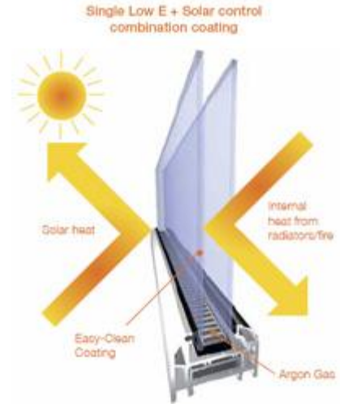
High performance glazing should be provided, especially if occupants are located close to glass.

The main effect on the internal conditions from the glazing will be radiation of heat or cold from the window. Consideration should be given to installing low 'e' (radiation emission) glass.

### 3.3.3 Low e glazing

Low 'e' glazing incorporating coating or laminate is ideal for temperate climates where radiant heat loss from windows is to be reduced. Low 'e' glass is most effective for reducing radiant heat loss to outside so its application is ideal in colder climates when heat loss from the occupied space to outside is the significant issue.

The benefits include reduced operating costs, improved comfort and reduced air conditioning and heating plant size.



# 4.0 Mechanical Services

## 4.1 Thermal comfort levels

Design temperatures can be challenged within each of the air conditioned zones. Relaxation of internal temperature and humidity levels will have significant effects on the reduction of energy consumption and plant capacity levels.

Designing the system to maintain elevated internal temperatures during the summer and reduced internal temperatures during the winter can improve occupant comfort levels significantly. This design strategy is based on occupant clothing standards during the varying seasons.

Consideration will be given to increasing comfort temperatures to 25ºC in summer and reducing comfort temperatures to 19ºC in winter.

## 4.2 Fan Energy Reduction Techniques

### 4.2.1 Demand controlled ventilation

As the outdoor air component of the buildings heating and cooling load is of such significance, all attempts should be made at reducing the external ventilation gains.

As the outdoor air volume flow rate is a function of occupancy, the volume flow rate can be varied depending on the number of occupants within the conditioned space. This can be achieved through the use of carbon dioxide monitoring to sense the level of carbon dioxide in the room air and vary the outdoor air according to the population.

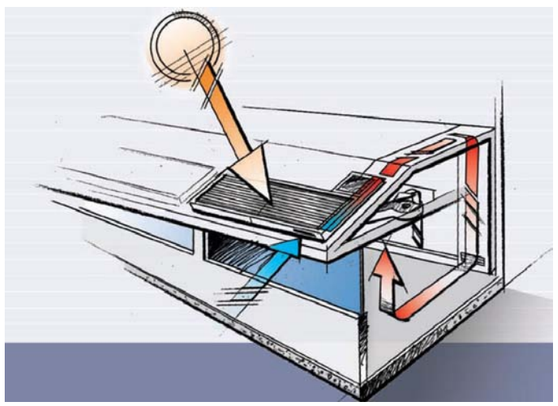
On this basis, it is recommended that $CO_2$ monitoring and outdoor air control be considered for this project, especially for communal areas.

## 4.3 Heating Considerations

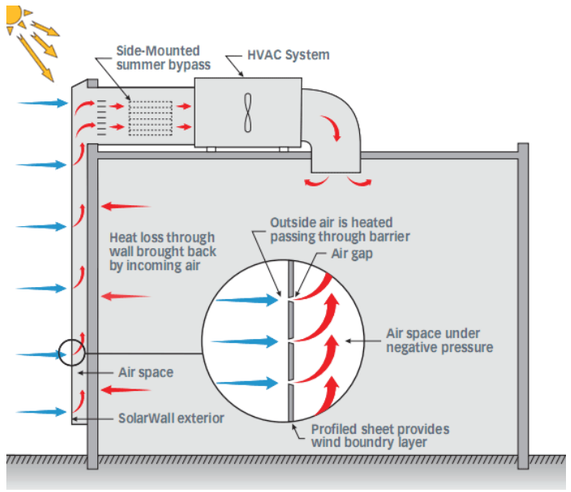
### 4.3.1 Rooftop / Wall / Facade Solar Air Heaters

These options involve pre-heating outside air streams via solar heat collectors. Such devices can be easily incorporated into the design of all the buildings the roof, the building's walls / floor, or both, and are generally constructed from dark coloured, highly conductive materials such as metals. The external surface heats up in the presence of direct solar radiation, and convectively transfers heat to the air stream moving below the surface.

The external element of this system relies on being orientated to receive the sun's rays during winter. As such, it also needs to be supplemented with the central heating system to provide the room with heat during days (or evenings) when the sun's power cannot be guaranteed to provide heating. i.e. overcast days.



Façade Solar Air Heaters



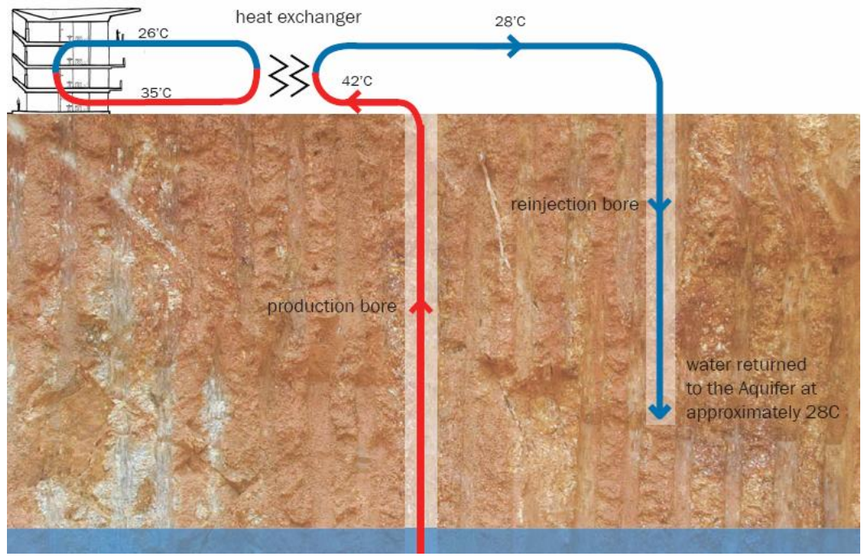

## 4.4 Geothermal Heat exchange

### 4.4.1 Closed loop ground source heat pump

Closed loop ground source heat pump systems use the ground to store heat or 'coolth' from an air conditioning condenser water system. This heat or 'coolth' which is stored in the ground is then extracted when needed and used to cool or heat the building through the use of a refrigeration circuit.

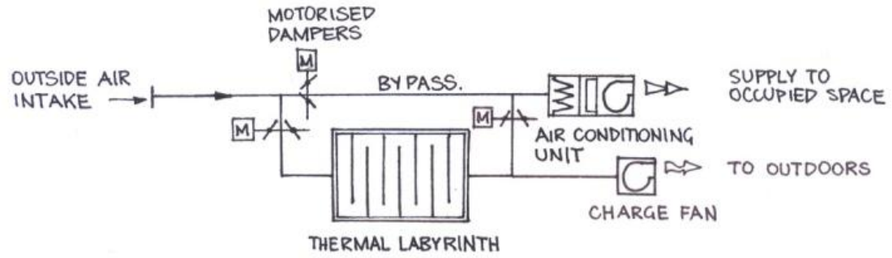
Closed loop ground source heat pumps require an annual balanced heating and cooling energy load to ensure that the net ground temperature does not continuously rise or fall. Ground source heat pump systems incur high capital costs and require site area for the location of bore holes.

Based on the heating and cooling energy consumption over a year, we will investigate the feasibility of a closed loop ground source heat pump.



## 4.5 Thermal Storage

Thermal storage in the form of chilled water, ice storage or a rock bed thermal labyrinth can provide significant cost savings in the operation of chiller plant. Operating standby chillers at night to generate chilled water for storage can take advantage of off-peak electricity rates and reduce energy consumption through operating at a depressed wet-bulb temperature. The stored chilled water can then be used to peak-lop during the peak chiller load of the following day.

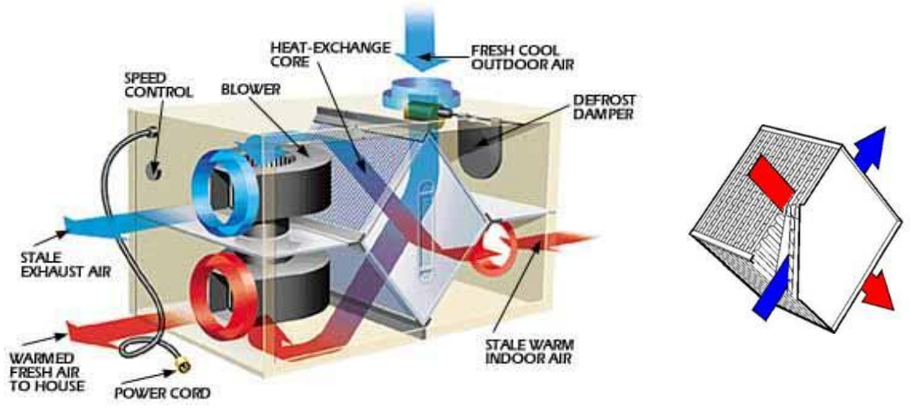



Thermal labyrinths are effective in climates with high diurnal temperature climates such as Jurien Bay. In Jurien Bay, the average diurnal range is 15 degrees, making thermal storage systems quite effective in reducing peak cooling load requirements.

## 4.6 Air to Air Heat Recovery

Air-to-air heat recovery through the use of plate heat exchangers can recover up to 70% of exhaust air from a building.

Air-to-air heat recovery installations need to be carefully designed to minimise the extent of additional ductwork and all of the additional material required to complete an installation.




Air-to-air heat exchange through the use of run-a-round coils can provide heat recovery with up to 50% efficiency. Run-a-round coils use conventional air conditioning unit coils to transfer heat from the exhaust air into a water circuit. The heated water is then reticulated to another coil. This second coil releases the stored heat into the air stream providing heat reclaim. The run-a-round coil system is more flexible than the plate heat exchanger system as the heat exchanger coils can be located easily anywhere in ductwork however it provides a lower efficiency and requires higher fan and pumping energy consumption.

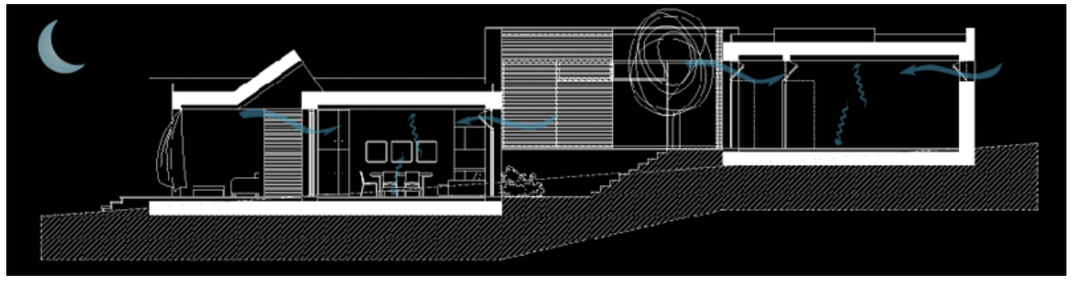
Cost benefit analyses for various systems will be provided to maximise the level of air-to-air heat recovery systems.

## 4.7 Night Cooling

Passive heating and cooling operates on the principle that an isolated system will always try to reach thermal equilibrium by transferring heat from the warmer body to the cooler body. For a system such as a building, this means that the wall and internal air temperatures will constantly converge in an attempt to reach equilibrium. The rate at which the building achieves thermal equilibrium is dependent upon the construction of the building and the desired comfort conditions within the internal spaces.

During the heat of the day a building absorbs heat from the warm outside air and direct solar radiation incident upon the walls and roof. During the night when the surrounding environment is cooler this heat is transferred back to the environment, cooling the thermal mass of the building.

During the summer months when the temperatures of the internal space is high due to the heat gain of the day, ventilation strategies will be put in place to maximise the benefits of the building mass. By opening the windows fully during the night, the cooler night air can flow through the building allowing the heat to be convected out of the structure. In this instance the openings of the loggia will provide this. The building slowly cools down during the night so that throughout the following day it can absorb more heat before the internal temperature starts to rise. Maximising the thermal mass of the structure increases the amount of heat that the building can absorb before it heats up to a level above a comfortable temperature.



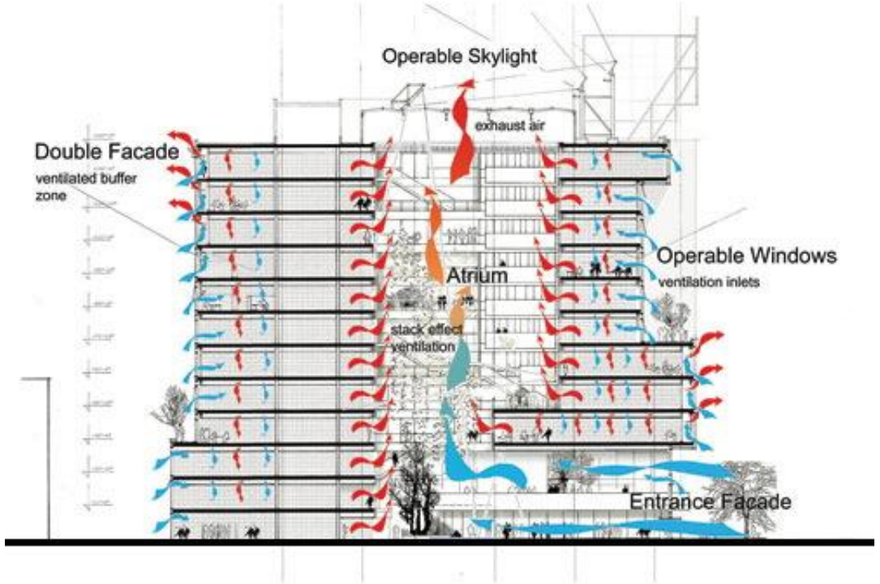
Where natural ventilation is incorporating, night cooling is a very effective means to provide comfort conditions within a space. The costal Jurien Bay climate is ideal for incorporating night cooling in the mid-seasons and summer.

Night cooling techniques operate most effectively in occupied spaces with exposed thermal mass on ceilings and walls. Night cooling will be considered for building A and B in particular. The strategy can be site wide. Therefore all buildings will have as much exposed thermal mass as possible.

## 4.8 Natural Ventilation

The coastal Jurien Bay climate is ideal for providing natural ventilation in the mid-seasons and winter. The cool night temperatures and the mild mid-seasons could allow acceptable conditions to be maintained in the resort without the need for air conditioning system operation.

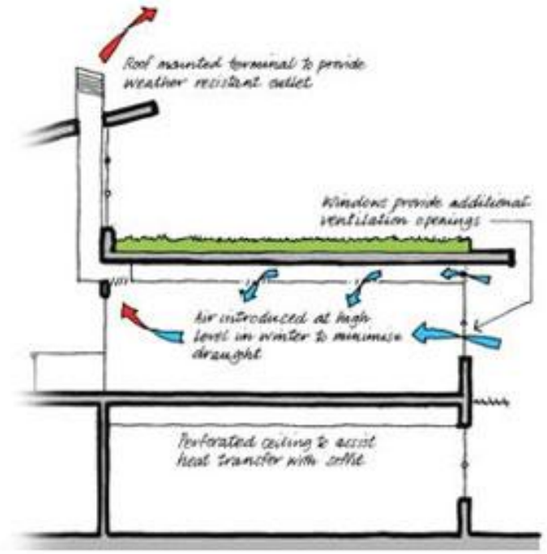
The benefits of a natural ventilation solution to the resort includes significantly reduced energy consumption levels, savings in plant capital cost and improved comfort levels for occupants for most of the year.




## 4.9 Mixed Mode Ventilation

Mixed mode ventilation systems involve hybrid systems incorporating natural ventilation and air conditioning. Natural ventilation is provided when the ambient conditions are suitable through the use of operable windows or façade vents. When the ambient conditions become unacceptably high or low, the natural ventilation systems are disabled and the air conditioning or heating system is activated to maintain comfort conditions.

The benefits of mixed mode ventilation systems include reduced operating costs and improved occupant comfort levels.



# 5.0 Electrical Services

## 5.1 Integrated daylight / artificial daylight control

Where natural lighting is promoted at the building facades additional energy saving features can be employed through the use of photo electric sensors. These controls operate the lighting at the facade through dimming or shutting off lights when the ambient light levels are adequate.

Dimming of lights is preferred to turning lights on and off as the abrupt change in lighting level caused with the latter method of control can cause distractions to the occupants.

## 5.2 Occupancy sensors

Infrared motion detectors will be employed in rooms which are infrequently inhabited, such as private offices, to shut off lighting and or air conditioning. This method of control is useful in automatically disabling light and/or air conditioning when the rooms are not occupied. These systems are effective however they are more expensive than manual control and are dependent on constant occupant movement and line-of-site to all corners of the room.

Infrared motion detectors are usually employed when occupants cannot be disciplined to manually turn on or off lighting or air conditioning systems.

## 5.3 Lighting control system

A fully integrated lighting control system which turns lights on and off in accordance with a time schedule can provide both running cost and energy savings. The integrated lighting control system can be linked to occupancy and day lighting controllers to assist in optimising the building lighting system operation.

## 5.4 Carpark lighting

Carpark lighting energy consumption can be reduced significantly through a number of initiatives to assist in improving the average lux levels and optimising the lighting design.

Provision of low energy light fittings throughout carparks in addition to controlling lights through infrared motion detectors or timers can provide energy reductions.

Opportunities for using integrated PV powered lighting systems for carparking will be considered.

## 5.5 Exterior lighting

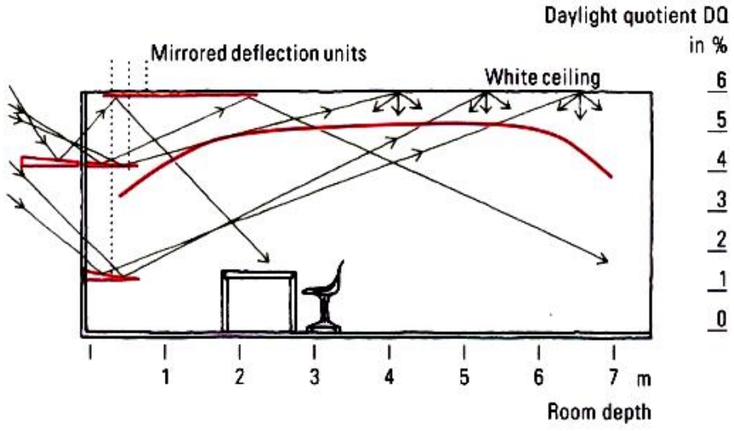
Exterior lighting energy consumption could be reduced through optimum lighting design and use of low energy fittings such as plasma, high pressure sodium or LED fittings. Exterior lighting controls using photoelectric cells will reduce the occurrence of exterior lights operating when not required.

To prevent light pollution all external lighting will be aimed to fall incident upon a building façade.

## 5.6 Light shelves and prisms

Natural lighting by using light shelf or prism technology can be effective for up to 7m into the room from the façade.

Light shelves provide the glass with direct shading of the window from the sun and they also reflect the visible spectrum deep into the occupied space. Laser cut prisms can refract diffuse light from the sky and direct it deep into the occupied space to reduce the reliance on electric lighting.




Effective natural lighting techniques can reduce not only the annual lighting energy consumption significantly but also assist in reducing the air conditioning load.

# 6.0 Hydraulics

## 6.1 Grey water and Rain Water recycling

Due to the usage of the site, it is considered that hydraulics is one area where excellent sustainability initiatives exist and will be explored further for viability within the scope of the cost plan.

As a holiday and permanent residence, it is likely that reasonable quantities of grey water will be generated. In addition, the adjoining athletics stadium is also likely to generate grey water and rainwater. Initial calculations indicate a diversified grey water volume of 70,000 litres per day. This could be as high as 100,000 litres at peak load conditions.

A tourism development like this will be water intensive. The patrons of holiday resorts place high demands on the water infrastructure. At AECOM we see an opportunity to apply a water sensitive design strategy. In harmony with a landscape design that utilises spent water from the site for irrigation, all building water use can be re-used.

By approaching the water design as a closed loop system, we are able to control the input and output of water use. Apart from the obvious environmental benefits, the client saves a considerable amount of money per annum.

In brief we would recommend studies on the following -

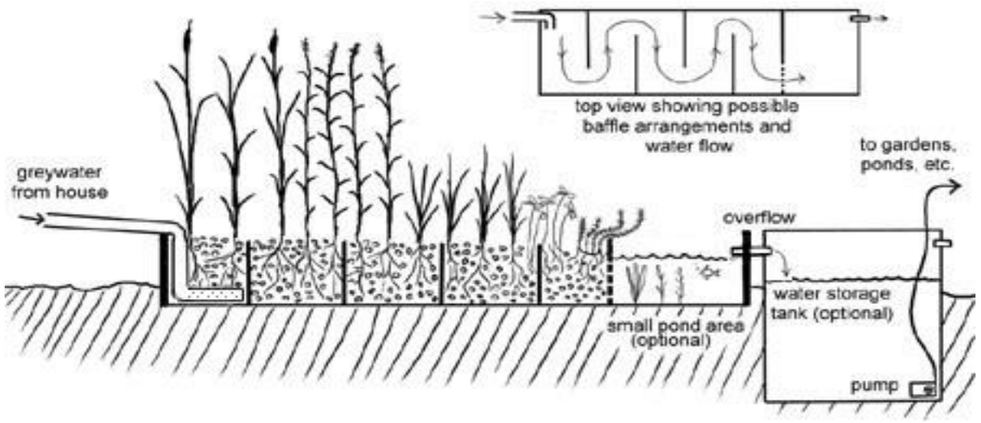
## 6.2 Site Wide Water Conservation Strategy

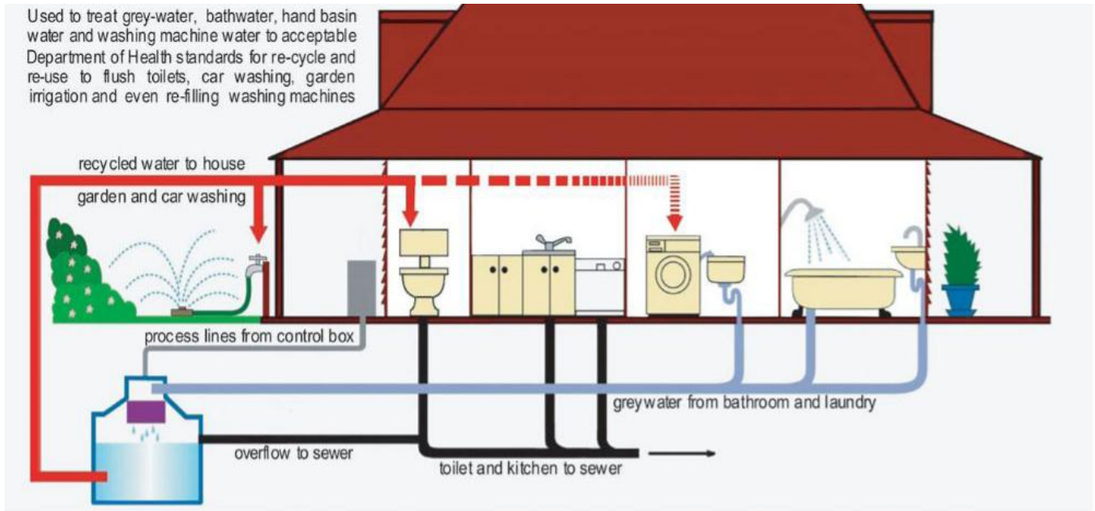
**Cost of Water**

The typical cost for water in remote locations can be $5.20 per kilo litre (kl). The cost of potable clean water at Jurein Bay will be excessive compared to Perth where a kl of water costs 0.43c. Our site wide water conservation strategy will offer significant potable water consumption savings, and the associated economic benefits.

Grey water treatment and recycling alone reduces demand on the potable water supply by 50%.

The plant material (reeds and sedges) proposed for within the grey water treatment systems are emerged Macrophytes. These Macrophyte plants break down the impurities and polish the grey water passing through the grave bed. The grey water treatment systems operate under oxygenated conditions and produce no odour.



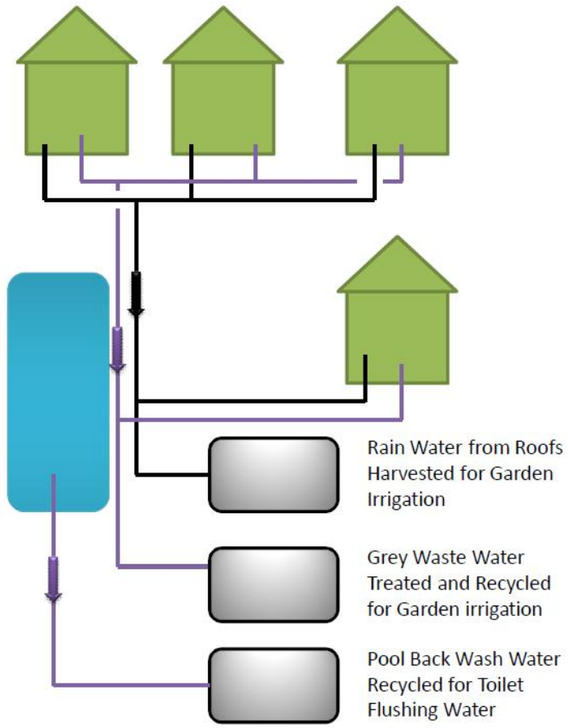




**Water ways with Reed Beds for Grey Water Treatment**

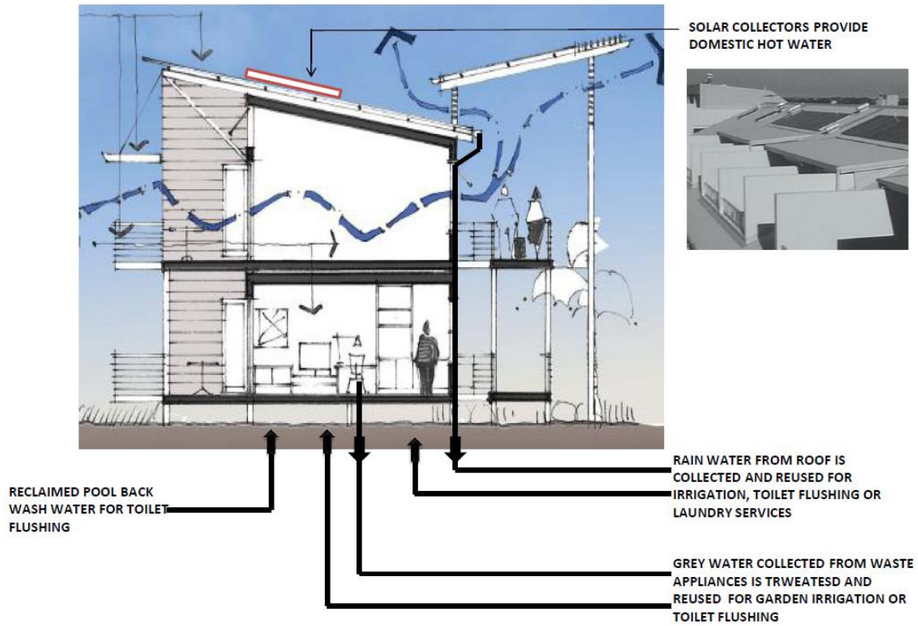
The Hydraulic Services design will be a water sensitive design, interactive with the Landscaping and built environments. The system will minimise offsite foul water and stormwater discharge, and reuse the treated water in specific situations.

The Hydraulic Services system design will incorporate:

- **Reduced flow tap ware** and water efficient sanitary appliances. This will provide significant reductions in the domestic water demand and in the volume of waste water produced.
- **Rain water** from roofed areas will be collected and reused onsite. By capturing and reusing rain water we can reduce the reliance and demand on the water supply infrastructure.
- **Grey Water recycling** treatment system will collect waste water from basins, showers and laundry areas. The grey water is treatment by a grey water treatment package unit. Secondary treatment is provided by interactive landscape water ways and reed beds, designed in conjunction with the landscape architects.
- **Pool filter back wash water** is passed through a back wash sand filter and stored for later reuse. The initial back wash water will be purged and discharged to the stormwater system, the remaining back wash water is collected




A typical water conservation strategy is depicted below.




## 6.3 Solar hot water

Solar hot water panels are another method of using solar energy directly to reduce the energy consumption. Locating flat panel solar hot water collectors on the roof of the all the buildings could significantly contribute to the supply of domestic hot water demand for the resort.

Hot water generation by solar collectors could also be used to provide heating to the facility or pre-heating of outdoor air.

For space heating, it is envisaged that the solar collectors could heat water which could then pass through either the floor slab or perimeter fin tube convectors.

# 7.0 Power Generation

The issue of whether the client is prepared to embark on power generation is one that needs to be considered. Generally, the end user of these buildings will not have power generation as part of their core business plan. However, installing green power generation to offset that used by the site may be a viable option.

## 7.1 Photovoltaic (pv cells)

Photovoltaics generate electricity directly from sunlight using layers of silicon compounds. There are generally four types of photovoltaic types including:

- Monocrystalline Silicon Cells
- Polycrystalline Silicon Cells
- Amorphous solar cells
- Semi transparent

The efficiencies of photovoltaic cells range from 4% to approximately 20%, however the return on investment is still difficult to justify in most cases.

Consideration will be given to installing photovoltaic cells on the roof area of block A and B. There is the potential to install over 100kW capacity with photovoltiacs.

The current payback period for photovoltaics is between 8 to 10 years and the embodied energy required to manufacture them is significant questioning their viability for this project.

This notwithstanding, block A and B has significant roof area which could be utilised for mounting of solar panels. Alternately, translucent cells could be integrated within the façade to provide some natural lighting as well as generating electricity.

Similarly, PV powered lighting for paths and roads within the facility may have a reduced payback due to reduced cabling and infrastructure requirements.

## 7.2 Façade integrated PV cells

Façade integrated PV cells provide all of the benefits and disadvantages of the previous clause. However façade integrated PV cells provide slightly better returns as they can be offset against the façade material.

As mentioned previously, integrating translucent cells within the roof of selected roof areas could provide some natural lighting, as well as electricity generation.

## 7.3 Wind power

Wind power could be employed to generate electricity on site through the use of wind mills mounted at high level above the height of any neighbouring buildings or other obstructions.

Nominated locations around the entire site may be acceptable for mounting the turbines.

# 8.0 Materials

## 8.1 Natural and Renewable Resources

Where ever possible natural and renewable materials will be specified for use in the construction of the resort. Natural and renewable products lower the impact of the development on the local environmental. Old growth forests will be avoided and preference will be given to plantation timber preferably from local sources.

## 8.2 Embodied energy

Embodied energy can account for up to 30% of a building's total energy consumption. The facility will be constructed from low embodied energy materials. Embodied energy includes the energy used in extracting the raw material, energy in processing and manufacturing the material or product and transport energy costs. This means preference will be given to using materials which are quarried or harvested locally, have minimal processing required to create the finished products, are easily installed with little wastage and are easily disposed of or recycled.

Various amounts of sometimes conflicting data exist on embodied energy. Consideration will be given to adopting a principle of construction without full auditable material selection guidelines.

## 8.3 Toxicity

Materials will be selected with minimal toxicity effects. Materials such as paint finishes, adhesives, carpets or wall cladding and with Volatile Organic Compounds (VOC) will be avoided or minimised. PCB's (Polychlorinated Biphenyls) will be avoided and the use of PVC's (Poly Vinyl Chloride's) will be reduced. The benefits of reducing these products include improved occupant health with the potential for reduced sick building syndrome and a reduced impact on the environment through toxic chemical dilution.

## 8.4 Use of industrial by-products

The use of industrial by-products in lieu of non-renewable resources will be considered. Flyash is a product of industrial process which can be used in cement to provide fill and improve insulation qualities. Consideration will be given by the structural engineer for use of flyash concretes in relation to suitability of concrete strength.

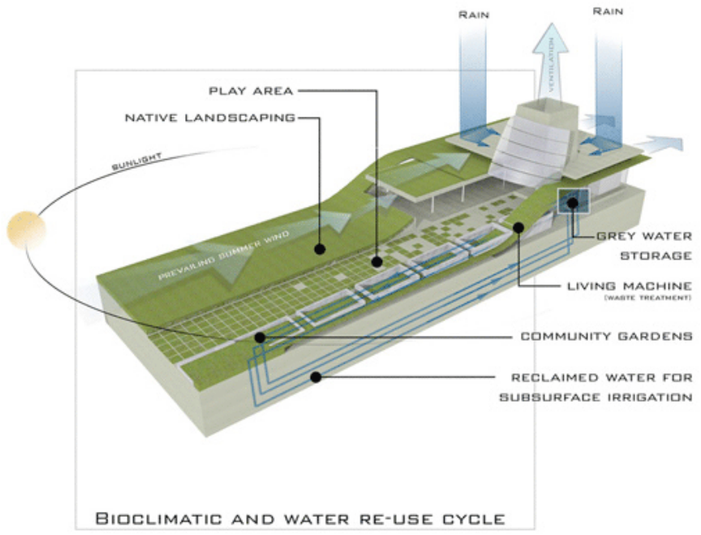
## 8.5 Durability

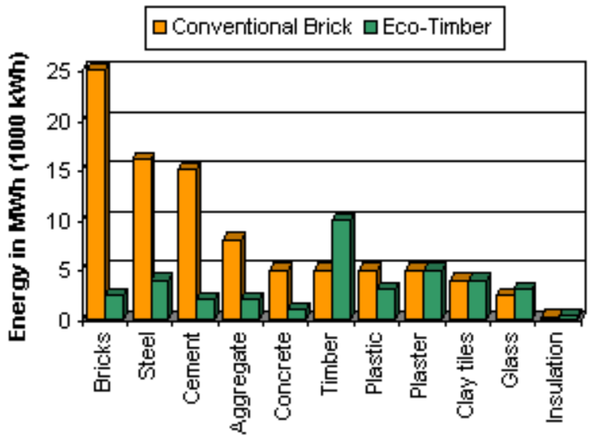
Good quality materials which have long lasting qualities will benefit the project and provide lower energy costs over the duration of the buildings. The necessity to replace materials such as carpet or wall materials before the economic life of the building will cost more and incur greater energy through maintenance and material embodied energy.

## 8.6 Deconstruction

An item not commonly considered as part of sustainability is the deconstruction and refurbishment aspects of a project. At the time of deconstruction, demolition techniques oftentimes render the original building product as unusable.

Building techniques that allow building elements to be readily reused will be considered.



# 9.0 Waste

## 9.1 Maximise off-site prefabrication

Maximising off-site prefabrication will contribute to significant savings in construction energy and land fill waste. Off-site pre-fabrication can also improve construction programme thereby improving the overall construction efficiency.

## 9.2 Recycle construction waste

Separate bins will be located on site during the construction period to encourage construction waste recycling. The benefits will be in reducing landfill and transport energy however training of construction workers will need to be carried out.

## 9.3 Recycling space

The new buildings will be provided with facilities and space for recycling of waste such as plastics, paper and cardboards and for glass. This will involve providing local deposit locations and bins.

The benefits include a reduction in wastes to landfill however it does rely on staff attitude and management practices.


# 10.0 Site Considerations

## 10.1 Maintain or improve site ecology

Many projects are built on sites which once incorporated indigenous flora and fauna. To minimise the impact of this development on the environment, the existing natural surroundings will be maintained as much as possible. This means retaining natural contours, bird life, etc where possible.

Where excavation is required, the extent of excavation will be minimised and the landscaping will only use indigenous species which are indigenous to the immediate local area. This reduces the environmental impact of the development on the sites flora and fauna.

## 10.2 Landscaping and Microclimates

Landscaping will provide more desirable microclimates around the buildings can improve the comfort for occupants in transit and reduce the climatic effect on the building façade. Microclimates can be achieved through the use of effective landscaping and shading. The form of the landscape, the use of vegetation around buildings and the arrangement of buildings can reduce the occurrence of suntraps and promote comfortable microclimates. Prevent wind tunnel effect around buildings. Open spaces between buildings can promote wind distribution and reduce wind restrictions.

Consideration will be given for designing wind paths around buildings and using landscaping to improve comfort conditions in microclimates surrounding the buildings. This will provide improved comfort conditions for occupants outside the buildings.

The use of trees to provide shading from low angle sun in both the summer and winter will also be considered. Refer to the landscape masterplan for a more detailed description.

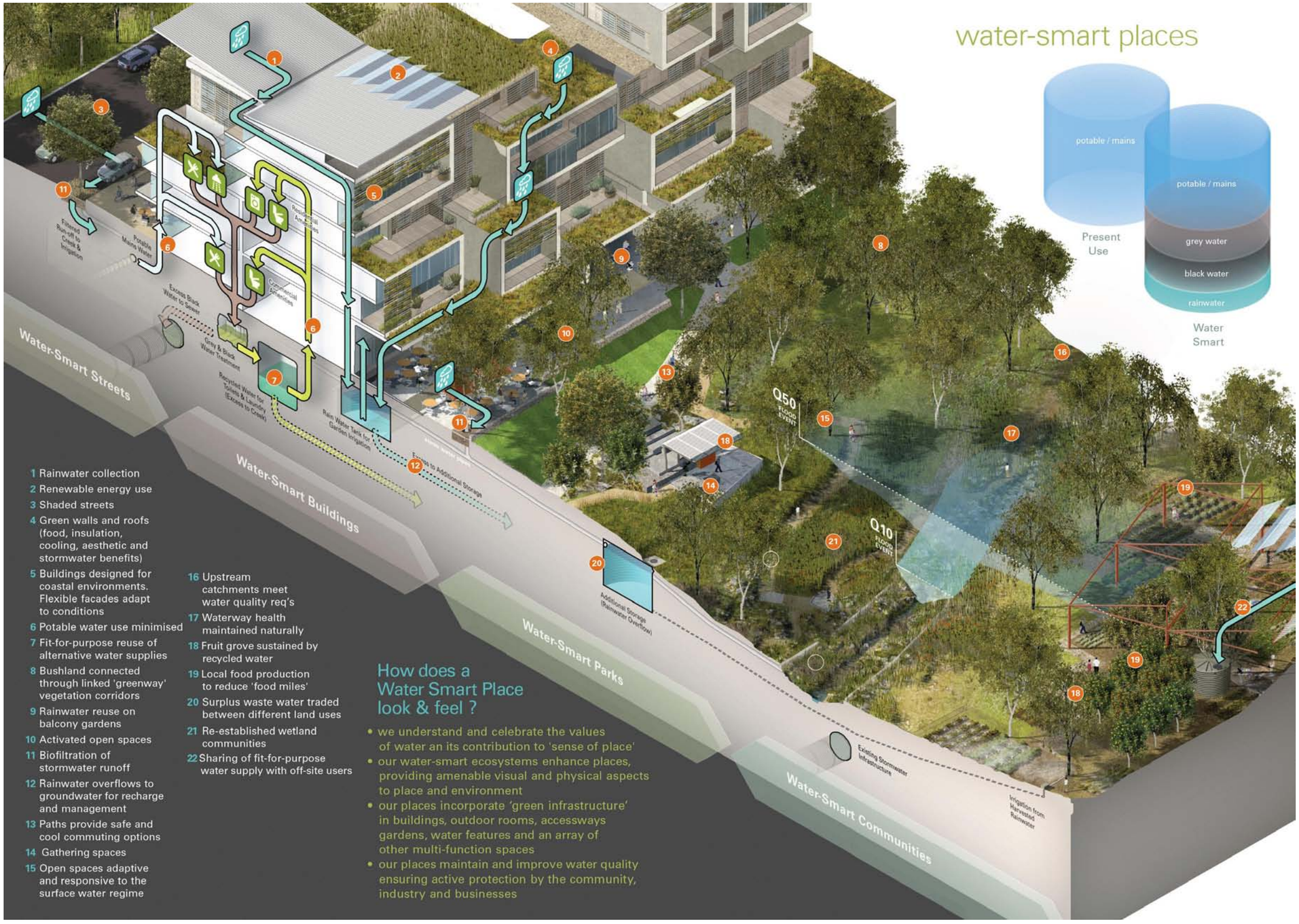
## 10.3 Bioswales and roof gardens

Bioswales and roof gardens can be used to collect and absorb water into the ground in lieu of discharging into the stormwater system. Consideration will be given to incorporating bioswales into the landscape design to collect and absorb stormwater from the hard standing areas and building footprint.

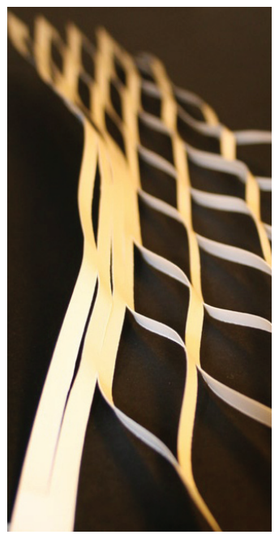
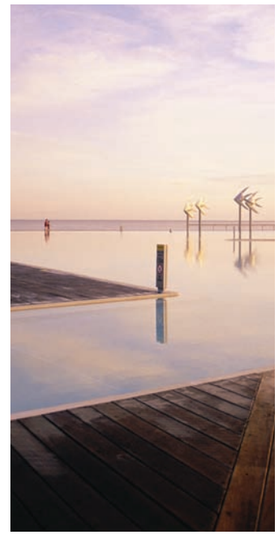
The majority of rainwater and grey water from the site is to be harvested and reused in the facility, however, any other runoff, including from remote road ways and the like, will be directed to recharge the local aquifer.

## 10.4 Design approach to smart water design

A design approach to reuse of rain and grey water is depicted below. This approach will be adopted on the Jurien Bay resort.



# APPENDIX 4:
# LANDSCAPE CONCEPT REPORT


# Jurien Bay Resort
# Landscape Concept Report

PREPARED FOR LAWRENCE SCANLAN AND ASSOCIATES ARCHITECTS

PROJECT NO. 0954.1089

FEBRUARY 2010

AECOM

# Contents





# Introduction

This report oulines the conceptual framework and approach to landscape design for the Jurien Bay Resort. It has been prepared in consultation with Lawrence Scanlan and Associates Architects, AECOM Buildings Group and the UDLA studio (responsible for neighbouring works).

This landscape strategy report and master plan is provided as supporting material to the development application.

**Objectives**

The main design objectives of the document are:

- to establish a landscape design appropriate to the site context and location
- create a supurb and luxurious resort landscape setting
- establish quality streetscape interfaces with the resort and hotel
- work in and compliment plans for the foreshore and main street connection by the UDLA
- identify environmental constraints and opportunties that may influence design decisions in the Master Plan; eg mitigation of heat/wind effects
- establish an appropriate suite of plant species fit for purpose and location
- establish and integrate into the site wide water quality management system where by reed-bed filtation ponds become feature water elements in the landscape

Jurien Bay Town Foreshore Concept Plan as designed in coordination with UDLA, the Shire of Dandaragan and the Jurien Bay Foreshore community / stakeholder reference group.

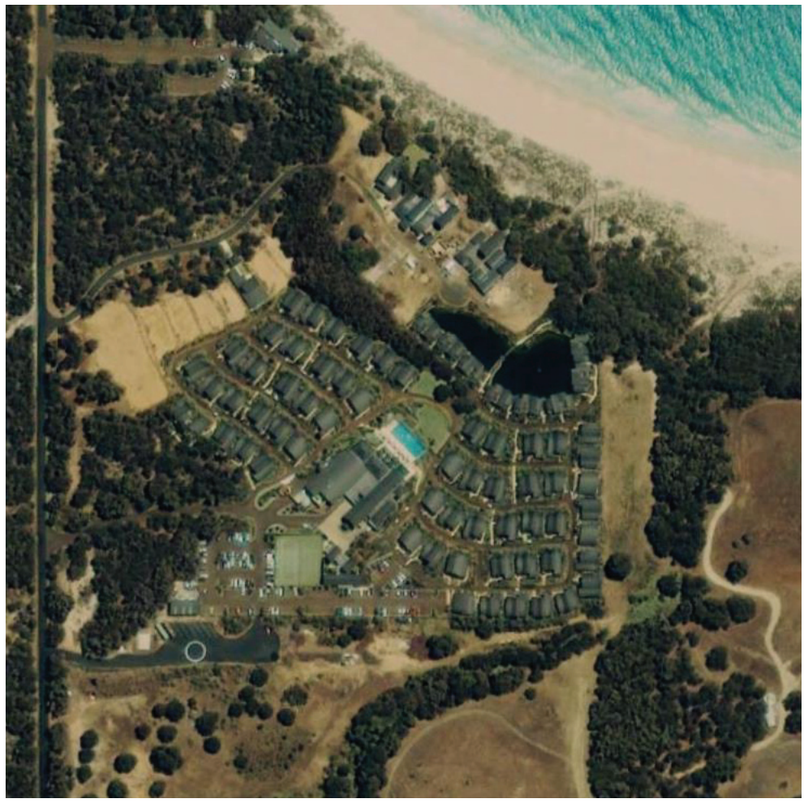

Existing site photos

# Precedent sites

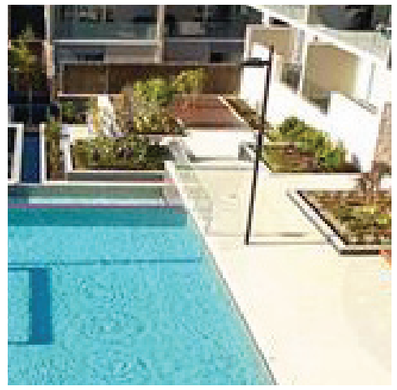
## Injidup Spa and Retreat, Margaret River

# Precedent sites

## Bunker Bay Resort, Dunsborough

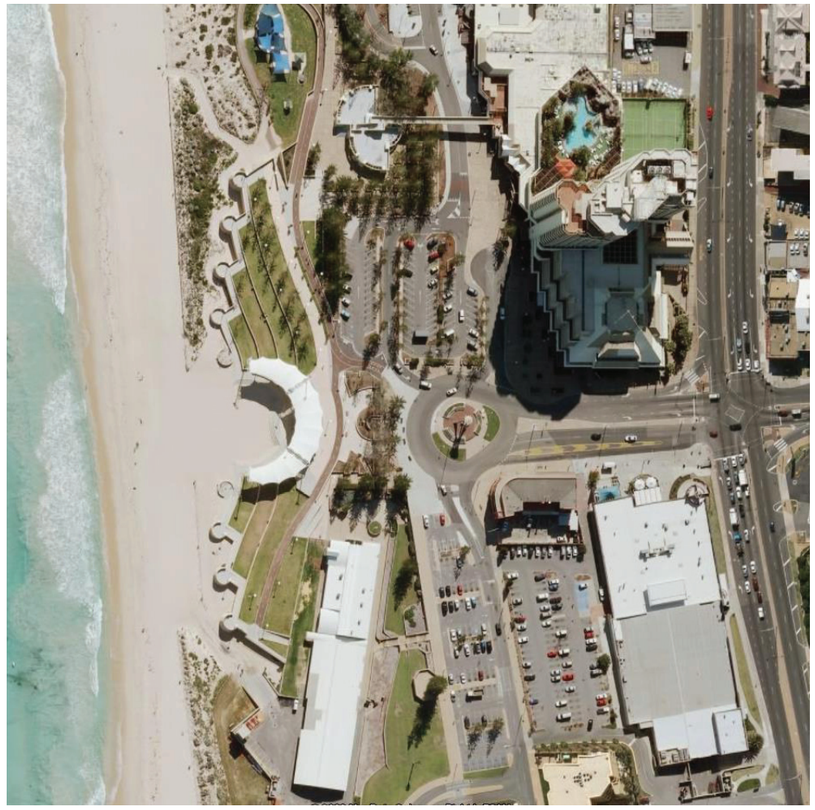


## Smiths Beach Resort, Yalingup

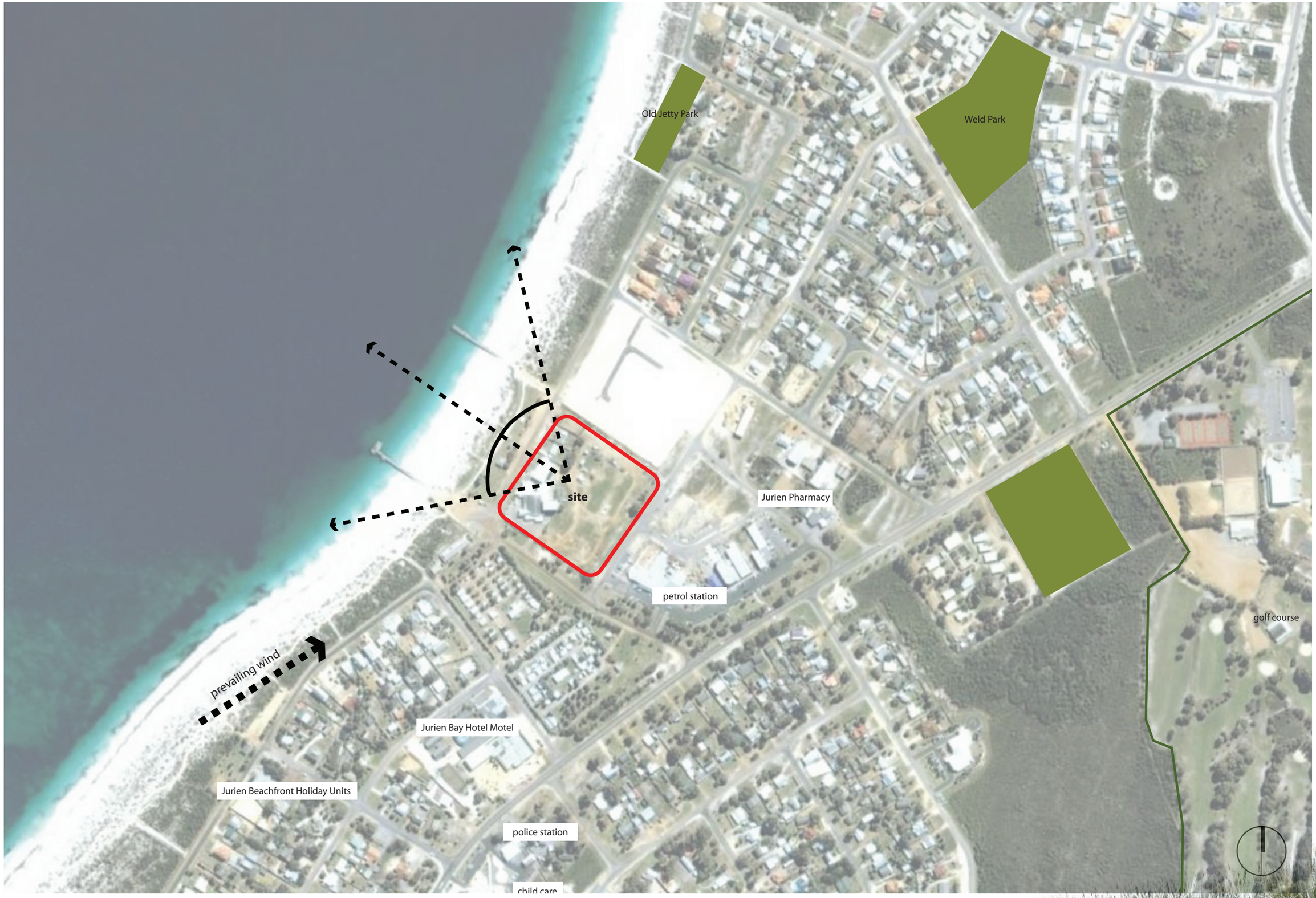


Club Capricorn, Yanchep

Scarborough Beach

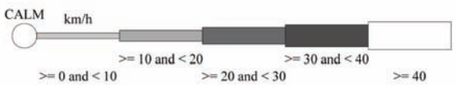


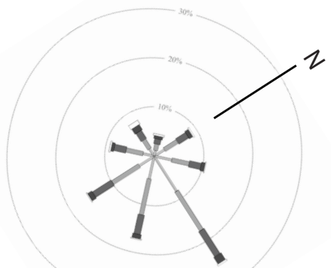
# Site context - broad


Old Jetty Park
Weld Park
site
Jurien Pharmacy
petrol station
golf course
prevailing wind
Jurien Bay Hotel Motel
Jurien Beachfront Holiday Units
police station
child care

# Wind analysis- morning easterly


## legend



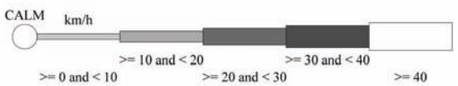

wind shadow (morning easterly)

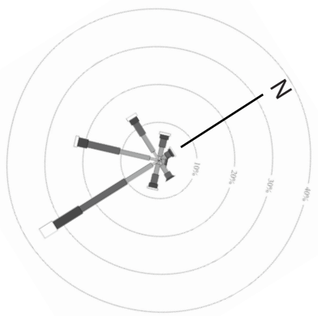
wind exposed (morning easterly)

# Wind analysis- afternoon sea breeze



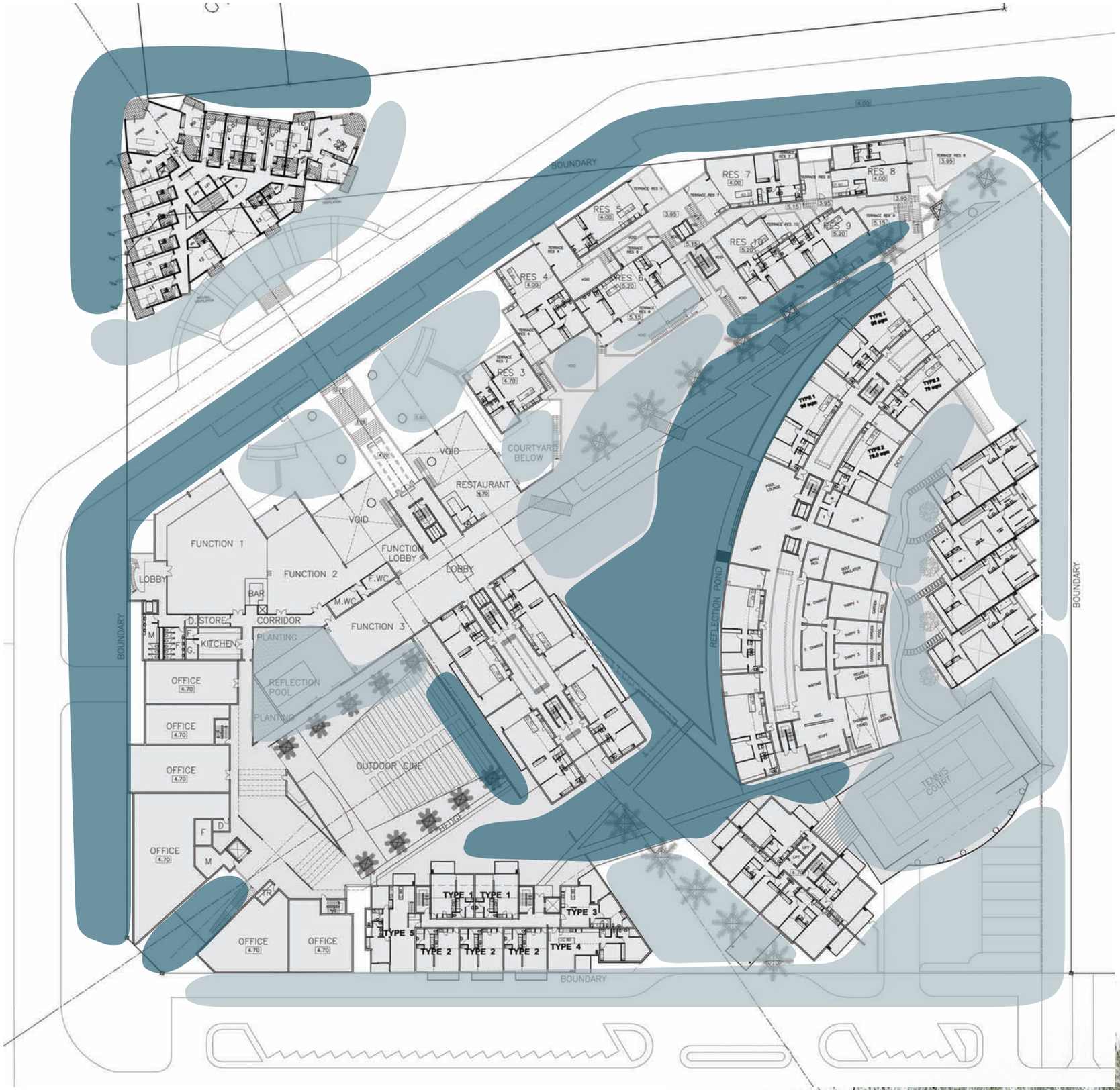
## legend




wind shadow (afternoon south westerly)

wind exposed (afternoon south westerly)



# Solar analysis




## legend

- all day shade
- morning sun
- midday sun
- afternoon sun
- all day sun


## legend

major views

key views

minor views

# Circulation analysis




## legend

- 1st floor main entry point
- ground floor entry point
- 1st floor entry point
- first floor main circulation
- first floor minor circulation
- ground floor main circulation
- ground floor minor circulation
- beach access

# Landscape rooms



1 beach arrival / boulevard

2 formal entry

3 cafe / bar

4 restuarant (2 floors)

5 beachfront park

6 beachside streetscape

7 sunken courtyards

8 passive pool side

9 trajectory - water view

10 beach swale park

11 reflection pond: resort lobby

12 internal junction

13 function courtyard

14 tickets and entry to theatre

15 outdoor theatre lobby

16 theatre

17 active poolside

18 intimate viewing platform

19 garden path

20 active sport

21 walk through

22 external arrival junction

23 kids play (non water)

24 formal city-side arrival & sales

25 city-side streetscape

26 carpark entry

27 cross site link / beach track / boulevarde

# Conceptual thoughts - mapping the concept



**Water**
reflective ponds
lap pool
open pool
hot bath
childrens pool
filtration ponds

**Colours:**
bleached + muted
- whites
- greens
- limes
- fresh

**Concept:**
lamina flow
wind streams
wind contours

**Forms:**
smooth
flowing
blending

**Textural contrasts / transitions through graduated fading**

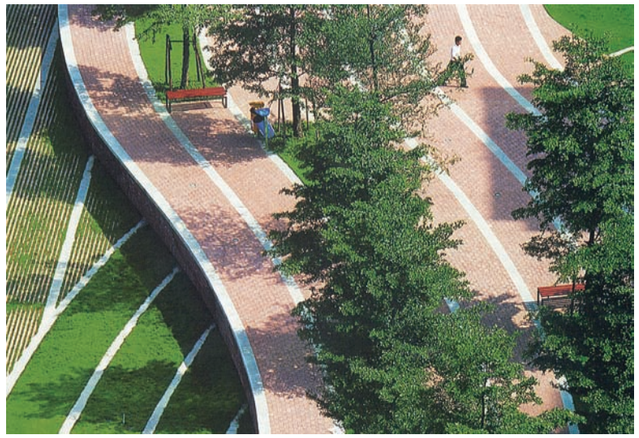
**Sheltered:**
- wind breaks
- sun screens
- tree canopy

**French connection**
**Charles Marie Jurien (1801 - 03)**
**Formal French Garden Axis**

**Planting:**
dunal
hardy
fading transitions
textural
exotic/tropical
architectural

**Materials:**
jarrah
stone
limewash renders
concrete
large format pavers

Precedent project showing 'lamina flow' or wind contours



# Preliminary concepts


# Concept - Canopy gradation

Dunal landscapes are characterised by an increase in vegetation structure the further back one moves from the beach.

Tree canopy is difficult to establish in front row windy conditions and limited species are appropriate.

Consequently the strategy is to build up canopy density further back into the resort where built form provides more wind protection.

This brings about a cool, protected and shady respite to the eastern portion versue the exposed and harsh beach front.

These dualities are helpful in constructing a range of microclimates that allow guests


Melaleuca lanceolata

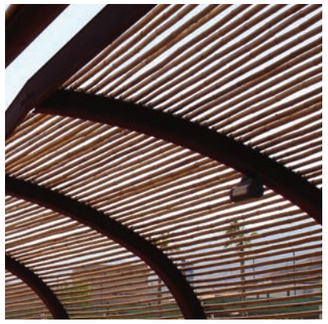

Pink Frangipani


Olive species


Tabebuia rosea

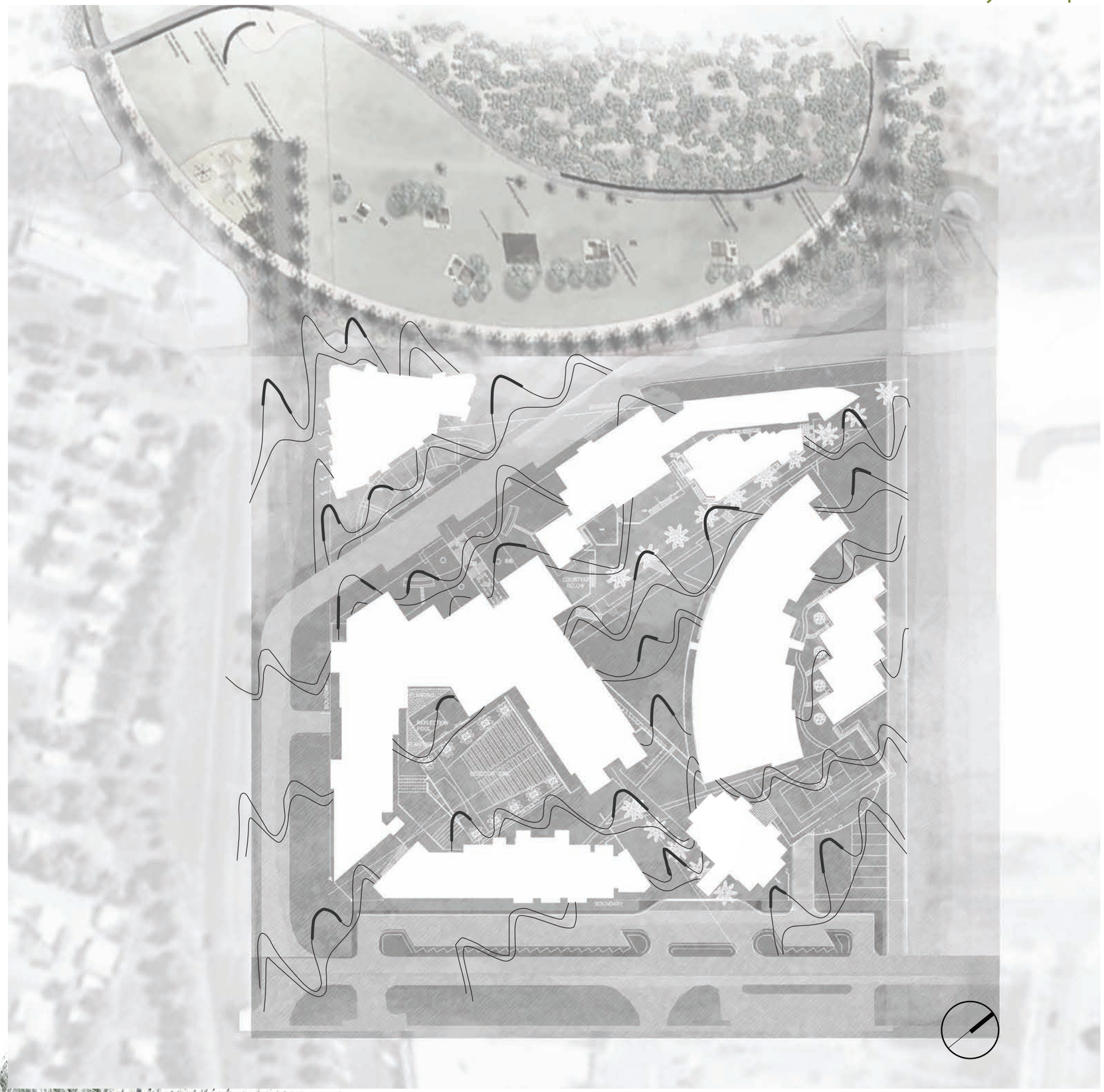

Washingtonia robusta


Auracaria heterophylla



Coastal vegetation has adapted to the changing and often harsh weather conditions associated with dunal areas. Vegetation, such as Spinifex, is salt tolerant and has the ability to trap wind-blown sand, thereby assisting with dune formation.

Vegetation plays an important role in the establishment and longevity of dune systems. They act as a windbreak, trap sand particles and have the ability to grow up through the sand and continually produce new stems and roots as more sand is trapped and the dune grows.



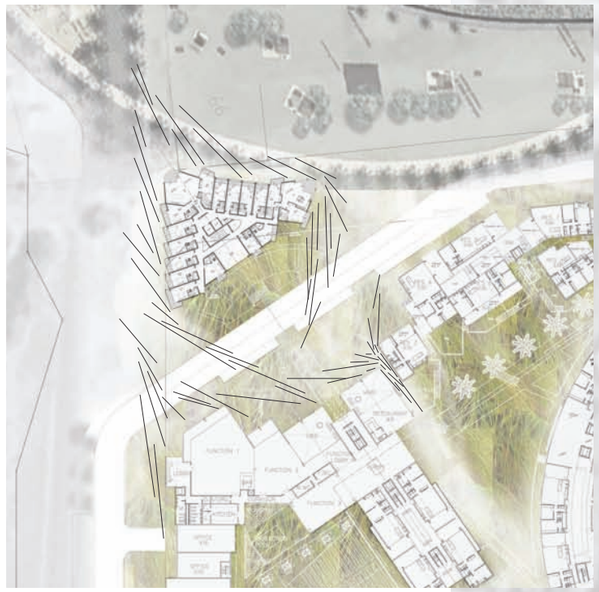
# Preliminary concepts

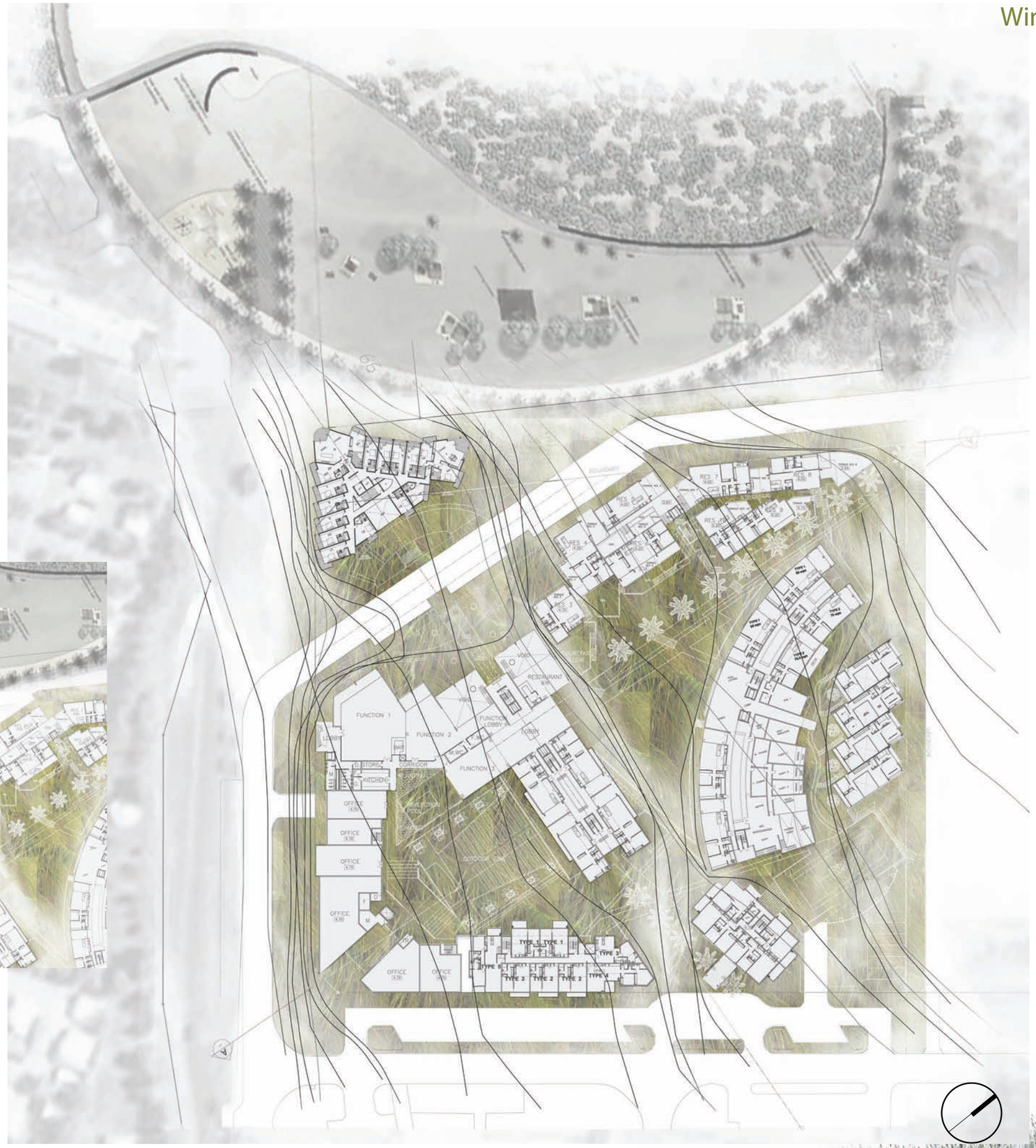
Prevailing wind interacts with the proposed built form to establish a patternation and surface structure in the public domain.

This base structure to the landscape design serves to unify the various spaces into a continuous theme, setting or carpet.

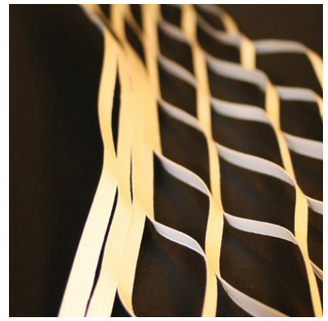
The lamina flow or wind contours generate sweeping gestures that are massaged to create planter beds, pools, decks, bridges and paving patterns.

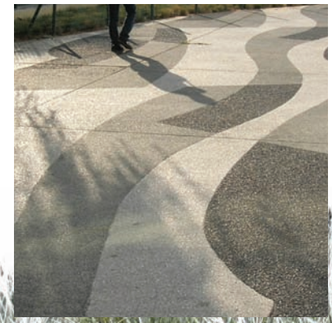
A sensuous and rythmical outcome is achieved





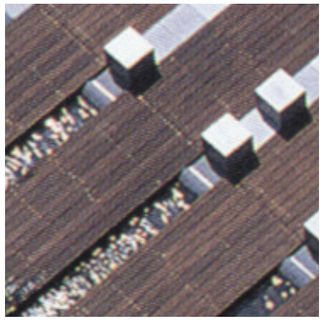

# Wind concept





# Grid concept





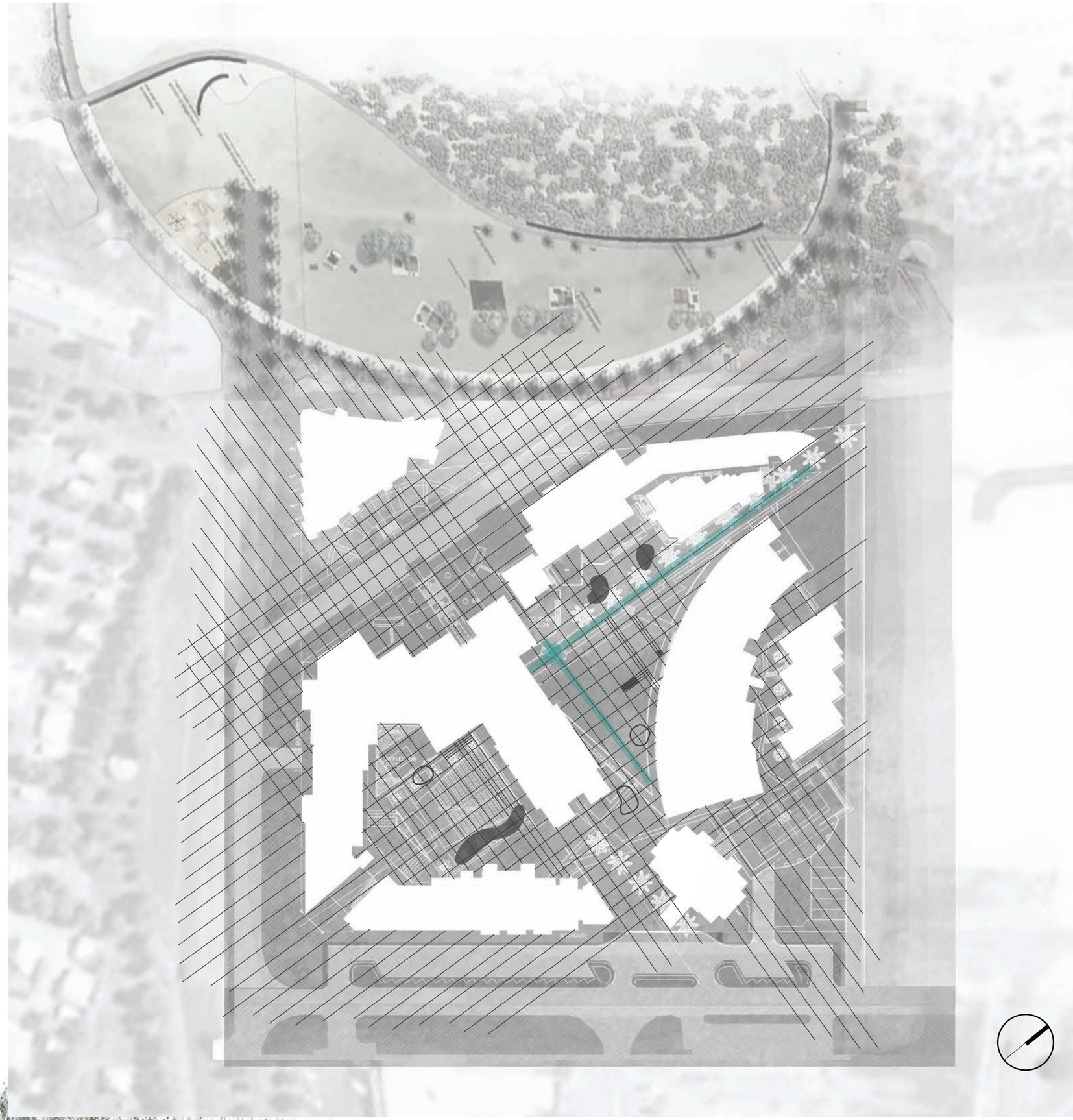
The built form is set out on two major axes. In an east-west orientation the first axis organises the architectural elements of hotel, lobby, central tower and eastern entry. In a north-south orientation the axis forms a long reflection pond that aligns with Favourite Island off the coast. They interstect in a central lobby area.

On the whole the Master Plan has been developed using the wind contour concept rather than the grid structure, however on the north-south axis, along the reflective pond, the wind contours meet and conform to the grid.

This creates a moment of formality and symmetry when viewing north out from the central lobby area.

The pool area is a synthesis of both the grid and wind structures. As a hybrid it adopts both formality and informal aspects.

The resulting design is a fusion of both concepts.



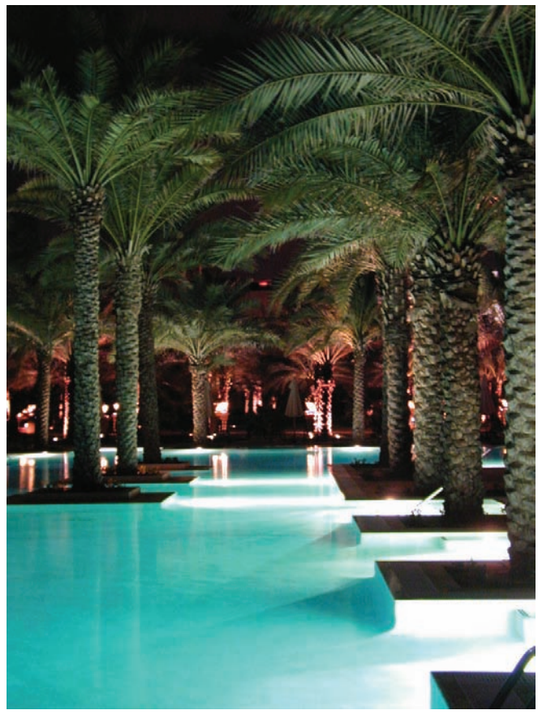
# Water concepts



There are five types of water proposed to bring about a multi-layered and ever-changing sense of water on site. Critically the water managagement and recycling strategy is integrated to support the celebration and expression of water.

- 1. Reflection Ponds
- 2. Swimming Pools
- 3. Spa Pools
- 4. Children's/Paddle Pool
- 5. Falling Water
- 6. Fountains/bubblers
- 7. Water Filtration through reed and filter medium (see diagram below)

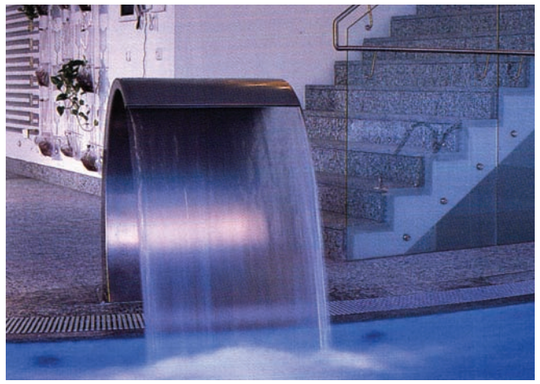
1. Reflection/Still Water Pools



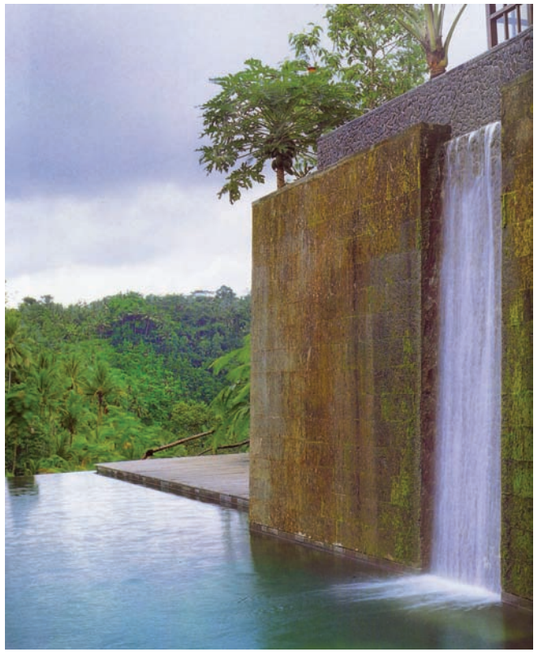
2. Swimming Pool

3. Spa Pools

5. Falling Water

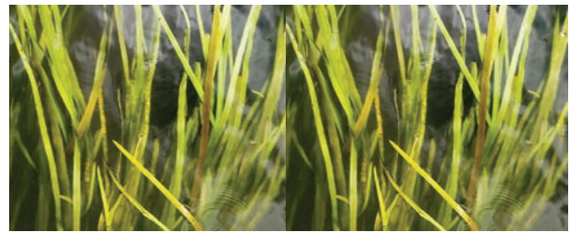


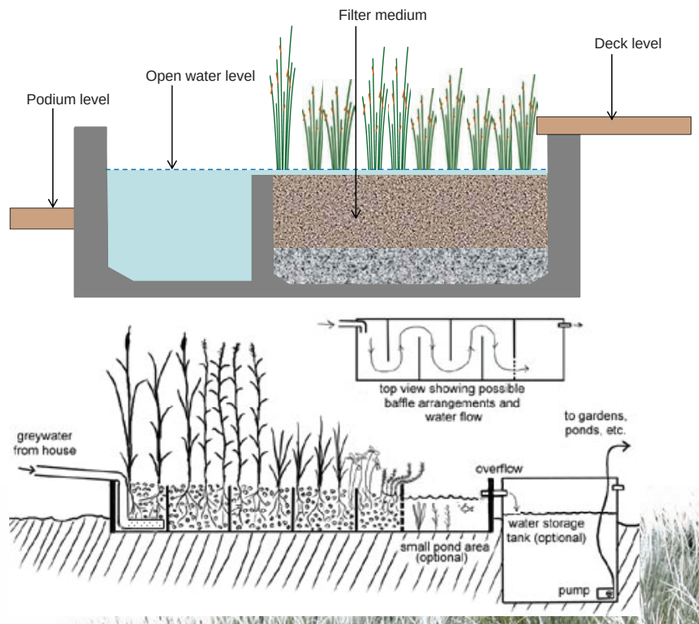
5. Falling Water (cont)



6. Fountains/ bubblers

7 Water Filtration - Reed bed and filter medium





# The Landscape Concept Master Plan



Pool Area Detail


Landscape Master Plan

# Indicative Section

**LEGEND**

1. Main pool
2. Timber slatted shade deck
3. Childrens pool
4. Spa
5. Toilet with water fall and roof garden over
6. Ampitheatre
7. Potential childrens play area
8. Tropical walk
9. Eastern entry stair and deck with water falls
10. Western formal entry
11. Entry to Ampitheatre
12. Extention of water axis into water fall and pool




Indicative section

# Character zones
## Location map




**1** main and coastal streetscape axis

**2** entrance axis (both western and eastern)

**3** amphitheatre

**4** central pool area

**5** sport and access areas

**6** town-side streetscape and eastern entry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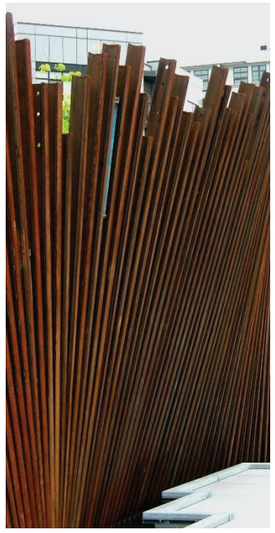
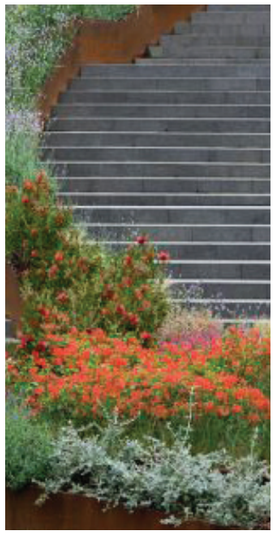
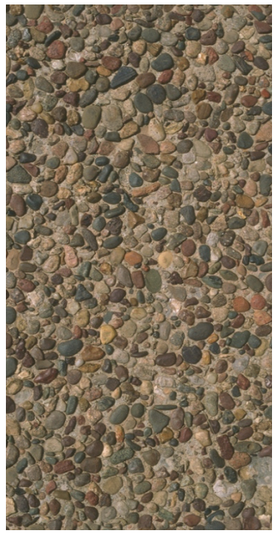
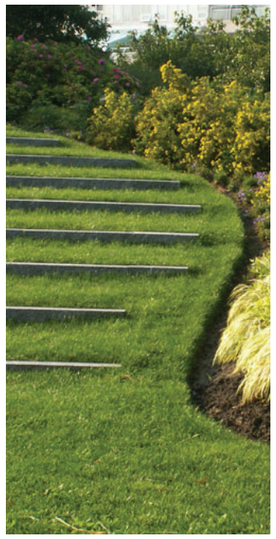
# Character and material types
## Entrance axis

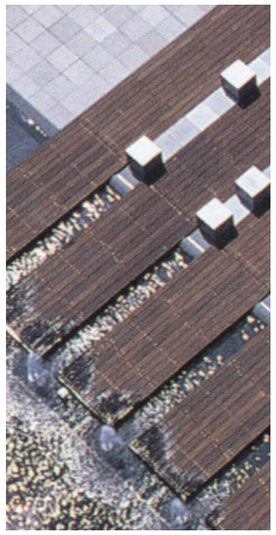


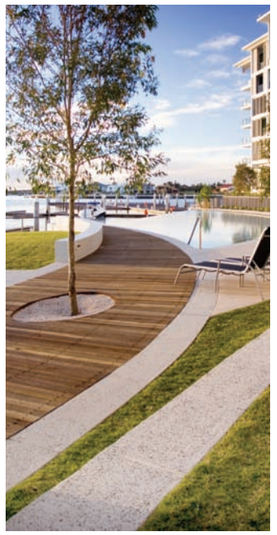

# Character and material types
## Amplitheatre

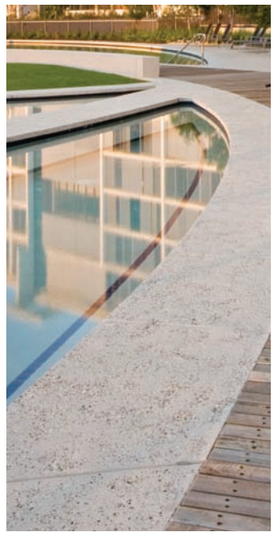



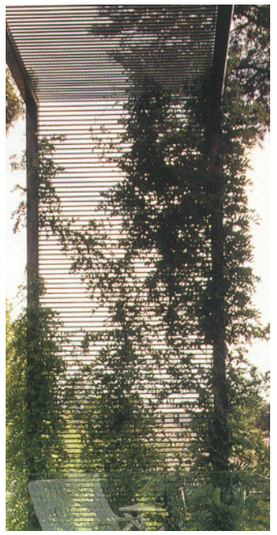








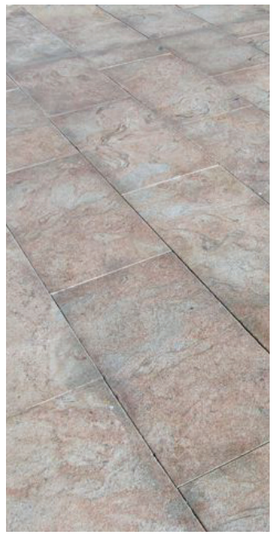
# Character and material types
## Central Pool Area (continued)



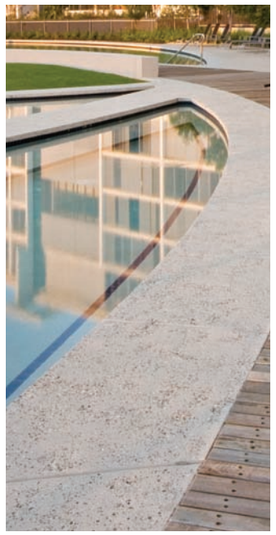


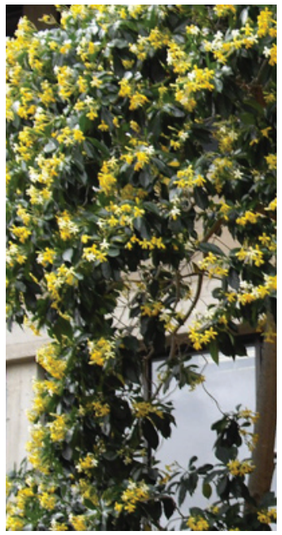








# APPENDIX 5:
# TRANSPORT IMPACT STATEMENT

# Transport Impact Statement

| | |
|---|---|
| Project: | Proposed Hotel and Residential Resort Development Block D<br>Lot 62 Roberts Street, Jurien Bay |
| Client: | Good Aliceville Pty Ltd c/o Scanlan Architects |
| Author: | Paul Nguyen |
| Date: | 10th June 2022 |
| Shawmac Document #: | 2204003-TIS-001 |

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## Document Status: Client Review

| Version | Prepared By | Reviewed By | Approved By | Date |
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## Disclaimer



File Reference: Y:\Jobs Active 2022\T&T - Traffic & Parking\Scanlan_Lot 62 Roberts St, Jurien Bay_TIS_2204003\3. Documents\3.2 Reports\Scanlan_Lot 62 Roberts St, Jurien Bay_TIS_Rev B.docx

## Contents

## Figures



## Tables

# 1. Introduction

## 1.1. Proponent

Shawmac has been engaged by Scanlan Architects, on behalf of Aliceville Pty Ltd to prepare a Transport Impact Statement (TIS) for Block D of a proposed Hotel and Residential Resort Development in Jurien Bay.

This TIS has been prepared in accordance with the Western Australian Planning Commission (WAPC) *Transport Impact Assessment Guidelines Volume 4 – Individual Developments*. The assessment considers the following key matters:

- Details of the proposed development.
- Vehicle access and parking.
- Provision for service vehicles.
- Hours of operation.
- Daily traffic volumes and vehicle types.
- Traffic management on frontage streets.
- Public transport access.
- Pedestrian access.
- Cycle access and end of trip facilities.
- Site specific and safety issues.

## 1.2. Site Location

The site address is Lot 62, 20 Roberts Street, Jurien Bay. The local authority is the Shire of Dandaragan.

The general site location is shown in **Figure 1**. An aerial view of the existing site is shown in **Figure 2**.


**Figure 1: Site Location**


**Figure 2: Aerial View (December 2020)**

# 2. Proposed Development

## 2.1. Land Use

The overall development is a mixed-use tourist development comprising a hotel, motel, serviced apartments, restaurant, cinema/theatre, tavern, residential apartments, office tenancies, retail tenancies, a reception centre and parking.

Block D is a proposed motel with 41 accommodation units located in the southern corner of the site to the north of the Roberts Street / Sandpiper Street intersection.

The proposed site layout is shown in **Figure 3**.

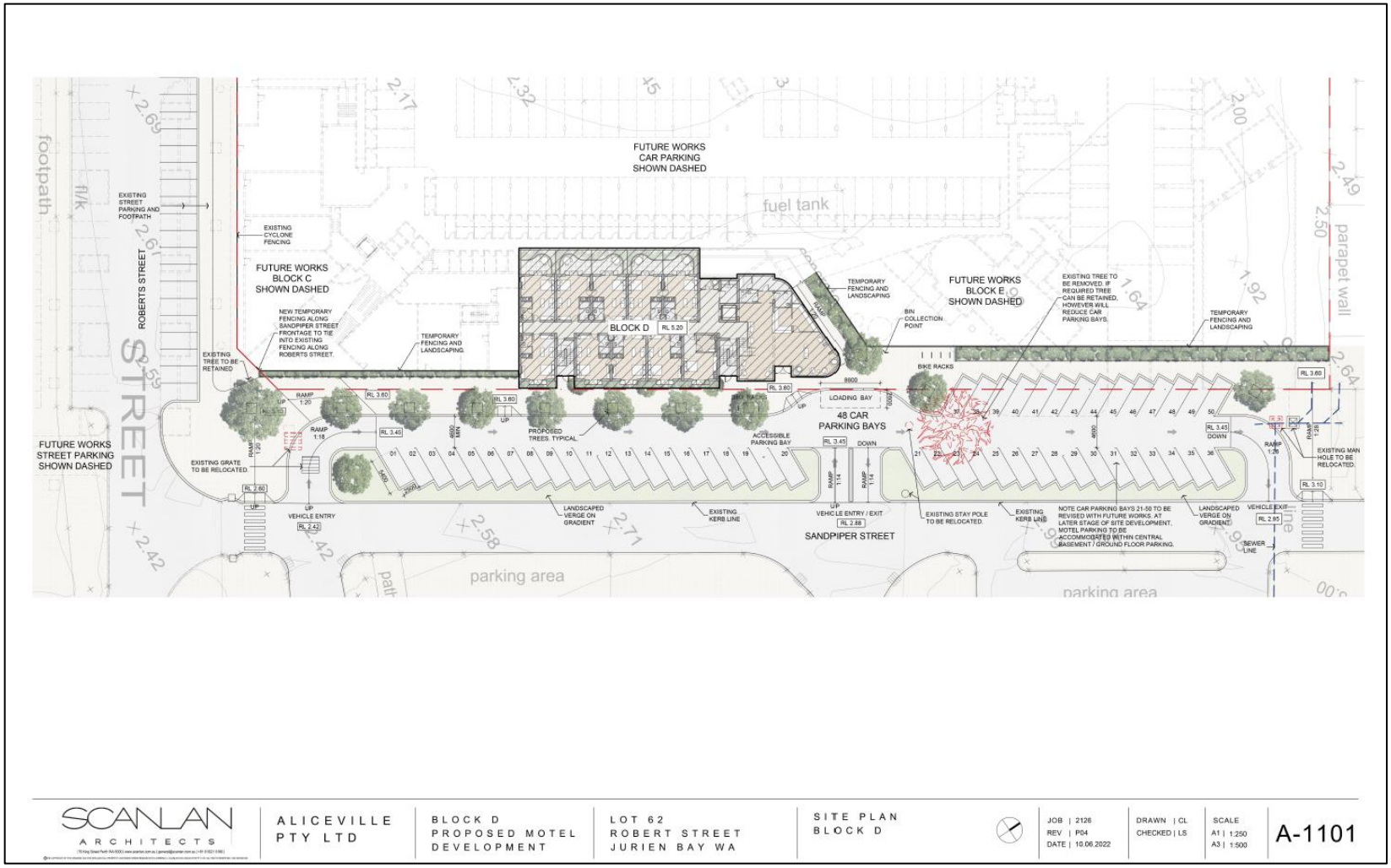



**Figure 3: Site Layout**

# 3. Traffic Management on Frontage Streets

## 3.1. Road Network

### 3.1.1. Existing Road Layout and Hierarchy

The layout and hierarchy of the existing local road network according to the Main Roads WA *Road Information Mapping System* is shown in **Figure 4**. Heaton Street, Roberts Street and Sandpiper Street are all constructed as two-lane single carriageway roads.

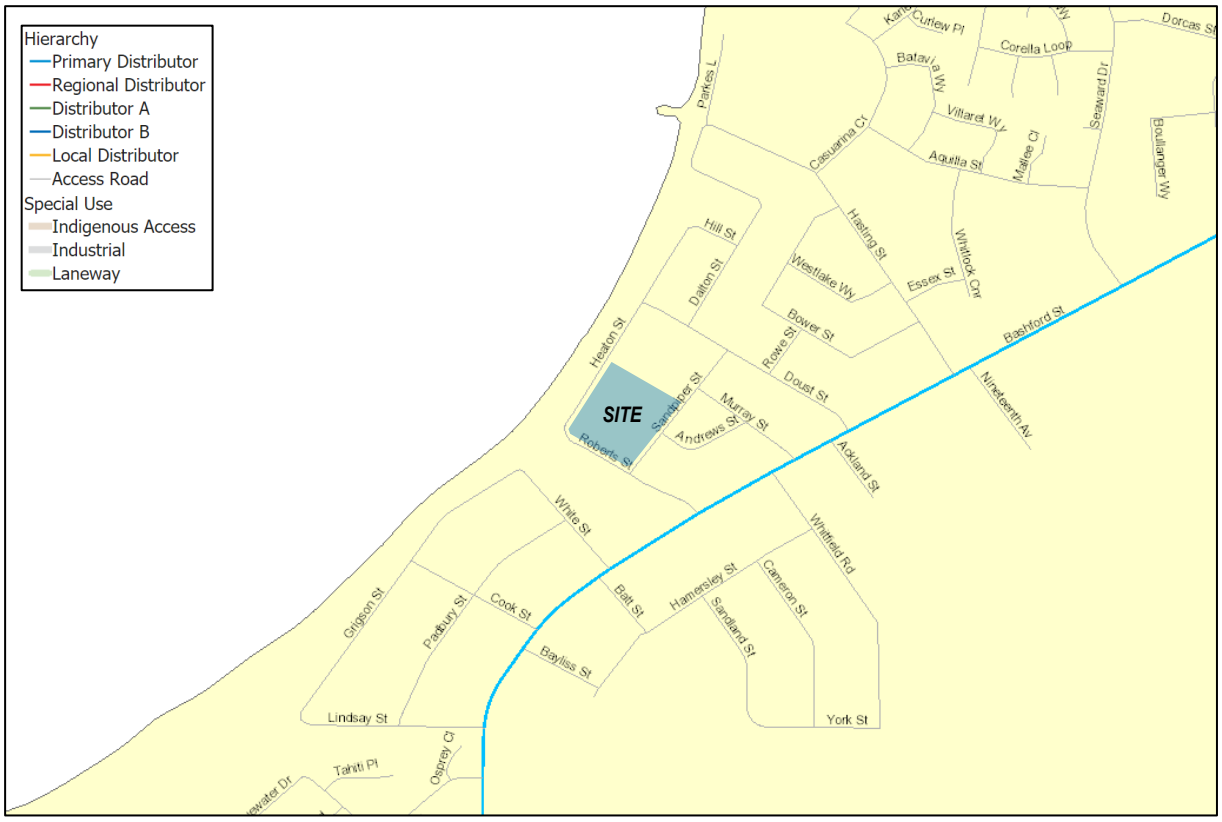



**Figure 4: Existing Road Network Hierarchy**

The speed limits are shown in **Figure 5**.

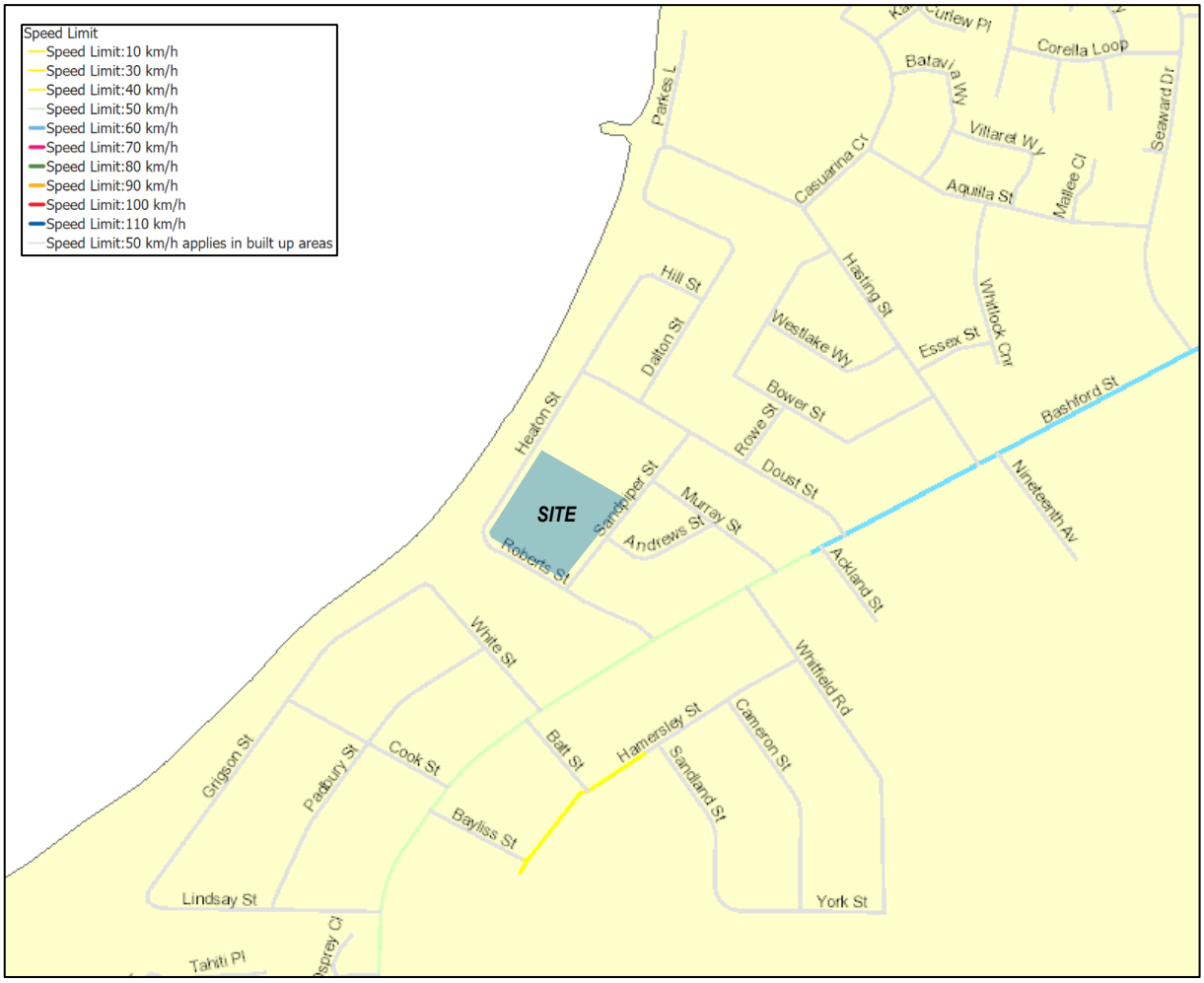



**Figure 5: Existing Speed Limits**

# 4. Vehicle Access and Parking

## 4.1. Access

Vehicle access to the site is proposed via Sandpiper Street as shown in **Figure 6**.

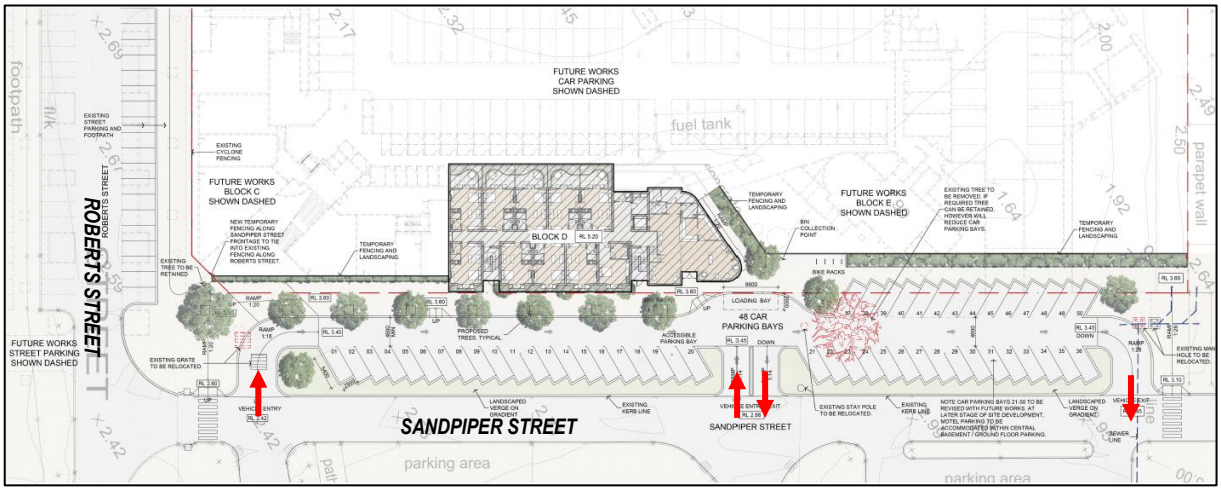
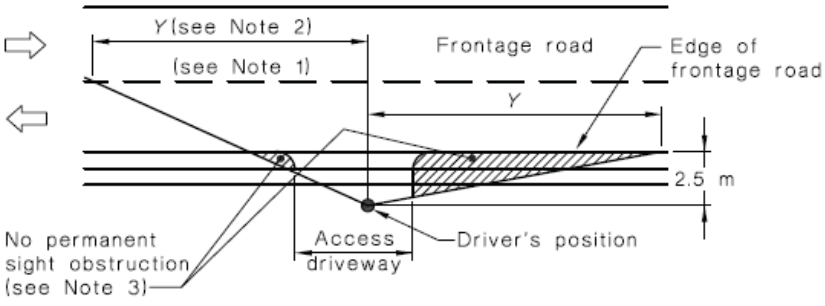



**Figure 6: Vehicle Access Arrangement**

A total of 50 car parking bays are proposed in an angled arrangement along a one-way circulating road.

## 4.2. Sight Distance

Sight distance requirements from vehicle exit points are defined in Figure 3.2 of Australian Standard AS2890.1-2004 *Parking facilities Part 1: Off street car parking* (AS2890.1) which is shown in **Figure 7**.




| Frontage road speed (Note 4) km/h | Distance (*Y*) along frontage road m | | |
|---|---|---|---|
| | Access driveways other than domestic (Note 5) | | Domestic property access (Note 6) |
| | Desirable 5 s gap | Minimum SSD | |
| 40 | 55 | 35 | 30 |
| 50 | 69 | 45 | 40 |
| 60 | 83 | 65 | 55 |
| 70 | 97 | 85 | 70 |
| 80 | 111 | 105 | 95 |
| 90 | 125 | 130 | Use values from 2nd and 3rd columns |
| 100 | 139 | 160 | |
| 110 | 153 | 190 | |

**Figure 7: AS2890.1 Sight Distance Requirements**

Based on the 50km/h speed limit along Sandpiper Street, the minimum required sight distance is 45m. The available sight distance is shown in **Figure 8**.


**Figure 8: Sight Distance Check**

As shown, the sight distance is achieved in both directions from both of the proposed vehicle exit points.

Vertically, the geometry of Sandpiper Street is relatively flat and there are no major crests or sags that restrict sight distance.

## 4.3. Car Parking

Car parking requirements for non-residential development within the Shire of Dandaragan are outlined in Shire's Local Planning Policy 8.7 Planning – Car Parking (LPP8.7). The parking requirement for the development is calculated in **Table 1**.

**Table 1: Car Parking Calculation**

| Land Use | Requirement | Quantum | Bays Required |
|---|---|---|---|
| Motel | 1 space per unit<br>3 spaces per 25m$^2$ of service area | 41 units<br>41m$^2$ service area (reception/office, maintenance store, cleaners store, linen store) | 41 bays<br>5 bays |
| | | Total | 46 bays |

The proposed 50 bays satisfies the minimum parking requirements of LPP8.7 as calculated above. It is also noted that the site is located within the main commercial centre of Jurien Bay and there is ample public parking in the area. As shown in **Figure 9**, there is public parking along all three frontages of the site.

**Figure 9: Street Parking**

# 5. Traffic Generation

The volume of traffic generated by the proposed motel has been estimated using trip generation rates from the Institute of Transportation Engineers (ITE) *Trip Generation*.

The traffic generation is detailed in **Table 2**.

**Table 2: Proposed Development Vehicle Trip Generation**

| Land Use | Units | Quantity | Generation Rate | | | Number of Trips | | |
|---|---|---|---|---|---|---|---|---|
| | | | Daily | AM Peak | PM Peak | Daily | AM Peak | PM Peak |
| Motel - Weekday | Rooms | 41 | 3.35 | 0.35 | 0.36 | 137 | 14 | 15 |
| Motel - Saturday | Occupied Rooms | 41 | 9.09 | - | 0.96 | 373 | - | 39 |

On a weekday, the development is estimated to generate 137 daily vehicle trips including 14 during the AM peak hour and 15 vehicle trips during the PM peak hour.

On a Saturday, the development is estimated to generate 373 daily vehicle trips including 39 during the peak hour of the development.

According to the WAPC TIA guidelines, an increase of between 10 to 100 peak hour vehicles is considered to have a low to moderate impact and is generally acceptable without requiring detailed capacity analysis. The maximum 39 vehicles per hour is in the middle of this range and so the development traffic is considered to have a low to moderate impact and can be accommodated within the existing capacity of the road network.

# 6. Pedestrian and Cyclist Access

## 6.1. Paths

All three frontage roads have at least one footpath. In the broader area, most roads also have footpaths.

The paths and walkways are expected to be continued around the perimeter of the site as the overall development progresses. As shown in **Figure 10**, pedestrian crossings are proposed at either end of the car park to provide a connection between the existing path on the opposite side of Sandpiper Street.

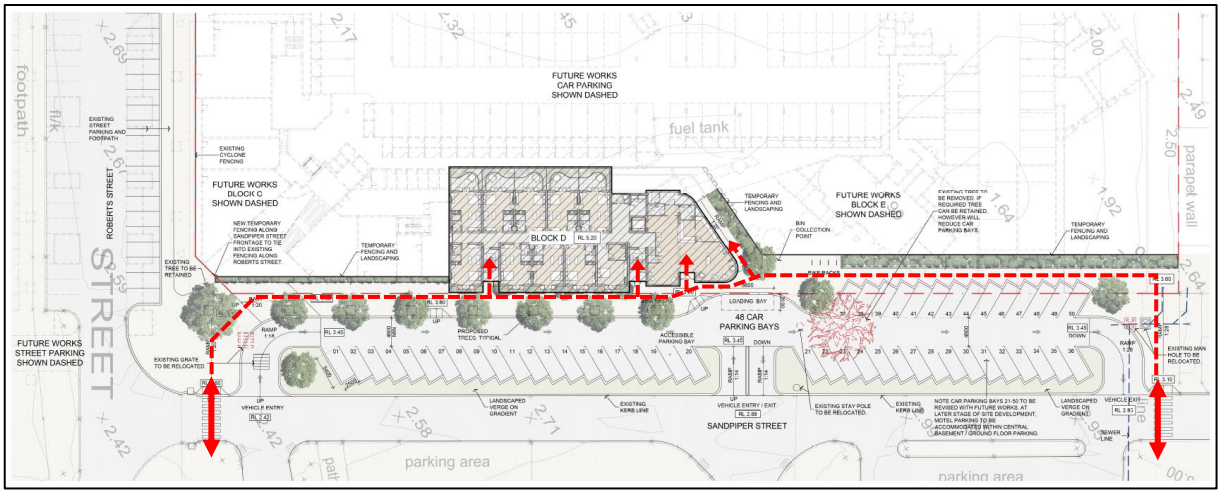



**Figure 10: Pedestrian Connections**

The external path network is reasonably well established and considered to be adequate for pedestrians and cyclists to safely travel between the site and surrounding areas.

## 6.2. Bicycle Parking

LPP8.7 does not specify bicycle requirements for motels.

Based on the proposed land use, the only bicycle parking demand is likely to be from staff. The development plans indicate that 6 bicycle racks will be provided along the building frontage which would be sufficient for the likely demand for bicycle parking.

## 7. Public Transport Access

The only existing public transport service in the area is the TransWA N5 regional coach service which operates between East Perth and Geraldton via Jurien Bay.

Based on the location of the site and the proposed use, the demand for public transport is likely to be minimal and so the provision of additional services is not required.

# 8. Site Specific Issues and Safety Issues

## 8.1. Crash History

The crash history of the adjacent road network was obtained from the MRWA Reporting Centre. No crashes have been recorded along the entire length of Roberts Street or along Sandpiper Street between Roberts Street and Murray Street over the five-year period ending December 2021.

The proposed development itself will only generate a low volume of additional traffic and there is no indication that the development would increase the risk of crashes unacceptably.

# 9. Conclusion

The Transport Impact Statement for the proposed motel development on Lot 62 Roberts Street in Jurien Bay concluded the following:

- On a weekday, the development is estimated to generate 137 daily vehicle trips including 14 during the AM peak hour and 15 vehicle trips during the PM peak hour. On a Saturday, the development is estimated to generate 373 daily vehicle trips including 39 during the peak hour of the development. This volume of traffic is low and can be accommodated within the existing capacity of the road network with no modifications required.
- The minimum sight distance requirement of AS2890.1 is achieved in both directions from the proposed vehicle exit points along Sandpiper Street.
- The provision of 50 car parking bays satisfies the minimum requirements calculated according to the Shire's Local Planning Policy 8.7. There is also ample street parking in the vicinity of the site.
- The crash history of the adjacent road network did not indicate any safety issue on the adjacent road network and there is no indication that the development would increase the risk of crashes unacceptably.
- The proposed internal and external path network is considered to be adequate.
- Based on the proposed land use, the only bicycle parking demand is likely to be from staff. The development plans indicate that 6 bicycle racks will be provided along the building frontage which would be sufficient for the likely demand for bicycle parking.
- The demand for public transport is likely to be minimal based on the proposed use and location and so the provision of additional services is not warranted.

# APPENDIX 6:
# COASTAL HAZARD RISK MANAGEMENT AND ADAPTATION PLAN

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creating better coasts and ports

R1132 Rev 0

February 2019

Aliceville Pty Ltd

# Lot 62 Roberts St, Jurien Bay
# Coastal Hazard Risk Management & Adaptation Plan

marinas
boat harbours
canals
breakwaters
jetties
seawalls
dredging
reclamation
climate change
waves
currents
tides
flood levels
water quality
siltation
erosion
rivers
beaches
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| A | Updated & Issued for Client Use | A Clapin | C Doak | C Doak | 12/02/2019 |
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Form 035 18/06/2013

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# 1. Introduction

Lot 62 Roberts St (Lot 62) is located on the Western Australia coastline in Jurien Bay, approximately 200 km north of Perth, and within the Shire of Dandaragan (Shire).

Lot 62 is situated immediately landward of Heaton St and Dobbyn Park, a popular area of the Jurien Bay foreshore. The locality of Lot 62 is shown in Figure 1.1.


**Figure 1.1 Lot 62 Roberts St, Jurien Bay Location**

Current development at Lot 62 is limited to two buildings and a shed, which are relatively degraded and not currently in use. The site is approximately 2.2 ha and is predominantly vacant, with some trees adjacent to the existing buildings.

Aliceville Pty Ltd own Lot 62 and are developing plans to create an exciting new Hotel and Residential Resort. Aliceville recognise the demand for a tourism development within the area and plan to address this by providing world class facilities that are accessible to a wide range of visitors. If economically feasible, the delivery of the Hotel and Residential Resort will result in a much needed approximately $22.5 million investment into the local community, with corresponding increases in tourist patronage to the region.

The vision for the development is to create an iconic and memorable destination that protects and enhances the existing natural and social values and character of the coastal site. The current plans for the Hotel and Residential Resort feature a hotel at the western corner, a range of other accommodation types, a fitness centre, a bar, two restaurants, swimming pools, an outdoor cinema and a tennis court.

Furthermore, it is intended that the Hotel and Residential Resort will:

- interpret the high standard of marine and terrestrial activities in the region to encourage length of stay;
- provide a range of accommodation types for families and domestic and international visitors;
- provide large landscaped areas and open spaces for guests to relax and play; and
- be capable of satisfying high end escorted coach travellers, fly-in guests and weddings/functions.

The above outcomes will help to increase the level of tourist patronage in the region, which will have a direct benefit to the local economy. The concept plans for the Hotel and Residential Resort can be summarised by the Lawrence Scanlan & Associates Pty Ltd (2011) site plans shown in Figures 1.2 and 1.3.

The basement and first level site plan layouts are shown in Figure 1.2 (left) and 1.2 (right) respectively. The main focus of this assessment, the ground level, is shown by the site layout plan in Figure 1.3.

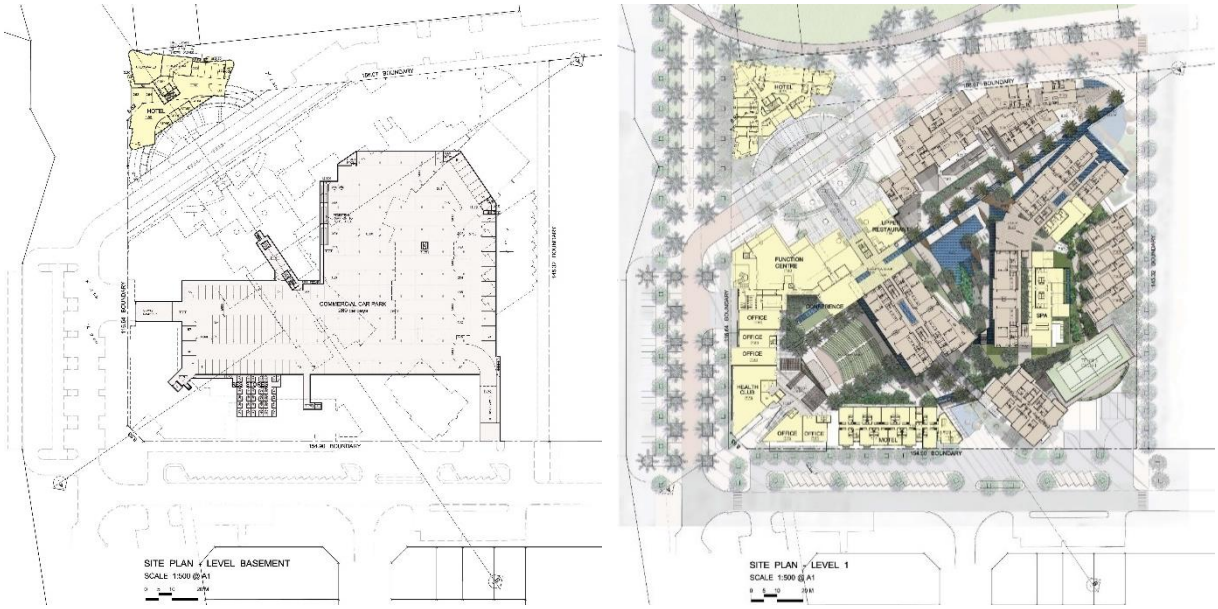


**Figure 1.2 Hotel & Residential Resort Basement (Left) & First Level (Right)**


**Figure 1.3 Hotel & Residential Resort Ground Level**

As the proposed Hotel and Residential Resort has a coastal frontage (refer to Figure 1.1), the risks posed to the site from coastal hazards need to be considered both now and into the future. Notwithstanding the potential risks, Aliceville is committed to pursuing the development of the Hotel and Residential Resort if it is economically feasible. Development at this location will provide a world class destination with accommodation and amenities suitable for a diverse range of tourists and visitors, which will help boost the Western Australian tourism industry.

## 1.1 Coastal Hazard Assessment Requirements

Within Western Australia, State Planning Policy 2.6: State Coastal Planning Policy (SPP2.6; WAPC 2013) provides guidance on the assessment of coastal hazard risks for assets or infrastructure located near to the coast. The objectives of SPP2.6 are wide ranging, however a key component of SPP2.6 is to provide focused areas of the coast for use by the public to access and enjoy the coastal amenity that is inherent to the Western Australian lifestyle. This includes allowing for tourism developments at appropriate locations through provision of access to the foreshore reserve in these areas. Table 1.1 provides further details of how the proposed Hotel and Residential Resort is consistent with the stated objectives of SPP2.6.

## Table 1.1 Alignment of the Proposed Development with SPP2.6 Objectives

| SPP2.6 Policy Objective | Details of Proposed Hotel & Residential Resort Development |
|---|---|
| 1. Ensure that development and the location of coastal facilities takes into account coastal processes, landform stability, coastal hazards, climate change and biophysical criteria. | The Coastal Hazard Assessment (GHD 2015), discussed in Section 3 of this report, assessed the coastal processes for the relevant Jurien Bay shoreline surrounding the proposed Hotel and Residential Resort development.<br><br>The concept designs for the Hotel and Residential Resort produced by Lawrence Scanlan & Associates have considered the Coastal Hazard Assessment completed for Jurien Bay and adopted preliminary recommendations made as part of this CHRMAP process. This has included, for example, assigning finished floor levels based on the potential inundation levels over relevant planning timeframes. |
| 2. Ensure the identification of appropriate areas for the sustainable use of the coast for housing, tourism, recreation, ocean access, maritime industry, commercial and other activities. | The proposed Hotel and Residential Resort is located within the Experience Perth tourism brand reach. It is connected with Australia's Coral Coast to its north (from Cervantes to Ningaloo) via Indian Ocean Drive and the Brand Highway.<br><br>Jurien Bay and it's surrounds currently lacks the significant high end tourism development for national and international visitors, which is available throughout the southwest region.<br><br>In 2011, Jurien Bay was selected as one of nine inaugural 'SuperTowns' under the Royalties for Regions Regional Centres Development Plan (SuperTowns) initiative. Under this plan, Jurien Bay is identified as having the potential to develop into a Regional City with a population of over 20,000. To enable growth in Jurien Bay, tourism developments such as the proposed Hotel and Residential Resort are required for the local economy.<br><br>Tourism Western Australia (2013) have also recognised and registered the proposed Hotel and Residential Resort as a "Significant Tourist Accommodation Development" within Australia's Coral Coast.<br><br>With the sustained growth of the northwest Perth Metropolitan region and limited high end tourism facilities available surrounding Jurien Bay, Aliceville recognise the opportunities and plan to deliver a world class destination. Preliminary investigations and consultation have been met with strong support. |
| 3. Provide for public coastal foreshore reserves and access to them on the coast. | The concept plans for the Hotel and Residential Resort development include public parking along Heaton and Roberts St as well as formal access to the foreshore reserve and Dobbyn Park. |
| 4. Protect, conserve and enhance coastal zone values, particularly in areas of landscape, biodiversity and ecosystem integrity, indigenous and cultural significance. | The concept design recognises the strong support for retaining public access to the beaches and foreshore reserve as well as preserving coastal dunes and vegetation for future generations. These coastal values were identified by the wider Shire CHRMAP (Cardno 2018) as discussed further in Section 2.5 of this report. |

The guidance on the assessment of coastal hazard risk is provided within SPP2.6 in the form of a methodology to assess the potential extent of coastal hazard impacts, as well as for the development of a Coastal Hazard Risk Management and Adaptation Plan (CHRMAP). Further details in this regard are also provided in the CHRMAP Guidelines (WAPC 2014).

The key requirement of a CHRMAP is to develop a risk based adaptation framework for assets or infrastructure that could be at risk of impact from coastal hazards over the relevant planning timeframe. Importantly, the balance of these risks needs to be considered with reference to the expected lifetime of the assets or infrastructure.

To provide guidance regarding the risks posed by coastal hazards, Aliceville engaged specialist coastal and port engineers, M P Rogers & Associates Pty Ltd (MRA), to complete a CHRMAP for the proposed Hotel and Residential Resort development. This CHRMAP covers the following key items:

- Establishment of context.
- Coastal hazard identification and vulnerability.
- Risk analysis and evaluation.
- Risk management and adaptation planning.
- Implementation planning.

Details regarding each of these items will be provided in this report.

# 2. Context

## 2.1 Purpose

The potential vulnerability of the coastline and the subsequent risks to the community, economy and environment needs to be considered for any coastal development.

SPP2.6 requires that the responsible management authority or development proponent prepares a CHRMAP where an existing or proposed development may be at risk from coastal hazards over the planning timeframe. The main purpose of the CHRMAP is to define areas of the coastline which could be vulnerable to coastal hazards and to outline the preferred approach for the monitoring and management of these hazards where required.

A CHRMAP can be a powerful planning tool to help provide clarity to existing and future developers, users, managers or custodians of the coastline. This is done by defining levels of risk exposure, management practices and adaptation techniques that the development proponent, with agreement from the appropriate management authority, considers acceptable in response to the present and future risks posed by coastal hazards.

Specifically, the purpose of this CHRMAP is as follows:

- Confirm the specific extent of coastal hazards in relation to the proposed Hotel and Residential Resort development assets.
- Outline the coastal hazard risks associated with the Hotel and Residential Resort development and how these risks may change over time.
- Establish the basis for present and future risk management and adaptation, which will be used to inform the proposed Hotel and Residential Resort development.
- Provide guidance on appropriate future management and adaptation planning for the proposed Hotel and Residential Resort, including monitoring.

## 2.2 Objectives

The key objectives of this plan are as follows:

- Inform the Hotel and Residential Resort design development by providing appropriate guidance to the proponents and key stakeholders with respect to the management of coastal hazards.
- Ensure the proponent and key stakeholders understand the potential likelihood, consequence and subsequent risks to assets within the proposed development being impacted by coastal hazards over each planning horizon.
- Outline the required coastal adaptation approach in a project specific Implementation Plan for the proponent and that is acceptable to key stakeholders.

## 2.3 Scope

The *CHRMAP Guidelines* (WAPC 2014) provide a specific framework for the preparation of a CHRMAP. This is outlined in the flowchart presented in Figure 2.1, which shows the risk management and adaptation process.

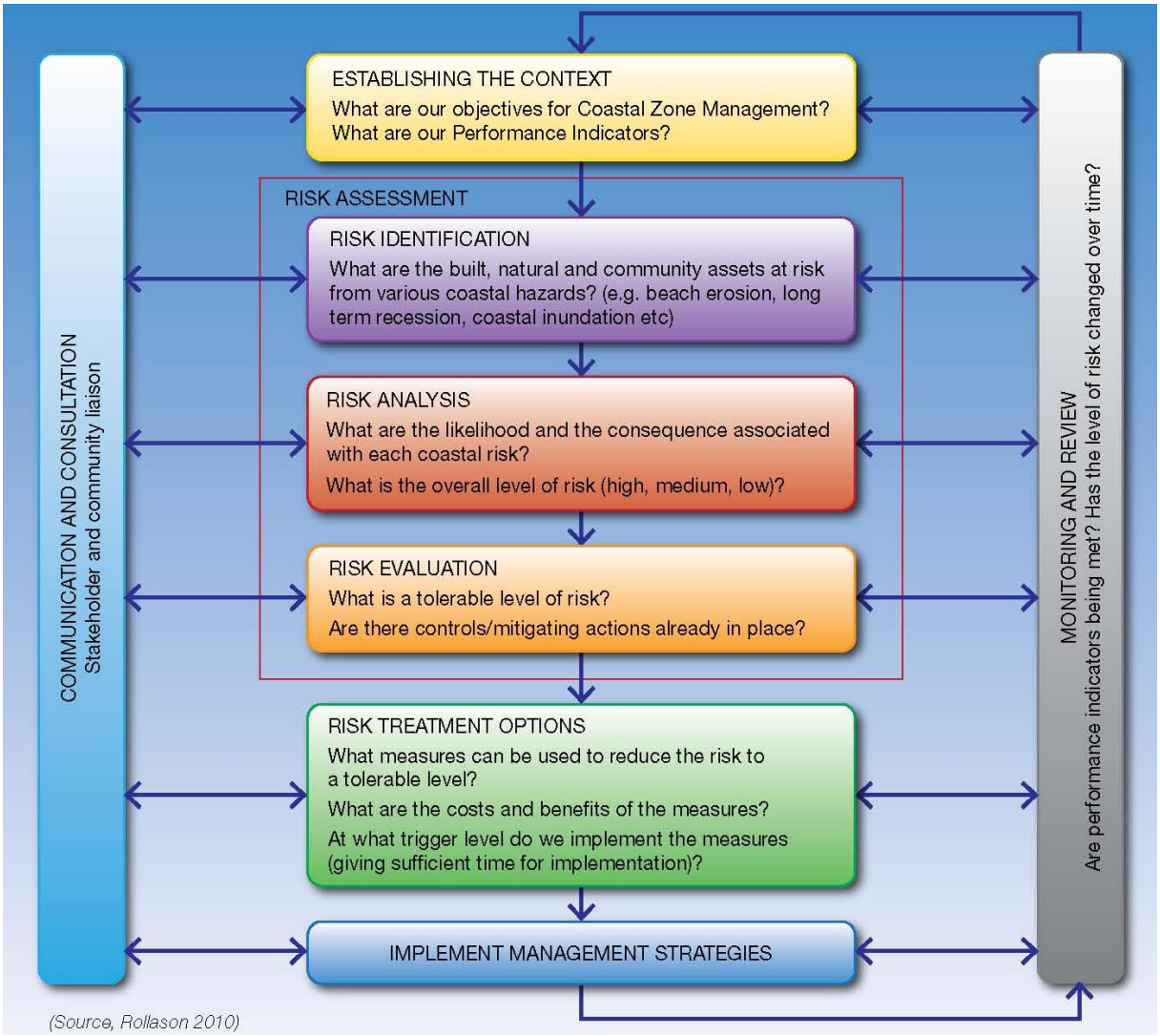


**Figure 2.1 Risk Management & Adaptation Process Flowchart (WAPC 2014)**

As presented in the flowchart, the process for the development of a meaningful CHRMAP requires a number of fundamental inputs. These inputs enable the assessment and analysis of risk, which should ultimately be informed by input received from key stakeholders, to help shape the subsequent adaptation strategies.

The management of coastal hazard risk associated with the proposed Hotel and Residential Resort development will be required to present a proposed adaptation plan that is acceptable to the stakeholders. As a result, the approach that has been taken for this plan is to develop a management methodology that allows for flexibility into the future.

The development of the adaptation plan will be informed by the assessment of the coastal erosion and inundation hazards at the site. The identification of the coastal erosion and inundation hazards at the proposed Hotel and Residential Resort is presented within Section 3 of this report.

This CHRMAP will consider the potential risks posed by coastal hazards over a range of horizons covering the 100 year planning timeframe, as required by SPP2.6 for development on the coast.

Intermediate planning horizons will also be considered in order to assess how risk profiles may change in the future and to inform the requirement for adaptation strategies. This is particularly significant where these intermediate planning horizons more closely align to the expected service lives of the proposed development assets. The intermediate planning horizons that will be considered in this CHRMAP are based on the available erosion hazard line horizons, discussed in Section 3.1, and are listed below.

- Present day.
- 2030.
- 2070.
- 2110.

Based on the results of the risk assessment, risk mitigation strategies will be developed, where required, in order to provide a framework for future management. However, it is important to realise that the risk assessment will be based on the outcomes of the coastal vulnerability assessment, which by their nature, are justifiably conservative. This is due to the uncertainty around coastal dynamics when predicting impacts over long timeframes. As a result, the framework for future risk management strategies should be considered to be a guide of future requirements.

The actual requirement for implementation of these management actions should ultimately be informed by a coastal monitoring regime. The purpose of this coastal monitoring regime is to identify actual changes in the shoreline or sea level that could alter, either positively or negatively, the risk exposure of the proposed assets and infrastructure. A recommended coastal monitoring regime is included within the Implementation Plan, presented within Section 8.4 of this report.

## 2.4 The Site

The proposed Hotel and Residential Resort is located on the Jurien Bay coastline, approximately 200 km north of Perth and within the Shire. Situated between Cervantes to the south and Green Head to the north, Jurien Bay is connected with Australia's Coral Coast via Indian Ocean Drive and the Brand Highway. Jurien Bay has a relatively small permanent population of almost 2,000 people (ABS 2016), however is a popular tourist destination with a range of activities on offer including swimming, fishing, snorkelling, surfing, walking, kitesurfing, skydiving and sightseeing.

The shoreline fronting the Jurien Bay townsite is relatively well protected by the adjacent fringing reef and groups of offshore islands. The beach receives waves averaging less than 0.5 m, which combined with the fine beach sand, maintain a wide low gradient beach and inshore area (Short 2006). The extent of the reef, islands and shallow nearshore area surrounding the site is best illustrated on the local nautical chart, an extract from which is provided in Figure 2.2.

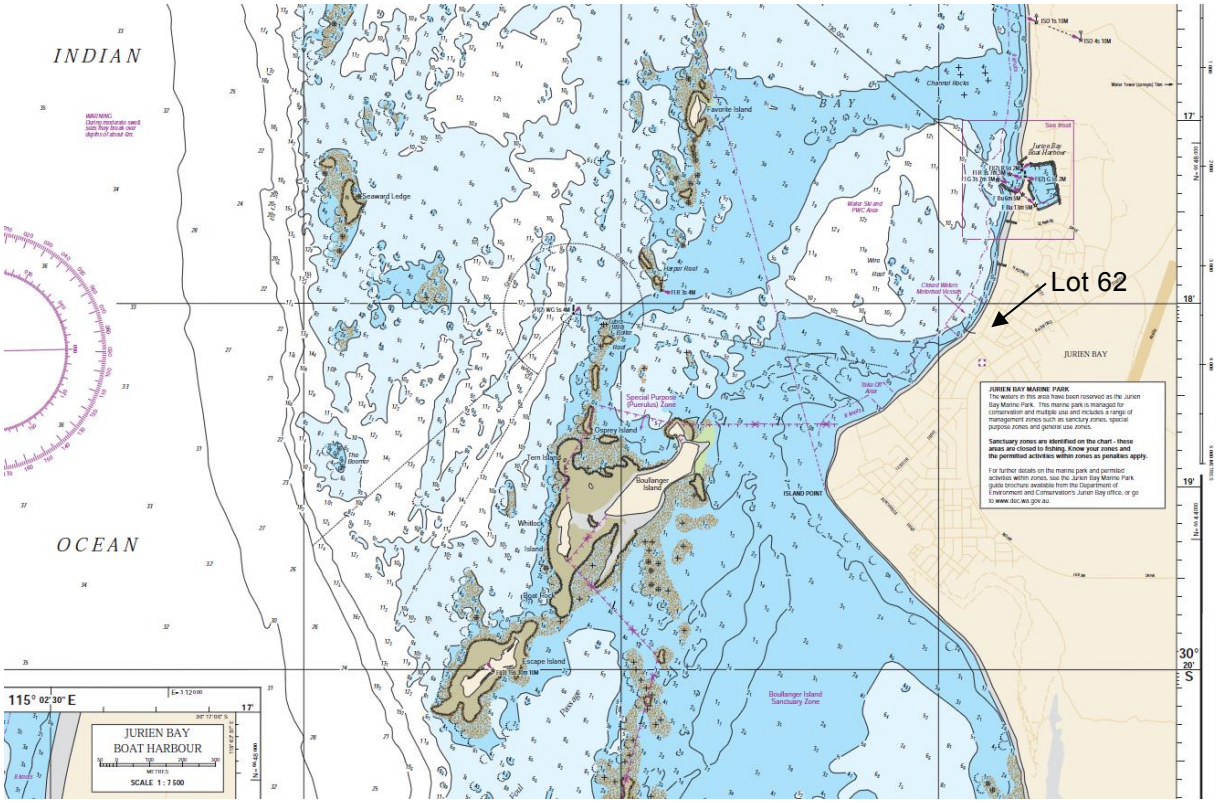


**Figure 2.2 Extract from Local Nautical Chart (WA 947)**

The long-term stability of the geomorphic landform at Island Point, south of Lot 62 (refer to Figure 2.2) is dependent on the ongoing supply of sand that originates in the lee of the offshore island chain (GHD 2015).

The Jurien Bay townsite, encompassing the proposed Hotel and Residential Resort, is located within Secondary Sediment Cell 6 - Grey to Middle Head, as identified in Stul et al (2014) and presented in Figure 2.3. The coastal hazard assessment and adaptation strategies presented by this CHRMAP consider this entire sediment cell, as recommended in SPP2.6.

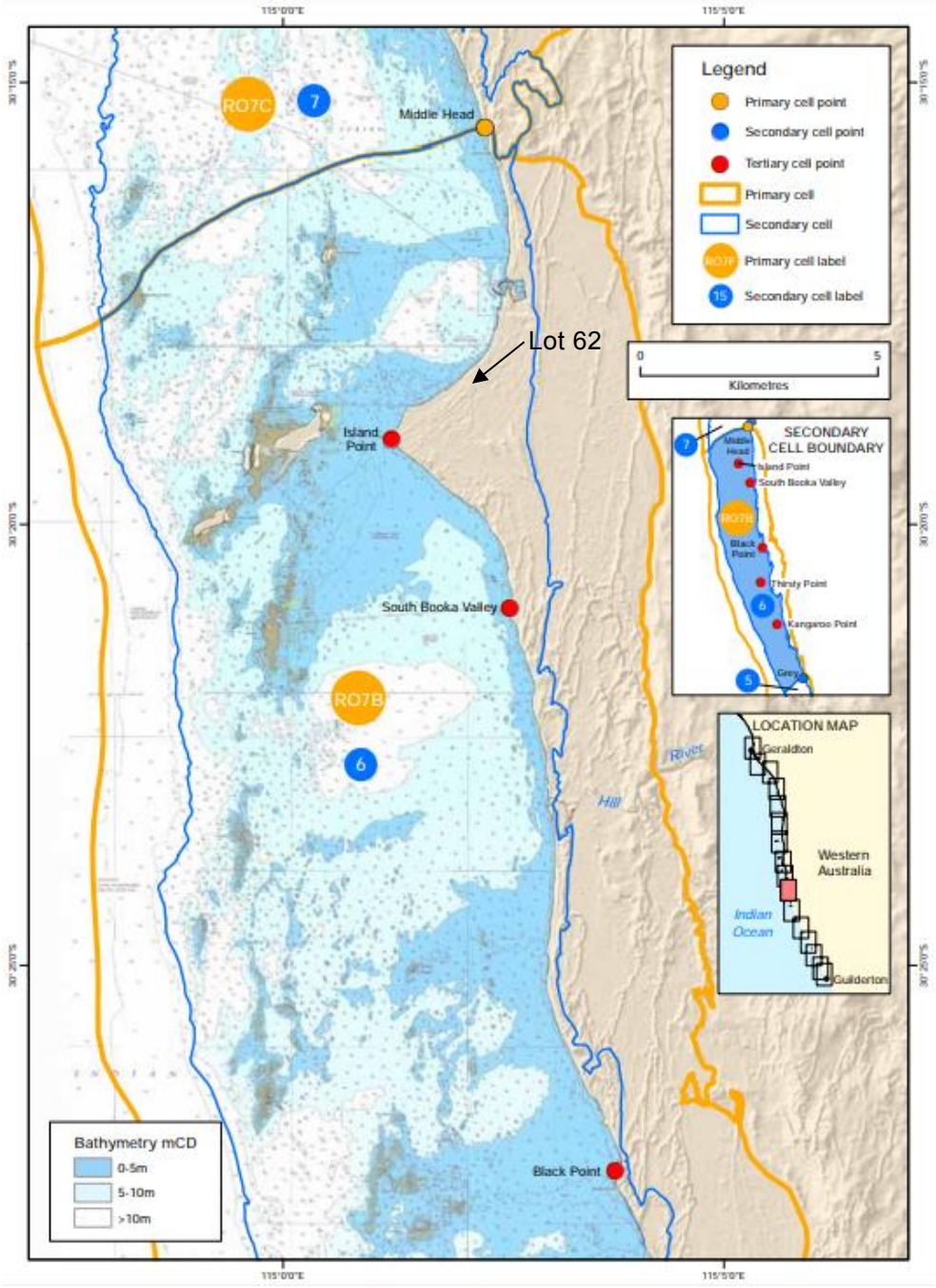


**Figure 2.3 Coastal Sediment Cell (Stul et al 2014)**

## 2.5 Stakeholder Engagement

In 2018, Cardno completed a CHRMAP for the entire Shire, which encompasses Jurien Bay and the proposed Hotel and Residential Resort development area. As part of this wider CHRMAP, stakeholder and community engagement was completed. This engagement was completed to capture the coastal values of the community, inform the public about coastal hazards and the CHRMAP process and gauge attitudes towards the various adaptation options available. A community engagement session was facilitated by the Shire in Jurien Bay on 27 May 2017 and followed by an online survey in June 2017.

The key outcomes of the CHRMAP community engagement are summarised below.

- The community strongly support the ongoing provision of the foreshore reserve for current and future generations.
- The community strongly agreed that private landholders should be informed about the risk of erosion when purchasing or developing in hazard areas and that development should be limited in these areas.
- There was strong community disagreement for protecting private property from erosion when this results in the loss of the public foreshore reserve and beach access.
- The community moderately support allowing private land owners to protect their property when they have demonstrated there will be no impact on the adjoining coast.
- The community moderately support relocating assets away from the coast and letting natural processes take their course.

The wider CHRMAP completed for the Shire doesn't address Lot 62 or the proposed Hotel and Residential development specifically. Nonetheless, the key community engagement and CHRMAP outcomes will be considered in this assessment and used to help determine appropriate risk adaptation and mitigation strategies.

This is considered to be the key stakeholder input required for the preparation of this CHRMAP, in addition to the Shire, since the development of Lot 62 is in accordance with the relevant planning requirements and schemes (refer to Section 2.6). There has been ongoing consultation with the Shire during the development application process, which will continue throughout the planning phase of this project.

## 2.6 Existing Planning Controls

The proposed Hotel and Residential Resort has regard for a number of planning requirements and considerations. Details of these are provided within the following section.

### 2.6.1 Land Tenure & Ongoing Management

The proposed Hotel and Residential Resort development site is legally described as:

*Lot 62 on Deposited Plan 207149, Volume 1499, Folio 123.*

Aliceville purchased Lot 62 in June 2004 and is committed to the ongoing management of coastal risk and the acceptance of this risk as part of the proposed development. Aliceville has acknowledged and accepted the coastal hazard risks presented by this CHRMAP document.

The risk management and adaptation requirements for Lot 62 will be determined in the next phase of this CHRMAP process, however construction of coastal protection works to protect the development is not something that would be contemplated by Aliceville, unless the wider Shire's CHRMAP (Cardno 2018) was updated to identify this as the preferred adaptation strategy for the broader region.

### 2.6.2 Shire Local Planning Scheme No.7

The Jurien Bay townsite, inclusive of Lot 62, Roberts Rd, is governed by Local Planning Scheme No.7 (LPS7). The majority of Lot 62, Roberts Rd was rezoned 'Special Use No.4 - Tourist Resort'

under Scheme Amendment No.21 (2015) of LPS7, with a portion of the site reserved as 'Local Road.' This is shown in the following extract of LPS7.

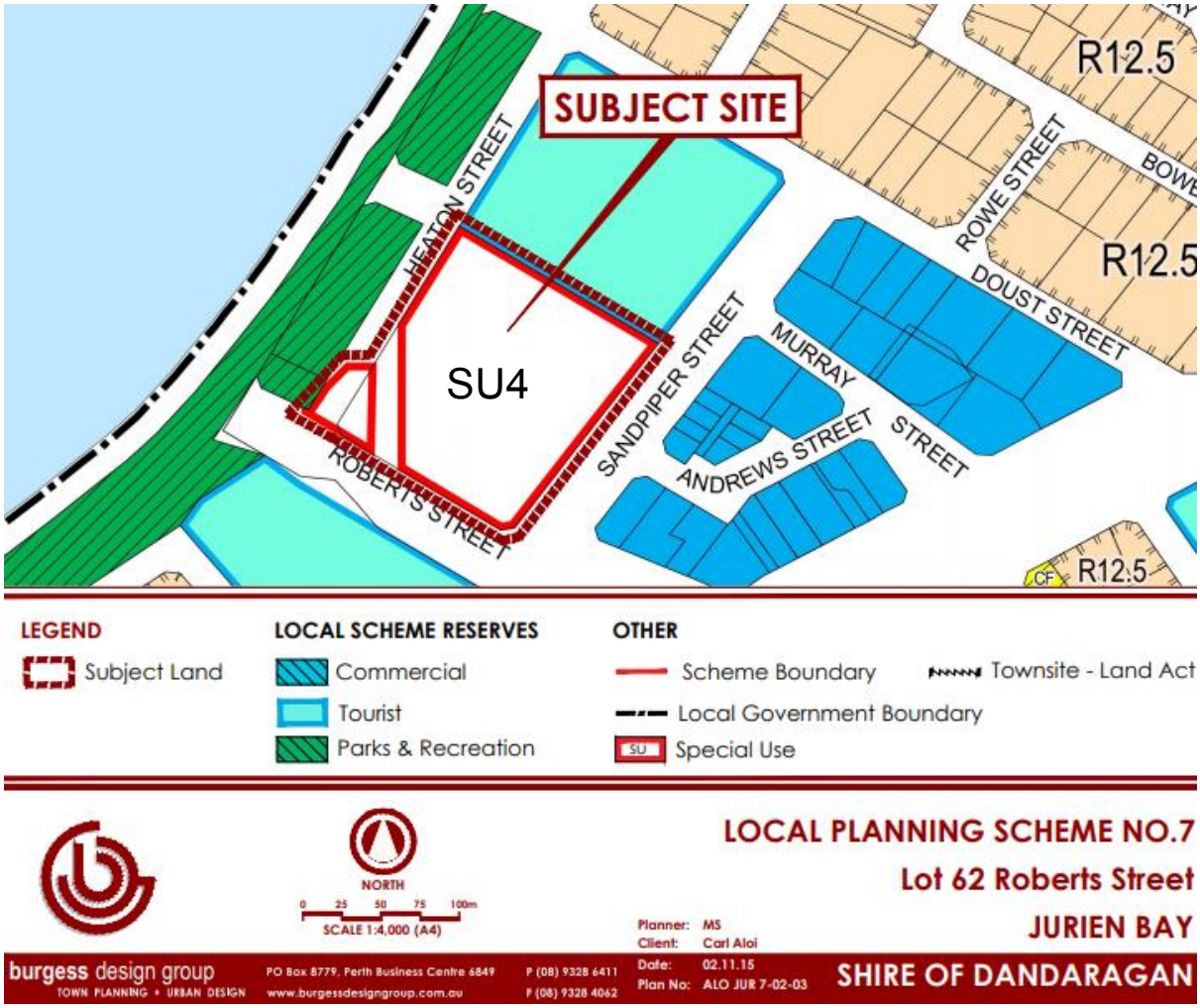


**Figure 2.4 Local Planning Scheme No.7 Extract**

The proposed Hotel and Residential Resort concept plans are compliant with this zoning, which permits a range of tourism, recreation, residential and commercial activities. Two clauses of the Lot 62 special use zone (SU4) that specifically reference coastal hazards are given below:

*Condition 6: Prior to the approval of development on the site a CHRMAP is to be prepared in accordance with SPP2.6 and approved by the local government. The CHRMAP should include but not be limited to consideration of inundation, erosion, finished floor levels, setbacks and drainage. Relevant adaptation measures are to be implemented at the time of development.*

*Condition 14: A notification to the following effect is to be placed on the certificate(s) of title of any proposed lot(s) identified in the CHRMAP that may be affected by coastal hazards: Vulnerable coastal area – This lot is located in an area likely to be subject to coastal erosion/inundation over the next 100 years.*

The completion of this CHRMAP report aims to addresses Condition 6 of the LSP7 Scheme Amendment No.21. Furthermore, the adaptation and mitigation strategies and Implementation

Plan discussed in Sections 7 and 8 respectively will discuss the notification of title required by Condition 14 of the LSP7 Scheme Amendment No.21.

### 2.6.3 Jurien Bay Regional Centre Growth Plan

In 2011, Jurien Bay was selected as one of nine inaugural 'SuperTowns' under the Royalties for Regions Regional Centres Development Plan SuperTowns initiative (Regional Development Council). Under this plan, Jurien Bay is identified as having the potential to develop into a Regional City with a population of over 20,000.

The Jurien Bay Regional Centre Growth Plan was subsequently completed in 2012(a) (Eaton et al) and recognizes tourism development within the area as a key economic driver to support this sustainable growth. Furthermore, the Plan recognises that Jurien Bay has the potential to develop a strong value proposition as a higher end 2-3 day destination for national and international guests, leveraging on the nearby beautiful local natural environment.

The Jurien Bay Regional Centre Growth Plan states that the development of an Interpretative Centre and associated café at Dobbyn Park in conjunction with the proposed development at Lot 62 'would "bookend" and frame the view looking to the coast along Roberts St and abut the pedestrian link from Roberts St to the foreshore and jetty' providing a major public activation opportunity.

### 2.6.4 Jurien Bay Town Centre Strategy (2012)

Eaton et al (2012b) have prepared a Draft Jurien Bay Town Centre Strategy that aims to provide a clear direction for future development and management within the Jurien Bay Town Centre. The relevant aims of the strategy are:

- A vision (and possible theme) for the town centre of Jurien Bay looking forward 10-15 years.
- Where future commercial, tourist, medium density residential and mixed use development should occur based on physical, social and environmental considerations.
- Appropriate scale and density of development (residential, commercial, tourist) to achieve a sustainable economic benefit, whilst enhancing the quality of wellbeing, lifestyle and services for the broader community.
- Consolidation of land use and establish a framework to deliver a more integrated, sustainable, and functional town centre environment.

Aliceville intend to achieve the above Town Centre Strategy aims by providing the following in the delivery of the proposed Hotel and Residential Resort development:

- Long term economic benefit to the town centre.
- Jobs for the local community.
- A central tourist core for Jurien Bay into the future.
- A bookend development to Roberts St.
- An active pedestrian link along Roberts St to the Jurien Bay Foreshore.

### 2.6.5 Shire Local Tourism Planning Strategy

The Shire Local Tourism Planning Strategy (Tourism Western Australia 2012) is the current guiding strategic document for tourism planning within the Shire.

The Strategy has been formed through the analysis of the existing State, regional and local framework and the development of a tourism profile. It recognises the proposed development at Lot 62 as 'presenting a number of opportunities to facilitate the creation of a tourism precinct between the town centre and the foreshore.'

### 2.6.6 Shire Local Planning Strategy

A Draft Local Planning Strategy (LPS; 2016) is currently being considered for the entire Shire to outline a 10-15 year planning direction in the context of State and regional planning policies. It will also provide a rational for land use zoning and planning provisions for amendments to the existing LPS7. Once approved, the current Jurien Bay Town Centre Strategy will be retained as a separate document to guide ongoing development in the city centre. However, the LPS will incorporate the information of and succeed a number of exiting documents discussed above.

The Draft LPS discusses coastal processes and the wider Shire CHRMAP process being undertaken during the time of writing. The document acknowledges that appropriate coastal setbacks are important, and that engineering solutions to protect coastal infrastructure or residential/tourist development may be required.

The Draft LPS includes the following strategic directions for Jurien Bay that are relevant to the proposed development at Lot 62:

- Recognise Jurien Bay as the regional centre providing services and facilities to serve the wider regional community.
- Provide a diversity of housing in response to demographic trends.
- Increase employment opportunities based on the competitive opportunities identified for the Shire, particularly in the tourism sector.
- Consolidate urban areas and support mixed use sites.

Other strategies relating to coastal hazards in Jurien Bay, given in the Draft LPS include the following:

- New development and coastal facilities to be within areas that can be protected from coastal processes and hazards as per SPP2.6.
- Identify areas in which a detailed CHRMAP needs to be undertaken before rezoning, subdivision or development occur, such as areas that may be subject to coastal inundation and long-term erosion over the planning timeframe.
- Undertake coastal adaptation planning to identify assets, including infrastructure that may be at risk from coastal processes over the planning timeframe, and develop strategies to mitigate or manage risks where appropriate.

The Draft LPS is expected to be updated and adopted by the Shire in the coming years.

### 2.6.7 Local Development Plan

A Local Development Plan (LDP) for Lot 62 Roberts Rd, Jurien Bay has been prepared by Burgess Design Group (2016). This was completed in accordance with the LSP7 Scheme Amendment No.21 and endorsed by the Western Australian Planning Commission (WAPC) in September 2015.

The LDP discusses in detail the existing planning framework relevant to Lot 62 and how the proposed Hotel and Residential Resort development plans to address them.

## 2.7 Key Assets

The proposed Hotel and Residential Resort development is being prepared with the specific requirement to not negatively impact the social and environmental values of the area, as to do so would be an unacceptable outcome to the key stakeholders and would detract from the tourism potential for the site. As a result, the preservation of social and environmental values is considered to be inherent in the development of the relevant plans for the Hotel and Residential Resort.

It has therefore been identified that a coastal adaptation strategy will need to be prepared to ensure that there is no negative impact on the social and environmental values of the area. This will require a coastal adaptation strategy that, incorporating the results of the coastal hazard assessment (GHD 2015), ensures the development assets are appropriately designed for and managed to safeguard against any adverse impacts. This is further discussed by the adaptation options presented in Section 7 of this CHRMAP.

This assessment will be completed with regard for the expected economic life of the built assets that will be constructed for the proposed Hotel and Residential Resort development. For instance, it is envisaged that the design life of the structures within the proposed development will be limited to 50 years. Beyond this period, it is expected that the condition of these assets would be such that they would need to be replaced, as is common for structures immediately adjacent to the coastline given the corrosive nature of the environment.

The key assets proposed within the Hotel and Residential Resort development are shown on the concept plans previously provided in Figure 1.2 and 1.3 and have been summarised in Table 2.1. The risk assessment will focus on these assets in order to identify their vulnerability and consequently the requirements for risk management.

The beach and Dobbyn Park located immediately landward of Lot 62, are also considered to be key assets, however have been previously assessed by the wider Shire CHRMAP (Cardno 2018). They will be discussed in Section 7 in relation to the proposed adaptation strategies.

It is also noted that the existing built assets on the site, the two buildings and shed, will be demolished to enable the construction of the Hotel and Residential Resort.

## Table 2.1 Key Assets within the Proposed Hotel & Residential Resort

| Key Assets | Finished Floor Level (mAHD) (Development Level) |
|---|---|
| Environment | |
| Beach | N/A |
| Social | |
| Dobbyn Park | ~ 3.0 |
| Hotel | 5.1 (Ground) |
| Bar | 4.6 (Ground) |
| Restaurant | 4.6 (Ground) |
| Spa | 5.4 (Ground) |
| Staff Accommodation | 5.4 (Ground) |
| Residences | > 4.0 (Ground) |
| Motel | 5.4 (Ground) |
| Boardwalk | > 3.0 (Ground) |
| Economic | |
| Residential Carpark | 5.4 (Ground) |
| Commercial Carpark | 1.7 (Basement) and 3.35 (Ground entrance point) |
| Roberts St Road/Carparking | 3.35 (Ground) |
| Heaton St Road/Carparking | 3.8 (Ground) |
| Reception | 3.6 (Ground) |

Notes: 1. Finished floor levels are based on the lowest proposed development ground level for each asset group.

2. Assets on the first level are located above approximately 7.8 mAHD and will be addressed in this CHRMAP by the assessment of the ground level assets that they are located above.

## 2.8 Success Criteria

The success criteria for the CHRMAP will ultimately be as follows:

- Demonstrated understanding by the proponent and key stakeholders regarding the likelihoods, consequences and subsequent risks of coastal hazards impacting identified assets over each planning horizon.
- Evidence of the stakeholder engagement outcomes being incorporated throughout the development of risk management and adaptation measures.
- Acceptance of a risk management and adaptation plan for the 100 year planning timeframe by the proponent and key stakeholders.
- Adoption of the Implementation Plan (refer to Section 8) by the proponent throughout the development and operation of the Hotel and Residential Resort.

The outcomes of the success criteria listed above are presented in the following sections of this report.

# 3. Coastal Hazard Identification

An understanding of the coastal hazards and potential risks is critical for the assessment and determination of management and adaptation actions. Appropriate coastal erosion and inundation hazard allowances have been determined in accordance with SPP2.6 and are presented in the following sections.

## 3.1 Coastal Erosion Hazard Allowances

A Coastal Hazard Assessment was previously completed by GHD (2015), which was reviewed and accepted for adaptation planning purposes by DoT. It was completed in accordance with SPP2.6 and included the calculation of coastal erosion hazard lines for the present day (2016), 2030, 2070 and 2110 year planning horizons. These coastal erosion hazard lines were subsequently adopted for use by the wider Shire CHRMAP completed by Cardno (2018).

SPP2.6 provides the methodology for completing an assessment of the potential impacts from erosion on coastal development in Western Australia. For sandy coasts, relevant for the shoreline fronting the proposed Hotel and Residential Resort, this methodology requires consideration of the following coastal erosion hazard allowances:

- Allowance for the current risk of storm erosion (termed the S1 allowance).
- Allowance for historic shoreline movement trends (termed the S2 allowance).
- Allowance for erosion caused by future sea level rise (termed the S3 allowance).
- Allowance for uncertainty.

The calculation of the above allowances (S1, S2 and S3) is outlined in the Coastal Hazard Assessment (GHD 2015) and determined the following total erosion hazard allowances for the relevant shoreline fronting the proposed Hotel and Residential Resort. The distances are given from the Horizontal Shoreline Datum (HSD).

**Table 3.1 Total Recommended Erosion Hazard Allowances (GHD 2015)**

| Planning Horizon | S1 (m) | S2 (m) | S3 + Uncertainty(m) | Total Erosion Hazard Allowance(m) |
|---|---|---|---|---|
| Present Day (2016) | 49 | 0 | 0 | 49 |
| 2030 | 49 | 0 | 10 | 59 |
| 2070 | 49 | 0 | 51 | 100 |
| 2110 | 49 | 0 | 109 | 158 |

It is important to understand that these coastal erosion hazard allowances are not intended to be predictions of the future shoreline location, but rather to provide conservative estimates of possible future shoreline retreat that are appropriate for consideration in coastal planning. Nevertheless, the coastal erosion hazard lines will be used for this CHRMAP to inform the potential future risk associated with the proposed Hotel and Residential Resort development.

The coastal erosion hazard lines for the relevant shoreline fronting Lot 62, the proposed Hotel and Residential Resort are shown in Figure 3.1. As shown by the figure, Lot 62 is located landward of the present day (2016), 2030 and 2070 hazard lines. However, the 100 year planning timeframe (2110) coastal erosion hazard line overlaps a relatively small western portion of the site, necessitating the completion of this CHRMAP.

The proposed development must also include consideration of a number of other factors such as public access, recreation, cultural and ecological requirements. In some cases, the required setback from the HSD may therefore be greater than the recommended erosion hazard allowances outlined in Table 3.1.


**Figure 3.1 Coastal Erosion Hazard Lines (Cardno 2018)**

## 3.2 Coastal Inundation Hazard Allowance

SPP2.6 requires that the allowance for inundation (termed the S4 allowance) be taken as the maximum extent of inundation experienced during a water level event with a 0.2% Annual Exceedance Probability (AEP) (500 year Average Recurrence Interval (ARI)) plus the appropriate allowance for sea level rise. This is the critical aspect when considering public safety and significant assets, however for tourist based assets where public safety is managed, consideration of less severe inundation events could be appropriate.

Assessment of the inundation levels requires consideration of peak storm surge, including wave setup. A storm surge occurs when a storm with high winds and low pressures approaches the coastline (refer Figure 3.2). The strong, onshore winds and large waves push water against the coastline (wind and wave setup) and the barometric pressure difference creates a region of high water level. These factors acting in concert create the storm surge. The size of the storm surge is influenced by the following factors:

- Wind strength and direction.
- Pressure gradient.
- Seafloor bathymetry.
- Coastal topography.

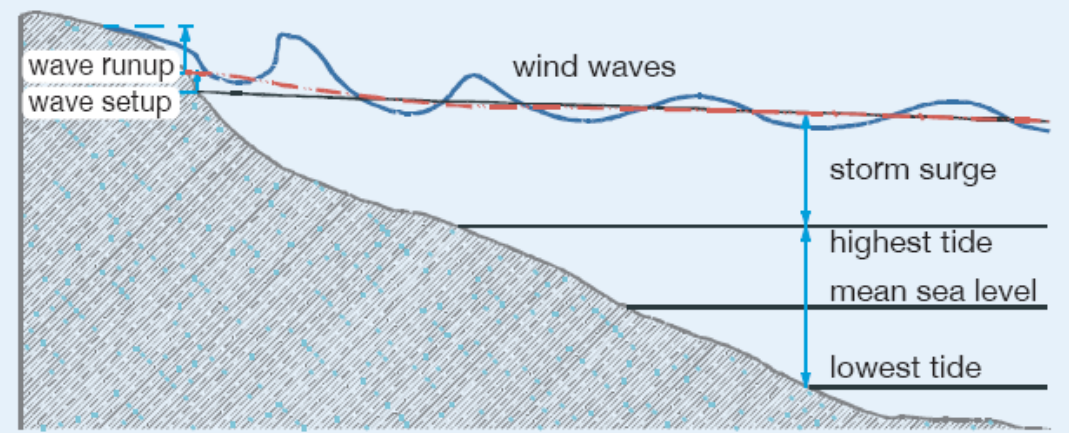


**Figure 3.2 Storm Surge Components**

The proposed Hotel and Residential Resort is located within Area 3 of SPP2.6 (Figure 1: Coastal Areas) and as such, the allowance for the current risk of inundation should be based on a tropical cyclone storm event.

Design Storms for Western Australia Coastal Planning - Tropical Cyclones (Seashore 2018) provides a preliminary set of estimated ARI inundation levels. This includes a 500 year ARI water level of 3.7 mAHD for Jurien Bay. Similarly, preliminary design water levels are given for 10, 20, 50, 100, 200 and 1000 year ARI events, which have also been used to assess inundation probability as discussed in Section 5.1.2.

As the projected water levels are given for the shoreline, they are assumed to include nearshore wind and wave set up during these events. It is also noted that in the absence of targeted and more detailed modelling, the levels presented by Seashore Engineering (2018) are deliberately conservative. It is also important to note that cyclones produce high waves and water levels for

relatively short periods of time compared to severe storms associated with the passage of cold fronts in the south-west region of Western Australia. These factors will be considered by the risk assessment and subsequent adaptation strategies discussed later in this report.

DoT (2010) completed an assessment of the potential increase in sea level that could be experienced on the Western Australian coast in the coming 100 years. This assessment extrapolated work by Hunter (2009) to provide sea level rise values based on the IPCC (2007) A1FI climate change scenario projections to the year 2110. The derived sea level rise scenario was subsequently adopted by the Western Australian Planning Commission (and SPP 2.6) for use in coastal planning along the Western Australian coast. This is the sea level rise scenario adopted for this assessment and is presented in Figure 3.3.

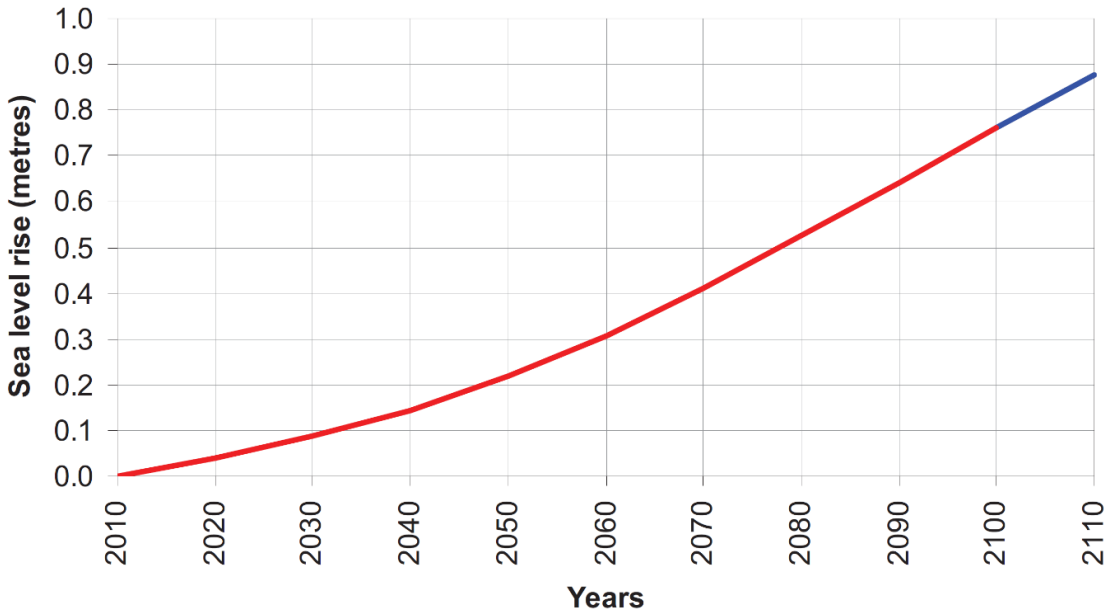


**Figure 3.3 Recommended Allowance for Sea Level Rise (DoT 2010)**

The total S4 storm surge inundation allowance for the Hotel and Residential Resort, considering the 500 year ARI storm surge water level (Seashore 2018) and the appropriate allowances for sea level rise (DoT 2010) are provided in Table 3.2 for each of the planning horizons.

**Table 3.2 S4 Inundation Levels**

| Planning Horizon | Potential Sea Level Rise Allowance (m) | 500 yr ARI Water Level (mAHD) | Inundation Level (mAHD) |
|---|---|---|---|
| Present Day (2016) | 0 | 3.7 | 3.7 |
| 2030 | 0.06 | 3.7 | 3.76 |
| 2070 | 0.38 | 3.7 | 4.08 |
| 2110 | 0.9 | 3.7 | 4.6 |

These potential inundation levels will be considered as part of this CHRMAP to comply with the requirements of SPP2.6.

# 4. Coastal Vulnerability

The vulnerability of the existing and proposed assets identified previously (refer to Figures 1.2 and 1.3 and Table 2.1) is related to their level of exposure to coastal hazards, as well as their sensitivity to the impacts caused by these hazards and their ability to respond to them (termed adaptive capacity). With the exception of the environmental assets, which will essentially be left to naturally respond to the impacts of coastal hazards, the assets that are being considered are built form assets. Therefore, whilst they are being constructed in a way that will allow the assets to be migrated in the future in response to elevated coastal hazard risk, the level of vulnerability of the assets will ultimately be linked to their level of exposure. Further consideration of the risk and future management and adaptation requirements will therefore be needed for these assets. Details of this risk assessment and future management and adaptation requirements are presented in subsequent sections of this report.

# 5. Risk Analysis

In accordance with WAPC (2014), a risk based approach will be used to assess the hazards and required mitigation and adaptation options for the proposed Hotel and Residential Resort. As coastal hazards are the focus of this assessment, it is the likelihood and consequences of these coastal hazards that need to be considered. As stated previously, it is inherent in the proposal that there be no negative social or environmental impacts as a result of this development, with mitigation strategies already highlighted to address these issues.

## 5.1 Likelihood

Likelihood is defined as the chance of something happening (AS/NZS ISO 31000:2009). WAPC (2014) defines the likelihood as the chance of erosion or storm surge inundation occurring or how often they impact on existing and future assets and values. This requires consideration of the frequency and probability of the event occurring over a given planning timeframe.

The probability of an event occurring is often related to the AEP or the ARI. The use of the AEP to define impacts of coastal hazards over the planning timeframe assumes that events have the same probability of occurring each year. In the case of climate change and sea level rise, which has a large influence on the assessed coastal hazard risk, this is not true. In addition, there is insufficient data available to properly quantify the probability of occurrence. A scale of likelihood has therefore been developed, which follows the Australian Standard Risk Management Principles and Guidelines (AS/NZS ISO 31000:2009). This is presented in Table 5.1.

### Table 5.1 Scale of Likelihood

| Rating | Description/Frequency |
|---|---|
| Almost certain | There is a high possibility the event will occur as there is a history of frequent occurrence<br>90-100% probability of occurring over the timeframe. |
| Likely | It is likely the event will occur as there is a history of casual occurrence<br>60-90% probability of occurring over the timeframe. |
| Possible | The event may occur<br>40-60% probability of occurring over the timeframe. |
| Unlikely | There is a low possibility that the event will occur<br>10-40% probability of occurring over the timeframe. |
| Rare | It is highly unlikely that the event will occur, except in extreme/exceptional circumstances.<br>0-10% probability of occurring over the timeframe. |

The likelihood and consequences of coastal hazards are different for erosion and inundation. As a result, the likelihood and consequence of erosion and inundation should be considered separately. The likelihood of the coastal hazard impacts is discussed in the following sections.

### 5.1.1 Coastal Erosion

The likelihood ratings given to the proposed development assets are based on the coastal erosion hazard lines (Figure 3.1) and the consideration of the probabilities of each of the allowances occurring within the respective planning horizons.

It is important to note that the hazard lines reaching a particular asset at the end of the planning horizon do not necessarily mean this will occur. This is due to the fact that it requires all of the following to occur:

- Erosion of 0.2 m/year (uncertainty allowance) in an area not identified as eroding.
- The upper estimate of erosion caused by sea level rise.
- The 100 year ARI severe storm event to be experienced at the end of the planning timeframe (ie when the other allowances have been realised).

Only if all of these occur will the erosion hazard lines be realised.

At the Hotel and Residential Resort, shoreline change above the HSD is predominantly driven by the 100 year ARI severe storm erosion event over the shorter term planning horizon to almost 2070. Without the 100 year erosion event being realised, coastal change will be limited to impacts to the beach and vegetation seaward of Dobbyn Park over the planning horizon to 2070.

This has been considered in the assessment of likelihood for the relevant assets over the 100 year planning horizon.

The assessment of the relative likelihood of each of the identified key assets (refer to Table 2.1), being impacted by erosion hazards over the 100 year planning timeframe, is presented in Table 5.2.

### Table 5.2 Assessment of Likelihood of Coastal Erosion Impact

| Key Assets | Present Day (2016) | 2030 | 2070 | 2110 |
|---|---|---|---|---|
| Hotel | Rare | Rare | Unlikely | Possible |
| Bar | Rare | Rare | Rare | Rare |
| Restaurant | Rare | Rare | Rare | Rare |
| Spa | Rare | Rare | Rare | Rare |
| Staff Accommodation | Rare | Rare | Rare | Rare |
| Residences | Rare | Rare | Unlikely | Possible |
| Motel | Rare | Rare | Rare | Rare |
| Boardwalk | Rare | Unlikely | Possible | Likely |
| Residential Carpark | Rare | Rare | Rare | Rare |
| Commercial Carpark | Rare | Rare | Rare | Rare |
| Roberts St Road/Carparking | Rare | Rare | Rare | Rare |
| Heaton St Road/Carparking | Rare | Rare | Unlikely | Possible |
| Reception | Rare | Rare | Rare | Rare |

Notes: 1. Based on most exposed location of each asset group.

The assessment of likelihood of coastal erosion impact shows the following:

- Coastal erosion may impact several assets over the 100 year planning timeframe to 2110.
- All of the proposed Hotel and Residential Resort assets are assessed as either Rare or Unlikely for erosion hazard impact over the planning horizon to 2070, with the exception of the Boardwalk (rated Possible).
- The Hotel, Residences and Heaton St Road/Carparking are assessed as Possible for risk of erosion hazard impact over the 100 year planning timeframe to 2110.
- The Boardwalk is assessed as Likely for risk of erosion hazard impact over the 100 year planning timeframe to 2110.

### 5.1.2 Coastal Inundation

Assessment of the likelihood of coastal inundation is slightly different to that for coastal erosion. This is due to the fact that the potential for coastal inundation will change in the future as the sea level rises. This means that an area that would only be inundated during a very severe event in the present day could potentially be inundated by a much less severe event in the future.

Assessment of the probability of an area being inundated within a given planning horizon therefore needs to consider the changing probability of event occurrence throughout that planning timeframe.

As an example, based on the estimated inundation levels, an area with an elevation of around 3.7 mAHD would just be inundated by the 500 year ARI event in the present day. However, it may be inundated by the 375 and 200 year ARI events in 2070 and 2110 respectively. Cumulative probabilities of occurrence of inundation at each level for the proposed assets were combined on an annual basis. These probabilities have been used to determine the likelihood of each of the key assets being impacted by inundation for the respective planning horizons.

The results of the assessment of likelihood of coastal inundation for each of the key assets (refer to Figure 2.1) is presented in Table 5.3.

### Table 5.3 Assessment of Likelihood of Coastal Inundation Impact

| Key Assets | Finished Floor Levels | Present Day (2016) | 2030 | 2070 | 2110 |
|---|---|---|---|---|---|
| Hotel | 5.1 (Ground) | Rare | Rare | Rare | Rare |
| Bar | 4.6 (Ground) | Rare | Rare | Rare | Unlikely |
| Restaurant | 4.6 (Ground) | Rare | Rare | Rare | Unlikely |
| Spa | 5.4 (Ground) | Rare | Rare | Rare | Rare |
| Staff Accommodation | 5.4 (Ground) | Rare | Rare | Rare | Rare |
| Residences | > 4.0 (Ground) | Rare | Rare | Rare | Unlikely |
| Motel | 5.4 (Ground) | Rare | Rare | Rare | Rare |
| Boardwalk | > 3.0 (Ground) | Rare | Rare | Unlikely | Possible |
| Residential Carpark | 5.4 (Ground) | Rare | Rare | Rare | Rare |
| Commercial Carpark | 1.7 (Basement) | Rare | Rare | Unlikely | Possible |
| Roberts St Road/Carparking | 3.35 (Ground) | Rare | Rare | Unlikely | Possible |
| Heaton St Road/Carparking | 3.8 (Ground) | Rare | Rare | Unlikely | Unlikely |
| Reception | 3.6 (Ground) | Rare | Rare | Unlikely | Unlikely |

The assessment of likelihood of coastal inundation impact shows the following:

- Coastal inundation may impact several assets over the 100 year planning timeframe to 2110.
- All of the proposed Hotel and Residential Resort assets are assessed as either Rare or Unlikely for inundation hazard impact over the planning horizon to 2070.
- The Boardwalk, Commercial Carpark and Roberts St Road/Carparking is rated as Possible for inundation hazard impact over the 100 year planning horizon to 2110. It is noted the assessment of the Commercial Carpark is based on the 3.35 mAHD level, where the entrance ramp comes off Roberts St.

## 5.2 Consequence

The second part of the risk assessment is determining the consequence of the coastal hazards on the proposed Hotel and Residential Resort assets. A scale of consequence has been developed which provides a range of impacts and is generally consistent with the Australian Standard Risk Management Principles and Guidelines (ISO 31000:2009).

### Table 5.4 Scale of Consequence

| Rating | Social | Economic | Environment |
|---|---|---|---|
| Catastrophic | Loss of life or serious injury. Large long term or permanent loss of services, employment, finances or culture (75% of community affected), international loss | Damage to property, infrastructure or local economy > $20M | Major widespread loss of environmental amenity and progressive irrecoverable environmental damage |
| Major | Serious injury. Medium term disruption to services, employment, finances or culture (<50% of community affected), national loss | Damage to property, infrastructure or local economy > $5M to $20M | Severe loss of environmental amenity and a danger of continuing environmental damage |
| Moderate | Minor injury. Major short or minor long term disruption to services, employment, finances or culture (<25% of community affected), regional loss | Damage to property, infrastructure or local economy > $500K to $5M | Isolated but significant instances of environmental damage that might be reversed with intensive efforts. Recovery may take several years. |
| Minor | Small to medium disruption to services, employment, finances or culture (<10% of community affected), local loss | Damage to property, infrastructure or local economy > $50K to $500K | Minor instances of environmental damage that could be reversed. Consistent with seasonal variability, recovery may take one year. |
| Insignificant | Minimal short-term inconveniences to services, employment, finances or culture (<5% of community affected), neighbourhood loss | Damage to property, infrastructure or local economy < $50K | Minimal environmental damage, recovery may take less than 6 months. |

Similar to the assessment of likelihood, the consequence rating has been completed separately for coastal erosion and coastal inundation. Typically for infrastructure and assets, the consequences associated with coastal erosion are more significant than those associated with coastal inundation. This arises due to the fact that coastal erosion is generally more permanent and more difficult to overcome than coastal inundation. For instance, if the foundations of a house were undermined by erosion it is likely that the house would fall. However, if a house was inundated, while there may be some damage, structural failure would be less likely.

The consequence ratings for coastal erosion and coastal inundation are outlined in the following sections. These consequence ratings are ultimately provided to inform Aliceville of the risks given their future management liabilities as outlined in Section 2.6.

Importantly, this assessment of the consequence of coastal erosion and inundation has been completed on the basis that the public safety risk is managed during severe coastal events. Given that these events are likely to be associated with the passage of severe storms or cyclones, management of public safety is something that will occur through an emergency management plan of the Hotel and Residential Resort and the emergency management procedures of DFES. This is discussed further in Sections 7 and 8 of this CHRMAP.

### 5.2.1 Coastal Erosion

The assessed consequences of coastal erosion for each of the planning horizons over the 100 year planning timeframe are outlined in Table 5.5.

### Table 5.5 Assessment of Consequence of Coastal Erosion Impact

| Key Assets | Present Day (2016) | 2030 | 2070 | 2110 |
|---|---|---|---|---|
| Hotel | Catastrophic | Catastrophic | Catastrophic | Catastrophic |
| Bar | Major | Major | Major | Major |
| Restaurant | Major | Major | Major | Major |
| Spa | Major | Major | Major | Major |
| Staff Accommodation | Major | Major | Major | Major |
| Residences | Major | Major | Catastrophic | Catastrophic |
| Motel | Major | Major | Major | Major |
| Boardwalk | Minor | Minor | Moderate | Moderate |
| Residential Carpark | Moderate | Moderate | Catastrophic | Catastrophic |
| Commercial Carpark | Major | Major | Major | Major |
| Roberts St Road/Carparking | Moderate | Moderate | Moderate | Moderate |
| Heaton St Road/Carparking | Moderate | Moderate | Moderate | Major |
| Reception | Major | Major | Major | Major |

Notes: 1. Assumes structures are appropriately designed to withstand coastal forces expected during design events as discussed in following Sections.

The rationale behind the key consequence ratings for coastal erosion impact are provided below:

- As shown in the table, the consequences of erosion vary for some key assets over different timeframes due to the potential effects of increased erosion. For example, the Heaton St Road/Carparking has a Moderate consequence of erosion over the planning horizon to 2070 as the erosion hazard line extends only to the edge of the carparking. However, the 2110 erosion hazard line extends past the entire road and carparking, resulting in a higher quantity of potential erosion and therefore a Major consequence rating.

- The erosion impact consequence ratings assigned to each of the proposed ground level assets also takes into account the first level assets located above. For example, structural failure of the Bar on the ground level would subsequently result in the failure of the Function Centre on the first level.

- The consequence of erosion for assets with toilets or chemical storage was deemed to be more severe, given the potential environmental impact of the erosion of these assets. The erosion of a sewerage system during a cyclone event for example could lead to the contamination of the surrounding fragile environment.

### 5.2.2 Coastal Inundation

The assessed consequence of coastal inundation for each of the key assets and each of the planning horizons is presented in Table 5.6. Similar to erosion, the consequence of inundation changes over the planning horizons due to the likely increased consequence of a higher water level and potentially greater inundation extents as sea level rise is realised over time.

**Table 5.6 Assessment of Consequence of Coastal Inundation Impact**

| Key Assets | Present Day (2016) | 2030 | 2070 | 2110 |
|---|---|---|---|---|
| Hotel | Moderate | Moderate | Major | Major |
| Bar | Moderate | Moderate | Major | Major |
| Restaurant | Moderate | Moderate | Major | Major |
| Spa | Moderate | Moderate | Moderate | Moderate |
| Staff Accommodation | Moderate | Moderate | Moderate | Moderate |
| Residences | Moderate | Moderate | Major | Major |
| Motel | Moderate | Moderate | Moderate | Moderate |
| Boardwalk | Minor | Minor | Minor | Moderate |
| Residential Carpark | Minor | Minor | Minor | Minor |
| Commercial Carpark | Moderate | Major | Major | Major |
| Roberts St Road/Carparking | Minor | Minor | Minor | Minor |
| Heaton St Road/Carparking | Minor | Minor | Minor | Minor |
| Reception | Minor | Minor | Minor | Minor |

Notes: 1. Assumes structures are appropriately designed to withstand coastal forces expected during design events as discussed in following Sections.

The rationale behind the key consequence ratings for coastal inundation are provided below:

- The impacts of inundation are assessed to be Minor at present day for assets such as the Boardwalks, carparks and roads. This is due to the fact that the cost for the repair of each of these assets after a short duration inundation event, expected to be the case for a tropical cyclone (refer to Section 3) is expected to be minimal.
- The more significant assets, including the Hotel, Bar and Restaurant were assigned a consequence rating of Moderate and Major at present day and from 2070 onwards respectively. This is due to the higher expected costs to repair these assets after inundation, with the increased consequences from 2070 onwards explained by the potentially greater inundation depths as a result of sea level rise.

# 6. Risk Evaluation

## 6.1 Risk Evaluation Matrix

The risk rating from a risk assessment is defined as “likelihood” x “consequence.” A risk matrix defining the levels of risk from combinations of likelihood and consequence has therefore been developed for the coastal hazards. This risk matrix is generally consistent with WAPC (2014).

### Table 6.1 Risk Matrix

| RISK LEVELS | | CONSEQUENCE | | | | |
|---|---|---|---|---|---|---|
| | | Insignificant | Minor | Moderate | Major | Catastrophic |
| LIKELIHOOD | Almost Certain | Low | Medium | High | Extreme | Extreme |
| | Likely | Low | Medium | Medium | High | Extreme |
| | Possible | Low | Medium | Medium | Medium | High |
| | Unlikely | Low | Low | Medium | Medium | Medium |
| | Rare | Low | Low | Low | Low | Low |

A risk tolerance scale assists in determining which risks are acceptable, tolerable and unacceptable. The risk tolerance scale used for the assessment is presented in Table 6.2.

### Table 6.2 Risk Tolerance Scale

| Risk Level | Action Required | Tolerance |
|---|---|---|
| **Extreme** | Immediate action required to eliminate or reduce the risk to acceptable levels | Intolerable |
| **High** | Immediate to short term action required to eliminate or reduce risk to acceptable levels | Intolerable |
| **Medium** | Reduce the risk or accept the risk provided residual risk level is understood | Tolerable |
| **Low** | Accept the risk | Acceptable |

The risk tolerance scale has been reviewed and accepted for use by the proponent. It shows that the extreme and high risks need to be managed.

## 6.2 Risk Assessment

The risk assessment for the study area will be completed in accordance with the recommendations of AS5334 (Standards Australia 2013), which requires a detailed risk analysis to include a vulnerability analysis to thoroughly examine how coastal hazards and climate change

may affect the assets. This includes consideration of the adaptive capacity and vulnerability of the relevant assets.

### 6.2.1 Coastal Erosion

Based on the results of the risk analysis completed previously, Table 6.3 presents the coastal erosion risk levels for each of the identified key assets. The order of the assessed risks in the table has been used to show the priority risk assets for each planning timeframe at the start of the table, with decreasing risk down the table.

**Table 6.3 Assessment of Risk of Coastal Erosion Impact**

| Key Assets | Present Day (2016) | 2030 | 2070 | 2110 |
|---|---|---|---|---|
| Hotel | Low | Low | Medium | High |
| Residences | Low | Low | Medium | High |
| Boardwalk | Low | Low | Medium | Medium |
| Heaton St Road/Carparking | Low | Low | Low | Medium |
| Bar | Low | Low | Low | Low |
| Restaurant | Low | Low | Low | Low |
| Spa | Low | Low | Low | Low |
| Staff Accommodation | Low | Low | Low | Low |
| Motel | Low | Low | Low | Low |
| Residential Carpark | Low | Low | Low | Low |
| Commercial Carpark | Low | Low | Low | Low |
| Roberts St Road/Carparking | Low | Low | Low | Low |
| Reception | Low | Low | Low | Low |

Notes: 1. Assumes structures are appropriately designed to withstand coastal forces expected during design events as

The results of the assessment show that all of the proposed development assets have a Low risk of being impacted by erosion over the planning horizon to 2030. Based on Table 6.2, these risks are low enough to warrant acceptance without further consideration.

Following this, four assets have a Medium or High risk of being impacted by erosion over longer planning horizons. This includes the Hotel, Residences, Heaton St Road/Carparking and Boardwalk. The High risk at 2110 for the Hotel and Residences is intolerable, as shown by Table 6.2, and action should be taken to eliminate or reduce this risk to an acceptable level.

Further consideration and discussion of the implications of these results are provided in the following section with regard to risk management.

### 6.2.2 Coastal Inundation

Based on the results of the risk analysis completed previously, Table 6.4 presents the coastal inundation risk levels for each of the identified key assets. The order of the assessed risks in the table has been used to show the priority risk areas for each planning timeframe at the start of the table, with decreasing risk down the table. Once again, this risk assessment is on the basis that public safety is effectively managed as discussed in Section 8.

**Table 6.4 Assessment of Risk of Coastal Inundation Impact**

| Key Assets | Present Day (2016) | 2030 | 2070 | 2110 |
|---|---|---|---|---|
| Commercial Carpark | Low | Low | Medium | High |
| Bar | Low | Low | Low | Medium |
| Restaurant | Low | Low | Low | Medium |
| Residences | Low | Low | Low | Medium |
| Boardwalk | Low | Low | Low | Medium |
| Roberts St Road/Carparking | Low | Low | Low | Medium |
| Hotel | Low | Low | Low | Low |
| Spa | Low | Low | Low | Low |
| Staff Accommodation | Low | Low | Low | Low |
| Motel | Low | Low | Low | Low |
| Residential Carpark | Low | Low | Low | Low |
| Heaton St Road/Carparking | Low | Low | Low | Low |
| Reception | Low | Low | Low | Low |

Notes: 1. Assumes structures are appropriately designed to withstand coastal forces expected during design events as

The results of the assessment show that all of the proposed development assets have a Low risk of being impacted by inundation up to 2070, with the exception of the Commercial Carpark.

The Commercial Carpark has a Medium risk of being impacted by inundation to 2070 and following, has a High risk to 2110. The High risk at 2110 is intolerable, as shown by Table 6.2, and action should be taken to eliminate or reduce this risk to an acceptable level.

Further consideration of the implications of these results are provided in the following section with regard to risk management.

# 7. Risk Adaptation & Mitigation Strategies

SPP2.6 outlines a hierarchy of risk adaptation and mitigation options, where options that allow for a wide range of future strategies are considered more favourably. This hierarchy of options is reproduced in Figure 7.1.


**Figure 7.1 Risk Management & Adaptation Hierarchy**

These options are generally outlined below:

- Avoid – avoid new development within the area impacted by coastal hazards.
- Retreat – the relocation or removal of assets within an area identified as likely to be subject to intolerable risk of damage from coastal hazards.
- Accommodation – measures which suitably address the identified risks.
- Protect – used to preserve the foreshore reserve, public access and public safety, property and infrastructure.

The assessment of options is generally done in a progressive manner, moving through the various options until an appropriate mitigation option is found.

## 7.1 Coastal Adaptation Approach

The potential future movement of the shoreline and the risks posed from coastal hazards necessitates the requirement for coastal adaptation and risk mitigation planning. The proposed approach for the Hotel and Residential Resort development is summarised below:

- The majority of assets within the proposed Hotel and Residential Resort development **avoid** the coastal hazard risks over the 100 year planning timeframe to 2110. As shown in Figure 1.2 and 1.3, the majority of the proposed built assets are located towards the eastern portion of the site, landward of the 100 year erosion hazard line and above the 500 year ARI inundation water level.
- The proposed development assets seaward of the 100 year erosion hazard line to 2110, therefore potentially at risk over the planning timeframe, include the Hotel and several of

the Residences. These assets were both shown in Table 6.3 to have a Low risk of erosion impact over planning horizon to 2030, which is considered to be tolerable. Following this, these assets were both assessed as having a Medium and High risk of erosion impact to 2070 and 2110 respectively. The Hotel and Residences would likely have a service life of around 50 years. As such, these assets could be utilised in their planned locations over the next 50 years and subsequently removed to **avoid** erosion hazard risk or **retreated** to a location further landward at the end of their service life. The location for **managed retreat** would be determined at the time based on an updated coastal hazard risk assessment. The potential for retreat of these assets would be dependent on suitable space being available elsewhere on Lot 62 as a result of a redesign at that time. If no space is available, these assets would be removed.

- The public assets seaward of the 100 year erosion hazard line, therefore potentially at risk, include the Boardwalk (Medium by 2070) and Heaton St Road/Carparking (Medium by 2110). These risks are considered to be tolerable, however an As Low As Reasonably Practical (ALARP) approach is proposed. Similar to the Hotel and Residences, these assets would have a service live of around 25 or 50 years. At the end of their service life, the Boardwalk and Heaton St Road/Carparking could be removed to **avoid** erosion hazard risk or **retreated** to a location further landward. The location for **managed retreat** would be determined at the time based on an updated coastal hazard risk assessment.

- It is important to consider the beach and Dobbyn Park located seaward of the proposed Hotel and Residential Resort. The beach was assessed by the wider Shire CHRMAP (Cardno 2018) as being at Low, Medium, Extreme and Extreme risk of being impacted by erosion in 2016, 2030, 2070 and 2110 respectively. Dobbyn Park was assessed by the wider Shire CHRMAP (Cardno 2018) as being at Medium, Medium, Medium and High risk of being impacted by erosion in 2016, 2030, 2070 and 2110 respectively. These assets are located within a popular section of the Jurien Bay foreshore and are considered to be extremely valuable. It is envisaged that the City would want to preserve these assets, should the monitoring (refer to the wider Shire CHRMAP Implementation Plan) indicate that there are risks from erosion impact. MRA (2009) outlines a conceptual shoreline model for Island Point and the shoreline to the north, including that fronting the proposed Hotel and Residential Resort. The shoreline model was based on an investigation (PWD 1984) of sediment dynamics at Jurien Bay to inform the construction of the boat harbour as well as updated shoreline movement plots and analysis (MRA 2009). The conceptual shoreline model is presented in Figure 7.2 and estimates that there is approximately 20,800 $m^3$/year of net sediment transport to the north at the relevant section of shoreline fronting Lot 62. Options may be available to trap this sediment and preserve key sections of the foreshore, including that at Dobbyn Park. The above strategies for the proposed Hotel and Residential Resort don't rely on this possibility, however recognise that the erosion risks posed to the proposed development assets in later planning horizons would be reduced if this occurred.

- The Commercial Carpark has a proposed 3.35 mAHD entrance off Roberts Rd and a basement level of 1.7 mAHD. It was assessed as being at risk of being impacted by inundation over the 100 year planning timeframe (Medium to 2070 and High to 2110) and mitigation controls are required to reduce these risks. The following **accommodation** strategies are proposed for the Commercial Carpark:

    - Designing an appropriate storm surge barrier at the Heaton St entrance that can be closed during the passage of a severe cyclone event to restrict the carpark from being inundated.

- Designing the walls appropriately to minimise any groundwater seepage.
- Minimising the services within the carpark and locating any required service infrastructure along the ceiling.
- Incorporating systems that allow for the easy isolation of services in different areas, which can be shut off easily if required.

- The remaining assets within the proposed development were rated as being at Low or Medium risk of being impacted by inundation over the 100 year planning timeframe. This is considered to be tolerable, however should adopt an ALARP approach. The following **accommodation** strategies are proposed for the Hotel and Residential Resort development.
  - Designing assets appropriately to the minimum prescriptive requirements of codes and standards typically considered mandatory for coastal built forms.
  - Locating service infrastructure as far landward and as high as possible to reduce the potential for inundation exposure. This should be above the 500 year ARI level of 3.7 mAHD plus the appropriate allowance for sea level rise over the relevant planning horizon.
  - Storing all hazardous materials as far landward and as high as possible to reduce the risk of environmental damage should inundation occur. This should be above the 500 year ARI level of 3.7 mAHD plus the appropriate allowance for sea level rise over the relevant planning horizon.
- The westernmost Residences, that are located within the erosion hazard extent identified by the Coastal Hazard Assessment (GHD 2015) or have a finished floor level of less than 4.6 mAHD, should have a notification placed on the Certificate(s) of Title. This shall be to the effect of "this Lot is located in an area likely to be subject to coastal erosion/inundation over the next 100 years"


**Figure 7.2 Conceptual Shoreline Model (MRA 2009)**

### 7.1.1 Public Safety

As outlined previously, the risk ratings that were determined for coastal hazards, namely inundation, and the risk mitigation strategies outlined above, are provided on the basis that public safety will be managed by both Aliceville and DFES. DFES's management already occurs along the entire coastline of Western Australia in response to cyclone events, which are the key

contributor to inundation hazards at the proposed Hotel and Residential Resort development (refer to Section 3).

Essentially, to manage risks associated with cyclone inundation, DFES communicate with the Bureau of Meteorology to receive updates on the potential cyclone tracks, associated storm surge and potential areas of inundation. Evacuations are then completed as required in order to manage public safety prior to event impact.

It is also important to note that there would be some degree of self-management of these risks by patrons of the Hotel and Residential Resort at the time of such events, as many travellers would be aware of the risks and would likely leave the area before conditions became too severe. Nevertheless, despite the potential self-management by travellers and the management by DFES, it is recommended that Aliceville develop a specific inundation risk management plan for the Hotel and Residential Resort. This plan should outline steps that should be taken as severe events approach, as well as evacuation pathways and routes to identified safe areas. It is recommended that this plan be developed in consultation with DFES and the Shire.

As a result of the evacuation policies that are already in place, as well as any further development of these policies that may be required specifically for the Hotel and Residential Resort, the management of public safety due to coastal hazards is ensured.

# 8. Implementation Plan

The risk mitigation and adaptation strategies outlined in Section 7 set out the general proposed coastal management approach for the Hotel and Residential Resort development. Direct guidance on when, what, how and by who these processes will be completed is provided within this Implementation Plan. For ease of reference, these details have been broken down to outline the requirements for each stage of the project and/or asset life.

## 8.1 Planning & Initial Construction

Coastal planning for this development involves mitigating against coastal hazard risks from erosion and inundation. The sole responsibility for any coastal hazard risks at the site is something that has been acknowledged and accepted by the proponent.

As discussed in Section 2.6, this will be passed on to the relevant residential landholders by way of a notification placed on the Certificate(s) of Title.

The other element that is key during the planning and construction phases is to ensure that the designs of each of the individual assets that comprise the proposed development are appropriate for the expected loading, namely wind or water pressures.

A summary of the requirements of the planning and construction stage is presented in Table 8.1.

### Table 8.1 Implementation Plan – Planning & Initial Construction Stage

| Requirement | Timing | Responsibility |
|---|---|---|
| Acceptance of disclosed hazards/vulnerability | Planning Stage | Respective asset owners. It is noted that the proponent has completed this through the acknowledgement and acceptance of risks presented in this CHRMAP<br>This is to be acknowledged by residential landholders by was of a notification placed on the Certificates of Title. |
| Appropriate design of Hotel and Residential Resort structural elements and levels to ensure that erosion and inundation risks are managed as best as possible | Planning & Construction Stage | Proponent<br>(supported by engaged design team) |

## 8.2 Operation Over the Infrastructure Service Life

Over the service lives of the proposed assets, there will be a requirement to monitor the shoreline to ascertain whether coastal risks to assets are increasing. Further details of the monitoring requirements are outlined in Section 8.4. This monitoring will be responsibility of the proponent.

If, at some stage during the service life of an asset, the risks from coastal hazards become intolerable, the relevant assets will be relocated in accordance with the managed retreat adaptation strategy. If this is not financially viable or aligned with the development requirements

at this time, the relevant assets will be abandoned and removed from the site. In this way, a foreshore area will always be maintained fronting the site.

A summary of the requirements during the operation of the assets over their service life is presented in Table 8.2.

### Table 8.2 Implementation Plan – Operation Over Infrastructure Service Life

| Requirement | Timing | Responsibility |
|---|---|---|
| Monitoring coastal hazard risk to assess if risks become intolerable and assets need to be retreated<br>(Refer Section 8.4) | Operation over service life | Proponent |
| IF REQUIRED<br>Asset relocation/retreat in accordance with the requirements outlined in Section 8.3<br>OR<br>Abandon and remove infrastructure for that particular asset | If risks to Hotel and Residential Resort development assets are intolerable | Proponent |

## 8.3 Asset Replacement

Replacement of assets after their service life requires that they be located in an area where the risk to that asset over its remaining service life is considered to be acceptable. To do this will require a revised coastal hazard risk assessment to be completed in accordance with the requirements at that time. The appropriate location for replacement assets can then be chosen based on tolerable risk levels. Alternatively, that particular asset could be removed and not replaced, essentially adopting an avoid approach. The responsibility for these actions would rest with the proponent.

A summary of the requirements during the replacement of assets is presented in Table 8.3.

### Table 8.3 Implementation Plan – Asset Replacement

| Requirement | Timing | Responsibility |
|---|---|---|
| Complete a revised coastal hazard risk assessment to quantify the risk level at that time | Planning for asset replacement | Proponent |
| Determine appropriate retreat location for replacement assets based on acceptable risk level<br>OR<br>Remove infrastructure and abandon for that particular asset | Planning for asset replacement | Proponent |

## 8.4 Monitoring & Review

Coastal monitoring and review is essential in order to track changes to the shoreline over time. Whilst the results of the Coastal Hazard Assessment (GHD 2015) provide an indication of the potential changes to the shoreline (and incorporate a justifiable level of conservatism), the system is inherently complex and the actual shoreline response could be different to that presented. Monitoring should therefore be completed to track changes over time and indicate whether the timing for risk mitigation should be adjusted. Triggers for further assessment of the shoreline movement have previously been discussed. As a result, the following triggers will be used for the proposed Hotel and Residential Resort development:

- Retreat of the shoreline (defined in this instance as the HSD) to within 60 m (S1 allowance (approximately 50 m) plus 10 m) of the proposed development assets as a result of chronic erosion will prompt review by a specialist coastal engineer to commence planning for managed retreat of assets or removal.
- Retreat of the shoreline to within 20 m of the proposed development assets caused by chronic erosion will prompt immediate managed retreat or removal of assets.
- Retreat of the shoreline to within 20 m of the proposed development assets caused by acute erosion will prompt review by a specialist coastal engineer to ascertain the potential for recovery of the shoreline before managed retreat is implemented.

The shoreline monitoring should be completed using a combination of onsite measurements and photo-monitoring as well as review of aerial photography captured by Landgate. Given the relatively large buffer for erosion and minimal shoreline movement as outlined in the Coastal Hazard Assessment (GHD 2015), it is recommended that shoreline monitoring is completed and assessed at two yearly intervals.

If the rate of change in shoreline position observed during the monitoring is materially different from that allowed for with the Coastal Hazard Assessment, it would be recommended that the

Coastal Hazard Assessment and this CHRMAP be updated to quantify any changes to the risks posed by coastal hazards.

Likewise, should the State Government guidance for the determination of the required allowances change as a result of new information becoming available, the Coastal Hazard Assessment and this CHRMAP should also be updated. This is especially the case for information regarding climate change and projected sea level rise, however may also apply for the calculation of severe storm erosion, shoreline movement erosion and inundation allowances. The responsibility for both of these actions would rest with the proponent.

A summary of the requirements for the monitoring and review is presented in Table 8.4.

### Table 8.4 Implementation Plan – Monitoring & Review

| Requirement | Timing | Responsibility |
|---|---|---|
| Shoreline monitoring | Ongoing – to be assessed on a 2 yearly basis or as required based on the triggers being met or exceeded | Proponent |
| Revision of Coastal Hazard Assessment and CHRMAP | If shoreline behaviour changes substantially from that identified within the Coastal Hazard Assessment<br>OR<br>If guidance changes on the determination of the required allowances as a result of new information becoming available | Proponent |

# 9. Conclusions

This CHRMAP has been completed to provide guidance on required adaptation and management actions associated with the proposed Hotel and Residential Resort assets at Lot 62 Roberts St. It has been completed in line with the recommendations of SPP2.6 and WAPC (2014), using previous investigations and studies including the wider Shire CHRMAP (Cardno 2018).

The completion of a coastal hazard risk assessment for the proposed Hotel and Residential Resort development has shown that there is a risk of coastal hazards impacting the site over the 100 year planning timeframe. Over the shorter and medium term timeframes to 2030 and 2070 respectively, these risks were deemed to be tolerable to the proponent. The 2070 timeframe also exceeds the expected service life of the proposed development assets. Despite these levels of risk being acceptable to the proponent, the ALARP approach has been adopted for the proposed development and a number of risk mitigation strategies have been proposed for implementation.

Over the 100 year long term planning timeframe to 2110, the Hotel and Residences were determined to be at High risk of erosion hazard impact. Similarly, the Commercial Carpark was assessed as being at High risk of inundation hazard impact. A number of strategies were proposed in Section 7 to mitigate these risks to acceptable levels.

The risks assessed in this report and subsequent adaptation options and Implementation Plan proposed have been completed to inform coastal hazard planning for the proposed Hotel and Residential Resort in Jurien Bay. The strategies and Implementation Plan proposed are considered to adequately address potential coastal hazard risks associated with the development. The management of such coastal hazard risks enables the development of a much needed high end Hotel and Residential Resort to promote tourism and sustain economic growth in Jurien Bay and the Shire.

# 10. References


Australia Bureau of Statistics 2016. *2016 Census QuickStats*. Government of Australia.

Burges Design Group 2016. *Lot 62 Roberts St, Jurien Bay - Shire of Dandaragan Local Development Plan.* Prepared for Aliceville Pty Ltd.

Cardno 2018. *Coastal Hazard Risk Management and Adaptation Plan.* Document Reference 59917806 Rev D. Prepared for the Shire of Dandaragan.

Department of Transport 2010. *Sea Level Change in Western Australia – Application to Coastal Planning*. Government of Western Australia, Perth.

Eaton & Passarelli Town and Regional Planning et al 2012a. *Jurien Bay Growth Plan*. Prepared for Royalties for Regions Regional Centres Development Plan SuperTowns initiative.

Eaton & Passarelli Town and Regional Planning, Urbanix and Donald Veal Consultants 2012b. *Jurien Bay City Centre Strategy Plan*. Draft report prepared for the Shire of Dandaragan.

GHD 2015. *Coastal Hazard Risk Assessment: Jurien Bay Erosion Hazard Mapping*. Prepared for the Shire of Dandaragan.

MRA 2009. *Jurien Bay - Dobbyn Park Coastal Processes Study*. Prepared for the Shire of Dandaragan.

Public Works Department 1984. *Jurien Bay Boat Harbour Investigations*. Report number CIS 84/1 prepared by Harbours and Rivers Branch.

Seashore Engineering 2018. *Design Storms for Western Australian Coastal Planning: Tropical Cyclones*. Prepared for Department of Transport, Western Australia.

Short, A. 2006. *Beaches of the Western Australian Coast: Eucla to Roebuck Bay. A guide to their nature, characteristics, surf and safety*. Sydney University Press.

Stul T, Gozzard JR, Eliot IG and Eliot MJ. 2014. *Coastal Sediment Cells for the Mid-West Region between the Moore River and Glenfield Beach, Western Australia*. Report prepared by Seashore Engineering Pty Ltd and Geological Survey of Western Australia for the Western Australian Department of Transport, Fremantle. WAPC 2013. Statement of Planning Policy No. 2.6 – State Coastal Planning Policy. Government of Western Australia, Perth.

Tourism Western Australia 2012. *Local Tourism Planning Strategy*. Prepared for the Shire of Dandaragan.

WAPC 2013. *State Planning Policy 2.6 - State Coastal Planning Policy*. Western Australian Planning Commission, Perth.

WAPC 2014. *Coastal Hazard Risk Management and Adaptation Planning Guidelines*. Government of Western Australia, Perth.

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# DA PLANS:
## SCANLAN ARCHITECTS

# LOT 62, ROBERTS ST, JURIEN BAY WA

BLOCK D PROPOSED MOTEL DEVELOPMENT

## 2126 - ARCHITECTURAL SET

**DRAWING LIST**




SCANLAN ARCHITECTS

| 79 King Street Perth WA 6000 | www.scanlan.com.au | general@scanlan.com.au | +61 8 9321 0166 |




ALICEVILLE PTY LTD

BLOCK D PROPOSED MOTEL DEVELOPMENT

LOT 62 ROBERT STREET JURIEN BAY WA

TITLE SHEET

JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

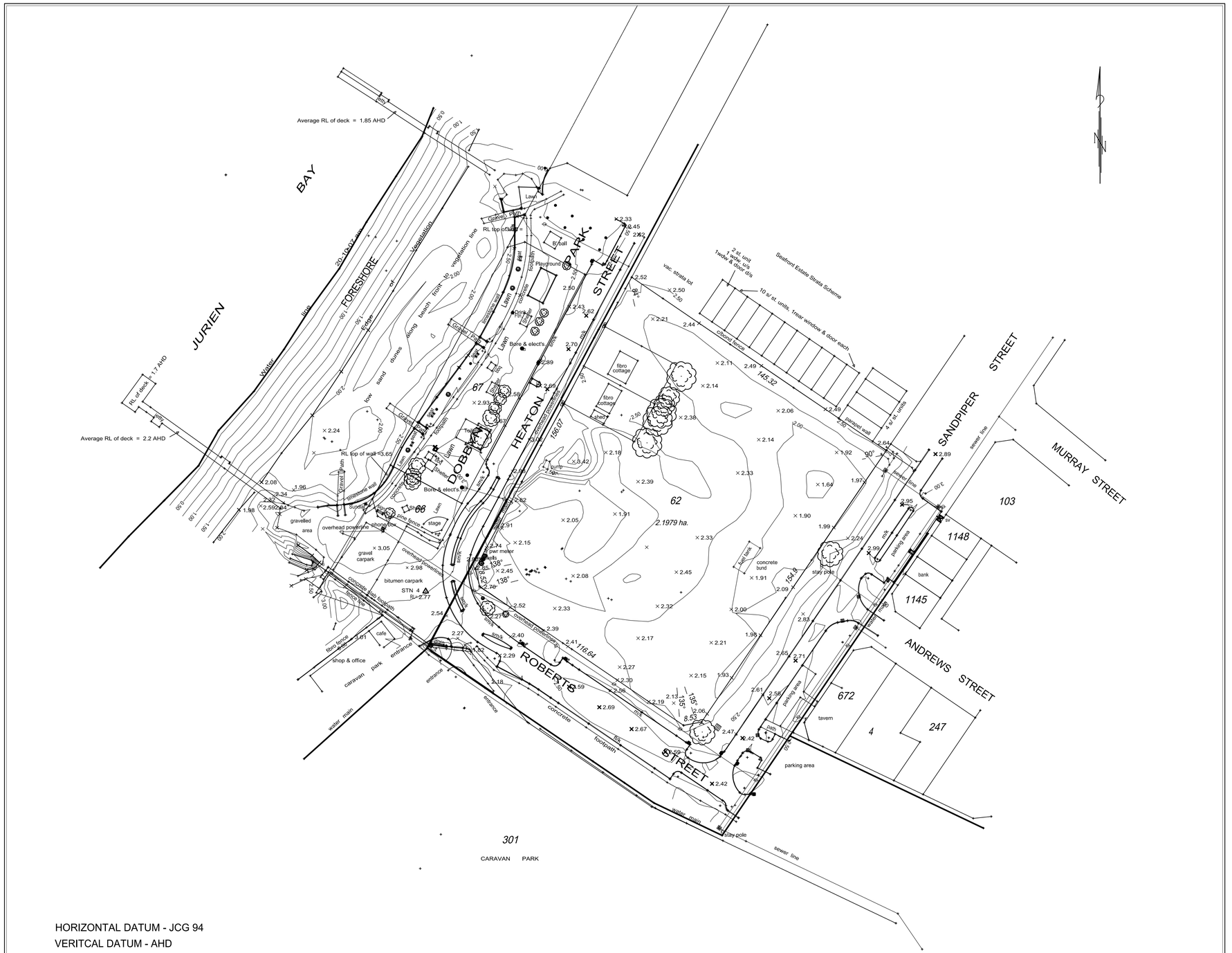
SCALE
A1 | NA
A3 | NA

A-0000

LEGEND

SITE


01 LOCATION PLAN
- PLAN 1:10000




02 SITE SURVEY
- PLAN 1:1000



F. R. RODDA & Co.
LICENSED SURVEYORS
14 COOK STREET, JURIEN BAY
Ph. 9652 2424 Fax. 9652 2426
Email : rodda@iinet.net.au

# DETAIL SURVEY

20 ROBERTS STREET, JURIEN BAY
BEING LOT 62 ON DP 207149 C. of T. Vol.1499 Fol. 123
OWNER: ALICEVILLE PTY LTD
LOCAL AUTHORITY: SHIRE OF DANDARAGAN

| | |
|---|---|
| SCALE 1:1000 @ A1 | DATE: 29-05-09 |
| SURVEYED : FR & RS | OUR REF : 2596-09 |
| DRAWN :RS<br>CHKD: FR | DWG No. : 2596B |

SCANLAN ARCHITECTS
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ALICEVILLE PTY LTD

BLOCK D PROPOSED MOTEL DEVELOPMENT

LOT 62 ROBERT STREET JURIEN BAY WA

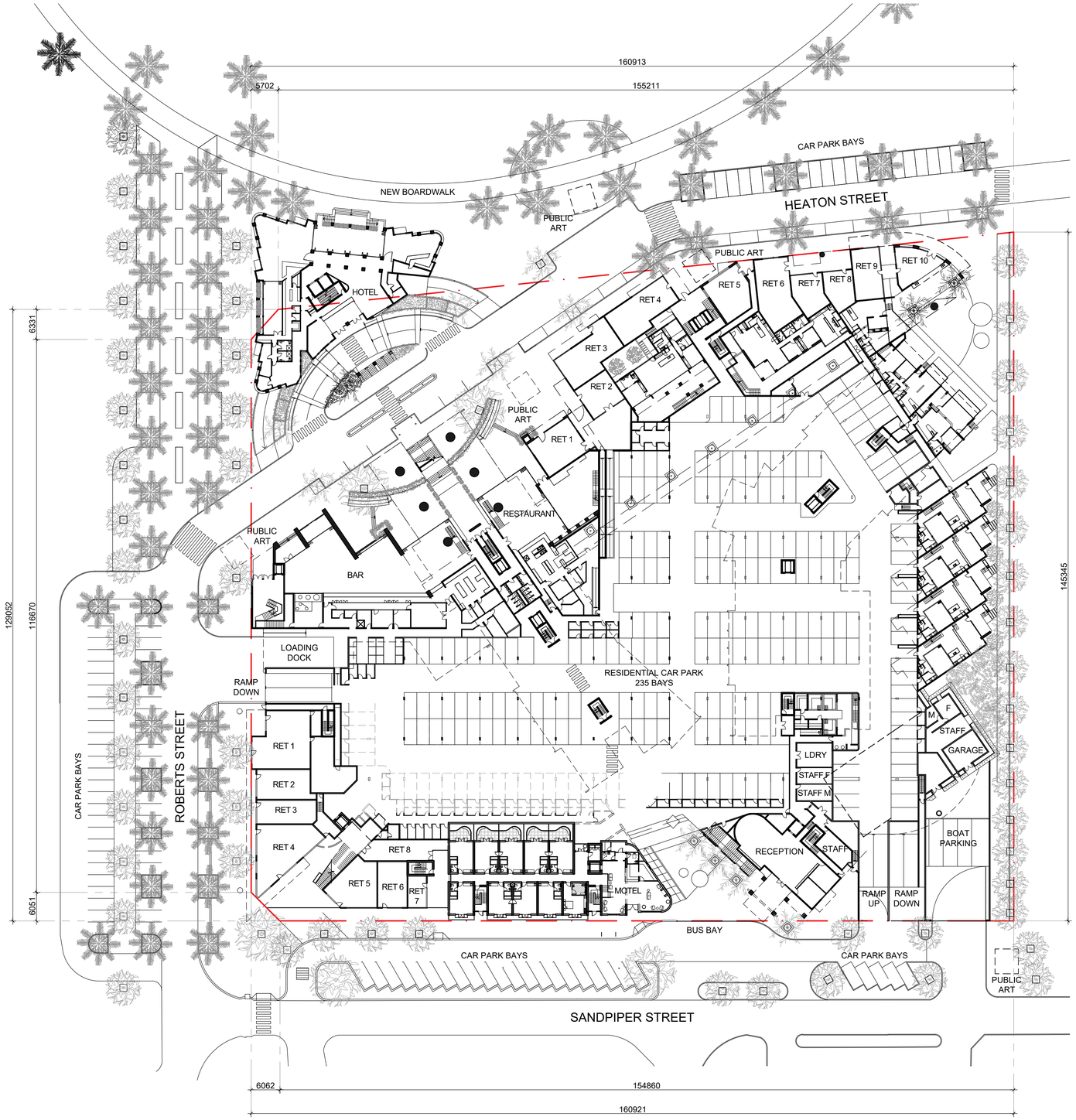
LOCATION PLAN AND SITE SURVEY

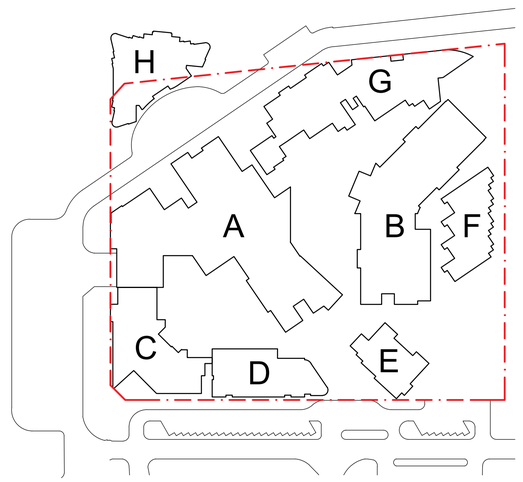
JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

SCALE
A1 | AS NOTED
A3 | NA

A-1000




## 01 SITE PLAN

- PLAN 1:500

## 02 KEY

- PLAN 1:1250

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ALICEVILLE PTY LTD

BLOCK D
PROPOSED MOTEL
DEVELOPMENT

LOT 62
ROBERT STREET
JURIEN BAY WA

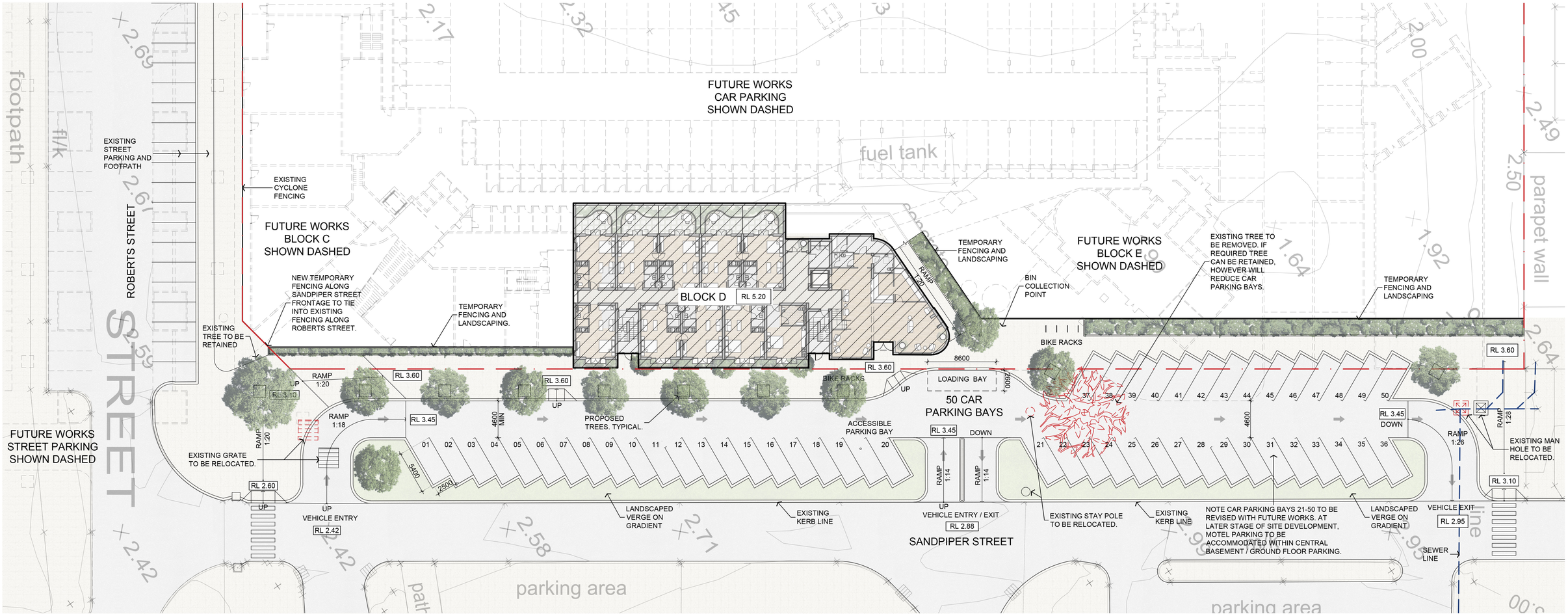
SITE PLAN
OVERALL

JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

SCALE
A1 | AS NOTED
A3 | NA

A-1100




SCANLAN ARCHITECTS

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ALICEVILLE PTY LTD

BLOCK D
PROPOSED MOTEL
DEVELOPMENT

LOT 62
ROBERT STREET
JURIEN BAY WA

SITE PLAN
BLOCK D

JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

SCALE
A1 | 1:250
A3 | 1:500

A-1101


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ALICEVILLE PTY LTD

BLOCK D
PROPOSED MOTEL
DEVELOPMENT

LOT 62
ROBERT STREET
JURIEN BAY WA

GA PLAN
BASEMENT

JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

SCALE
A1 | 1:100
A3 | 1:200

A-2100


SCANLAN ARCHITECTS

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ALICEVILLE PTY LTD

BLOCK D
PROPOSED MOTEL
DEVELOPMENT

LOT 62
ROBERT STREET
JURIEN BAY WA

GA PLAN
GROUND FLOOR

JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

SCALE
A1 | 1:100
A3 | 1:200

A-2101


SCANLAN
ARCHITECTS
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ALICEVILLE
PTY LTD

BLOCK D
PROPOSED MOTEL
DEVELOPMENT

LOT 62
ROBERT STREET
JURIEN BAY WA

GA PLAN
FIRST FLOOR

JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

SCALE
A1 | 1:100
A3 | 1:200

A-2102


SCANLAN ARCHITECTS

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ALICEVILLE PTY LTD

BLOCK D
PROPOSED MOTEL
DEVELOPMENT

LOT 62
ROBERT STREET
JURIEN BAY WA

GA PLAN
SECOND FLOOR

JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

SCALE
A1 | 1:100
A3 | 1:200

A-2103


SCANLAN ARCHITECTS
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ALICEVILLE PTY LTD

BLOCK D
PROPOSED MOTEL
DEVELOPMENT

LOT 62
ROBERT STREET
JURIEN BAY WA

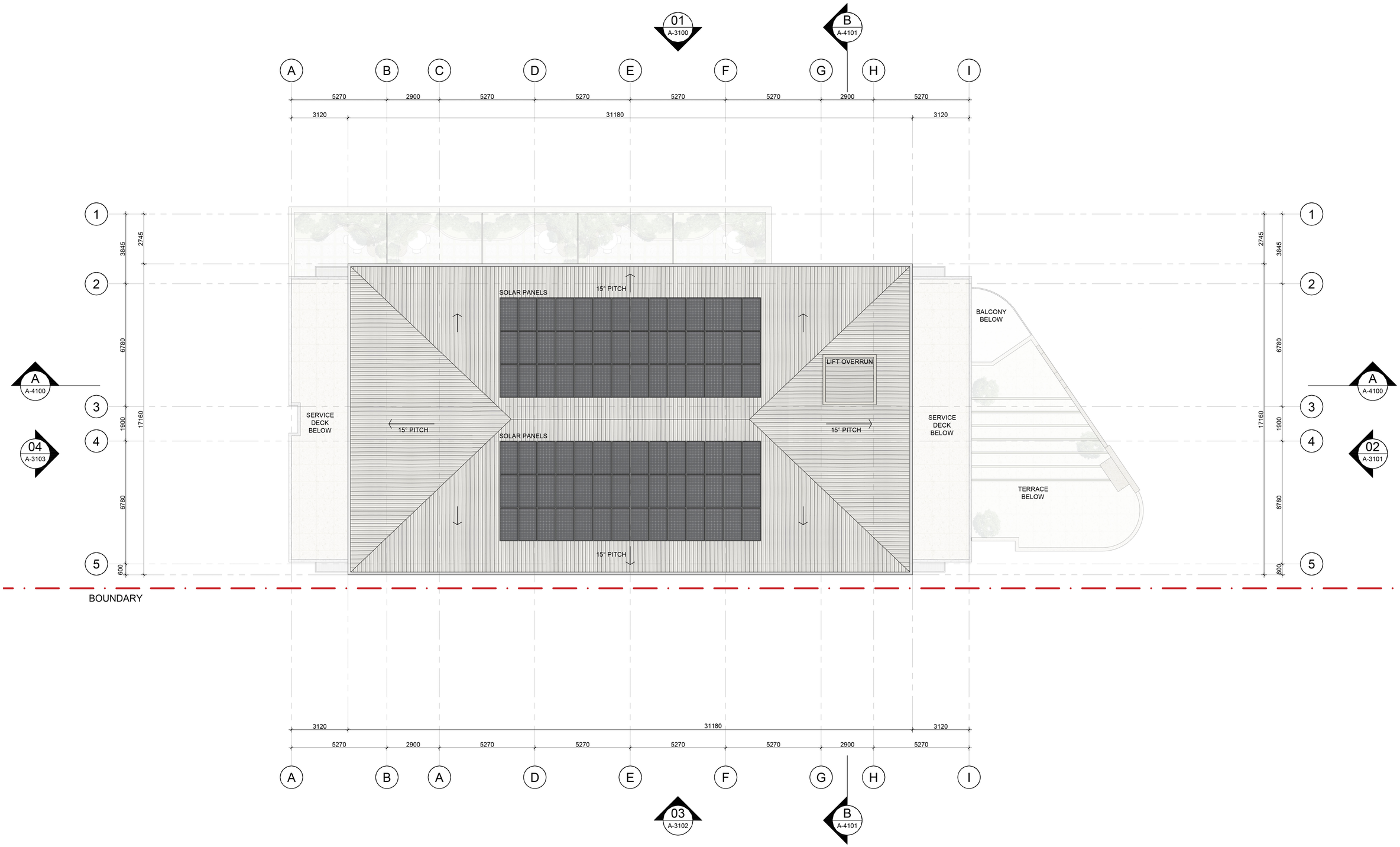
GA PLAN
THIRD FLOOR

JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

SCALE
A1 | 1:100
A3 | 1:200

A-2104




SCANLAN ARCHITECTS

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ALICEVILLE PTY LTD

BLOCK D
PROPOSED MOTEL
DEVELOPMENT

LOT 62
ROBERT STREET
JURIEN BAY WA

GA PLAN
ROOF

JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

SCALE
A1 | 1:100
A3 | 1:200

A-2105

## EXTERNAL FINISHES LEGEND

| | | | | | |
|---|---|---|---|---|---|
| B1 | BRICK - WHITE | M1 | COLORBOND ROOF - WHITE | R1 | RENDER |
| B2 | 'HIT AND MISS' BRICK - WHITE | M2 | SLATED METAL SCREEN - WHITE | S1 | LIMESTONE |
| B3 | BRICK - BAGGED | M3 | METAL - WHITE | T1 | WEATHERBOARD WHITE |
| G1 | GLASS - CLEAR | P1 | PAINT - WHITE | T2 | TIMBER |

NOTE: FINISH ARE REPRESENTATION OF THE COLOUR PALLET ONLY. PLEASE NOTE THIS IS AN ARTISTIC IMPRESSION AND VARIATIONS MAY OCCUR ACCORDING TO MATERIAL SELECTIONS.


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ALICEVILLE PTY LTD

BLOCK D
PROPOSED MOTEL
DEVELOPMENT

LOT 62
ROBERT STREET
JURIEN BAY WA

ELEVATION
SOUTH EAST

JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

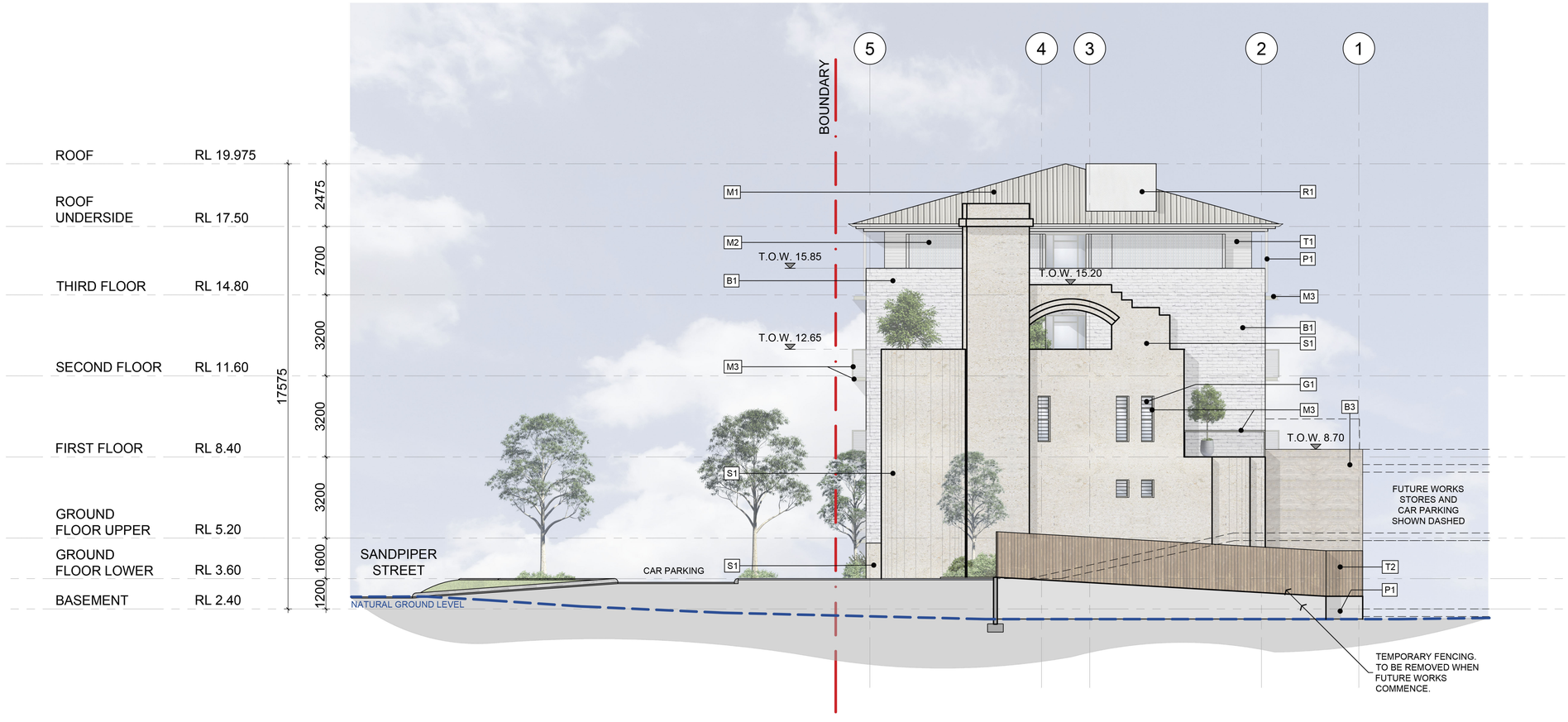
SCALE
A1 | 1:100
A3 | 1:200

A-3100

## EXTERNAL FINISHES LEGEND

| | | | | | |
|---|---|---|---|---|---|
| B1 | BRICK - WHITE | M1 | COLORBOND ROOF - WHITE | R1 | RENDER |
| B2 | 'HIT AND MISS' BRICK - WHITE | M2 | SLATED METAL SCREEN - WHITE | S1 | LIMESTONE |
| B3 | BRICK - BAGGED | M3 | METAL - WHITE | T1 | WEATHERBOARD WHITE |
| G1 | GLASS - CLEAR | P1 | PAINT - WHITE | T2 | TIMBER |

NOTE: FINISH ARE REPRESENTATION OF THE COLOUR PALLET ONLY. PLEASE NOTE THIS IS AN ARTISTIC IMPRESSION AND VARIATIONS MAY OCCUR ACCORDING TO MATERIAL SELECTIONS.

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ALICEVILLE PTY LTD

BLOCK D
PROPOSED MOTEL DEVELOPMENT

LOT 62
ROBERT STREET
JURIEN BAY WA

ELEVATION
NORTH EAST

JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

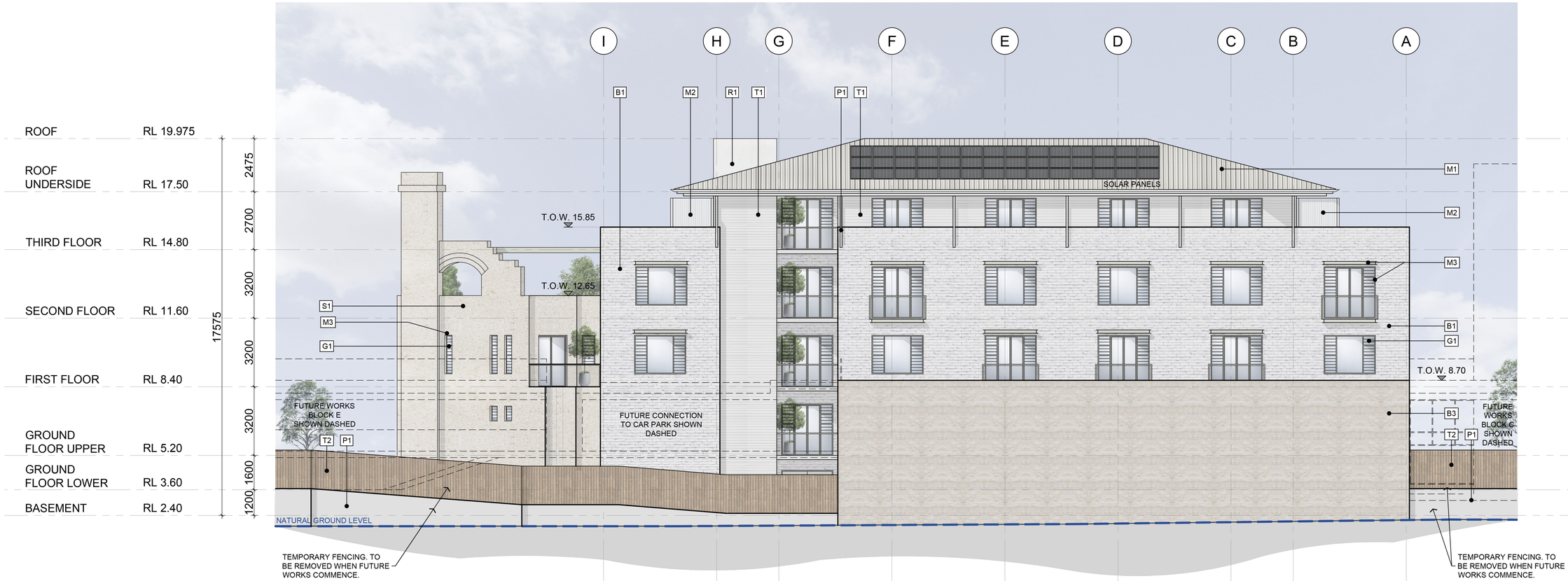
SCALE
A1 | 1:100
A3 | 1:200

A-3101

## EXTERNAL FINISHES LEGEND

| | | | | | |
|---|---|---|---|---|---|
| B1 | BRICK - WHITE | M1 | COLORBOND ROOF - WHITE | R1 | RENDER |
| B2 | 'HIT AND MISS' BRICK - WHITE | M2 | SLATED METAL SCREEN - WHITE | S1 | LIMESTONE |
| B3 | BRICK - BAGGED | M3 | METAL - WHITE | T1 | WEATHERBOARD WHITE |
| G1 | GLASS - CLEAR | P1 | PAINT - WHITE | T2 | TIMBER CLADDING |

NOTE: FINISH ARE REPRESENTATION OF THE COLOUR PALLET ONLY. PLEASE NOTE THIS IS AN ARTISTIC IMPRESSION AND VARIATIONS MAY OCCUR ACCORDING TO MATERIAL SELECTIONS.

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ALICEVILLE PTY LTD

BLOCK D
PROPOSED MOTEL DEVELOPMENT

LOT 62
ROBERT STREET
JURIEN BAY WA

ELEVATION
NORTH WEST

JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

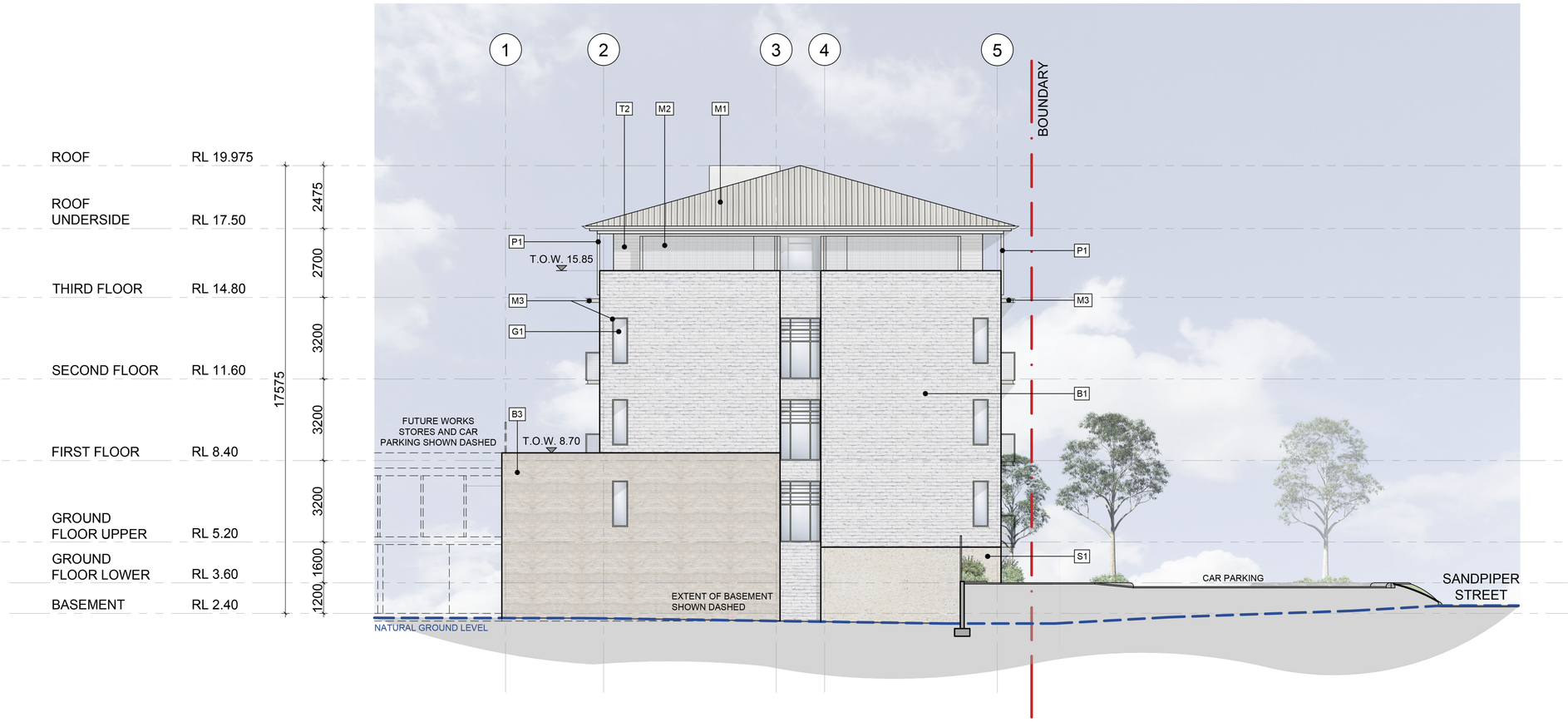
SCALE
A1 | 1:100
A3 | 1:200

A-3102

## EXTERNAL FINISHES LEGEND

| | | | | | |
|---|---|---|---|---|---|
| B1 | BRICK - WHITE | M1 | COLORBOND ROOF - WHITE | R1 | RENDER |
| B2 | 'HIT AND MISS' BRICK - WHITE | M2 | SLATED METAL SCREEN - WHITE | S1 | LIMESTONE |
| B3 | BRICK - BAGGED | M3 | METAL - WHITE | T1 | WEATHERBOARD WHITE |
| G1 | GLASS - CLEAR | P1 | PAINT - WHITE | T2 | TIMBER |

NOTE: FINISH ARE REPRESENTATION OF THE COLOUR PALLET ONLY. PLEASE NOTE THIS IS AN ARTISTIC IMPRESSION AND VARIATIONS MAY OCCUR ACCORDING TO MATERIAL SELECTIONS.

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ALICEVILLE PTY LTD

BLOCK D
PROPOSED MOTEL
DEVELOPMENT

LOT 62
ROBERT STREET
JURIEN BAY WA

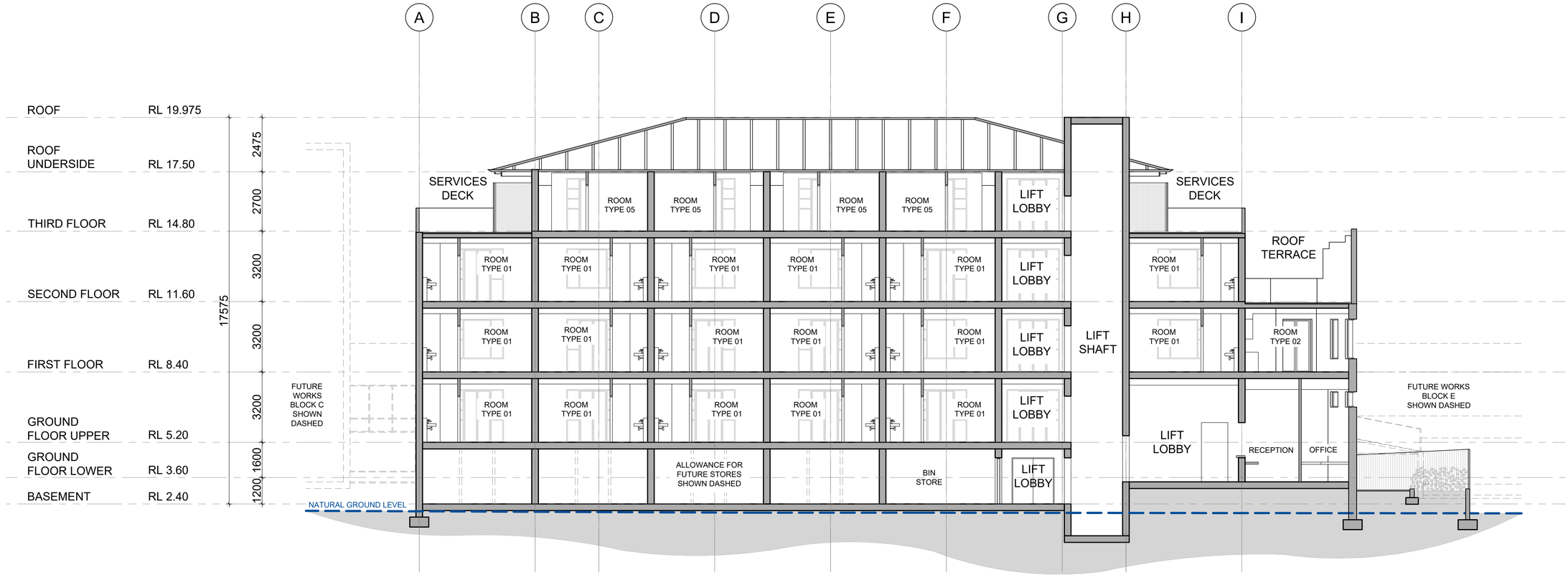
ELEVATION
SOUTH WEST

JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

SCALE
A1 | 1:100
A3 | 1:200

A-3103

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ALICEVILLE PTY LTD

BLOCK D
PROPOSED MOTEL
DEVELOPMENT

LOT 62
ROBERT STREET
JURIEN BAY WA

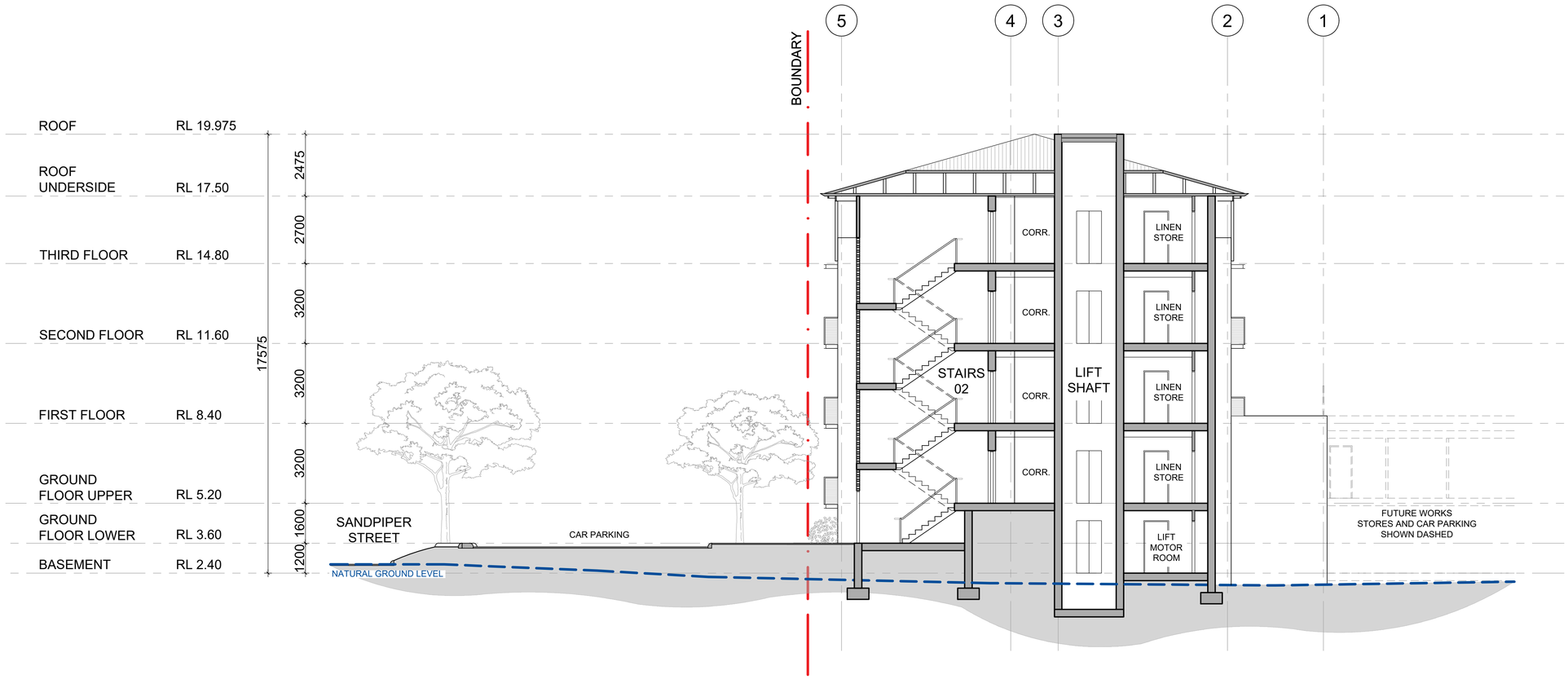
SECTION A

JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

SCALE
A1 | 1:100
A3 | 1:200

A-4100

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ALICEVILLE PTY LTD

BLOCK D
PROPOSED MOTEL
DEVELOPMENT

LOT 62
ROBERT STREET
JURIEN BAY WA

SECTION B

JOB | 2126
REV | DA01
DATE | 14.06.2022

DRAWN | CL
CHECKED | LS

SCALE
A1 | 1:100
A3 | 1:200

A-4101