Former area of Local Structure Plan
rationalised into
Town Planning Scheme No.3
under Amendments 176 and 177

CITY OF FREMANTLE
CITY OF COCKBURN

SOUTH BEACH RECREATION
CAR PARK
OCEAN DRIVE
SOUTH BEACH PROMENADE
DORNE LANE
WAY
KEELING
ISLAND STREET
CY O'CONNOR RESERVE
REGION OPEN SPACE
MEWSTONE CRESCENT
BARROW WAY
DRIVE
HEYWOOD LANE
ENDERBY CLOSE
PICARD LANE
O'CONNOR
SHOALWATER WAY
KOOYAN LANE
BERNIER RISE
DARCY LANE
DOWNES LANE
SABLE LANE
ADELE LANE
MARET LANE
HERISSON WAY
BREAKSEA DRIVE
ROSEMARY LINK
CLOSE
LANCELIN ROAD
ROLLINSON ROAD
BENNETT AVENUE

CAFÉ OR RESTAURANT

R60-R100 GROUP/MULTIPLE DWELLINGS
R40-R80
R20-R40
R125 MULTIPLE DWELLINGS
POS
MIXED USE R60-R80

NOTE:
Any future development of lots 366 and 394 Breaksea Drive, North Coogee is to ensure that a suitable notification is placed on the Certificate of Title regarding the nearby proximity of Bennett Avenue waste water pumping station. This notification is to be prepared under Section 165 of the Planning and Development Act 2005, and is to advise of the existence of the waste water pumping station and that this may affect the use and enjoyment of the land by way of odour impacts.

City of Cockburn
wetlands to waves

GNA 2/2025

0 50m
scale

- Structure Plan Boundary
- Residential R20-R40
- Residential R40-R80
- Residential R60-R100 Group/Multiple Dwelling Site
- Residential R125 Multiple Dwelling (subject to DAP)
- Public Open Space
- Region Open Space
- Mixed Use R60-R80
- Railways
- * Proposed Location For Café or Restaurant

STRUCTURE PLAN
SOUTH BEACH VILLAGE

South Beach Structure Plan Report

September 2002 | 702.164

ENDORSEMENT PAGE

This structure plan is prepared under the provisions of the City of Cockburn Local Planning Scheme No. 3.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

April 2003

In accordance with Schedule 2, Part 4, Clause 28 (2) and refer to Part 1, 2. (b) of the *Planning and Development (Local Planning Schemes) Regulations 2015.*

Date of Expiry: **19 October 2035**

Amendment No.	Amendment Summary	WAPC Endorsed Date
1	Rezoning approximately 1.2 hectares from 'Mixed Business' to 'Mixed Use'	16 February 2017
2	Structure Plan amended in accordance with clause 29A(2) • Land normalised into TPS 3 by Amendment No. 176 removed from structure plan area	Structure Plan amended in accordance with Schedule 2 - Deemed Provisions, Clause 29A on 20 February 2025
3	Structure Plan amended in accordance with clause 29A(2) • Land normalised into TPS 3 by Amendment No. 177 removed from structure plan area	Structure Plan amended in accordance with Schedule 2 - Deemed Provisions, Clause 29A on 27 May 2025

Former area of Local Structure Plan
rationalised into
Town Planning Scheme No.3
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CITY OF FREMANTLE
CITY OF COCKBURN

SOUTH BEACH RECREATION
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City of Cockburn
wetlands to waves

GNA 2/2025

0 50m
scale

- Structure Plan Boundary
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- * Proposed Location For Café or Restaurant

STRUCTURE PLAN
SOUTH BEACH VILLAGE

EXECUTIVE SUMMARY

The South Beach area in South Fremantle is currently the subject of a structure planning exercise to redevelop the area's derelict industrial land. The objective of this exercise is to create an urban village with a strong sense of place based on the principles of social, economic and environmental sustainability.

The study area comprises a variety of lots including Pt Lot 1815 Island Street, Lot 100 Rollinson Road, the West Australian Government Rail (WAGR) reserve, the Dorsogna factory site and light industrial lots in South Fremantle and is defined by the Island Street Road Reserve and Ocean Street in the north, Rollinson Road in the south and the former tip and Fremantle Village to the east.

The structure plan report has been initiated by the area's principle landowners, South Beach Pty Ltd and has been prepared by a multi-disciplinary team of consultants led by The Planning Group and including ERM Mitchell McCotter, Van der Meer Consulting, Mitchell Goff and Associates, Jones Coulter Young and Herring Storer Pty Ltd with assistance from the Department of Planning and Infrastructure, City of Cockburn, City of Fremantle, the local community and other interested groups.

The land, which was previously zoned Industrial was rezoned to Urban as part of a Metropolitan Region Scheme (MRS) Amendment in 2001. The following environmental conditions were imposed as part of the Amendment:

- Preparation and implementation of a noise management plan in relation to noise from the railway line and commercial/heavy vehicles in and around the site;
- Preparation and implementation of a soil and groundwater management and remediation plan; and
- Establishment of buffers where necessary in response to potential land use conflicts.

The South Beach development area is subject to a number of local and regional planning instruments, being the MRS, City of Cockburn District Zoning Scheme No.2 and the City of Fremantle Town Planning Scheme No. 3. The Structure Plan complies with the requirements of all these instruments.

A search of both the City of Cockburn and City of Fremantle Municipal Heritage Inventories revealed no sites of heritage significance within the study area. A search of the Aboriginal Affairs Department's Register of Aboriginal Sites, however, revealed that there are two registered sites in close proximity to the study area.

Outlines for the preparation of the Site Investigation and Management Plan and Noise Management Plan as required under the conditions of the MRS Amendment are provided. These include the need to identify and remove contaminated soil. Noise management strategies provided include minimum building setbacks, the implementation of quiet house design and the further option of constructing acoustic barriers.

The traffic and transportation issues relating to the study area include bus service planning, pedestrian and cycle facilities planning, regional road planning, site access, existing local traffic conditions and the existing rail freight routes.

Service and infrastructure considerations for the site conclude that the South Beach development will provide all standard urban services being; reticulated water, sewerage and gas, comprehensive stormwater management and underground power and telecommunications facilities.

A design workshop was held from the 16th to 21st of March 2002 as part of the community and stakeholder consultation process for the project. The main objectives of the workshop were to identify the community and stakeholders' aspirations, priorities and values in creating a community-driven vision of South Beach and to generate a structure plan that accommodates these aspirations.

The issues that arose from the workshop can be grouped into the following categories:

- Transport and Access;
- Environment;
- Design Character;
- Heritage; and
- Community Issues.

These issues were reviewed in light of current initiatives relating to urban design, statutory planning, environmental planning, transport, service and infrastructure and community development planning. They directly influenced the recommendations of the structure plan.

The structure plan was based on several broad design principles including accessibility, social and economic viability, local integration and environmental sustainability.

The South Beach development will have the following mix of land uses:

Land Use	Area	%
Single Lots (residential)	73,530m²	33.3
Group Dwelling Sites	30,089m²	13.6
Mixed Business	40,500m²	18.3
Public Open Space	23,650m²	10.7
Roads	53,325m²	24.1
Total	221,094m²	100

The 300 single residential lots within South Beach have been planned to a variety of urban densities ranging from R20 to R80 and adopt the design philosophy that permits and encourages permeability, good solar access and linkages to open space areas.

There are 22 grouped dwelling sites planned at densities between R80 and R100 and ranging from 324m^2 to 2942m^2. These sites are located to frame views and mark key focal points within the development.

The structure plan's road network design focuses on the ease of movement within the site and connections and accessibility to the foreshore. The width of the road reserves range from 6m (laneways) to 20m, depending on their designation and function.

The main access into the site is from Island Street, with secondary access via South Terrace and Rollinson Road. Access to South Fremantle from the majority of the site has been limited due to public concerns regarding traffic impacts on the existing South Beach Recreation node and existing residential streets south of Duoro Road.

The structure plan incorporates the latest policy directions from the Department for Planning and Infrastructure, and in doing so, provides a land product that will be compatible with the surrounding area. Above all, it will provide a range of interesting housing lots, well located in terms of accessibility, linkages and views.

TABLE OF CONTENTS

PLANS

TABLES

1.0 INTRODUCTION

The South Beach area in the locality of Hamilton Hill is currently the subject of a structure planning exercise to reclaim and redevelop the area's derelict industrial land. The purpose of this exercise is to create an urban village with a strong sense of place that is based on the principles of social, economic and environmental sustainability. *Plan 1* depicts the general locality of the South Beach area.

This report supports a land use structure plan that conveys the general issues and principles of the project, rather than a detailed development plan. The next stage of the project will involve the preparation of more detailed information and subdivision plan and further investigations of the issues mentioned in this report.

This report has been prepared on behalf of the area's principal landowners, South Beach Pty Ltd by a multi-disciplinary team of consultants led by The Planning Group and including ERM Mitchell McCotter, Van der Meer Consulting, Mitchell Goff and Associates, Jones Coulter Young and Herring Storer with assistance from the Department of Planning and Infrastructure, City of Cockburn, City of Fremantle, the local community and other interested groups.

1.1 Background

In recognition of the fact that the industrial land uses within South Beach had ceased to operate, the Department for Planning and Infrastructure (previously the Ministry for Planning) initiated the Metropolitan Region Scheme (MRS) rezoning of the area in 1998 from Industrial to Urban. This followed an amendment request by the City of Cockburn to the Western Australian Planning Commission (WAPC) in June 1997. This amendment also included zoning the railway reservation within the site. It was considered that an Urban zoning would be more appropriate given the area's proximity to the Fremantle Regional Centre, the suburb of South Fremantle, the major recreation area of the South Beach Parks and Reserves, major employment areas and major educational facilities.

Furthermore, an Urban zoning would be consistent with Metroplan (prepared by the former Department of Planning and Urban Development in 1990) and The State Planning Strategy (Western Australian Planning Commission, 1997) which advocates that a range of housing opportunities should be provided in areas adjacent to regional centres as a high priority.

The main issues that were raised during the amendment process primarily related to planning and environmental matters. All environmental issues were referred to the Department of Environmental Protection (DEP) who considered that these issues had been appropriately dealt with by the WAPC and determined that the amendment would not adversely affect the environment. The main issues include:

- Noise buffers to the freight railway line and existing (industrial) uses;
- Portions of the site being reserved for Parks and Recreation instead of zoned Urban; and
- Soil and groundwater contamination.

Source: DOLA StreetExpress 1999

TITLE: Location Plan	
Date April 2002	E. Ref Figure 1
Scale NTS	Job # 702.164

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Figure # 1

In response to these issues, the following Environmental Conditions were imposed upon the amendment:

- Preparation and implementation of a noise management plan in relation to noise from the railway line (refer to Section 5.3 of this report);
- Preparation and implementation of a soil and groundwater management and remediation plan (prior to subdivision or development application approval); and
- Establishment of buffers where necessary in response to potential land use conflicts.

The noise managenent plan has been included in this report and the site investigation and management plan will be prepared during subsequent stages of this project. Appropriate buffers have also been considered during the structure planning process . The WAPC did not consider a monir increase to the coastal Parks and Recreation reserve on the basis that:

- There was no demand for additional regional recreation space;
- The zoning did not necessarily preclude public access to or damage the dunes;
- The imposed coastal setbacks are sufficient to protect development form potential erosion of the beach and dunes; and
- The rezoning of this site would not set a precedent, as there are other sites west of the Railways reservation that are not reserved for Parks and Recreation.

Several issues raised during the amendment process were deemed by the WAPC as being appropriate to be dealt with during the structure planning process. These include issues relating to vehicular and pedestrian access, the community, impact on surrounding land uses, development densities, appropriate land uses and design principles. These issues are addressed in subsequent sections of this report.

1.2 Structure Plan Objective

The objective of this structure planning exercise is to ensure the creation of a vibrant and environmentally, socially and economically sustainable urban village that has limited adverse impact on the adjacent South Fremantle community. The focus is to maximise the unique site opportunities presented by:

- The existing local community, urban form and economy;
- The connectivity with surrounding areas;
- Views to the ocean and to Fremantle;
- Existing infrastructure;
- The rail line; and
- The landform.

2.0 THE SUBJECT LAND

2.1 Study Area and Surrounds

The South Beach development area (also referred to as the 'subject site') comprises a variety of lots including Pt Lot 1815 Island Street, Lot 100 Rollinson Road, the West Australian Government Rail (WAGR) reserve, the Dorsogna factory and light industrial lots in O'Conner Close, Cockburn and South Fremantle and is defined by the Island Street Road Reserve and Ocean Road in the north, Rollinson Road in the south and Cockburn Road to the east.

The site is located approximately 2.4km from the Fremantle City Centre, and is in relatively close proximity to the Challenger and Success Boat Harbours and the Beeliar Regional Park. The proposed Roe Highway is also located near the site, east of Cockburn Road.

The subject site is bounded by Hollis Park and existing residential uses to the north, industrial, commercial and retail uses to the north east, a former landfill site and the Fremantle Village Chalet Centre to the east, existing industrial uses to the south and the South Beach Park and recreation area to the west. The western portion of the site is bisected by a freight railway line which effectively cuts-off the majority of the site from the coast. There are presently two traffic and pedestrian links across the railway line located at Ocean Road and Rollinson Road (refer *Plan 2*).

The site affords good views to the Fremantle Harbour, the Indian Ocean and Garden Island. The site is also subject to seasonal south westerly breezes from the ocean. The landform within the site is generally lower than surrounding areas due to quarrying activities in the past and earthworks will be required prior to development.

Several remnant industrial structures exist within the site including the old Wesfarmers Woolstores. These buildings are no longer in use and will be demolished to make way for the new development.

TITLE: Site Analysis Plan	
Date April 2002	E. Ref Figure 2
Scale See Scale	Job # 702.164

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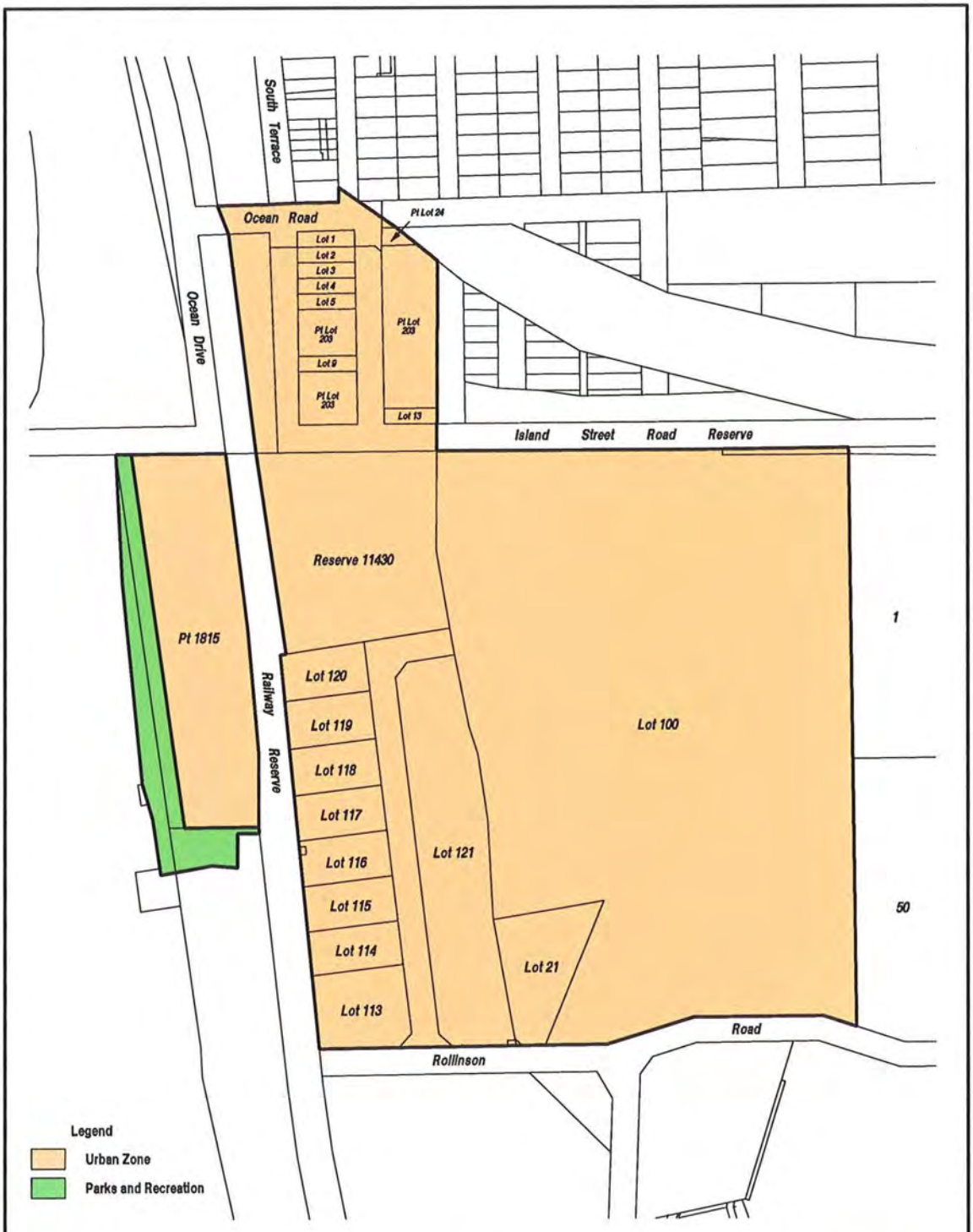
Figure # 2

2.2 Land Ownership

The South Beach development area is comprised of a number of different lots and reserves owned by a variety of individuals and organisations (refer *Plan 3* - Land Ownership):

- Pt Lot 1815 - Steiger Aust Asia Pty Ltd;
- Lot 100 - South Beach Pty Ltd;
- Lot 21 - Whitehall Securities Pty Ltd;
- Lot 113 - Dwellers Nominees Pty Ltd;
- Lot 114 - Collin Moffat-Clarke;
- Lot 115 - Era Fishing Company Pty Ltd;
- Lot 116 - T.M & J.M Kenny;
- Lot 117 - Toscana (WA) Pty Ltd;
- Lot 118 - Andrew Eagleton and Annette Phillips;
- Lot 119 - Robbins Enterprises Pty Ltd and Matsen Enterprises Pty Ltd;
- Lot 120 - Robbins Enterprises Pty Ltd and Matsen Enterprises Pty Ltd;
- Lot 121 - O'Conner Close Pty Ltd;
- Lot 1 - WAGR;
- Lot 2 - WAGR;
- Lot 3 - WAGR;
- Lot 4 - WAGR;
- Pt Lot 24 - City of Fremantle;
- Lot 5 - WAGR;
- Lot 9 - Commissioner of Main Roads;
- Lot 13 - Commissioner of Main Roads;
- Pt Lot 203 - Crown Land; and
- Reserve 11430 - Vacant Crown Land.



TITLE: **Land Ownership**

Date 15 April 2002	E. Ref Figure 3.dgn
Scale 1:4000	Job # 702.164

All areas and dimensions subject to survey

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Plan # 3

3.0 PLANNING AND DEVELOPMENT CONSIDERATIONS

3.1 Metropolitan Region Scheme (MRS)

Amendment 1008/33 was gazetted on 12 December 2001 and rezoned the majority of the structure plan area from Industrial and Railways Reserve to Urban. The variation to this generalisation was that a strip of land down the western side of Pt Lot 1815 (the ANI Bradken site) was added to the ocean foreshore reserve and shown to be within the MRS Parks and Recreation Reserve.

The Urban zoning includes land along O'Connor Close which is zoned Light Industry under the City of Cockburn District Zoning Scheme No.2 and not under the control of the project's proponents. Light industry is considered to be consistent with an Urban zoning under the MRS.

The MRS Amendment was made subject to formal assessment by the Environmental Protection Authority (EPA) through Assessment Number 1256. As a result of this assessment, Environmental Conditions were added to Schedule 1 of the MRS and these are listed below.

3.1.1 Environmental Conditions

Prior to application for subdivision or development approval, the potential for land use conflict between sensitive land uses and industrial premises shall be identified and buffers established where necessary to the satisfaction of the Western Australian Planning Commission on advice of the Department of Environmental Protection and the City of Cockburn.

Environmental Management Plans and requirements shall be prepared in accordance with the specifications set out in the Minister for the Environment's 'Statement that a Scheme may be Implemented' No 000560 published on 22 December 2000, for:

- Noise Management Plan,
- Site Investigation and Management Plan, and
- Site Remediation and Validation Report.

These Environmental Management Plans and requirements shall be prepared and implemented in accordance with the provisions of the Plans, to the requirements of the Western Australian Planning Commission, with the concurance of the Department of Environmental Protection, in consultation with the Health Department of WA, Water and Rivers Commission, City of Fremantle and City of Cockburn, where required by the 'Statement that a Scheme may be Implemented' No. 000560.

3.2 City of Cockburn District Zoning Scheme No 2 (DZS2)

DZS2 reflects the MRS prior to Amendment 1008/33, in that Lot 100 (Wesfarmers) and Pt Lot 1815 are zoned General Industry, the WAGR land is reserved for Railway and the land along O'Connor Close is zoned Light Industry.

Council has adopted Amendment No.201 to DZS2 proposing to include the structure plan area, including the land along O'Connor Close within the Development Zone. This Amendment has been approved for advertising but is now held in abeyance as it appears that it has been overtaken by Cockburn's new Scheme No.3, which is progressing towards final approval which is expected to occur within the next few months.

Proposed Scheme 3 also shows the structure plan area to be zoned "Development" which is said to provide for future residential, industrial or commercial development in accordance with a comprehensive structure plan prepared under the Scheme. Development and use of land under the zone is to be in accordance with an approved structure plan.

Once the structure plan has been received by Council it is referred to the Western Australian Planning Commission (WAPC) prior to advertising. Within 60 days of Council receiving the structure plan, it should be advertised for a period of not less than 21 days. Council considers submissions and if it decides to adopt the structure plan, refers it to the WAPC for adoption.

3.3 City of Fremantle Town Planning Scheme No 3 (TPS3)

The Fremantle City Council has initiated Amendment No.49 to TPS3 to include the northern part of the WAGR land currently reserved Railway within the Scheme's Development zone. The WAPC has agreed to allow the amendment to proceed to advertising subject to modifications which are now complete. Advertising commencement is therefore imminent.

The City of Fremantle has agreed to advertise the South Beach structure plan and then modify Amendment No.49 if required prior to advertising it. Also, the structure plan will only be advertised for 4 weeks due to some public advertising already occuring during the workshop.

4.0 HERITAGE CONSIDERATIONS

4.1 European Heritage

A search of both the Cities of Cockburn and Fremantle Municipal Heritage Inventories has revealed that there are no sites of heritage significance within the South Beach site. However, both inventories identified that there are several sites of significance within close proximity to the site. These include several of the houses north of the development area and the Robb Jetty Chimney.

4.2 Aboriginal Heritage

A search of the Aboriginal Affairs Department's Register of Aboriginal Sites has revealed that there are two registered sites in close proximity to the South Beach development area. These sites are the Robb Jetty Camp and the Indian Ocean between the Fremantle coast and Rottnest and Garden Islands. It is assumed that Robb Jetty was used by Aboriginal people in the past as a settlement camp, and that this area includes the South Beach foreshore.

5.0 ENVIRONMENTAL CONSIDERATIONS

5.1 Site Investigation and Management Plan

Prior to application for subdivision or development approval, a site investigation and management plan will be prepared to the requirements of the Department of Environmental Protection (DEP) on advise of the Health Department of WA (HDWA) and the Water and Rivers Commission (WRC).

This plan will include:

- The methods and criteria, compatible with the intended land use by which potential soil and groundwater contamination in the study area will be determined;
- Details of the nature and extent of the soil and groundwater contamination, including notation of any contamination which is reasonable to assume has extended beyond the boundary of the study area as a result of previous land use;
- Detailed description of how sensitive land uses in the study area will be protected from adverse impacts from soil or groundwater contamination, including the details of any remediation works and any on-going groundwater restrictions or monitoring required; and
- The framework of the validation report and audit that will be undertaken, to confirm the success of the remediation.

Where it is noted that it is reasonable to assume that contamination has extended beyond the boundary of the amendment area as a result of previous land use within the study area, the Department of Planning and Infrastructure, the DEP and the WRC as well as the relevant local government authority will be advised of such contamination.

5.2 Site Remediation and Validation Report

Prior to the backfilling of clean fill and/or commencement of site works for subdivision or development on any land that has residual soil or groundwater contamination, a site remediation and validation report will be prepared.

The site remediation and validation report will verify that the remediation of the site has occurred to an acceptable standard and that it is compatible with the intended land use.

5.3 Noise Management Plan

This section satisfies the Metropolitan Region Scheme Amendment No. 1008/33, Environmental Conditions 3 "Noise Management Plan", and 4 "Buffers", which state:-

Condition 3 Noise Management Plan

1-1 As part of the structure planning process and prior to application for subdivision or development approval within the amendment area, whichever occurs first, the Responsible Authority shall require the preparation of a Noise Management Plan.

This Plan shall:

(1) include predictions of noise levels from trains and heavy or commercial vehicles;

(2) identify the appropriate noise criteria against which noise impacts in the amendment area should be measured; and

(3) show how noise-sensitive land uses will be protected from adverse noise impacts from the adjacent rail line and heavy or commercial vehicle traffic.

1-2 The Noise Management Plan shall be prepared and implemented to the requirements of the Responsible Authority with the concurrence of the Department of Environmental Protection.

Condition 4 Buffers

As part of the structure planning process and prior to application for subdivision or development approval, the Responsible Authority shall require that the potential for land use conflict between sensitive land uses and industrial premises has been identified, and buffers established where necessary, to the requirements of the Responsible Authority on advise of the relevant local authority and the Department of Environmental Protection.

To satisfy the above environmental conditions, Herring Storer Acoustics was commissioned by South Beach Pty Ltd to prepare a Noise Management Plan. The Noise Management Plan identifies various set backs required to comply with the EPA Statement of EIA No 14 (Version 3) for Road and Rail Transportation Noise. The EPA Statement also stated that within these setback distances residential premises could be built, provided certain building guidelines were incorporated in their design. This Noise Management Strategy addresses the basic building requirements to achieve compliance at residential premises located within the "conditional" area of the development.

5.3.1 Criteria

Department of Environmental Protection – Preliminary Draft Guidelines for Road and Rail Transportation Noise

The Department of Environmental Protection (DEP) under the Preliminary Draft EPA Guidance for the Assessment of Environmental Factors No. 14 - Road and Rail Transportation Noise (Version 3) provides draft guidelines for the acceptability of road and rail noise outside noise sensitive premises. The approach taken is similar to Australian Standard 2021 - 1994 which relates to aircraft noise received at a noise sensitive premise. The draft guidelines from the Department of Environmental Protection determine zones, which depending on the noise level, classify an area as acceptable, conditionally acceptable and unacceptable.

Under the acceptable zone, no noise amelioration is required.

Under conditionally acceptable, noise amelioration is required, either in terms of attenuating the noise before it reaches the premises or providing an increased noise reduction through the building structure to achieve acceptable internal noise levels.

Within the unacceptable zone, noise sensitive premises are not permitted.

The range of noise levels are summarised below in Table 1.

TABLE 1 – NOISE LEVELS VS ACCEPTABILITY OF LANDUSE

Rating	Day Noise Level dB(A)	Night Noise Level dB(A)	Zoning		
			Acceptable	Conditionally Acceptable	Unacceptable
N0	50	40	Residential		
N1	51-55	41-45	Residential		
N2	56-60	46-50	Open Space	Residential	
N3	61-65	51-55		Residential Units, Open Space	Residence + Yard
N4	66-70	56-60		Residential Units, Open Space	
N5	70	60		Residential Units, Open Space	Open Space

AS2107:2000

Australian Standard 2107:2000, recommends the maximum noise levels (as listed in Table 2) within residential premises located adjacent to major roads. In this instance, given the location of the subdivision and the proximity to the freight line, the maximum L_{Aeq} levels listed in the standard would be applicable for this development.

L_{Aeq} is the logarithmic average for the night period (i.e. 2200 hours to 0700 hours).

Living areas include dining room, living room, study, and games room.

Work areas include kitchen, laundry and bathrooms.

Based on the above, residential premises located within the "conditional" zone are to be designed to meet the noise levels during the night period as listed in Table 2.

TABLE 2 – MAXIMUM L_{Aeq} INTERNAL NOISE LEVELS

Location	L_{Aeq} Noise Level dB(A)
Sleeping Area	40
Living Area	45
Work Area	45

5.3.2 Heavy Vehicles

Currently the only heavy vehicle use on Rollinson Road is to access the Container Refrigeration Operations located at Lot 121 O'Connor Close.

The use of this site for container maintenance and storage has not been approved and is currently

being contended in the Town Planning Tribunal, and continued use of the site is opposed by the City of Cockburn, WAPC and South Beach Pty Ltd.

5.3.3 Train Parameters

Current Usage

The current number of trains passing through the development is approximately 4 per week.

Future Use

From information supplied by the Fremantle Port Authority, they believe that by the year 2017 the number of train movements would be 10 per day. The Fremantle Port Authority also claim that the length of each train would be 600m.

On a prorata basis, the number of train movements during the critical night period would be 4.

However, given the current usage and the implications of the impacts of this increase for the entire section of track, we believe that this number of train movements is unlikely. As the development of a facility to cater for this number of trains would require approval from the EPA. To achieve approval, compliance would need to be shown for the entire section of track.

South Beach Pty Ltd have instructed us to use the Port Authority figures and as such, to be conservative the parameters for assessment that were used included 5 movements per night, L type locomotives (worst case), 40 km/hr and Notch Setting 3.

Noise level at 15 metres 73 dB(A) $L_{Aeq\ 1min}$

5.3.4 Calculations

Based on the above parameters, the distances required to comply with the appropriate criteria are listed in Table 3.

TABLE 3 – DISTANCE TO COMPLY WITH DEP L_{Aeq} NIGHT PERIOD

Dwelling	Distance (m)	
	Acceptable	Conditional
Single Residential	50	30
Grouped Dwelling	50	Edge of Railway Reserve

The reduction in noise levels that would be achieved by various height barriers are listed in Table 4.

TABLE 4 – REDUCTION IN L_{Aeq} NOISE LEVEL FOR VARIOUS BARRIER HEIGHTS

Barrier Height (m)	Reduction in Noise Level dB(A)
0	0
2	2
3	7
3.5	9
4	11

5.3.5 Structure Plan

From the Structure Plan (see Plan 13), the distance between the railway line and the residential areas along with their zoning are listed in Table 5.

TABLE 5 – DISTANCES BETWEEN RESIDENCES AND RAILWAY LINE

Location	Distance (m)	Zoning *
Eastern Side		
Single Residential	50	Complies
Grouped Dwellings	30	Complies
Western Side		
Single Residential	30	Complies (see note below)
Grouped Dwellings	15	Conditional

Note: On the western side, noise received at the single residential from passing trains comply with the EPA criteria, as they are located behind the grouped dwellings and these dwellings act as a barrier to the railway line.

5.3.6 Building Guidelines

As shown in Table 5 the only conditional residences are the grouped dwellings located on the western side of the railway line. To comply with the appropriate criteria, these dwellings will use quiet house design and have notification of train noise stated on the land titles.

For the grouped dwellings located 15 metres from the railway line, quiet house design will include:

- Locating bedrooms on opposite side of residence from railway,
- Locating of laundries / bathrooms on same side of railway,
- Protecting main entrance from rail noise,
- Enclosing eaves,
- Roof insulation,
- Double brick construction, and
- Use of thicker glazing, with casement windows using winders.
- Some specific details to satisfy the quiet house design requirements includes:
- Double brick or tilt up concrete construction,
- Casement windows in timber or commercial steel frames and compressible seals (windows visible from railway lines only),
- Glazing on side(s) of residence visible from tracks to be minimum of 8mm laminated glass,
- Eaves to be enclosed using 6mm thick compressed cement sheeting or equivalent,

- Sliding doors are only acceptable on face which is on the opposite side of the tracks
- Entrance doors (visible from tracks) to be solid 40mm hardwood doors 8mm in hardwood timber frames, with rebates and door seals. Glazing inserts of 8mm thick laminated glass are acceptable,
- Roofs not to pitch towards tracks,
- Roofs to be colourbond (or equivalent) with 50mm anticon, with ceilings on top floor to be one layer of 13mm plasterboard and 50mm thick (minimum 32 kg/m^3) insulation laid over the top, and
- No recessed light fittings allowed in bedroom ceilings (on top storey).

Note: An acceptable solution to the top storey is to allow lofts. These spaces can have higher noise levels, and so long as the floor is concrete and there is a door to the loft then noise would be acceptable.

Notifications of train noise and the above requirements are to be placed on titles.

For residences within the conditional zone, designs are to be checked by an acoustical consultant with a report stating that the construction adequately attenuates noise emissions from trains travelling at certain speeds past the development. In this case the trains would be freight trains and the speed would be up to 40km/hr.

5.3.7 Noise Buffers

The potential for land use conflict between existing industrial uses and future residential uses only exists in one location.

Lot 121, currently tenanted by Container Refrigeration.

There is no potential conflict between residential uses north of Rollinson Road and Special Industry "A" uses south of Rollinson Road. The Special Industry "A" zone south of Rollinson Road is governed by the 1994 "Environmental Guidelines for Industries Operating in Coogee" (prepared by the DEP) that states that emissions of gases, dust and noise should be managed such that they are within standards acceptable to the DEP. This guideline was implemented to protect permanent residents already living on the northern side of Rollinson Road in the Fremantle Village.

There is no potential conflict between Lot 21 currently leased to D'orsogna Pty Ltd for a cold storage facility. This facility is a light industrial use that does not require any buffers to residential.

Lot 121 is leased to Container Refrigeration as an office and container storage facility. This use is currently being contested by The City of Cockburn, the West Australian Planning Commission and South Beach Pty Ltd in the Town Planning Appeal Tribunal. Container Refrigeration only have planning approval for the office building erected on the southern boundary of the site. They do not have approval to use the land for container storage and maintenance, the local authority are

not prepared to approve the use as it does not conform to the existing or proposed Town Planning Scheme zoning. Lot 121 is currently zoned "Light Industrial".

The local scheme development guidelines for Light Industrial land restricts uses to those "in which the processes carried on, the machinery used and the goods and commodities carried to and from the premises will not cause any injury to, or will not adversely affect the amenity of the locality by reason of the emission of light, noise, vibration, smell, fumes, smoke, vapour, steam, soot, ash, dust, waste water or other products."

Container Refrigeration's legal representative has recently (9/9/02) requested that the Town Planning Appeal Tribunal defer the hearing for a month whilst their client is in the process of negotiating to purchase another.

6.0 TRAFFIC AND TRANSPORTATION CONSIDERATIONS

6.1 Introduction

This section of the report relates to traffic and transport planning for South Beach and presents information and recommendations for:

- Bus Service Planning;
- Pedestrian/Cycle Facilities Planning;
- Regional Road Planning;
- Site Access; and
- Local Traffic Conditions: Existing and Post Development.

6.2 Bus Services

6.2.1 Existing Services

Several bus routes operate along Cockburn Road/Hampton Road to and from Fremantle City Centre via South Street and South Terrace (refer *Plan 4*). Service frequency is very good at approximately every 10 minutes during weekday peak periods and approximately 20-30 minutes at other times. The high frequency is due to the number of bus routes involved (ie. 126, 135, 136, 138, 510, and 920). Existing bus stops with shelters are located near the following intersections:

- Cockburn Road/Boyd Crescent;
- Hampton Road/Clontarf Road; and
- Hampton Road/Douro Road.

Rockingham Road and Hampton Road form part of the evolving Fremantle-Rockingham Transitway. The Hampton Road 'bus' lanes are a recent development that forms part of the Transperth planning for this high frequency public transport service.

Route 141 (Coolbellup–Fremantle) operates along Douro Road/South Terrace. The bus stops for this route are located near Douro Road/Chester Street intersection. This service has a 30-minute frequency on weekdays and 60 minutes outside of working hours and on weekends.

The Fremantle Central Area Transit System (CAT) operates in a one-way clockwise direction down South Terrace to Douro Road and then north up Marine Terrace. The CAT bus stop closest to South Beach is at the corner of Marine Terrace and Douro Road. Service frequency is every 10 minutes and travel time to Fremantle Station is approximately 7 minutes. The complete roundtrip ('figure 8' route taking in Ord Street and James Street loop) takes 30 minutes.

TITLE: Bus Routes	
Date April 2002	E. Ref Figure 4
Scale See scale	Job # 702.164

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Figure # 4

The CAT is being funded 50/50 by the City of Fremantle and Transperth under a 3-year agreement that ends in August 2003. Given the early popularity and success of the CAT, it is hoped that a new agreement for funding (shared or wholly by Fremantle) will be arranged and the CAT will continue to operate beyond August 2003.

6.2.2 Possible New Services

The South Beach development structure plan has been designed to cater for possible bus service additions as indicated in *Plan 5* and described below:

- CAT bus service extension along South Terrace to either Ocean Road or Island Street within the South Beach Development; and
- New north-south local bus route into and through the site, possibly using Bennett Ave. and Island Street.

A preliminary analysis of the CAT service extension options is summarised in Table 6 below.

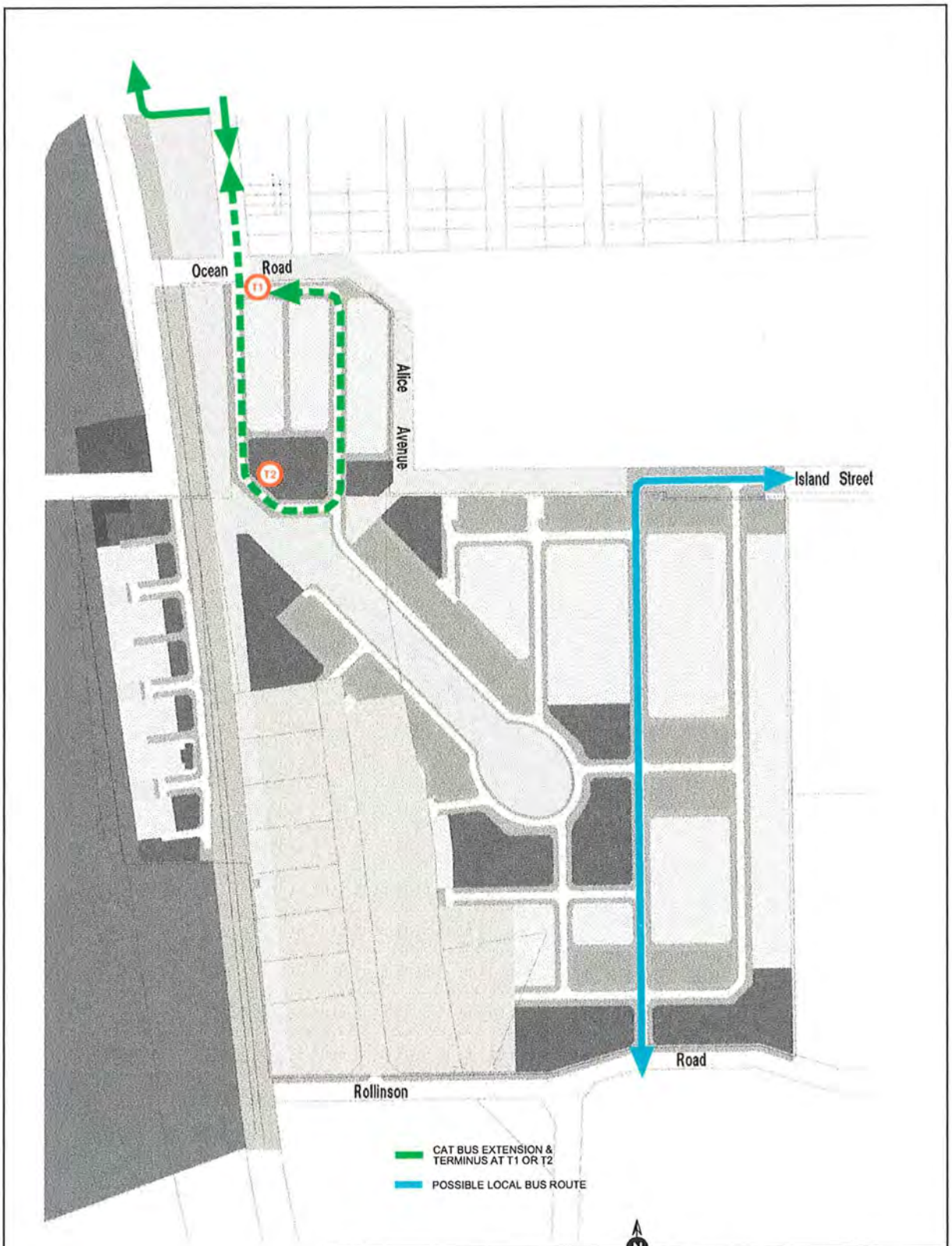
Table 6 - CAT Route Extension: Options and Costs

Route Description	Extend south to Ocean Road	Extend south to Island Street
Number of Buses and resulting headway	3 buses at 10.7 minutes headway	4 buses at 8.8 minutes headway
Extra Bus Travel Distance	560 metres	1060 metres
Extra Capital Cost	$0 (no additional bus required)	$400,000 for new CAT bus
Extra Operating Cost (based on $2.50/km)	$32,000*	$230,000*

***The costs for a new CAT bus and the cost for extending the operation of the CAT were provided by Transperth. Table 6 cost information does not allow for bus depot overhead charges that may accrue to a route extension nor does it include construction of a turnaround facility/stop at the southern end within the South Beach Development.**

The CAT currently operates with 3 buses at 10 minute average headways. As shown in Table 6, extending the CAT as far south as Island Street will require an additional CAT bus because otherwise the headway will increase to 12 minutes (unacceptable for this type of service).

The possible new local bus route shown in *Plan 5* will most likely only be viable if Bennett Avenue connected through to Cockburn Road and the existing industrial area south of Rollinson Road some day converted to an urban zoning. With residential and commercial uses adjacent to Bennett Avenue and with a link through the South Beach development to Island Street, this could provide a very useful local bus route to Fremantle.



TITLE:
Possible Bus Services

Date Sep 2002	E. Ref Figure 5
Scale NTS	Job # 702.164

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Figure # 5

6.3 Pedestrian/Cyclist Facilities

6.3.1 Existing Shared Paths

A coastal shared path is in place from McTaggert Cove (south of Catherine Point Reserve) to the South Beach recreation node and then continues north to the Roundhouse at the south end of Victoria Quay in Fremantle. The shared path is located on the west side of the rail alignment for the whole of its length but has various connections to the road system and footpaths to the east of the rail line.

A second shared path runs east-west from the Cockburn Road/Rockingham Road intersection to Ocean Road near the South Beach Recreation Area. This path skirts the southern boundary of the existing South Fremantle residential area and the northern boundary of Hollis Park (refer *Plan 6*).

6.3.2 New Shared Paths

The South Beach development will have shared paths as indicated in *Plan 7* and described below. These paths will be developed in accordance with the City of Fremantle's Footpath Policy:

- Wilson Park Path (N-S path adjacent to and on the east side of the rail line within the extension of Wilson Park);
- Island Street Path (E-W path from Cockburn Road/Rockingham Road intersection directly west to the Wilson Park Path);
- Paths to existing South Fremantle residential streets (eg. N-S path connecting to the southern end of Thomas Street);
- Central Spine Paths (diagonal paths through the development linking to the Wilson Park Path and the Island Street Path); and
- Rollinson Road Path (E-W path along the north side of Rollinson Road between Cockburn Road in the east to the Wilson Park Path in the west).

6.3.3 On Road Cycling

North South Roads

An on-road cycle route follows Chester Street, Douro Road, and Thomas Street and connects to the east-west shared path along Hollis Park. It is signed as the 'Hampton Road Alternative Route'. This route has been identified as a local bike route on the Perth Bike Maps and provides a relatively cycle friendly alternative to the heavily trafficked Hampton Road.

Cyclists are currently prohibited from using the new bus lanes on Hampton Road. This presents difficulties for on-road cycling on Hampton Road due to high traffic volumes and lack of other road space for cyclists. The City of Fremantle and the Fremantle Bicycle User Group are currently seeking to have this prohibition removed.

ERM 0 150m

N

TITLE:
Existing Pedestrian/Cycle Facilities

Date April 2002	E. Ref Figure 6
Scale See scale	Job # 702.164

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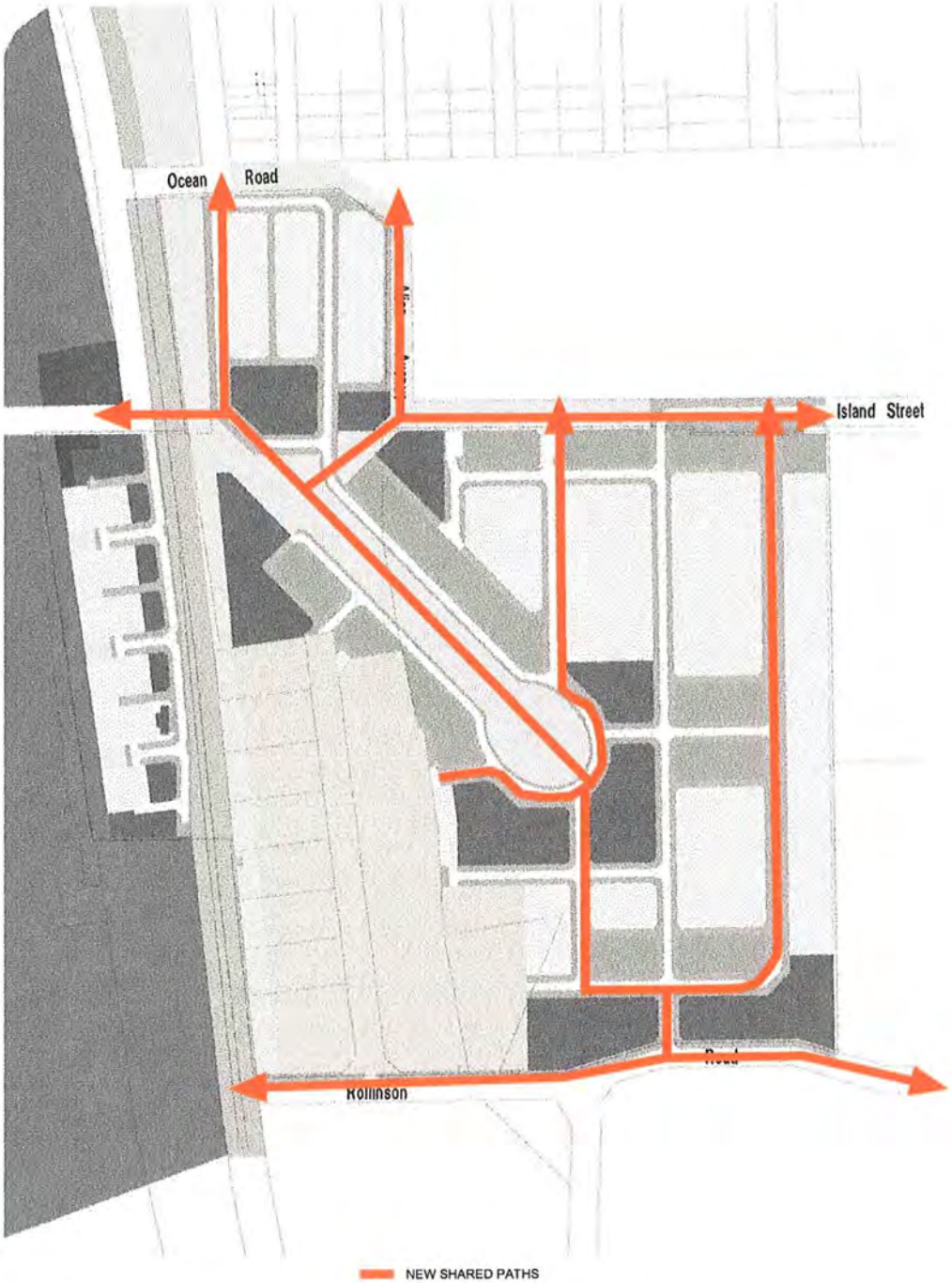
Figure # 6



TITLE:
New Shared Paths

Date Sep 2002	E. Ref Figure 7
Scale NTS	Job # 702.164

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Figure # 7

South Terrace (north of Douro Road) is a 2-lane road in a 20m reserve. It has 2.5m wide on-street parking lanes adjacent to travel lanes of 3.2m wide. It has a painted median of 1.2m. This street cross-section does not allow adequate space for on-road cyclists to be passed by vehicles at speed without moving over the painted island and some care is required by cyclists and drivers to safely share the available road space.

The proponents are working with the residents of South Terrace and the City of Fremantle to redesign and redevelop South Terrace (south of Douro Road). It is possible to provide additional verge and off-street parking within the existing road reserve that will benefit cyclists and pedestrians alike.

East West Roads

Douro Road is a 2-lane road with intermittent 2m wide kerbed median islands and travel lanes of approximately 4.4m width and has limited on-street parking (in embayments). This 4.4m lane width is generally considered adequate for safe on-road cycling in a 50km/hr speed environment but inexperienced cyclists should have an off-street alternative. An alternative parallel route and/or a shared path on the verge are options that are often considered.

Unfortunately, there is no convenient parallel street that younger cyclists can use and some sections of the footpaths along Douro Road are of slab construction and of insufficient width to accommodate sharing by cyclists and pedestrians. It appears that there is some scope for establishing a 2.0-2.5m wide shared path on one or both sides of Douro Road within its current 20m reserve width.

New On Road Cycling Routes

The South Beach development will provide safe on road cycling on all local streets. Traffic volumes on all local streets are expected to be less than 3,000 veh/day. At this level of traffic, and given the low vehicle operating speeds on residential streets, separate cycle lanes will not be necessary on the internal street network.

Island Street is expected to carry the majority of the site traffic (ie. 1,610 veh/day) and will have a shared path within its reserve to cater for those cyclists that do not want to mix with local vehicle traffic.

Rollinson Road currently caters for industrial traffic and it is desirable to have separate on-road cycle lanes if South Beach development cyclists are to use it. Cockburn Road also lacks on-road cycling lanes and has no shared paths within the road reserve. Until Rollinson Road and Cockburn Road can be improved for cyclists, it will be best for cyclists to use the new Island Street route instead.

6.4 Regional Road Network Planning

6.4.1 Fremantle Eastern Bypass (FEB) and Roe Highway Stages 7 & 8

Road network planning in this part of the Perth metropolitan area is undergoing significant change due to commitments by the current State Government to remove the FEB from the Metropolitan Region Scheme (MRS) and to review Roe Highway Stage 7 & 8 planning.

Roe Highway Stage 8 comprises that section from the Kwinana Freeway to FEB reserve. There is no MRS reservation for Roe Highway west of the FEB reserve.

In order to progress planning of the road network, the State Government is undertaking a Freight Network Review and associated workshops on:

- Alternatives to the FEB; and
- Review of Roe Highway Stage 7 & Stage 8 options.

Once these initiatives are undertaken, the Department for Planning and Infrastructure and Main Roads Western Australia will be in a better position to address the planning implications for roads in the South Fremantle and Coogee areas, including Cockburn Road.

6.4.2 Fremantle-Rockingham Highway and Cockburn Road

It is possible that the Fremantle-Rockingham Highway will not be required now that the FEB has been eliminated from the network. In that case, Cockburn Road will retain an important role in the regional road network.

Under the previous planning (which included the FEB and Fremantle-Rockingham Highway), Cockburn Road will have been downgraded and control will have passed to local government from Main Roads Western Australia. Now, the ultimate design standard, planning responsibility and funding responsibility for Cockburn Road is uncertain and will need to be resolved as road network planning in the region proceeds.

Currently Cockburn Road is under the control of Main Roads Western Australia and has a nominal 25m reserve over most of its length past the study area (ie south of the Rockingham Road intersection). It is a 2-lane undivided road south of Rockingham Road. Hampton Road, which is under the control of the City of Fremantle is a 4-lane road with turning lanes at signalised intersections north of Rockingham Road.

6.5 Site Access

This sub-section provides a review of the site access options that have been considered for the South Beach development (refer *Plan 8*).

ERM 0 150m

N

TITLE: **Site Access Possibilities Considered at Public Workshop**

Date April 2002	E. Ref Figure 8
Scale See scale	Job # 702.164

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Figure # 8

6.5.1 Rollinson Road

Existing Conditions

This is an existing east-west road on the southern boundary of the site and currently serves a number of industrial developments. It is a 2-lane undivided road in a 20m reserve with a kerb to kerb width that varies from 7m to 10m.

At the western end it joins the northerly extension of Robb Road at a foreshore car park near Catherine Point Reserve. The 'at grade' crossing of the freight rail line has standard 'railway crossing' and 'stop' signs but no red flashing lights or boom gates.

At the eastern end, Rollinson Road forms an unsignalised T-junction with Cockburn Road and is 7.4m wide (ie. only one shared approach lane for right and left turns). There are no turn lanes on Cockburn Road for traffic turning into Rollinson Road.

Existing traffic is low but there is a very high percentage of heavy vehicles including semi-trailers from the container depot. These vehicles have been observed to move at relatively high speed given the short length of road and occasionally they cross the centre-line on the S-bend (east of Bennett Avenue Intersection) (refer Section 5.3.7 of this report).

6.5.2 Island Street Reserve

Island Street reserve is 20m wide and runs from Ocean Road/Alice Avenue in the west to Cockburn Road in the east. The reserve intersects Cockburn Road at the Rockingham Road signalised T-junction.

This reserve presents an excellent opportunity for site access to the east and north. A signalised intersection is the best type of access that can be achieved as it provides a high level of safety for right turning vehicles and crossing vehicles.

As described previously, Island Street may also form part of a future local bus service and also provide a link from a possible future residential area south of Rollinson Road to the signals at Cockburn/Rockingham Road intersection.

Adding the fourth leg (Island Street) to this intersection will require some realignment of the existing shared path that is currently in the middle of the Island Street reserve near the Cockburn Road/Rockingham intersection.

6.5.3 South Terrace (South of Douro Road)

Existing Conditions

Currently South Terrace provides access to Ocean Road, the South Beach recreational area, the WAGR site (not operational), the Wesfarmers site (not operational) and the ANI industrial site (not operational). The portion of South Terrace between Douro Road and Ocean Road is traffic calmed via horizontal alignment and speed bump design.

Traffic volumes have been falling over the last 10 years as industrial activity has dropped off and ceased. Traffic in 1993 was approximately 3800 veh/day and dropped to only 1100 veh/day in 1999 (Main Roads Western Australia Average Weekday Traffic, 1998/99). This traffic is primarily destined for the South Beach recreation area because all but one of the adjacent residential properties has their garage access via Hickory Street.

Post Development

Access from South Terrace to the structure plan area will provide a more convenient vehicle access to/from Fremantle but has been designed to discourage through traffic because the access routes between external road connections are indirect.

Some vehicle traffic from the area south of Rollinson Road is expected to use the South Beach street network to access South Terrace. This is because even an indirect and traffic calmed route will offer reduced travel time to destinations along Marine Terrace and South Terrace.

The amount of through traffic that could develop is hard to determine at this stage but could be in the order of several hundred vehicles per day. 300 vehicles/day of through traffic is assumed for this analysis. This assumption is based on 10 percent of the ultimate Rollinson Road traffic (upper limit conservatively estimated at 3000 veh/day) having destinations along Marine Terrace and South Terrace.

The South Beach generated traffic that will use South Terrace is estimated at approximately 1000 vehicles/day. The sum of South Beach and through traffic that will use South Terrace is thus estimated at approximately 1300 vehicle trips per day.

Adding the new 1300 vehicles per day to the existing 1100 vehicles per day on South Terrace gives an expected Average Weekday Traffic of approximately 2400 vehicles per day at ultimate development. This is still within the Liveable Neighbourhoods design limit of 3000 vehicles/day for a higher order Access Street.

A higher order Access Street would typically have:

- 7.2-7.5m wide pavement with cars parking on-street, or
- 6.0m-7.0m wide pavement with 2.5m wide embayment parking.

Given that South Terrace has been identified as a potential CAT bus route, the requirements of buses must be taken into account. Transperth have indicated that a minimum pavement width of 6.5m adjacent to 2.5m parking embayment is acceptable but that a 7.0m pavement width is desirable.

6.6 Local Traffic Conditions: Existing and Post Development

6.61 Existing Traffic Conditions

Table 7 provides summary information on traffic volumes and characteristics for a selection of existing streets adjacent to the South Beach development site.

Table 7 - Selected Local Traffic Volumes (Average Weekday Traffic, Main Roads Data 1999)

Street Name	Vehicles per Day	Comments
Douro Road	16,000 west of Hampton Rd. 7500 west of South Tce.	20m wide reserve. At/ near capacity. Difficult to cross for peds/ cyclists. Difficult for vehicle access.
South Terrace	9500 just north of Douro Rd. 1100 south of Douro Rd.	20m wide reserve. Mixed land use adjacent. Residential properties front Wilson Park. Traffic calmed street design. Provides the only vehicle access to South Beach Recreational Area. Garage access from Hickory Street.
Hickory St. to Thomas St.	< 300 veh/day	15m wide reserves. Residential access streets of 7.5m -8.5m width with cars parked on street.
Daly St.	< 200 veh/day	20m wide reserve. Residential properties on west side. Some commercial and service industrial land and substantial vacant land on east side.
Rollinson Road	< 1000 veh/day but very high percentage of heavy vehicles	20m wide reserve through industrial area. Road width varies from 7.0m to 10m wide. Trucks travel at high speed.

As indicated in Table 7, Douro Road is very busy and poses community severance problems in the South Fremantle area. The reason for the heavy traffic is that South Street and Douro Road handle the bulk of east-west traffic distribution without significant help from any streets between them (eg. Lefroy Road).

Network improvement options that could be considered to reduce Douro Road traffic levels include:

- Improve the attractiveness of Lefroy Road via directional signage and a more direct and higher standard road linkage between South Terrace and Marine Terrace; and/or
- Create an east-west link through the South Beach development site that links Marine Tce to Island Street.

Either of the above options will take some of the estimated 13,000+ veh/day of through traffic off of Douro Road and share it across additional east-west distributor roads.

Obviously, the second option of running through the South Beach development site has significant implications for the design of the site. These implications and design options were explored at the community design workshop and 'ruled out' due to public objection and a previous Fremantle Council position.

6.6.2 South Beach Structure Plan Network and Traffic Volumes

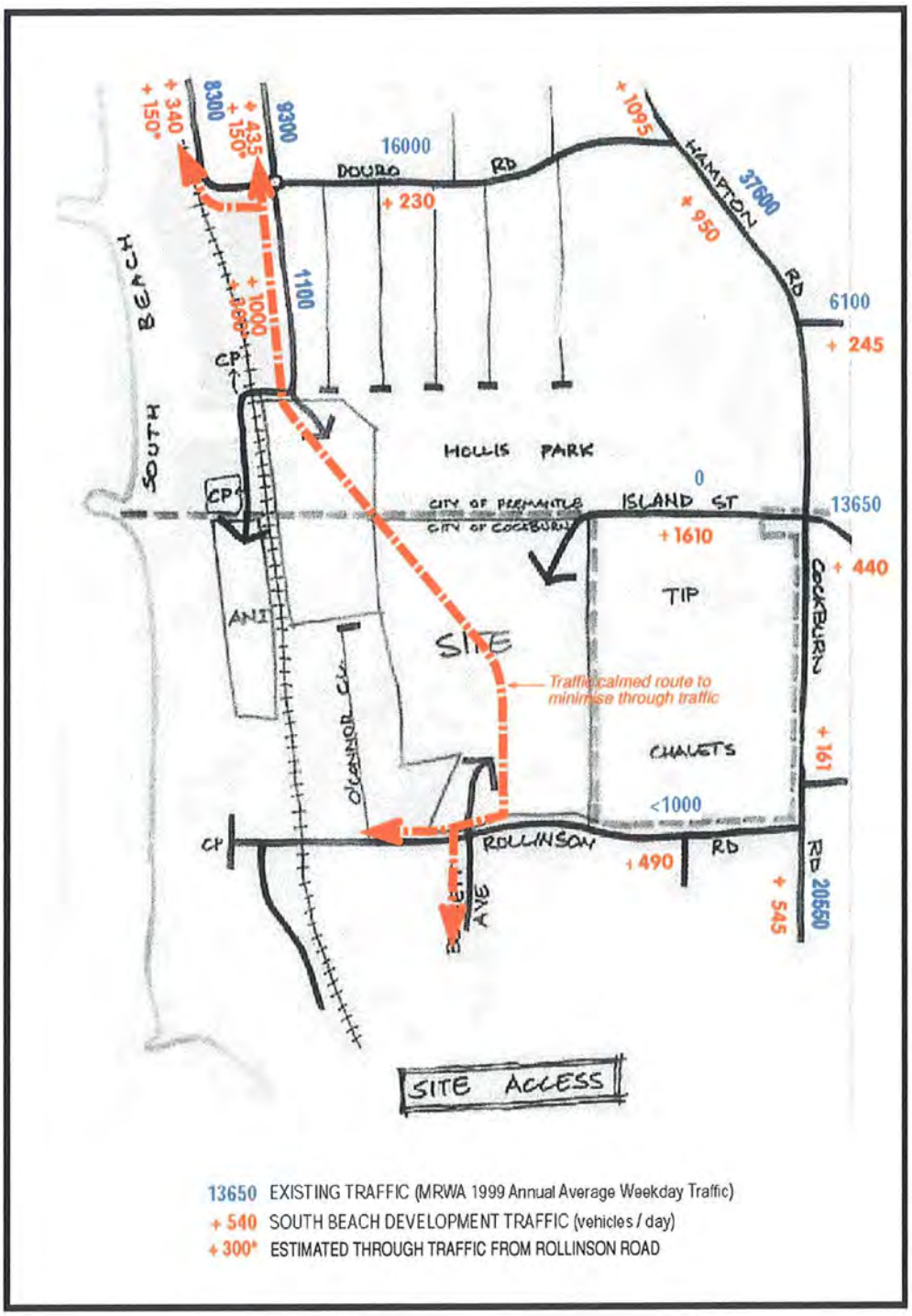
Plan 9 shows the South Beach development site access routes and the surrounding road network. Existing traffic volumes (Main Roads Western Australia data for 1999 Average Weekday Traffic) are shown in black and estimated additional 'post-development' daily traffic volumes are shown in red.

The traffic generation assumption is based on the fully developed structure plan:

- 301 single residential lots at R30 and 13 grouped dwelling sites at R100 (approximately 199 units);
- Average of 7 vehicle trips per single residential lot per day and 5 vehicle trips per day for each unit within the grouped dwelling site; and
- A directional distribution for traffic favouring the northern and eastern destinations where the majority of employment and social amenities are found.

Plan 9 shows the estimated 3102 veh/day of South Beach development traffic as it has been distributed to the adjacent road network:

- Rollinson Road will carry approximately 490 veh/day additional;
- Island Street will carry approximately 1610 veh/day;
- Hampton Road will carry approximately 950 veh/day extra;
- Douro Road will carry about 230 veh/day additional; and
- South Terrace (south of Douro Road) will carry approximately 1000 - 1300 veh/day extra.



13650 EXISTING TRAFFIC (MRWA 1999 Annual Average Weekday Traffic)

+ 540 SOUTH BEACH DEVELOPMENT TRAFFIC (vehicles / day)

+ 300* ESTIMATED THROUGH TRAFFIC FROM ROLLINSON ROAD

TITLE: **Estimated Site Traffic**	
Date April 2002	E. Ref Figure 9
Scale NTS	Job # 702.164

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Figure # 9

7.0 SERVICE AND INFRASTRUCTURE CONSIDERATIONS

7.1 Introduction

This section highlights the services and infrastructure requirements of the South Beach development, and has been compiled based on the following terms of reference:

- Preliminary structure plan prepared during the series of workshop meeting undertaken by the developers in mid-march 2002;
- 1:2000 base plans obtained from the Water Corporation of Western Australia showing cadastral boundaries, contours, sewerage and water services;
- Consultation with the Water Corporation on the issues of sewerage and water supply for the area;
- Consultation with the City of Cockburn regarding issues relating to roadworks and drainage requirements for the development; and
- Briefing discussions and meetings with the developers and consultant team appointed to the project.

7.2 Site Evaluation & Bulk Earthworks

The subject land was previously used for industrial purposes. The South Fremantle Marshalling yards and properties currently owned byWAGR and the City of Fremantle are adjacent to the site. Demolition of all miscellaneous structures and fence lines will be required prior to redevelopment of the site.

7.2.1 Site Topographical Evaluation

The study area is already substantially cleared and contains some industrial buildings and bitumen hardstand areas that are to be demolished.

The subject land generally slopes from the east to the west, with site gradients ranging between 1 in 50 to 1 in 30, with an average slope of 1 in 50.

Levels across the ANI site range from RL 6 AHD in the Northwest corner to RL 7.0 AHD approximately along the eastern boundary.

Levels across the Wesfarmers site range from RL 3.5 to RL 5.9 AHD, but the site generally has been excavated below the surrounding natural surface levels during previous development.

7.2.2 Site Geology

Previous geotechnical investigations identified the site subsoil profile and issues that require further consideration during the development phase of the project.

Reference to the Perth Geological Survey Map series indicates the primary soil condition is classified as calcareous sand (Safety Bay sand – Qhs (S_8), overlaying limestone (LS1).

The calcareous sand (S13) is described as white, medium – grained, rounded quartz and shell debris, well sorted of aeolian origin.

The limestone (LS1) is described as comprising tamala limestone (Qtl) and Safety Bay sand (Qhs) in part. The limestone is pale yellowish brown, fine to coarse – grained, sub angular to well rounded quartz, trace of felspar, shell debris, variably lithified, surface kankar, of aeolian origin.

The geomorphologic classification is described as relic foredune sequence, high level, holocene (Er).

Previous geotechnical investigations identified the need for further studies to clearly determine the extent of Karsitic limestones. The majority of the subject land will achieve a class 'A' site classification based on preliminary results.

Refer to *Plan 10* for the geological & geomorphology details.

7.2.3 Ground Water Level

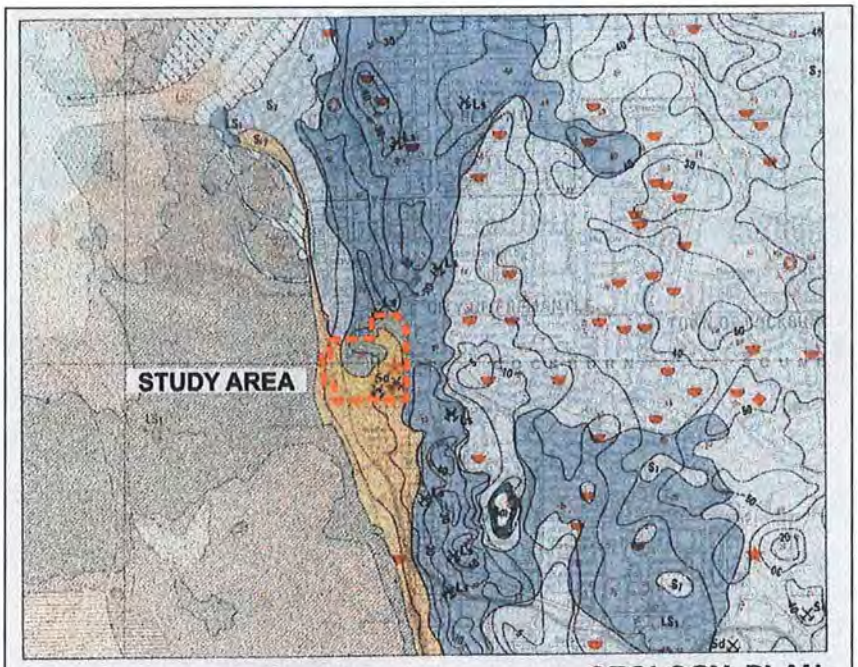
According to groundwater contour maps compiled by the Water Corporation (estimated maximum recorded water levels 1993) the groundwater levels across the site vary from RL 0.4m AHD (on the eastern boundary of the study area) to 0.2m AHD at the western boundary. The average groundwater level in the study area is therefore approximately RL 0.3m AHD.

Further work will be required to prove up specific levels within the subject land, however, current data indicates that ANI site (Pt Lot 1815 Island Street) has a minimum freeboard range of 5.6 – 6.0m between average surface levels and the average GWL, with the Wesfarmers site (Lot 100 Rollinson Road) freeboard ranging from 3.6 to 3.8m.

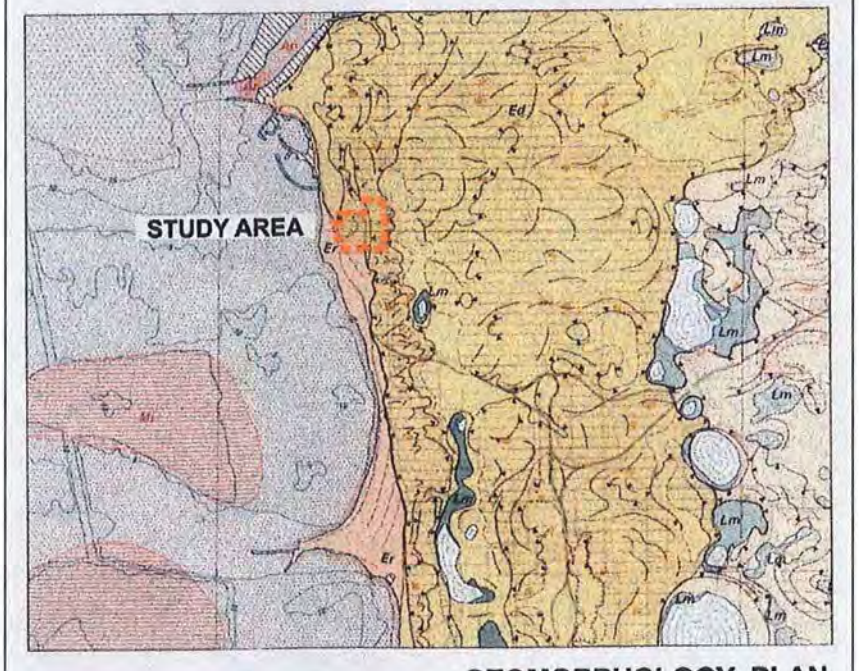
Based on these general conditions, the site is suitable for on site disposal of stormwater by soakage (soakwells and direct recharge via basins and passive community open space and landscaped soakage areas).

Groundwater water quality is an important issue and should be given priority consideration under all development options considered. Techniques and strategies that require consideration include maximising on-site stormwater disposal by soakage or storage techniques both on a micro and macro scales.

Refer to *Plan 11* for groundwater levels.



GEOLOGY PLAN



GEOMORPHOLOGY PLAN

Source: Van Der Meer Engineering

TITLE: Geology/Geomorphology	
Date April 2002	E. Ref Figure 10
Scale NTS	Job # 702.164

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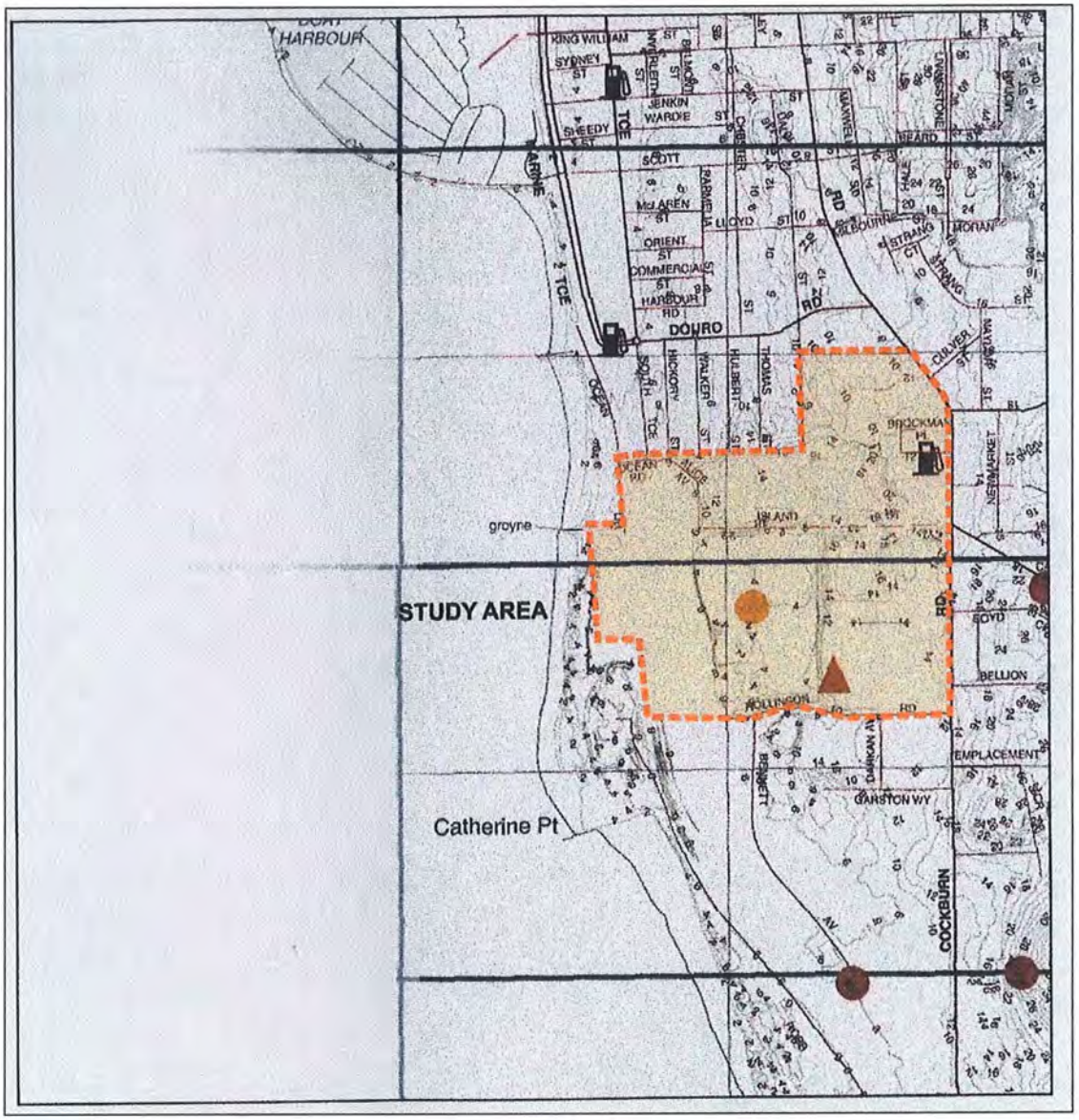
Figure # 10



Source: Van Der Meer Engineering

N

TITLE:
Groundwater Conditions

Date April 2002	E. Ref Figure 11
Scale NTS	Job # 702.164

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Figure # 11

7.2.4 Bulk Earthworks/Site Works

Preparatory works will include the following:

- Demolition of selected existing industrial buildings, outbuildings, slabs structures, remnant improvements, and bitumen paved areas;
- Removal of fencing and other improvements as necessary, however, retaining as many existing and significant trees and vegetation as possible, where filling operations do not require disturbance of the ground;
- Removal of and deleterious materials and below ground facilities, tanks and remnant infrastructure; and
- Extensive filling of the Wesfarmers site.

The development will comprise high quality beachfront housing and high quality multi-density dwellings. Carefully considered landscape treatments to both road verges, major entries and selected lots, will be an important feature of the marketing strategy of the development.

The bulk earthwork operations will be completed using material imported to the site. Once the earthworks have been completed, the site will be stabilised by hydromulch stabilisation as appropriate and in accordance with the requirements of the local authority.

7.3 Roadworks

All internal roadworks will be generally designed and constructed in accordance with the requirements and standards of the City of Cockburn and City of Fremantle as appropriate to the regulatory control requirement of the individual roads and hierarchy requirements. Roadworks may vary from traditional kerbed and asphalted pavements but will only be incorporated with local authority approval. Roads will also be enhanced by integrated landscape treatments in keeping with a selected theme.

All entrance roads into the development will be subject to intersection treatments, and may include refuge islands and high level treatments to accord with the 'streetscape concepts' and in accordance with local authority requirements.

In order to achieve a legible road hierarchy within the development, the following carriageway widths are planned within the development:

- Main distributor roads – 18m reserve with 7.5 m wide seal;
- Minor distributor roads – 15-18m reserve with 5-6m seal width;
- Minor internal roads – 12-14m reserve with 4.5 m to 5.0m seal width; and
- Culdesac, small accessways and lanes – 5-10m reserves with 4.0 m to 6m seal width.

The above reserve widths are also designed to accommodate the relevant services corridors required to provide reticulated essential services to the development.

Existing perimeter roads may require upgrading for development options that upgrade the land use from industrial to urban (residential) development. Upgrading may include marking kerbing and sealing with introduction of formal drainage systems.

7.4 Stormwater Drainage

7.4.1 General

Preliminary discussions with the City of Cockburn indicate that the design philosophy for drainage in the area is to ensure that downstream discharges are limited to existing flows, which includes compensation and nutrient stripping prior to overflowing into the adjacent road drainage networks.

Stormwater collection disposal strategies will vary according to development category, however, the standard principles will generally be applied.

The developer has emphasised the need for water sensitive design principals to be adopted where possible. The intention of the development is to primarily limit lot flow into the drainage system by encouraging attenuation of runoff within the lots, in combination with road verge runoff being retained within landscaped zones throughout the development. It is anticipated that grassed verges and areas of landscaping on larger lots throughout the development will assist in the retention and dissipation of runoff by soakage, where soil conditions are appropriate. The central POS areas will be useful for drainage purposes.

It is anticipated that all stormwater from the development will be piped into drainage soakage or attenuation areas provided at strategic locations within the site prior to discharging into existing down stream systems. Furthermore, by implementing water sensitive principals, the size of the attenuation areas will be minimised to reduce the impact on lot owners and improve property marketability.

All soakage areas will be extensively landscaped to encourage pollution and silt trapping.

7.4.2 Water Quality Control

Water quality from surface flows within the development areas will be controlled by incorporating nutrient stripping facilities within the proposed and existing soakage areas and formal landscaped features. The general guidelines and methods to be employed are described in the subsection on nutrient stripping ponds.

7.4.3 Groundwater Resource Management

Groundwater resource management will include limiting drainage inverts to above the established annual average maximum groundwater level, however, other than development adjacent to the wetlands (if permitted or considered) this will not be a major issue for this site as groundwater

levels are well within acceptable freeboard standards of the regulatory authorities. As discussed above, groundwater levels across the site are at depths exceeding 3m on the average and will therefore not be an issue.

7.5 Sewer Reticulation

The development will require sewer as a condition of subdivision.

Consultation with the Water Corporation on the issue of sewer reticulation for the area indicates that the sewerage infrastructure to the south should be utilised to provide a sewer outlet for the development.

All developed lots will therefore be served by a conventional gravity sewer system with the majority of the reticulation sewers located within road reserves. The internal sewer reticulation will be designed in accordance with the Water Authority Sewerage manual and will discharge to pumping facilities located within the study area.

Two major sewer lines traverse the site. These are large diameter lines that will need to be diverted to avoid the need for easements or reservations across the site. These lines will ideally be realigned along road reserves and will be subject to detailed design.

7.6 Water Reticulation

Consultation with the Water Corporation has confirmed that whilst capacity issues in the area will not preclude development, only the early stages of the development will be serviced by the existing infrastructure.

Subsequent stages of development will require upgrading of the local infrastructure.

The Water Corporation has indicated that it will need to undertake a major strategic planning exercise to examine the water supply requirements of the area. This study and detailed assessment will be concluded once the structure plan is approved.

It is likely that a 200mm diameter water main extension from Cockburn Road, will be required to increase the local reticulation capacity. It is likely that this line will be installed along Island Street as part of the overall development of the major access routes into the site.

All internal water reticulation pipework will be designed and constructed to the standards and requirements of the Water Corporation. Internal pipework will generally be 150mm diameter for the main ring main distributors, with feeders to lots being 100mm diameter.

7.7 Power, Telecommunication & Gas

7.7.1 Western Power

Preliminary information from Western Power indicates there is a service network within the study area and that this network will have sufficient capacity to service the development with underground power. Overhead power lines exist within the area.

7.7.2 Street Lighting

Standard Western Power street lighting design principles will be adopted for all development options. In the case of urban development, it is likely that a high quality system will be incorporated in the design to ensure maximum presentation value is achieved to enhance sales and return on investment.

Should it be requested that non-standard Western Power street lighting be adopted for gazetted roads, prior approval of the local authority will be required.

Western Power will provide one point of connection and a separate reticulation system will be required to be designed and installed as a part of the construction of the reticulated lighting network.

7.7.3 Telecommunications

Preliminary information from Telstra indicates there is an extensive service network in the vicinity of the development and that this network will have sufficient capacity to service the development with telecommunication services.

Telstra will install any new telecommunication network facilities to the lots, subject to the developer providing trenching for cable laying.

Alternatively, where cable routes match Western Power underground power supply routes, Telstra will wherever possible use the Western Power trenches in lieu of the developer providing additional trenching.

7.7.4 Gas Supply

Alinta Gas have not formally responded to preliminary inquiries, however, it is envisaged that reticulated gas services are available in the area. It is anticipated that this network will have sufficient capacity to service the development with reticulated gas services by extension of the existing mains.

Existing gas mains are located in Island Street and will need to be incorporated and modified as part of the development and infrastructure planning implementation.

Previous gas fired foundry operations on Pt Lot 1815 and associated infrastructure will need to be decommissioned and diverted/modified as part of the servicing requirements of the site.

7.8 Miscellaneous

Other site development infrastructure which may include footpaths, fencing and landscape treatments have not been specifically discussed with Council at the engineering level, however, will be incorporated in the development guidelines or the subdivisional requirements that will be issued in due course.

All works will be consistent with the quality development according to the option under consideration in order to achieve maximum return on investment.

7.8.1 Landscape Elements

The landscape treatment options will vary according to budget and return based on more extensive studies to be undertaken at the detailed stage of development.

The use of a common theme with all landscaping elements and street furniture (eg. signage, bins, seating, etc) will be consistent with a high quality development.

7.9 Development Constraints

No major servicing constraints are envisaged for the development, other than those already discussed in this section.

The site is capable of being serviced with all essential services, and with careful and considered design will result in a high quality development.

8.0 COMMUNITY AND STAKEHOLDER CONSULTATION

Community and stakeholder input into the structure planning process for South Beach was identified as vital at the outset of the project. The community and stakeholder consultation for South Beach conducted to date, forms the first phase of the overall consultation for this project. The objective of this phase was to prepare a structure plan based on the synthesis of ideas generated from feedback from the community. The second phase will occur during the advertising of this structure plan.

The extensive public and stakeholder consultation culminated in a community design workshop, which was held from the 16th-21st of March 2002 at the administration office of the old Wesfarmers administration building at South Beach. The workshop was attended by stakeholders including landowners, state and local government agencies and members of the community and were advised and directed by the consultant team to achieve practical design solutions focussing on desirable objectives and overcoming potential conflicts.

The main objectives of the workshop were to understand the stakeholders' aspirations, priorities and values in creating a community-driven vision of South Beach, the outcome being a structure plan.

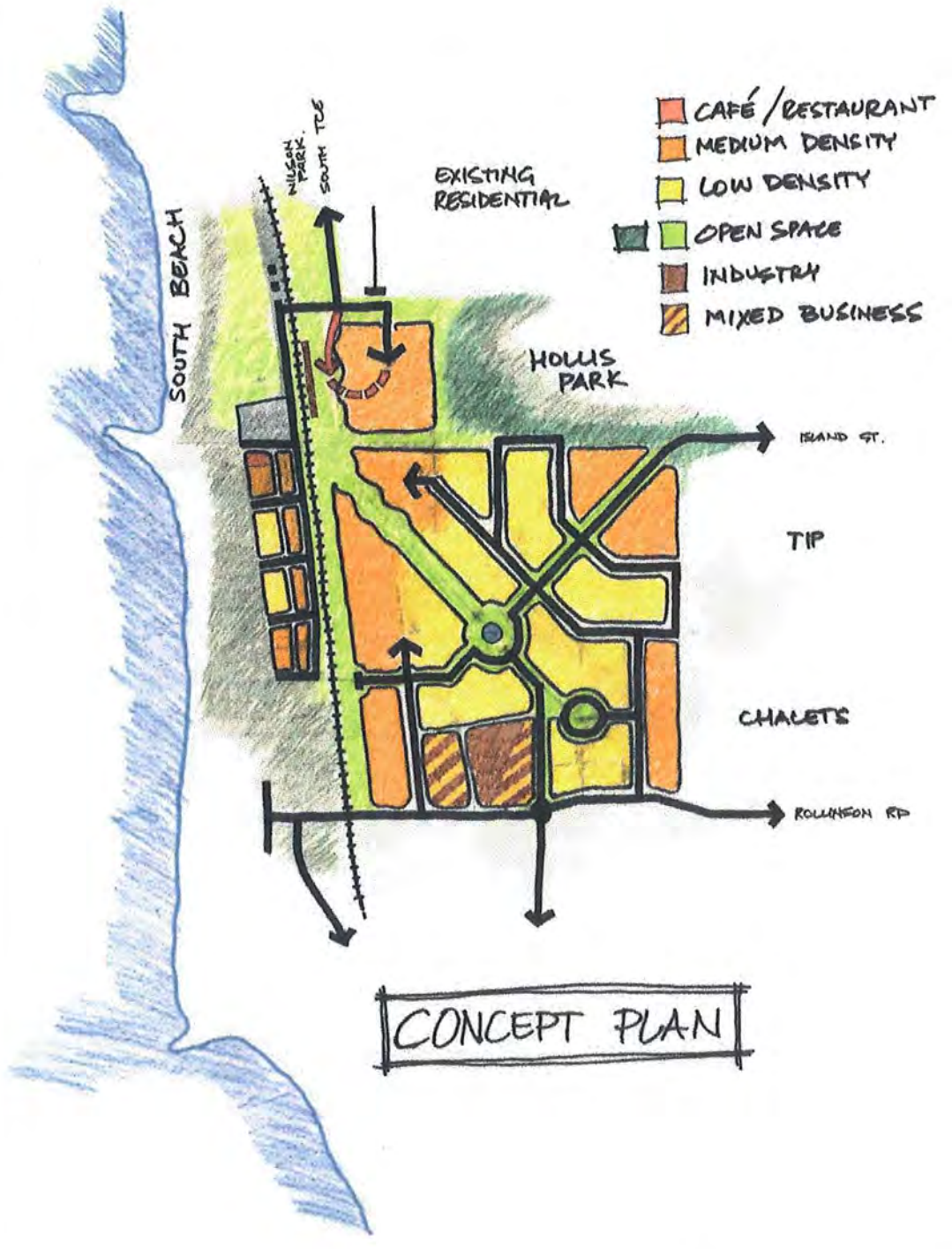
A final concept plan was prepared at the workshop (refer *Plan 12*). The main difference between the resulting structure plan (see Section 10) and the final concept plan is that Island Street has been redirected down its existing reserve. This has been done to fulfil the landowners objective of solar efficiency, as the concept plan cuts the area into four triangles, making it impossible to achieve a high percentage of solar efficient lots.

Detailed information on the outcomes of the design workshop can be obtained from the Community Consultation Report prepared by The Planning Group (May 2002).

The main issues raised and discussed during the workshop are listed below:

8.1 Transport and Access

- Ensure appropriate street network planning, including consideration of an east-west access;
- Traffic calming measures to discourage traffic speeds and volumes;
- Discourage the development area's use for through traffic;
- Restrict non-local parking;
- Promote safe pedestrian and cycle access;
- The railway should be given consideration for use as a passenger rail; and
- Provide accessible public transport.



CONCEPT PLAN

N

TITLE:
Final Concept Plan

Date April 2002	E. Ref Figure 12
Scale NTS	Job # 702.164

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THE PLANNING GROUP

Figure # 12

8.2 Environment

- Continued use of 'heritage' trees such as Norfolk Island Pines and London Planes;
- Ensure sustainable practices at all stages of development;
- Substantial open space areas to be a central focus of development;
- Open space areas to be managed by local community and to include orchards, community gardens, horse trails, etc;
- Protect dunes and natural vegetation; and
- Remediate tip site.

8.3 Design Character

- Limit development to 3 storeys – low rise and grouped dwellings greater than 3 storeys should be located at the rear of the site;
- Apply strict design and material guidelines;
- Both the Cities of Fremantle and Cockburn need to formulate compatible planning and design requirements;
- Provide underground power;
- Appropriate street scale and pattern to integrate with surrounding areas;
- Retain views and accessibility to the beach and surrounding areas and features;
- Encourage a mix of land uses, development densities and building styles;
- Retain existing contours;
- Provide appropriate buffers to surrounding land uses;
- Promote energy-efficient design; and
- Existing industrial structures to be incorporated into development.

8.4 Heritage

- Acknowledge and reflect the area's history and industrial heritage; and
- Acknowledge the area's Aboriginal heritage.

8.5 Community Issues

- Protect privacy of residents;
- Retain sense of fun and holidays within new development;
- Provide a range of housing products suiting aged diversity;
- Beachfront development to cater for some public uses on ground floor;
- Cater for a wide social mix; include affordable/community housing;
- Retain dog beach;
- Maintain present feel and spirit of South Fremantle;
- Ensure strong sense of community and village lifestyle;
- Vibrant, friendly and safe street culture;
- On-going community involvement in development;
- Provide community and youth facilities; and
- The beach to remain in public ownership.

9.0 STRUCTURE PLAN CONTEXT

The issues arising from the design workshop were reviewed in light of current initiatives relating to urban design, statutory planning, environmental planning, transport, service and infrastructure and community development planning.

Listed below are the outcomes of a detailed consideration of the issues, which directly influenced the recommendations within the South Beach structure plan (discussed in section 10 of this report).

9.1 Transport and Access

The transport and access components of the structure plan focus on the following elements as raised by the community. These issues relate to the South Beach development and adjacent South Fremantle and North Coogee areas:

- Bus services;
- Pedestrian and cycle facilities;
- Regional Road Planning; and
- Local traffic conditions and site access possibilities.

Key recommendations include:

9.1.1 Public Transport Services

The Fremantle CAT service should be extended to Ocean Road as early as possible. Traffic calming on South Terrace (south of Douro Road) will need to be changed to accommodate vehicles and public transport. Extending the CAT service further south to the Island Street reserve will require an additional bus and increase annual operating costs but will provide improved service levels along the whole CAT route.

9.1.2 Pedestrian/Cycle Facilities

Shared paths and footpaths are to be constructed by the developer, City of Cockburn and City of Fremantle in order to provide good access to the existing bus services at the perimeter of the site. The City of Fremantle should fast track the upgrading of slab footpaths along the existing residential streets to the north of the site (ie South Terrace, Hickory, Walker, Hulbert, Thomas, and Daly) as these streets will cater for increased pedestrian and cycle traffic due to the South Beach development. The City of Fremantle should also upgrade the footpath on the north side of Douro Road to a shared path of 2.0m minimum width as this is necessary to provide a safe off-road cycling alternative along Douro Road.

The City of Cockburn and Main Roads Western Australia should extend and widen the path on the western side of Cockburn Road southward to Rollinson Road. This extension is important due to the current poor cycling environment along Cockburn Road and a lack of footpaths.

9.1.3 Pedestrian Crossing Facilities

One pedestrian crossing has been included on the northern side of the ANI Bradken site (Pt Lot 1815). Continued liaison with WAGR is required regarding the location and design of pedestrian crossing points along the freight rail line and the design of longitudinal barriers along the rail line (ie fence, hedging, etc).

9.1.4 Regional Road Planning and Site Access

The Department for Planning and Infrastructure need to finalise the planning for the Fremantle Rockingham Controlled Access Highway and Cockburn Road. This will allow certainty regarding the intended road hierarchy and help resolve the timing and appropriate design standards for improvements to Cockburn Road. Rollinson Road needs to be progressively upgraded to better cater for mixed industrial and urban traffic. Cycle lanes and a 2.0m wide median are recommended along with a shared path along the north side of Rollinson Road.

Cockburn Road requires a right turn lane on the north approach at the Rollinson Road intersection. This should be considered along with other improvements to Cockburn Road and will depend on the longer-term plans as mentioned previously.

Due to the limited vehicular access from the South Beach development to the existing street system immediately to the north, the proposed Island Street connection to Cockburn Road is critical. The existing signalised T-junction should be converted to 4-way operation and, road widening will be necessary at the intersection to provide right turn lanes. Further discussions with Main Roads Western Australia, City of Cockburn and City of Fremantle will be necessary to determine the timing, construction and design requirements of this intersection.

9.2 Design Character and Environment

The South Beach development is envisioned as a vibrant and sustainable village with an appropriate form, scale and character of development, commensurate with market and community demand. It will incorporate a mix of residential, recreation and commercial activities.

The guiding principles for the design of South Beach are to create of an area that:

- Promotes a sense of place and ownership by the local community;
- Exhibits sustainable design practices;
- Encourages development at a variety of densities and appropriate heights;
- Respects the existing design styles and materials of South Fremantle through the implementation of clear design and material guidelines acceptable to both the Cities of Fremantle and Cockburn;
- Links the beach, parks and open spaces; and
- Allows for the creation of attractive streetscapes.

It was identified that a critical element of a successful development will be strong visual and pedestrian links, particularly across the railway line to the foreshore, whilst limiting increased traffic volumes. The area will be developed as a pedestrian friendly environment with quality footpaths, paving, street lighting, shade and security in order to decrease the high car dependency within the area to enable convenient, safe and comfortable movement

Safety within the development is important to the community and will be addressed through the provision of safe street networks with a high level of connectivity for vehicles, pedestrians and cyclists, street layouts that encourage efficient circulation, urban development that enhances personal safety and perceptions of safety through passive surveillance, well lit footpaths, and vibrant, stimulating and legible streets that encourage people to walk.

In view of the proximity of Pt Lot 1815 to coastal Parks and Recreation reservation, submission of a "Detailed Area Plan" in accordance with *Liveable Neighbourhoods* requirements will be a condition of the WAPC's subdivision approval. The DAP will be required to address various issues such as solar orientation, interface between private property and the reservation (boundary fences, building height and setback), landscaping of the proposed local open areas and access from the subdivision to the foreshore and existing dual use path.

9.2.1 Residential Design Guidelines

Refer Attachment 1.

9.3 Heritage

The Aboriginal heritage of the area relates to the early use of surrounding land around the site by Aboriginal communities as a camping ground, particularly the areas close to the beach. The area's heritage can be interpreted within the development, particularly in the design of the recreation areas and can be supported through the use of Aboriginal public art that relates to the area's past use.

The European heritage relates to the past use of the site for industrial purposes. Whilst some members of the community expressed a desire for the existing industrial structures to be retained and incorporated into the new development, this is not practical as the structures are no longer viable or safe to be used. However, the site's industrial heritage can be expressed through design elements within the public open space areas, street furniture and some of the group housing sites.

9.4 Community Issues

It is envisaged that South Beach will develop a distinct and identifiable character and have a 'village' atmosphere that mirrors the prevalent style and spirit of South Fremantle. The development should be vibrant, friendly and safe and this characteristic should be maintained and integrated into the design fabric to create a distinct 'feel' that promotes a sense of place for local residents and visitors alike. This can be achieved through the implementation of appropriate design guidelines,

streetscape elements and public art, the creation of a visually attractive and safe environment and the provision of a variety of lot sizes and land uses including public open space areas.

The creation of an identifiable character within the development to which the local community can relate to will ensure a vibrant development that the community will take pride in and foster a sense of ownership which will in turn reduce the incidence of anti-social behaviour.

It is recognised that the beach is a highly valued asset to the local community and therefore sensitive design methods need to be employed to ensure existing community access and privileges are maintained and the current 'feel' which has been identified as easy-going, laid back and relaxed is retained and enhanced. This can be achieved by providing community facilities such as a café within close proximity to the beach, retention of the area as a dog and horse beach and public accessibility to open space areas both within and surrounding the development.

It is recognised that, in order to achieve the objectives of the development, the area should be accessible and affordable to the general public. An overwhelming response from the community indicates that the area should not be developed as exclusive and up-market, but rather cater for a wide range of community groups. This can be achieved through the provision of diverse lot types at a range of land prices. Whilst it is accepted that certain areas of the development will, by nature of their location, be expensive, there is the opportunity to provide more affordable lots and group dwellings in the development.

10.0 SOUTH BEACH STRUCTURE PLAN

10.1 Design Philosophy

The philosophy behind the South Beach structure plan (refer *Plan 13*) is based on several broad design principles, as outlined below:

Accessibility

The development area will feature an efficient movement network with good circulation and accessibility and will be well integrated with public transport facilities. Pedestrian accessibility is also vital, and good linkages are provided within the development and to the beach.

Social Viability

The structure plan demonstrates that the development area can be developed in such a way as to create a vibrant and self-sustaining neighbourhood community. South Beach is intended as a village-style development with an appropriate form, scale and character which will encourage community interaction and ownership.

Surrounding Context

Whilst the development will be self-sustaining, it will also have strong relationships with its surrounding context. The structure plan shows the relevance of linkages and interface with surrounding areas and uses, including:

- Road and pedestrian links;
- Public transport;
- Visual Interface; and
- Environmental links.

Sustainability

The proponents' intention for the development is to create an urban village with a strong sense of place that is based on principles of social, economic and environmental sustainability.

Their aim is to create a practical example of a medium density urban settlement in the Perth metropolitan area that addresses many of the problematic social and environmental issues often associated with conventional urban development, and works toward solving them.

The development will focus on the conservation of water, energy and resources, the preservation and re-vegetation of the natural landscape and the creation of a cohesive sense of place through community design.

Residential lots will be subjected to architectural and landscaping standards to ensure both environmental and aesthetic objectives are met. These will include requirements such as solar passive design principles, the use of appropriate water and energy saving technology, and restrictions on the planting of invasive exotic species.

The development objectives are:

- To acknowledge the existing local community and to encourage an interactive relationship that builds a proactive involvement enhancing the design process,
- To acknowledge and enhance existing community facilities including beach access, surrounding public open space, and historic equestrian uses,
- For the design to reflect the highest and best use of urban standards with a strong emphasis on unity and diversity i.e. the whole development will have a strong overall theme whilst allowing for differing interpretations of the theme. Design guidelines should include strict height and scale restrictions that acknowledge and complement the architectural heritage of Fremantle and the coastal location,
- To protect the existing freight line that runs through the site, and accommodate it aesthetically into the overall design, ensuring that future residents are also protected from the environmental impact of the line,
- For the design to acknowledge the importance of accommodating all age groups and to include some opportunities for affordable housing whilst developing a physical environment that fulfils psychological needs such as security, community and identity,
- To incorporate energy efficient features into the overall structure plan, firstly, by providing good solar access to all lots by means of street alignment and lot orientation, and secondly, by setting building envelopes and solar passive architectural design guidelines for all homes (single and group). To assist and encourage all future residents to take advantage of State and Federal renewable energy grants,
- To make the best use of open space, including elements that encourage social interaction and healthy lifestyles that contribute to the on-going health and wellbeing of the community. Plantings will include the appropriate indigenous flora, productive and traditional coastal species and where appropriate deciduous trees to assist with solar access in winter,
- To enhance pedestrian and bicycle usage by minimising the overall impact of motorized traffic and linking green corridors and open space with pedestrian and cycling paths that also connect to the local corridors identified in the Fremantle Green Plan. To work with the City of Fremantle towards the extension of the existing public transport link from the City to the South Beach Village, and

- To provide for the efficient management of water resources by developing an integrated urban water management plan that will include; landscaping guidelines for public and private open space, the efficient use and management of rain and storm water within the settlement and water conserving, recycling technology throughout the development.

10.2 Design Objectives

To achieve the above mentioned design principles, there are a number of objectives that must be met. These are to:

- Include the principles of the Liveable Neighbourhoods code;
- Design and develop a quality residential subdivision offering competitively priced, well planned home sites to meet the needs of the South Fremantle market;
- Provide sustainable community and recreation opportunities which meet a high level of public amenity and community need;
- Offer a variety of lot sizes in a solar efficient orientation;
- Reserve and rehabilitate the existing dunal vegetation.
- Create a distinct road hierarchy offering interesting and engaging vistas, permeability and structure; and
- Provide opportunities for pedestrian and cycle networks located on both the local road network and within open space reserves.

10.3 Land Uses

The South Beach development proposes a mixture of land uses including residential, commercial and open space as shown in Table 8 below:

Table 8 - Land Uses

Land Use	Area	%
Single Lots (residential)	73,530m²	33.3
Group Dwelling Sites	30,089m²	13.6
Mixed Business	40,500m²	18.3
Public Open Space	23,650m²	10.7
Roads	53,325m²	24.1
Total	221,094m²	100

10.3.1 Single Lots

The 300 single residential lots within South Beach have been planned to an urban density ranging from R20 to R80 and adopt the design philosophy that permits and encourages permeability and linkages to open space areas.

10.3.2 Grouped Dwelling Sites

There are 22 grouped dwelling sites planned at densities between R60 and R100 and ranging from 324m^2 to 2942m^2. These sites are located to frame views and mark key focal points within the development.

10.4 Public Open Space

The public open space and landscaping within the South Beach development will provide a series of spaces that function as a linear park system creating strong open space links through the development. The landscape will not just be a visual amenity, but an integral part of the drainage system utilising surface water for passive irrigation and potentially also recycled "grey water". Species selection will be appropriate to the coastal location and will range from locally indigenous dunal and coastal heath to selected exotics in locations remote from the foreshore.

In addition to the open space network, the streetscapes will play an important part in defining the character of the place. It is not intended to have a very formal street planting regime across the development. Street trees will be positioned to create shade, reduce wind velocities and be part of a solar access management strategy. This entails that in some circumstances street trees will not be present on both sides of a street. Tree species will be selected and positioned to provide the best shade in summer and light access in winter. In selected locations the use of deciduous species will be appropriate and these will be selected to ensure they do not seed into or compromise indigenous environments. In addition, it is intended to supply new residents and land purchasers with guidance information regarding planting related to buildings to meet enhanced environmental standards. This will include information on waterwise gardening, species and placement.

The public open space layout compliments the existing parks and reserves, extending them into the new community. New parks will be designed to provide character references back to existing but will also provide opportunities to create places that are distinctive and representative of the new residential area.

The foreshore will be an integral part of the emerging community and is considered an educational resource and local amenity, as well as being an environmental asset. It is intended to provide full environmental interpretation facilities, which will include managed access, signage, information boards and planting to extend the coastal heath over that part of the industrial land that is transferred to be regional reserve.

The approach will be to ensure the environmental integrity is secure while providing sufficient interpretive material and accessibility to encourage the community to value and respect the area.

The general character of the new landscape will take its references from the existing South Fremantle locality. Indigenous species will form the foreshore areas. The core parklands will utilise coastal species as the structural elements and may also include accent specimens such as Norfolk Island pines. It is the intention to create spaces and places that are relaxed, informal and low in maintenance.

10.5 Roads

The main focus of the road network design is the ease of movement within the site and connections and accessibility to the foreshore. The widths of the road reserves range from 6m (laneways) to 20m, depending on their designation and function.

Good vehicular access is provided via Cockburn Road and South Terrace to all local roads in the area. These regional roads provide good connections to the vast majority of local and regional employment, recreation and education destinations.

10.6 Services

The South Beach development will provide all normal urban services being reticulated water, sewerage and gas, comprehensive stormwater, underground power and telecommunications. Existing sewer infrastructure to the south of the site will be utilised, whereas existing water infrastructure along Cockburn Road will be extended into the site. Western Power, Telstra and Alinta Gas service networks already exist within the site.

10.7 Performance of the Structure Plan

The structure plan incorporates the latest policy directions from the Department for Planning and Infrastructure and in doing so, provides a land product that will be compatible with the surrounding area. Above all, it will provide a range of interesting housing lots, well located in terms of accessibility, linkages and views. It is considered that these refinements of the plan will result in a more attractive and efficient village design.

11.0 IMPLEMENTATION AND STAGING

11.1 Implementation

Both the Cities of Fremantle and Cockburn will need to administer the development within their respective areas. This administration will include cost sharing to balance the provision of necessary works for the implementation of the structure plan. These works include:

- Upgrading South Terrace south of Douro Road;
- Changes to the traffic signals and channelisation at the Cockburn Road/Island Street/ Rockingham Road intersection;
- Underground the overhead power line extending through the structure plan area; and
- Preparing and implementing a Foreshore Management Plan for the ocean foreshore to the west of the structure plan area.

The proponents will fund construction of Island Street and seek contributions from adjoining lot owners who may benefit from its construction.

In addition, land will have to be made available for recreation and drainage. The majority of this open space/drainage land is located within the holdings of South Beach Pty Ltd (Lot 100) and WAGR. For the purposes of this cost sharing arrangement, the land holdings of Steiger Aust/Asia Pty Ltd, WAGR and South Beach Pty Ltd shall be considered independently of the existing light industrial area comprising Lot 21 Rollinson Road and Lots 113 to 121 inclusive, O'Connor Close.

The open space/drainage land within the Steiger Aust/Asia Pty Ltd, WAGR and South Beach Pty Ltd land shall be balanced proportionately according to each party's landholding within the land described excluding Metropolitan Region Scheme (MRS) reserves. Table 9 shows the apportionment of responsibilities to the provision of open space/drainage land within those three landholdings. The structure plan shows that some 11.14% of the combined landholdings of Steiger Aust/Asia Pty Ltd, South Beach Pty Ltd and WAGR is set aside for open space and drainage. Where a landowner is shown to be in credit in Table 9, that owner shall be compensated proportionately by the developer of land holdings shown to be in debit. For the purposes of this exercise, the open space/drainage land shown within the WAGR area shall be valued as at the date of final subdivision approval to any subdivision of either the Steiger Aust/Asia land or the South Beach Pty Ltd land and those entities shall pay the amounts owing to WAGR or its successor in title. Should WAGR develop/subdivide its land prior to the subdivision/development of the Steiger Aust/Asia Pty Ltd land and/or the South Beach Pty Ltd land, the subdivider of the WAGR land shall transfer the land shown as open space/drainage to the Crown free of costs and to subsequently be compensated at the time of subdivision/development of the land holdings of the other two entities.

Table 9 POS & Drainage Provision – WAGR, Steiger Aust/Asia Pty Ltd, South Beach Pty Ltd

Land	Owner	Area (excluding MRS Reserves)	POS shown	POS Balance
Pt 1815	Steiger Aust	1.811	0.081	-0.1215
100	South Beach	11.4947	0.6997	-0.5854
Various	WAGR	4.0992	1.1569	+0.7069

A public open space schedule will be included with any subdivision applications to the WAPC. Public open space proposals in the structure plan are subject to detailed consideration by the WAPC at the subdivision stage in terms of what areas will be credited towards the reqired 10% public open space contribution for subdivisions.

The provision of open space/drainage land within the balance of the structure plan area comprising Lot 21 plus Lots 113 to 121 inclusive will be determined at the time of subdivision and/or development for residential purposes. The structure plan however envisages that open space comprising the southern extension of Wilson Park will continue southwards adjacent to the railway line, and that the extent of this reserve and its provision will be determined later, possibly using Section 28A of the Town Planning & Development Act to create a balance through payments of cash-in-lieu of land. The structure plan, however, indicates some 4,274m^2 as open space and drainage land within this area. This represents 10.79% of the 3.9353ha in this area.

The physical works described above are expected to be completed by South Beach Pty Ltd/ Steiger Aust/Asia Pty Ltd and/or the developer of the WAGR land. The cost of carrying out these works shall be recorded and updated by the use of the Consumer Price Index, and those landowners who have completed the works shall be reimbursed in proportion to land area excluding MRS reserves as detailed in Table 10. In the event that Lot 21 or any of Lots 113 to 121 inclusive are not developed/subdivided for a residential purpose during the life of the structure plan, the Councils shall not be under any obligation to reimburse the land owner that relative proportion. In the event that the City of Fremantle develops areas of its land generally adjacent to the structure plan area, it is expected that the City will proportionately reimburse the participants in this structure plan, proportionate amounts for work on the construction of Island Street and its connection to Cockburn Road as well as the upgrading of South Terrace.

Table 10 Contributions to Common Works

Land	Area (excluding MRS reserves)	Contribution Prop %
Pt 1815	1.811	8.4623
100	11.4947	53.8782
WAGR	4.0992	19.2139
21	0.4922	2.3071
113	0.3940	1.8468
114	0.2203	1.0326
115	0.2252	1.0556
116	0.2225	1.0429
117	0.2202	1.0321
118	0.2252	1.0556
119	0.2251	1.0551
120	0.2252	1.0556
121	1.4854	6.9624
TOTAL	**21.3346**	**100.0002**

11.2 Staging

It is anticipated that the South Beach Development will occur as indicated on Figure 14 - Indicative Staging Plan. The first stage of development is likely to include the Public Open Space and the land to the south of Ocean Road. The second stage is likely to include the land around the POS. The third stage is likely to be the area south of Island Street with the fourth stage the land north of Rollinson Road. Stage five will include the area west of stage four. Stage six is likely to be Pt Lot 1815 and a small area of land to the east with stage seven being the mixed use/residential area. It is anticipated that the first stage will occur in mid 2003 with the further stages being developed subsequently.

Given that the land is in different ownership it is difficult to confirm the exact staging and timing, however, Figure 14 represents the anticipated stage of the South Beach Development.

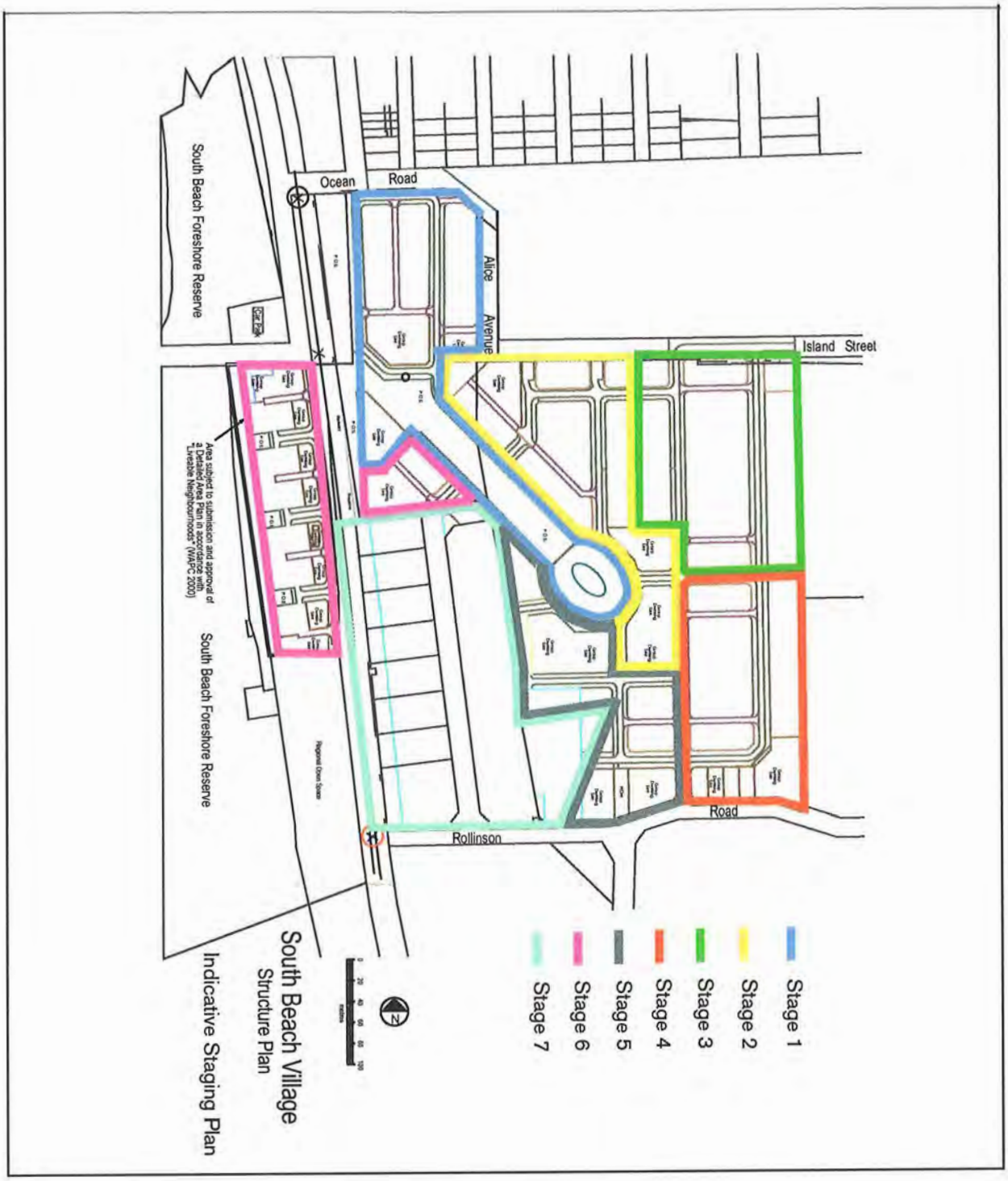

Figure No: 1

Title: Staging Plan

Date: 21 May 2003 Revision No: 1

Scale: NTS	Job No: 702.164
Designer:	Drawn: A.J.
E Reference: Staging Plan	Source:

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11.3 Environmental and Planning Approvals

To enable the development of South Beach, various planning and environmental approvals will be required. Listed below are the required approvals for the completion of South Beach:

- Adopt structure Plan;
- Local Town Planning Scheme Amendments;
- Subdivision Approval;
- Clearances of conditions; and
- Environmental clearances from the Department of Environmental Protection.

The area designated as Mixed Business/Residential on the Structure Plan will be subject to planning in accordance with the requirements for variations to structure plans in the City of Cockburn District Zoning Scheme when this is considered necessary by the City of Cockburn and Department for Planning and Infrastructure in response to residential development proposals from the landowners.

12.0 CONCLUSIONS AND RECOMMENDATIONS

It is considered that this report has demonstrated that the structure plan for South Beach, while introducing the design philosophy of the Liveable Neighbourhoods codes, maintains its consistency with the local and regional planning and environmental framework of the South Fremantle area.

Endorsement of the structure plan will improve the current residential amenity of the adjoining South Fremantle area by the regeneration of a derelict and unused portion of the area. Its' development will provide the surrounding area with a high quality development that subscribes to the latest policy directions from the Department for Planning and Infrastructure.

In light of the above, it is respectfully requested that the Cities of Cockburn and Fremantle and the Western Australian Planning Commission resolve to:

- Adopt the South Beach structure plan; and
- Initiate local authority amendments in favour of permitting residential and recreation areas to develop.

REFERENCES

Metropolitan Region Scheme Amendment No 1008/33 - Report on Submissions (Volume 1)

City of Cockburn District Zoning Scheme No. 2

City of Cockburn Municipal Heritage Inventory

City of Fremantle Town Planning Scheme No. 3

City of Fremantle Municipal Heritage Inventory

Aboriginal Affairs Department Register of Aboriginal Sites

Contaminated Sites Management Services (DEP, 2001)

Preliminary Draft Guidelines for Road and Rail Transportation Noise (DEP)

Assessment of Environmental Factors No 14 - Road and Rail Transportation Noise (ver 3) (EPA)

Australian Standard AS2021-1994 Acoustics - Aircraft Noise Intrusion, Building Siting and Construction

Liveable Neighbourhoods (Edition 2, June 2000)

South Beach Pre-Workshop Information Package

South Beach Community Consultation Report

ATTACHMENT - DESIGN GUIDELINES

Residential Design Guidelines

City of Cockburn

Residential design guidelines are to be attached to this structure plan as Attachment 1, establishing the bulk, location and sustainability criteria to be used in the design of buildings within the area. Because these guidelines will only impact future purchasers who will be aware if their existence before purchase, they are to be added to this structure plan upon adoption by Council at a later date without further public advertising.

City of Fremantle

Residential design guidelines for the City of Fremantle are to be incorporated into Town Planning Scheme No 3.