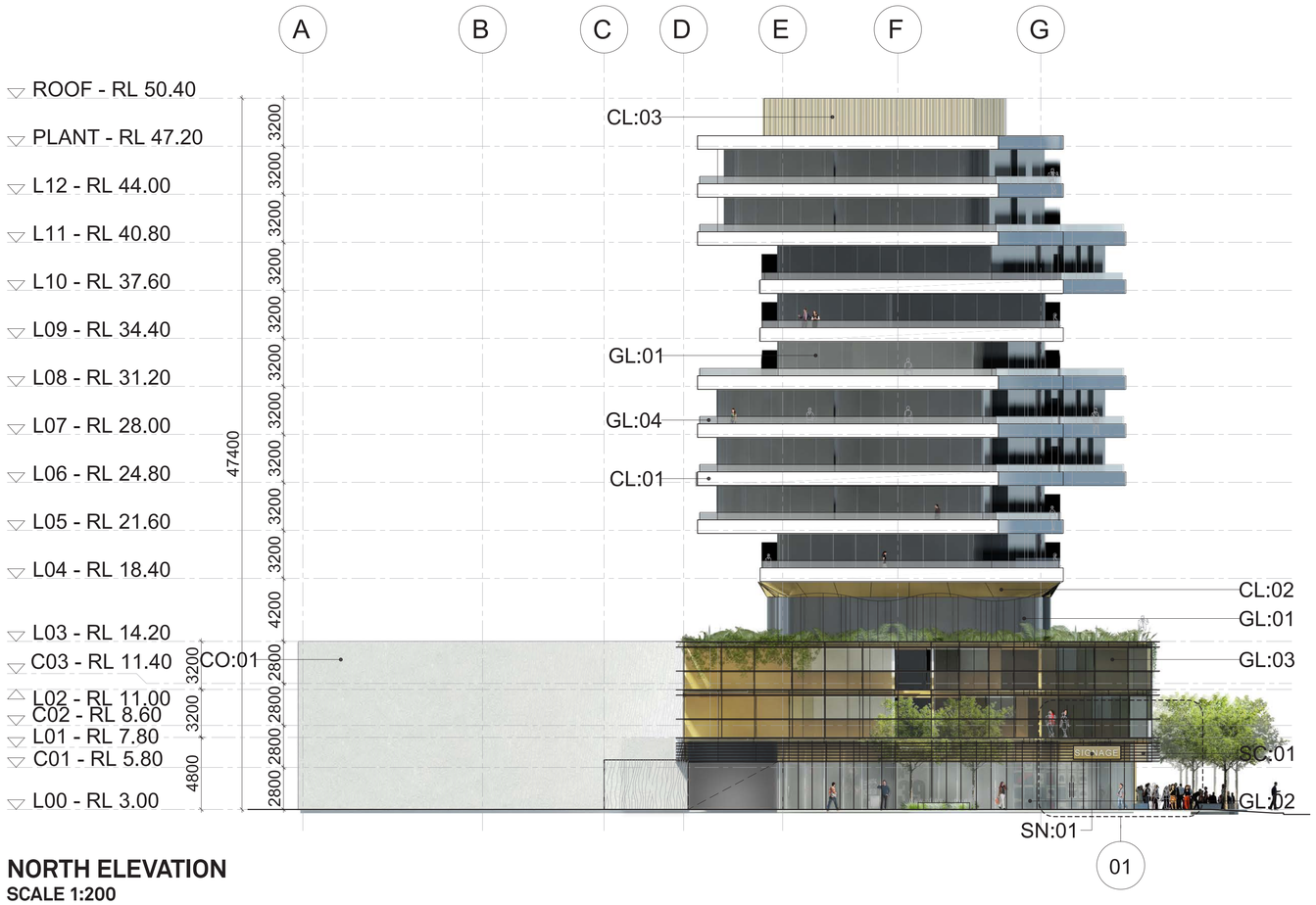


NORTH ELEVATION
SCALE 1:200

SN:01 - TYPICAL SIGNAGE PANEL.
DIMENSIONS AS SHOWN.
NOTE: PANEL DRAWN ON OBLIQUE ANGLE

01 -NORTHERN SIGNAGE ELEVATION
SCALE 1:100

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

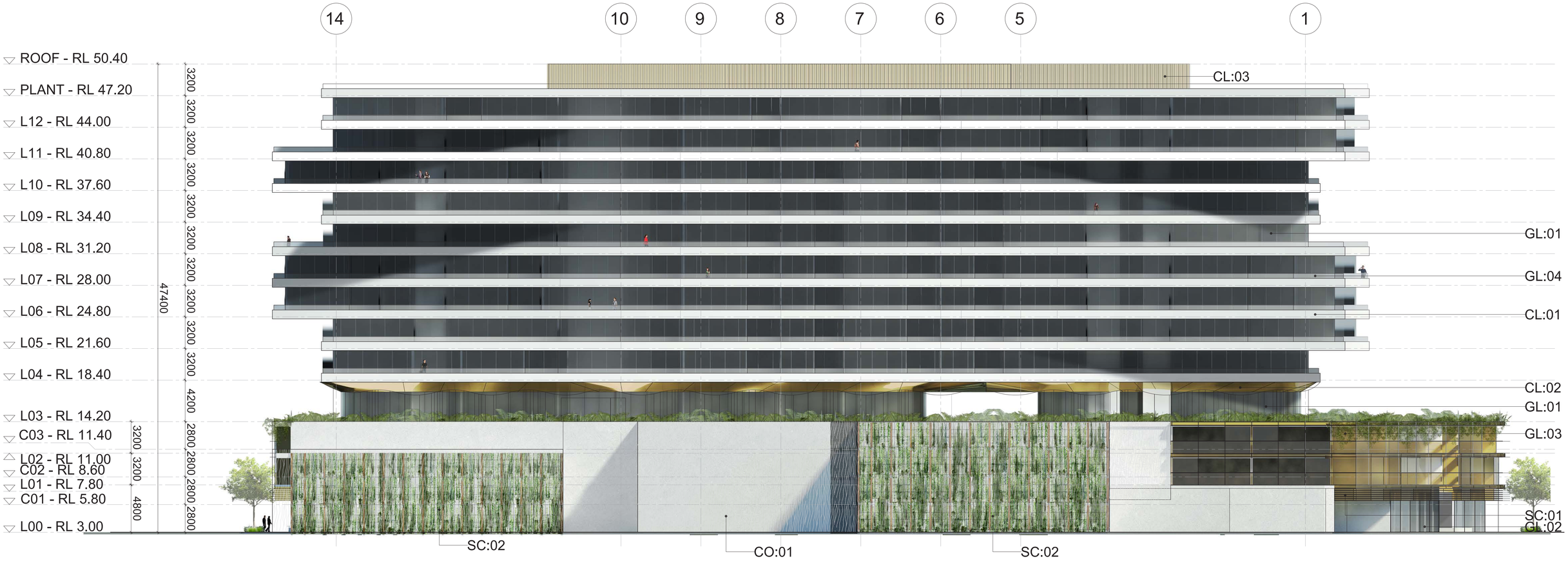
Scale
SCALES AS NOTED @ A1

Client
Bruno Marveggio

Project Name
Marina Regency Hotel & Apartments
6-10 Adelphi Tce
Glenelg SA

Drawing
SK-2000
NORTH ELEVATION

HASSELL

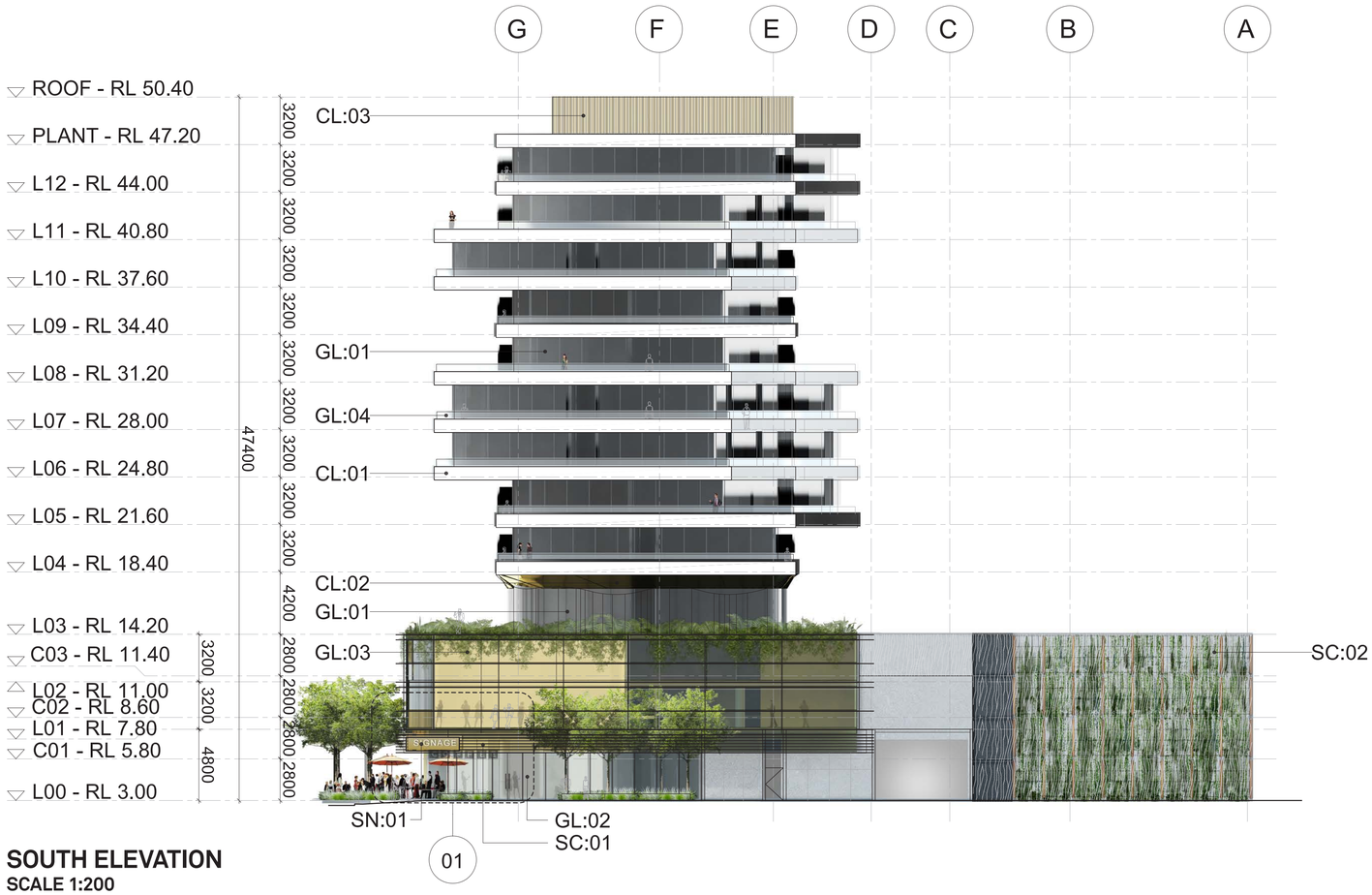


EAST ELEVATION
SCALE 1:200

0 2 8 16m

Revision	Date	Scale	Client	Project Name	Drawing
A - DEVELOPMENT APP.	14-08-2015	1:200@A1 1:400@A3	Bruno Marveggio	Marina Regency Hotel & Apartments 6-10 Adelphi Tce Glenelg SA	SK-2001 EAST ELEVATION

HASSELL



SOUTH ELEVATION
SCALE 1:200

01 -SOUTHERN SIGNAGE ELEVATION
SCALE 1:100

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

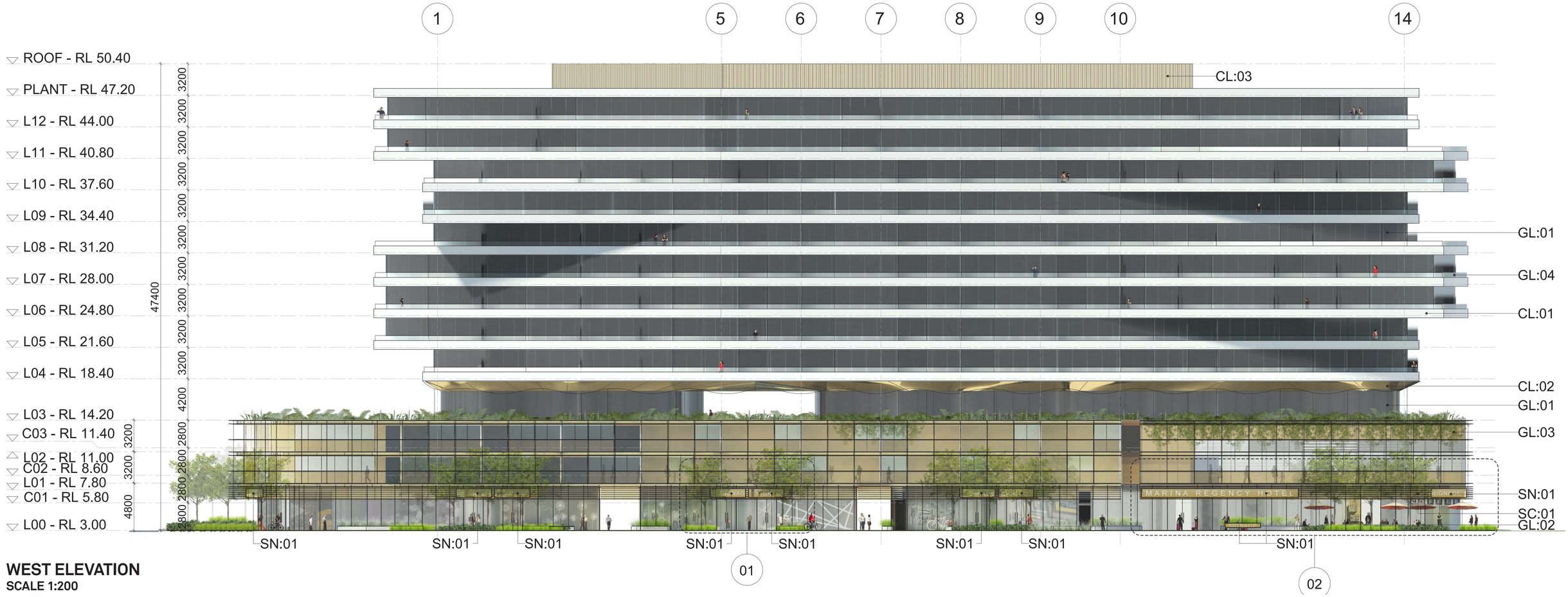
Scale
SCALES AS NOTED @ A1

Client
Bruno Marveggio

Project Name
Marina Regency Hotel & Apartments
6-10 Adelphi Tce
Glenelg SA

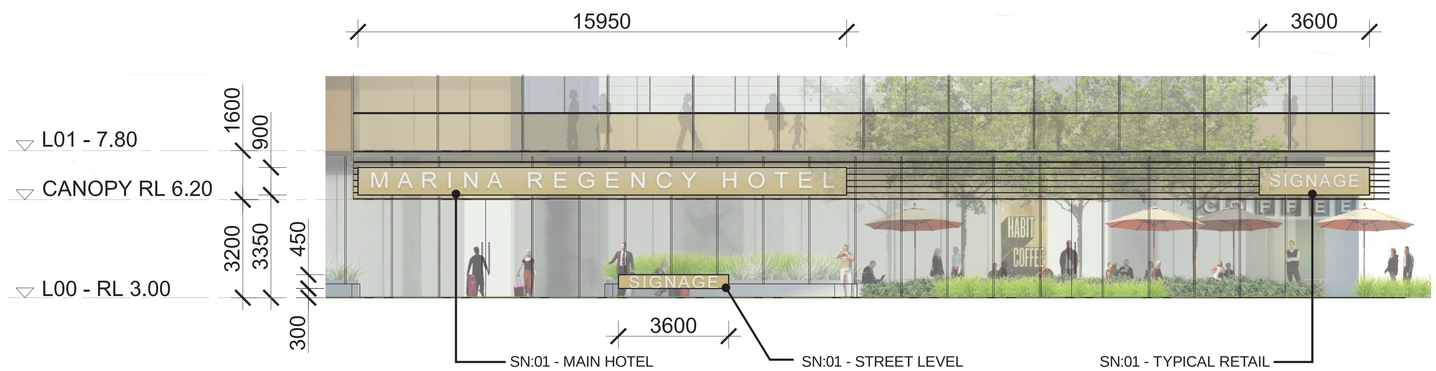
Drawing
SK-2002
SOUTH ELEVATION

HASSELL



WEST ELEVATION
SCALE 1:200

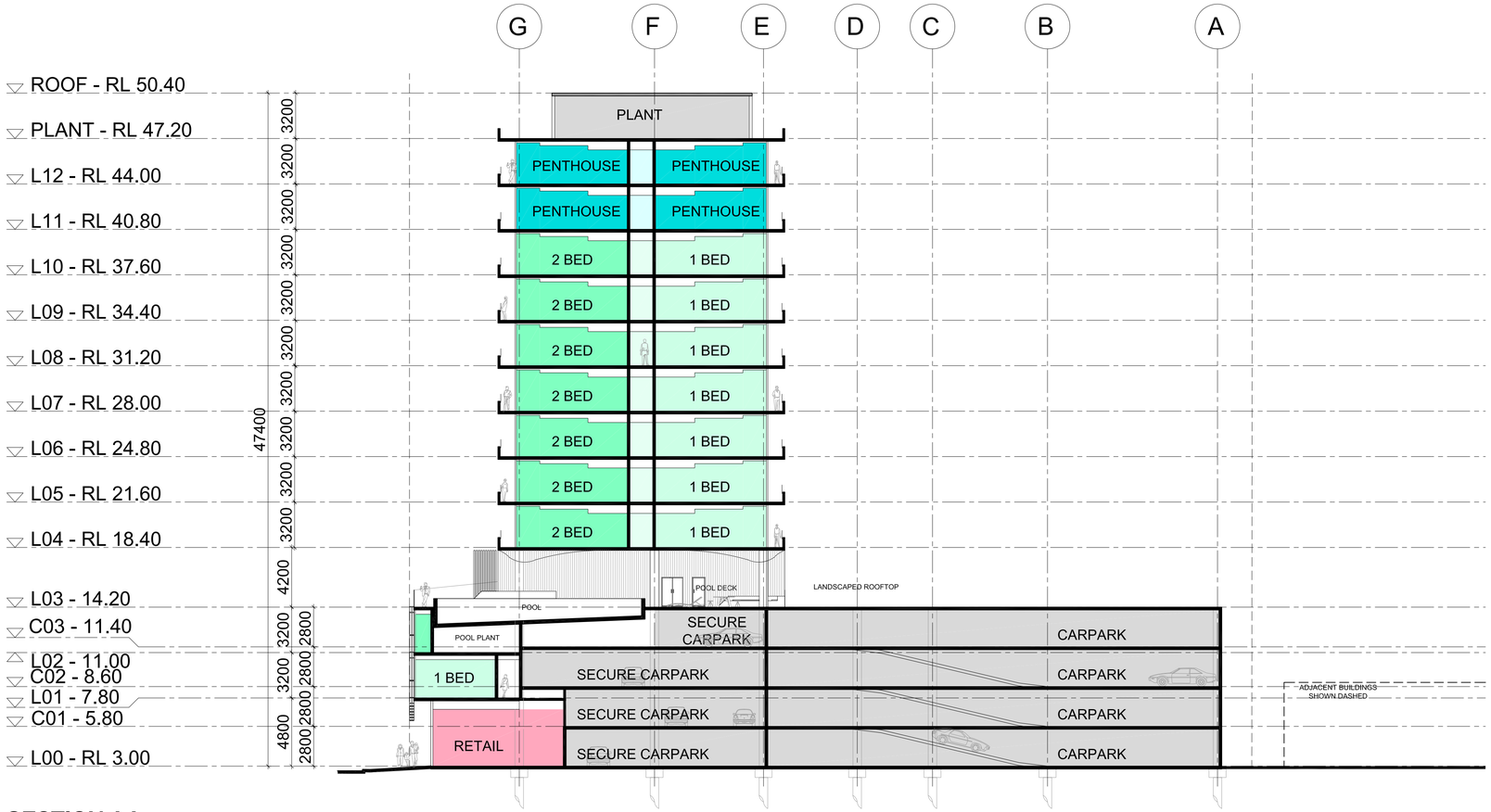
01 -TYPICAL TENANCY SIGNAGE ELEVATION
SCALE 1:100



02 -HOTEL SIGNAGE ELEVATION
SCALE 1:100

Revision	Date	Scale	Client	Project Name	Drawing
A - DEVELOPMENT APP.	14-08-2015	SCALES AS NOTED @ A1	Bruno Marveggio	Marina Regency Hotel & Apartments 6-10 Adelphi Tce Glenelg SA	SK-2003 WEST ELEVATION

HASSELL

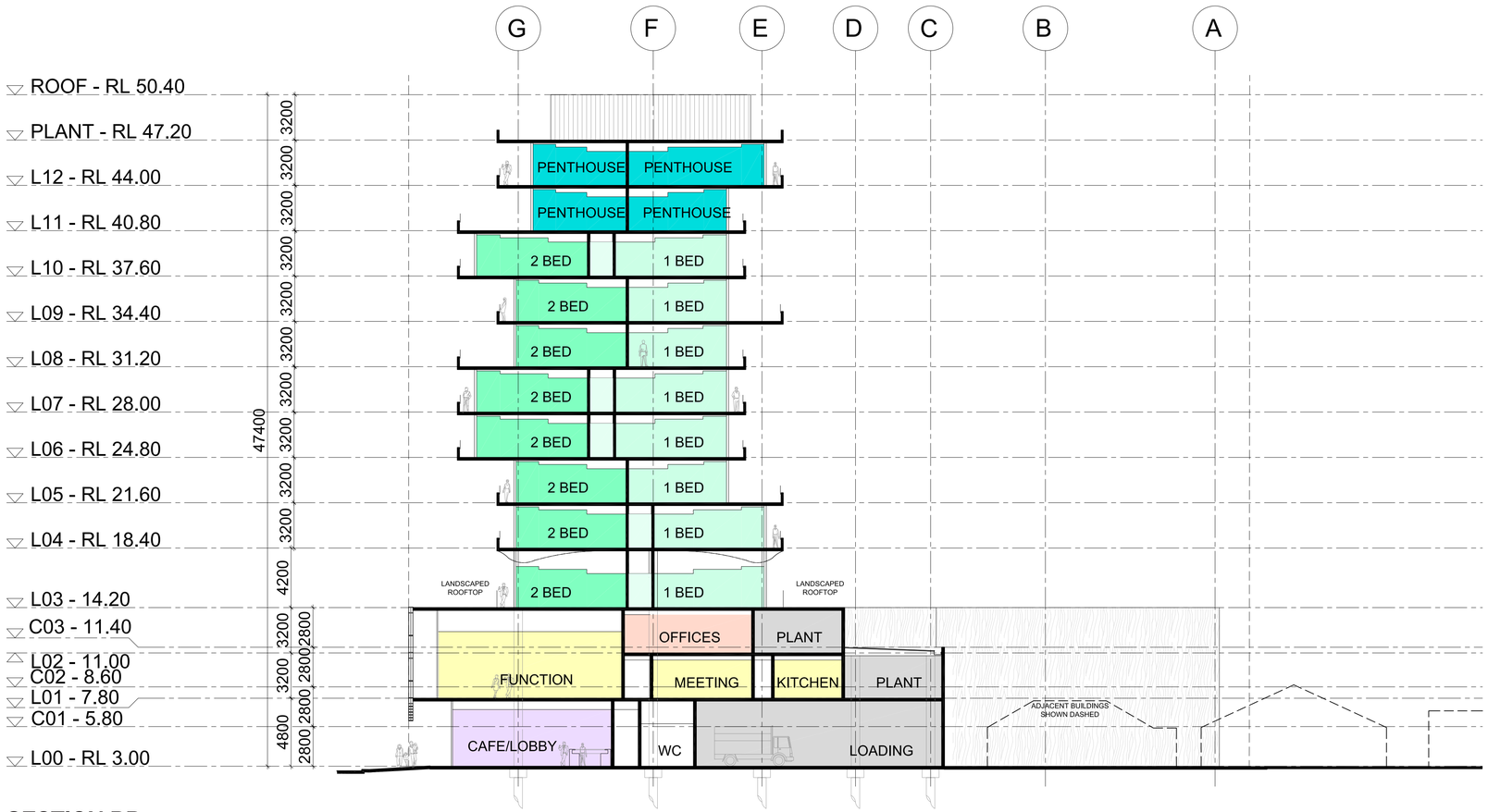


SECTION AA
SCALE 1:200

0 2 8 16m

Revision	**Date**	**Scale**	**Client**	**Project Name**	**Drawing**
A - DEVELOPMENT APP.	14-08-2015	1:200@A1 1:400@A3	Bruno Marveggio	Marina Regency Hotel & Apartments 6-10 Adelphi Tce Glenelg SA	SK-3000 SECTION AA

HASSELL



SECTION BB
SCALE 1:200

0 2 8 16m

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

Scale
1:200@A1
1:400@A3

Client
Bruno Marveggio

Project Name
Marina Regency Hotel & Apartments
6-10 Adelphi Tce
Glenelg SA

Drawing
SK-3001
SECTION BB

HASSELL

CONCEPTUAL HOTEL LOBBY SECTION
SCALE 1:100

0 1 4 8m

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

Scale
1:100@A1
1:200@A3

Client
Bruno Marveggio

Project Name
Marina Regency Hotel & Apartments
6-10 Adelphi Tce
Glenelg SA

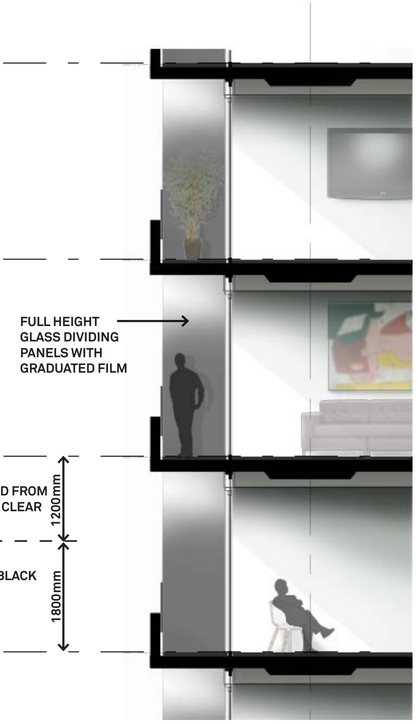
Drawing
SK-3002
CONCEPTUAL HOTEL LOBBY SECTION

HASSELL

TYPICAL FLOOR PLAN
SCALE 1:50

01 - TYPICAL ELEVATION
SCALE 1:50

3D CONCEPT
NTS

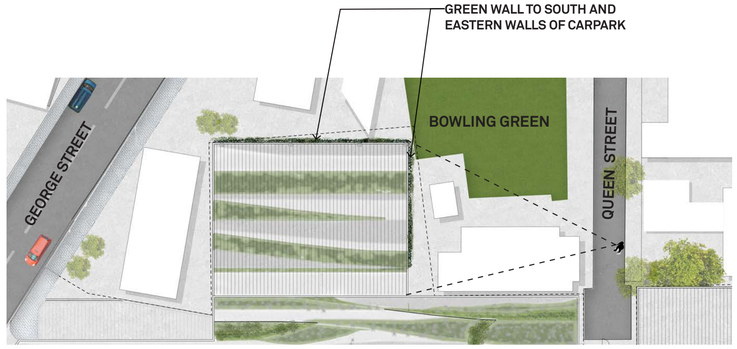


01 - TYPICAL SECTION
SCALE 1:50

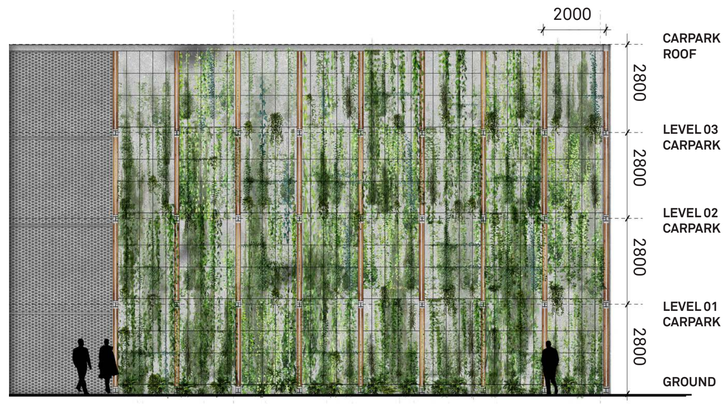
0 1 2 4m

Revision	Date	Scale	Client	Project Name	Drawing
A - DEVELOPMENT APP.	14-08-2015	1:50@A1 1:100@A3	Bruno Marveggio	Marina Regency Hotel & Apartments 6-10 Adelphi Tce Glenelg SA	SK-4000 TYPICAL FACADE STUDY

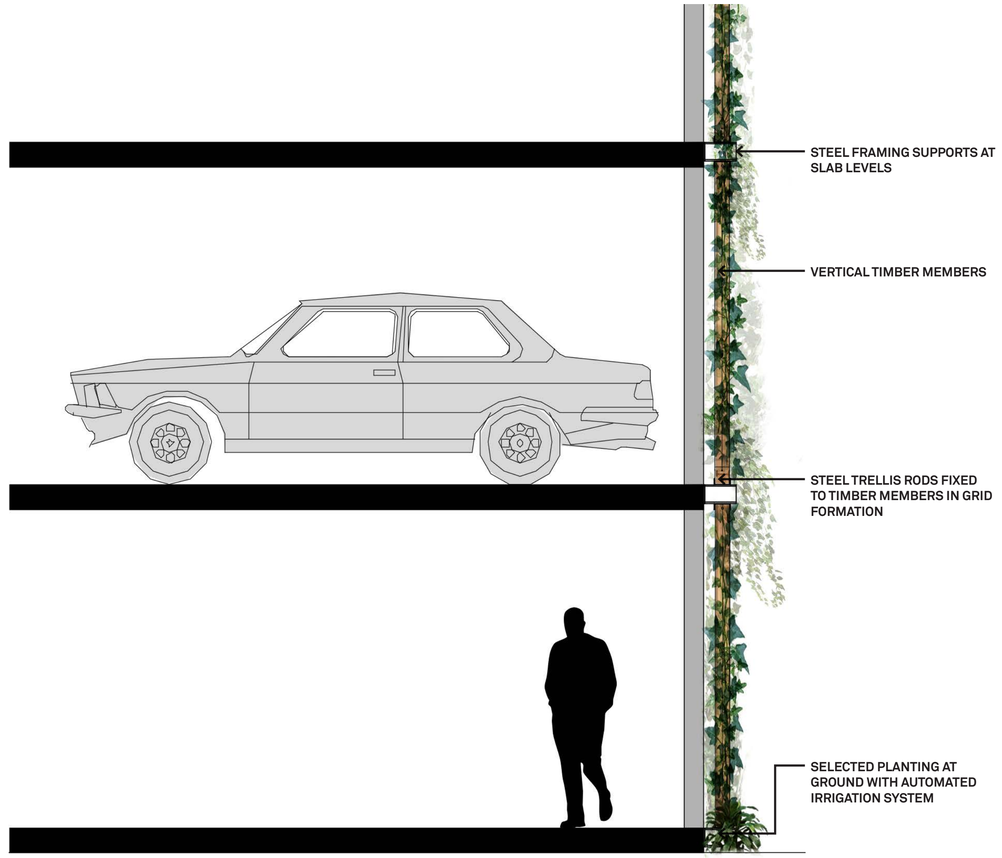
HASSELL



01 - GREEN WALL LOCATION PLAN
SCALE 1:200



01 - GREEN WALL - SOUTH ELEVATION
SCALE 1:100



01 - GREEN WALL SECTION
SCALE 1:25

TRACHELOSPERMUM JASMINOIDES
STAR JASMINE

MUEHLENBECKIA ADPRESSA
CLIMBING LIGNUM

01 - GREEN WALL
PLANT PALETTE

FESTUCA OVINA VAR. GLAUCA
BLUE FESCUE

EREMOPHILIA GLABRA ‘KALBARRI CARPET’
COMMON EMU BUSH

SENECIO SERPENS
BLUE CHALK STICKS

01 - CARPARK ROOF PLANTING
PLANT PALETTE

ALL PLANTS SELECTED TO BE WATER EFFICIENT
VARIETIES SUITED TO THE SURROUNDING
ENVIRONMENTAL CONDITIONS

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

Scale
SCALES AS NOTED @ A1

Client
Bruno Marveggio

Project Name
Marina Regency Hotel &
Apartments
6-10 Adelphi Tce
Glenelg SA

Drawing
SK-4001
GREEN WALL CONCEPT

HASSELL

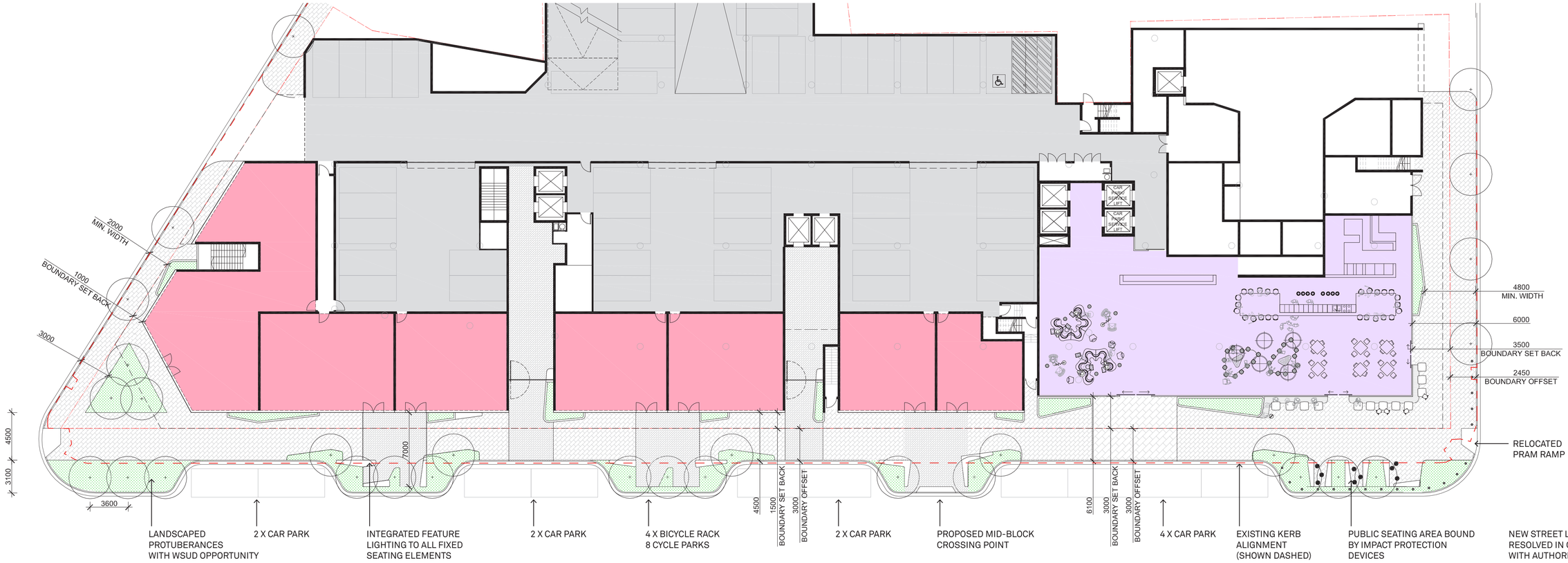
STREETSCAPE PLAN
SCALE 1:200

WESTERN STREETSCAPE ELEVATION
SCALE 1:200

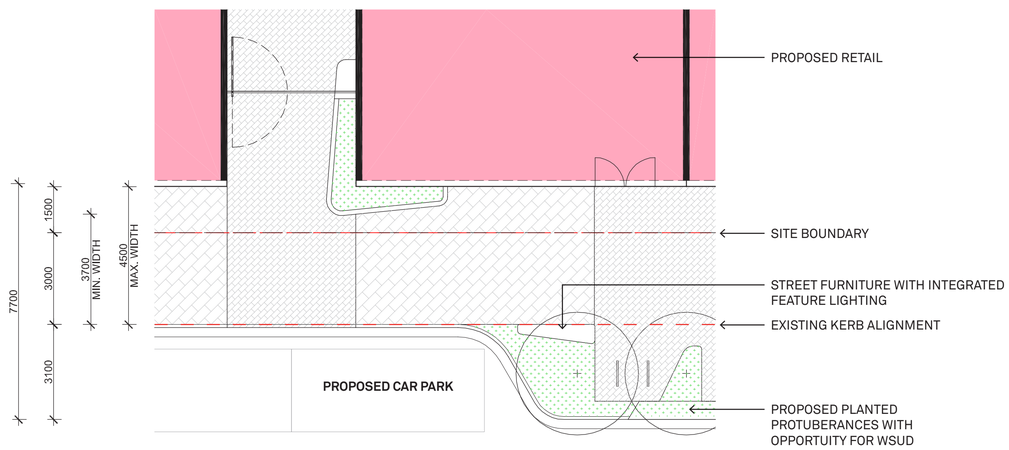
0 2 8 16m

Revision	Date	Scale	Client	Project Name	Drawing
A - DEVELOPMENT APP.	14-08-2015	1:200@A1 1:400@A3	Bruno Marveggio	Marina Regency Hotel & Apartments 6-10 Adelphi Tce Glenelg SA	SK-5000 STREETSCAPE CONCEPT PLAN

HASSELL



STREETSCAPE PLAN
SCALE 1:200



STREETSCAPE TYPICAL LAYOUT
SCALE 1:100

0 2 8 16m

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

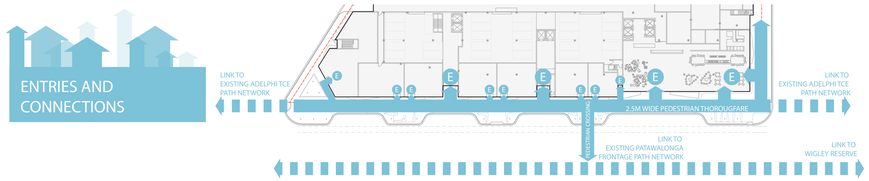
Scale
1:200@A1
1:400@A3

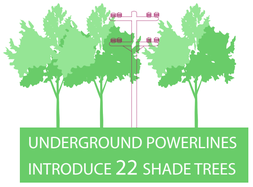
Client
Bruno Marveggio

Project Name
Marina Regency Hotel & Apartments
6-10 Adelphi Tce
Glenelg SA

Drawing
SK-5001
STREETSCAPE TECHNICAL PLAN

HASSELL





URBAN DESIGN DIAGRAMS
NTS

STREETSCAPE PLANT PALETTE

ALL PLANTS SELECTED TO BE WATER EFFICIENT VARIETIES SUITED TO THE SURROUNDING ENVIRONMENTAL CONDITIONS

CUPANIOPSIS ANACARDIOIDES
TUCKEROO

RAPHIOLEPIS UMBELLATA
YEDDA HAWTHRON

DIANELLA CAERULEA ‘CASSA BLUE’
BLUE FLAX LILY

WESTRINGIA FRUTICOSA ‘ZENA’
COASTAL ROSEMARY

EUPHORBIA RIGIDA
SILVER SPURGE

FURNITURE AND METERIALS PALETTE

STAINLESS STEEL SHEFFIELD BIKE RAIL

STAINLESS STEEL PERFORATED BIN ENCLOSURE

TREATED TIMBER AND CONCRETE BENCH SEATING

STONE / CONCRETE PAVER, VARIOUS SIZES
COLOUR: GREY

INORGANIC GRAVEL MULCH TO GARDEN BEDS

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

Scale
NOT TO SCALE

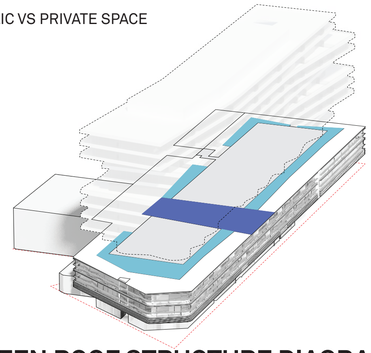
Client
Bruno Marveggio

Project Name
Marina Regency Hotel & Apartments
6-10 Adelphi Tce
Glenelg SA

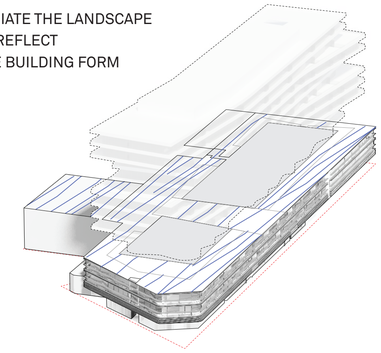
Drawing
SK-5002
STREETSCAPE DIAGRAMS & SCHEDULE

HASSELL

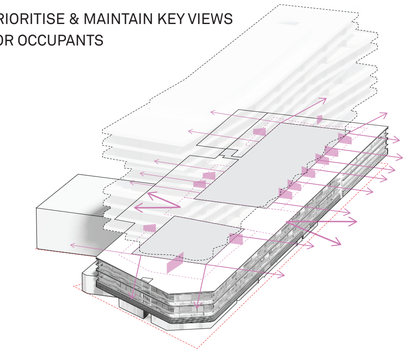
PUBLIC VS PRIVATE SPACE



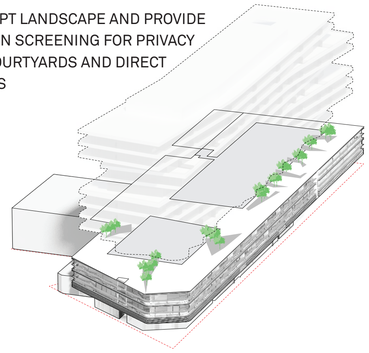
STRIATE THE LANDSCAPE
TO REFLECT
THE BUILDING FORM



PRIORITISE & MAINTAIN KEY VIEWS
FOR OCCUPANTS



SCULPT LANDSCAPE AND PROVIDE
GREEN SCREENING FOR PRIVACY
TO COURTYARDS AND DIRECT
VIEWS



GREEN ROOF STRUCTURE DIAGRAMS
NTS

GREEN ROOF CONCEPT
1:200

CYCAS REVOLUTA
SAGO PALM

ZAMIA FURFURACEA
CARDBOARD PALM

LEUCADENDRON SALIGNUM

KNIPHOFIA SP.

XEROCHRYSUM BRACTEATUM
EVERLASTING DAISY

GREEN ROOF PLANT PALETTE
NTS

ALL PLANTS SELECTED TO BE WATER EFFICIENT
VARIETIES SUITED TO THE SURROUNDING
ENVIRONMENTAL CONDITIONS

0 2 8 16m

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

Scale
1:200@A1
1:400@A3

Client
Bruno Marveggio

Project Name
Marina Regency Hotel &
Apartments
6-10 Adelphi Tce
Glenelg SA

Drawing
SK-5003
GREEN ROOF CONCEPT

HASSELL

EXISTING

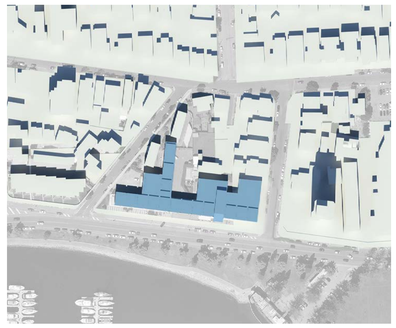
PROPOSED

21 DECEMBER

0900HRS

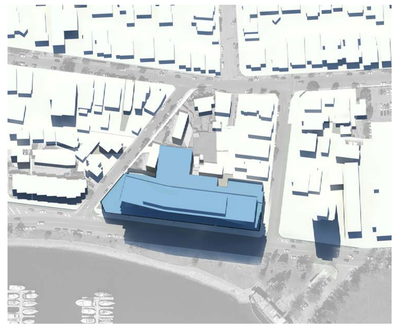
1200HRS

1500HRS



21 DECEMBER

0900HRS



1200HRS

1500HRS

21 JUNE

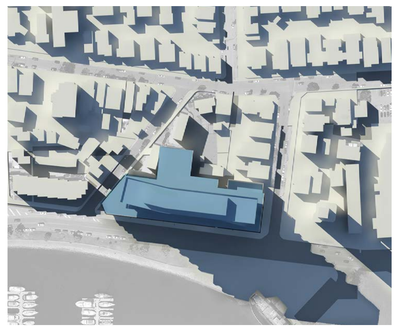
0900HRS

1200HRS

1500HRS

21 JUNE

0900HRS



1200HRS

1500HRS

23 SEPTEMBER

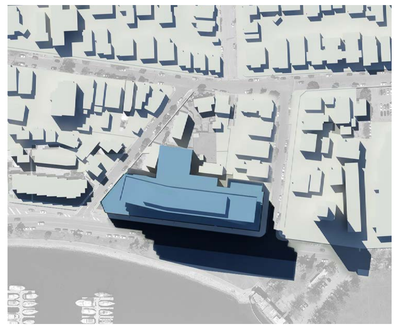
0900HRS

1200HRS

1500HRS

23 SEPTEMBER

0900HRS



1200HRS

1500HRS

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

Scale
NOT TO SCALE

Client
Bruno Marveggio

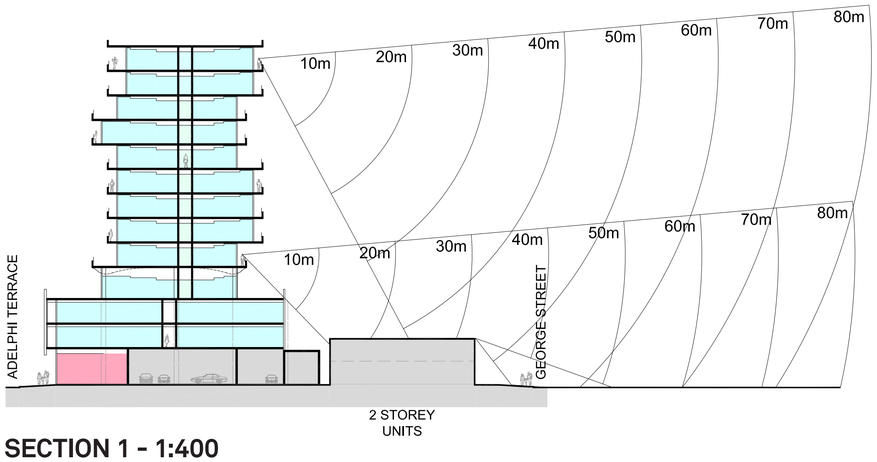
Project Name
Marina Regency Hotel & Apartments
6-10 Adelphi Tce
Glenelg SA

Drawing
SK-6000
SHADOW STUDY DIAGRAMS

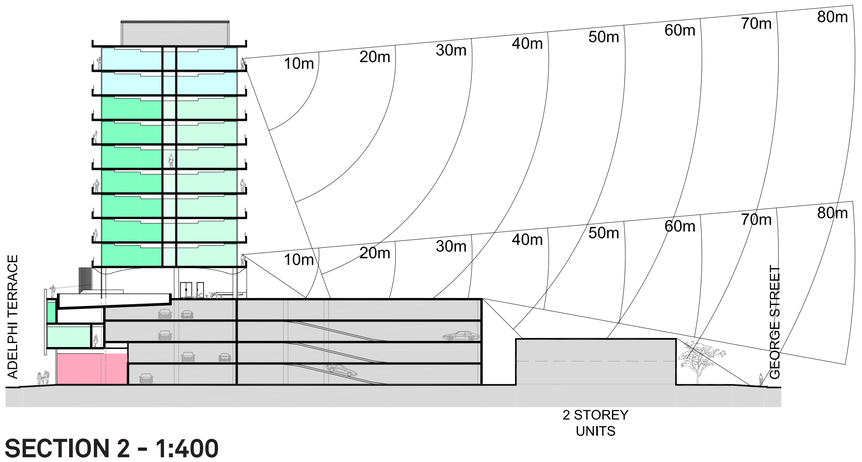
HASSELL

GREEN SPACE
1 STOREY BUILDING
2 STOREY BUILDING
1 STOREY PROPOSED
2 STOREY PROPOSED
3 STOREY PROPOSED
10 STOREY PROPOSED
11 STOREY PROPOSED
13 STOREY PROPOSED
ROOF PROPOSED

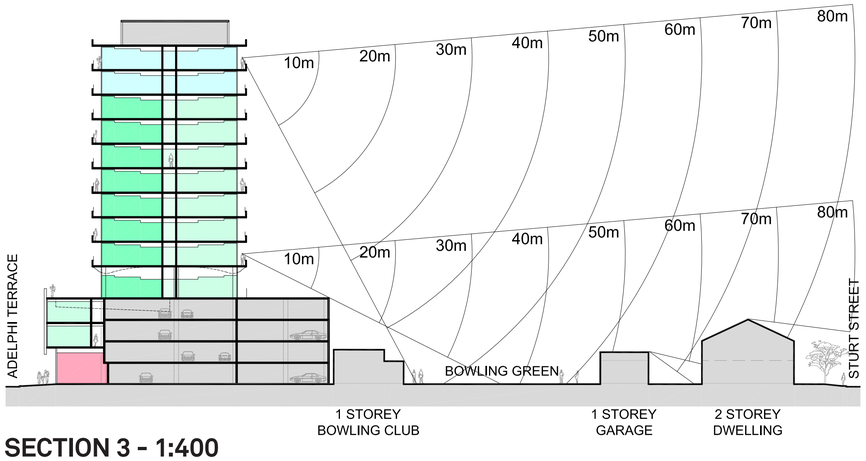
KEY PLAN 1:800



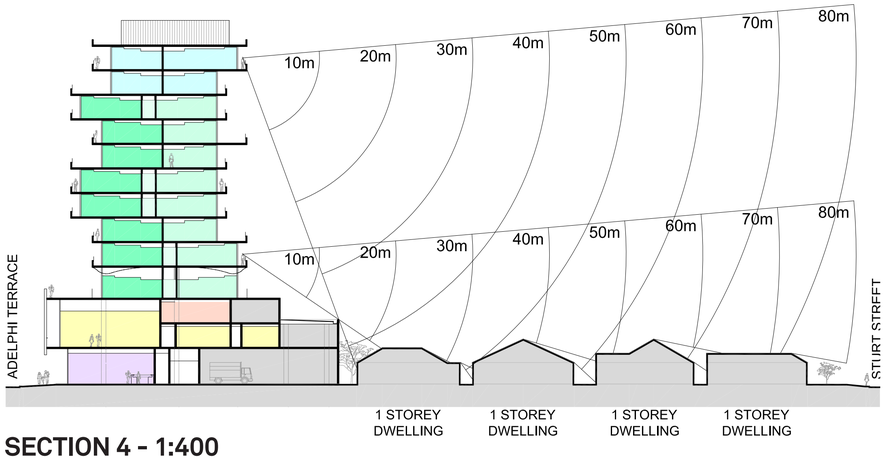
SECTION 1 - 1:400



SECTION 2 - 1:400



SECTION 3 - 1:400



SECTION 4 - 1:400

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

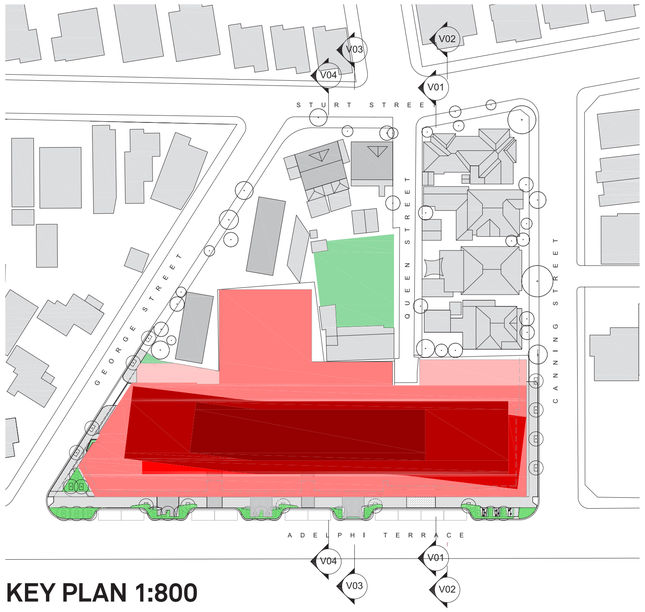
Scale
SCALES AS NOTED @ A1

Client
Bruno Marveggio

Project Name
Marina Regency Hotel & Apartments
6-10 Adelphi Tce
Glenelg SA

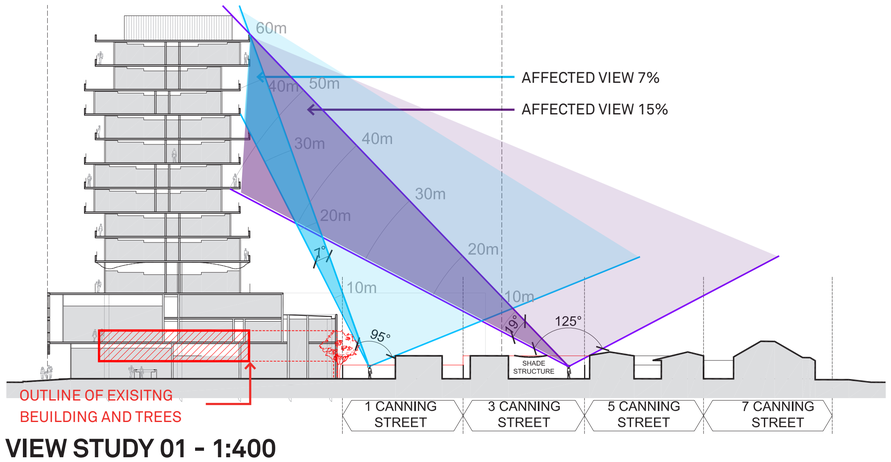
Drawing
SK-6001
OVERLOOKING DIAGRAMS

HASSELL

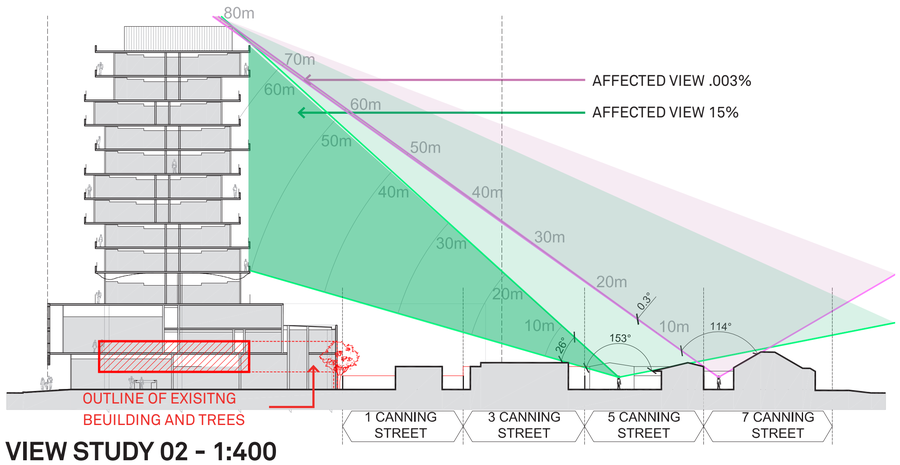


GREEN SPACE
1 STOREY BUILDING
2 STOREY BUILDING
1 STOREY PROPOSED
2 STOREY PROPOSED
3 STOREY PROPOSED
10 STOREY PROPOSED
11 STOREY PROPOSED
13 STOREY PROPOSED
ROOF PROPOSED

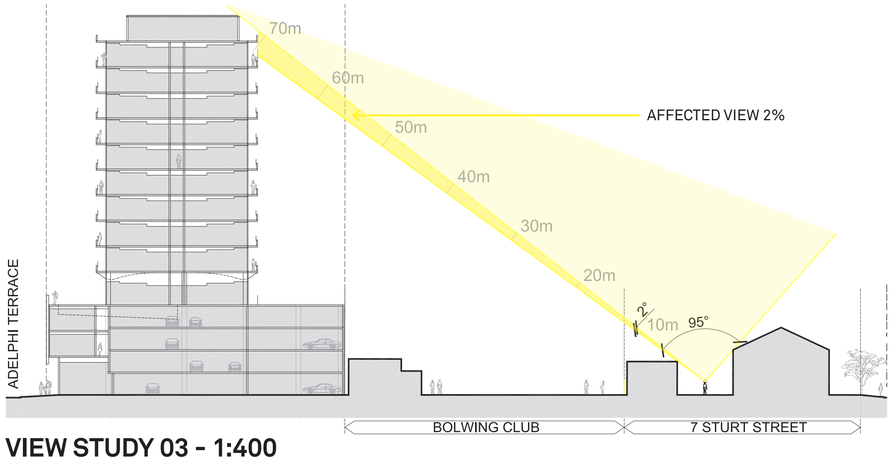
KEY PLAN 1:800



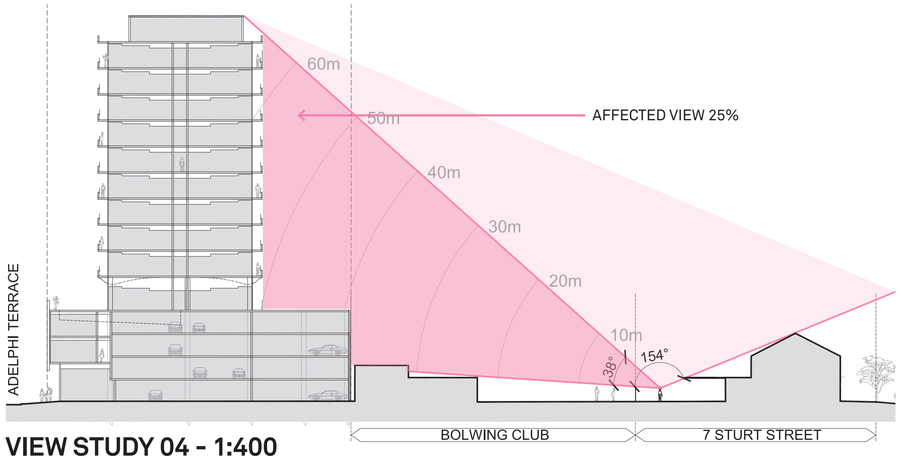
VIEW STUDY 01 - 1:400



VIEW STUDY 02 - 1:400



VIEW STUDY 03 - 1:400



VIEW STUDY 04 - 1:400

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

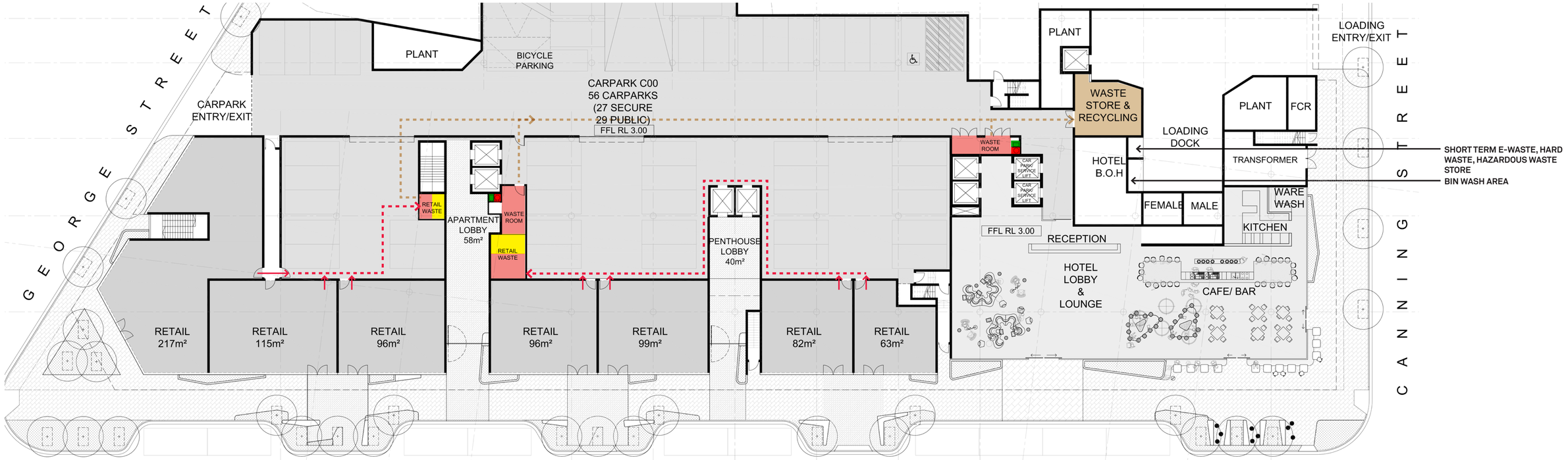
Scale
SCALES AS NOTED @ A1

Client
Bruno Marveggio

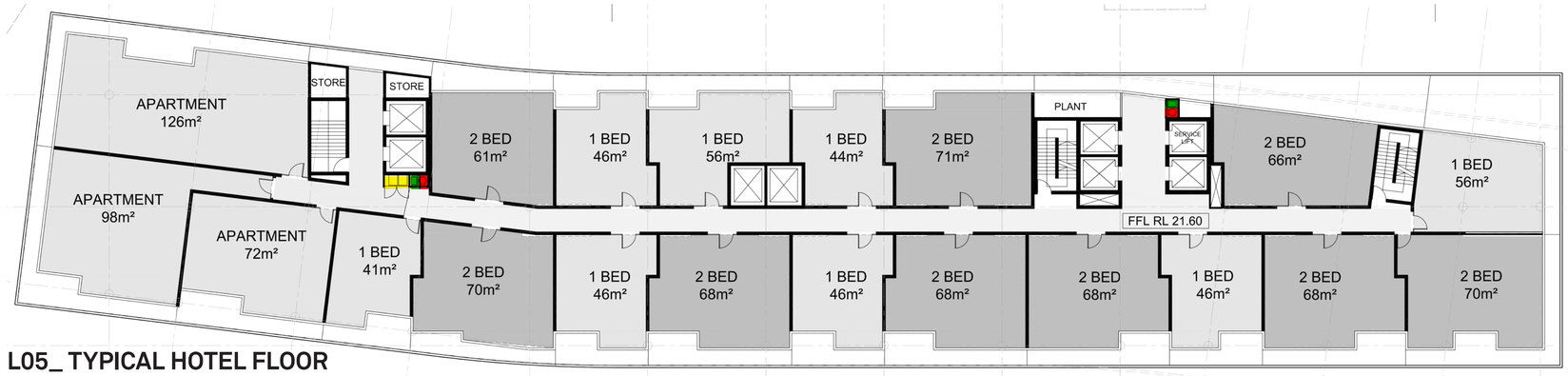
Project Name
Marina Regency Hotel & Apartments
6-10 Adelphi Tce
Glenelg SA

Drawing
SK-6002
VISUAL IMPACT DIAGRAMS

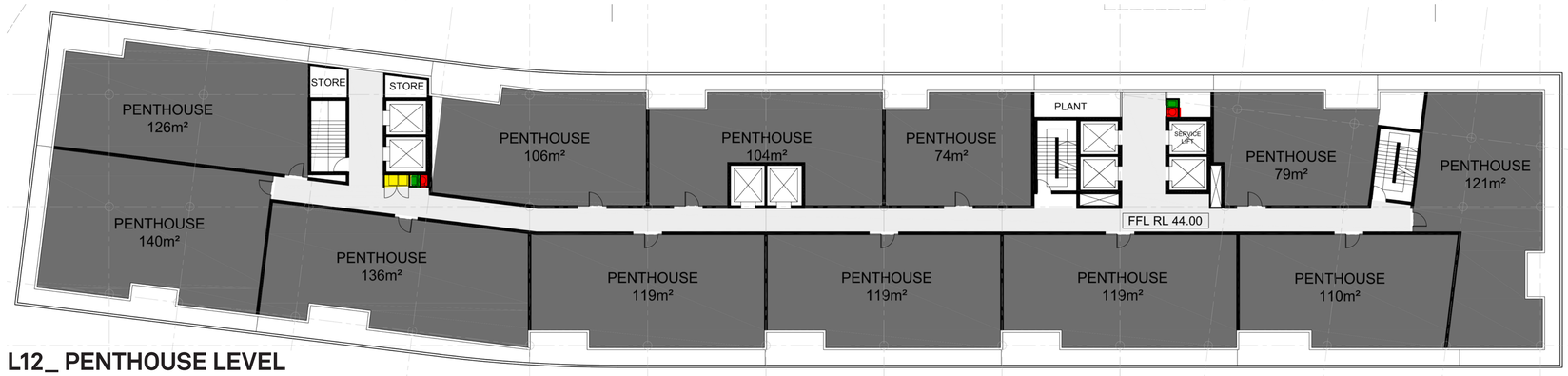
HASSELL



L00_ GROUND FLOOR



L05_ TYPICAL HOTEL FLOOR



L12_ PENTHOUSE LEVEL

GENERAL WASTE CHUTE

WASTE COLLECTION POINT/ STORE

WASTE STORE & COLLECTION

RECYCLING COLLECTION POINT

GREEN WASTE COLLECTION POINT

PATHS OF TRAVEL

PATHS OF TRAVEL

0 2 8 16m

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

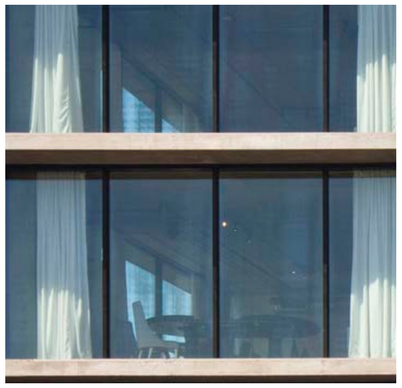
Scale
1:200@A1
1:400@A3

Client
Bruno Marveggio

Project Name
Marina Regency Hotel & Apartments
6-10 Adelphi Tce
Glenelg SA

Drawing
SK-6003
WASTE MANAGEMENT DIAGRAM

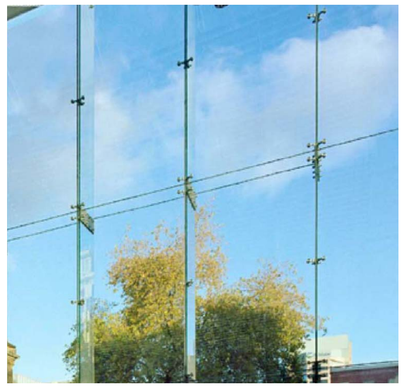
HASSELL



GL:01

HIGH PERFORMANCE GLASS: COLOUR CRYSTAL GREY
ALUMINIUM FRAME: COLOUR BLACK

LOCATION: RESIDENTIAL GLAZING



GL:02

HIGH PERFORMANCE GLASS: COLOUR CLEAR (LOW IRON)
FRAMELESS: PATCH FITTINGS OR GLAZED FIN SUPPORT

LOCATION: HOTEL LOBBY, CAFE AND FUNCTION

GL:03

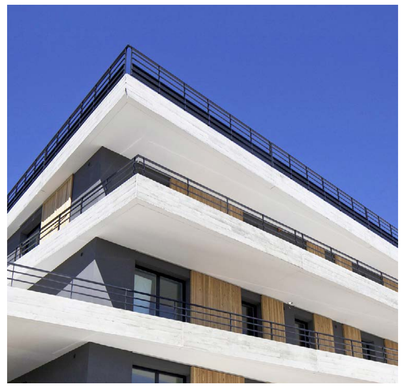
HIGH PERFORMANCE GLASS: COLOUR GOLD/BRONZE
ALUMINIUM FRAME: COLOUR BLACK

LOCATION: LEVEL 01 & 02 GLAZING

GL:04

GLASS BALUSTRADE: COLOUR CLEAR (LOW IRON)

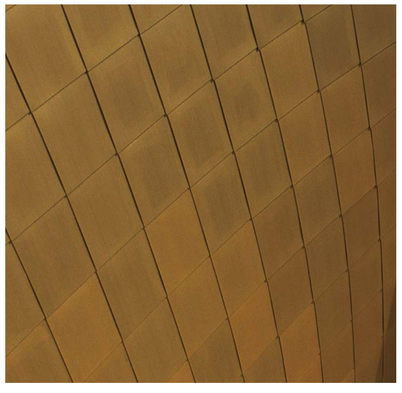
LOCATION: RESIDENTIAL BALCONIES



CL:01

EAVE CLADDING: COLOUR WHITE
MATERIAL SELECTION: TBC

LOCATION: EAVE FASCIA



CL:02

POLISHED SHEET METAL :COLOUR GOLD / CHAMPAGNE
MATERIAL SELECTION: TBC

LOCATION: SOFFIT LINING LEVEL 3

CL:03

PERFORATED SHEET METAL :COLOUR GOLD / CHAMPAGNE
MATERIAL SELECTION: TBC

LOCATION: ROOF LEVEL PLANTROOM

SC:01

HORIZONTAL ARCHITECTURAL LOUVRE: COLOUR BLACK
MATERIAL SELECTION: TBC

LOCATION: PODIUM FACADE

SC:02

CARPARK SCREEN WITH VERTICAL LANDSCAPING

LOCATION: CARPARK FACADE

CO:01

PRECAST CONCRETE PANELS WITH RELIEF PATTERN
COLOUR: INTEGRAL WHITE OXIDE

LOCATION: LOADING, FUNCTION BOH

SN:01

SIGNAGE PANEL
SHEET METAL SIGNAGE PANEL. COLOUR: TO MATCH ADJACENT FACADE
WHITE BACKLIT LETTERING

LOCATION: PODIUM FACADES & STREETSCAPE

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

Scale
NOT TO SCALE

Client
Bruno Marveggio

Project Name
Marina Regency Hotel & Apartments
6-10 Adelphi Tce
Glenelg SA

Drawing
SK-9000
MATERIAL & FINISHES SCHEDULE

HASSELL

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

Scale
NOT TO SCALE

Client
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Project Name
Marina Regency Hotel & Apartments
6-10 Adelphi Tce
Glenelg SA

Drawing
SK-9100
ARTIST'S IMPRESSION
VIEW FROM ANZAC HWY

HASSELL

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

Scale
NOT TO SCALE

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Glenelg SA

Drawing
SK-9101
ARTIST'S IMPRESSION
VIEW FROM KING ST BRIDGE

HASSELL

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

Scale
NOT TO SCALE

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Glenelg SA

Drawing
SK-9102
ARTIST'S IMPRESSION
VIEW FROM CORNER OF
CANNING ST AND STURT ST

HASSELL

Revision
A - DEVELOPMENT APP.

Date
14-08-2015

Scale
NOT TO SCALE

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Glenelg SA

Drawing
SK-9103
ARTIST'S IMPRESSIONS
ADELPHI TCE STREETSCAPE

HASSELL

HOLMES PARTNERS

Appendix 5. Design Principles

Architecture
Interior Design
Landscape Architecture
Planning
Urban Design

Australia
China
Hong Kong
Singapore
Thailand
United Kingdom

MARINA REGENCY HOTEL DESIGN PRINCIPLES

6-10 Adelphi Terrace
Glenelg SA

Prepared for Bruno Marveggio

HASSELL

Revision	Date
[A - DEVELOPMENT. APP.]	[12-08-2015]

Front cover image: Marina Regency Hotel,
Glenelg SA. Concept image

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Contents

01 Context

The Glenelg setting for the Marina Regency Hotel is idyllic with potential ready to be captured

Context

The Glenelg setting for the Marina Regency Hotel is idyllic with potential ready to be captured. Presenting a rare opportunity for redevelopment, the 5000 square metre site on Adelphi Terrace boasts a 130 metre western frontage onto the Patawalonga River and Holdfast Shores Marina. The site stretches North to South and with potential for extensive views across Adelaide. The ocean and Patawalonga River rest at its doorstep, the Adelaide Hills to the East, the Adelaide CBD to the North and the vibrant Glenelg Retail and tourist precinct to the South.

The context provides a unique opportunity for this project, with views, aspect and amenity becoming the influential forces for the design. As such, the design is a contemporary response to place, public identity and a new tourism opportunity. The development is set to attract and host an increased number of visitors and residents to the area which is highly accessible by public transport and less than 10 minutes by car from Adelaide Airport.

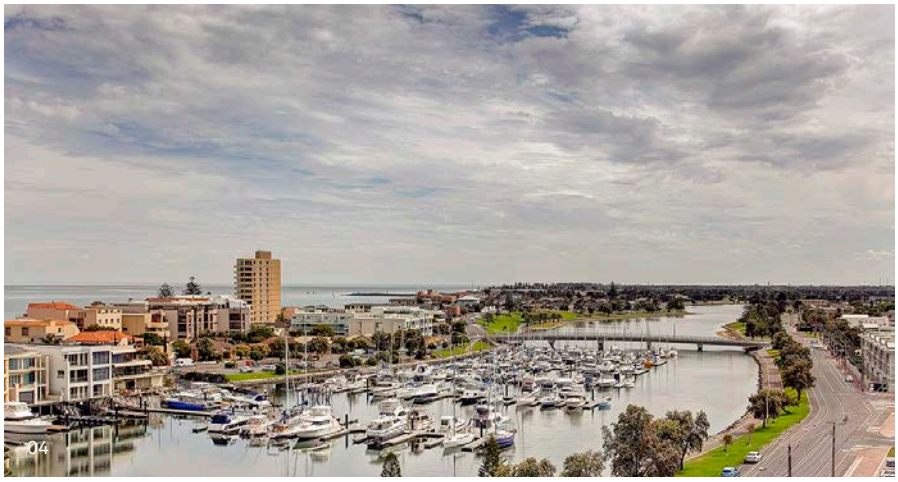
01 View from king Street Bridge. Photography by Hassell

01

01

02

03



04

01 Site context plan

02 View to the South West. Photography by Jonathan Kissock

03 View to the East Photography by Jonathan Kissock

04 View to the North West. Photography by Jonathan Kissock

A singular and cohesive character with horizontal expression drawing from its coastal context

Design Intent

_Create a high quality living experience for residents and guests by providing internal and external spaces which take full advantage of the 360 degree ocean, hills and city views.

_Create an inviting and exciting environment which embraces and adds to the vibrancy of the beachside precinct.

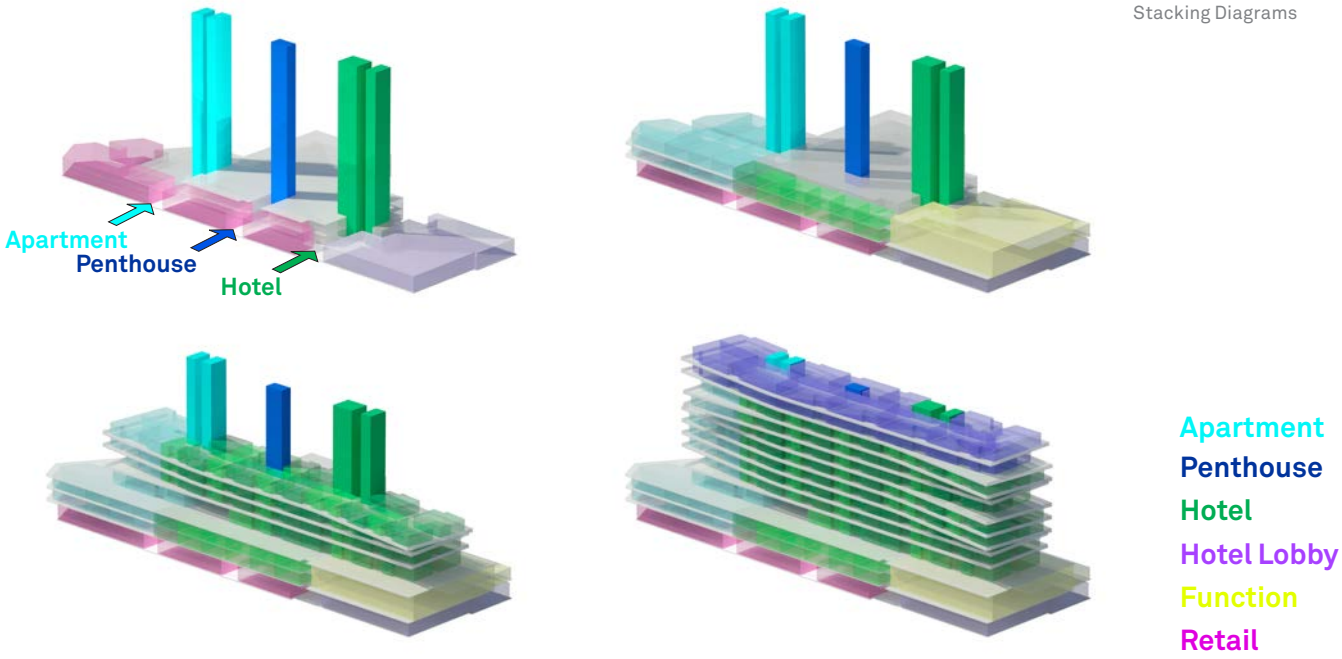
_Create an architectural response that derives its form from consideration of its site and local context.

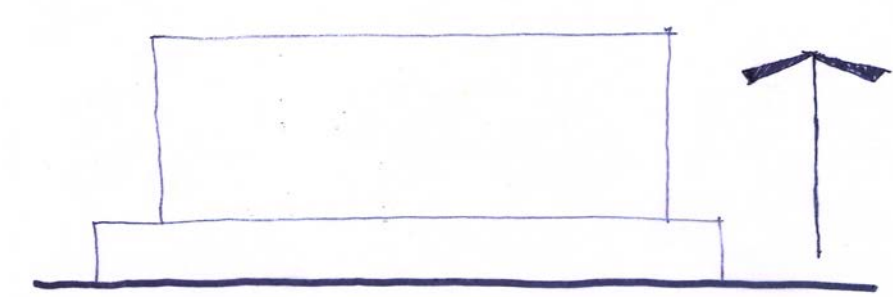
Building Form

The building responds to the character of Adelaide's primary beach destination in a new way. It moves on from the residential precedents typical of the precinct, presenting an elegant and confident form for a discerning market. The building also responds to its site, exhibiting a singular and cohesive character with horizontal expression drawing from its coastal context and appropriate to its residential nature.

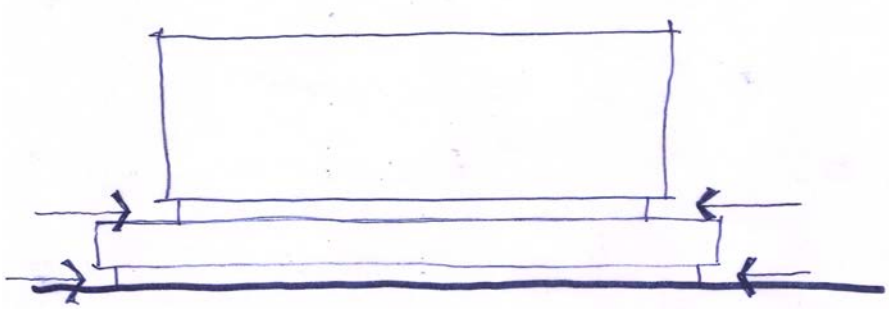
The building form evolved through a merging of external and internal drivers. The streetscape and coastal setting saw a 'landscape' response as appropriate over a tower or series of vertical masses. The main building sits atop a podium which extends towards the site boundaries and provides an active 3 story street frontage comprised of retail tenancies, cafes and the hotel lobby. Above are domestic scale hotel rooms and apartments with balconies providing further engagement with the street. The building above is set back from boundaries, reducing its scale from the surrounding streets. It appears suspended and separate from the podium levels, assisted by an open air swimming pool at the podium rooftop, allowing views through and further lightening the buildings overall visual mass. The internal planning prioritised each living space and bedroom to have full height windows with views of the hills and/or ocean. The linear arrangement of accommodation creates no overlooking between apartments and no compromised outlooks. The floor plate is simple in its response with accommodation either side of a central corridor, an elegant plan which sits comfortably within the site boundaries.

Stacking Diagrams

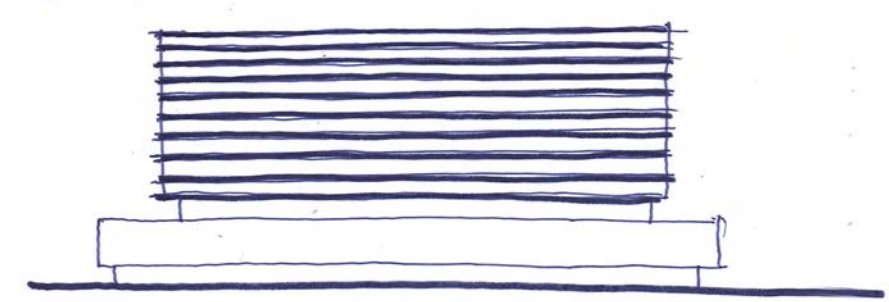




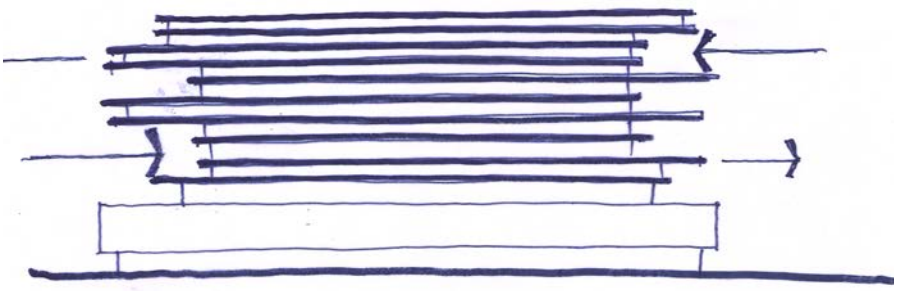
Stack



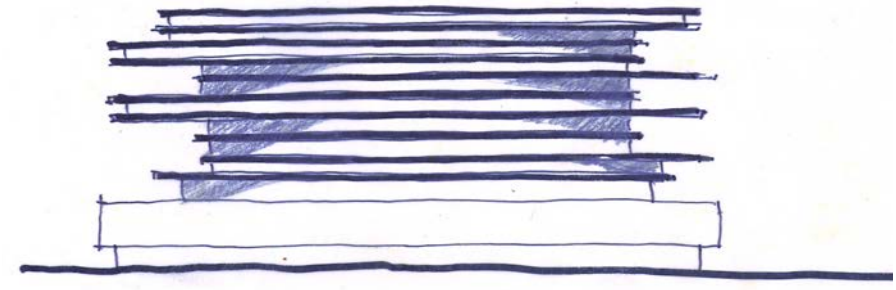
Separate



Striate



Stretch + Squash



Shift

Concept diagrams

02 Building Form

Cantilevered floor plates

Continuous perimeter balconies result in deep eaves which become the key feature of the building's design and define its residential character and scale. The dynamism and elegance of the building is created when the long floor plates dramatically shift at the north and south end on differing levels. The 'frayed' ends breaking down the building's mass and larger balcony areas and deeper eaves are created. Structural elements are inset allowing the building's movement to be suspended, free of visible structure, depicting a building which is light and fluid, responding to its costal context.

The eaves also respond to the elemental demands of the site, providing a means of sun control. The deep eaves combined with high performance glazing systems will mediate sun light whilst allowing high levels of natural light into the accommodation. The façade system will also allow for strong visual connections to the outside and allow for operable facades to increase living space and foster an active façade. The high performance facade system will minimise heat transfer through the building skin whilst maximising available views and allowing for natural ventilation to habitable spaces.

03 Podium + Streetscape

The podium design aims to improve pedestrian experience and offer an active street frontage

The extensive street frontage of the site provides a unique opportunity to improve public amenity within the area. The podium design aims to improve pedestrian experience, offer an active street frontage and provide suitable parking facilities for a development of this size and type.

Design language
The horizontality of the main building above has been reinterpreted for the podium section. Strong horizontal emphasis is maintained through the use of projected fins running at various vertical spacings around the entire podium perimeter at levels 01 & 02. A clear glass façade to the ground floor creates a transparent base for the building, revealing the retail and hotel functions within and simultaneously lightening the podiums mass. The glazed façade above is punctured at locations corresponding to balconies. The bronze tinted glass provides the building with a unique identifiable character and the subtle 'folds' in the façade create variation and rhythm across its length

Diversity of uses
The ground level facade is setback from the boundary with the projected level above providing a sense of loggia at pedestrian scale. Ground level is occupied by retail tenancies to the North and centre sections with the hotel lobby and publicly accessible all day dining restaurant to the Southern end. Levels 01 & 02 above house private apartments to the North, hotel accommodation to the centre and a double height function space to the Southern end above the hotel lobby. The function and conference facility will be a key attraction to the Marina Regency Hotel with events drawing a large number of both patrons and hotel guests. This diverse set of uses aim to promote an active façade and streetscape.

Streetscape montage from the corner of Adelphi Terrace and Canning Street

03 Podium + Streetscape

Pedestrian experience and connectivity

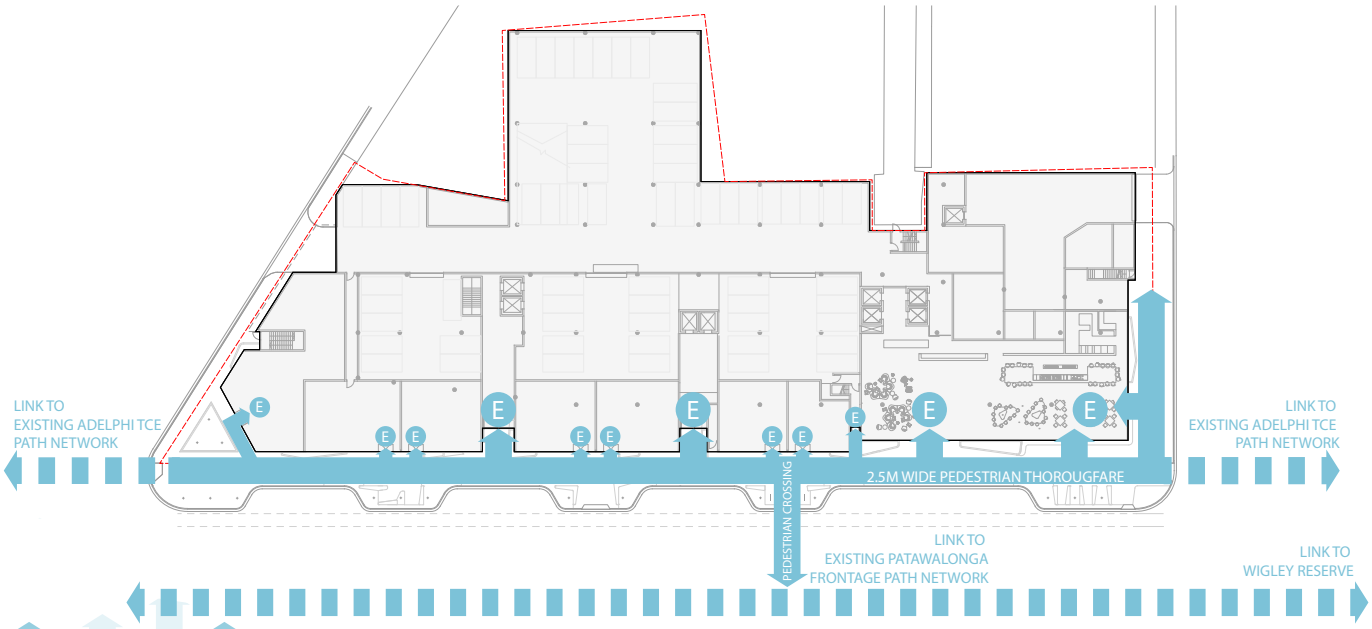
Improving pedestrian experience was a key driver in the design of the podium and streetscape beyond. The existing 80m of driveway is proposed to be removed from the Adelphi Terrace frontage and replaced with planting and car parking. The generous setback at ground level gives back space to the public realm. Public space is further improved and extended through a proposed kerb realignment which allows for 'pockets' of green space interspersed with on street car parking. These green spaces will offer seating, bike racks and outdoor dining space. Existing power lines are proposed to be relocated underground and replaced with new tree planting, offering shade to pedestrians and the podium. High quality materials and finishes complementing adjacent areas are proposed. The plant species have been selected across the project for being hardy coastal tolerant species with low water and maintenance requirements once established. At streetscape level, the planting palette a wind tolerant, hardy selection of varying green hues with a burst of yellow floral display in Spring. These green pockets provide opportunity for WSUD to reduce the requirement for irrigation.

Retail tenancies are typically grouped in pairs, interspersed with key address points. Hotel entry, apartment entry and penthouse entry. This legibility at street level aims to provide a clear sense of address within the precinct. A proposed pedestrian zebra crossing linking the new precinct into the existing Adelphi terrace, Patawalonga River and Wrigley reserve footpath networks aims to improve connectivity into the precinct.

Access and Parking

To the rear of the site, within the podium, a 4 level car park with access off George Street accommodates over 205 car spaces. A mix of public parking and secured residential parking spaces is provided. A dedicated loading dock with on site turning and access to the main core is provided with access off Canning Street. As an integral part of the ground floor back of house spaces a linked and accessible range of spaces are planned to ensure seamless operations for the "backbone" of the development operations. The car park and loading dock are in the most part hidden from view though where appropriate vertical landscaping has been explored as a means of screening.

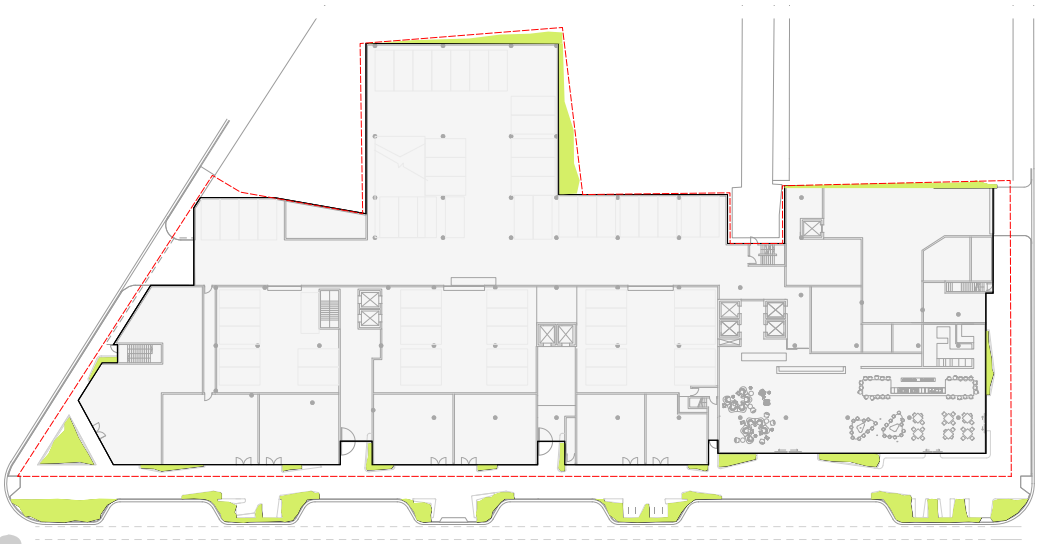
Streetscape montage looking South on Adelphi Terrace



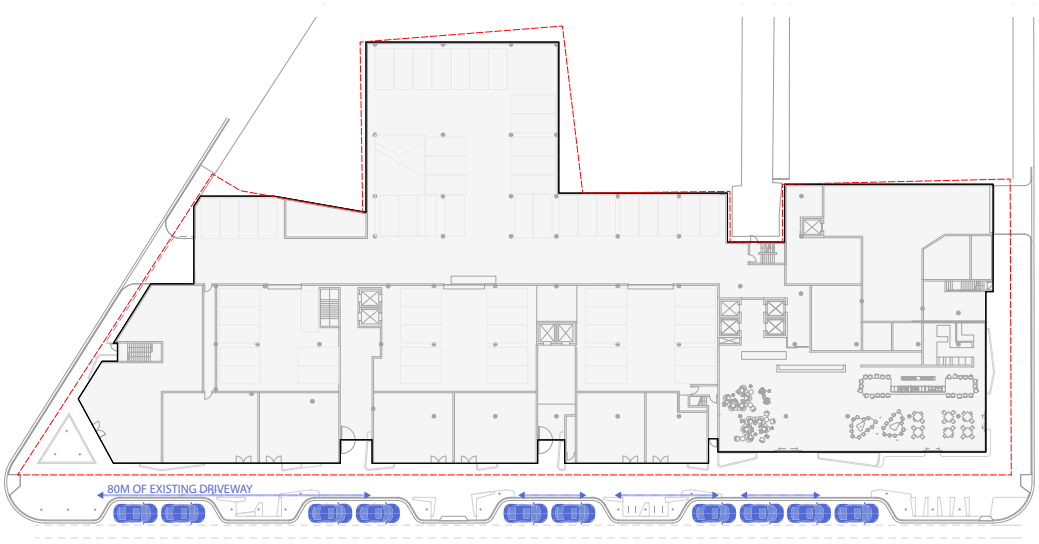
ENTRIES AND
CONNECTIONS

ACTIVATED EDGE

Key urban design
elements

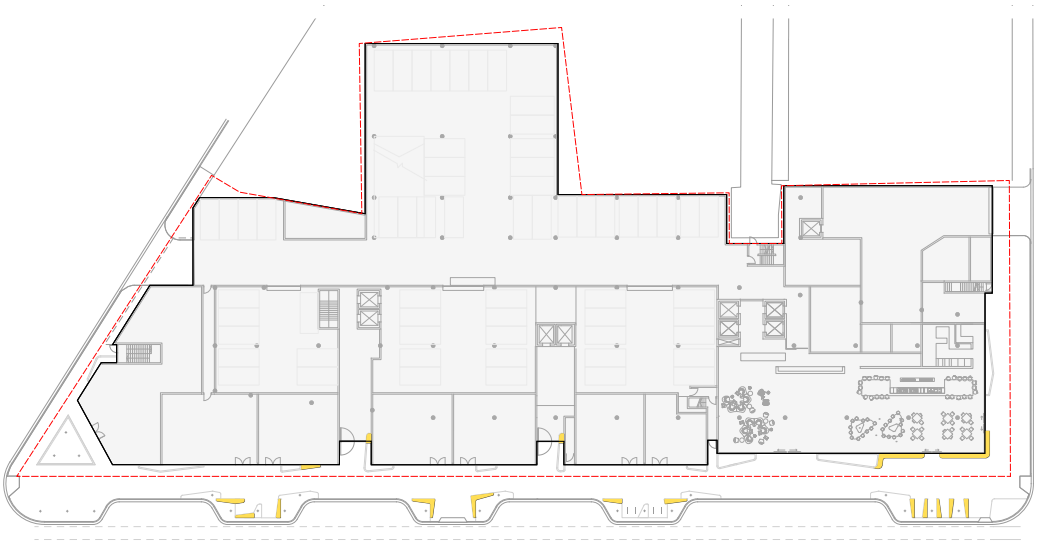


GREEN POCKETS

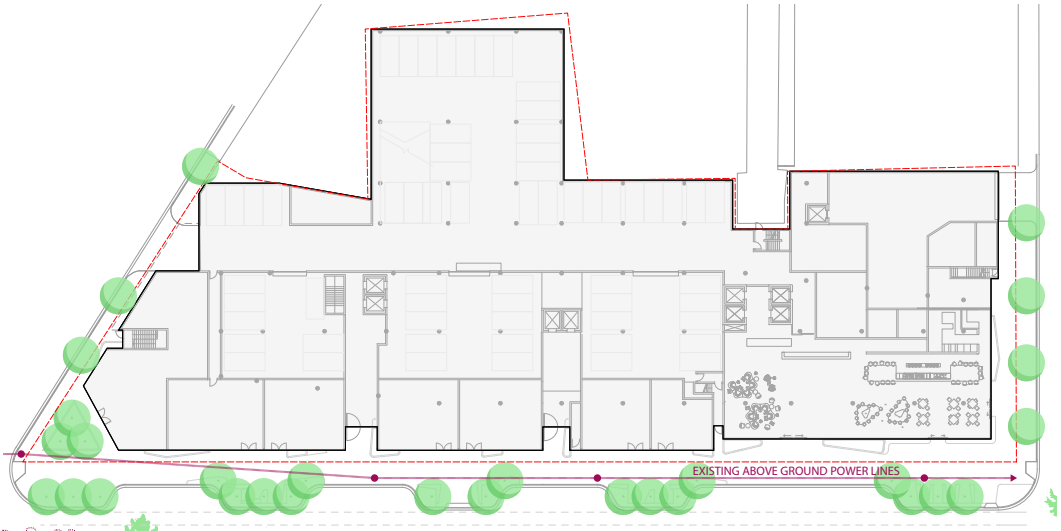


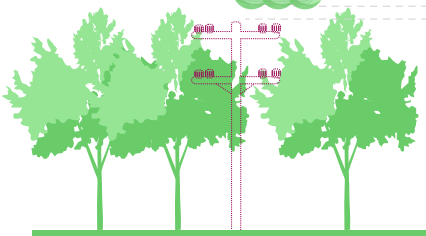
REMOVE DRIVEWAYS
INTRODUCE 10 PARKS

Key urban design elements



SEATING OPPORTUNITIES





UNDERGROUND POWERLINES
INTRODUCE 22 SHADE TREES

Key urban design elements

04 Rooftop landscaping

An oasis within the building

Podium Rooftop

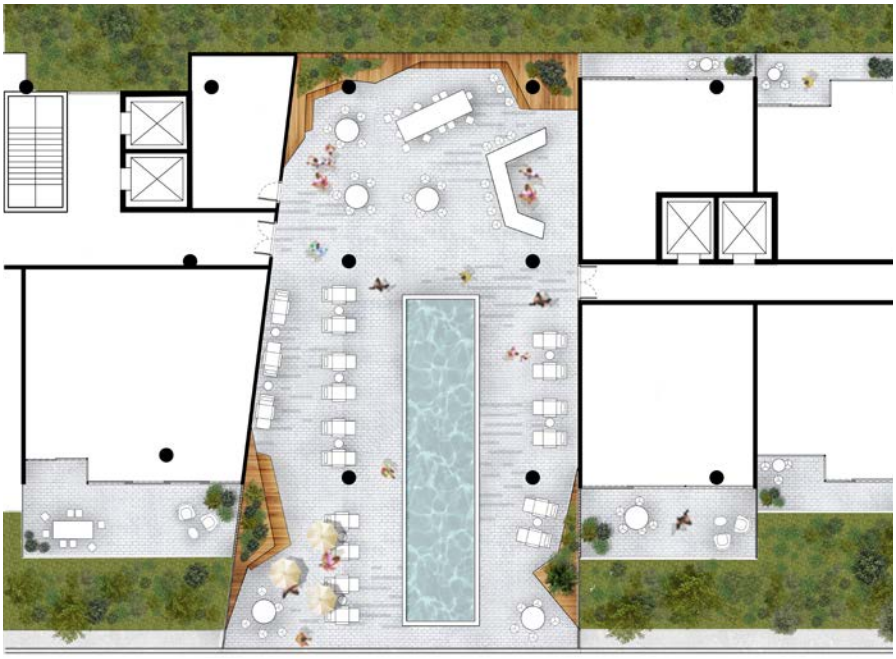
Atop the podium a landscaped terrace level is proposed, extending towards site boundaries. This terrace garden level will also house the shared pool deck accessible to residents and hotel guests. An oasis within the building. Some accommodation is planned at this level but is setback from the floor plate outline above to assist the main building to appear suspended over the podium. At this level the apartments and hotel rooms are pulled apart from each other allowing the pool deck to sit in the gap. The location of the pool allows for partial cover whilst extending towards Adelphi Terrace further activating the street frontage and capitalising on views over the Marina to the West.

The landscape design aims to create a unique and attractive setting for the hotel and apartment residents with a rich and textural planting palette carefully selected for their robust nature and suitability for the Western facing coastal environment. By highlighting and extending the potential view corridors looking outward from the private and public courtyards, the design offers a functional and visually inviting landscape.

The alignment and size of the individual courtyard spaces is informed by a striated ground plane that reflects the building floor plate design of the levels above. The planting scheme reinforces the striations by using a colourful and textural plant palette with varying ground treatments. The species are selected to enhance the view corridors from level 03 but to also provide visual interest from the floors overlooking above.

The ground plane is manipulated vertically to provide softscape privacy barriers between the apartments courtyards whilst engaging the residents by framing views to the external landscape. The use of green barriers reduce the requirement for blade wall structures to separate the spaces whilst also allow for a sense of openness.

The softscape barriers are strengthened by a plant palette of varying mature growth heights and colour organisation. Where views are encouraged, smaller and less visually dominant species are used whereas spaces requiring privacy will host taller growing species providing a ‘soft’ screen to residents.



Level 03 Pool Deck

The dynamic building form creates a unique identity for the building. A restrained material palette supports the elegant architecture

Material Selections

A controlled selection of materials aims to support the main architectural moves.

Facades across the main levels will be operable aluminium framed glazing systems with high performance grey tinted glass. Facade systems shall take full advantage of the veranda ethos conveyed by the “residence” style design architectural intent. The operable facades opening onto balconies will allow for natural ventilation to the apartments and hotel rooms. The lower parts of the balustrades will be solid and white in colour. The material selection will be further investigated in the next stage of design. The upper parts of the balustrades will be clear frameless glazing and dividing wall between apartments glass panels with a graduated tint film. These materials all contribute to the horizontal banding of the elevation and emphasise the horizontality of the scheme.

The podium façade system consists of a curtain wall system with expressed horizontal fins. Bronze tinted glazing provides an identifiable character to the building. The same colour is repeated on the soffit of level 03 which is clad in a reflective metal cladding, catching light, reflecting greenery from the rooftop and activity from the pool into the street. The ground floor retail facades will be clear glass.

Back of house areas and the car park wall will be clad in precast concrete panels. The panels will be sculpted or patterned to provide visual interest, rhythm and play of light and shade. Where possible, green wall planting will be applied to these walls in order to improve visual amenity from the adjacent properties.

Where possible preference will be given to materials which have low embodied energy, low formaldehyde emissions and low volatile organic compound content.

Material Palette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HOLMES PARTNERS

Appendix 6. Environmental Sustainability Report

Building Services
Design Development
ESD Report

Project: Marina Regency Hotel

Adelphi Terrace, Glenelg SA

Hotel & Apartment Development

Reference Number: 2225.150709.G.1

Issued for: Design Development Issue

Date: July 2015

Revision: 3

Revision	Issue Date	Revision Description	By	Checked
1	13 July 2015	Draft Issue	DMK	ARC
2	22 July 2015	Issue for Review	DMK	ARC
3	29 July 2015	Final Draft	DMK	ARC

Contents

1.0 General

1.1 Introduction

This Building Services Design Development Brief presents the various Environmentally Sustainable Design (ESD) initiatives proposed to be incorporated into the Mechanical, Electrical, Hydraulic and Vertical Transportation Services designs for the Marina Regency Apartments and Hotel Development located at Adelphi Terrace, Glenelg, South Australia.

This Brief summarises our design development recommendations for client, stakeholders and the relevant Authority acceptance in principle.

All aspects of this ESD Brief are to be verified through the course of concept design development and detailed design of the building and infrastructure.

1.2 Project Brief

The project fundamentally comprises a multi-storey development on Adelphi Terrace, Glenelg SA.

The project is proposed as a mixed-use development comprising the following classifications of building:

- Class 2; a building containing 2 or more sole-occupancy units each being a separate dwelling
- Class 3; a residential building (hotel)
- Class 9B; a public assembly building
- Class 7a; a carpark

1.3 Requirements for Energy Efficiency

The Building is subject to requirements for energy efficiency prescribed within Section J of the National Construction Code 2015.

The Building Services shall be designed to meet the Deemed to Satisfy requirements prescribed within the National Construction Code in particular Sections J0 applicable for residential apartments, and J5, J6 and J8 for all other areas. Where practicality or cost issues arise in respect to achieving the Deemed to Satisfy provisions of Code, BCA Engineers will utilise our expert opinion and analysis to present an Alternative Solution for acceptance by the project certification authority.

All aspects of systems and infrastructure shall be designed in accord with industry best-practice for principles of environmentally sustainable design.

2.0 Mechanical Services

2.1 Air conditioning systems

A detailed life cycle cost analysis will be completed to establish the most efficient air conditioning system whilst not compromising on capital and ongoing maintenance costs.

All air conditioning systems to be designed to meet, if not exceed the minimum performance parameters defined by Section J of the National Construction Code 2015. In addition all plant to be designed to meet, if not exceed best practice requirements for apartment buildings.

Air Conditioning systems to be equipped with Inverter Driven or Digital Scroll Compressor Technology, resulting in more energy efficiency at part loads compared with constant speed compressor systems.

Temperature control bands and run-time shut-downs are programmed to ensure that excessive use does not occur. These parameters are 'locked-out' of normal user access, however variable adjustments can only be undertaken by the building manager. Control of the units can be fully handed over to occupant at a later date if desired, however this is not recommended in a hotel environment.

2.2 Non Ozone Depleting Refrigerants

Non Ozone Depleting Refrigerants (ODP = 0) to be used on this project in accordance with the Montreal protocol and Australian legislation.

2.3 Ventilation Systems

All ventilation systems to be designed to meet, if not exceed the minimum performance parameters defined by Section J of the National Construction Code 2015. In addition all plant will be designed to meet, if not exceed best practice requirements for apartment buildings.

Ventilation systems serving public areas are proposed to be interlocked to the associated lighting motion sensors, so that unnecessary energy usage is limited.

3.0 Electrical

3.1 Interior Lighting

Interior lighting systems shall generally comprise combinations of LED technology and T5 fluorescent solutions to maximise energy efficiency and to suit aesthetics, function and costs.

LED technology shall be utilised as far as practical in all visible public areas and private apartments.

Target illumination power density shall exceed the performance parameters defined by Section J of the National Construction Code 2015.

3.2 Exterior Lighting

Exterior lighting systems shall generally comprise combinations of LED technology and T5 fluorescent solutions to maximise energy efficiency and to suit aesthetics, function and costs.

All exterior lighting shall be impact resistant and weatherproof.

All exterior lighting shall be minimum IP65 rated surface mounted on walls or free standing poles/bollards, and shall be minimum IP44 rated for mounting below covered canopies.

3.3 Lighting Controls

Lighting controls shall fundamentally comprise motion-sensor-on with delay-timer-off facilities where practical to prevent lighting fixtures left on for extended durations when not in use.

Lighting controls shall also incorporate time-clock on/off facilities wherever practical such as for feature lighting or illuminated signage, photoelectric-switch on/off for any exterior lighting, and interior daylight sensing on/off/dim where natural illumination permits.

Manual on/off/auto-over-ride switches shall also be provided either at respective distribution boards from which lighting circuits originate or generally accessible for staff personnel as appropriate.

Specific and additional Digital Lighting Control System(s) utilising local Digital Addressable Lighting Interface (DALI or DSI) technology luminaires and control gear are proposed to the ‘Function Centres’.

3.4 Occupant sensing

For Class 3 apartments, occupant sensing or occupant activated devices shall be provided to de-energise power supplies to artificial lighting, air-conditioning systems, exhaust fans and bathroom heaters if applicable when the apartments is unoccupied.

4.0 Hydraulic Services

BCA Engineers have undertaken analysis for water sensitive design initiatives to be undertaken for the proposed Adelphi Hotel development. The measures proposed are to be reviewed by the stakeholders for assessment / suitability prior to formal lodgement for DAC approval.

4.1 Rainwater Re-use

In order to reduce the demand on the Authorities domestic cold water supply, it is proposed to utilise rainwater from roof run-off. The intention is to collect the entire roof area for collection and re-use to supplement the buildings water usage for water flushing and laundry usage. Preliminary calculations indicate the available rainwater collection can be utilised to supplement the water closet and laundry demand for the first two floors of the development.

Rainwater is proposed to be collected and stored in a nominal 75kL below ground rainwater tank, located within the basement car park.

Stored rainwater will be pumped to the first two floors via a dedicated rainwater reticulation system, plumbed to water closets and laundries.

In order to safeguard against potential microbial contamination, the rainwater will be treated via an ultra-violet sterilizer prior to distribution throughout the rainwater reticulation pipework.

In the event of insufficient rainwater collection, an automated changeover to mains water is proposed to be included within the pump set.

4.2 Water Efficiency

Tapware

The development is to be provided with highly water efficient Tapware in order to minimise the water consumption and to reduce the wastewater loading on the sanitary drainage infrastructure.

In accordance with the best practice for the industry, the following WELS ratings are proposed for the following fixtures:

Sink / Hand Basin Mixer Tapware: 6 Star (Less than 4.5 Litres per Minute).

Laundry Outlet: 5 Star (4.5 to 6 Litres per Minute).

Shower: 3 Star (7.5 to 9 Litres Per Minute).

Water Closet: 4 Star (3.5 Litre Average Flush).

Sub Metering

The development is to be provided with private sub meters in order to monitor cold water usage for individual components within the domestic cold water reticulation system, including the following:

Boundary: Boundary water meter to monitor total site domestic cold water usage.

Residential Apartments: A billable quality cold water meter is to be provided at each private residential dwelling, including apartments and townhouses.

Domestic Hot Water Plant: A cold water meter is to be provided at the inlet to the centralised domestic hot water plant to monitor the domestic hot water consumption.

Irrigation: A private water meter is to be fitted to the irrigation cold water supply to monitor the irrigation water usage.

Rainwater Re-use: A private water meter is to be fitted to the outlet of the rainwater pump and to the mains back up supply to monitor rainwater re-use and mains water backup consumption.

Building Management System

Data readings from the water meters are to be integrated into a mini Building Management System in order to record data, monitor trends and identify leaks.

Commissioning

In order to ensure efficient operation of the Hydraulic Services installation, the Hydraulic equipment is to be commissioned in accordance with CIBSE Commissioning codes, in particular Code M. Equipment to be commissioned in this manner consists of (but is not limited to), Domestic Hot Water Plant, Re-circulation Pump, Re-usable Water Pressure Booster Pump, Reticulation Pipework, Backflow valves and Thermostatic Mixing Valves.

Operation and Maintenance data is to be provided to the building manager to ensure the system is maintained and functioning at peak efficiency.

5.0 Vertical Transportation Services

All passenger lifts is to be designed to meet, if not exceed the best practice requirements for apartment buildings in South Australia. There are no current NCC Part J energy requirements applicable to lifts.

Lifts to be Machine Room Less (MRL) configurations and be provided with the following energy saving initiatives:

- Energy recovery systems to feed electricity back to the building as a result of the lift car breaking systems
- Variable Frequency Drive lift motors
- Timer controls to ensure lift car lighting is turned off when the lift in use for a five minute period
- Efficient digital control systems to maximise the traffic control and to limit the number of lifts in operation in peak and off peak periods
- LED lighting to lift cars

6.0 Passive Design Elements

The following passive design elements are proposed to be incorporated by architectural design.

Sun Control

The levels of the building above the podium are all provided with minimum 1200mm deep balcony spaces around the entire perimeter of the building. These balcony spaces provide shading to the glazed facades on the level below. 'Pocket balconies' in each apartment and hotel room are set back 2400mm from the edge offering further shading for the occupants. Offset floor plates at the North and South provide further means of solar control and also provide deeper overhangs to the East and West at some levels.

Glazing and Shading

High performance tinted glazing will be used throughout to further reduce solar heat gains. This glazing coupled with horizontal shading fins provide the podium levels with further protection from the sun.

Additionally the apartments are provided with deep perimeter balconies to address the Western sun. Internal blinds will allow occupants to further control sun and glare at a user level.

Further shading will be provided by the proposed street planting.

Natural Ventilation

All apartments and hotel rooms have large operable façade panels allowing them to be opened up and become naturally ventilated. The coupling of operable facades, broad private balconies and open plan layouts allows occupants to take advantage of naturally cooling sea breezes unique to the site.

Operable glazing adjacent to the two lift cores allows for the internal corridor to be naturally cross ventilated. Automated control will be incorporated to work with the mechanical ventilation system.

Materials

A restrained material palette allows for careful consideration of material selection. Where possible preference will be given to materials which have low embodied energy, low formaldehyde emissions and low volatile organic compound content.

HOLMES PARTNERS

Appendix 7. Traffic and Parking Report

Haven Property Trust

PROPOSED HOTEL AND APARTMENTS
6-10 ADELPHI TERRACE, GLENELG NORTH

PARKING DESIGN AND TRAFFIC ASSESSMENT

August 2015

14-0163

Traffic • Parking • Transport

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DOCUMENT ISSUE

Revision issue	Date	Description	Approved by
Draft 1	23 July 2015		
Draft 2	28 July 2015		DK
Draft 3	28 July 2015		DK
Rev A	25 August 15		DK

CONTENTS

1.0 INTRODUCTION

MFY Pty Ltd has been engaged to undertake a parking design and traffic assessment for the proposed mixed-use redevelopment of 6-10 Adelphi Terrace, Glenelg.

The proposal involves demolishing the existing Motel and constructing a mixed-use development comprising residential apartments, Hotel with ancillary components, a café, function facilities, meeting rooms and retail components.

This report provides a review and summary of the traffic and parking aspects of the proposal, including consideration of access, deliveries and refuse collection, parking and traffic impact.

This report is based upon plans prepared by Hassell (Drawings SK-0000 to SK-3002 dated 14 August 2015).

2.0 EXISTING SITUATION

2.1 SUBJECT SITE

The Holdfast Bay Council Development Plan (consolidated 18 December 2014) identifies the subject site to be located within the Residential High Density Zone (RHD) – Urban Glenelg Policy area. The RHD zone is bounded by a Residential Character zone to the north, east and south, Mixed Use to the east, District Centre to the South and Glenelg Foreshore and Patawalonga zone to the west.

The site is in close proximity to the Jetty Road precinct (suburban shopping strip), Glenelg Beach and Glenelg Jetty, Morphettville Racecourse and the Harbour Town Shopping Centre.

The site is currently occupied by the Comfort Inn Haven Marina comprising the following uses:

- café and function areas comprising 320 seats;
- 69 bedrooms comprising:
  - 18 Queen Rooms;
  - 39 Twin Share;
  - 10 Triple share;
  - Two apartments (triple share); and
- Meeting room comprising 12 seats.

There are 70 parking spaces existing for the site.

Parallel on-street parking spaces are available on both sides of Adelphi Terrace, George Street and Canning Street within close proximity to the subject site. Spaces generally do not have timing restrictions with the exception of some of the parallel spaces on the western side of Adelphi Terrace where there is a two hour timing restriction period between 09:00 am and 06:00 pm daily.

Figure 1 illustrates the subject site locality.

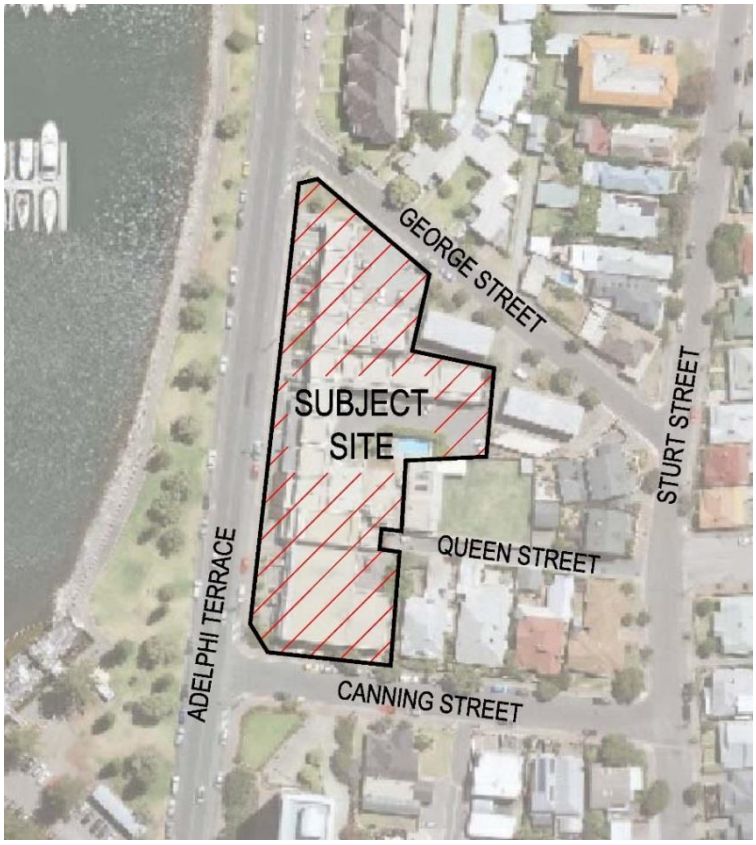

Figure 1: Subject site locality.

2.2 ROAD NETWORK

Adelphi Terrace functions as a collector road under the care and control of the Holdfast Bay Council. The road comprises two traffic lanes in each direction, with added bicycle lanes in each direction, and the addition of on-street parallel parking (both sides of Adelphi Terrace). Footpaths are provided on the eastern side of Adelphi Terrace, and on the western side adjacent the Patawalonga Lake. A residential speed limit of 50 km/h applies. Council's traffic data (2012) identifies a traffic volume of 12,000 vehicles per day (vpd).

George Street is a local two-way road also under the care and control of the Holdfast Bay Council. While no traffic data were available at the time of this assessment, it is estimated George Street would have a daily traffic volume within the range of a typical residential street (less than 1,500 vpd). Parallel parking is permitted on both sides of George Street, which is also subject to a residential speed limit of 50 km/h.

Canning Street is a local two-way street subject to a 50 km/h speed limit and is under the care and control of the Holdfast Bay Council. While no traffic data were available at the time of this assessment, it is estimated Canning Street would have a daily traffic volume within the range of a typical residential street (less than 1,500 vpd). Unrestricted parallel parking is permitted on both sides of Canning Street adjacent 1.3 m (approximate) footpaths.

Queen Street is a residential "no-through road" subject to an estimated traffic volume of less than 500 vpd. This road primarily provides access to the rear of the existing Motel development, a bowls club and residential allotments. A residential speed limit of 50 km/h applies.

2.3 TRANSIT SERVICES, CYCLISTS AND PEDESTRIANS

The subject site is well serviced by public transport including regular bus services to and from the Adelaide CBD, Adelaide Airport and Westfield Marion Shopping Centre.

The J1 service operates within 200 m walking distance from the site (Glenelg Interchange to City, and reverse, via Adelaide Airport), on Adelphi Terrace. The Department of Planning Transport and Infrastructure's (DPTI) patronage data for the 2014 financial year identifies that this service carries an average of approximately 1,700 patrons per weekday and 1,000 patrons per weekend day and public holiday, placing it ninth within the top ten busiest "east-west" bus routes in Adelaide.

Located approximately 800 m from the subject site on Gordon Street, the H20 service also operates in an "east-west" direction (Glenelg Interchange to Paradise Interchange, and reverse, via City). DPTI's patronage data (Year 2014) identifies this service has an average weekday patronage of approximately 3,200 persons and a weekend day and public holiday average patronage of 1,000 persons. This bus service is ranked third within the top ten busiest "east-west" services in Adelaide.

Additional bus routes operating on Gordon Street provide access to numerous suburban areas within Adelaide and surrounds. These services can been seen in Table 1 (in addition to the above services) along with their average weekday and weekend/public holiday patronage.

Table 1 DPTI patronage data from bus services operating within close proximity to the subject site (Year 2014).

Bus Route	Weekday Average	Weekend/Public Holiday Average
J1	1,700	1,000
H20	3,200	1,000
167	760	330
168	1,100	340
265	1,600	570
265B	60	*
265W	*	30

Source: Department of Planning, Transport and Infrastructure (DPTI).
*Service does not operate during weekday or weekend/public holiday periods (respectively)

Other public transport services such as the Glenelg/Adelaide Entertainment Centre tramline (via City), are located within close proximity to the subject site (on Jetty Road, within approximately 700 m walking distance). This public transit route provides excellent connectivity between Glenelg and the Adelaide CBD with an average patronage of 8,200 per weekday, utilising approximately 240 services (total). On weekend days and public holidays, patronage remains relatively high with approximately 5,000 patrons utilising the services.

Cycling also plays a key role in regards to movement within the Holdfast Bay Council. Adelphi Terrace is recognised within the South Australian Government's Bikedirect Network as a "Secondary Road with Bike Lane", with full time bicycle lanes on both sides of the road.

The subject site is also accessible to pedestrians, as pedestrian paths exist on all roads surrounding the subject site (Adelphi Terrace, George Street, Sturt Street and Canning Street). These streets create a well serviced pedestrian area, providing links to Jetty Road, the Glenelg foreshore and other tourist facilities.

3.0 PROPOSED DEVELOPMENT

The proposed development will comprise the construction of a new multi-storey building. The proposal will comprise the following uses:

- retail tenancies with a total floor area of 768 m²;
- café and function areas comprising a total of 174 seats;
- 146 rooms associated with the proposed Hotel;
- meeting rooms comprising 40 seats;
- 60 privately owned apartments/penthouses comprising;
  - 12 x 2 bedroom apartments;
  - 24 x 3 bedroom apartments;
  - 4 x 2 bedroom penthouses; and
  - 20 x 3 bedroom apartments.

Ancillary uses include an office area for staff and a pool bar accessible to the privately owned apartments/penthouses and guests of the proposed Hotel. These facilities will not generate any additional parking demand or traffic generation.

A total of 204 parking spaces are proposed to be provided in the form of a multi-level car park. A total of ten on-street parking spaces is proposed to be installed on Adelphi Terrace adjacent the western boundary. However, given these parking spaces will be publically accessible, they have not been considered as part of the parking assessment, albeit it will be an improvement to on-street parking provisions adjacent the site. The on-street parking spaces will be designed to the relevant on-street parking standards.

3.1 ACCESS

The site is currently accessible via a total of eight crossovers. Five crossovers exist on Adelphi Terrace to the west, one crossover on George Street to the north, one crossover via Canning Street to the south and one crossover via Queen Street to the east.

Access to the proposed development will be consolidated via two crossovers. It is proposed to retain the George Street crossover, while the Canning Street crossover is proposed to be relocated further east adjacent the eastern boundary to provide greater separation from the Canning Street/Adelphi Terrace intersection.

This proposal will result in the removal of the five crossovers (some being greater than 20 m wide) directly from Adelphi Terrace. The closure of the crossovers will have significant road safety benefits in that it will reduce the number of conflict points on

the main road. This will also significantly improve the safety of pedestrians and cyclists along the western end of the site, as a result of removing the crossovers and eliminating the need for a driver to reverse directly onto Adelphi Terrace when exiting the parking spaces.

The crossover via Queen Street is also proposed to be closed.

The existing George Street crossover is proposed to be the primary access with a proposed relocation of the Canning Street crossover to accommodate delivery and refuse collection only.

4.0 PARKING DESIGN

The publicly accessible section of the car park will comply with the requirements of the relevant Australian/New Zealand Standard, *Parking Facilities Part 1: Off-street car parking (AS/NZS 2890.1:2004)*, in that:

- standard spaces will be 2.5 m wide and 5.4 m long;
- aisles will be 5.8 m wide with at least 300 mm clearance to obstructions;
- columns will be located outside of car door opening and manoeuvring envelope as identified in Figure 5.2 of the Standard;
- a minimum head height of 2.2 m will be provided above aisles and parking spaces (with an additional 300 mm head height above parking spaces for people with disabilities);
- the internal ramps within the car park will be a minimum 5.8 m wide with 300 mm clearances;
- ramp grades will not exceed a gradient of 1:5 and will have appropriate transitions at the top (3 m at 1:8) and bottom (3 m at 1:6.7) for car clearances; and
- a turn-around area will be provided at the end of any blind aisles (greater than six spaces in length).

The publicly accessible section of the car park will also provide compliant spaces for people with disabilities in accordance with the requirements of the Australian/New Zealand Standard, *Parking Facilities Part 6: Off-street parking for people with disabilities (AS/NZS 2890.6:2009)*, in that spaces will be 2.4 m wide and 5.4 m long, with an adjacent 2.4 m wide shared area.

The proposed turn around space at the end of the blind aisle will be partly shared with the adjacent shared area for use by people with a disability. Whilst the blind aisle turn around provisions will utilise a portion of the shared zone, it will be in accordance with the intent of AS/NZS 2890.1:2004, in that drivers will be able to undertake the turnaround manoeuvre at the end of the blind aisle. Such movements will be minimal and the turning movements will be effectively executed.

Bicycle and motorcycle parking is proposed to be provided within the ground level car parking area. Bicycle parking will also be installed within the proposed protuberances along the Adelphi Terrace frontage in close proximity to the main entrances. A total of approximately 40 bicycle parking spaces are proposed. This will be further developed during detailed design.

4.1 SECURE PARKING

Secure parking is proposed for the residential apartments and penthouses on all levels of the car park, providing a total of 77 residential spaces.

These spaces will generally comply with the requirements of the Australian/New Zealand Standard, *Parking Facilities Part 1: Off-street car parking (AS/NZS 2890.1:2004)* for User Class 1A, in that:

- all parking spaces will be at least 2.4 m wide and 5.4 m long;
- aisles will be 5.8 m wide with at least 300 mm clearance to obstructions;
- columns will be located outside of car door opening and manoeuvring envelope as identified in Figure 5.2 of the Standard; and
- blind aisles will extend 1.0 m beyond the last space.

There will be no turnaround spaces nominated at the end of the parking aisles, as all spaces will be allocated to specific residents/staff.

Six stacked parking spaces are proposed for residential use (one set proposed on level 1 and the others on level 2).

All secured parking spaces will be accessed through internal roller doors, of which the operation will be determined during the detailed design stage. It is also recommended that adequate sightlines be provided for drivers entering and exiting the secured parking areas in order to minimise the potential safety conflicts occurring.

The parking aisle for the secure spaces car park at ground level to the north of the proposed Apartment Lobby will need to be widened to 5.8 m with 300 mm clearance from obstructions. It is understood from Hassell that this could be readily accommodated during detailed design.

4.2 DELIVERY AND REFUSE COLLECTION

Delivery and refuse collection is proposed to occur via Canning Street. The largest expected delivery vehicle to access the loading area will be an 8.8 m Medium Rigid Vehicle (MRV). There will be a minimum head height clearance of 4.5 m and the loading area will be approximately 8 m wide which will comply with AS 2890.2:2002. Figure 2 illustrates how a driver of an MRV (the largest expected vehicle) will be able to enter and exit the site in a forward direction.

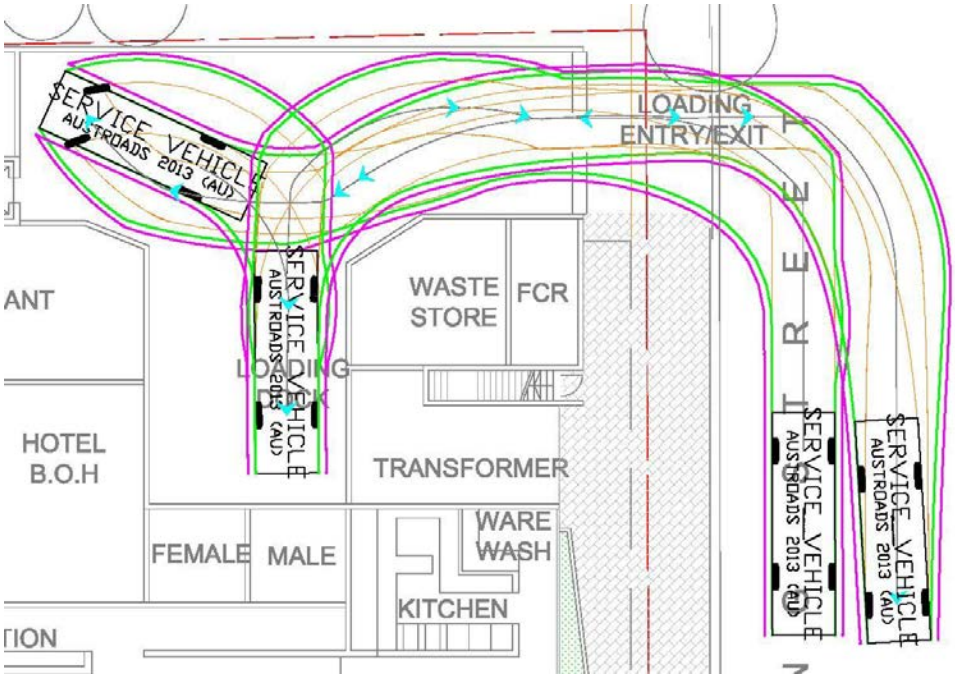

Figure 2: Swept path illustration of an MRV

Refuse collection will be undertaken by a private contractor and will be undertaken by an MRV or smaller vehicle.

The number of trips generated by deliveries and refuse collection associated with the proposal is estimated to be in the order of five trips per day, which is considered low.

5.0 PARKING ASSESSMENT

5.1 PARKING RATES

Council's Development Plan identifies the following parking rates applicable within the RHD zone for the proposed uses:

- 1 parking space per 15 m² for retail;
- 1 parking space per 5 seats for a meeting hall; and
- For a residential flat building and tourist/visitor accommodation within the Residential High Density Zone comprising three storeys or more (external wall heights greater than 10.5 m) above natural ground level:
  - 0.75 parking spaces per 1 bedroom independent habitable unit;
  - 1 space per 2 bedroom independent habitable unit;
  - 1.5 spaces per 3 or more bedroom independent habitable unit;
  - plus an additional space for every 5 units for visitors.

It should be noted that there would be a high number of patrons and residents in Glenelg who would use alternative modes of transport and therefore this would be a conservative assessment by adopting the following rates.

This is consistent with Council's Development plan which identifies that the RHD zone is *"well provisioned with quality public open spaces and accessible by public transport (in the form of buses and tram). Accordingly, there is a recognised reduced need for provision of private car parking ".* Accordingly, the following Sections 5.1.1 to 5.1.5 of this report considers parking rates appropriate for this development proposal.

5.1.1 RETAIL RATE

In regard to Council's Development Plan retail parking rate, such a rate, is much higher than experienced at retail centres and would result in a significant overprovision of parking for the site. It is now accepted that retail development generates a lower peak parking demand, as documented in numerous recent approvals which have had a lower parking rate. Furthermore, parking demand rates from surveys at various retail uses undertaken by MFY indicate that the peak demand rates have all been in the range of 4.0 to 4.5 spaces per 100 m². The surveys indicate there has been a downward trend in peak parking demands that has occurred over the past 15 years. In addition, it is noted that the retail proposed for the subject site would be patronised by residents and tenants, thus reducing the parking demand associated with this tenancy. For the purposes of this assessment, a rate of 4.5 spaces per 100 m² has been adopted.

5.1.2 RESIDENTIAL RATE

With regard to the residential flat building parking rate, the NSW Roads and Traffic Authority's (RTA) "*Guide to Traffic Generating Developments*" identifies a parking rate of 0.9 parking spaces per 2 bedroom unit and 1.4 parking spaces per 3 bedroom unit plus 1 parking space per 5 units for visitors. Such a rate is similar to the rate identified in Council's Development Plan. While the subject site is provided with good connectivity to public transport and other transport modes, the rates from Council's Development Plan have been adopted as a conservative assessment.

5.1.3 HOTEL RATE

While Council's Development plan identifies a rate for tourist accommodation, this is considered excessive as it is categorised with the rate for residential flat buildings, which would not be the case for this proposal.

Planning SA's Planning Bulletin does not identify a parking rate for a Hotel. However, the RTA Guide identifies a peak rate of one space per four units which is considered an appropriate rate to adopt for this assessment.

5.1.4 CAFÉ/FUNCTION RATE

While Council's Development Plan does not identify a parking rate for a café specifically for a RHD zone, given that the District Centre zone is adjacent the subject RHD zone, it is considered that the rate of one space per five seats (as the rate identified in the District Centre zone) is appropriate for the parking assessment for this use in the proposal. The rate has also been applied for the proposed function areas as it would operate in a similar manner.

5.1.5 MEETING ROOM RATE

The rate identified for a meeting hall has been adopted for the proposed meeting rooms as it would operate in a similar manner.

5.2 EXISTING

Based on the above parking rates Table 1 summarises the theoretical parking requirements under the existing use.

Table 2: Theoretical Parking Requirement Summary of Existing Situation

Use	Quantity	Rate		Spaces
Café/Function	320	0.2	per seat	64
Motel beds/apartments	69	0.25	per unit	18
Meeting	12	0.2	per seat	2
Total				**84**

It can be seen that there is a theoretical parking requirement of 84 parking spaces associated with the existing situation. Given only 70 parking spaces are provided on-site, this would imply there is a theoretical on-street parking demand for 14 parking spaces.

5.3 PROPOSED

Based on the above parking rates Table 3 summarises the theoretical parking requirements under the proposed use.

Table 3: Theoretical Parking Requirement for the Proposed Development

Use	Quantity	Rate		Spaces
Hotel Room	146	0.25	per unit	36
2 Br Apartment/Penthouse	16	1.0	per unit	16
3 Br Apartment/Penthouse	44	1.5	per unit	66
Apartment/Penthouse Visitors		0.2	per unit	12
Retail	768	4.50	per 100 m²	35
Café/Function	174	0.2	per seat	35
Meeting	40	0.2	per seat	8
Total				**208**

As shown in Table 3, there will be a parking demand for 208 parking spaces. It is proposed to provide 204 parking spaces and, therefore, the peak parking demand will have a theoretical on-street reliance for 4 parking spaces. Such a reliance is less than the on-street reliance for the existing situation.

Furthermore, the above table is the scenario where the peak parking demand associated with all uses in the proposal were to coincide. However, in reality there will be different peak parking demands associated with the different uses. The following section assesses three peak parking demand scenarios which indicates there will be no theoretical on-street parking reliance.

5.4 SENSITIVITY ANALYSIS OF SCENARIOS

Three scenarios have been considered in this assessment, namely:

- Scenario 1 – weekday lunchtime period;
- Scenario 2 – weekend lunchtime period; and
- Scenario 3 – weekday and weekend evening period (after 7pm).

In regard to Scenario 1, during lunchtime periods cafés on a weekday lunchtime would not be occupied at capacity. Typically a café would only have approximately 50% occupancy.

Similarly, visitors to the apartments and penthouses would typically occur during the evening or weekends.

In regard to Scenario 2, it is not expected that the meeting rooms would be in use during weekend lunchtimes. Similarly, it is expected that 50% of patrons associated with the Hotel would have headed out for the day with their vehicles.

In Scenario 3, it is expected that meeting rooms would not typically be occupied during the evening and retail after 07:00pm would typically be no more than 60% of the peak parking demand based on MFY's experience at other retails sites.

Table 4 provides a forecast peak parking assessment of Scenarios 1, 2 and 3 for the proposal.

Table 4: peak parking demand assessment for alternative peak scenarios

Use	Theoretical spaces required	Scenario 1		Scenario 2		Scenario 3	
		Per cent of peak	Lunchtime weekday and weekend Scenario	Per cent of peak	Weekend lunch Scenario	Per cent of Peak	Evening weekday or weekend Scenario
Hotel room	36	50%	18	50%	18	100%	36
2 Br Apt/ Penthouse*	16	N/A	16	N/A	16	N/A	16
3 Br Apt/ Penthouse*	66	N/A	66	N/A	66	N/A	66
Apt/ Penthouse Visitors	12	25%	3	100%	12	100%	12
Retail	35	90%	32	100%	35	60%	21
Café/ Function	35	50%	17	100%	35	100%	35
Meeting	8	100%	8	0%	0	0%	0
Total	**208**		**160**		**182**		**186**

**The parking spaces are assigned to residents*

5.5 PARKING ASSESSMENT SUMMARY

The above parking assessment identifies that the proposed development can readily provide the parking requirements within the subject site.

Furthermore, this would result in a theoretical reduction on the reliance for on-street parking, when compared with the existing situation. Accordingly, it is considered that parking provisions for the proposed development will be more than adequate.

In addition to the above, Council's Development Plan identifies a parking rate of one car parking space per 30 spaces provided with any form of development (other than residential development) for people with a disability. However it is considered that such a provision is high for this type of development (given that it is primarily residential in nature) and would lead to the potential sterilisation of parking spaces. The Building Code of Australia identifies for this type of development a provision requirement of 2% which is more appropriate and consistent with other developments of this nature.

TRAFFIC ASSESSMENT

In regard to this traffic assessment, the morning trade is typically less than that of the evening trade. Accordingly, the evening peak generation has been assessed as the worst case scenario.

The RTA Guide and the more recent update of this document, NSW Roads and Maritime Services (RMS) *"Guide to Traffic Generating Developments – Technical Direction – Updated Traffic Surveys"* (TDT 2013/04a) identifies the following traffic generation rates which have been adopted in this traffic assessment:

- 5 trips per 100 m² GFA for a café;
- 0.4 trips per unit for Motel accommodation; and
- 0.32 trips per unit for high density residential the more conservative rates for "regional" locations have been utilised (as opposed to central Sydney rates).

The NSW Roads and Traffic Authority's (RTA) (now Roads and Maritime Services (RMS)) *"Guide to Traffic Generating Developments"* (the RTA Guide) identifies a pm peak hour traffic generation rate of 12.3 trips per 100 m² for retail centres smaller than 10,000 m². However, surveys at shopping centres recently undertaken by this firm indicate that such a rate is high. The results at other centres range from 7.5 to 9 trips per 100 m². For the purpose of this traffic assessment, a rate of nine trips per 100 m² has been adopted.

While the RTA guide does not identify a traffic generation rate for meeting rooms, the meeting rooms could potentially operate similarly to that of an office, albeit it is anticipated the traffic generation may be slightly lower. Notwithstanding a rate of 1.2 trips per 100 m² has been adopted for this assessment.

Similarly, the Motel rate has been adopted for the proposed Hotel component as a comparable assessment.

Table 5 summarises the existing, proposed and forecast additional traffic being generated by the subject site.

Table 5: Existing, proposed and forecast additional traffic generation

Existing Use	Quantity	pm Trips Rate	Trips
Café and Function rooms	620 m²	5 per 100 m²	31
Meeting rooms	25 m²	1.2 per 100 m²	1
Motel Accommodation	69 rooms/apartments	0.4 per unit	28
Existing Total			**60**
Proposed Use	**Quantity**	**pm trips Rate**	**Trips**
Retail	768 m²	9 per 100 m²	70
Café and Function rooms	575 m²	5 per 100 m²	30
Meeting rooms	126 m²	1.2 per 100 m²	2
Hotel Accommodation	146 rooms	0.4 per unit	60
Residential	60 Apartments/Penthouses	0.32 per unit	20
Proposed Total			**182**
Forecast Additional Total			**125**

On the basis of the above, there will be an additional forecast traffic generation in the order of 125 tips during the pm peak hour.

It should be noted that the peak hours for each of the different uses would not necessarily directly coincide. There would also likely be some double counting of shared trips associated with the mixed-use nature of the site. The above volumes, therefore, provide a conservative assessment of the generation associated with the proposal.

The distribution utilised is summarised in Figure 3.

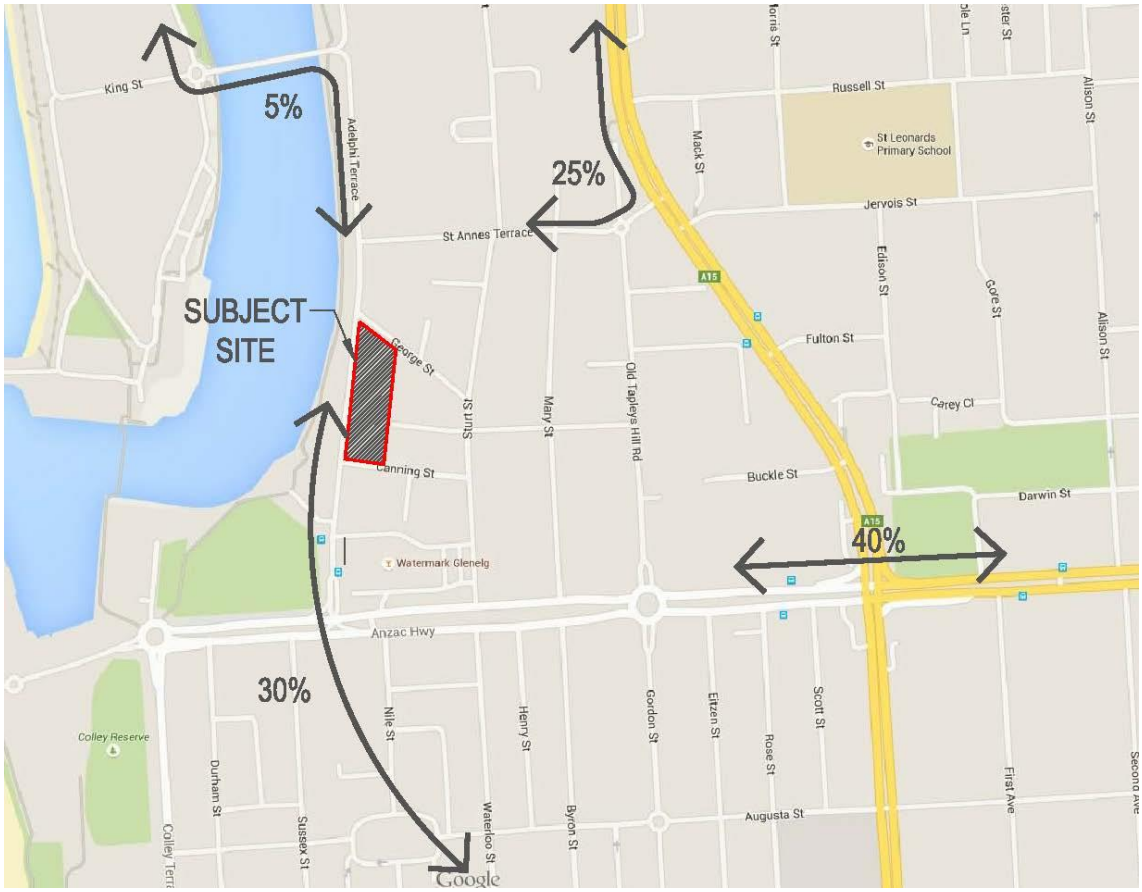

Figure 3: Forecast traffic distribution

In addition to this, it is forecast that approximately 30% of the forecast trips would be from the site and 70% of trips would be to the site in the pm peak hour. This equates to approximately 85 trips entering the site and 40 trips existing the site in the pm peak hour.

Based on the above traffic generation and distribution, the forecast additional trips has been undertaken for the pm peak hour scenario. The trips into and out of the subject site can be seen in Figure 4 below.

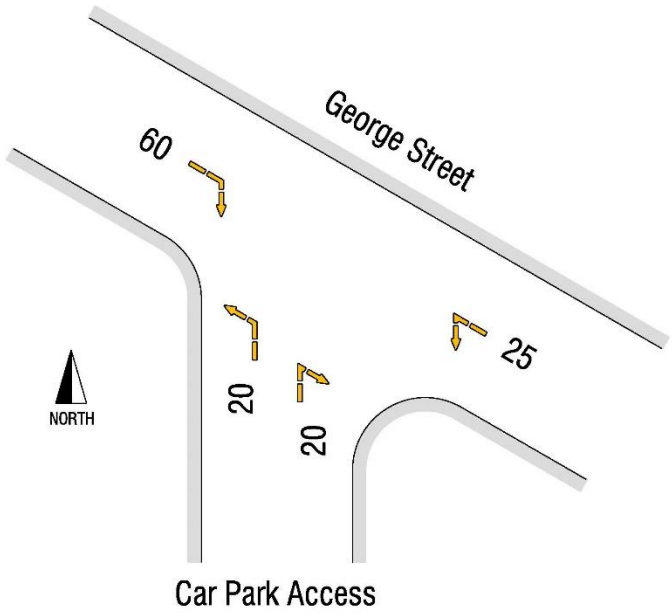

Figure 4: Site access/George Street Turning movements in the pm peak hour.

Given that the forecast additional trips relating to the subject development will be relatively low, the access of the on-site car park with George Street will operate satisfactorily.

6.0 SUMMARY

In summary, the proposed redevelopment of 6-10 Adelphi Terrace, Glenelg, will provide a mixed-use development incorporating residential, tourist, function, meeting and retail uses.

The proposal will be serviced by a publicly accessible car park which will provide 204 parking spaces for visitor and staff use, along with 77 secure parking for residents, across four levels. In addition to this, ten parking spaces will be provided on-street directly adjacent the subject site, albeit these parking spaces have not been considered in the parking assessment. These spaces will meet the requirements of Council's Development Plan and the RMS Guide in regards to parking provision. All parking spaces will be design to ensure compliance with the requirements of the relevant Australian Standards.

Deliveries and refuse collection will be accommodated on-site within a separate loading area with access from Canning Street.

Additional traffic associated with the development will readily be accommodated by the existing road network.

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Appendix 8. CPTED Report

CPTED

Meticulous design and the inclusion of active uses at the ground level promote a safe and secure environment. Retail tenancies wrap around the building to the north west and the café is nestled in the south west corner of the ground floor. Visibility is consequently high, and coupled with the expansive use of glazing, casual community surveillance of the adjoining public realm is optimised. Casual passive surveillance is augmented by the integration of balconies at all levels of the building, also enabling longer-view observation of Wigley Reserve to the south, and the Patawalonga Lake and its frontage to the west and north.

The building's entrance points along Adelphi Terrace will be well identifiable and secure. Clear signage distinguishes the apartment and penthouse lobbies from the hotel lobby to the south, which is accessed from Adelphi Terrace and Canning Street. Street level legibility enables a clear sense of address for the retail tenancies, tourists and residents alike. External lighting of the building will be multi-faceted and well integrated, ensuring a safe and well-lit environment for all.

Key urban design elements are contained in Hassell's "Design Principles". These elements are carefully considered and illustrate the thorough integration of architectural design and CPTED principles in this balanced proposal.

Pedestrian amenity in the public realm is enhanced through the generous 2.5m wide footpath, additional street tree plantings providing shade, retention of street lights and the anticipated removal of the existing power lines through the undergrounding of these services. The ground level façade is setback from the property boundary, enabling the projected level above to provide a sense of loggia at the pedestrian level.

Removal of the existing 80m of driveway along Adelphi Terrace vastly improves pedestrian safety and facilitates clear lines of sight, broadening the scope for casual community surveillance. The public realm is enlarged through a proposed kerb realignment, allowing "pockets" of green space interspersed with a number of car parking spaces. These "pockets" will offer opportunities for seating, bike racks and outdoor dining, further enhancing the public realm for the local community and tourists.

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Appendix 9. Waste Report and Schematic

WASTE

Hassell drawing SK-6002, the "waste management diagram", illustrates the intended movement of refuse culminating its storage within the designated "waste store and recycling" room, prior to its collection via the secure and sealed loading dock.

General household rubbish generated by hotel guests and residents will be placed in a specific waste chute, located at both the Northern and Southern cores. Both designated chutes terminate in a "waste room', illustrated on drawing SK-6002. Waste generated by the retail uses will be placed in the designated "retail waste" rooms, also illustrated on drawing SK-6002. All of the general, retail and hotel back-of-house waste will then be transferred to the large main "waste store and recycling" room adjacent to the loading dock for appropriate sorting prior to collection.

A designated "recycling collection point" for residents' use is located adjacent to the Northern core on each floor. Naturally, any recycling gathered from the hotel rooms will be collected by staff and taken directly to the main "waste store and recycling" room adjacent to the loading dock.

Bulk non-hazardous liquid waste generated by the hotel operations will continue to be collected by specialist contractors, via the loading dock area. Commercial property maintenance contractors will remove the green waste generated from the plantings, green wall and landscaped terrace. Domestic green waste, organic matter such as food and flowers, generated by residents can be accommodated in the designated "recycling collection point" for residents' use located adjacent to the Northern core on each floor. The City of Holdfast Bay operates a standard three-bin system and use will be made of the fortnightly green organic bin collection should demand require it. This is the only form of waste collection that may occur outside of the loading dock area.

All general, liquid, landscaping and recyclable refuse collection is proposed to occur completely within the secure, sealed loading dock area, which is accessed via Canning Street. Refuse collection will be undertaken by private contractors, consistent with the current satisfactory arrangement. The largest vehicle to access the loading area will be an 8.8 m Medium Rigid Vehicle (MRV).

mfy's "Parking and Traffic Assessment" Report concludes that the design of the loading dock area provides the necessary clearances to enable a driver of an MRV (the largest expected vehicle) to safely enter and exit the site in a forward direction.

The careful design of appropriately sized, designated refuse collection and storage areas enables the efficient recycling and transfer of waste. The loading dock facilitates the safe movement of waste off-site, minimising the visual and intrusive noise impacts that often accompanying such necessary activities.

Waste Resource Generation Rates

SOURCE: SA "Better Practice Guide Waste Management for Residential and Mixed Use Developments"

** medium density residential dwelling – no garden*
 # high density residential dwelling

	General Waste 35 litres/bedroom/wk* (#30)	**Recycling** 30 litres/bedroom/wk* (#25)	**Organics** 10 litres/bedroom/wk*
Apartment 12 x **2 bed** = **24** bedrooms	840 (#720)	720 (#600)	240
Apartment 24 x **3 bed** = **72** bedrooms	2520 (#2160)	2160 (#1800)	720
Penthouse 4 x **2 bed** = **8** bedrooms	280 (#240)	240 (#200)	80
Penthouse 20 x **3 bed** = **60** bedrooms	2100 (#1800)	1800 (#1500)	600
	5700 litres / week	4920 litres / week	1640 litres / week
	General Waste (5 litres/day)	**Recycling** (3 litres/day)	**Organics** (1.5 litres/day)
Hotel **Accommodation** 146 rooms	730 (5110 litres / week)	438 (3066 litres / week)	219 (1533 litres / week)

	General Waste	Recycling	Organics
Café 200m2	30 litres / 10m2/day = 600 litres/day (4200 litres/week)	20 litres / 10m2/day = 400 litres/day (2800 litres/week)	40 litres / 10m2/day = 800 litres/day (5600 litres/week)
Retail 768 m2	6 litres/10m2/day = 460.8 litres/day (3225.6 litres/week)	6 litres/10m2/day = 460.8 litres/day (3225.6 litres/week)	0.3 litres/10m2/day = 23.04 litres/day (161.28 litres/week)
Function Space 420 m2	30 litres / 10m2/day = 1260 litres/day (8820 litres/week)	20 litres / 10m2/day = 840 litres/day (5880 litres/week)	40 litres / 10m2/day = 1680 litres/day (11760litres/week)
Function Space 420 m2	30 litres / 10m2/day = 1260 litres/day (8820 litres/week)	5 litres / 10m2/day = 210 litres/day (1470 litres/week)	40 litres / 10m2/day = 1680 litres/day (11760litres/week)

	Hard & E-Waste (0.77m3/household/year
Apartment 12 x **2 bed** = 24 bedrooms	18.48 m3
Apartment 24 x **3 bed** = 72 bedrooms	55.44 m3
Penthouse 4 x **2 bed** = 8 bedrooms	6.16 m3
Penthouse 20 x **3 bed** = 60 bedrooms	46.2 m3
164 households	***126.28 m3 / year***

TOTAL:

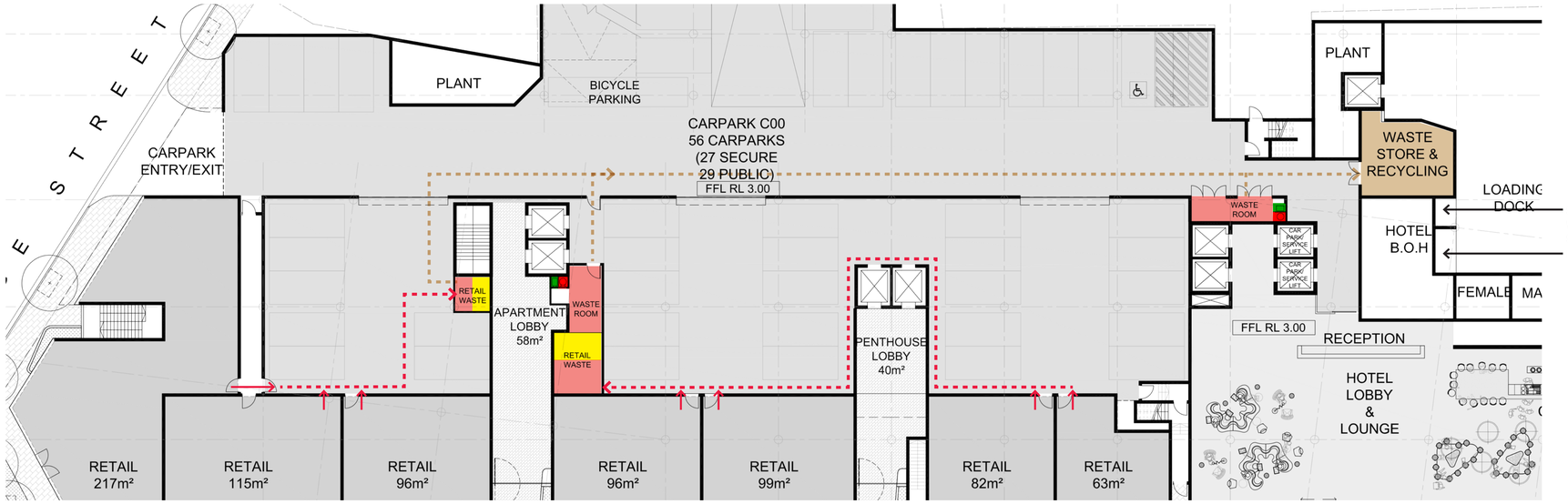
General Waste = 18 235.6 litres / week
Recycling = 14 011.6 litres / week
Organics = 8 934.28 litres / week

NB excludes Function Space – difficult to ascertain best fit "waste resource generation rates", hence calculated with firstly with "café/restaurant" then with "hotel or motel – dining areas" from the Guide. Not satisfied with either.

These volumes are indicative of the need for twice/thrice weekly collection. The compaction of waste may assist in reducing storage space need and hence reduce collection frequency. The selected contractor will determine the precise storage method. It is, however, proposed that waste will be stored in a combination of 660 and 1100 litre bins, and the use of larger bins such as those with a 1.5m3 capacity will also be considered.

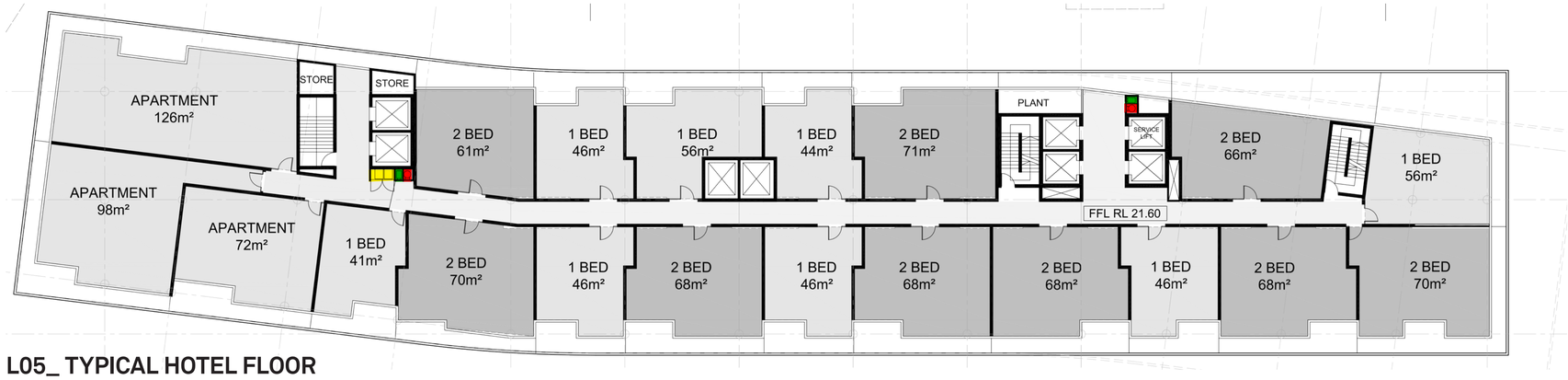
The Waste Management System incorporates local disposal rooms on each level enabling access to the three stream waste chutes. Refuse from each of the chutes aggregates in the relevant waste bin located in the ground floor level waste storerooms prior to collection by contractors through the loading dock.

It is important to note that the higher rate specified for *medium density residential dwelling – no garden* has been used – not that specified in the Guide for *high density residential dwelling*.

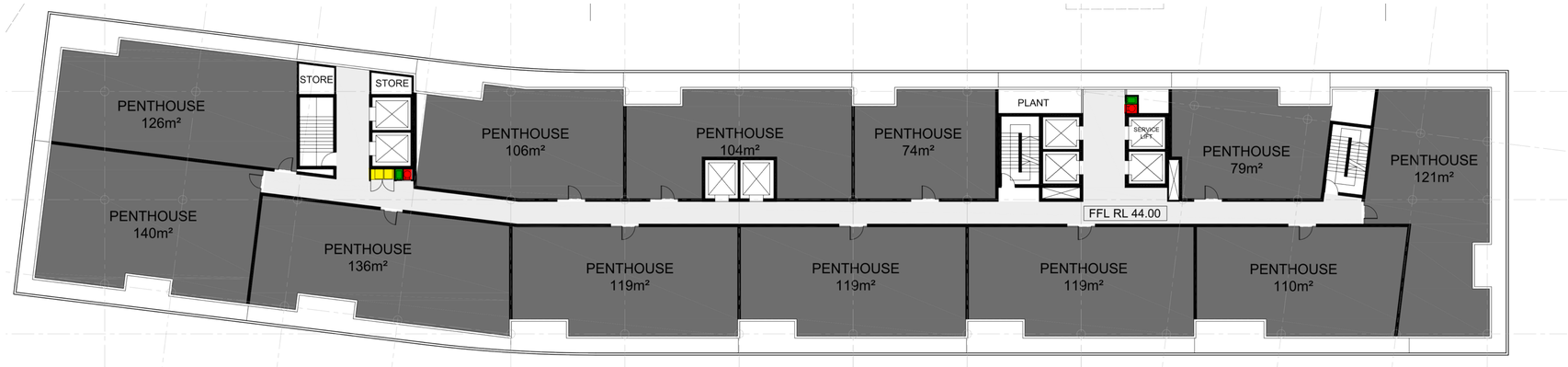


SHORT TERM E-WASTE, HARD WASTE, HAZARDOUS WASTE STORE
BIN WASH AREA

L00_ GROUND FLOOR



L05_ TYPICAL HOTEL FLOOR



L12_ PENTHOUSE LEVEL

GENERAL WASTE CHUTE

WASTE COLLECTION POINT/ STORE

WASTE STORE & COLLECTION

RECYCLING COLLECTION POINT

GREEN WASTE COLLECTION POINT

PATHS OF TRAVEL

PATHS OF TRAVEL

0 2 8 16m

Revision
[A - DRAFT DEV. APP.]

Date
[29-07-2015]

Scale
1:200@A1
1:400@A3

Client
Bruno Marveggio

Project Name
Marina Regency Hotel & Apartments
6-10 Adelphi Tce
Glenelg SA

Drawing
SK-6002
WASTE MANAGEMENT DIAGRAM

HASSELL

HOLMES PARTNERS

Appendix 10. Advice from AAL

From: Brett Eaton <beaton@aal.com.au>
Sent: Tuesday, 21 July 2015 1:52 PM
To: Stephen Holmes
Subject: RE: Send data from MFP11376904 15/07/2015 15:51

Hi Stephen,

The proposed building at 50.4m AHD will be through the Obstacle Limitation Surface at 48.5m AHD so will require an Airspace Approval in accordance with the Airports Act Protection of Airspace Regulations.

The PANS-Ops Surfaces is at approx. 74m AHD. Any construction crane would need to stay below this height.

In my opinion I don't consider an Airspace Impact Study is required if you are confident that there is enough freeboard above the building to accommodate crane operations to the PANS-OPS Surfaces.

If this 23.6m is marginal then you may require an Airspace Impact Study to confirm crane operations can stay below the PANS-OPS during construction.

Regards
Brett Eaton
Airside Operations Manager

P: 08 8308 9245
M: 0438 890 111
F: 08 8308 9311
E: beaton@aal.com.au

-----Original Message-----
From: Stephen Holmes [mailto:stephen@holmespartners.com.au]
Sent: Monday, 20 July 2015 2:58 PM
To: Brett Eaton
Subject: FW: Send data from MFP11376904 15/07/2015 15:51

Further to my email on 15/7/15, based upon our proposed building height of RL50.4 for 6-10 Adelphi Terrace, a height of RL49.3 for Atlantic Tower next door and an OLS of RL48.5 at this location (as advised by you), are you able to confirm that an Aeronautical Impact Assessment will not be necessary in this instance?

Regards

Stephen Holmes
Director
Holmes Partners Australia

Mobile 0413 807 348
stephen@holmespartners.com.au

Gizeau Pty Ltd trading as Holmes Partners Australia

-----Original Message-----

From: Stephen Holmes
Sent: Wednesday, 15 July 2015 4:18 PM
To: 'beaton@aal.com.au' <beaton@aal.com.au>
Cc: Helen Dyer <helen@helendyer.com.au>
Subject: FW: Send data from MFP11376904 15/07/2015 15:51

Enclosed is a cross section and site plan for the proposed development of 6-10 Adelphi Terrace, Glenelg North. Also enclosed is the advice from Minister Rau declaring this proposal a Major Development. We would be pleased to receive your early advice regarding the acceptability of the height of this building. Please advise is you require any additional information to assist with your assessment.

Regards

Stephen Holmes
Director
Holmes Partners Australia

Mobile 0413 807 348
stephen@holmespartners.com.au

Gizeau Pty Ltd trading as Holmes Partners Australia

-----Original Message-----
From: Holmes Group Scanner [mailto:scanner@iinet.net.au]
Sent: Wednesday, 15 July 2015 3:52 PM
To: Stephen
Subject: Send data from MFP11376904 15/07/2015 15:51

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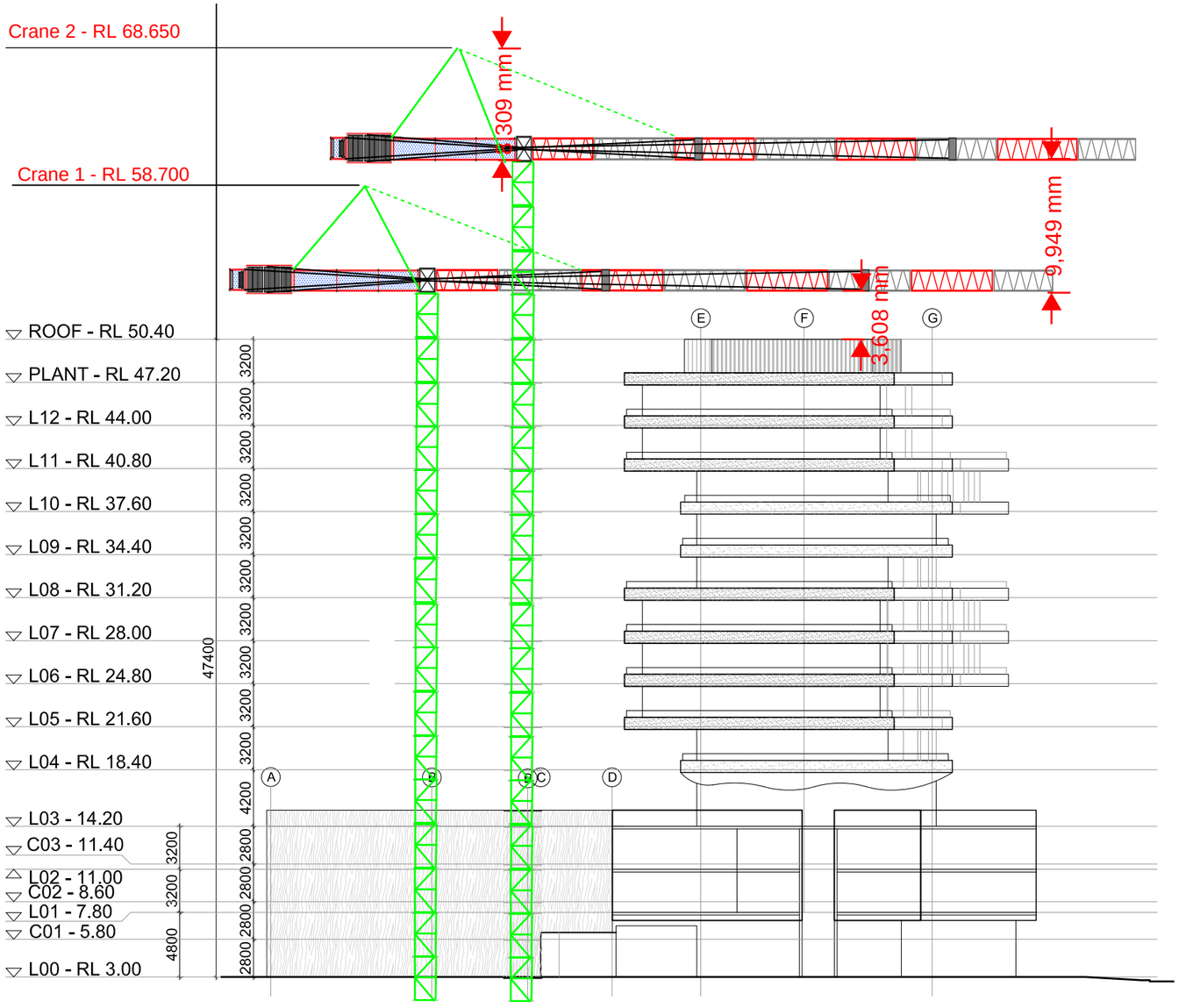
Pages:2
Resolution:300x300 DPI

HOLMES PARTNERS

Appendix 11. Advice regarding Crane specifications



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Revision	Date	Scale	Client	Project Name	Drawing
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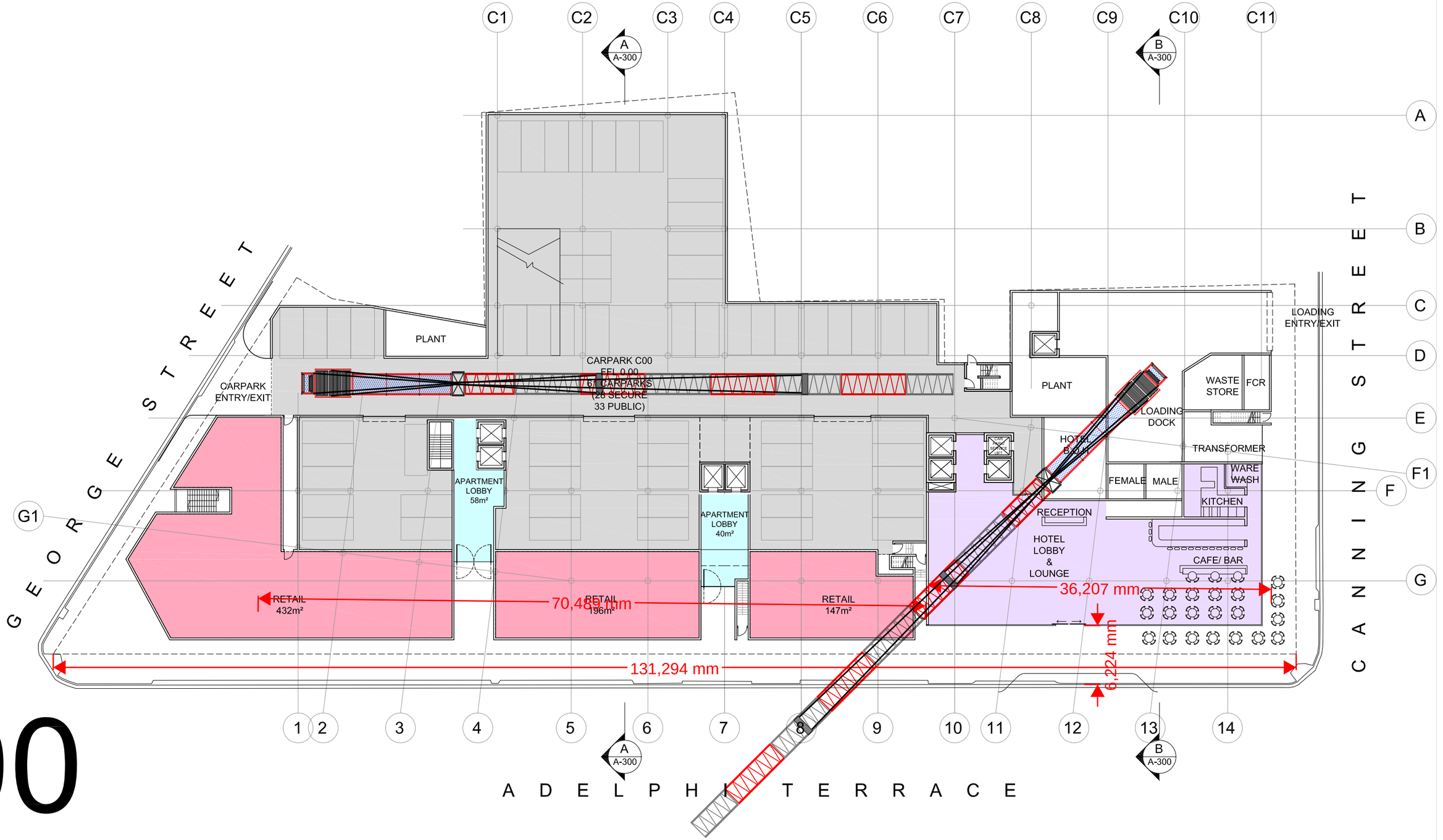
[C, PRELIMINARY]	[11-JUNE 2014]			[Glenelg, SA]	NORTH ELEVATION
[D,PRELIMINARY]	[01-JULY 2014]				
[E, PRELIMINARY]	[29-APRIL-2015]				
[F, PRELIMINARY]	[13-MAY-2015]				
[G, PRELIMINARY]	[21-MAY-2015]				

HASSELL



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0 5 10 20m

Revision	Date	Scale	Client	Project Name	Drawing
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[C, PRELIMINARY]	[11-JUNE 2014]			[Glenelg, SA]	GROUND FLOOR PLAN
[D,PRELIMINARY]	[01-JULY 2014]				
[E, PRELIMINARY]	[29-APRIL-2015]				
[F, PRELIMINARY]	[13-MAY-2015]				
[G, PRELIMINARY]	[21-MAY-2015]				

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HOLMES PARTNERS

Appendix 12. Noise Impact Assessment

aurecon

Marina Regency Hotel
Adelphi Tce, Glenelg

Development Application
Acoustic Report

Q Developments

3 August 2015
Revision: 1
Reference: 248366

Document control record

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Document control						
Report title	Development Application Acoustic Report					
Document ID	248366-RP-ACOUSTIC-001[01]		**Project number**		248366	
File path	\\aurecon.info\shares\AUADL\Admin\Data\General Staff\Disciplines\Noise and Vibration\Projects\Marina Regency Hotel, Adelphi Tce\Report\2015Aug03 248366-RP-Acoustic-001[01].docx					
Client	Q Developments		**Client contact**		Bruno Marveggio	
Rev	**Date**	**Revision details/status**	**Prepared by**	**Author**	**Verifier**	**Approver**
0	24 July2015	Draft	YKL	YKL	BD	NCM
1	3 August 2015	Issue to client	YKL	YKL	BD	NCM
Current revision	**1**					

Approval			
Author signature		Approver signature	
Name	Yong Keat LEE	Name	Neil Mackenzie
Title	Senior Acoustic Engineer	Title	Technical Director

Contents

Figures

Tables

1 Introduction

Aurecon has been engaged by Q Developments to provide acoustic advice for the proposed Hotel development at 6-10 Adelphi Terrace, Glenelg, South Australia.

The purpose of this assessment is to examine the proposed layout and architectural drawings to finalise the acoustic planning for the development. As part of the assessment, Aurecon has conducted an attended ambient noise surveys at the site.

This report addresses the acoustic design issues associated with development as part of the development application process. The report provides the following information:

- A general overview of the environmental noise impact to the proposed development;
- Results of attended noise measurements conducted at the subject site;
- Established relevant environmental criteria and requirements for operational noise emission for the project in accordance with the relevant Holdfast Bay Council Development Plan Provisions, relevant legislation, Australian Standards and South Australia EPA requirements;
- Preliminary assessment of external noise intrusion into the proposed development;
- Identifies the nearest potentially affected existing noise-sensitive receivers;
- Control of mechanical plant noise emission to noise-sensitive receivers (including those within the development itself) from the user of the development;
- Provide preliminary noise mitigation measures required to comply with the relevant project-specific criteria.

A glossary of acoustic terminology used throughout this report is included in Appendix A.

2 Proposed Development

Based on information provided (i.e. architectural drawings received from Hassell via email on 23 July 2015), it is understood that the development involves development of a new 12 storeys residential hotel apartments and ground level commercial/retail suites located at 6-10 Adelphi Terrace, Glenelg. The proposed hotel development comprises function rooms on level 1, swimming pool facility on Level 3, four levels of car parks and retail at ground level, commercial tenancies on the first floor.

The project is situated approximately 100 meters from the beach, and overlooking at the Boat Haven at Holdfast Bay, and the site is bounded by Adelphi Terrace to the west, George Street to the north, Canning Street to the South, and existing residential properties and Queen Street to the east. An aerial photograph of the site is shown in Figure 1.

Figure 1: Outline of proposed development site

The subject site is located within the “Residential High Density (RHD)” zone and is currently a Hotel accommodation (i.e. as Comfort Inn Haven Marina). The immediate area comprises residential properties along Adelphi Terrace and mixed commercial and residential properties in the broader surrounding area.

3 Identified Noise Issues

Following an inspection of the site, a review of the proposed development and inspection of the adjoining land uses, the following noise issues have been determined as being of concern:

3.1 Noise affecting the development

The proposed hotel development has the potential to be subjected to noise intrusion from the following sources:

- Road traffic noise intrusion from traffic along Adelphi Terrace;
- Air craft noise intrusion.

External noise intrusion is considered in this assessment to guide the design of the building envelope to protect against aircraft and road traffic related noise. These issues will be resolved with adequate façade glazing and building envelope construction in the detailed design stage. With appropriate façade design, the internal noise levels within the new hotel will comply with the appropriate Australian Standard.

3.2 Potential noise emissions from the development

Noise from the proposed hotel development has the potential to affect existing neighbouring properties in the area as follows:

- Mechanical services noise from the development (e.g. roof-mounted plant)

Noise emissions are also addressed in this assessment to guide the design of the development to protect the surrounding environment.

The following acoustic issues are outside the scope of this preliminary DA assessment and would be considered separately once the design is mature, during future detailed design phases:

- Indoor noise resulting from the operation of building services associated within the development (such as mechanical plant, lifts and hydraulics).
- Acoustic separation of dissimilar spaces within the development
- Acoustic isolation of plant room, back of house, risers, etc. with noisy equipment
- Noise & vibration emission associated with construction

4 Existing Noise Environment

An attended day-time and night-time noise survey was undertaken at the project boundary to document existing noise levels and noise sources impacting on the future development during the day-time and night-time. The measurements were carried out using a Type 1 Larson Davis LD 831 sound level meter (equipped with a LD PRM 831 pre-amplifier and a PCB 377B02 ½" microphone). The sound level meter was field calibrated with a Larson Davis LD CA 200 pistonphone before and after the noise survey, with the calibration found to be consistent. The microphone of the sound level meter was fitted with an approved windshield at all times throughout the survey. The measurement locations are shown in Figure 2, and summarised as follows:

- Location 1 – On the Adelphi Terrace footpath;
- Location 2 – On the George Street footpath;
- Location 3 – On the Canning Street footpath.

Figure 2: Attended Noise Survey Locations

Based on our site observation and attended noise survey, we note the dominant noise sources on-site will be vehicle traffic movement along Adelphi Terrace. A summary of the existing measured day-time and night-time noise levels is presented in Table 1 below.

Table 1: Summary of attended noise measurements conducted on 4 September 2014

Location	Measurement time	Measured noise levels, dBA				Observations
		L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	
Adelphi Tce (Location 1)	Day period (7:00-7:15am)	70	86	74	50	Traffic dominant, Instantaneous noise was measured at 84dBA when a bus pass-by.
	Night period (10:05-10:20pm)	64	78	69	46	Background noise with no traffic was measured at approx. 46dbA. Road traffic noise dominant, with car pass-by measured at 73dBA, bus pass-by at 75dBA, and 2x light aircraft flyby at approx. 65dBA.
George St (Location 2)	Day period (7:18-7:33am)	57	74	59	46	Noise from road traffic along adjacent Adelphi Tce was dominant. Instantaneous noise was measured at 72dBA when an aircraft taking off
	Night period (10:20-10:35pm)	50	61	53	46	Road traffic pass-bys on Adelphi Tce dominant with light wind in trees and distant traffic audible. Adelphi traffic pass-bys was measured at approx. 54dBA.
Canning St (Location 3)	Day period (7:35-7:50am)	64	81	64	47	Noise from road traffic along adjacent Adelphi Tce was dominant. Instantaneous noise was measured at 81dBA when a truck pass-by, and aircraft noise was measured at 60dBA. Other noise audible include distant loading dock activity noise
	Night period (10:40-10:55pm)	54	65	58	46	Identical to George St, i.e. road traffic pass-bys on Adelphi Tce dominant. Background noise was measured at 46dBA with audible "humming" noise from outdoor air conditioning units at Comfort Inn. During this period, a plane was landing, and was measured at approx. 60dBA.

Note:

- L_{Aeq} refers to A-weighted equivalent continuous sound pressure level over the measurement period. It is used to quantify the average noise level over a time period.
- L_{A10} refers to the A-weighted noise level which is exceeded for only 10% of the measuring period. It is usually used as the descriptor for intrusive noise level and represents ambient road traffic noise in general.
- L_{A90} refers to the A-weighted noise level which is exceeded for 90% of the measuring period. It is usually used as the descriptor for background noise level during the measurement period.

5 Regulations and Standards

The following legislation, guidelines and standards were referenced to address the various components of this study:

5.1 External noise intrusion into development

- Holdfast Bay Council Development Plan, consolidated 18 December 2014;
- *Australian Standard AS/NZS 2107:2000 "Acoustics – Recommended design sound levels and reverberation times for building interiors";*
- *Australian Standard AS2021-2000 "Acoustics: Aircraft noise intrusion – building siting and construction";*
- Minister's Specification SA 78B 'Construction requirements for the control of external sound'', February 2013, Government of South Australia.

5.2 Noise emissions to community

- Holdfast Bay Council Development Plan, consolidated 18 December 2014;
- South Australian Environment Protection (Noise) Policy 2007;
- *Australian Standard AS 1055.2 – 1997 "Acoustics – Description and measurement of environmental noise. Part 2: Application to specific situations";*
- *"Guidelines for Community Noise" published by WHO (World Health Organization), Switzerland, 1999*.

6 Design Criteria - Acoustics

6.1 External Noise Intrusion Criteria

This section provides noise criteria which are obtained from Australian and international noise guidelines for acceptable noise intrusion into noise sensitive space within the developments such as wards, consulting room, and office spaces.

6.1.1 Australian / New Zealand Standard AS/NZ 2107

Internal design sound level criteria are provided in *AS/NZS 2107: 2000 -Acoustics - Recommended Design Sound Levels and Reverberation Times for Building Interiors*. The relevant criteria are provided in Table 2 below. External noise intrusion L_{Aeq} through the façade should not exceed the levels outlined in the table. The internal noise design criteria, along with reverberation and sound insulation criteria will be finalised during the design development stage of the project, based on the relevant standards and health guidelines, specific client requirements, and as required to achieve ESD initiatives.

Table 2: AS/NZS 2107 internal noise criteria

Type of occupancy / activity	Recommended design sound level, L_{Aeq} dB(A)	
	Satisfactory	Maximum
Living areas (near major roads)	35	45
Sleeping areas (for apartments near major roads)	30	40
Sleeping areas (for hotels near major roads)	35	40
Work areas	35	45
Apartment common areas (e.g. foyer, lift lobby)	45	55
Hotels – Bars & lounges	45	50
Hotels – Conference areas (with sound reinforcement)	35	45

Note: the “satisfactory” levels of 30dBA and 35dBA for sleeping areas and living space respectively are often impractical to achieve and can be counter-productive as lower background noise levels inside residential apartments may result in other noise sources such as door slamming, plumbing, footfall, etc. becoming more noticeable, especially during night-time period. The “satisfactory” levels are useful as ideal planning objectives where practical, or where the required ameliorative treatment(s) remain cost-effective.

In addition to the internal noise criteria above, it should be noted that the World Health Organisation suggests a maximum (L_{Amax}) internal noise level of 45dBA inside sleeping rooms to minimise the likelihood of annoyance and sleep disturbance. For standard building facades and assuming partially open windows for ventilation, this equates to an external noise level of L_{Amax} 55-60 dBA.

6.1.2 Holdfast Bay Council Development Plan

The City of Holdfast Bay Development Plan includes provisions that relate to external noise intrusion into development. The relevant Council-wide Objectives and Principles of Development Control (PDC) are summarised as follows, and discussed in subsequent sections:

- Residential Development - Principles of Development Control 44, 45, 46 and 47.
- Tourism Development - Principles of Development Control 8(b).

The following Principles are relevant in this regard:

Principle 44

Residential development close to high noise sources (e.g. major roads, railway lines, tram lines, industry, and airports) should be designed to locate bedrooms, living rooms and private open spaces away from those noise sources, or protect these areas with appropriate noise attenuation measures.

Principle 45

Residential development on sites abutting established collector or higher order roads, or on a road indicated within the following table, should include front fences and walls that will supplement the noise control provided by the building façade.

Collector roads	***Higher order roads***
Adelphi Terrace, Glenelg North *Cedar Avenue, Brighton* *Commercial Road, Brighton* *Cudmore Street, Somerton Park* *Dyson Street, Glenelg East* *Edwards Street, Brighton/South Brighton* *Elizabeth Street, Glenelg* *Grove Street, Glenelg East* *Harris Street, Glenelg East* *Highet Avenue, Brighton* *Jetty Road, Brighton* *King George Avenue, Hove* *Miller Street, Glenelg East* *Moore Street, Glenelg East* *Nile Street, Glenelg* *Old Tapleys Hill Road, Glenelg North* *Penzance Street, Glenelg* *Rugless Terrace, Glenelg East* *Scarborough Street, Somerton Park* *Sixth Avenue, Glenelg East* *Waterloo Street, Glenelg* *Wattle Avenue, Hove* *Wenlock Street, Brighton*	*Augusta Street, Glenelg* *Bowker Street, North Brighton* *Cliff Street, Glenelg East* *Dunrobin Road, North Brighton* *Gordon Street, Glenelg* *King George Avenue, Somerton Park* *Lapthorne Street, Glenelg East* *Moseley Street, Glenelg* *Patawalonga Frontage, Glenelg North* *Partridge Street, Glenelg* *Pier Street, Glenelg* *Scholefield Road, Kingston Park* *Sherlock Road, Kingston Park* *The Crescent, Brighton* *The Broadway, Glenelg South* *Wheatland Street, Seacliff* *Whyte Street, Somerton Park*

Principle 46

The number of dwellings sharing a common internal pedestrian entry within a residential flat building should be minimised to limit noise generation in internal access ways.

Principle 47

External noise and light intrusion to bedrooms should be minimised by separating or shielding these rooms from:

(a) active communal recreation areas, parking areas and vehicle access ways

(b) service equipment areas and fixed noise sources on the same or adjacent sites.

Tourism Development - Principles of Development Control

Principle 8

Car parking for tourist accommodation associated with a dwelling should be provided at the rate of one space for each guest room or suite of rooms, and ensure that:

(b) the bedrooms of residential neighbours are suitably shielded from noise and headlight glare associated with guest vehicle movements

6.1.3 Minister Specification SA 78B

The Minister's Specification SA 78B stipulates performance requirements for external noise intrusion through the building envelope and ventilations systems, and is applicable to road traffic noise sources impacting on development within a designated area identified on the Noise and Air Emissions Overlay in the relevant Development Plan. Given that the subject site is situated outside the "designated" area in the Development Plan, therefore the Minister's Specification SA 78B does not apply.

6.2 Environmental Noise Emission Limits

6.2.1 South Australia Environment Protection (Noise) Policy

The South Australia Environment Protection (Noise) Policy 2007 provides a framework for environmental planning and decision making and a clear set of publicly agreed environmental noise objectives. Determination of noise limits are based on the methodology in the Environment Protection (Noise) Policy and the land use categories principally promoted by the relevant Development Plan.

Based on the Holdfast Bay Development Plan, the project site and the adjacent noise-sensitive receptors are located within the "Residential" zone. Figure 3 shows the land use zoning around the development. Table 3 presents the relevant indicative noise factors based on the Environment Protection (Noise) Policy 2007.

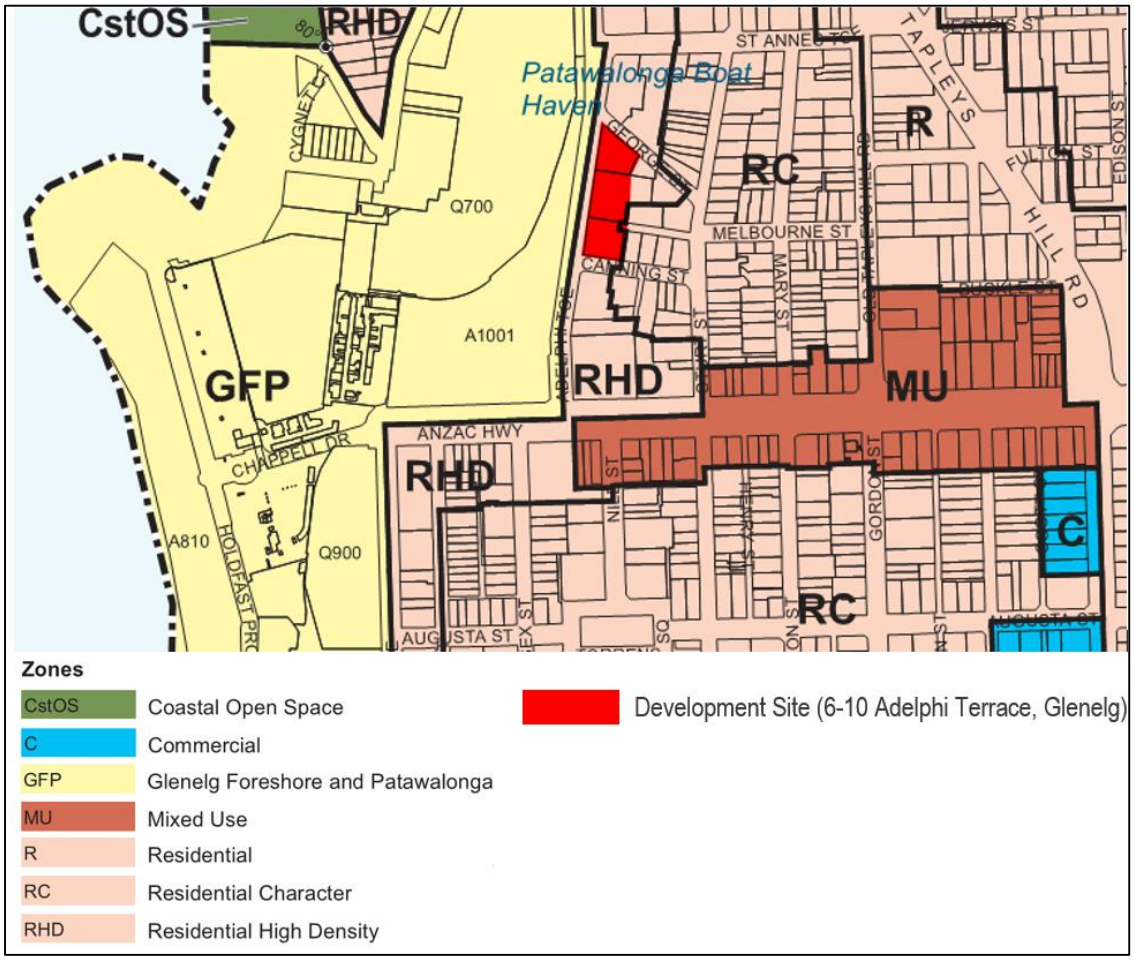

Figure 3: Land use zoning around subject site (Excerpt from Holdfast Bay City Council)

Table 3: Relevant indicative noise factors

Land use category	Indicative noise factor (dBA)	
	Day (7am to 10pm)	Night (10pm to 7am)
Residential	52	45
Mixed use (residential & commercial)*	57	50

* *Note: If the land use does not fall within a single land use category, the indicative noise levels is the average of the relevant factors (in this case, the average of residential and commercial)*

For development authorisation applications (i.e. planning purposes for future noise sources), a predicted source noise level (continuous) should not exceed the relevant indicative noise level less 5dB(A) in accordance with SA EPA 2007. The noise emission criteria based on the indicative noise factors less 5dB(A) applicable to noise emitted from the proposed Marina Hotel development are summarised in Table .

Table 4: Environmental noise criteria for planning phase

Land Use Category	Continuous noise criteria for noise emissions, dB(A)	
	Daytime (7am to 10pm)	Night-time (10pm to 7am)
Residential	47	40
Mixed use zone (Residential & commercial) *	52	45

In accordance with the SA EPA approach, we consider the following environmental noise emission criteria for the development to be most appropriate: i.e. **47dBA for day time** (between 7am and 10pm), and **40dBA for night time** (between 10pm and 7am).

In addition, a 5 dB(A) penalty applies to predicted noise levels (up to a maximum penalty of 10 dB(A)) if the noise from the development contains any noise characteristics (i.e. a tonal, impulsive, low frequency or modulating characteristics).

6.2.2 Holdfast Bay Council Development Plan

The City of Holdfast Bay Development Plan includes provisions that relate to noise from development in the city. The relevant Council-wide Objectives and Principles of Development Control (PDC) are summarised as follows, and discussed in subsequent sections:

- Residential Development - Principles of Development Control 43.
- Interface between Land Uses - Principles of Development Control 7.

The following Principles are relevant in this regard:

Residential - Principles of Development Control

Principle 43

Noise generated by fixed noise sources such as air conditioning units and pool pumps should be located, designed and attenuated to avoid causing potential noise nuisance to adjoining landowners and occupiers.

Interfaces between Land Uses - Principles of Development Control

Principle 7

Development that emits noise (other than music noise) should include noise attenuation measures that achieve the relevant Environment Protection (Noise) Policy criteria when assessed at the nearest existing noise sensitive premises.

7 Guidelines to meet requirements

7.1 External Noise Intrusion

Insulation from external noise sources (road traffic, air traffic, external mechanical plant, etc.) is important to meet the indoor noise criteria and relevant Principles of Development Controls. Sound insulation requirements depend on the external noise climate, the adjoining spaces, as well as the type of ventilation used for the space. The orientation of buildings onsite, buffer zones, internal layouts planning, choosing the most appropriate building materials, and using good construction techniques will need to be considered to reduce the cost of sound insulation and to satisfy acceptable internal noise levels in sensitive spaces within the hotel.

7.1.1 Road Traffic Noise Impact

Road traffic noise is the dominant (especially building façade overlooking Adelphi Terrace), and has potential to affect the indoor environment of the new hotel. The building envelopment construction will be developed during the detailed design stage as required to achieve the design criteria nominated in Section 6.1. The design criteria will be not be achieved with windows open, however, the hotel apartment's occupant have the option to close external windows and doors to significantly reduce noise intrusion.

At this early Planning stage, it is anticipated that double glazing will be required to achieve the project noise criteria. Close attention should be paid during detailed design stage to the necessary noise insulation performance of the building envelope, façade and glazing. Appropriate noise mitigation measures will be implemented, such as absorption finishes reducing reverberant noise build-up, and careful design of engineering noise control treatment. Attended noise survey was carried out to quantify the sound pressure levels resulting from road traffic movement along Adelphi Terrace. Based on the site plan, layout of the development, and the results of our attended noise survey, specific design considerations, which are driven by the requirement to reduce maximum internal levels from airborne noise arising from road traffic, have been laid out in Table 5.

Table 5: Indicative insulation requirement for Façade Glazing

<table>
<tr><th>Level</th><th>North facing
(George St)</th><th>West facing
(Adelphi Tce)</th><th>East Facing
(Queen St)</th><th>South facing
(Canning St)</th></tr>
<tr><td>12
11
10
9
8
7
6
5
4</td><td rowspan="3">Rw ≥30
(e.g. 6.76mm laminated glass or 6.38mm Vlam)</td><td>Rw ≥40 (e.g. laminated IGU glazing 6.76mm laminated – 12mm air gap – 10mm glass)</td><td>Rw ≥30
(e.g. 6.76mm laminated glass Or 6.38mm VLam Hush)</td><td rowspan="3">Rw ≥30
(e.g. 6.76mm laminated glass Or 6.38mm VLam Hush)</td></tr>
<tr><td>3
2</td><td rowspan="2">Rw ≥42 (e.g. VLam Hush Double glazing consisting of 8.5mm Hush – 16mm air gap – 12.5mm VLam Hush)</td><td>Rw ≥35 (e.g. 10.38mm laminated glass)</td></tr>
<tr><td>1</td><td rowspan="2">Rw ≥35
(e.g. 10.38mm laminated glass Or 10.5mm VLam Hush)</td><td rowspan="2">Rw ≥35
(e.g. 10.38mm laminated glass Or 10.5mm VLam Hush)</td></tr>
<tr><td>G</td><td>Rw ≥35 for retail or non-residential component (e.g. 10.38mm laminated glass Or 10.5mm VLam Hush)</td><td>Carpark / loading docks – no glazing</td></tr>
</table>

The list is intended to give an indication of the level of mitigation that is likely to be required at each level of the building; as such it does not provide an exhaustive or final list of specific mitigation measures for the hotel apartment.

Window frames must be selected so as not to degrade the sound insulation performance of the glazing. All operable façade elements shall be high quality commercial grade glazing suites fitted with good quality acoustic grade seals (e.g. “Rylock” or “Vantage SoundOUT” or “Raven” type) to all sides, bottom and head etc. to ensure that the acoustic performance of the façade systems is not significantly degraded. Hinged/Awning frames windows are preferred over sliding windows as they provide better air-tight seal.

We recommend utilising “Silenceair” passive acoustic wall ventilators or acoustically equivalent for any direct wall ventilation which is required from outside to inside. Alternative passive ventilation paths should be provided to enable occupants to close their windows when required to achieve improved acoustic amenity. Passive ventilation paths must maintain the BCA requirements for ventilation and must be sized by the project mechanical services engineer.

7.1.2 Aircraft Noise Intrusion

Aircraft noise is assessed in accordance with AS 2021-2000 based on the latest Australian Noise Exposure Forecast (2034 ANEF) contours.

The project site is located at approximately 3.5 km west of the Adelaide airport. Intermittent aircraft noise impacting on the proposed development will be less than road traffic noise given that the development site is well outside the 20 ANEF contour line (shown in Figure 4). In accordance with AS 2021-2000, additional consideration of aircraft noise break-in is not required.

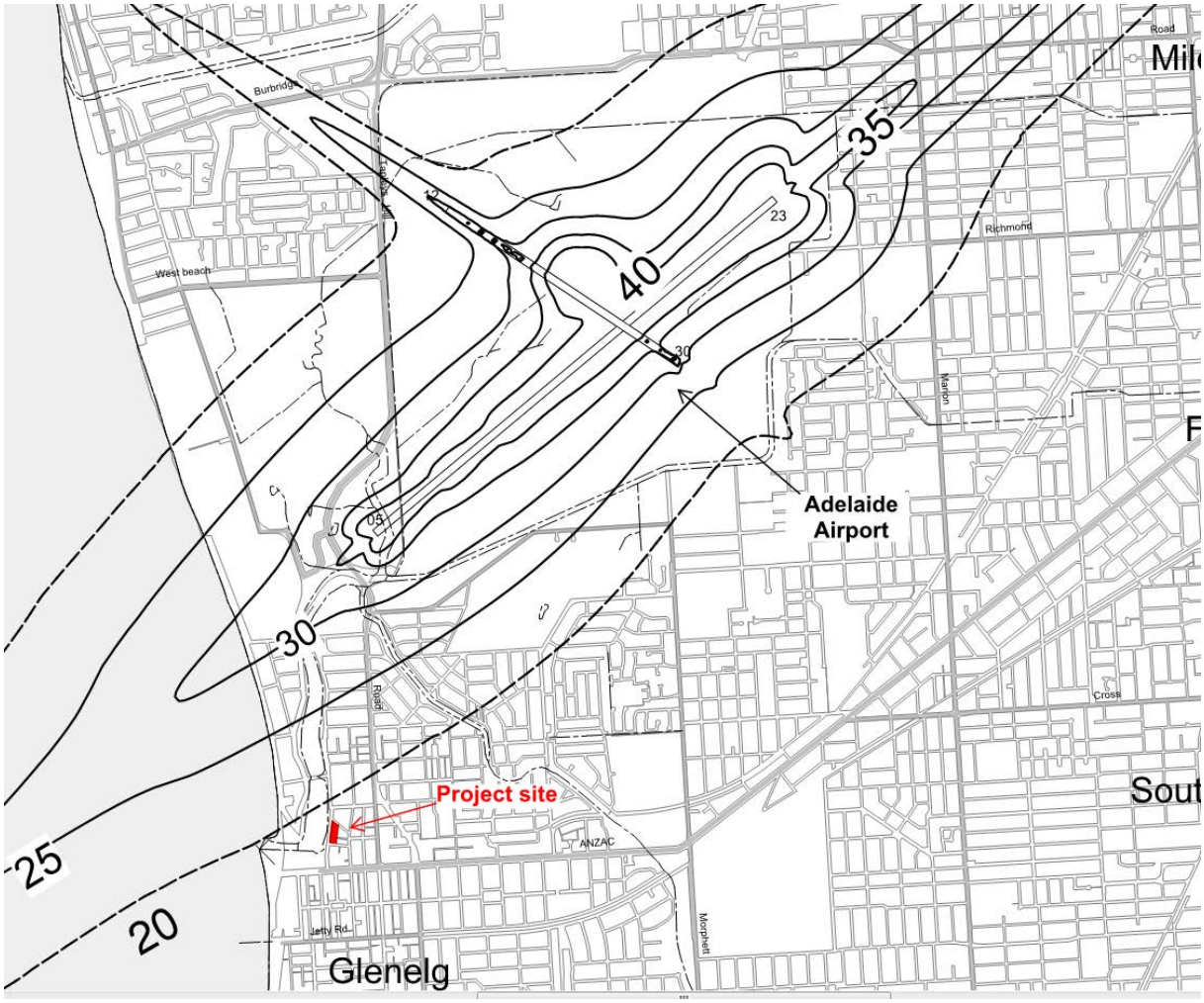

Figure 4: Australian Noise Exposure Forecast Contour

7.2 Environmental Noise Emissions – Building Services Plant

The closest noise sensitive residential properties to the subject site are the residential dwellings along Queen Street immediate east of the development.

Environmental noise emission from the project site will primarily consist of noise from major building services plant/equipment associated with the development such as the operation of roof mounted thermal plant, miscellaneous exhaust and ventilation systems. These noise sources may have adverse impact on the existing neighbouring properties and will need careful design.

The location and specific selection of building services plant equipment for the development have not been made at the current planning phase. During the design phase, services plant design and selection will ensure that building services noise levels do not adversely affect the nearby community.

To ensure compliance with the SA Environmental Protection Agency Noise Policy and relevant Holdfast Bay Council's Principles of Development Control, building services plant equipment (such as roof top thermal plant, exhaust fans, condensers, standby generator, etc.) will be assessed against the operational criteria once the building services specification and design drawings are available, and all necessary remediation measures will be undertaken where required, such as the following:

- Selecting service plant equipment on the basis of noise emissions;
- Locating noisy equipment away from potentially affected receivers;
- Ensuring all mechanical equipment (fans, etc.) have adequate vibration isolation installed
- Installation of acoustic louvres to plant rooms;
- Selecting appropriate façade / envelope (roof, wall, door etc.) construction for plant rooms
- Building solid noise barriers / partial enclosures on the roof around noisy equipment, and where necessary for acoustic attenuation
- Installation of silencers and acoustically lined ductwork;
- Utilisation of variable speed controls to ramp down plant equipment when full-load is not required (e.g. reduced operation and noise from cooling towers during the night-time).

7.3 Environmental Noise Emissions – Car Park

The receivers most affected by short-term operational noise events from the multilevel car park are likely to be those residential properties to the east of the development.

Given that the primary entry/exit to/from the multi-level carpark will be from George Street on the northern boundary of the site, the intermittent noise impact on the adjacent eastern residential properties will be insignificant. The short term noise associated with car park activities is expected to be identical to existing situation for the outdoor carpark. Background noise from road traffic is likely to be significantly higher and would mask carpark noise.

To minimize potential sleep disturbance, the car park should be designed to minimise noise during operation (e.g. low noise speed bumps and road surface). Concrete floors of car parks are to be roughened to avoid tyre screeching type noise. Alternatively, the car park floor surface can be fitted with polyurethane car park deck coating system (e.g. Deckshield product) to minimise unwanted tyre squealing noise. It is recommended that further investigation of the car park design to be undertaken at a detailed design stage.

8 Summary

Aurecon has conducted a preliminary acoustic assessment of the environmental noise issues relevant to the proposed hotel development at 6-10 Adelphi Terrace, Glenelg. Relevant legislation and design criteria have been identified along with general principles for acoustic design and noise control. Detailed acoustic treatments will be developed during the detailed design phase to ensure compliance with the design criteria is achieved.

Appendix A

Glossary – Acoustic Terminology

Appendix A

Glossary – Acoustic terminology

Sound Pressure	Sound or sound pressure is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure Level	The sound pressure relative to a standard reference pressure of 20μPa ($20x10^{-6}$ Pascals) on a decibel (dB) scale.
Sound Power Level	The sound power of a source is the amount of acoustic energy being generated per unit time by the source and does not change with distance. The sound power level is defined as 10 times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 Pico Watt. Sound power level cannot be directly measured using a microphone. The sound power level of a machine may vary depending on the actual operating load.
dB	The decibel (dB) is the unit used for sound level measurement.
dB(A)	Unit of sound level, in A-weighted decibels. The human ear is not equally sensitive to all frequencies of sound. The A-weighting approximates the sensitivity of the human ear by filtering these frequencies. A dB(A) measurement is considered representative of average human hearing.
$L_{Aeq, T}$	The A-weighted equivalent continuous sound pressure level over T measurement period, used to quantify the average noise level over a time period.
L_{A10}	The A-weighted sound pressure level exceeded for 10% of the measurement period. It is often referred to as the average maximum noise level and is frequently used to describe traffic noise or intrusive noise level.
L_{A90}	The A-weighted sound pressure level exceeded for 90% of the measurement period. It is usually used as the descriptor for background noise level.
$L_{A10, 15min}$	The A-weighted sound pressure level exceeded for 10% of the time when measured over a 15 minute period. It is usually used as the descriptor for intrusive noise level.
L_{Amax}	The maximum A-weighted sound pressure level for the measurement period

The subjective response to changes in noise levels can be described as follows:

A 3dB(A) change in sound pressure level is just noticeable or perceptible to the average human ear; a 5dB(A) increase is quite noticeable and a 10dB(A) increase is typically perceived as a doubling in loudness.

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Appendix 13. Wind Impact Assessment

aurecon

Marina Regency Hotel
Adelphi Tce, Glenelg

Development Application
Wind Report

Q Developments

27 July 2015
Revision: 0
Reference: 248366

Document control record

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Document control						aurecon
Report title		Development Application Wind Report				
Document ID		248366-RP-WIND-001[01]	**Project number**		248366	
File path		C:\Users\neil.mackenzie\Desktop\Travel Folder\adelphi hotel\2015July26 248366-RP-Wind-001[01].docx				
Client		Q Developments	**Client contact**		Bruno Marveggio	
Rev	**Date**	**Revision details/status**	**Prepared by**	**Author**	**Verifier**	**Approver**
0	27 July2015	Issue to Client	NCM	NCM	KT	NCM
Current revision		**0**				

Approval			
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Contents

Figures

Tables

1 Introduction

Aurecon has been engaged by Q Developments to provide a wind effects statement for the proposed Hotel development at 6-10 Adelphi Terrace, Glenelg, South Australia. Wind environment affects comfort, safety and the commercial success of a development (as strong winds will deter users of the development and reduce its commercial potential as perceived by potential tenants).

This report considers ground level wind effects associated with the proposed development and in so doing, it considers the wind climate specific to the site given the surrounding terrain and structures, and the wind effects the proposed built form introduces. These effects are considered relative to widely accepted assessment criteria based on use of the outside space surrounding the development

Based on information provided (i.e. architectural drawings received from Hassell via email on 23 July 2015), it is understood that the development involves development of a new 12 storeys residential hotel apartments and ground level commercial/retail suites located at 6-10 Adelphi Terrace, Glenelg. The proposed hotel development comprises function rooms on level 1, swimming pool facility on Level 3, four levels of car parks and retail at ground level, commercial tenancies on the first floor.

The project is situated approximately 100 meters from the beach, and overlooking at the Boat Haven at Holdfast Bay, and the site is bounded by Adelphi Terrace to the west, George Street to the north, Canning Street to the South, and existing residential properties and Queen Street to the east. An aerial photograph of the site is shown in Figure 1.

Figure 1: Outline of proposed development site

The subject site is located within the “Residential High Density (RHD)” zone and is currently a Hotel accommodation (i.e. as Comfort Inn Haven Marina). The immediate area comprises residential properties along Adelphi Terrace and mixed commercial and residential properties in the broader surrounding area.

2 Wind Environment

Wind is one of the most highly variable meteorological elements, both in speed and direction. It is influenced by a wide range of factors, from large scale pressure patterns, to the time of day and the nature of the surrounding terrain. Because the wind is highly variable it is often studied by means of frequency analyses (often in the form of wind roses) of data obtained from the Bureau of Meteorology (BOM) for a particular site (data from the closest weather station is used).

Data from the BOM is often presented as averaged values (speed/direction) over time (10 minutes to 1 hour). In excess of 4000 observations of wind speed (10 minute average) and direction were used to analyse the variation of wind speed with direction for the site (based on data from the Kent Town weather station). Figure 2 and Figure 3 show the probability distribution of wind speed and direction for seasonal variations and annually.

It is apparent that:

- The prevailing wind direction is from the South West, largely a result of afternoon wind conditions chiefly in the warmer months (spring and summer), with the hot land mass resulting in recirculation of air from the cool ocean mass.
- Winter breeze is most often from the Westerly sector.
- Very infrequent wind comes from the Easterly sector.
- Wind speed is typically 2.8 - 5.6m/s, though in the warmer months (Spring and Summer), the probability distribution is slightly skewed, with the wind speed typically 5.6-8.3m/s (and typically from the South-West in the afternoon).
- For about 95% of the time, the wind speed is typically less than 8-10m/s (classified on the Beaufort scale as a fresh breeze).

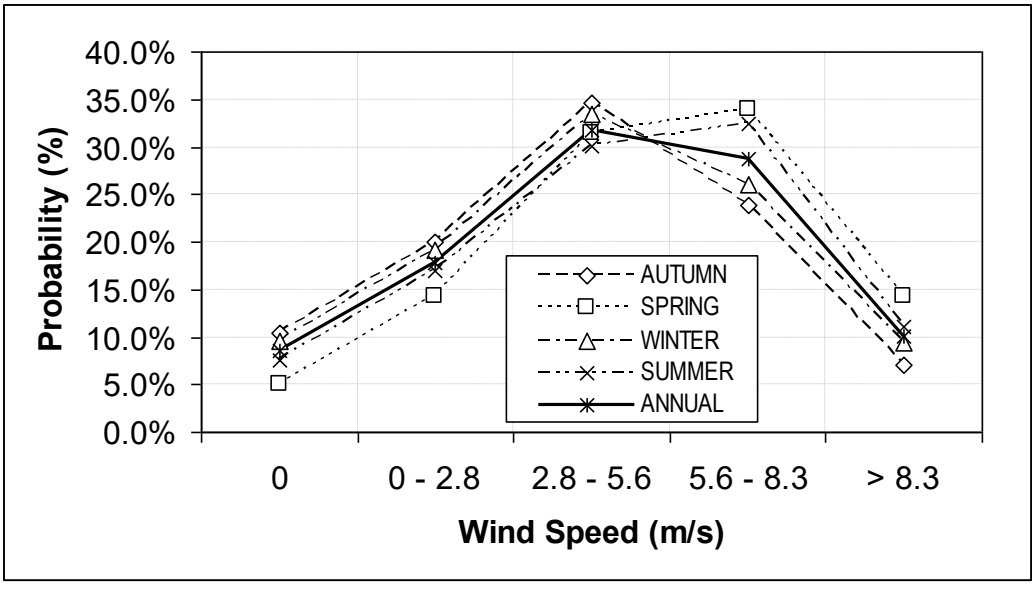

Figure 2 Wind speed (10 minute average) probability distribution

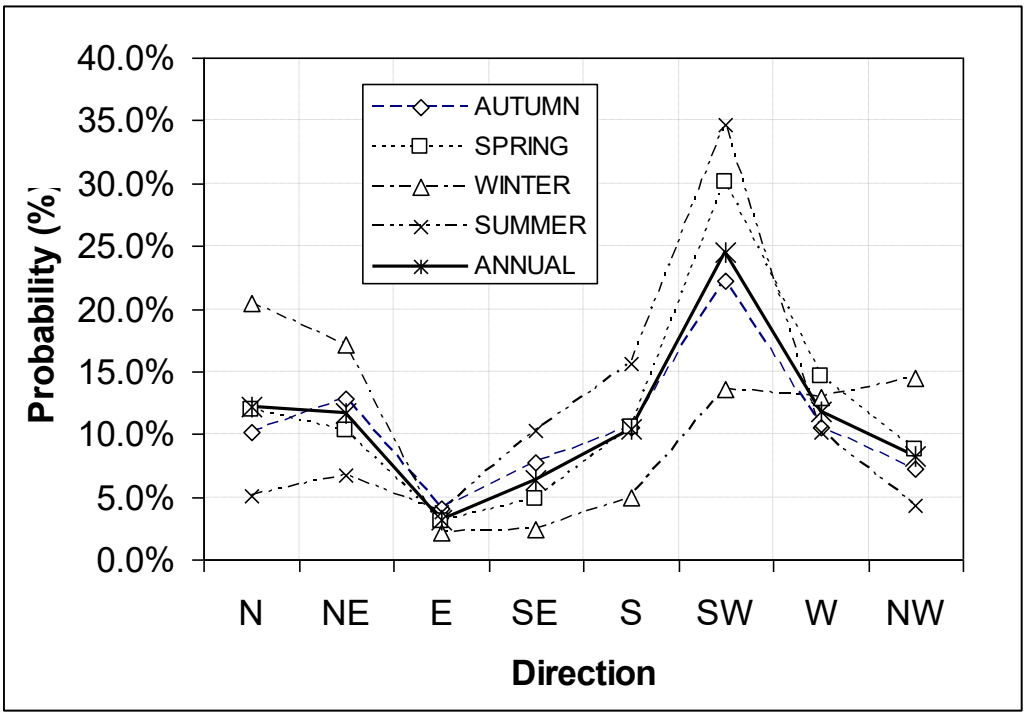

Figure 3 Wind direction (10 minute average) probability distribution

3 Wind Effects

Figure 4 provides a schematic illustration of the wind flow pattern around a single wide high-rise building. As the wind flow approaches the building, it gradually diverges. Part of the flow is deviated over the building (1) and part of it flows around the building (2). At the windward facade, a stagnation point with maximum pressure is situated at approximately 70% of the building height. From this point, the flow is deviated to the lower pressure zones of the facade: upwards (3), sidewards (4) and downwards (5).

The considerable amount of air flowing downwards produces a vortex at ground level (6) called standing vortex, frontal vortex or horseshoe vortex. The main flow direction of the standing vortex near ground level is opposite to the direction of the approach flow. Where both flows meet, a stagnation point with low wind speed values is created at the ground in front of the building (7). The standing vortex stretches out sideways and sweeps around the building corners where flow separation occurs and corner streams with high wind speed values are created (8). The corner streams subsequently merge into the general flow around the corners (9).

At the leeward side of the building, an under-pressure zone is created. As a result, backflow or recirculation flow occurs (10,13). A stagnation zone is marked downstream of the building at ground level where the flow directions are opposite and low wind speeds exist (11; end of the recirculation zone). Beyond the stagnation zone, the flow resumes its normal direction but wind speeds stay low for a considerable distance behind the building (i.e. the far wake) (12).

The backflow is also responsible for the creation of slow rotating vortices behind the building (13). Between these vortices and the corner streams (9), a zone with a high velocity gradient exists (the shear layer) that comprises small, fast rotating vortices (16). The shear layers originate at the building corners where flow separation occurs. [Ref. 4].

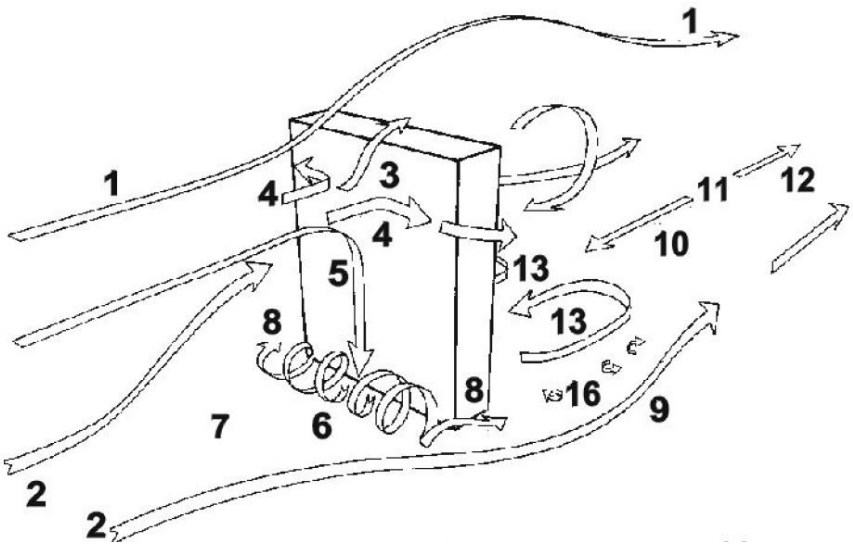

Figure 4 Description of wind flow around a building

4 Assessment Criteria

The Davenport criteria are often used for wind comfort assessment in outdoor areas and are defined in Table 1 and Table 2. The Davenport criteria are used to assess wind force only and do not allow for variations in ambient temperature, solar radiation, and other environmental variables.

The comfort criteria are based on the exceedance of the threshold wind speeds occurring less than 5% of the time (approximately once every 3 weeks). The value of 5% has been established as giving a reasonable allowance for extreme and relatively infrequent winds that are tolerable within each category. For example, if the mean hourly wind speed at a particular location is less than 4 m/s for 95% of the time then that location is classified as C4. At the other extreme, if the wind speed exceeds 8 m/s more than 5 % of the time but exceeds 10 m/s less than 5% of the time, then category C1 applies and the location would be considered windy though not necessarily unsafe. A wind speed in excess of 10 m/s more than 5% of the time would incur a category of C1+.

Table 1 Davenport Comfort Criteria

Comfort rating	Description	Threshold mean hourly wind speed exceeded < 5% of the time	Appropriate use	Description of wind effects
C1+	Uncomfortable for all uses	>10 m/s	Uncomfortable for all uses	• Umbrellas used with difficulty • Hair blown straight • Difficult to walk straight
C1	Fast or business walking	10 m/s	Local areas around tall buildings where people are not expected to linger	• Force of wind felt on body • Trees in leaf begin to move
C2	Leisurely walking or window shopping	8 m/s	General areas of walking and sightseeing	• Moderate, raises dust, loose paper • Hair disarranged • Small branches move
C3	Short period standing or sitting	6 m/s	Appropriate for bus stops, window shopping and building entrances	• Light leaves and twigs in motion • Wind extends lightweight flag
C4	Long period standing or sitting	4 m/s	Reading a newspaper, eating and drinking	• Light wind felt on face • Leaves rustle

For the safety criteria, once per annum during daylight hours equates to a seasonal threshold exceedance of 0.023 %. A wind speed greater than 15 m/s but less than 20 m/s occurring once a year is classified as unsuitable for general public which includes elderly, cyclists and children. Able bodied users are those determined to experience distress when the wind speed exceeds 20 m/s once per year.

Table 2 Davenport Safety Criteria

Safety rating	Description	Mean hourly wind speed exceeded once per annum
S1	Unsuitable for Able Bodied	20 m/s
S2	Unsuitable for General Public	15 m/s

5 Site Specific Assessment

The wind environment for each quadrant was assessed in terms of the potential exceedance of threshold wind speeds that relate to comfort levels perceived during standard pedestrian activities.

5.1 North East Quadrant

Winds from the North West are similar in frequency to those from the North East, occurring about 10% of the time, with the average speed typically about 5m/s. The joint probability distribution of wind speed and direction gives a threshold of about 3.4m/s (exceeded for less than 5% of the time), or a comfort class of C4.

This is unlikely to be exceeded in the public realm surrounding the development due to significant setbacks from the podium edge as shown in Figure 5 below. Additionally, the significant faceted form of the façade (shown in Figure 6 to Figure 9) will further mitigate downwash.

5.2 South-West Quadrant

Winds from the South West are most frequent, occurring up to 30-35% of the time in Spring and Summer, with average wind speeds frequently up to 8m/s. The joint probability distribution of wind speed and direction gives a threshold of 6.4m/s (exceeded for less than 5% of the time).

Whilst this wind speed represents a comfort class just above C3, acceleration of winds to ground level are unlikely to result given setbacks and the faceted form described above.

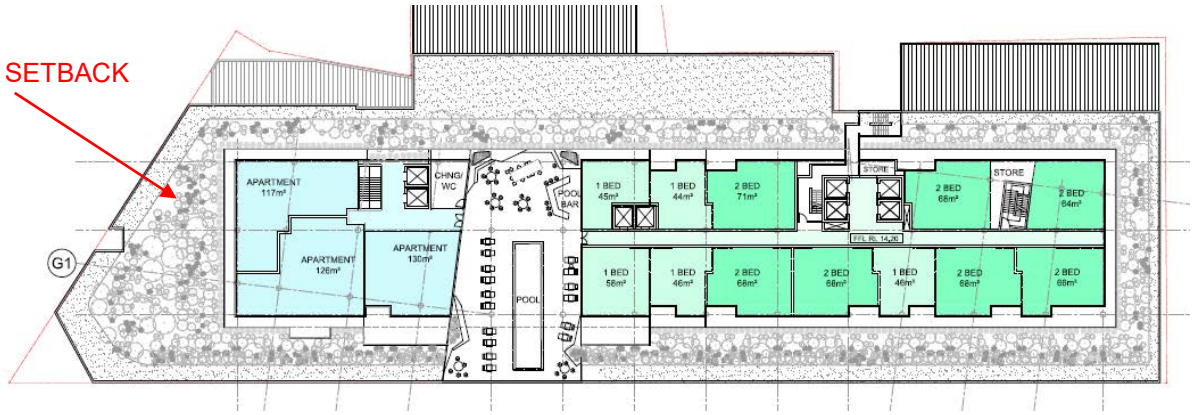

Figure 5 Plan at Level 3 of the development showing landscaping and setbacks

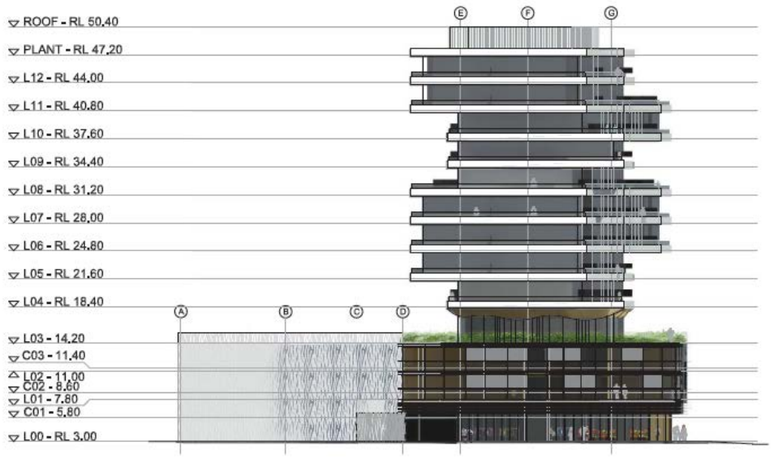

Figure 6 North Elevation

Figure 7 West Elevation

Figure 8 South Elevation

Figure 9 East Elevation

6 Disclaimer

This assessment of wind conditions around the proposed development has been based on sound engineering judgment gained from past assessments of wind effects measured on-site and in a wind tunnel, as well as assessed from computational methods. No wind tunnel tests or computational analysis has been used to more accurately quantify the local wind effects for comparison with criteria referenced herein.

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Appendix 14. Site History Report

LBW | environmental projects





6 – 10 Adelphi Terrace, Glenelg North
Preliminary Site Investigation – Site History

Report for PT Design

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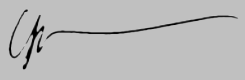
6 – 10 Adelphi Terrace, Glenelg North
Preliminary Site Investigation – Site History

Report for PT Design

Document Control

File	150684 R01.docx
Revision	0
Date issued	24/07/2015
Author(s)	Kaitlyn Bradey
Principal review	Joe Pedicini
Approved for issue	

Document Distribution

Revision	Date Issued	Client	Other	LBW | ep
0	24/07/2015	1 x PDF	-	1 x PDF - file

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List of Acronyms

ACM	Asbestos-containing material
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure 1999 (amended 2013)
DEWNR	Department for Environment, Water and Natural Resources, Government of South Australia
EPA	Environment Protection Authority, Government of South Australia
EP Act	*Environment Protection Act 1993*, Government of South Australia
LBW|ep	LBW Environmental Projects Pty Ltd
mAHD	metres Australian Height Datum
NATA	National Association of Testing Authorities
OCP	Organochlorine pesticides
OPP	Organophosphorus pesticides
PAH	Polyaromatic hydrocarbons
PCA	Potentially contaminating activity
PSI	Preliminary Site Investigation
SA	South Australia
TRH	Total recoverable hydrocarbons
TPH	Total petroleum hydrocarbons

Executive Summary

On 17 July 2015, LBW Environmental Projects (LBW|ep) was commissioned by PT Design to undertake a Preliminary Site Investigation (PSI) – Site History (formerly a Phase 1 Environmental Site Assessment) for the site located at 6-10 Adelphi Terrace, Glenelg North, South Australia.

Based on information provided by PT Design, LBW|ep understood the following;

- The site was comprised of three certificates of title;
- The site is currently operating as a hotel; and
- The history of potentially contaminating activities (PCAs) undertaken at the site was unknown.

The objectives of the PSI Site History were to:

- Research current and historical land uses and associated activities undertaken at or adjacent to the site, to identify whether PCAs, as defined in the Environmental Protection Regulations 2009, may have occurred on or near the site;
- Provide a desktop assessment of risk with respect to the likelihood that PCAs could have caused site contamination, with respect to the proposed hotel use; and
- Based on the results of the investigation, provide an opinion as to whether further site investigation is required.

Based on the site history investigation undertaken by LBW|ep, we concluded the following

- One PCA as defined in the Environmental Protection Regulations 2009 was identified to have potentially occurred on the subject site; fill or soil importation (unconfirmed) and was considered to be of minor significance for future hotel development; and
- Two activities of potential environmental significance were identified to have occurred onsite; presence of asbestos containing material (ACM) in building structures (unconfirmed) and operation of a grease arrestor. These were respectively considered to be of minor and negligible significance to the future hotel land use.

Based on these findings it is concluded that further environmental investigation of the site is unlikely to be necessary.

Site development will however require:

- A detailed assessment of ACM presence within the current structure prior to demolition;
- Disposal classification of any spoil likely to be surplus to site requirements prior to excavation commencing, particularly in areas where old asphalt pavement may have impacted soils.

The appointed civil contractor must always be vigilant for the presence of any fill or unexpected buried structures which present indicators of contamination (odour, visual) or may be a source of contamination.

1 Introduction

On 17 July 2015, LBW Environmental Projects (LBW|ep) was commissioned by PT Design to undertake a Preliminary Site Investigation (PSI) – Site History (formerly a Phase 1 Environmental Site Assessment) for the site located at 6-10 Adelphi Terrace, Glenelg North, South Australia.

A site location plan is provided as Figure 1 in **Appendix A.**

Based on information provided by PT Design, LBW|ep understood the following;

- The site was comprised of three certificates of title (CTs);
- The site is currently operating as a hotel; and
- The history of potentially contaminating activities (PCAs) undertaken at the site was unknown.

The objectives of the PSI Site History were to:

- Research current and historical land uses and associated activities undertaken at or adjacent to the site, to identify whether PCAs, as defined in the Environmental Protection Regulations 2009, may have occurred on or near the site;
- Provide a desktop assessment of risk with respect to the likelihood that PCAs could have caused site contamination, with respect to the proposed hotel land use; and
- Based on the results of the investigation, provide an opinion on whether further site investigation is required.

The scope of work undertaken for this PSI was in accordance with LBW|ep's proposal (ref: email *6-10 Adelphi Terrace, Glenelg North*), dated 16 July2015.

2 Scope of Work and Methodology

2.1 PSI Site History Guidance

The PSI works were undertaken with reference to the guidance provided in the following documents:

- Edwards J. W., Van Alphen M and Langley A., Identification and Assessment of Contaminated Land: Improving Site History Appraisal. Contaminated Sites Monograph Series No 3, SA Health Commission, Adelaide (1994);
- National Environment Protection Council 1999, National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM) Schedules B(1) and B(4);
- Planning SA (2001) Site Contamination. Planning Advisory Notice 20; and
- Environment Protection Regulations, 2009.

2.2 PSI Site History Methodology

The history of PCAs undertaken on or adjacent to the site was researched using the following sources of information:

- Aerial photographic records obtained from Mapland and other aerial image resources;
- CT historical information obtained from the Land Services Group through the Property Assist website;
- Published geology and topographic maps of the region;
- Department of Environment, Water and Natural Resources (DEWNR) *Water Connect* database of groundwater records;
- The local planning authority (City of Holdfast Bay);

A site inspection was undertaken on the 23 July 2015 to obtain information regarding the current land use(s) and associated PCAs at the site.

2.3 Reporting

This report was prepared to document the PSI Site History objectives, scope, methodology, findings and conclusions in respect of the assessment objectives.

3 Regulatory Framework

In South Australia, the assessment, management and remediation of site contamination is regulated by the *Environment Protection Act 1993* (EP Act). The EP Act defines site contamination in section 5B as follows:

(1) For the purposes of this Act, site contamination exists at a site if—

(a) chemical substances are present on or below the surface of the site in concentrations above the background concentrations (if any); and

(b) the chemical substances have, at least in part, come to be present there as a result of an activity at the site or elsewhere; and

(c) the presence of the chemical substances in those concentrations has resulted in—

(i) actual or potential harm to the health or safety of human beings that is not trivial, taking into account current or proposed land uses; or

(ii) actual or potential harm to water that is not trivial; or

(iii) other actual or potential environmental harm that is not trivial, taking into account current or proposed land uses.

(2) For the purposes of this Act, environmental harm is caused by the presence of chemical substances—

(a) whether the harm is a direct or indirect result of the presence of the chemical substances; and

(b) whether the harm results from the presence of the chemical substances alone or the combined effects of the presence of the chemical substances and other factors.

(3) For the purposes of this Act, site contamination does not exist at a site if circumstances of a kind prescribed by regulation apply to the site.

Based on the above, the first stage in determining whether or not site contamination exists is to assess whether chemical substances have been added to the site through an activity and whether these substances are above background concentrations. The second stage is to assess whether the chemical substances have resulted in actual or potential harm to the health or safety of human beings or the environment that is not trivial.

If site contamination is determined to be present at a site, the EP Act provides mechanisms to assign responsibility for the contamination and appropriate assessment and/or remediation of the contamination.

The professional assessment of site contamination and consequential risk to human health and the environment is guided by the *National Environment Protection* (Assessment of Site Contamination) Measure 1999 (ASC NEPM), Australian Standards and several guidelines prepared by the EPA. The NEPM operates as an environment protection policy under the EP Act.

4 Site Information

4.1 Site Ownership Information

Site identification details are provided in Table 1. Copies of the current CTs for the site are provided in **Appendix B.**

Table 1 Site Identification Details

Allotment References	Allotment 14, 19 and 20 Filed Plan 1437 in the area named Glenelg North, Hundred of Noarlunga
Certificate of Title References	CT 5085/557, CT 5085/558 & CT 5085/559
Site Area	5,100 m^2 total area
Site Owner	Ross Park Pty Ltd, Bruno Marveggio & Anna-Maria Marveggio
Local Government Authority	City of Holdfast Bay
Zoning	Residential High Density
Current Land Use	Commercial - Hotel
Proposed Land Use	Commercial - Hotel
Client	PT Design

4.2 Topography

According to the topographic map for the Mt Lofty Ranges Region (Dept. of Lands 1990) the site has an elevation of approximately 2 metres (m) AHD (Australian Height Datum). The topographic map indicated the site was relatively flat and was in an area of low topographic gradient, with a gentle slope towards the Patawalonga and further west, Holdfast Bay.

4.3 Local Geology

The 1:250,000 *Adelaide* geology map Sheet SI 54-9 (Geological Survey of SA, Dept of Mines 1962), indicated that the site was in an area characterised by the St Kilda Formation which consisted of light-grey shelly stranded beach ridge deposits and shelly silts and sands overlain in places by modern intertidal and swamp deposits.

4.4 Local Hydrogeology

On 20 July 2015, a search of the DEWNR Water Connect database identified 76 wells within a 500 metre radius of the site. A copy of the search result is provided in **Appendix C**.

No registered wells were located on the site.

The information recorded for offsite wells indicated the following regarding the groundwater at the site locality:

- The standing water level (SWL) ranged from 1.7 m to 4 m below ground level (BGL), with maximum drill depths ranging from 3.6 m to 18 m;
- The majority of wells were listed as waterwells with 20 listed as engineering wells;
- Wells with listed installation dates were installed between the years 1937 and 2009 for varying purposes primarily monitoring and investigation; and

- Salinity measurements were recorded for nine of the wells with total dissolved solids (TDS) concentrations ranging from 755 mg/L to 4,959 mg/L indicating saline shallow groundwater. According to EPA 2009, groundwater with TDS concentration exceeding 2,000 mg/L is not suitable for drinking water supply.

4.5 Sensitive Receiving Environments

The Patawalonga lake lies approximately 50 metres to the west and is a sensitive receiving environment. Based on the distance between the site, ground cover and stormwater collection infrastructure present in between of the site and the Patawalonga and the topographic gradient of the area, runoff from the site is considered to have a minimal possible impact on this catchment.

No other sensitive receiving environments were observed in close vicinity of the site during the site inspection.

4.6 Site Inspection

On 23 May 2015, a site inspection was conducted by an experienced Environmental Consultant from LBW | ep. General site features are shown on Figure 2 **Appendix A.** Photographs taken during the site inspection are included in **Appendix E**.

At the time of inspection the following key observations were made:

- The site was in use as a hotel;
- The site was generally flat;
- The site was fully developed, buildings and car-parking covering the majority of the site, with the exception of a swimming pool near the centre of the site and small garden beds at various locations, particularly street front boundaries;
- No asbestos containing material (ACM) was specifically observed however given the era of the buildings and the presence of kitchens (heat sources), its presence cannot be excluded. The rooves of the buildings could not be viewed;
- The interior uses of the structures were as to be expected for a hotel, including bedrooms, plant rooms, conference rooms, bathrooms, kitchens, laundries (not dry cleaning) and a small maintenance room;
- No major chemical storage areas were noted, only domestic scale storage of cleaning fluids, pool chlorine, paint and oils in three locations;
- Two disused kitchens were noted, now used for storage;
- A kitchen grease arrestor was noted at the rear of the hotel administration and main kitchen building, consisting of an underground sump in the waste storage area. Pavement staining was noted in this area;
- Surrounding land use was predominantly residential, with a bowling green to the immediate east and the Patawalonga to the west.

The site inspection noted indicators of one possible activity at the site with potential to cause contamination which was the presence of a grease arrestor.

4.7 Adjacent Land Uses

The flowing adjacent land uses were observed during the site inspection:

- North: Residential
- East: Community bowls club and residential (further east historical gas works)
- South: Residential and further south commercial (hotel, restaurant)
- West: Reserve, Patawalonga lake

The surrounding land uses observed at the time of inspection did not indicate significant potential for site contamination to be affecting the site as a result of current, nearby offsite activities.

5 Site History

5.1 Property Ownership

On 21 July LBW|ep conducted a search on the 'Property Assist' website (administered by Land Services Group within the Department of Planning, Transport and Infrastructure), of the current and historical CTs for the site.

Available records date back to 1911 with the site, which currently comprises three CTs, originally being comprised of seven separate titles. Occupations of previous owners include fruit grower, builder, accountant, cabinet maker, orchardist and potato merchant. Prior to current site ownership, the site was acquired in portions between 1966 and 1975 by Donald Peter Farrell, his wife Margaret Janet Farrell and Clarence William Smith and his wife Barbara Joan Smith, all of whom were builders. Ownership remained unchanged until the first transfers to Ross Park Pty Ltd in 1990.

The site was acquired by current owners, Bruno Marveggio, Anna-Maria Marveggio and Ross Park Pty Ltd in portions from 1990 onward.

A review of the site ownership history and the potential land uses associated with the listed owners/occupiers did not suggest that any PCAs were likely to have occurred on the site or in the adjacent land parcels. While fruit grower and orchardists did own portions of the site, the actual occurrence of these activities on the site is unlikely given the site setting, geology and hydrogeology of the area. In any case, such use would have predated the earliest aerial photograph, dated 1959, which shows residential use of the site.

Specific information on land use provided on the CTs is limited therefore the possibility of other uses having occurred cannot be ruled out.

For a more detailed ownership history, refer to the summary of current and historical ownership information presented as a title tree in **Appendix B**.

5.2 Aerial Photographs

Selected aerial photographs of the site and surrounding area, covering the period from 1959 to 2002 inclusive, were acquired from DEWNR. Two images were acquired from DEWNR for the years 1959 and 1989 and provide clearer images and formed the basis for the aerial image review. Satellite images taken in 2009 and 2015 were also obtained from Near Map. Copies of the images are provided in **Appendix D**.

A summary of the features and apparent land use(s) observed in the historical aerial photography is provided in Table 2.

Table 2 Aerial Photograph Review

Date	Description
1959	Residential dwellings were present across the site, along the Adelphi Terrace frontage. Five main structures were noted, with accompanying shed structures noted along the eastern boundary in the southern portion of the site. The eastern most section of the site appeared vacant. Residential dwellings were present to the north, south and east of the site. An open space / reserve was apparent west of the site across Adelphi Terrace, with the Patawalonga outlet visible further west. The outlet appeared fairly discrete, with a large sandy bank present. Directly to the east of the central portion of site, an open space was noted and appeared to be an oval/pitch of some kind. Further east of the site, vacant blocks were evident along with a large tank assumed to be a gas holder, associated with historic gas works.
1969	The poor quality of the image made it difficult to distinguish finer site features however structures were clearly evident. The dwellings previously noted on site had changed in composition with a large C shaped structure (most likely the first stage of hotel development) evident in the central portion of the site. The dwelling previously noted in the northern portion of the site remained. It was difficult to determine the composition of the southern section of the site, but it appeared to

	contain similar residential structures to the previous image. The land surrounding the site remained largely unchanged with the exception of the widening of the Patawalonga outlet to the west of the site. In the previous image the channel appeared quite small, surrounded by large sandy banks. In this image the watercourse appeared to cover a significantly larger area, with some moorings and jetties visible. If the lake had been widened, the already developed status of the subject site would have prevented reclaimed fill being placed on the subject site.
1979	Site features appeared largely unchanged from the previous image. A structure was clearly evident in the southern portion of the site (hotel), whilst the structure previously noted in the northern portion of the site had been removed and the vacant area appeared to be sealed. The northern aspect of the C shaped structure in the central portion of the site had been extended further east. The surrounding land use appeared generally consistent with previous aerial images. The gas holder / tank structure noted in the 1959 image 300m to the east of the site had been removed. The previously vacant land in this vicinity appeared to include some structures.
1989	The southern and central portions of the site appeared largely unchanged from the previous image. The hotel had been extended to the northern boundary and a swimming pool was present in the central portion of the site. All ground surfaces appeared sealed. The surrounding land appeared generally unchanged from the previous image.
1999	The image quality was poor and made determining site features difficult. However the site appeared unchanged from the previous images. The surrounding land appeared generally unchanged from the previous image.
2009	The southern and central portions of the site appeared unchanged from previous images. The structure onsite, a hotel, had been extended to the northern boundary of the site. Site surfaces visible in the image appeared sealed, with the exception of a grassed area adjacent to the swimming pool. The surrounding land appeared generally unchanged from the previous image.
2015	The site appeared unchanged from the previous image. The surrounding land appeared generally unchanged from the previous image.

5.3 City of Holdfast Bay

On 22 June 2015, LBW | ep contacted a representative from the City of Holdfast Bay. A Duty Planner indicated the oldest record the council held in regards to the site was an application for extension of the hotel lodged with the council in 1975. No other environmentally significant records relevant to the site history investigations were noted.

5.4 Historical Overview

Based on the desktop research conducted by LBW | ep it was evident that the site had historically been used for residential and commercial purposes as a hotel. The site has been operating as a hotel since the late 1960s, with various portions acquired and extended between 1966 and 1975. The structures onsite have remained relatively unchanged since the mid-1970s with the addition of northern structures post 2000.

One PCA was identified as a result of LBW | ep's site history investigation of the site:

- importation of fill (unconfirmed).

This activity was determined to be of minor risk to the proposed future hotel use given the timespan since hotel construction or land reclamation, which importation of fill would have been primarily associated with. Observation of site levels with respect to adjoining older residential buildings did not suggest that site levels had been raised.

No PCAs were determined to have occurred offsite within close proximity to the site, it is however noted that a gas works was historically operated approximately 350m east of the site.

Two activities of potential environmental significance, although not defined as PCAs by the *Environment Protection Regulations 2009,* were identified to have occurred onsite:

- presence of ACM (unconfirmed): and
- operation of a grease arrestor.

No activities of potential environmental significance were determined to have occurred offsite within reasonable proximity of the site to have a potential effect.

6 Potential for Residual Contamination

A desktop assessment of PCAs likely to have been undertaken at or near the site and their likely significance with respect to site contamination for hotel land use is presented in Table 3. Other activities likely to have been undertaken at the site and with the potential to adversely affect the condition of the land have also been assessed, as presented in Table 4.

Table 3 Desktop Assessment of the Likely Significance of Potential Site Contamination from PCAs

Potentially contaminating activity	Contaminants of Potential Concern	Likely location	Likely significance or potential liability for commercial land use
On site			
Importation of fill material from unknown sources	Various, commonly including: Heavy metals, polycyclic aromatic hydrocarbons (PAHs), pesticides, polychlorinated biphenyls (PCBs), phenolic compounds, benzene, toluene, ethyl benzene and toluene (BTEX) and Total Recoverable Hydrocarbons (TRH)	Entire site	**Minor** Fill materials may have been historically imported to site (potentially 1930s) from unknown sources and used during land reclamation or construction of historic residences, the hotel and sealed carpark areas. Observation of site levels and the age of nearby residences do not suggest that the subject site has been filled or its level raised. Therefore, the importation of fill is considered to be unlikely and of minor significance with respect to the proposed hotel land use.
Off Site			
None noted	-	-	-

Table 4 Desktop Assessment of the Significance of Site Contamination from Other Activities

Other Activity	Contaminants of Potential Concern	Likely location	Likely significance or potential liability for hotel land use
On Site			
Presence of ACM	Asbestos dust and fibres	Onsite structures, primarily roofing materials	**Minor** No ACM was noted onsite during the site inspection, however given the era when buildings were erected and the prevalence of ACM use in that period, its presence onsite cannot be dismissed. With correct demolition and management strategies to mitigate dust generated from demolition of these structures and ensure appropriate disposal of ACM, if any, the risk of asbestos fibres impacting future hotel use is negligible.
Presence of grease arrestor associated with kitchen facilities	Organic wastes, solvents	Within kitchen facilities	**Negligible** A grease arrestor or similar sump structure was noted near the kitchen area during the site inspection, with some associated pavement staining. The history of operation and the current status and/or condition of the system and surrounding soils is unknown however if any contamination were present it would be of low risk and highly localized therefore is considered to be of negligible significance to future hotel land use.
Off Site			
None noted	-	-	-

7 Conclusions and Recommendations

On 17 July 2015, LBW Environmental Projects (LBW|ep) was commissioned by PT Design to undertake a Preliminary Site Investigation (PSI) – Site History (formerly a Phase 1 Environmental Site Assessment) for the site located at 6-10 Adelphi Terrace, Glenelg North, South Australia.

Based on information provided by PT Design, LBW|ep understood the following;

- The site was comprised of three certificates of title;
- The site is currently operating as a hotel; and
- The history of PCAs undertaken at the site was unknown.

The objectives of the PSI Site History were to:

- Research current and historical land uses and associated activities undertaken at or adjacent to the site, to identify whether PCAs, as defined in the Environmental Protection Regulations 2009, may have occurred on or near the site;
- Provide a desktop assessment of risk with respect to the likelihood that PCAs could have caused site contamination, with respect to the proposed hotel land use; and
- Based on the results of the investigation, provide an opinion as to whether further site investigation is required.

The scope of work undertaken for this PSI was in accordance with LBW|ep's proposal (ref: email *6-10 Adelphi Terrace, Glenelg North*), dated 16 July2015.

Based on the site history investigation undertaken by LBW|ep, we concluded the following

- One PCA as defined in the Environmental Protection Regulations 2009 was identified to have potentially occurred on the subject site; fill or soil importation and was considered to be of minor significance for future hotel development; and
- Two activities of potential environmental significance were identified to have occurred onsite; presence of ACM in building structures and operation of a grease arrestor. These were respectively considered to be of minor and negligible significance to the future hotel land use.

Based on these findings it is concluded that further environmental investigation of the site is unlikely to be necessary.

Site development will however require:

- A detailed assessment of ACM presence within the current structure prior to demolition;
- Disposal classification of any spoil likely to be surplus to site requirements prior to excavation commencing, particularly in areas where old asphalt pavement may have impacted soils.

The appointed civil contractor must always be vigilant for the presence of any fill or unexpected buried structures which present indicators of contamination (odour, visual) or may be a source of contamination.

The information provided in this report is subject to the limitations expressed in Section 8. The reader should make themselves aware of the limitations and how they relate to the conclusions and recommendations provided at Section 7.

8 Limitations

Scope of Services

This environmental site assessment report ("the report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the PT Design and LBW Environmental Projects (LBW | ep) ("scope of services"). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints.

Reliance on Data

In preparing the report, LBW | ep has relied upon data, surveys, analyses, designs, plans and other information provided by PT Design and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise stated in the report, LBW | ep has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. LBW | ep will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to LBW | ep.

Desktop Environmental Conclusions

In accordance with the scope of services, LBW | ep has relied upon the data and has conducted desktop site history research in the preparation of the report. The nature and extent investigation conducted is described in the report.

No desktop investigation, no matter how thorough, can eliminate the possibility that not all potentially contaminating activities were identified or provide sufficient confidence to determine the suitability of a site for a given use. The conclusions are based only upon the data and information available to LBW | ep at the time of preparing this report.

Within the limitations imposed by the scope of services, the investigation and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

Report for Benefit of PT Design

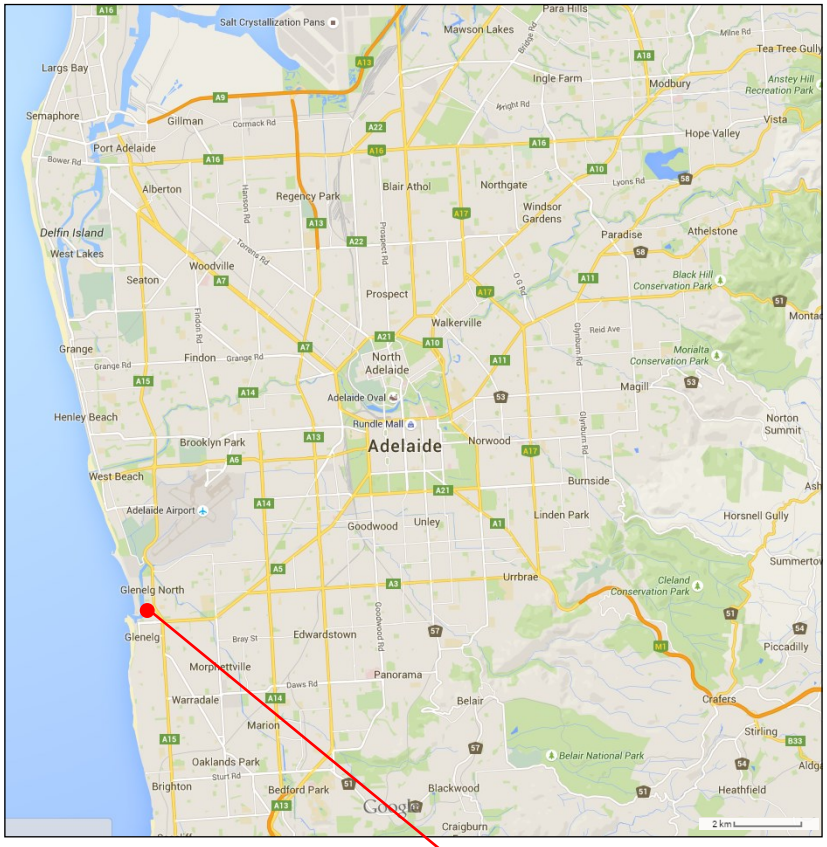
The report has been prepared for the benefit of the PT Design and no other party. LBW | ep assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of LBW | ep or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

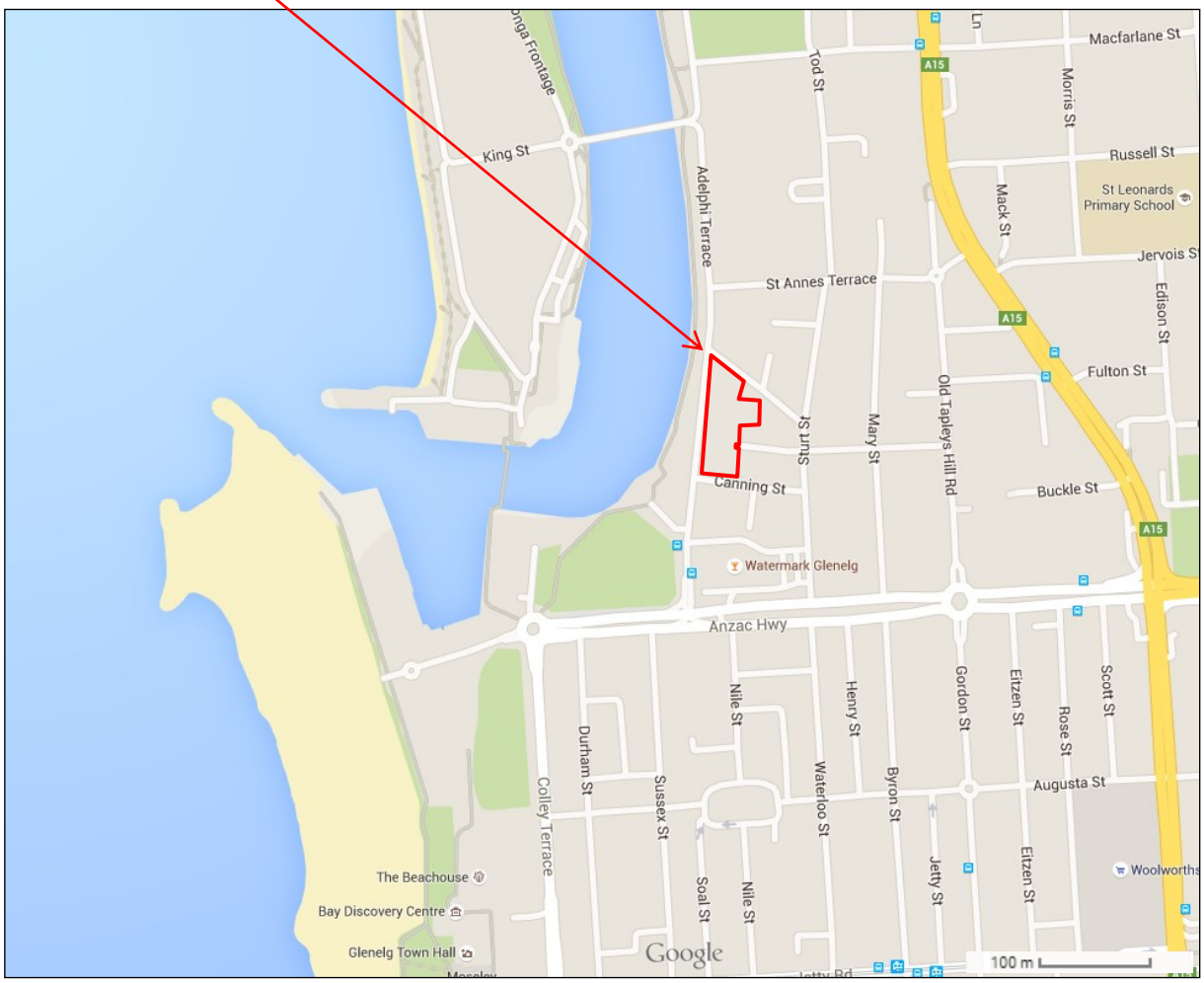
Other Limitations

LBW | ep will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

Appendix A

Figures





N

6-10 Adelphi Terrace, Glenelg North
Preliminary Site Investigation

For

PT Design

Figure 1
Site Location Plan

Job No: 150684
Drawn: K Bradey
Checked:

LBW environmental projects

FIGURE 2

Site Layout Plan

N

6-10 Adelphi Terrace,
Glenelg North
Preliminary Site Investigation

For

PT Design

LEGEND

Approximate Site Boundary

SCALE

0 10m 20m

Image source:
Nearmap

Job Number: 150684

Drawn: K Bradey

Checked:

LBW environmental projects

Appendix B

Current Certificate of Title and Site Ownership History

Land Ownership History

CT 5085/557

Allotment 14, Filed Plan 1437 in the area named Glenelg North, Hundred of Noarlunga.

26.08.1992	New title to Clarence William Smith and Barbara Joan Smith and Ross Park Pty Ltd;
07.09.2000	Transfer to Ross Park Pty Ltd;
16.07.2009	Transfer to Bruno Marveggio.

Current Certificate of Title.

CT 4126/627

Allotment 14 of Section 1481 and other land, Hundred of Noarlunga in the area named Glenelg North (L.T.R.O Filed Plan No. 1437)

22.09.1978	New title to Clarence William Smith and Barbara Joan Smith each as regards one undivided fourth part and Margaret Janet Farrell as regards to remaining two undivided fourth parts;
12.1.1990	Transfer to Ross Park Pty Ltd of two undivided fourth parts

Cancelled to CT 5085/557

CT 2478/78

Portion of Allotments 33 and 53 of the subdivision of Section 1495 laid out as Glenelg, Hundred of Noarlunga, County of Adelaide

27.09.1956	New title to Vincent Proctor Charlton (Orchardist) and Mildred Grace Charlton (wife);
07.01.1970	Transfer to Colin Graham (Company Director);
02.07.1971	Transfer to Donald Peter Farrell and Margaret Janet Farrell (both builders) and Clarence William Smith and Barbara Joan Smith (both builders);
05.10.1976	Transfer of portion to Margaret Janet Farrell (widow) (from Donald Peter Farrell deceased).

Cancelled to CT 4126/627.

CT 2220/103

Portion of Allotments 33 and 53 of the subdivision of Section 1495 laid out as Glenelg, Hundred of Noarlunga, County of Adelaide

13.08.1952	New title to Harold William Horsfall (Blackwood Potato Merchant);
29.07.1952	Transfer to Victor Emmanuel Trafford (Builder);
02.07.1954	Transfer to Vincent Proctor Charlton (Orchardist) and Mildred Grace Charlton (wife);
13.09.1956	Transfer of portion to Victor Emmanuel Trafford (Builder).

Portion Cancelled to CT 2478/77 (not site).

Balance Cancelled to CT 2478/78.

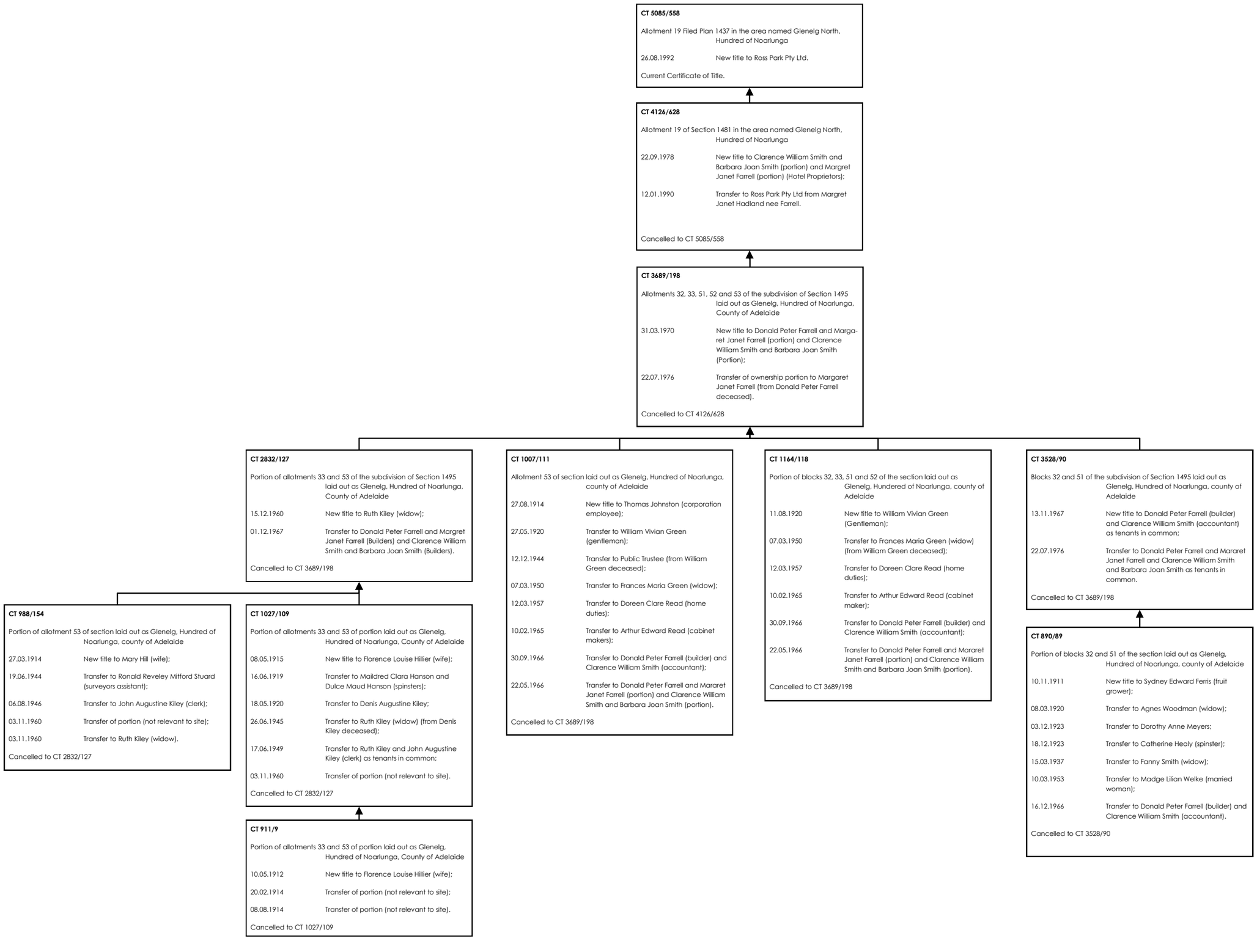
CT 911/8

Portion of Allotments 33 & 53 of the section laid out as Glenelg, Hundred of Noarlunga, County of Adelaide.

10.05.1912	New title to Thomas Francis Wigley (Solicitor) and Constance Laura Reid (wife of William Colley Reid, Kalgoorlie);
30.01.1920	Transfer to Hannah Eliza Dopson (wife od Elijah Dopson, Renmark Orchardist);
20.03.1934	Transfer to William Usher (Norwood Manufacturer);
20.07.1936	Transfer to Mary Usher (widow) and William Usher (motor painter);
11.12.1946	Transfer to Harold William Horsfall (Blackwood Potato Merchant);

Cancelled to CT 2220/103

Land Ownership History



Land Ownership History

CT 5085/559

Allotment 20, Filed plan 1437 in the Area named Glenelg North, Hundred of Noarlunga.

26.08.1992	New title to Ross Park Pty Ltd, Clarence William Smith and Barbara Joan Smith;
07.09.2000	Transfer to Ross Park Pty Ltd;
13.07.2006	Transfer to Anna-Maria Marveggio;
28.08.2008	Transfer to Anna-Maria Marveggio.

Current Certificate of Title.

↑

CT 4126/626

Allotment 20 of section 1481 and other land, Hundred of Noarlunga in the area named Glenelg North (L.T.R.O. Filed Plan No. 1437).

22.09.1978	New title to Clarence William Smith, Barbara Joan Smith and Margaret Janet Farrell (Motel Proprietors);
21.12.1979	Transfer to Clarence William Smith and Barbara Joan Smith each of one undivided fourth part and Margaret Janet Hadland (nee Farrell) of two undivided fourth parts;
12.01.1990	Transfer to Ross Park Pty Ltd of two undivided fourth parts from Margaret Janet Hadland.

Cancelled to CT 5085/559.

↑

CT 993/17

Portion of Allotments 32 and 51 of the section laid out as Glenelg in the Hundred of Noarlunga, County of Adelaide containing one rood and fifteen perches or thereabouts.

08.05.1914	New title to Diedrich Schmidt (civil servant) and Alice Ellen Schmidt (wife);
20.08.1915	Title owners names amended to Dick Stanhope and Alice Ellen Stanhope;
09.10.1919	Transfer to Ernest John Apps;
24.11.1936	Transfer to the Public Trustee as administrator of the estate of Ernest John Apps;
24.11.1936	Transfer to Doris Mabel Apps (widow);
20.03.1973	Transfer to Kathleen Sealy Apps (spinster);
01.12.1975	Transfer to Clarence William Smith (builder), Barbara Joan Smith (wife) and Margaret Janet Farrell (home duties) as tenants in common;

Cancelled to CT 4126/626.

Government of South Australia
Department of Planning, Transport and Infrastructure

Product	Register Search
Date/Time	20/07/2015 03:07PM
Customer Reference	150684
Order ID	20150720007724
Cost	$27.25

The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.

Registrar-General

Certificate of Title - Volume 5085 Folio 557

REAL PROPERTY ACT, 1886
South Australia

Parent Title(s)	CT 4126/627
Dealing(s) Creating Title	CONVERTED TITLE
Title Issued	26/08/1992
Edition	11
Edition Issued	29/10/2014

Estate Type

FEE SIMPLE

Registered Proprietor

ROSS PARK PTY. LTD. (ACN: 008 191 991)
OF 4 HUNTINGTON AVENUE FULHAM SA 5024
1 / 2 SHARE

BRUNO MARVEGGIO
OF 4 HUNTINGTON AVENUE FULHAM SA 5024
1 / 2 SHARE

Description of Land

ALLOTMENT 14 FILED PLAN 1437
IN THE AREA NAMED GLENELG NORTH
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

Dealing Number	Description
11563348	MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

Notations

Dealings Affecting Title

NIL

Priority Notices

NIL

Notations on Plan

NIL

Registrar-General's Notes

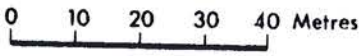
NIL

Administrative Interests

NIL

* Denotes the dealing has been re-lodged.

Product	Register Search
Date/Time	20/07/2015 03:07PM
Customer Reference	150684
Order ID	20150720007724
Cost	$27.25



Government of South Australia
Department of Planning, Transport and Infrastructure

Product	Register Search Plus
Date/Time	20/07/2015 03:31PM
Customer Reference	150684
Order ID	20150720008191
Cost	$32.50

The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.

REGISTRAR - GENERAL SOUTH AUSTRALIA

Registrar-General

Certificate of Title - Volume 5085 Folio 558

REAL PROPERTY ACT, 1886
South Australia

Parent Title(s)	CT 4126/628
Dealing(s) Creating Title	CONVERTED TITLE
Title Issued	26/08/1992
Edition	11
Edition Issued	29/10/2014

Estate Type

FEE SIMPLE

Registered Proprietor

ROSS PARK PTY. LTD. (ACN: 008 191 991)
OF 596 ANZAC HIGHWAY GLENELG EAST SA 5045

Description of Land

ALLOTMENT 19 FILED PLAN 1437
IN THE AREA NAMED GLENELG NORTH
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

Dealing Number	Description
9709352	MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

Notations

Dealings Affecting Title

NIL

Priority Notices

NIL

Notations on Plan

NIL

Registrar-General's Notes

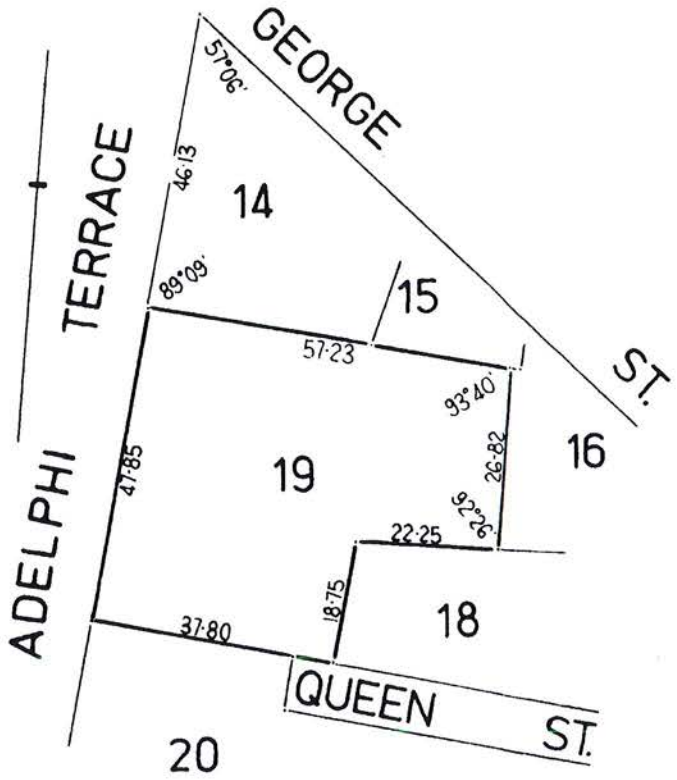
NIL

Administrative Interests

NIL

* Denotes the dealing has been re-lodged.

Product	Register Search Plus
Date/Time	20/07/2015 03:31PM
Customer Reference	150684
Order ID	20150720008191
Cost	$32.50



Government of South Australia
Department of Planning, Transport and Infrastructure

Product	Register Search Plus
Date/Time	20/07/2015 03:45PM
Customer Reference	150684
Order ID	20150720008518
Cost	$32.50

The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.

REGISTRAR - GENERAL SOUTH AUSTRALIA

Registrar-General

Certificate of Title - Volume 5085 Folio 559

REAL PROPERTY ACT, 1886
South Australia

Parent Title(s)	CT 4126/626
Dealing(s) Creating Title	CONVERTED TITLE
Title Issued	26/08/1992
Edition	12
Edition Issued	29/10/2014

Estate Type

FEE SIMPLE

Registered Proprietor

ANNA-MARIA MARVEGGIO
OF 4 HUNTINGTON AVENUE FULHAM SA 5024
50 / 100 SHARE

ROSS PARK PTY. LTD. (ACN: 008 191 991)
OF 4 HUNTINGTON AVENUE FULHAM SA 5024
50 / 100 SHARE

Description of Land

ALLOTMENT 20 FILED PLAN 1437
IN THE AREA NAMED GLENELG NORTH
HUNDRED OF NOARLUNGA

Easements

NIL

Schedule of Dealings

Dealing Number	Description
11563350	MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

Notations

Dealings Affecting Title

NIL

Priority Notices

NIL

Notations on Plan

NIL

Registrar-General's Notes

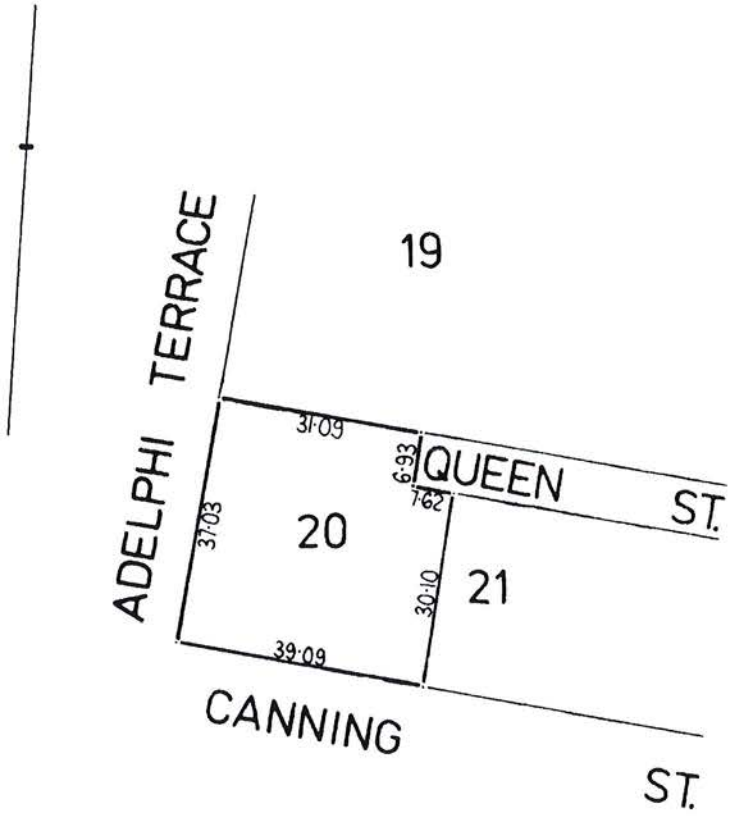
DISCHARGE OF 2ND MTGE/ENC - CT NOT PRODUCED

Administrative Interests

NIL

* Denotes the dealing has been re-lodged.

Product	Register Search Plus
Date/Time	20/07/2015 03:45PM
Customer Reference	150684
Order ID	20150720008518
Cost	$32.50



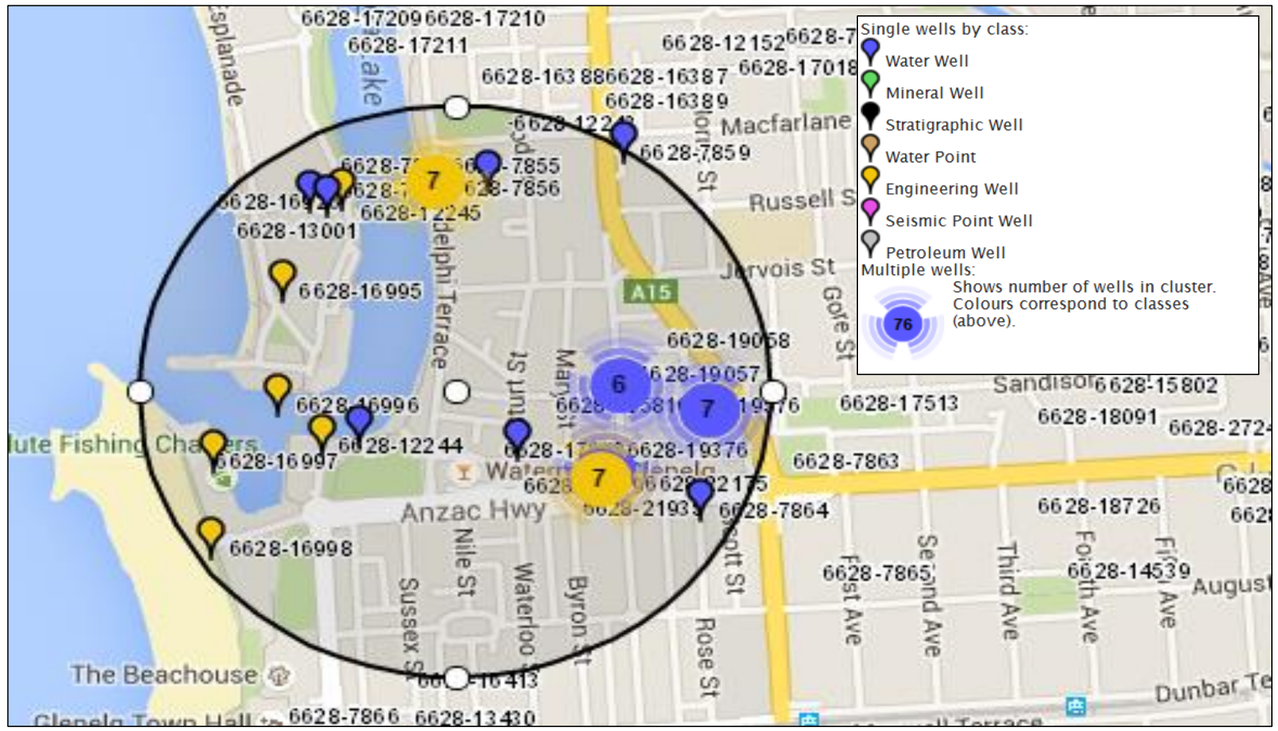
Appendix C

Department of Environment, Water and Natural Resources Search

WaterConnect Groundwater Database Records

LBW | environmental projects

Job: 6-10 Adelphi Terrace, Glenelg North
LBW Job Number: 150684
Search Date: 20-Jul-15
Search Radius: 500m



Headings
EC: Electrical conductivity
TDS: Total dissolved solids
SWL: Standing water level
RSWL: Relative standing water level

Class
WW: Water wells
WP: Waterpoint well
ENG: Engineering well

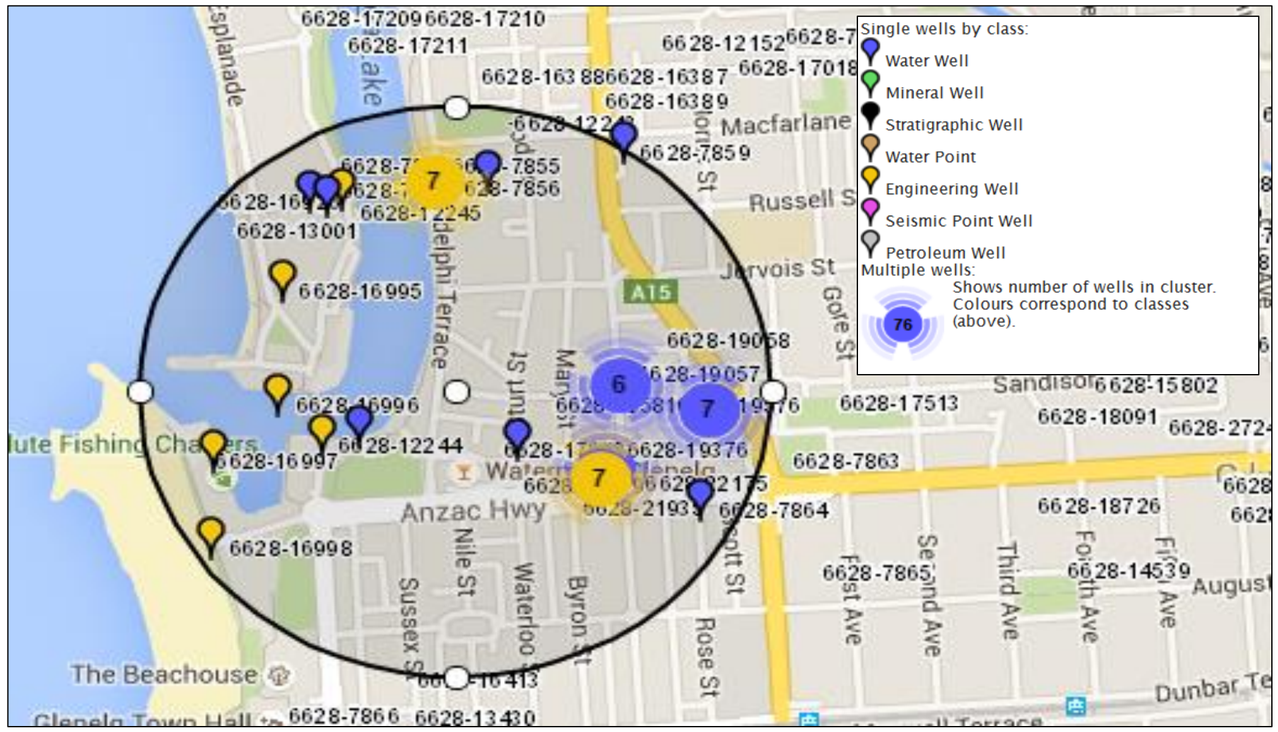
Purpose
DOM: Domestic
DRN: Drainage
ENV: Environmental
INV: Investigation
IRR: Irrigation
OBS: Observation
SPR: Spring
STK: Stock
MON: Monitoring

Status
ABD: Abandoned
BKF: Backfilled
CFL: Controlled flowing
FL: Flowing
GEQ: Geotechnically Equiped
NL: Not located
OPR: Operational
RHB: Rehabilitated
UFL: Uncontrolled flowing
UKN: Unknown

Unit No.	Class	Purpose	Status	Status Date	Original drill date	Original drill depth (m)	Max drill date	Max drill depth (m)	RSWL (mAHD)	SWL (mBGL)	SWL date	TDS (mg/L)	EC (mS/cm)	Salinity date	pH	pH_date	yield (L/min)	yield date	mga easting	mga northing	mga zone
6628-7854	ENG		UKN	20/10/1954	20/10/1954	12.19	20/10/1954	12.19											273056.72	6127302.29	54
6628-7855	ENG		UKN	22/10/1954	22/10/1954	12.19	22/10/1954	12.19											273056.72	6127302.29	54
6628-7856	ENG		UKN	21/10/1954	21/10/1954	12.19	21/10/1954	12.19											273056.72	6127302.29	54
6628-7857	ENG		UKN	21/10/1954	21/10/1954	14.94	21/10/1954	14.94											273056.72	6127302.29	54
6628-7858	ENG		UKN	25/10/1954	25/10/1954	6.1	25/10/1954	6.1											273055.75	6127301.23	54
6628-7859	WW						7/08/1934	4.57				4298	7612	7/08/1934					273355.76	6127332.23	54
6628-7864	WW				1/11/1937	12.19	1/11/1937	12.19				2641	4730	11/11/1937			0.76	1/11/1937	273495.68	6126713.21	54
6628-12243	ENG	INV	GEQ	29/06/1982	29/06/1982	10	29/06/1982	10											273155.71	6127378.31	54
6628-12244	ENG	INV	GEQ	28/06/1982	28/06/1982	10.75	28/06/1982	10.75											272890.75	6126809.27	54
6628-12245	ENG	INV	GEQ	25/06/1982	25/06/1982	14	25/06/1982	14											272912.75	6127239.28	54
6628-13001	WW		BKF		28/06/1984	9	28/06/1984	9	2.7	2.1	28-Jun	4959	8744	24/05/1984	7.9	24/05/1984	0.1	28/06/1984	272888.74	6127227.25	54
6628-14260	WW	DRN			16/07/1988	5	16/07/1988	5	2.31	1.7	16-Jul						1	16/07/1988	273144.7	6127277.25	54
6628-14540	ENG	INV	ABD	17/12/1981	17/12/1981	10.25	17/12/1981	10.25											273183.72	6127387.22	54
6628-16850	WW	INV			1/12/1994	5.5	1/12/1994	5.5											273341.63	6126798.18	54
6628-16851	WW	INV			1/12/1994	5.5	1/12/1994	5.5											273336.79	6126798.29	54
6628-16852	WW	INV			1/12/1994	5.5	1/12/1994	5.5											273336.69	6126813.16	54
6628-16926	WW	DOM			12/01/1995	6.5	12/01/1995	6.5	0.86	4	12-Jan	994	1800	12/01/1995	6.9	12/01/1995	0.5	12/01/1995	272861.73	6127233.24	54
6628-16995	ENG		UKN	12/02/1990	12/02/1990	18.45	12/02/1990	18.45											272821.73	6127078.39	54
6628-16996	ENG		UKN	16/03/1985	16/03/1985	15.4	16/03/1985	15.4											272821.61	6126878.26	54
6628-16997	ENG		UKN	16/03/1985	16/03/1985	15.5	16/03/1985	15.5											272721.86	6126778.42	54
6628-16998	ENG		UKN	13/09/1981	13/09/1981	15.85	13/09/1981	15.85											272721.77	6126628.23	54
6628-17245	ENG				30/01/1995	5.5	30/01/1995	5.5											273331.87	6126783.07	54
6628-17246	ENG				30/01/1995	5.5	30/01/1995	5.5											273331.88	6126823.14	54
6628-17247	ENG				30/01/1995	5.5	30/01/1995	5.5											273401.72	6126788.25	54
6628-17248	ENG				30/01/1995	5.5	30/01/1995	5.5											273401.85	6126753.42	54
6628-17249	ENG				30/11/1994	5.5	30/11/1994	5.5											273346.82	6126813.44	54

WaterConnect Groundwater Database Records

Job: 6-10 Adelphi Terrace, Glenelg North
LBW Job Number: 150684
Search Date: 20-Jul-15
Search Radius: 500m



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Unit No.	Class	Purpose	Status	Status Date	Original drill date	Original drill depth (m)	Max drill date	Max drill depth (m)	RSWL (mAHD)	SWL (mBGL)	SWL date	TDS (mg/L)	EC (mS/cm)	Salinity date	pH	pH_date	yield (L/min)	yield date	mga easting	mga northing	mga zone
6628-17250	ENG				30/11/1994	6	30/11/1994	6											273346.78	6126793.32	54
6628-17251	ENG				1/12/1994	5.7	1/12/1994	5.7											273351.77	6126798.44	54
6628-18411	WW	MON			26/11/1996	4.5	26/11/1996	4.5	1.34	2.3	26-Nov								273276.87	6126878.27	54
6628-18412	WW	MON			26/11/1996	4.5	26/11/1996	4.5	1.39	2.26	26-Nov								273281.91	6126863.3	54
6628-18413	WW	MON			26/11/1996	4.5	26/11/1996	4.5	1.44	2.21	26-Nov								273281.88	6126853.31	54
6628-18654	WW	INV			20/10/1997	9.25	20/10/1997	9.25	1.07	2.1	20-Oct								272951.86	6126828.22	54
6628-19057	WW	MON			12/06/1998	6	12/06/1998	6	1.48	2.3	12-Jun						0.2	12/06/1998	273361.84	6126948.21	54
6628-19058	WW	MON			12/06/1998	6	12/06/1998	6	1.45	2.4	12-Jun						0.2	12/06/1998	273406.85	6127008.27	54
6628-19059	WW	MON			12/06/1998	6	12/06/1998	6	1.43	2.5	12-Jun						0.2	12/06/1998	273451.85	6126973.31	54
6628-19060	WW	MON			12/06/1998	6	12/06/1998	6	1.53	2.5	12-Jun						0.2	12/06/1998	273501.89	6126908.29	54
6628-19061	WW	MON			12/06/1998	6	12/06/1998	6	1.58	2.4	12-Jun						0.2	12/06/1998	273471.89	6126898.33	54
6628-19062	WW	MON			12/06/1998	6	12/06/1998	6	1.42	2.5	12-Jun						0.2	12/06/1998	273441.84	6126898.25	54
6628-19373	WW	MON			24/09/1998	4.5	24/09/1998	4.5	0.73	2.98	24-Sep						0.1	24/09/1998	273316.82	6126833.31	54
6628-19374	WW	MON			24/09/1998	4.5	24/09/1998	4.5	0.71	2.98	24-Sep						0.1	24/09/1998	273301.89	6126783.32	54
6628-19375	WW	MON			24/09/1998	4.5	24/09/1998	4.5	0.76	2.98	24-Sep						0.1	24/09/1998	273331.87	6126823.25	54
6628-19376	WW	MON			24/09/1998	4.5	24/09/1998	4.5	0.79	2.98	24-Sep						0.1	24/09/1998	273346.83	6126813.3	54
6628-19377	WW	MON			24/09/1998	4.5	24/09/1998	4.5	0.73	2.98	24-Sep						0.1	24/09/1998	273316.83	6126818.21	54
6628-19378	WW	MON			24/09/1998	4.5	24/09/1998	4.5	0.76	2.98	24-Sep						0.1	24/09/1998	273331.87	6126838.23	54
6628-19379	WW	MON			24/09/1998	4.5	24/09/1998	4.5	0.81	2.98	24-Sep						0.1	24/09/1998	273351.89	6126753.26	54
6628-19576	WW	MON			2/06/1999	5	2/06/1999	5	1.76	2.13	2-Jun	755	1370	1/06/2002					273426.88	6126893.32	54
6628-19577	WW	MON			2/06/1999	5	2/06/1999	5	1.21	2.68	2-Jun								273421.91	6126858.23	54
6628-19578	WW	MON			2/06/1999	5	2/06/1999	5	1.56	2.25	2-Jun								273376.85	6126888.3	54
6628-19579	WW	MON			2/06/1999	5	2/06/1999	5	1.5	2.35	2-Jun								273396.84	6126863.27	54
6628-19580	WW	MON			2/06/1999	5	2/06/1999	5	1.76	2.1	2-Jun								273406.91	6126888.28	54
6628-19581	WW	MON			2/06/1999	5	2/06/1999	5	1.83	2.02	2-Jun								273401.85	6126893.26	54
6628-20470	WW											2391	4290	8/11/1996	7.3	8/11/1996			273488.19	6126930.06	54

Job: 6-10 Adelphi Terrace, Glenelg North
LBW Job Number: 150684
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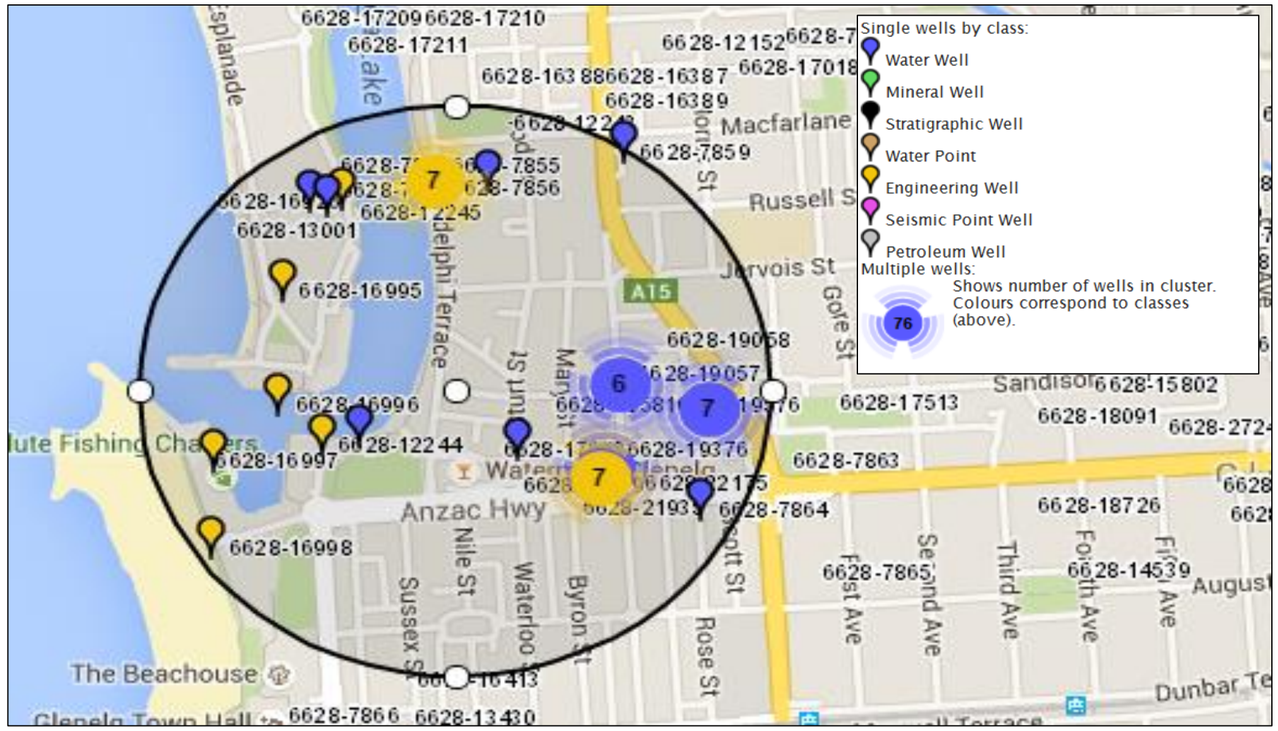


Unit No.	Class	Purpose	Status	Status Date	Original drill date	Original drill depth (m)	Max drill date	Max drill depth (m)	RSWL (mAHD)	SWL (mBGL)	SWL date	TDS (mg/L)	EC (mS/cm)	Salinity date	pH	pH_date	yield (L/min)	yield date	mga easting	mga northing	mga zone
6628-20471	WW											2025	3640	8/11/1996	7.5	8/11/1996			273458.11	6126926.98	54
6628-21935	WW	MON			13/09/2004	5	13/09/2004	5	1.66	2	13-Sep								273277.91	6126750.96	54
6628-21936	WW	MON			13/09/2004	5	13/09/2004	5	1.63	2	13-Sep								273264.89	6126762.22	54
6628-21937	WW	MON					14/09/2004	5	1.61	2	14-Sep								273259.26	6126795.3	54
6628-21938	WW	MON			13/09/2004	5	13/09/2004	5	1.71	2	13-Sep								273311.42	6126766.26	54
6628-22172	WW	MON			19/07/2005	6.2	19/07/2005	6.2	1.07	2.7	19-Jul	1249	2259	18/07/2005					273342.4	6126752.04	54
6628-22175	WW	MON			18/07/2005	6.2	18/07/2005	6.2				1352	2442	19/07/2005					273378.63	6126756.13	54
6628-22545	WW		BKF	10/02/2006				5.2											273311.15	6126808.59	54
6628-22546	WW		BKF	10/02/2006				18											273328.42	6126797.91	54
6628-22547	WW		BKF	10/02/2006				8											273327.37	6126805.56	54
6628-22548	WW		BKF	10/02/2006				5.4											273319.85	6126794.75	54
6628-22549	WW		BKF	10/02/2006				4.4											273323.94	6126803.85	54
6628-22550	WW		BKF	10/02/2006				6											273318.01	6126804.51	54
6628-22838	WW	INV			22/09/2006	4.2	22/09/2006	4.2											273326.91	6126813.75	54
6628-22839	WW	INV			22/09/2006	4.2	22/09/2006	4.2											273327.21	6126810.26	54
6628-22840	WW	INV			22/09/2006	4.2	22/09/2006	4.2											273327.36	6126807.37	54
6628-22841	WW	INV			22/09/2006	4	22/09/2006	4											273327.67	6126804.02	54
6628-22842	WW	INV			22/09/2006	3.6	22/09/2006	3.6											273295.89	6126796.72	54
6628-25246	WW				26/08/2009	5	26/08/2009	5		2.35	26-Aug								273279.41	6126815.51	54
6628-25247	WW	INV			24/08/2009	5	24/08/2009	5		2.03	24-Aug								273280.54	6126803.5	54
6628-25248	WW	INV			24/08/2009	5	24/08/2009	5		2.03	24-Aug								273279.41	6126792.91	54
6628-25249	WW	INV			25/08/2009	5	25/08/2009	5		2.03	25-Aug								273280.46	6126779.53	54
6628-25250	WW	INV			26/08/2009	5	26/08/2009	5		2.03	26-Aug								273259.77	6126804.96	54
6628-25251	WW	INV			26/08/2009	5	26/08/2009	5		2.03	26-Aug								273202.87	6126809.24	54

Appendix D

Historical Aerial Photographs

1959 Aerial Photograph

6-10 Adelphi Terrace,
Glenelg North
Preliminary Site Investigation

For

PT Design

LEGEND

Approximate site boundary

DATE 03/01/1959

SURVEY 325

PHOTO 9253

SCALE

0m 25m 50m

Image source:
Mapland, Dept for Environment and Natural Resources

Job No: 150684
Drawn: K Bradey
Checked:

N

LBW environmental projects

1969 Aerial Photograph

6-10 Adelphi Terrace,
Glenelg North
Preliminary Site Investigation

For

PT Design

LEGEND

Approximate site boundary

DATE 09/01/1969

SURVEY 1133A

PHOTO 719

SCALE

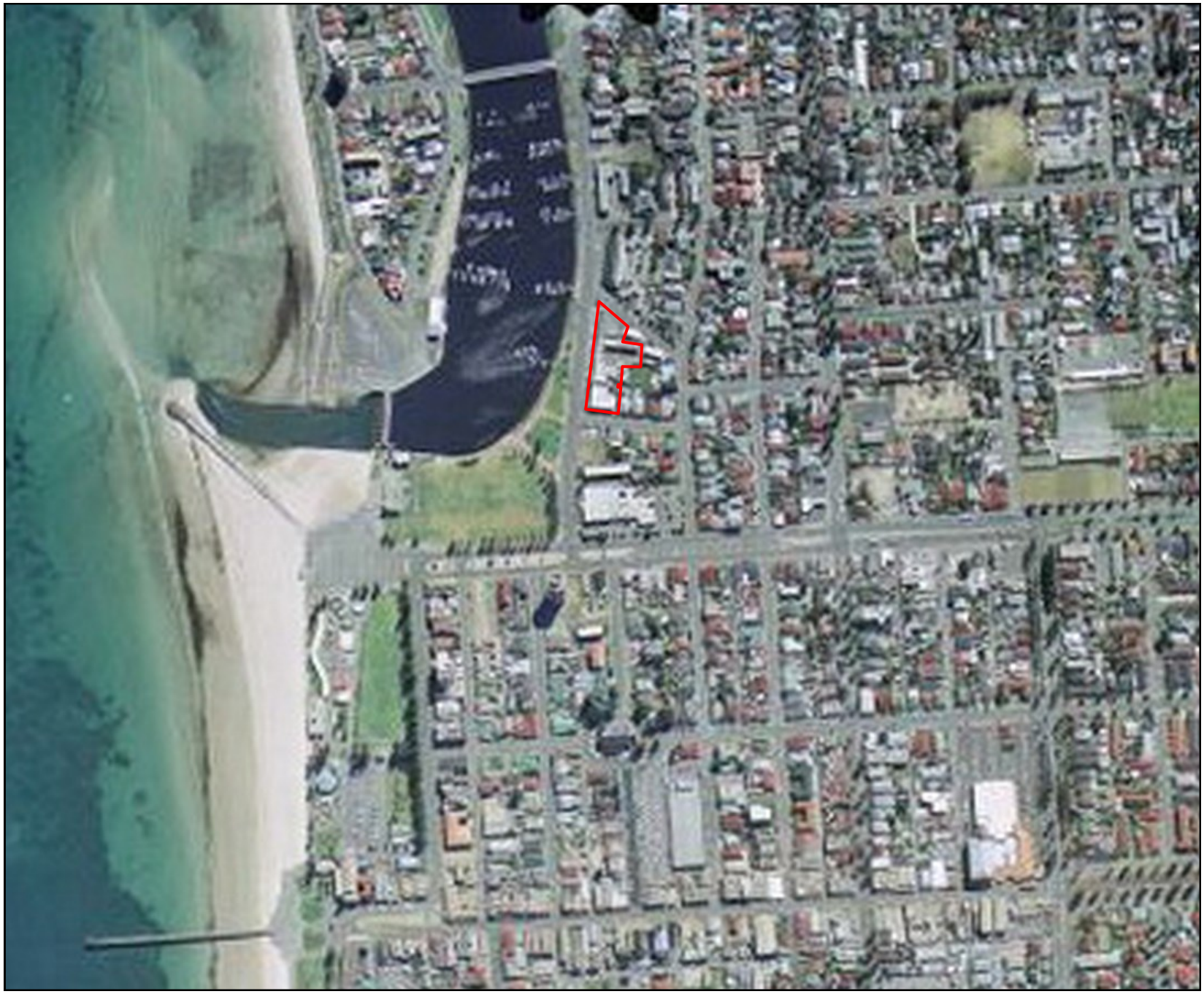
0m 50m 100m

Image source:
Mapland, Dept for Environment and Natural Resources

Job No: 150684
Drawn: K Bradey
Checked: GP

N

LBW environmental projects



N

1979 Aerial Photograph

6-10 Adelphi Terrace,
Glenelg North
Preliminary Site Investigation

For

LEGEND

Approximate site boundary

DATE 19/03/1979

SURVEY 2406

PHOTO 40

SCALE

0m 50m 100m

Image source:
Mapland, Dept for Environment and Natural Resources

Job No: 150684
Drawn: K Bradey
Checked:

LBW environmental projects

1989 Aerial Photograph

6-10 Adelphi Terrace,
Glenelg North
Preliminary Site Investigation

For

PT Design

LEGEND

Approximate site boundary

DATE 06/09/1989

SURVEY 4091

PHOTO 134

SCALE

0m 25m 50m

Image source:
Mapland, Dept for Environment and Natural Resources

Job No: 150684
Drawn: K Bradey
Checked: GP

N

LBW environmental projects

1999 Aerial Photograph

6-10 Adelphi Terrace,
Glenelg North
Preliminary Site Investigation

For

LEGEND

Approximate site boundary

DATE 26/09/1999

SURVEY 5718

PHOTO 819

SCALE

0m 100m 200m

Image source:
Mapland, Dept for Environment and Natural Resources

Job No: 150684
Drawn: K Bradey
Checked: GP

N

LBW environmental projects

N

2009 Aerial Photograph

6-10 Adelphi Terrace,
Glenelg North
Preliminary Site Investigation

For

PT Design

LEGEND

Approximate site boundary

DATE 29.10.2009

SURVEY -

PHOTO -

SCALE

0m 10m 20m

Image source:
Nearmap

Job No: 150684
Drawn: K Bradey
Checked: GP

LBW environmental projects

2015 Aerial Photograph

6-10 Adelphi Terrace,
Glenelg North
Preliminary Site Investigation

For

LEGEND

Approximate site boundary

DATE 11.03.2015

SURVEY -

PHOTO -

SCALE

0m 10m 20m

Image source:
Nearmap

Job No: 150684
Drawn: K Bradey
Checked:

N

LBW environmental projects

Appendix E

Site Inspection photographs

Photograph 1: View north through service road in the central portion of site showing stormwater drainage.

Photograph 2: View east along Queen Street of residential properties and bowling club (in the left of frame).

Photograph 3: Grease Arrestor adjacent to kitchen facilities.

Photograph 4: View east across sealed carpark area.

Photograph 5: Small chemical storage room.

Photograph 6: View west of storage space in the northern portion of the site.

Photograph 7: Cleaners' room containing small quantities of cleaning products.

Photograph 8: View north east of adjacent residential properties across northern most carpark.

Photograph 9: View east across sealed carpark area from first floor of hotel.

Photograph 10: Disused kitchen facilities.

Photograph 11: Tenant laundry facilities.

Photograph 12: Storage area, previously laundry.

HOLMES PARTNERS

Appendix 15. Site Services Report

Building Services
Design Development
Infrastructure Brief

Project: Marina Regency Hotel

Adelphi Terrace, Glenelg SA

Hotel & Apartment Development

Reference Number: 2225.150709.G.2

Issued for: Design Development Issue

Date: July 2015

Revision: 3

Revision	Issue Date	Revision Description	By	Checked
1	13 July 2015	Draft Issue	DMK	ARC
2	22 July 2015	Issue for Review	DMK	ARC
3	29 July 2015	Final Draft	DMK	ARC

Contents

1.0 General

1.1 Introduction

This Building Services Design Development Brief presents the various aspects of Building Services Infrastructure proposed to be incorporated into the Mechanical, Electrical, Fire Protection, Fire Safety, Hydraulic and Vertical Transportation Services designs for the Marina Regency Apartments and Hotel Development located at Adelphi Terrace, Glenelg, South Australia.

This Brief summarises our design development recommendations for client, stakeholders and the relevant Authority acceptance in principle.

All aspects of this Infrastructure Brief are to be verified through the course of concept design development and detailed design of the building and infrastructure.

1.2 Project Brief

The project fundamentally comprises the development of a multi-storey mixed use development on Adelphi Terrace, Glenelg, SA:

The project is proposed as a mixed use development comprising the following classifications of building:

- Class 2; a building containing 2 or more sole-occupancy units each being a separate dwelling
- Class 3; a residential building (hotel)
- Class 9B; a public assembly building
- Class 7a; a carpark

1.3 Executive Summary

Undergrounding of Existing Power Lines

BCA Engineers have applied to SA Power Networks for the undergrounding of existing overhead powerlines in a north-south orientation along Adelphi Terrace, from George Street to Canning Street. Associated works include the establishment of new public street lighting in consultation with stakeholders, and the undergrounding of Telstra infrastructure.

Power Distribution

SA Power Networks will provide a new power supply transformer in a dedicated Transformer Room facing Canning Street.

Section 86 of the Electricity Act

On the basis that existing overhead powerlines are sought to be removed and undergrounded, and that statutory clearances to new underground powerlines are maintained by design, then compliance to Section 86 of the Electricity Act shall be adhered.

Telecommunications

The NBNCo 'roll-out' has not yet commenced in Glenelg. In the absence of an NBNCo service, the development shall otherwise be designed and constructed future-proof and 'fibre-ready'. Existing Telecommunications infrastructure is evident immediately in front of the proposed development on Adelphi Terrace, as well as surrounding streets, ready for alteration and extension to suit project requirements.

Fire Water

Fire water supply to the site is to be provided by two (2) new 150mm connections to the 150mm SA Water main within Adelphi Terrace. Fire water infrastructure shall support combined hydrant/sprinkler systems. Two 13kL suction break tanks shall be located within basement. Electric and diesel duty suction pumps and a pressure maintenance pump shall be provided in a dedicated Fire Pump Room proposed to be located facing Canning Street; exact locations to be agreed with client, architect, stakeholders and SAMFS.

Fire Detection & Alarm

A Fire Indicator Panel (FIP) and a Master Emergency Control Panel (MECP) are proposed to be located in the ground floor foyer. Fire detection and alarm system is to be externally monitored by the local Fire Brigade utilising Romteck Alarm Signalling Equipment (ASE). An Automatic Stairwell Pressurisation System is proposed as part of the fire and life safety strategy for this project.

Sanitary Drainage

Two existing 150mm Authority sewer connections are proposed to be retained to serve the new development, one shall be made redundant, and an additional new 150mm sewer connection is to be provided off Canning Street to accommodate the Café. A 5,400 litre capacity in-ground arrestor is proposed to be located in reserved Plant / Loading Dock area accessible from Canning Street to pre-treat the grease waste prior to discharge to the Authority sewer.

Domestic cold water

An existing 40mm water meter on the southern side of the development shall be made redundant. The existing 32mm water meter on the southern side of the development shall be upgraded to 50mm and will serve the proposed buildings domestic cold water supply. A 6,500 litre capacity cold water break tank is proposed for the domestic cold water supply in order to accommodate the peak cold water demand. To provide adequate pressure the domestic cold water is proposed to be pumped from the break tank to 3-off 20kL header tanks located on the roof.

Rainwater

Rainwater shall be collected from the roof and stored in a below ground 80kL rainwater tank within the ground floor car park.

Hot Water

Centralised natural gas fired domestic hot water will be located adjacent to the header tanks on the roof.

Gas

Authority high pressure natural gas mains are currently available on all streets surrounding the development. Natural gas is proposed for the domestic hot water plant and the cafe / kitchen.

2.0 Existing Conditions

2.1 Dial Before You Dig

Refer to Appendix A for Dial Before You Dig responses from relevant authorities.

- **APA**
- **SA Power Networks**
- **SA Water**
- **Telstra**

2.2 Site Inspections

Preliminary site attendances have been undertaken to assess locations of existing major infrastructure assets and proposed new works.

Detailed site inspections will be necessary in due course to verify all existing conditions, to verify all Dial Before You Dig information, and for the development of concept designs for new infrastructure.

3.0 Electrical

3.1 Power Distribution

BCA Engineers has approached SA Power Networks in respect to this proposed development.

All aspects of detailed design are yet to be determined however we provide the following summary of design considerations for this project:

- Undergrounding of existing power lines
- High voltage power supply
- Transformer; outdoor substation vs. indoor substation
- High voltage switching cubicle; if necessary
- Clearances from power lines

Undergrounding of Existing Power Lines

The existing site accommodates a small 200kVA padmount substation transformer located in the existing car parking area near the corner of Adelphi Terrace and George Street. An underground high voltage power supply enters the site from a stobie pole on George Street.

BCA Engineers have applied to SA Power Networks for the removal of the existing padmount substation transformer, and for the removal of the underground high voltage power supply entering the site.

In addition BCA Engineers have applied to SA Power Networks for the undergrounding of existing overhead powerlines in proximity to the proposed development.

The extent of undergrounding considered appropriate for purpose is as follows:

- in a north-south orientation along Adelphi Terrace, from George Street to Canning Street
- and removing the first stobie pole only in a south-east direction into George Street

It is observed that existing stobie poles in proximity to the development have public street lighting attached and also support Telstra copper and fibre cabling infrastructure.

The solution for new public street lighting is to be developed further in consultation with stakeholders.

BCA Engineers are progressing liaison with both SA Power Networks and Telstra for the undergrounding of this infrastructure.

Corner of Adelphi Terrace and George Street

Corner of Adelphi Terrace and Canning Street

High Voltage Power Supply

Design considerations for high voltage reticulation shall be provided in accord with SA Office of the Technical Regulator reference document ED05 Building Safely Near Powerlines, summarised as follows:

- On the basis that proposed new underground power lines are less than 33kV, the minimum horizontal safe clearance distance of any building and its foundations to the nearest underground HV cable is 2000mm
- In addition, the building and its foundations shall be outside of any easement; this does not apply to the point of feeder entry into an indoor substation

- Refer in particular extract of ED05 Building Safely Near Powerlines Image 5.

Underground powerline voltage	Minimum clearance
66, 132 and 275 kV	3 metres
33 kV or less	2 metres

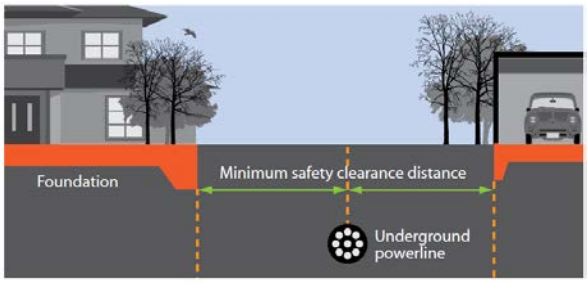


Image 5: Minimum safety clearance distance for electricity supplier's underground powerlines

SAPN have confirmed that dual high voltage power supply feeders are necessary due to the magnitude of the development.

The dual high voltage power supply feeders are proposed to enter into the premise Transformer Room located facing Canning Street.

Transformer

A nominal 1500kVA - 2000kVA size substation transformer unit is anticipated to serve the proposed development, although this size is subject to further assessment, liaison with SA Power Networks, stakeholders, and final design.

Our initial enquiry to SA Power Networks is based upon the following:

- Physical infrastructure rated up to 2000kVA
- Initial declared demand of nominal 1500kVA

Refer to Appendix B for Preliminary Information Letter from SA Power Networks.

SAPN will provide

The substation is proposed to be an indoor transformer room type substation.

Indoor Substation

Spatial considerations for Indoor Transformers shall be provided in accord with reference document TS 108, summarised as follows:

- For a single unit distribution transformer room, the minimum distribution transformer room size shall be not less than 6.25m (D) x 4.25m (W) x 4.0m (H) which is based on distribution transformer capacity 1500kVA - 2000kVA
- 4.0m Height shall be maintained, such that clearances for any roller door gear, panel lift door gear, or other mechanisms do not impede on this Height parameter

- If an HV Switching Cubicle is necessary, and if such HV switching cubicle is placed indoors, then additional spatial requirements will apply
- 3 hours fire rated construction
- Sufficient free-air for natural ventilation; otherwise forced ventilation and room cooling facilities may be required
- SA Power Networks 24/7 access
- Exits under emergency situations; at least two walls shall include personnel and equipment doors adjacent to open areas to provide an emergency escape; doors shall not open onto a fire isolated corridor
- 3.0-m Operating Area in front of transformer shall be at the same level as the transformer
- Various other design and construction parameters apply to indoor substations
- For all aspects of indoor substation design and construction, consultation with an SA Power Networks assigned project officer is necessary for approval
- Refer in particular extract of TS 108 Distribution Equipment & Transformer Rooms Figure 1 for spatial requirements

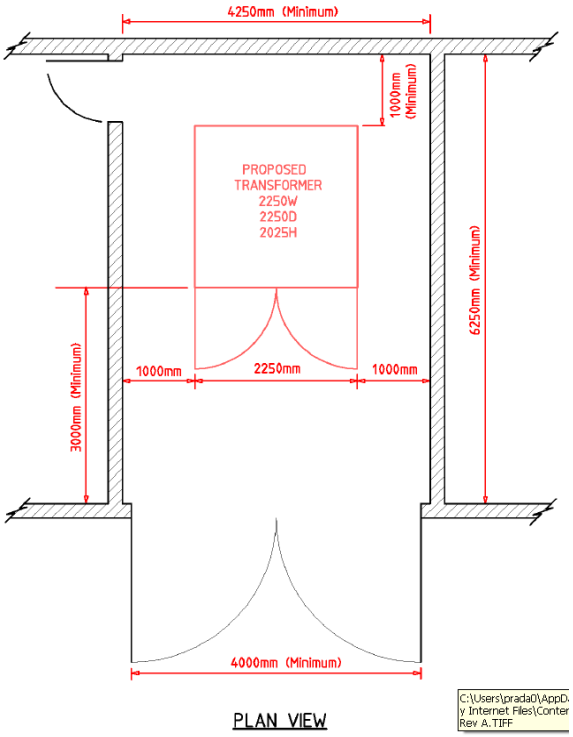


Figure 1 - Typical Distribution Transformer Room Size
6.25m (D) min. x 4.25m (W) min. x 4.0m (H)

Clearances from Power Lines

On the basis that existing overhead powerlines are sought to be removed and undergrounded, and that statutory clearances to new underground powerlines are maintained by design, then compliance to Section 86 of the Electricity Act shall be adhered.

Refer to Appendix C for City of Holdfast Bay Power Line Declaration of Compliance.

3.2 Telecommunications Systems

National Broadband Network

BCA Engineers are aware that the NBNCo 'roll-out' has not yet commenced in Glenelg. For a 'major project' such as this, NBNCo may be in a position to commence specific construction of assets, and back-haul of street fibre infrastructure into the area. The associated costs, merits and risks of pursuing such undertaking are yet to be determined in consultation with NBNCo and stakeholders.

Telstra Network

In the absence of an NBNCo service, the development shall otherwise be designed and constructed future-proof and 'fibre-ready'. Telstra shall be the initial infrastructure service provider to the premise.

Existing Telstra pits and conduit infrastructure are evident immediately in front of the proposed development on Adelphi Terrace, as well as surrounding streets, ready for alteration and extension to suit project requirements.

It is anticipated that a new nominal 300-Pairs capacity lead-in copper multicore cable would be sufficient to service the requirements of this development, although this capacity is subject to further assessment, liaison with Telstra, stakeholders, and final design.

Lead-In Telecommunications Service Provisions

Nominal 2 x 50mm dia. white communications Lead-In Conduits shall enter the premise Main Communications Room.

One (1) Communications Pit shall be provided and installed in vicinity of Main Communications Room.

The Main Distribution Frame (MDF) shall be installed in the Main Communications Room.

Main Communications Room

A Main Communications Room of nominal 3.5m x 4.5m dimensions is proposed on the ground floor. This Main Communications Room is intended to incorporate the Site Main Telecommunications Distribution Frame (MDF), Main Communications Cabinets (CCs), and other Landlord head-end equipment.

Spatial considerations for future active fibre equipment shall also be accommodated.

Undergrounding of existing Telstra services

Refer section *Undergrounding of Existing Power Lines*.

It is observed that existing stobie poles in proximity to the development support Telstra copper and fibre cabling infrastructure.

BCA Engineers are progressing liaison with both SA Power Networks and Telstra for the undergrounding of this infrastructure.

4.0 Fire Protection Services

4.1 Fire Water Supply Infrastructure

Fire water supply to the site is to be provided by two (2) new 150mm connections to the 150mm SA Water main within Adelphi Terrace. The result of SA Water network analysis indicating flow and pressure available in the main is provided in Appendix D of this report.

The proposed new fire water supply infrastructure for the proposed combined hydrant/sprinkler system to comprise of:

- Fire pumpset assembly comprising of electric and diesel duty suction pumps and a pressure maintenance pump. Pumps are to be located within a dedicated Fire Pump Room / Fire Control Room; in location determined in liaison with the architect.
- Two (2) off 13,000L suction break tanks located within basement
- Combined fire hydrant/sprinkler boost facilities for use by attending fire brigade (4 boost inlets)
- Provision of back flow prevention for all boost points and sprinkler supply locations
- Internal 150mm fire risers within building and fire stairs to serve internal fire hydrant valves and sprinkler systems

4.2 Fire Hydrant System

A site fire hydrant is proposed to serve the building comprising of:

- Internal hydrant valves located within fire isolated stairs
- Boost facilities (as per above)
- 150mm combined fire risers – ringed on top floor

4.3 Fire Hose Reels

Fire hose reels are proposed in accordance with the BCA and AS2441. Fire hose reels are to be supplied via the combined hydrant/sprinkler system. Fire hose reels are not required in the typical residential floors.

4.4 Automatic Sprinkler System

Automatic sprinkler systems are to be provided throughout to serve the entire building, including the carpark comprising of:

- Provision of new fast response sprinkler heads to the entire building
- Concealed ceiling space sprinkler protection based on 21m^2 spacing throughout
- Sprinkler control valves at each floor
- Boost facilities (as per above)
- 150mm combined fire risers – ringed on top floor
- All pipework and associated valves and fittings

The following hazard categories are relevant for specific areas:

Apartments & Hotel	Light Hazard – 21m^2 spacing
Carpark	Ordinary Hazard II – 12m^2 spacing
Plantrooms	Ordinary Hazard I – 12m^2 spacing

4.5 Control & Indicating Equipment

A Fire Indicator Panel (FIP) and a Master Emergency Control Panel (MECP) are proposed to be located in the ground floor foyer. These panels will control and monitor smoke hazard management systems, Emergency Warning and Intercommunication Systems (EWIS) and other building services interfaces for the site. A Public Address (PA) paging facility is to be located at the MECP.

Fire detection and alarm system is to be externally monitored by the local Fire Brigade utilising Romteck Alarm Signalling Equipment (ASE). Connection and monitoring fees are to be paid by building owner.

4.6 Smoke Hazard Management

Floors and compartments containing apartments are to be provided with an automatic smoke detection and alarm in accordance with Spec 2.2a of the BCA.

An Automatic Stairwell Pressurisation System is proposed as part of the fire and life safety strategy for this project.

4.7 Emergency Warning & Intercommunication System

An Emergency Warning and Intercommunication System (EWIS) is to be installed throughout the building comprising of:

- A new MECP (as per above)
- EWIS amplifiers
- Warden Intercommunication Phones (WIPs)
- Loudspeakers
- Visual Alarm Devices

It is proposed that speakers in residential floors are to be located in corridors with sounder bases within each apartment to sound evacuation tones in the event of a building fire alarm.

The EWIS is to have the capability for automatic over-ride of any public address system throughout the building.

5.0 Hydraulic Services

5.1 Sanitary Drainage

The site is currently served by 3-off existing 150mm Authority sewer connections, sourced from a 150mm main within Adelphi Terrace. Two of the existing connections are proposed to be retained to serve the new development, and the remaining connection is to be made redundant. In addition a new 150mm sewer connection is to be provided off Canning Street to accommodate the Café.

5.2 Trade Waste Drainage

In order to accommodate the Café / Kitchen, a grease arrestor is proposed to pre-treat the grease waste prior to discharge to the Authority sewer.

A 5,400 litre capacity in-ground arrestor is proposed to be located in reserved Plant / Loading Dock area accessible from Canning Street. This asset will typically require a foot print of 4.8 meters long by 1.5 meters wide.

5.3 Domestic cold water reticulation

The site is currently serviced by two off domestic cold water meters, sourced from the Authorities 150mm water main within Adelphi Terrace. The southern existing water meter comprises of a 40mm meter (Number E70640052). This meter is to be made redundant. The northern meter comprises of a 32mm Authority meter (Number E70232173). This meter is to be upgraded to 50mm and will serve the proposed buildings domestic cold water supply.

A 6,500 litre capacity cold water break tank is proposed for the domestic cold water supply in order to accommodate the peak cold water demand. Typically the required break tank dimensions are 4 metres long by 1 metre wide by 2 metres tall.

In order to provide adequate pressure throughout the proposed buildings, the domestic cold water is proposed to be pumped from the break tank to 3-off 20kL header tanks located on the roof. The domestic cold water will be reticulated from the header tanks to the buildings domestic cold water reticulation system. A pressure boosting pump set will be installed at roof level to provide adequate pressure to the topmost levels. The typical required spatial dimensions for the header tanks are 5 metres long, 2.5 meters wide, 2 metres tall (each). Each tank has a wet weight of 21 Ton. The pressure pump set will typically require a foot print of approximately 2.5 metres long by 1.5 meters wide by 1 metre tall.

5.4 Rainwater

As part of the water sensitive design proposed for the new building, rainwater is to be collected from the roof and stored in a below ground 80kL rainwater tank within the ground floor car park. The typical spatial requirements for the rainwater tank are 7 metre diameter, 2.1 metre depth. The rainwater will be pumped and filtered prior to distribution to the ground and first floor water closets and laundries. Typically the required spatial foot print for the rainwater and filtration equipment is 2 metres long, 1 metre deep and 1 metre tall enclosure. Refer to the BCA Engineers ESD report for further detail.

5.5 Domestic Hot Water Reticulation

Domestic hot water will be provided via a centralised hot water plant, located on the roof level. The hot water plant is based on a natural gas fired boiler system, capable of meeting the large hot water demand within a relatively compact plant. The heating load is proposed to be divided between two boilers to provide 100% redundancy in the event of maintenance or repair.

The thermal energy for the hot water plant will be generated by two off boilers. The boilers typically require a foot print of 2.43 meters long, 0.825 meters deep and 1.230 meters tall (flue terminal 2.92 meters tall). Each boiler has a weight of 520 kg. In order to accommodate the buildings peak domestic hot water demand, 4-off hot water storage cylinders are proposed, each cylinder typically has a foot print of 0.685 meters in diameter, and is 1.84 metres tall. Each cylinder has a wet weight of 550 kg.

The hot water will be distributed throughout the building via a flow and return system, in which hot water is circulated throughout the pipework to ensure constant supply of hot water.

5.6 Gas Reticulation

Natural gas is proposed for the domestic hot water plant and the cafe / kitchen. A new Authority gas meter will be required to accommodate the proposed load.

Authority medium pressure natural gas mains are currently available on all streets abounding the site (Adelphi Terrace, Canning Street, George Street and Queen Street) to service the requirements of the project.

There are no authority high pressure gas mains of significance that may adversely impact the development.

Appendix A - Dial Before You Dig

Job No 8461595

Phone: 1100
www.1100.com.au

Caller Details

Contact:	Mr Scott Gill	**Caller Id:** 815647	**Phone:** 0881321700
Company:	BCA Engineers	**Mobile:** 0419036533	**Fax:** Not Supplied
Address:	PO Box 2620 Kent Town SA 5071	**Email:** scottgill@bcaengineers.com	

Dig Site and Enquiry Details

WARNING: The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

User Reference: Not Supplied

Working on Behalf of:
Private

Enquiry Date:	Start Date:	End Date:
23/10/2014	25/10/2014	25/10/2014

Address:
10 Adelphi Terrace
Glenelg North SA 5045

Job Purpose: Excavation
Onsite Activity: Manual Excavation
Location of Workplace: Both
Location in Road: CarriageWay,Footpath

- Check that the location of the dig site is correct. If not you must submit a new enquiry.
- Should the scope of works change, or plan validity dates expire, you must submit a new enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility. If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

Notes/Description of Works:
Not Supplied

Your Responsibilities and Duty of Care

- If plans are not received within 2 working days, contact the asset owners directly & quote their Sequence No.
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly. Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any State legislative requirements regarding Duty of Care and safe digging requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- By using this service, you agree to Privacy Policy and the terms and disclaimers set out at **www.1100.com.au**
- **For more information on safe excavation practices, visit www.1100.com.au**

Asset Owner Details

The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days. Additional time should be allowed for information issued by post. It is **your responsibility** to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the Dial Before You Dig service, so it is **your responsibility** to identify and contact any asset owners not listed here directly.
** Asset owners highlighted by asterisks ** require that you visit their offices to collect plans.
# Asset owners highlighted with a hash require that you call them to discuss your enquiry or to obtain plans.

Seq. No.	Authority Name	Phone	Status
42188152	APA, Sa	0881591644	NOTIFIED
42188149	Mobil Adelaide Refinery Pipeline **	0883267154	NOTIFIED
42188150	SA Power Networks	0882920218	NOTIFIED
42188153	SA Water	0874241117	NOTIFIED
42188151	Telstra SANT	1800653935	NOTIFIED

END OF UTILITIES LIST

APA Group

Gas Pipeline Location Enquiry

Thankyou for your Dial Before You Dig enquiry regarding location of gas pipelines.

To ensure we have provided the correct information please verify your details and site address listed below.

Enquiry Date

23/10/2014

Enquiry Reference Number:

Sequence Number	42188152

Enquiry Received From:

Mr Scott Gill PO Box 2620 Kent Town Sa 5071 **Phone** 0881321700, **Mobile** 0419036533, **Facsimile**	Company Name BCA Engineers

Work / Excavation Site Address:

10 Adelphi Terrace, Glenelg North

For enquiries regarding this request contact:

APA Group, Locations Officer

Phone (08) 8159 1644

Fax (08) 8353 4685

Office Hours 7:45am to 3:45pm Monday to Friday

APA Group

CONDITIONS

General Conditions

1. **This location enquiry is valid for 30 days from the enquiry date**.
2. Expired locations over 30 days require a new Dial Before You Dig request to validate location information for the site listed above.
3. The location information supplied in this document shall be used as a guide only. APA Group shall not be liable or responsible for the accuracy of any such information supplied pursuant to this request.
4. It is the responsibility of the excavator to expose the gas pipeline or service by hand **(Please Note: Do not use vacuum excavation systems as damage to pipelines may occur).** Pipeline depths may vary according to ground conditions.
5. Gas service pipelines (inlet service) connecting the gas pipelines in the street to the gas meter on the property are not marked on the map.
6. Commonly, a map of the inlet service connection installation can be found inside the gas meter box.
7. Maps marked with the 'Caution Stamp' (as per sample below) require APA Group supervision of excavation works. A **minimum of 48 hours notice** is required to arrange attendance by an APA Group representative.

Transmission Pipelines Conditions

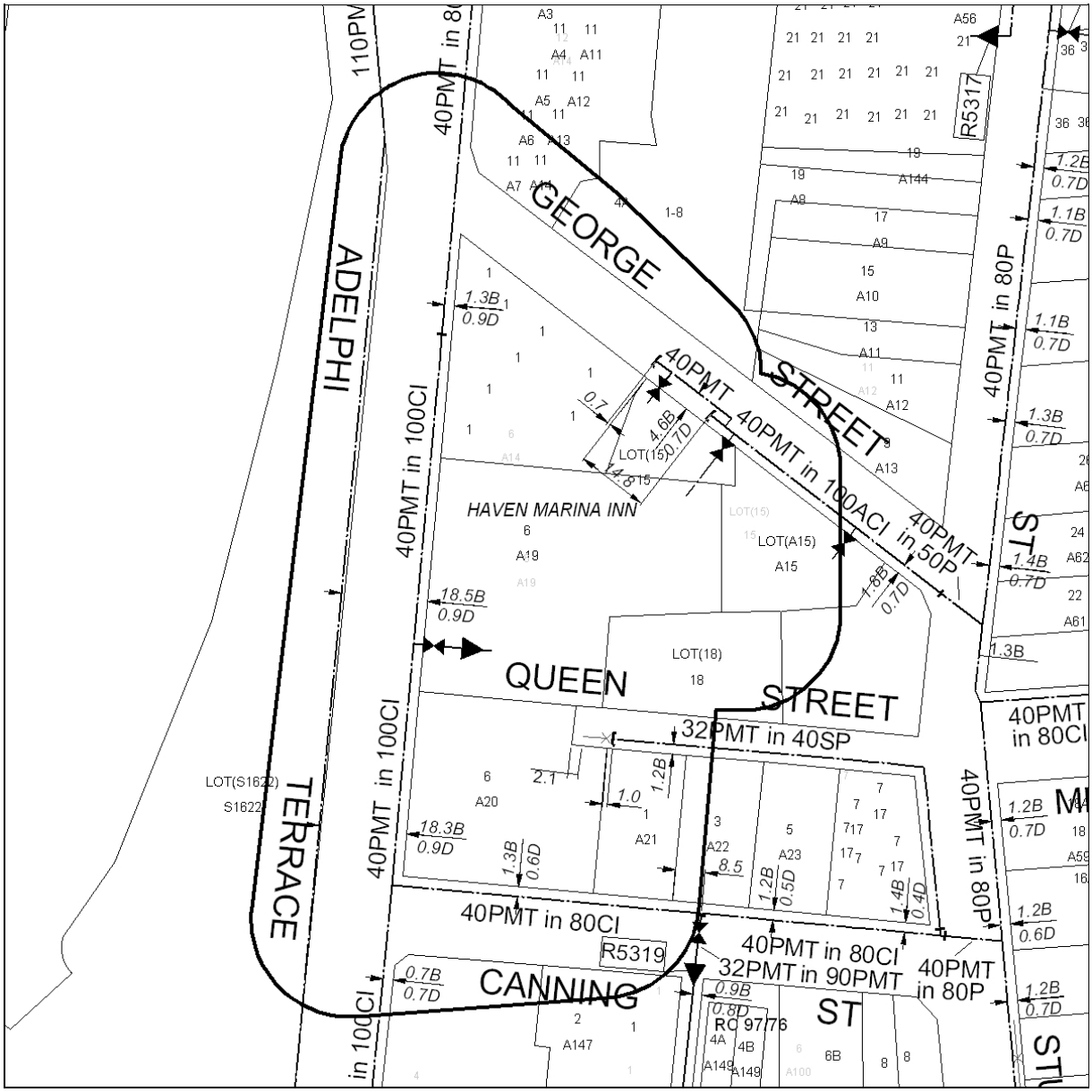
It is your responsibility to follow these important conditions when working in the vicinity of transmission pipelines.

1. Excavation works in the vicinity of a transmission pipeline requires mandatory supervision by an APA Group representative.
2. A **'Work In The Vicinity Of A Transmission Pipeline Request Form'** must be submitted to APA Group. APA Group will issue a Hazardous Task Permit. Work on the site must not commence until this permit has been received and an APA Group representative is present.
3. A **minimum of 48 hours notice** is required to arrange attendance by an APA Group representative.

APA Group

Site Address	**10 Adelphi Terrace Glenelg North**	**Sequence No**	**42188152**
Intersecting Street		**Map Reference**	**140E1,140E2,140F1,140F2**
Distance From Intersection		**Email**	**scottgill@bcaengineers.com**
Message	**Not Supplied**		

Please verify the area indicated is in the vicinity of your requested excavation



Immediately report any damage to gas pipelines – Telephone 1800 808 526

ITEM	SYMBOL	TERMS
LOW PRESSURE 1.2 - 1.7kPa	———	B - BOUNDARY
MEDIUM PRESSURE 35 - 100kPa	——— — ———	D - DEPTH
HIGH PRESSURE 70 - 350kPa	——— — — ———	Bok - Back of Kerb
TRANSMISSION PRESSURE 900 - 15000kPa	——— - - - ———	Fok - Front of Kerb
PROPOSED MAIN 1.2 - 15000kPa	— — — — — — —	

Sequence Number 42188150
Date Requested 23/10/2014

Mr Scott Gill
BCA Engineers
PO Box 2620
Kent Town SA 5071

Telephone 0881321700 Fax
Email scottgill@bcaengineers.com

SA Power Networks Infrastructure located

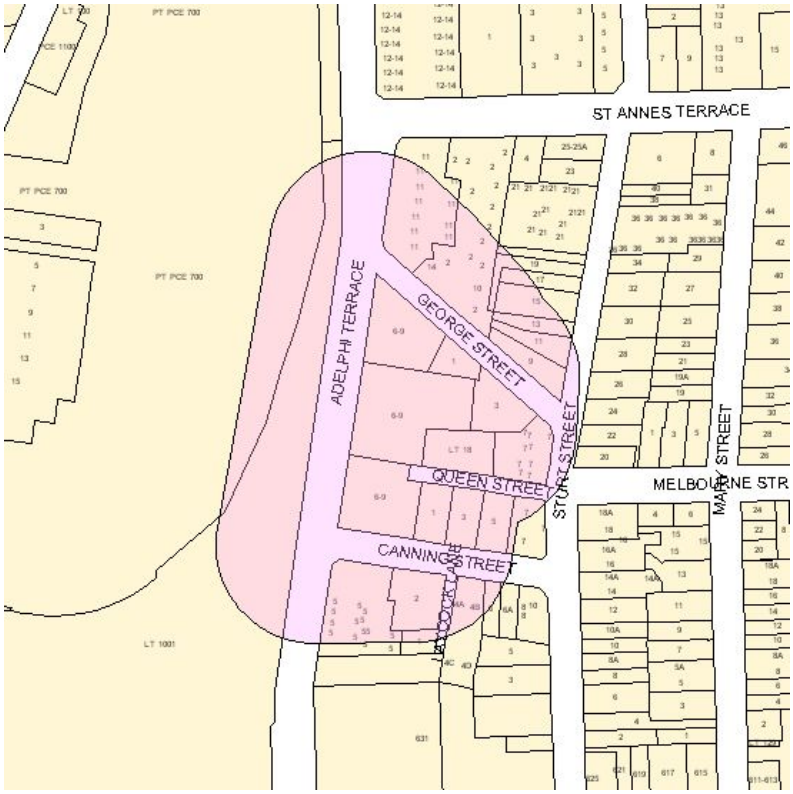
Please find attached the results of your request for SA Power Networks Underground Cable Locations.

Please ensure that you have read all accompanying documentation and that you comply with the terms and conditions of the supply of this data. Data information is valid for 30 days from date of issue.

Please Note:- Should you damage SA Power Networks assets you must immediately notify Faults and Emergencies on 1313 66

Area Requested:

10 Adelphi Terrace Glenelg North SA 5045



Important Information and conditions of use

For users of underground services information Supplied by SA Power Networks

Indicative information only

The accompanying information is intended only to indicate the presence of SA Power Networks' underground services and/or to convey general indicative information in respect of the location marked on the plans. **The information does not necessarily provide a current, comprehensive or accurate description or location of the underground services or associated infrastructure.**

The information may also describe or indicate the presence of underground services or infrastructure not owned or operated by SA Power Networks, for example, electrical services connected to an SA Power Networks' service point. SA Power Networks takes no responsibility for services or infrastructure that is not owned or operated by SA Power Networks or the accuracy or completeness of their description or location in the accompanying information.

Identifying the location of the underground services

Working near or around live electrical cables can be hazardous. **An on-site assessment is strongly recommended prior to undertaking ANY works and is necessary to determine the location of the underground services**. This can be undertaken by SA Power Networks or an alternative professional locating service provider. Enquires can be made about SA Power Networks' cable location service by telephoning (08) 8292 0218.

Underground services in the vicinity of any proposed earthworks must be located by hand digging (pot-holing) prior to the commencement of the works. Persons conducting works will be held responsible for any resulting loss or damage to the services or associated infrastructure.

Working near high voltage 33kV or 66kV underground cables

Persons intending to conduct earthworks in the vicinity of an SA Power Networks high voltage 33kV or 66kV underground cable **MUST first obtain a site-specific clearance** by contacting the SA Power Networks Cable Management Technical Officer on (08) 8292 0459 or 0403 582 130.

Basis of information supply

The accompanying information is supplied at the request of, and is only provided for use by, the requestor. The information is valid for 30 days from the date of issue.

SA Power Networks, its employees, agents and contractors shall accept no responsibility for any inaccuracy or incompleteness in the information provided or liability in respect of any personal injury, death or loss or damage to any real or personal property or otherwise that arises out of or in connection with, directly or indirectly, the provision of or reliance upon the information.

It is the requestor's responsibility to ensure that the information provided accords with the area depicted on the requestor's Dial Before You Dig request. The information provided should not be used in respect of any area outside of the area depicted on the Dial Before You Dig request. SA Power Networks does not warrant that the information is suitable for the requestor's intended purposes.

Any use of the accompanying information is subject to the requestor's agreement to the conditions contained in this document. Upon acceptance of these conditions, SA Power Networks grants the requestor permission to use the information. The information must be returned to SA Power Networks if the conditions are not accepted.

***Important Note**: It is an offence under the Electricity Act 1996 (SA) to cause damage to or interfere with electrical infrastructure*

Ref FS Job Safe Work Procedure No JSWP:106

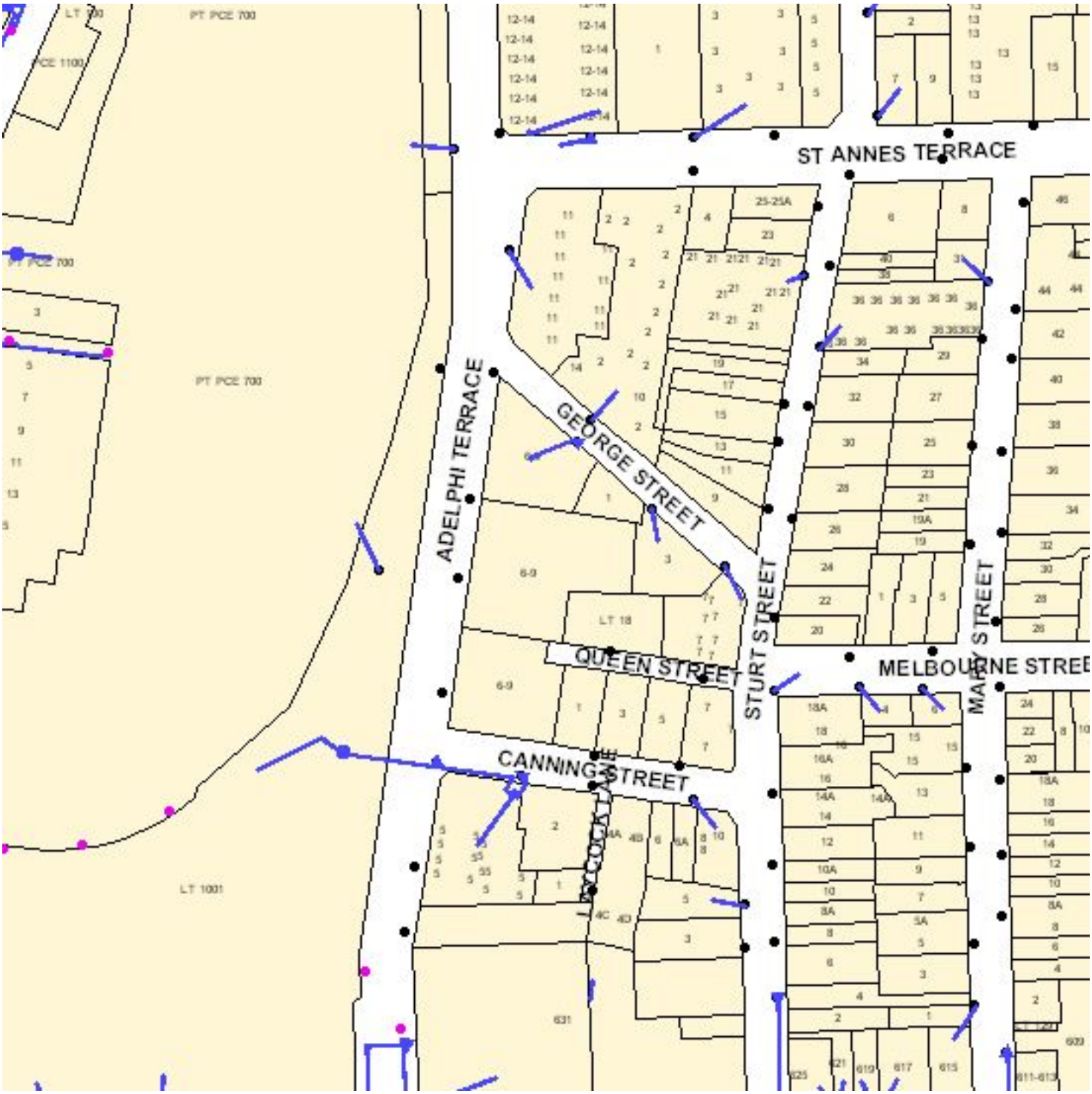
ASSET LOCATION MAP - HIGH VOLTAGE

N
W E
S

- High Voltage Ground Level Equipment
- High Voltage Underground Cable
- High Voltage Underground 19kV Cable
- High Voltage Underground 11kV Cable
- High Voltage Underground Cable Exit
- High Voltage Underground 19kV Cable Exit
- High Voltage Underground 11kV Cable Exit
- Electricity Pole
- High Voltage Underground 19kV Earth Grid
- Property Boundary

SA Power Networks

ASSET LOCATION MAP - LOW VOLTAGE



Note: The presence of public lighting columns may indicate additional unidentified cables within the search area

N
W
E
S

- Low Voltage Underground Cable
- Low Voltage Underground Cable Exit
- Customer Service Pillar
- Electricity Pole
- Lighting Column
- Property Boundary

SA Power Networks

SOUTH AUSTRALIAN
WATER CORPORATION

Notification number: 8461595
Sequence number: 42188153
Enquiry date: 23/10/2014 12:32:00 AM
Enquiry location: 10 Adelphi Terrace, Glenelg North SA 5045

Mr Scott Gill
BCA Engineers
PO Box 2620
Kent Town Sa 5071

Dial Before You Dig Response – SA Water Assets Identified

Dear Mr Scott Gill

Thank you for contacting Dial Before You Dig **(DBYD)** prior to engaging in work or activities which may affect the water and sewerage infrastructure of SA Water Corporation.

Our records indicate there has been SA Water infrastructure identified within your nominated search area and has been shown on the attached plan.

Disclaimer
The information has been generated by an automated system based on the area highlighted. It is your responsibility to ensure that the dig site is properly defined when submitting your Dial Before You Dig enquiry. If the information does not match the dig site or you have received this message in error please resubmit your enquiry.

This advice and/or information is given for your private use only. The accuracy of the advice and information is not guaranteed and no responsibility is accepted by the crown, the South Australian Water Corporation or their officers, agents or servants for any loss or damage caused by reliance upon this advice and/or information, as a result of any error, omission, incorrect description or statement therein whether caused by negligence or otherwise.

The information contained in this message may be confidential and may also be subject of legal, professional or public interest immunity. If you are not the intended recipient any use, disclosure or copying of this document is unauthorised. If you have received this message in error, please contact Dial Before You Dig.

For further enquiries or assistance with interpretation of plans and search content please contact our DBYD support team via email dialbeforeyoudig@sawater.com.au

Thank you for contacting DBYD service.

Yours sincerely

Dial Before You Dig Support Team
SA Water Corporation

Please note: Any damage to SA Water infrastructure must be reported immediately to Service Faults and Emergencies (24 hours, 7 days) on 1300 883 121

Government of South Australia

Government of South Australia

SA Water

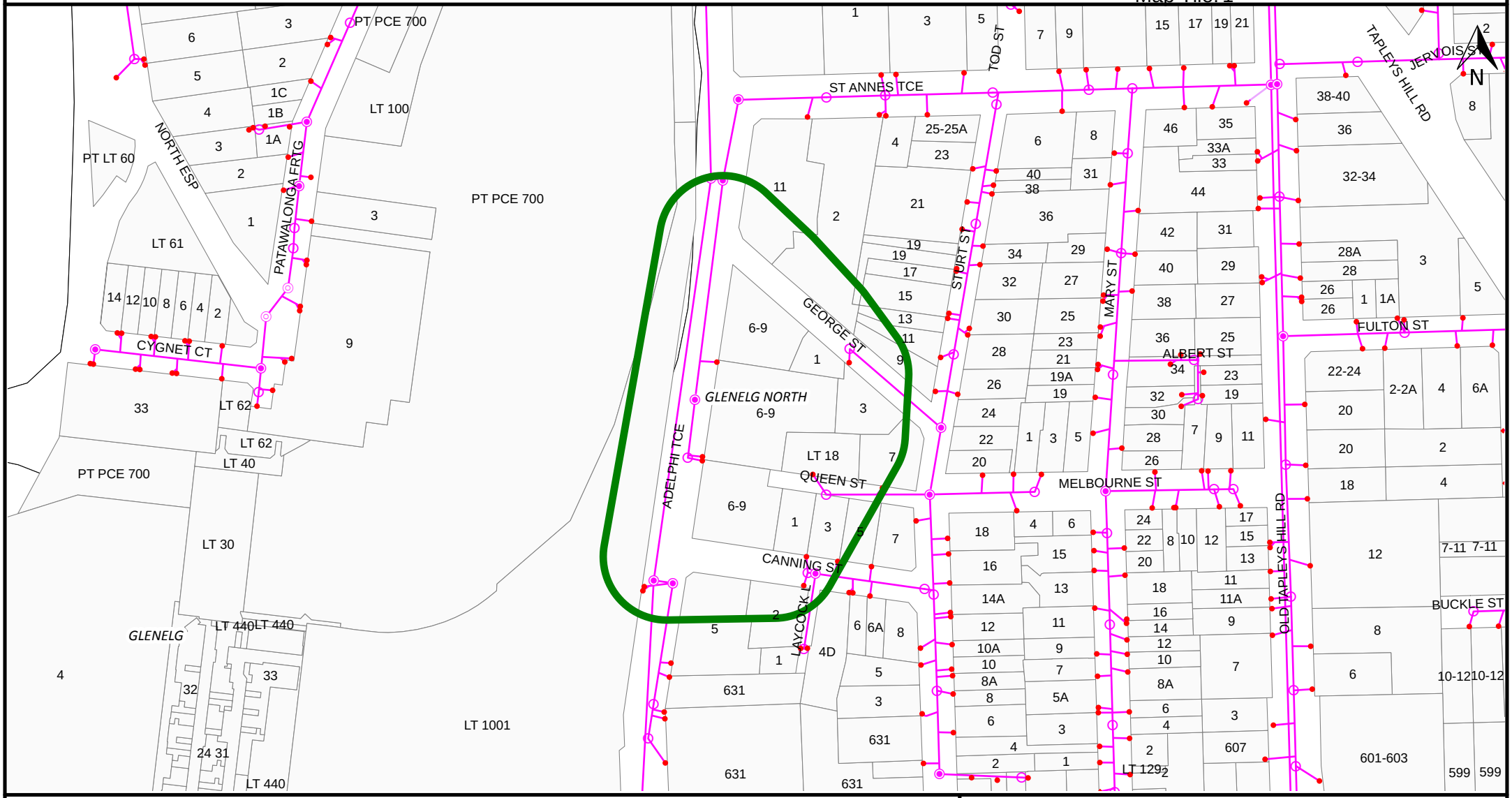
South Australian Water Corporation

WASTEWATER RETICULATION

DBYD Sequence No: **42188153**

Map Tile: 1

DIAL BEFORE YOU DIG www.1100.com.au



- GIP
- Valve
- Maintenance Hole
- Maintenance Shaft
- Inspection Opening
- Wastewater Connections
- Decommissioned Asbestos Mains
- Ancillary Pipes
- Gravity Mains
- Low Pressure
- Pumping Mains
- Vacuum Mains
- Railway
- Land Parcels
- CP Facility
- CP Anode/Cathode Cables
- CP Electricity Supply Cables
- CP Anode Bed Outlines
- CP = Cathodic Protection

Scale @ A4: 1:2500

Government of South Australia

SA Water

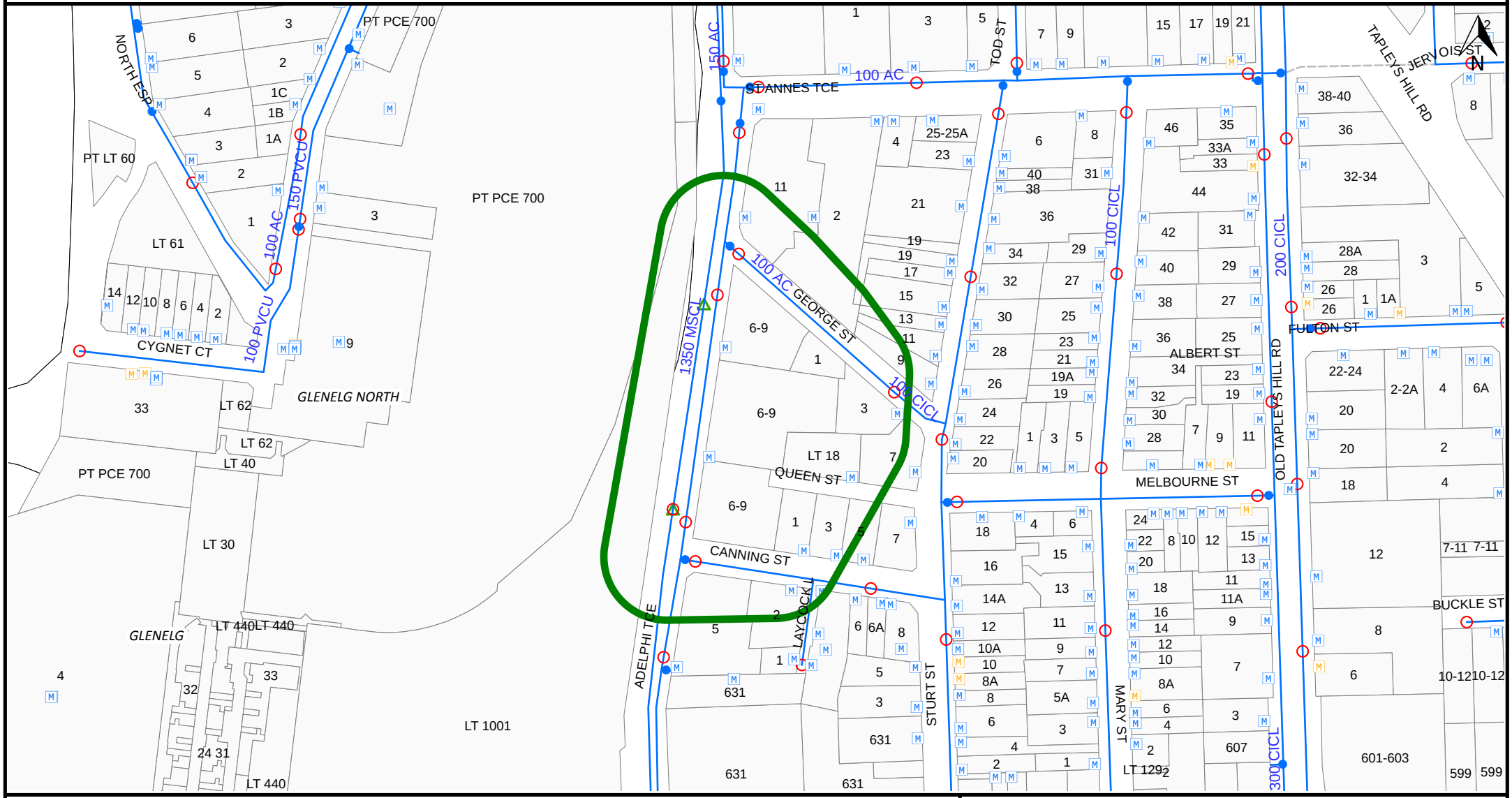
South Australian Water Corporation

WATER RETICULATION

DBYD Sequence No: **42188153**

Map Tile: 1

DIAL BEFORE YOU DIG www.1100.com.au



- Water Valves
- Water Main
- Water Main (Decommissioned)
- Decommissioned Asbestos Mains
- Water Pillar Hydrant
- Water Hydrant
- CP Facility

CP = Cathodic Protection

- CP Anode/Cathode Cables
- CP Electricity Supply Cables
- CP Anode Bed Outlines
- Railway
- Land Parcels
- Water Meter*
- Shifted Water Meter*

** Connection between water meter and pipe not shown*

Scale @ A4: 1:2500

DUTY OF CARE

TELSTRA CORPORATON ACN 051 775 556

IMPORTANT:

Please read and understand all the information and disclaimers provided below.
Sketches and Plans provided by Telstra are circuit diagrams only and indicate the presence of telecommunications plant in the general vicinity of the geographical area shown; exact ground cover and alignments cannot be given with any certainty and cover may alter over time. Telecommunications plant seldom follow straight lines and careful on site investigation is essential to uncover and reveal its exact position.
Due to the nature of Telstra plant and the age of some cables and records, it is impossible to ascertain the location of all Telstra plant. The accuracy and/or completeness of the information cannot be guaranteed and, accordingly Telstra plans are intended to be indicative only.

"DUTY OF CARE"

When working in the vicinity of telecommunications plant you have a legal "Duty of Care" that must be observed.

It is the responsibility of the owner and any consultant engaged by the owner, including an architect, consulting engineer, developer, and head contractor to design for minimal impact and protection of Telstra plant. Telstra will provide plans and sketches showing the presence of its network to assist at this design stage.

It is the owner's (or constructor's) responsibility to:-

a) request plans of Telstra plant for a particular location at a reasonable time before construction begins. If you have any doubts as to the exact location of Telstra Plant, we strongly recommend that you engage an Accredited Plant Locator in your area;

b) visually locate Telstra plant by hand digging or using non destructive water jet method (pot holing) where construction activities may damage or interfere with Telstra plant (see "Essential Precautions and Approach Distances" section for more information); and

c) contact Telstra's **Plan Services** (see below for details) if Telstra plant is wholly or partly located near planned construction activities.

DAMAGE TO TELSTRA'S NETWORK MUST BE REPORTED TO 132203 IMMEDIATELY.

The owner is responsible for all plant damage when works commence prior to obtaining Telstra plans, or failure to follow agreed instructions.
Telstra reserves all rights to recover compensation for loss or damage to its cable network or other property including consequential losses.

Important note: *The construction of Telstra's network dates back over many years. Some of Telstra's pits and ducts were manufactured from asbestos-containing cement. You must take care in conducting any works in the vicinity of Telstra's pits and ducts. You must refrain from in any way disturbing or damaging Telstra's network infrastructure when conducting your works. We recommend that before you conduct any works in the vicinity of Telstra infrastructure that you ensure your processes and procedures eliminate any possibility of disturbing, damaging or interfering in any way with Telstra's infrastructure. Your processes and procedures should incorporate appropriate measures having regard to the nature of this risk.*

EMERGENCY SITUATIONS - RECEIVING TELSTRA PLANS

Telstra's automated mapping system will provide a fast response for emergency situations. (faster than an operator can provide manually). Automated responses are normally available 24/7.

To receive a fast automated response from Telstra your request must **-**

- be a web request lodged at DBYD (**www.1100.com.au**) The request will be then forwarded directly to Telstra.
- contain your email address so you can receive the automated email response.
- be for the purposes of 'mechanical excavation' or other ground breaking DBYD activity. (requests with activity types conveyancing, planning & design or other non digging activities may not be responded to until the next business day).
- be for an area less than 350 metres in size to obtain a PDF map. (over 350 metres will default to DWF due to size)
- be for an area less than 2500 metres in size to obtain a DWF map

NATURAL DISASTERS

Natural Disasters include (amongst other things) earthquakes, cyclones, floods and tsunamis.

In the case of such events, urgent requests for plans or information relating to the location of Telstra network can be made directly to Telstra Network Integrity Team Managers as follows:

NSW – John McInerney 0419 485 795

QLD – Glenn Swift 0419 660 147

VIC/TAS - David Povazan 0417 300 947

SA/NT - Mick Weaver 0419 828 703

WA - Angus Beresford-Peirse 0419 123 589

TELSTRA PLAN SERVICES

For all Telstra DBYD (Dial Before You Dig) map enquiries please contact Telstra Plan Services

email - **Telstra.Plans@team.telstra.com**

phone - **1800 653 935** (for urgent, onsite or optic fibre enquiries)

Please note - to make an enquiry the plans must be current (within 60 days of issue). If your plans have expired you will need to submit a new request via DBYD.

ASSET RELOCATIONS

You are not permitted to relocate or alter any Telstra assets or network under any circumstance.
For all enquiries relating to the relocation of Telstra assets please phone
1800 810 443 or email **F1102490@team.telstra.com**

DATA EXTRACTION FEES

In some instances a data extraction fee may be applicable for the supply of Telstra information. Typically a data extraction fee may apply to large projects or requests to be supplied in non standard formats,. For further details refer to the section at the end of this document.

PRIVACY NOTE

Your information has been provided to Telstra by DBYD to enable Telstra to respond to your DBYD request. Telstra keeps your information in accordance with its privacy statement entitled "Protecting Your Privacy" which can be obtained from Telstra either by calling 1800 039 059 or visiting our website at www.telstra.com.au/privacy

CONCERNING TELSTRA PLANS:

Please note the following:

- For plans of Telstra locations contact **Dial Before You Dig** at least 2 business days prior to digging. (**www.1100.com.au**)
- Fast response can be provided by Telstra if an email address is supplied. (if posted, this may take up to one week or longer to receive plans)
- Telstra plans and information provided are **valid for 60 days** from the date of issue.
- Telstra owns and retains the copyright in all plans and details provided in conjunction with the applicant's request. The applicant is authorised to use the plans and details only for the purpose indicated in the applicant's request. The applicant must not use the plans or details for any other purpose. The plans and details should be disposed of by shredding or any other secure disposal method after use.
- Telstra plans or other details are provided only for the use of the applicant, its servants, or agents. **The applicant may not give the plans or details to other parties, and may not generate profit from commercialising the plans or details.**
- Please contact Telstra **Plan Services** (see above for details) immediately should you locate Telstra assets not indicated on these plans.
- Telstra, its servants or agents shall not be liable for any loss or damage caused or occasioned by the use of plans and or details so supplied to the applicant, its servants and agents, and the applicant agrees to indemnify Telstra against any claim or demand for any such loss or damage.

Please ensure Telstra plans and information provided remains on-site at all times throughout your construction phase.

ESSENTIAL PRECAUTIONS and APPROACH DISTANCES:

NOTE: If the following clearances cannot be maintained, please contact Telstra Plan Services (see above for details) for advice on how best to resolve this situation.

1. On receipt of plans and sketches and before commencing excavation work or similar activities near Telstra's plant, **carefully locate this plant first** to avoid damage. Undertake prior manual exposure such as potholing when intending to excavate or work **closer** to Telstra plant than the following approach distances.

Where Telstra's plant is in an area where road and footpaths are well defined by kerbs or other features a minimum clear distance of 600mm must be maintained from where it could be reasonably presumed that plant would reside.

In non established or unformed reserves and terrain, this approach distance must be at least 1.5 metres.

In country/rural areas which may have wider variations in reasonably presumed plant presence, the following minimum approach distances apply:

a) Parallel to major plant: 10 metres (for IEN, optic fibre and copper cable over 300 pairs)
b) Parallel to other plant: 5 metres

NOTE: Even manual pot-holing needs to be undertaken with extreme care, commonsense and employing techniques least likely to damage cables. For example, orientate shovel blades and trowels parallel to the cable rather than digging across the cable.

If construction work is parallel to Telstra plant, then careful hand digging or using non destructive water jet method (pot-holing) at least every 5m is required to establish the location of all plant, hence confirming nominal locations before work can commence.

2. Maintain the following minimum clearance between construction activity and **actual location** of Telstra Plant.

Jackhammers/Pneumatic Breakers	*Not within 1.0m of **actual location.***
Vibrating Plate or Wacker Packer Compactor	*Not within 0.5m of Telstra ducts.* *300mm compact clearance cover before compactor can be used across Telstra ducts.*
Boring Equipment (in-line, horizontal and vertical)	*Not within 2.0m of **actual location**.* *Constructor to hand dig or use non-destructive water jet method (pot-hole) and expose plant.*
Heavy Vehicle Traffic (over 3 tonnes)	*Not to be driven across Telstra ducts (or plant) with less than 600mm cover.* *Constructor to check depth via hand digging.*
Mechanical Excavators, Farm ploughing and Tree Removal	*Not within 1.0m of **actual location.*** *Constructor to hand dig or use non-destructive water jet method (pot-hole) and expose plant.*

All Telstra pits and manholes should be a minimum of 1.2m in from the back of kerb after the completion of your work.

All Telstra conduit should have the following minimum depth of cover after the completion of your work:-

Footway 450mm

Roadway 450mm at drain invert and 600mm at road centre crown

For clearance distances relating to Telstra pillars, cabinets and RIMs/RCMs please contact Telstra Plan Services (see above for details).

FURTHER ASSISTANCE:

Assistance can be obtained by contacting Telstra Plan Services

Where on-site location is provided, the owner is responsible for all hand digging or use non-destructive water jet method (pot-holing) to visually locate and expose Telstra plant.

If plant location plans or visual location of Telstra plant by digging reveals that the location of Telstra plant is situated wholly or partly where the owner plans to work, then Telstra's Network Integrity Group must be contacted through Telstra Plan Services to discuss possible engineering solutions.

NOTE:

If Telstra relocation or protection works are part of the agreed solution, then payment to Telstra for the cost of this work shall be the responsibility of the principal developer or constructor. The principal developer or constructor will be required to provide Telstra with the details of their proposed work showing how Telstra's plant is to be accommodated and these details must be approved by the Regional Network Integrity Manager prior to the commencement of site works.

RURAL LANDOWNERS

Where Telstra owned cable crosses agricultural land, Telstra may provide a once-off free on-site electronic cable location. The Telstra Plan Services operator will provide assistance in determining whether a free on-site location is required.

Please note:

- The exact location, including depth of cables can only be verified by pot holing, which is not covered by this service.
- This service is only available to assist private rural land owners.
- This service covers one hour on-site only. Additional time can be purchased directly from the Accredited Plant Locator.

For further information including terms and conditions, please contact Plan Services on **1800 653 935**.

LEGEND

Exchange
(major cable present)

Footway access chamber
(can vary from 1-lid to 12-lid)

Roadway access chamber

Pillar/cabinet
(above the ground / free standing)

Above ground complex equipment housing (eg RIM)
Please Note: This equipment is powered by 240V electricity.

PT **Public telephone**
Please Note: This equipment is powered by 240V electricity.

Direct buried cable

Cable jointing pit
(number indicating pit type)

Buried cable jointing pit
(number indicating pit type)

Elevated cable joint
(above ground joint on buried cable)

Cable loop (direct buried)

Telstra Plant in shared utility trench

Aerial Cable
(above ground)

Aerial Cable
(attached to joint use pole e.g. power)

SMOF **Optical fibre cable direct buried**

Single to multiple round conduit
Configurations 1, 2, 4, 9 respectively
(Attached text denotes conduit type and size)
P100

Multiple square conduit
Configurations 2, 4, 6 respectively
(Attached text denotes conduit type and size)
E85

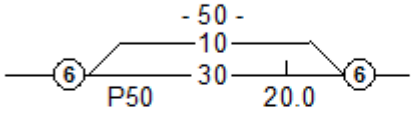
Some examples of conduit type and size:

A - Asbestos cement, P - PVC / plastic, C - Concrete, GI - Galvanised iron, E - Earthenware.

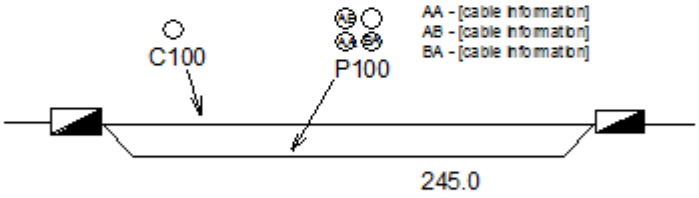
Conduit sizes *nominally* range from 20mm to 100mm.

P50	50mm PVC conduit
P100	100mm PVC conduit
A100	100mm asbestos cement conduit
E 85	85mm square earthenware conduit

Some examples of how to read Telstra plans:



One 50mm PVC conduit (P50) containing a 50-pair and a 10-pair cable between two 6-pits, 20.0m apart, with a direct buried 30-pair cable along the same route.



Two separate conduit runs between two footway access chambers (manholes) 245m apart. A nest of four 100mm PVC conduits (P100) containing assorted cables in three ducts (one being empty) and one empty 100mm concrete duct (C100) along the same route.

WARNING: Telstra's plans show only the presence of cables and plant. They only show their position relative to road boundaries, property fences etc. at the time of installation and Telstra does not warrant or hold out that such plans are accurate thereafter due to changes that may occur over time.
DO NOT ASSUME DEPTH OR ALIGNMENT of cables or plant as these vary significantly.
The customer has a DUTY OF CARE when excavating near Telstra cables and plant. Before using machine excavators TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG (potholing) to identify its location.
Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

ELECTRONIC PLANS - PDF AND DWF MAPS

If you have received Telstra maps via email you will have received the maps as either a PDF file (for smaller areas) or DWF file (for larger area requests). If you are unable to launch any one of the softcopy files for viewing and printing, you may need to download and install one or more of the free viewing and printing products such as Adobe Acrobat Reader (for PDF files) or Autodesk Design Review (for DWF files) available from the internet.

PDF files

PDF is the default softcopy format for all requests for areas up to approx *350m in length. (*depends on geographic location of request). The PDF file is formatted to A3 portrait sheet however it can be printed on any size sheet including from A4 to AO, either as the full sheet or selected areas to suit needs and legibility. (to print a selected area zoom up and print "current view"). If there are multiple layers of Telstra network you may receive up to 2 sheets in the single PDF file attachment supplied. There are three types or layers of network normally recorded - local network, mains cables or a combined layer of local and mains (usually displayed in rural or semi rural areas). If mains cable network is present in addition to local cables (i.e. as separate layer in a particular area), the mains will be shown on a separate sheet. The mains cable information should be read in conjunction with the local cable information.

DWF files

This is the default softcopy format for all requests for areas that are over 350m in length. Maximum length for a DWF automated response is approx 2500m - depending on geographic location of request (manually-processed plans may provide larger coverage). The DWF files differ from PDF in that DWF are vector files made up of layers that can be turned on or off and are not formatted to a specific sheet size. This makes them ideal for larger areas and for transmitting over email etc.

How to view Telstra DWF files -

Telstra DWF files come with all layers turned on. You may need to turn individual layers on or off for viewing and printing clarity. Individual layer names are CC (main cable/conduit), DA (distribution or local area network) and sometimes a combined layer - CAC. Layer details can be viewed by either picking off the side menu or by selecting 'window' then 'layers' off the top menu bar. Use 'layers' to turn individual layers off or on. (double click or right click on layer icon.)

How to print Telstra DWF files -

DWF files can be printed on any size sheet. They can be printed in their entirety or by selected areas of interest. Some DWF coverage areas are large and are not suited to printing legibly on a single A4 sheet - you may need several prints if you only have an A4 printer. Alternatively, an A3, A1 or larger printer could be used. To print, zoom in or out and then, by changing the 'print range' settings, you can print what is displayed on your screen to suit your paper size. If you only have a small printer, e.g. A4, you may need to zoom until the text is legible on your screen for it to be legible on the print. (which is why you may need several prints). To print what is displayed on your screen the 'view' setting should be changed from 'full page' to 'current view'. The 'current sheet' setting should also be selected. You may need to print layers separately for clarity and legibility. (details above on how to turn layers on or off)

How to change the background colour from white to black (when viewing) Telstra DWF files -

If using Autodesk Design Review the background colour can be changed by selecting "Tools" then "options" then "sheet". Tick the box "override published paper colors" and select the colour required using the tab provided.

Telstra Automated Mapping System

Telstra provides an automated plan response for the majority of DBYD requests received.

Requestors must supply a current email address on their request to DBYD and must also be able to accept a standard format of PDF or DWF. An automated response can be provided much faster than the alternative of a mailed hardcopy, and can avoid unnecessary delays in waiting for plans to arrive. Being softcopy, it can easily be sent directly to a worksite and can be available 7 days a week. The automated system can be configured for individual requestors to receive either PDF/DWF (where small requests are PDF and larger requests are DWF) or, alternatively, all in DWF (both small and large requests). Please contact Plan Services for further details or to have your preferences updated. Please note that all requests over *350m (approx.) in size can only be supplied in DWF format and there are size limits on what can be provided. (* actual size depends on geographic location of requested area)

ACCREDITED PLANT LOCATORS **(For your area)**

On-site assistance should be sought from an **Accredited Plant Locator** (Telstra accredited), if the telecommunications plant cannot be located within 2.5 metres of the locations indicated on the drawings provided.

On-site advice should be obtained from the Telstra Accredited Plant Locator who is highly skilled in locating Telstra plant. In the case where Telstra plant is outside a recognised road reserve Telstra recommends that Telstra Plan Services are contacted for assistance prior to engaging an Accredited Plant Locator.

Telstra does not permit external parties (non-Telstra) to conduct work on our network. Only Telstra staff or Telstra contractors that are correctly accredited are allowed to work on or enter our manholes, pits, ducts, cables etc.

Please note it is a criminal offence under the *Criminal Code Act 1995* (Cth) to tamper or interfere with communication facilities owned by a carrier. Heavy penalties may apply for breach of this prohibition, and any damages suffered, or costs incurred by Telstra as a result of any such unauthorised works may be claimed against you.

Should your projects require Telstra network location, any asset plant locator that is used MUST be Telstra accredited to be able to access and locate Telstra network. (a list of which is provided with the Dial Before You Dig plans). A Telstra Accredited Plant Locator must have a current identification card issued by Telstra.

For the assistance of customers an accredited Asset Plant Locator can perform any of the following activities if requested to do so by the owner:

- review Telstra's plans to assess the approximate location of Telstra plant;
- advise owners of the approximate location of Telstra plant according to the plans;
- advise owners of the best method for locating Telstra plant;
- advise owners of the hazards of unqualified persons attempting to find the exact location of Telstra plant and working in the vicinity of Telstra plant without first locating its exact position; and
- perform trial hole explorations by hand digging (pot-holing) to expose Telstra plant with a high degree of skill, competence and efficiency and utilising all necessary safety equipment.

A list of Accredited Plant Locators operating in your area is attached. Accredited Plant Locators are certified by Telstra to perform the tasks listed above. Owners may engage Accredited Plant Locators to perform these services, however Telstra does not give any warranty in relation to these services that Accredited Plant Locators are competent or experienced to perform any other services.

The attached list provides the names and contact details for Accredited Plant Locators who service your area and can provide you with assistance in locating Telstra plant on site. These organisations have been able to satisfy Telstra that they have a sound knowledge of telecommunications plant and its sensitivity to disturbance; appropriate equipment for locating telecommunications plant and competent personnel who are able to interpret telecommunications plans and sketches and understand safety issues relevant to working around telecommunications plant. They are also able to advise you on the actions which should be taken if the work you propose will/could result in a relocation of the telecommunications plant and/or its means of support.

We recommend that you engage the assistance of one of these Accredited Plant Locators as a step towards discharging your Duty of Care obligations when seeking the location of Telstra's telecommunications plant.

Please Note:

- Optic fibre cable locations must be performed by a locator with Telstra optic fibre cable location accreditation. (not all copper accredited locators have optic fibre accreditation). The locators with additional optic fibre cable location accreditation are indicated by a 'yes' in the column headed 'Fibre' in the lists of locators that are published with the DBYD plans.

- Each Accredited Plant Locator is NOT permitted to provide depth of communications plant unless physically exposed by hand digging.
- The details of any contract, agreement or retainer for site assistance to locate telecommunications plant shall be for you to decide and agree with the organisation engaged. Telstra is not a party to any contract entered into between an owner and an Accredited Plant Locator. The Accredited Plant Locators are able to provide guidance concerning the extent of site investigations required.
- Payment for the site assistance will be your responsibility and payment details should be agreed before the engagement is confirmed.
- Telstra does not accept any liability or responsibility for the performance of or advice given by an Accredited Plant Locator. Accreditation is an initiative taken by Telstra towards the establishment and maintenance of competency standards. However, performance and the advice given will always depend on the nature of the individual engagement.
- Each Accredited Plant Locator has been issued with a certificate which confirms the Accreditation. Every 2 years Telstra will reassess the accreditation and where appropriate will issue a letter confirming the accreditation for the next 2 years. You have the right to request the organisation you engage to show evidence of their ID card.
- Neither the Accredited Plant Locator nor any of its employees are an employee or agent for Telstra and Telstra is not liable for any damage or loss caused by the Accredited Plant Locator or its employees.
- The attached list contains the current names and contact details of Accredited Plant Locators who service your area, however, these details are subject to change.

IDEA FOR CONSIDERATION:

Telstra offer free Cable Awareness Presentations & Advanced Cable Reading Presentations, if you believe you or your company would benefit from this offer please contact Network Integrity on 1800 810 443 or **F1102490@team.telstra.com**

DATA EXTRACTION FEES - for non-ground breaking activities -

***Planning and design, conveyancing, tendering, educational or research, other data gathering**

Note - *The supply of any Telstra data for non ground breaking activities is at Telstra's discretion. Data supply may be refused on commercial, privacy, security or other reasons.*

Planning and design requests submitted by identified utilities intending works on their own assets ****may* *be exempt from the $55 (GST inc) extraction fee for Standard Telstra Responses for non ground breaking activities. This is at Telstra's discretion and conditions may apply. Data extraction fees for all non standard responses however will still apply. Eg for large projects or non standard formats.*

The supply of any data for non ground breaking activities is not subject to a 48hr response time; however Telstra will endeavour to respond within 48hrs for all standard responses.

Standard Telstra Response - for non ground breaking activities $55 (GST inc)

Criteria - Each request only requires a single delivery from Telstra (as in 1 request 1 Delivery).
A single delivery is either -

- **1 x Email with 1 x PDF map file** containing one or two A3 map pages (depending on network). *Covers areas up to approx 500m in size.*

or-

- **1 x Email with 1 x DWF map file**. *Covers areas up to approx 3km in size.*

or-

- **1 x *Posted delivery**.- (*only if email unavailable or at Telstra's discretion)

  Posted is either -
  - Posted softcopy of standard response on disk

  or-
  - Posted printed hardcopy – maximum of 2 x A3 sheets only.

Non-Standard Response – for non ground breaking activities (fees apply)

Data Use Agreement (required for DXF format) **$110** (GST inc)

Projects - If a response takes more than 30mins to extract data in any format will be at an hourly rate **($110** per hour GST inc).
- Projects that take 1 day or longer will be quoted individually.
- (All data will be provided in softcopy only - not printed).

Note - *Multiple part requests through DBYD for one project will be amalgamated and considered a single project for data extraction charging purposes. Posted responses cannot be delivered within 48hrs, allow several days for delivery. Postage is by Australia Post standard delivery. Express delivery at additional cost. All prices and specifications are subject to change.*

DATA EXTRACTION FEES - for ground breaking activities -

***Manual or mechanical excavation, horizontal boring, vertical boring, blasting**

Standard Telstra Response – for ground breaking activities cost to requestor - $nil

Criteria - Each request only requires a single delivery from Telstra (as in 1 request 1 delivery).
A single delivery is defined as either -

- **1 x Email with 1 x PDF map file** containing one or two A3 map pages (depending on network). *Covers up to approx 500m.*

  or-

- **1 x Email with 1 x DWF map file**. *Covers up to approx 3km.*

  or-

- **1 x *Posted delivery** for customers requesting a response for their principal place of residence only, (and only when email delivery is unavailable or at Telstra's discretion).
  Either -
  - Posted softcopy on disk (standard response only)
  - Posted printed hardcopy (A3 sheets only- at Telstra's discretion)

Non-Standard Telstra Response – for ground breaking activities (fees apply)

An extraction fee is incurred if the response exceeds a standard response i.e. -

- Use of data requires a data use agreement (for example DXF format)
- If an individual job or project requires more than a single delivery (as defined above)
- Specific printing and/or posting of requests that are not for the principle place of residence
- Any other response other than a Standard Telstra Response for ground breaking activities

Data extraction costs for ground breaking activities -

- Posted softcopy on disk of standard response when not principle place of residence- **$22** (GST inc)
- Posted hardcopy of standard response i.e. when not principle place of residence – max of 2 x A3 sheets (at legible scale) - **$22** GST inc. Note - large areas will not be printed and posted.
- Requires Data Use Agreement – i.e. requirement for DXF files - **$110** (GST inc)
- Non standard response over 30 mins extraction time for softcopy will be at an hourly rate (**$110 per hour** GST inc).
- Projects that take 1 day or longer will be quoted individually.

Note - *Multiple part requests through DBYD for one project will be amalgamated and considered a single project for data extraction charging purposes. Printing/posting fee exemptions may be provided at Telstra's discretion. Postage is by Australia Post standard delivery. All posted plans will normally be extracted within 48 hrs; time in transit through post is additional and may take several days Express delivery at additional cost. All prices and specifications are subject to change. Data extraction fees are based on various criteria including the principal excavation activity selected by the customer on the DBYD website. Telstra reserves the right to vary its fees in circumstances where the principal excavation activity is varied or misrepresented by the customer.*

Telstra Accredited Plant Locators - South Australia / Northern Territory.

If a physical location is required please contact a Telstra accredited locator from the list below (fees apply).

***Optic fibre cable locations** must be performed by a locator with Telstra optic fibre location accreditation. Locators with Telstra optic fibre cable location accreditation are indicated by a 'yes' in the 'Fibre' column.

Northern Territory

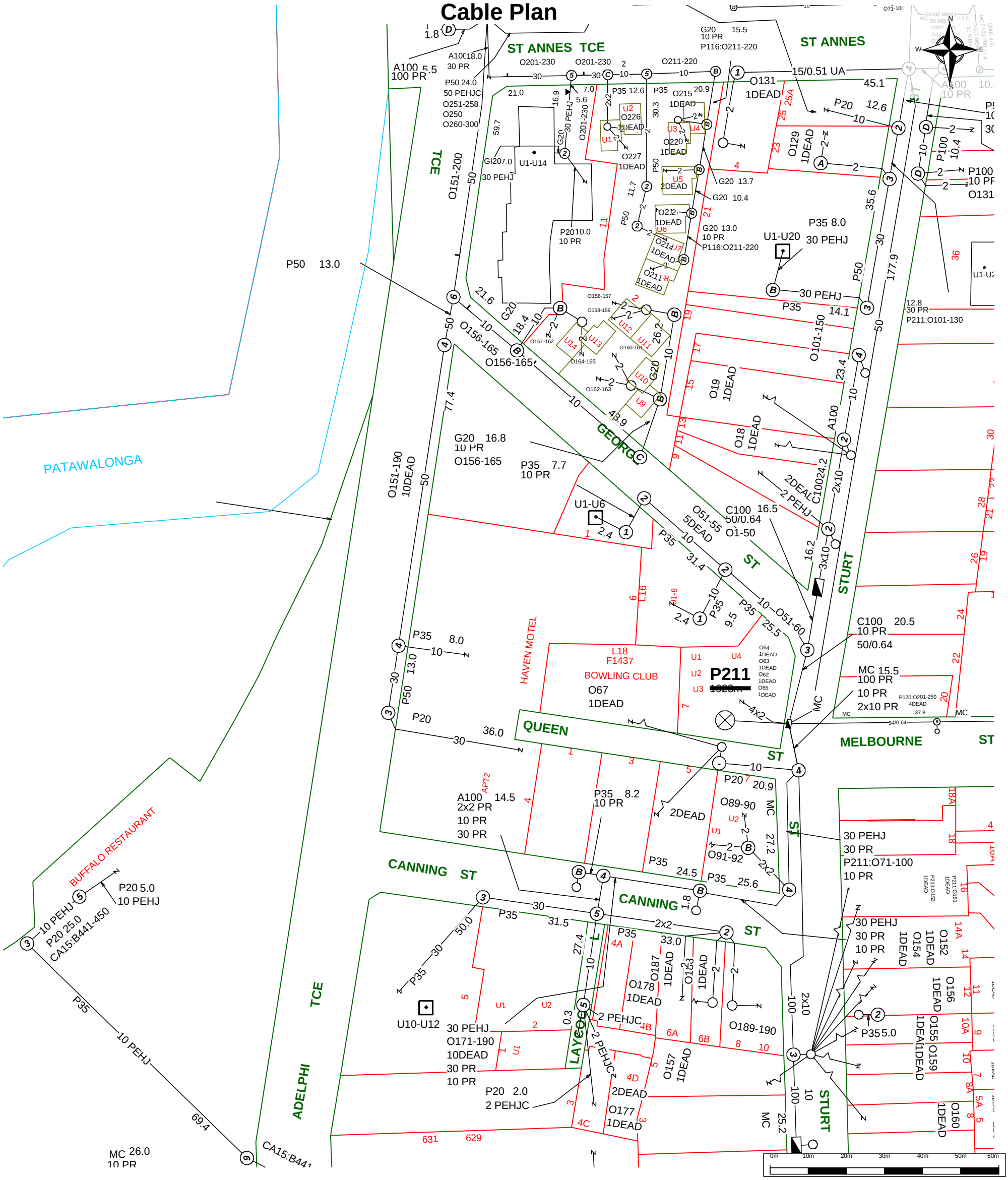
Company name and areas/districts covered	*Fibre	Contact details
AnywAir Pipe & Cable Locators - *Winnellie* *All Of NT, Broome, Kununurra, Kalumburu, Weipa, Normanton, Burketown*	Yes	Mob: 0418 890 071
Australian Underground Survey Solutions Pty Ltd - *Narre Warren* *All Areas*	No	(03) 9700 2311 or 0419 488 883 Fax: (03) 9314 1568
Danisam Pty Ltd - *Parap* *Covering Northern Territory and the top of WA*	Yes	0417 089 865 Fax: 08 89416435
Dig Hard Excavations - *Casuarina* *Remote Communities NT*	Yes	0411 591 153 Fax: (08) 8945 0727
iFind PIPES 'N' CABLES PTY LTD - *Winellie* *All of NT*	Yes	0419 612 476 Fax: (08) 8941 2615 k.phelps1970@hotmail.com
Northern Comms - *Casuarina*	Yes	Mob: 0407 904 319
No Wait 2 Locate - *Port Pirie* *Central Australia, Northern SA.*	Yes	1300 2 562283 (1300 2 LOCATE) Email: plans@kellercom.com.au
Pipeline Technology Services - *Marleston*	Yes	(08) 8351 7000 or 0419 878 220 Fax:(08) 8159 7537
Subscan - *Palmerston* *Covering Darwin and Remote Areas of the Northern Territory*	No	0414 863 874 Fax: (08) 8988 3093
Trenchless Pipelaying Contractors - *Plympton*	Yes	(08) 8376 5911 0418 881 175
Visionstream Australia Pty Ltd - *Perth Airport*	Yes	(08) 6211 0813 or 0439 799 657 Fax: (08) 6211 0899 Email: nick.jenkins@visionstream.com.au

South Australia

Company name and areas/districts covered	Fibre	Contact details
Accurate Locating Pipes & Cables previously trading under the name of ' State Wide Precise Detection Pipes & Cables' - *Barossa Valley* *Adelaide, Adelaide Hills, Barossa Valley and all regions of SA*	No	0407 464 882
Adelaide Hills Pipe & Cable Location - *Mt Barker* *Servicing Adelaide Hills & Regional South Australia*	No	0419 822 781
All Assets 2 Locate (Kellercom Pty Ltd) - *Port Pirie, Coffin Bay Eyre Peninsula, Yorke Peninsula, Far North, Flinders Ranges, Mid North, West Coast*	Yes	1300 2 562283 (1300 2 LOCATE) 0428 600 703 Email: plans@kellercom.com.au
Appcil Pty Ltd - *Winkie* *All Riverland areas of South Australia, plus Upper Mallee, North Western border areas of Vic and South Western NSW*	Yes	(08) 8583 7365 or 0439 822 102 Fax: (08) 8583 7356
Australian Underground Survey Solutions Pty Ltd - *Narre Warren*	No	(03) 9700 2311 or 0419 488 883 Fax: (03) 9314 1568
Baldock Earthmoving - *Normanville* *Covering - South Adelaide Hills, Fleurieu Peninsula*	No	(08) 8558 2686 or 0418 857 144 Fax: (08) 8558 2687
Barry Johnstone Locations and Communications - *Mt Gambier. South East Of South Australia (Limestone Coast), South West Victoria*	Yes	0418 834 804
BRP Products (Aust) Pty Ltd - *Thebarton* *Covering - All of SA*	No	(08) 8234 0633 Fax: (08) 8234 0920
Cable Search Services - *Echunga* *Rural Areas of SA excluding Adelaide metro area*	Yes	0417 866 121 Fax: (08) 8388 8643
Capogreco Excavations Pty Ltd - *Mildura South* *Mildura, Wentworth, Gol Gol, Dareton, Ouyen, Robinvale, Merbein*	No	(03) 5022 2070 or 0428 356 269 Fax (03) 5022 7003
Corny's Cabling & Phones Pty Ltd - *Port Lincoln* *Eyre Pennisula*	Yes	0409 814 464
D-TECH Ground and Overhead Services Ptd Ltd - *Notting Hill* *All of Vic*	No	0421 697 090 Email: tina@d-tech.net.au
Detect SA Ptd Ltd - *Redwood Park* *All Areas*	Yes	0407 649 759 Fax (08) 8264 9759
Dial-A-Trench - *Dernan Court*	No	0408 804 742
Drasol - *Brighton* *Metropolitan and Regional South Australia*	Yes	0419807 996
Far West Communication – *Broken Hill* *NSW Areas – Cobar, Menindee, Tibbaburra, Ivanhoe & surrounding areas* *S.A Areas – Eastern Regions of S.A including Mingary and Cockburn*	Yes	0439 350 355

Green Triangle Electronics – *Mt Gambier* *South East of South Australia and Western Victoria*	No	(08) 8724 2222 Fax: (08) 8723 0249
Independent Locating Services - *Meadows*	No	0418 812 325 Fax:(08) 8388 3180
Larsen Electrics - *Red Cliffs* *Mildura & Districts, NSW South, SA*	No	(03) 5024 1733 or 0428 385 610 Fax (03) 5024 1170
P.A Plumbers - *Golden Grove*	No	(08) 8251 1733 or 0408 442 210 Fax: (08) 8251 1833
P.D Excavations Pty Ltd - *Regency Park*	Yes	(08) 8347 0055 or 0408 820 408 Fax: (08) 8347 0150
Pipeline Technology Services - *Marleston*	Yes	(08) 8351 7000 or 0419 878 220 Fax:(08) 8159 7537
Plumbing & Pipeline Solutions (SA) Pty Ltd - *Marleston*	Yes	(08) 8297 1000 or 0408 809 928 Fax: (08) 8297 0088
Riverina Horizontal Boring Pty Ltd - *Wodonga*	No	(02) 6059 1788 or 0419 149 153 Fax: (02) 6059 5090
SADB Directional Boring - *Newton*	No	(08) 8168 7200 Fax: (08) 8168 7299
Service Locate Pty Ltd – *Mawson Lake*	No	0424 906 777
Subtrax - *Meningie* *Covering South Australia statewide*	Yes	(08) 8575 1434 or 0429 808 850
Sure Search - *Walkerville*	Yes	0418 896 772 Fax:(08) 8362 1179
Tatiara Trench Digger & Bobcat Hire - *Bordertown* *Covering districts - Bordertown and surrounding, Naracoote, Kingston, Meningie, Pinnaroo, Keith*	Yes	(08) 8752 1197 or 0428 587 596 Fax:(08) 8752 0406
Trenchless Pipelaying Contractors - *Plympton* *Covering all Metropolitan and Country Areas in S.A.*	Yes	(08) 8376 5911 or 0409 451 550
Tron Civil Contracting Pty. Ltd –*Salisbury South*	No	(08) 8281 3860 Fax:(08) 8281 0278
Vac-U-Digga - *Lonsdale* *Adelaide, Port Pirie, Whyalla, Port Augusta, Roxby Downs*	No	0447 466 036 or 1300 822 836
Wet Plumbing Service - *Park Holme*	No	0419 938 938

Cable Plan



For all Telstra DBYD plan enquiries -
email - Telstra.Plans@team.telstra.com
For urgent onsite contact only - ph 1800 653 935 (bus hrs)

TELSTRA CORPORATION LIMITED A.C.N. 051 775 556

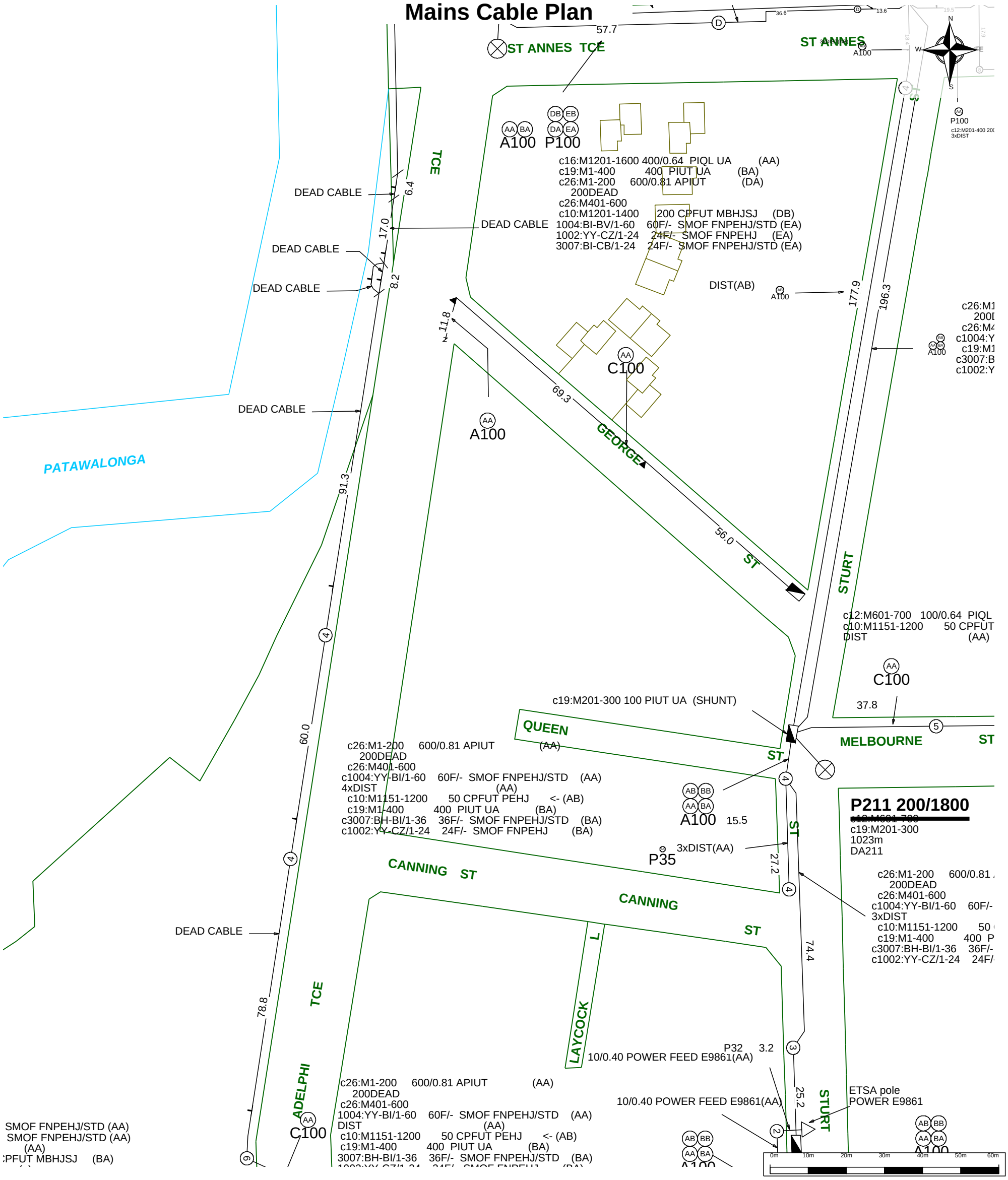
Sequence Number: 42188151

Generated On 23/10/2014 04:56:33

CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.

The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

Mains Cable Plan



For all Telstra DBYD plan enquiries -
email - Telstra.Plans@team.telstra.com
For urgent onsite contact only - ph 1800 653 935 (bus hrs)

TELSTRA CORPORATION LIMITED A.C.N. 051 775 556

Generated On 23/10/2014 04:56:41

Sequence Number: 42188151

CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.

Appendix B - SA Power Networks

Preliminary Information Letter

Our Ref: CN-500001462

20 July 2015

BCA Engineers
PO Box 2620
Kent Town SA 5071

Attention: Mr Antony Caruso

Dear Sir,

SA Power Networks – Connection Type, Costs and Request for Preliminary Information

Re: Proposal to Modify an Existing Electricity Supply Connection at 6-10 Adelphi Terrace, Glenelg North.

We acknowledge receipt of your request dated 11 July 2015 concerning your proposal to Modify an Existing Electricity Supply Connection at 6-10 Adelphi Terrace, Glenelg North ('**Project**').

From our initial analysis based on the information you provided with your request, we believe that your proposed work is of a Negotiated Connection Service type under our current service classification. (Please refer to Annexure 2 for a high-level process flow for this type of connection service provided by us.)

What you need to do:

In order for us to perform a more accurate assessment on your request and to prepare our offer to you in relation to the electricity infrastructure work for this Project, you must first:

1. Complete the ***Connection Enquiry Pro-forma*** set out in Annexure 1 and provide the information referred to in Table 1 of that form.
2. Return the completed ***Connection Enquiry Pro-forma*** and the requested information to us at the address set out at the top of the form.
3. Pay the appropriate ***Offer Preparation Fee*** set out in the Connection Enquiry form. Please read on to find out more on this fee.

If you do not wish to proceed with the proposal, please indicate your decision by ticking the box next to "Option 4" in the Annexure 1.

What is an Offer Preparation Fee?

We are entitled under the National Electricity Rules to charge a fee for preparing offers in response to connection enquiries from customers. Our offer preparation fee is based on our current estimate of the likely cost of the electricity infrastructure work for your Project. In the case of a large project (i.e. where the project cost is likely to exceed $100,000) our offer preparation fee is based on our estimate of the actual cost to prepare the offer.

Please note that this fee is non-refundable. However, if you elect to accept our offer the amount of the fee will be deducted from the final amount payable to us in relation to the Project. A tax invoice for the fee will be issued to you on receipt of your payment.

If you do not accept our offer before the end of the prescribed validity period and you subsequently request us to prepare another offer for the same Project, we may require you to make a further Connection Enquiry and pay a further fee for the preparation of that new offer. You must pay this further fee before we start to prepare the new offer.

Indicative Offer:

If you do not want to make a formal written connection enquiry at this stage, but you would like an indicative estimate as to our likely costs if you were to decide to proceed with the Project, you can request us to provide an indicative estimate by:

1. Completing and return the ***Connection Enquiry Pro forma*** set out in Annexure 1 and providing the information referred to in Table 1 of that form.

Any indicative estimate we provide will not be binding on us and will be based on the information you have provided at that time. There will be a charge of $ 1,936 (GST Inclusive) for us to prepare an indicative estimate.

Contestability:

We are required by the National Electricity Rules to inform you that the design and construction of the electricity infrastructure work within your proposed development and the design and construction of any extension to our existing distribution network which may be required to connect the new connection assets to our existing distribution network is contestable work, which means that you may call for tenders for this work in accordance with clause 3.4 of the National Electricity Rules. However, you will need our technical specifications for the design and construction of this work before you may call for tenders.

We may need further information from you in order to prepare these technical specifications. You will also be asked to pay a fee for the preparation of the technical specifications.

We are also required by the National Electricity Rules to inform you that any tenderer for this portion of the Works must submit separate amounts for designing and constructing the connection assets and any required extensions.

Where you elect to engage a contractor to undertake and complete all or a part of the contestable works, the External Contractor Design and Construction Terms will also apply between you and SA Power Networks (these Terms and Conditions are available from the Project Officer assigned to your project upon request).

Which type of offer do you require?

You can request two types of offers in relation to the electricity infrastructure work for your Project. The type of offer you request will depend upon whether you want us to undertake all of the electricity infrastructure work in relation to the Project, or you elect to undertake the project as a contestable venture.

Option 1 – All Work

This option applies where you want us to undertake all of the electricity infrastructure work in relation to the Project. This work will include:

- the design and construction of your new connection assets;
- the design and construction of any extension to our existing distribution network which may be required to connect your new connection assets to our existing distribution network;
- all other work required to complete the connection of your new connection assets and/or extension to our existing distribution network and their commissioning and energisation and;
- our overall project management of this work.

Option 2 – Non-Contestable Work Only

This option applies where you elect to engage an appropriately qualified contractor, to design and construct the contestable components of the electricity infrastructure work for the Project (i.e. the design and construction of your new connection assets and any required extension to our existing distribution network).

Under this option our offer will only relate to the non-contestable components of the electricity infrastructure work for the Project. This work will include:

- all work required to complete the connection of the new connection assets and/or extension to our existing distribution network and their commissioning and energisation;
- compliance inspection and issuing of the 'Certificate of Electrical Compliance' (CEC) for the contestable works and;
- our overall project management of this work.

Please note, if you select Option 2, we may not be able to provide an offer for the Non-Contestable Works until a design has been completed to SA Power Networks specification or the appropriately qualified design contractor you have engaged has provided us a precise scope of works to connect the contestable works to the existing distribution network.

Under ***Option 2*** you must also pay an additional non-refundable fee for the cost of preparing our technical specification for the design and construction of the contestable work for the Project. The amount of the ***specification preparation fee*** is set out in the attached Connection Enquiry form.

Once again, we are entitled under the National Electricity Rules to charge a fee for preparing technical specifications. Our specification preparation fee is based on our estimate of the likely cost of the contestable work for your Project and in the case of a large project (i.e. where the project cost is likely to exceed $100,000) our estimate of our actual cost to prepare the technical specification.

Customer Payment

The methods used to determine the customer payment associated with the customer demand of 1,500kVA outlined in your initial enquiry will be calculated in accordance with the SA Power Networks Connection policy for 2015-2020.

Please select the type of offer you would like to receive by ticking the appropriate box in the attached Connection Enquiry form.

If you need any assistance or information please contact me at our St Marys office on 8275 0970 or peter.tassone@sapowernetworks.com.au

Yours faithfully

Peter Tassone
Network Project Officer

Encl:

Annexure 1 - Connection Enquiry Pro-Forma (including Table 1 – Further Information Required)
Annexure 2 - SA Power Networks - Negotiated Connection Service Process Flow (high-level)
Annexure 3 – Connection Policy 2015 – 2020

Annexure 1

CONNECTION ENQUIRY PRO-FORMA

SA Power Networks Ref:	CN-500001462, 6-10 Adelphi Terrace, Glenelg North
Date:	20 July 2015
SAPN Project Manager:	Peter Tassone
Contact details:	SA Power Networks, 33 Ayliffes Road, St Marys SA 5042
Telephone	(08) 8275 0970
Email	peter.tassone@sapowernetworks.com.au

Please indicate your decision regarding this project by ticking *one* of the following boxes.

I/We hereby agree that:

1.	**Option 1 - Firm Offer:** SA Power Networks to undertake all work (both contestable and non-contestable) for the Project. **Offer Preparation Fee:** $3,872 (GST Inclusive) based on the estimated project cost.	☐
2.	**Option 2 - Firm Offer:** SA Power Networks to undertake non-contestable work only. **Offer Preparation Fee:** $3,872 (GST Inclusive) based on the estimated project cost. **Specification Fee:** $3,245 (GST Inclusive) based on the estimated project cost.	☐
3.	**Option 3 - Indicative Offer:** SA power Networks to provide the likely costs associated with the project. **Indicative Offer Fee:** $ 1,936 (GST Inclusive) based on the estimated cost to prepare a response.	☐
4.	**Option 4 - Do Not Proceed:** I/We do not wish to proceed with this project.	☐

By ticking either box 1, 2 or 3, signing this Acceptance Form and returning it to the SA Power Networks Project Manager nominated above, you are entering into a binding legal contract and undertaking a commitment to pay the amounts referred to in this Contract. That Contract is constituted by this letter (including all of its attachments).

I have enclosed payment for the Offer Preparation Fee, and Specification Preparation Fee, as selected above and request a Tax Invoice to be prepared and issued to the undersigned.

Alternatively if you require a Tax Invoice prior to making payment of the appropriate Fee outlined above, please complete the attached Annexure 1 (Connection Enquiry pro-forma) and return to our office. SA Power Networks will not commence preparation of the Offer and where appropriate, the Design Specification until payment is received.

SA Power Networks Ref:	CN-500001462, 6-10 Adelphi Terrace, Glenelg North
Date:	20 July 2015
SAPN Project Manager:	Peter Tassone
Contact details:	SA Power Networks, 33 Ayliffes Road, St Marys SA 5042
Telephone	(08) 8275 0970
Email	peter.tassone@sapowernetworks.com.au

If the signatory is not the Customer, then the signatory warrants that they are authorised to accept the Offer for and on behalf of the Customer.

Signed by, or for and on behalf of, the Customer:

..... **Date:** .....
Signature

Name of signatory: (print) .....

Relationship to Customer: (print) .....

Company Name: (print) .....

Customer's ABN: (print) .....

Address for forwarding Invoices: (print) .....

.....

Contact Phone: Mobile: ..... **Office:** .....

Please note: if unable to provide an ABN, the Customer must provide a 'Reason for not quoting an ABN' statement on the appropriate Australian Taxation Office form obtainable at http://www.ato.gov.au/uploadedFiles/Content/MEI/downloads/BUS38509n3346_5_2012.pdf.

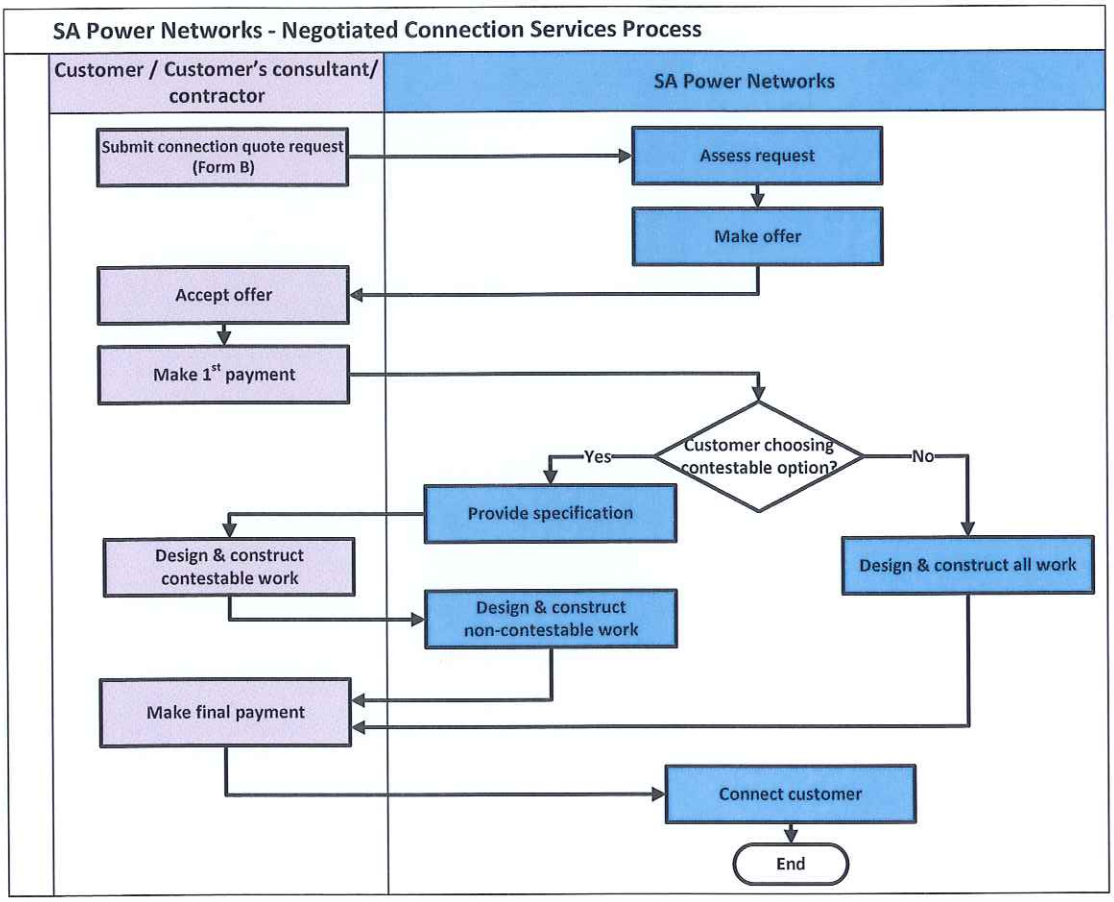
TABLE 1. FURTHER INFORMATION REQUIRED FROM YOU

Please provide the requested information for each ticked item.

Information required	Description	Information, Notes & Feedback (attach information separately as required)
1 ☑	**Program Dates** • Construction Start & Completion • Forecast connection date • "Your Works Program"	
2 ☑	**Supply Type** – 3 phase , single phase, other **Proposed use/Type of installation** **Load details**	
3 ☑	**Tenancy Type** – commercial, industrial, residential, apartments or combination	
4 ☑	**Customer's electrical load requirements (i.e. Maximum Demand – Existing** (AS3000))	
5 ☑	**Customer's electrical load requirements (i.e. Maximum Demand – Proposed** (AS 3000))	
6 ☑	**Load Operation Cycle – Existing & Proposed** operation cycle (i.e. typical operating times of plant & equipment)	
7 ☑	**Motor Starting** - Magnitude & incidence per day of anticipated plant inrush currents (i.e. for motors include DOL / Soft Start characteristics)	
8 ☑	**Harmonic distortion** expected if any (in % odd / even terms)	
9 ☑	**Main Switch Board** details • Consumer mains size / number of cables	
10 ☑	**Drawings & Plans** • Site Plans - detailed site / location / elevations. • Survey Plans • Sewer • Road Designs	
11 ☑	**Land Title Status** (i.e. Torrens, Community, Strata, Other) Installation address	
12 ☑	**Easements** acquisition responsibility: • SA Power Networks overall (if constructed by SA Power Networks) • Customer overall (if constructed by Contractor)	
13 ☑	**Metering**: • Quantity & Type • Preliminary metering arrangement anticipated (for future confirmation) • Account and / or existing meter numbers & serial numbers for all existing site services	
14 ☑	**Retailer** • Name of Retailer for proposed single customer consumers greater than 160MWh / annum & where existing tariff structure will not be retained.	
15 ☑	**Contact Details** - If other than the customer, the nominated agencies and their respective point of contact acting on behalf of the customer re: • Overall Project Management • Electrician. • Builder.	

Annexure 2

SA Power Networks - Negotiated Connection Service Process Flow (high-level)



Appendix C - City of Holdfast Bay Power Line Declaration of Compliance

DEVELOPMENT REGULATIONS 2008
Declaration by Applicant
(Pursuant to Clause 2A(1) of Schedule 5)

TO: **City of Holdfast Bay**

FROM: Name: ANTONY CARUSO.

Address: c/o BCA ENGINEERS, 33 RUNDLE STREET KENT TOWN SA

Telephone number: 08 81321700

Date of application: 29 JULY 2015. Development Application Number: TBA.

Location of proposed development:

House No: ---------- Lot No: ---------- Section No: (full/part): ----------

Street: ADELPHI TERRACE Suburb: GLENELG NORTH SA

Nature of proposed development:

HOTEL & APARTMENTS

I ANTONY CARUSO. **being the applicant for the development described above declare that the proposed development <u>will not</u> involve the construction of a 'building' which would be contrary to the regulations prescribed for the purposes of Section 86 of the *Electricity Act 1996*. I make this declaration under Clause 2A(1) of Schedule 5 of the Development Regulations 1993.**

Signed: ANTONY CARUSO **Date:** 29 JULY 2015.

<u>Note 1</u>:

This declaration is only relevant to those development applications seeking authorisation for a form of development that involves the construction of a building (there is a definition of 'building' contained in Section 4(1) of the Development Act 1993).

<u>Note 2</u>:

The requirement of Section 86 of the Electricity Act 1996 do not apply in relation to:

(a) A fence that is less than 2.0 metre in height; or
(b) A service line installed specifically to supply electricity to the building or structure by the operator of the transmission or distribution network from which the electricity is being supplied.

<u>Note 3</u>:

A Building Safely Near Powerlines brochure has been prepared by the Technical Regulator to assist applicants and other interested persons. Hard copies of this brochure are available from Councils and the Office of the Technical Regulator. The brochure and other relevant information can also be found at www.technicalregulator.sa.gov.au

Appendix D - SA Water Network Analysis

SOUTH AUSTRALIAN WATER CORPORATION

Postal Address: 12a Ashwin Parade Torrensville SA 5031
Facsimile: 70031953

To:	Koroush Keshavarz	**From:**	Lawrie Mcging (Project Officer)
	BCA Consulting Engineers	**Date:**	January 23, 2015
Phone:	74241953 mobile 0408840117	**Pages:**	4
Re:	Network analysis SA00241/15	**Fax:**	70031953

☐ **Urgent** ☐ **For Review** ☐ **Please Comment**

Greg

Please see attached copy of a network analysis, which was carried out as requested off the main in Adelphi Terrace, Glenelg North.

The Corporation endeavors to maintain a satisfactory pressure in the mains at all times, but under some circumstances this may not be possible, therefore no guarantee can be given.

Please note:

Approval must be sought for pumps in-line.

Regards

Lawrie McGing

Memo

Government of South Australia

SA Water

To:	Laurie McGing: Metering Specialist
CC:	Enter CC recipient
From:	Paul Feronas
Phone:	+61 8 7424 1881
Fax:	+61 8 7003 1881
Email:	Paul.Feronas@sawater.com.au
Date:	22/01/2015
SA Water Ref:	FF 15 00241
Subject:	Adelphi Tce, Glenelg North - Network Analysis

I refer to your memo dated 9/01/2015 regarding network analysis for a fire service located as follows for flows 0, 10, 20, 30, 40 L/s:

- 150 CICL main along Adelphi Tce, Glenelg North

The subject main is contained in the EL51 water supply pressure zone. The ground level at the fire service location is approximately EL2. The maximum static head at the no flow condition is approximately 49m (51 – 2) or 478 kPa.

A WaterGEMS model of the EL51_2014.wtg network was used to simulate the performance of the system with the nominated flows. The ground level residual pressure results (within the estimated peak demand 24 hour period) are shown on the graphs attached.

Regards

Paul Feronas
Snr Mgr Trtmt & Netwk Planning

CP 22 Jan. 15

Water GEMS Model: Z:\Modelling\WS\Metro\EL51\EL51_2014.wtg
Scenario: Base

Template: Memo - Network Analysis - Fire Flow.dotx V1.0, Custodian: Manager Systems Planning, Published: 10/04/2012

Government of South Australia

SA Water

FF 15 00241 Adelphi Tce, Glenelg North

Figure 1 Location Plan

"Disclaimer - The pressures and flows provided are indicative only and have been derived by theoretical network analysis for normal summer operating conditions.

SA Water cannot guarantee that these pressures and flows will be available from the system at all times and accepts no responsibility for any loss or damage that may result from reduced flow or pressure in the mains."

Template: Memo - Network Analysis - Fire Flow.dotx V1.0, Custodian: Manager Systems Planning, Published: 10/04/2012

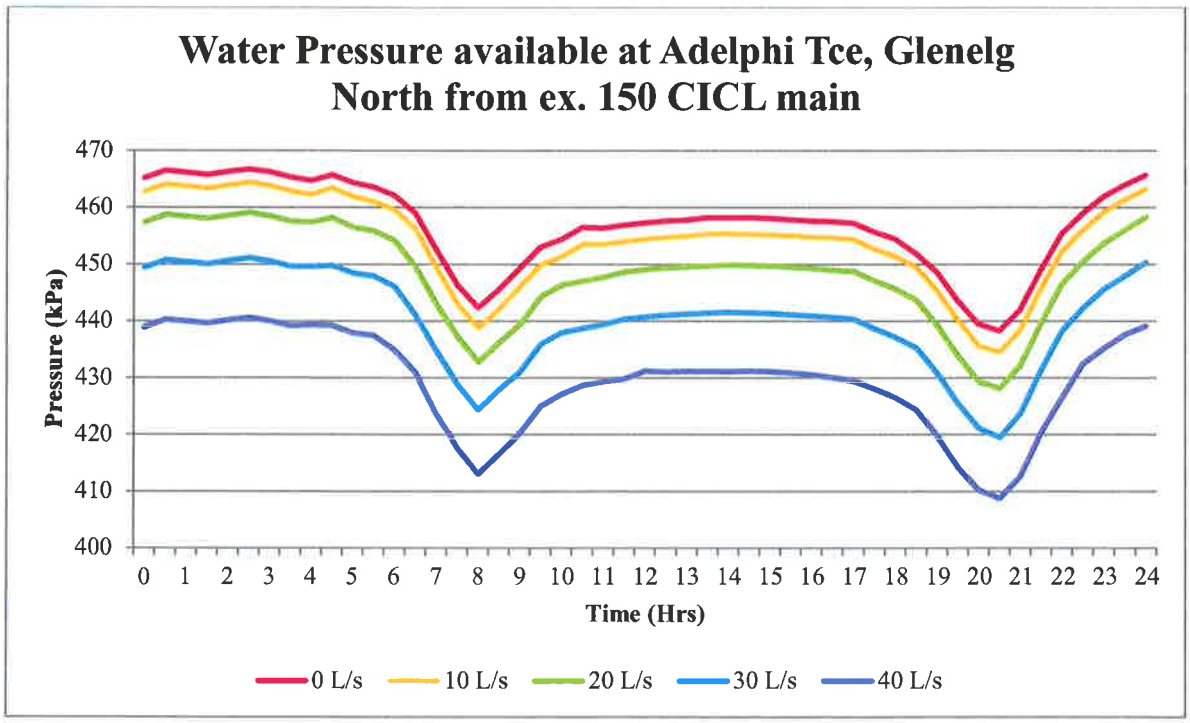


Figure 2 Available pressure at Node J-30592 on ex. 150 CICL, Adelphi Tce, Glenelg North

"Disclaimer - The pressures and flows provided are indicative only and have been derived by theoretical network analysis for normal summer operating conditions.

SA Water cannot guarantee that these pressures and flows will be available from the system at all times and accepts no responsibility for any loss or damage that may result from reduced flow or pressure in the mains."

Template: Memo - Network Analysis - Fire Flow.dotx V1.0, Custodian: Manager Systems Planning, Published: 10/04/2012

HOLMES PARTNERS

Appendix 16. Stormwater and flood impact report

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structural • civil • engineers

STORMWATER REPORT

SITE:	6-10 Adelphi Terrace Glenelg North, SA 5045
DATE OF ISSUE:	28/07/2015
PROJECT #:	17378
CLIENT:	Q Developments Australia

Scope of Works

This office has been engaged by Bruno Marveggio, of Q Developments Australia (the Client), to undertake the Stormwater Management Plan for a proposed hotel and apartment development at the afore mentioned site.

In preparation of the Stormwater Management Plan the following items require consideration and comment by this office –

- Analysis of the current stormwater run-off from the site compared to the proposed.
- Recommendations on how best to manage the increase in stormwater runoff as a result of the proposed development.
- Preparation of a preliminary stormwater drainage and pavement level plan including a proposed method of disposing the stormwater runoff from the site as a result of the proposed development.

Proposed Development

It is proposed to develop a 12 storey hotel and apartment building on the site of an existing two storey hotel complex. This proposal includes the demolition of the existing building, with the new build to extend the width and length of the current site. The majority of the proposed works involve impervious finishes.

Site Stormwater Management Requirements

This office has contacted the City of Holdfast Bay Council to determine the requirements for the management of the stormwater generated as a result of the proposed development.

This office was advised verbally, and via email, of the following requirement the Council wishes to be implemented in the stormwater management of the proposed works –

- 15mm of stormwater from the 1 in 5 yr; 60 minute storm duration must be detained for a minimum of 2 hours after the storm event.

Calculations were undertaken to determine the impact of this requirement on the proposed development and as a result approximately 54kL of detention would be required.

Based on pre-development compared to post development detention calculations, a detention volume of 54kL was deemed excessive as the majority of the existing site is impervious. Subsequent discussions with Council relating to the minor increase in run-off generated from this site had them alter their stance and agree to a maximum detention of 20kL above any retention required for re-use of stormwater within the development.

The site will need to be set above the expected 1 in 100 year ARI flood inundation level. This information was sourced from the City of Holdfast Bay website, specifically the 100YR ARI Flood Inundation Long-term Scenario Maps 2.1 and 2.2. These maps indicated that flooding of the adjacent road ways was likely to a depth of approximately 200mm but would not extend onto the site of the proposed development.

Stormwater Management Recommendations

It is the recommendation of this office that the following be undertaken to manage the stormwater runoff generated as a result of the proposed new works.

1. Design the subsurface drainage system for a rainfall event of 1 in 10 years of 5 minute duration.
2. Limit the flow from the roof of the proposed development and surrounding hardstand areas to the existing Council infrastructure to not exceed the current run-off from the existing site.
3. Provide a minimum of 20kL below ground detention within the proposed car park.

4. Set the finished floor level approximately 300mm above the top of the surrounding water table level, resulting in a floor level of approximately 3.0m AHD.

It is the opinion of this office that the implementation of the above recommendations will allow the proposed development to not have an adverse impact on the surround Council infrastructure.

The above recommendations are based on proposed layouts and may be subject to change. A more detailed civil and stormwater design will be required for the site, including items such as finalising pipe sizes, surface levels and final detention volumes, as part of the design documentation phase of the project.

A preliminary site stormwater plan has been provided as part of this submission and is attached for reference.

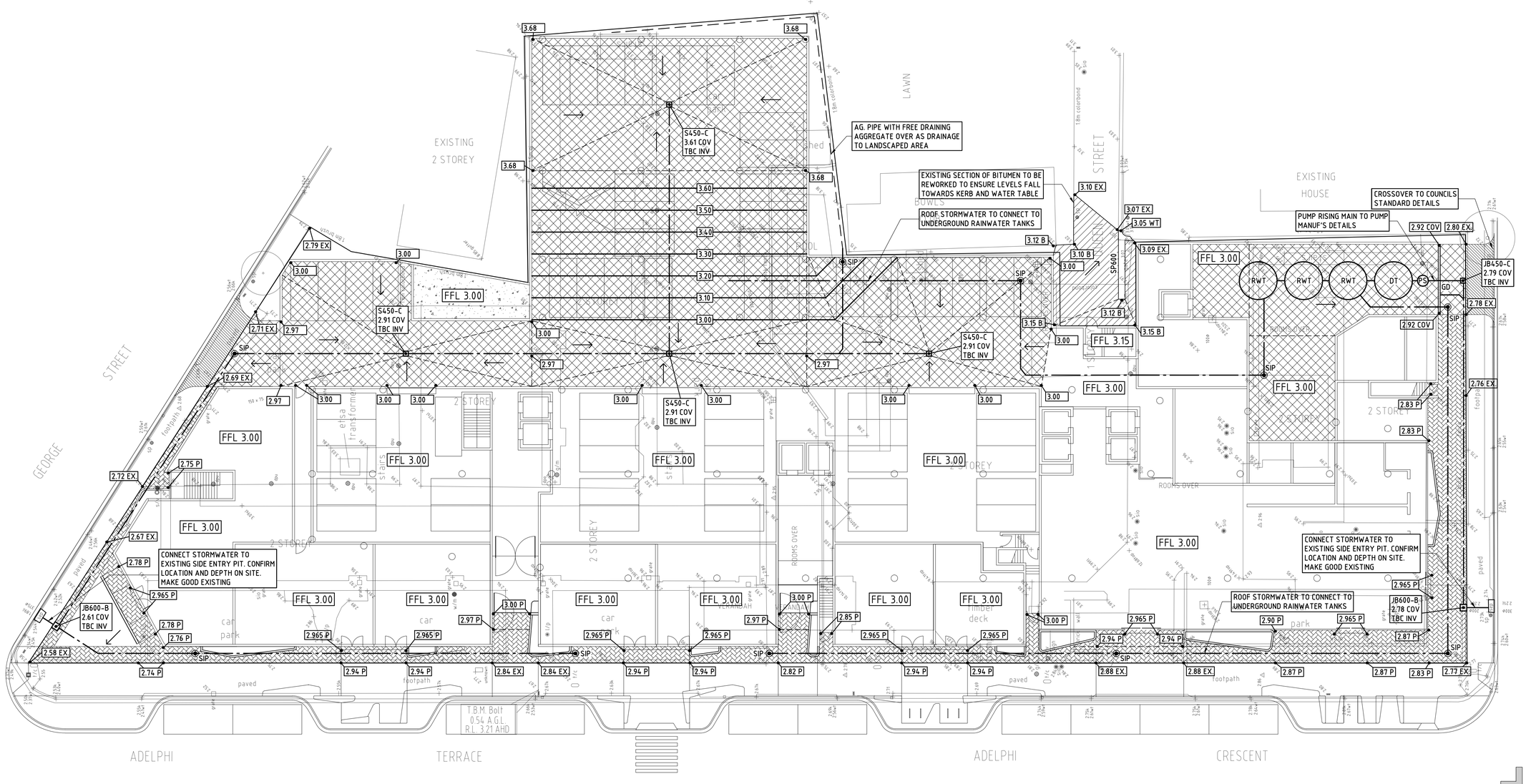
Please contact the undersigned if you wish to discuss any aspect of this report.

PT Design PTY LTD

Per:

Samuel Case
Director

Encl. 17378-C01 Rev B - Ground Floor and Level Drainage plan with survey (1 x A1 Page)
17378-C01 Rev B - Ground Floor and Level Drainage plan without survey (1 x A1 Page)



LEGEND

—— - ——	SEWER GRADE PVC STORMWATER PIPE
S450-C	450 SQUARE GRATED SUMP FITTED WITH CLASS C GRATE
JB600-X	600 SQUARE JUNCTION BOX COVER CLASS AS NOTED
JB450-C	450 SQUARE JUNCTION BOX WITH CLASS C COVER
DP	DOWNPIPE LOCATIONS TO FUTURE DETAIL
SIP	SITE INSPECTION POINT
GD	200 WIDE GRATED DRAIN TO MANUF'S DETAILS FITTED WITH CLASS C GRATE
15.55	DESIGN LEVEL P - PAVING GR - GRAVEL B - BITUMEN COV - COVER G - GROUND INV - INVERT C - CONCRETE EX. - TO MATCH EXISTING (C.O.S.)
←	DIRECTION OF SURFACE FALL
– – – – –	GRADE LINE
15.55 ——	CONTOUR LINE
CP	CONCRETE PLINTH
CU	CONCRETE UPSTAND
EC	CONCEALED CONCRETE EDGE RESTRAINT
SP600	600 WIDE CONCRETE SPOON DRAIN
RWT	25.00kL UNDERGROUND RETENTION TANK TO MANUF'S DETAILS
DT	25.00kL UNDERGROUND DETENTION TANK TO MANUF'S DETAILS
PS	PRE-PACKAGED PUMP STATION TO MANUF'S DETAILS PUMP RATE 5.0L/s
	40mm THICK HOTMIX BITUMEN ON EXISTING ROAD BASE RIP/TYNE EXISTING CARPARK ROAD BASE MATERIAL PROVIDE MINIMUM 250mm OVERALL PAVEMENT BASE DEPTH IMPORT FINE CRUSHED ROCK (PM1/20QG / PM1/40QG) AS REQUIRED TO SUIT EXISTING LEVELS RE-GRADE AND RE-COMPACT TO 98% MMDD
	TRAFFICABLE PAVEMENT TO FUTURE DETAIL
	NON-TRAFFICABLE PAVEMENT TO FUTURE DETAIL

0 5000 10000 15000

SCALE 1:200 @A1

PUMP NOTES:

PUMP SHALL BE DUAL PUMP. THE PUMP CONTROLS SHALL BE SET UP TO ENABLE ALTERNATE PUMP OPERATION AT EACH START. IN THE EVENT THAT A PUMP FAILS TO OPERATE WHEN THE WATER LEVEL IN THE WELL REACHES THE PUMP START, THE OTHER PUMP SHALL BE ACTIVATED AND A VISIBLE ALARM INITIATED. IN THE EVENT THAT BOTH PUMPS FAIL TO OPERATE, AN AUDIBLE ALARM SHALL BE INITIATED. PROVIDE BACK-UP POWER SUPPLY IN CASE OF POWER FAILURE.

STORMWATER NOTE:

STORMWATER PIPE LOCATIONS SHOWN ARE INDICATIVE ONLY. STORMWATER PIPE SIZES, LOCATIONS AND INVERTS ARE TO FUTURE DETAIL.

NOTE:

REFER TO ARCHITECTS DRAWINGS FOR ALL SETOUT DIMENSIONS

ALL LEVELS SHALL BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION. SHOULD ANY DISCREPANCY OCCUR THE CONTRACTOR SHALL CONTACT THIS OFFICE IMMEDIATELY FOR FURTHER INSTRUCTION.

CONTRACTORS NOTES:

COVER LEVELS GIVEN FOR PITS ARE NOMINAL ONLY. COVER LEVELS SHALL MATCH FINISHED PAVING LEVELS.

THE CONTRACTOR IS RESPONSIBLE FOR CHECKING LOCATION OF ALL UNDERGROUND SERVICES PRIOR TO COMMENCING ANY EXCAVATION WORK. ANY DAMAGE CAUSED TO ANY SERVICES SHALL BE REPORTED IMMEDIATELY TO THE SUPERINTENDANT & SHALL BE REPAIRED BY THE APPROPRIATE AUTHORITIES. ALL COSTS ASSOCIATED WITH REPAIRS SHALL BE AT THE CONTRACTOR'S EXPENSE. PHONE 'DIAL BEFORE YOU DIG' (1100) FOR ASSISTANCE.

Date	Revision	Issue
07.09.2015	ISSUED FOR PLANNING APPROVAL	C
29.07.2015	PRELIMINARY ISSUE	B
22.07.2015	PRELIMINARY ISSUE	A

FOR APPROVAL

PT Design

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T [08 8412 4300] F [08 8232 4311] E [ptdesign@ptdesign.net.au]

Designed	SR	Drawn	SR
Approved		Date	JUL '15
CIVIL		Sheet	1 of

Project

PROPOSED RESIDENTIAL DEVELOPMENT 6-10 ADELPHI CRESCENT GLENELG NORTH

Client

BRUNO MARVEGGIO

N

Drawing Title

GROUND FLOOR LEVELS & DRAINAGE

Scale

1:200

Drawing Number

17378-C01

Issue

C

Name: 17378-C01.dwg Date: 7.9.2015 Time: 13:58:33