

APPLICATION ON NOTIFICATION – Category 2

Applicant:	Scott Salisbury Homes
Development Number:	110/M010/18
Nature of Development:	Demolition of all structures on site and the construction of five residential flat buildings, comprising one 7 level building facing Adelphi Terrace with 6 levels of apartments (46 apartments) and ground level car parking and roof plant; and four 2 storey buildings to the east of the site, comprising 17 dwellings with associated integrated car parking
Subject Land:	19-20 Adelphi Terrace and 9 – 15 Tod Street, Glenelg North
Development Plan:	Holdfast Bay (City) Council Development Plan
Zone / Policy Area:	Residential High Density Zone, Urban Glenelg Policy Area 15, (Precinct 4 Five Storey); Residential Character Zone, Streetscape Character (Glenelg and Glenelg North) Policy Area 14
Contact Officer:	Gabrielle McMahon Phone Number: 7109 7056
Consultation Start Date:	7 February 2019
Consultation Close Date:	20 February 2019
During the notification period, hard copies of the application documentation can be viewed at the Department of Planning, Transport and Infrastructure, Level 5, 50 Flinders St, Adelaide, during normal business hours. Application documentation may also be viewed during normal business hours at the local Council office (if identified on the public notice).	

Written representations must be received by the close date (indicated above) and can either be posted, hand-delivered or emailed to the State Commission Assessment Panel.

Any representations received after the close date will not be considered.

Postal Address:

The Secretary
State Commission Assessment Panel
GPO Box 1815
ADELAIDE SA 5001

Street Address:

Development Division
Department of Planning, Transport and Infrastructure
Level 5, 50 Flinders Street
ADELAIDE

Email Address: scapreps@sa.gov.au

**South Australian
DEVELOPMENT ACT, 1993
REPRESENTATION ON APPLICATION – CATEGORY 2**

Applicant: Scott Salisbury Homes
Development No. 110/M010/18
Nature of Development: Demolition of all structures on site and the construction of five residential flat buildings, comprising one 7 level building facing Adelphi Terrace with 6 levels of apartments (46 apartments) and ground level car parking and roof plant; and four 2 storey buildings to the east of the site, comprising 17 dwellings with associated integrated car parking
Zone / Policy Area: Residential High Density Zone, Urban Glenelg Policy Area 15, (Precinct 4 Five Storey);
Residential Character Zone, Streetscape Character (Glenelg and Glenelg North) Policy Area 14
Subject Land: 19 - 20 Adelphi Terrace and 9-15 Tod Street, Glenelg North
Contact Officer: Gabrielle McMahon **Phone Number:** 7109 7056
Close Date: 20 February 2019, 5:00 PM

My Name: _____ **My phone number:** _____

Primary method(s) of contact: _____ **Email:** _____
Postal Address: _____ **Postcode:** _____

You may be contacted via your nominated PRIMARY METHOD(s) OF CONTACT if you indicate below that you wish to be heard by the State Commission Assessment Panel in support of your submission.

My interests are:
(please tick one)

- owner of local property
- occupier of local property
- a representative of a company/other organisation affected by the proposal
- a private citizen

The address of the property affected is: _____
Postcode: _____

My interests are:
(please tick one)

- I support the development
- I support the development with some concerns
- I oppose the development

The specific aspects of the application to which I make comment on are: _____

I: wish to be heard in support of my submission
(please tick one) do not wish to be heard in support of my submission
(Please tick one)

By: appearing personally
(please tick one) being represented by the following person
(Please tick one)

Signature: _____
Date: _____

DEVELOPMENT APPLICATION FORM

PLEASE USE BLOCK LETTERS

COUNCIL: HOLDFAST BAY.
APPLICANT: SCOTT SALISBURY GROUP
Postal Address: 4746 ANZAC HWY.
CAMDEN PARK. SA. 5038

Owner: _____
Postal Address: AS ABOVE

BUILDER: TBC

Postal Address: _____

 Licence No: _____

FOR OFFICE USE	
Development No: _____	_____
Previous Development No: _____	_____
Assessment No: _____	_____

<input type="checkbox"/> Complying <input type="checkbox"/> Non Complying <input type="checkbox"/> Notification Cat 2 <input type="checkbox"/> Notification Cat 3 <input type="checkbox"/> Referrals/Concurrences <input type="checkbox"/> DA Commission	Application forwarded to DA Commission/Council on / / Decision: _____ Type: _____ Date: / /
---	--

CONTACT PERSON FOR FURTHER INFORMATION

Name: CHRIS BRANFORD
Telephone: 0417895918 [work] _____ [Ah]
Fax: N.A. [work] _____ [Ah]
EXISTING USE: RESIDENTIAL

	Decision required	Fees	Receipt No	Date
Planning:	_____	_____	_____	_____
Building:	_____	_____	_____	_____
Land Division:	_____	_____	_____	_____
Additional:	_____	_____	_____	_____
Development Approval				

DESCRIPTION OF PROPOSED DEVELOPMENT: APARTMENT BLDG (46 APPT.) + 17 TOWNHOUSES
LOCATION OF PROPOSED DEVELOPMENT: 19-20 ADELPHI TCE + 9-15 TOD ST.
House No: _____ **Lot No:** _____ **Street:** _____ **Town/Suburb:** GLENELG NORTH.
Section No [full/part] _____ **Hundred:** _____ **Volume:** _____ **Folio:** _____
Section No [full/part] _____ **Hundred:** _____ **Volume:** _____ **Folio:** _____

LAND DIVISION:
Site Area [m²] _____ **Reserve Area [m²]** _____ **No of existing allotments** _____
Number of additional allotments [excluding road and reserve]: _____ **Lease:** YES NO

BUILDING RULES CLASSIFICATION SOUGHT: _____ **Present classification:** _____
 If Class 5,6,78 or 9 classification is sought, state the proposed number of employees: Male: _____ Female: _____
 If Class 9a classification is sought, state the number o persons for whom accommodation is provided: _____
 If Class 9b classification is sought, state the proposed number of occupants of the various spaces at the premises: _____

DOES EITHER SCHEDULE 21 OR 22 OF THE DEVELOPMENT REGULATIONS 2008 APPLY? YES NO
HAS THE CONSTRUCTION INDUSTRY TRAINING FUND ACT 2008 LEVY BEEN PAID? YES NO

DEVELOPMENT COST [do not include any fit-out costs]: \$ TBC

I acknowledge that copies of this application and supporting documentation may be provided to interested persons in accordance with the Development Regulations 2008.

SIGNATURE: [Signature] **Dated:** 13 / 12 / 18.



Government
of South Australia

DEVELOPMENT REGULATIONS 2008
Form of Declaration (Schedule 5 clause 2A)

To: DPTI : ATN GABRIELLE McMAHON.

From: CHRIS BRANFORD.

Date of Application: 13/12/13

Location of Proposed Development: ADELPHI TCE, GLENELG NORTH.

House No: 19-20 Lot No: _____ Street: ADELPHI TCE,

Town/Suburb: GLENELG NORTH.

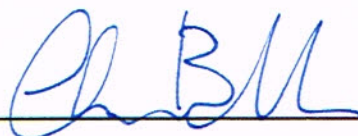
Section No (full/part): _____ Hundred: _____

Volume: _____ Folio: _____

Nature of Proposed Development:

RESIDENTIAL APARTMENT BUILDING (346 APPTS.)
+ 17 TOWNHOUSES.

I CHRIS BRANFORD being ~~the applicant~~ a person acting on behalf of the applicant (delete the inapplicable statement) for the development described above declare that the proposed development will involve the construction of a building which would, if constructed in accordance with the plans submitted, not 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 2008.

Signed: 

Date: 13/12/13.

REAL PROPERTY ACT, 1886



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Certificate of Title - Volume 5234 Folio 254

Parent Title(s) CT 4091/488
Creating Dealing(s) CONVERTED TITLE
Title Issued 09/12/1994 **Edition** 4 **Edition Issued** 21/07/2008

Estate Type

FEE SIMPLE

Registered Proprietor

PAULRAYMAK PTY. LTD. (ACN: 131 782 262)
OF 51 WOODVILLE ROAD WOODVILLE SA 5011
99 / 100 SHARE

RODGER BRETT MCGRATH
OF 39 NOBLE TERRACE ALLENBY GARDENS SA 5009
1 / 100 SHARE

Description of Land

ALLOTMENT 20 FILED PLAN 1160
IN THE AREA NAMED GLENELG NORTH
HUNDRED OF NOARLUNGA

Easements

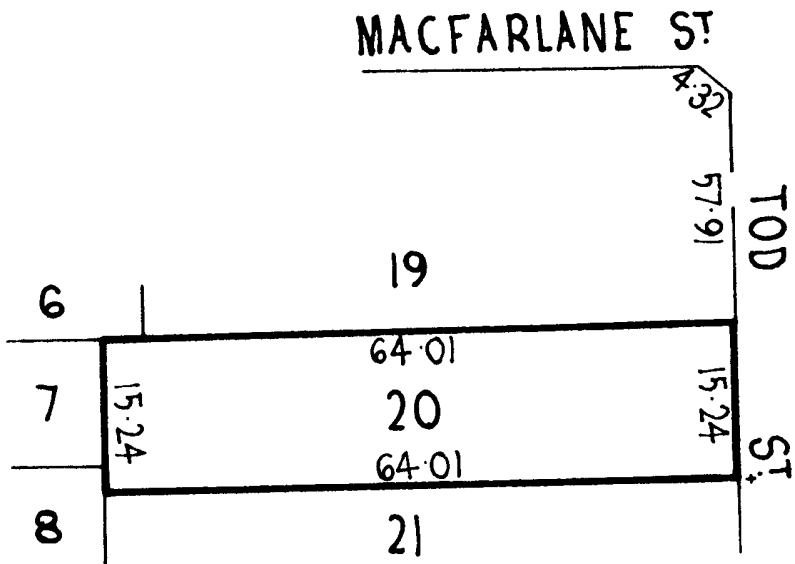
NIL

Schedule of Dealings

Dealing Number	Description
10990417	MORTGAGE TO AUSTRALIA & NEW ZEALAND BANKING GROUP LTD.

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



REAL PROPERTY ACT, 1886



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Certificate of Title - Volume 5442 Folio 696

Parent Title(s) CT 4310/523
Creating Dealing(s) CONVERTED TITLE
Title Issued 15/08/1997 **Edition** 2 **Edition Issued** 27/09/2011

Estate Type

FEE SIMPLE

Registered Proprietor

RAYMOND MALCOLM LEWIS MCGRATH
OF 19 ADELPHI TERRACE GLENELG NORTH SA 5045

Description of Land

ALLOTMENTS 7 AND 8 FILED PLAN 1160
IN THE AREA NAMED GLENELG NORTH
HUNDRED OF NOARLUNGA

Easements

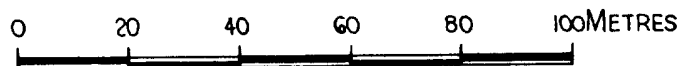
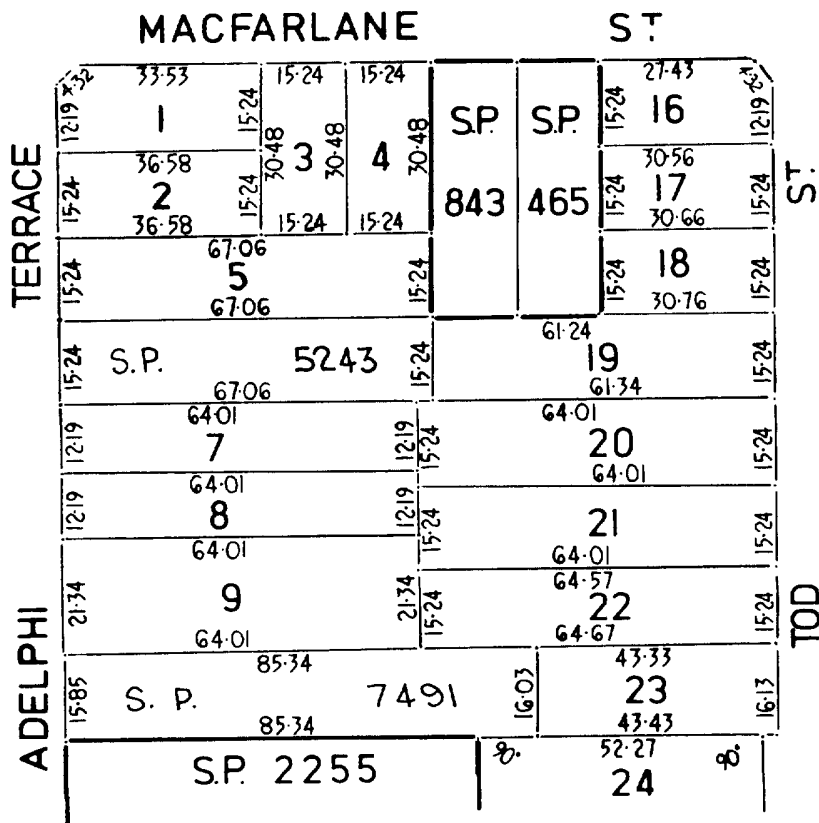
NIL

Schedule of Dealings

Dealing Number	Description
11608518	MORTGAGE TO AUSTRALIA & NEW ZEALAND BANKING GROUP LTD.

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



REAL PROPERTY ACT, 1886



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Certificate of Title - Volume 5440 Folio 999

Parent Title(s) CT 4252/687
Creating Dealing(s) CONVERTED TITLE
Title Issued 08/08/1997 **Edition** 4 **Edition Issued** 16/01/2007

Estate Type

FEE SIMPLE

Registered Proprietor

MCGRATH-BATTYE NOMINEES PTY. LTD. (ACN: 007 780 985)
OF 42 BRIGHTON ROAD GLENELG SA 5045
198 / 200 SHARE

KERRI ANNE MCGRATH
OF 42 BRIGHTON ROAD GLENELG SA 5045
1 / 200 SHARE

RAYMOND MALCOLM LEWIS MCGRATH
OF 42 BRIGHTON ROAD GLENELG SA 5045
1 / 200 SHARE

Description of Land

ALLOTMENT 22 FILED PLAN 1160
IN THE AREA NAMED GLENELG NORTH
HUNDRED OF NOARLUNGA

Easements

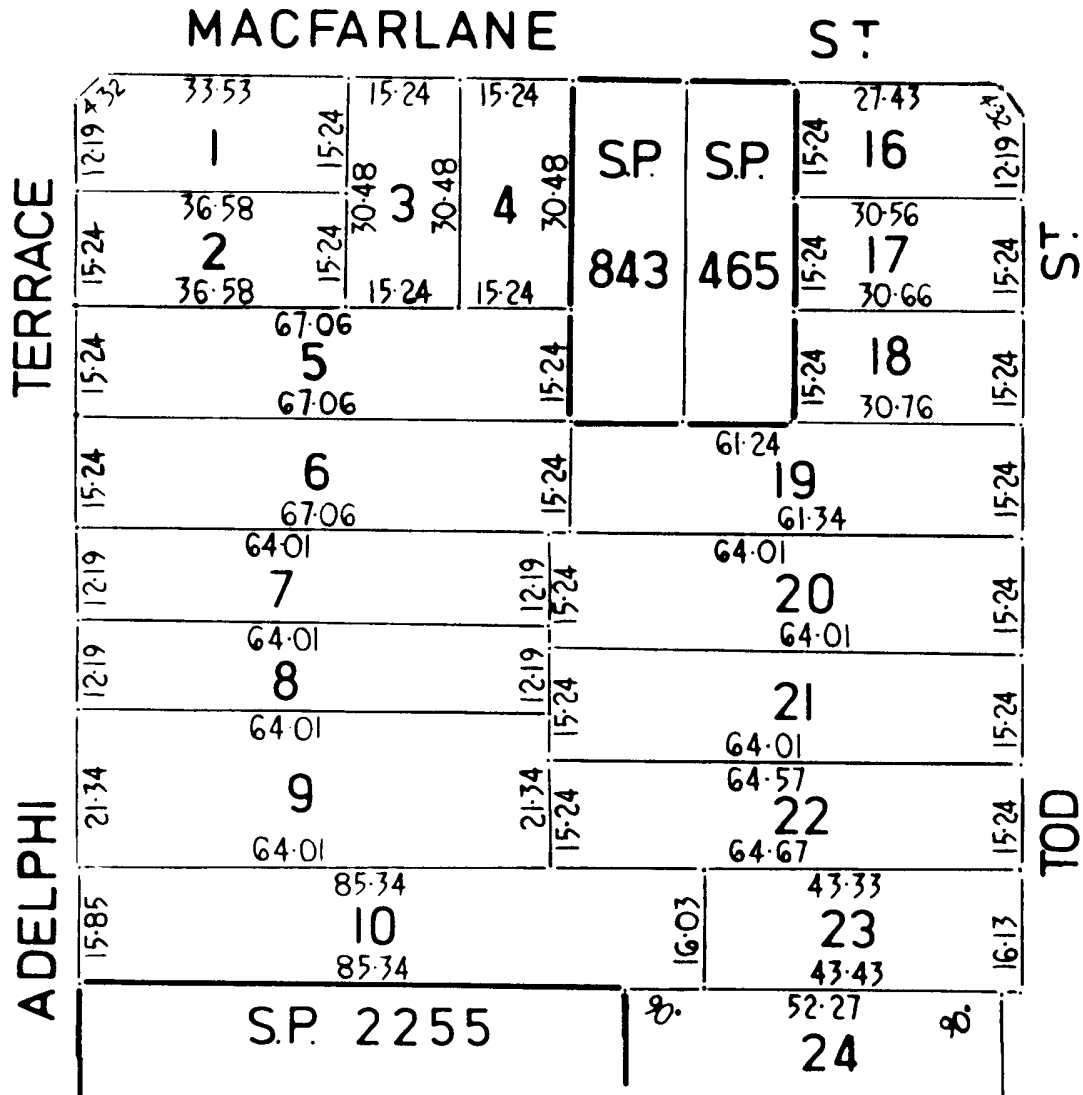
NIL

Schedule of Dealings

Dealing Number	Description
10607654	MORTGAGE TO AUSTRALIA & NEW ZEALAND BANKING GROUP LTD.

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



REAL PROPERTY ACT, 1886



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Certificate of Title - Volume 5474 Folio 496

Parent Title(s) CT 4222/748
Creating Dealing(s) CONVERTED TITLE
Title Issued 24/11/1997 **Edition** 3 **Edition Issued** 31/03/2004

Estate Type

FEE SIMPLE

Registered Proprietor

RAYMOND MALCOLM LEWIS MCGRATH
OF 19 ADELPHI TERRACE GLENELG NORTH SA 5045

Description of Land

ALLOTMENT 9 FILED PLAN 1160
IN THE AREA NAMED GLENELG NORTH
HUNDRED OF NOARLUNGA

Easements

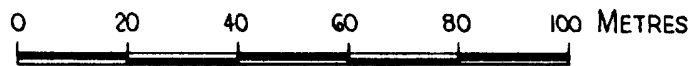
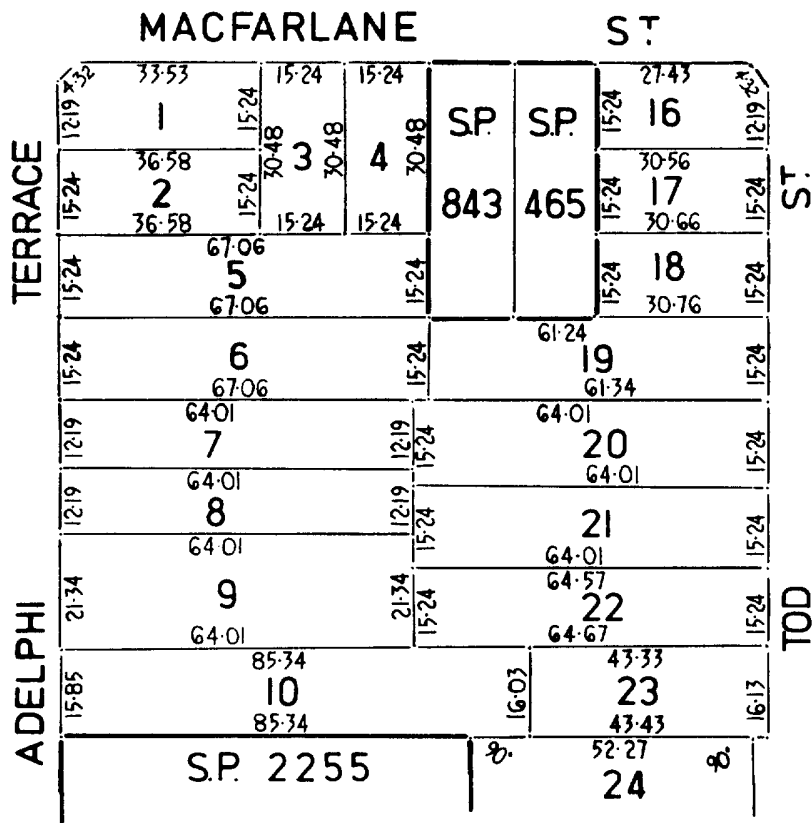
NIL

Schedule of Dealings

Dealing Number	Description
5193267	MORTGAGE TO AUSTRALIA & NEW ZEALAND BANKING GROUP LTD.

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



REAL PROPERTY ACT, 1886



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Certificate of Title - Volume 5758 Folio 265

Parent Title(s) CT 1368/100
Creating Dealing(s) CONVERTED TITLE
Title Issued 17/04/2000 **Edition** 6 **Edition Issued** 27/02/2017

Estate Type

FEE SIMPLE

Registered Proprietor

RAYDEV PTY. LTD. (ACN: 131 014 536)
OF CARE 19 ADELPHI TERRACE GLENELG NORTH SA 5045

Description of Land

ALLOTMENT 19 FILED PLAN 1160
IN THE AREA NAMED GLENELG NORTH
HUNDRED OF NOARLUNGA

Easements

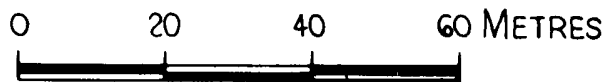
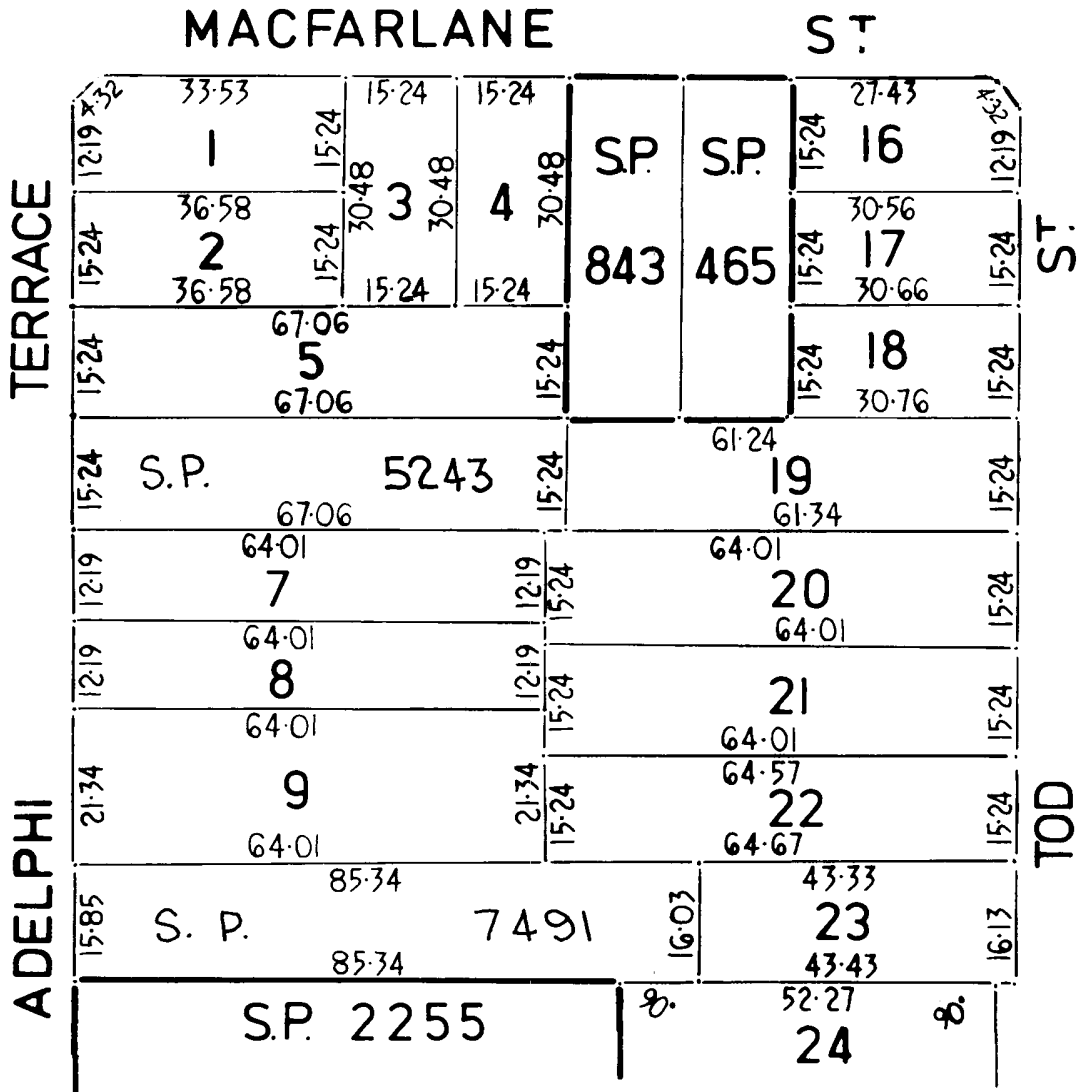
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Schedule of Dealings

Dealing Number	Description
12681514	MORTGAGE TO AUSTRALIA & NEW ZEALAND BANKING GROUP LTD. (ACN: 005 357 522)

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



REAL PROPERTY ACT, 1886



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Certificate of Title - Volume 5778 Folio 770

Parent Title(s) CT 1141/141
Creating Dealing(s) CONVERTED TITLE
Title Issued 30/05/2000 **Edition** 1 **Edition Issued** 30/05/2000

Estate Type

FEE SIMPLE

Registered Proprietor

MARY ELIZABETH MCGRATH
OF 19 ADELPHI TERRACE GLENELG NORTH SA 5045

Description of Land

ALLOTMENT 21 FILED PLAN 1160
IN THE AREA NAMED GLENELG NORTH
HUNDRED OF NOARLUNGA

Easements

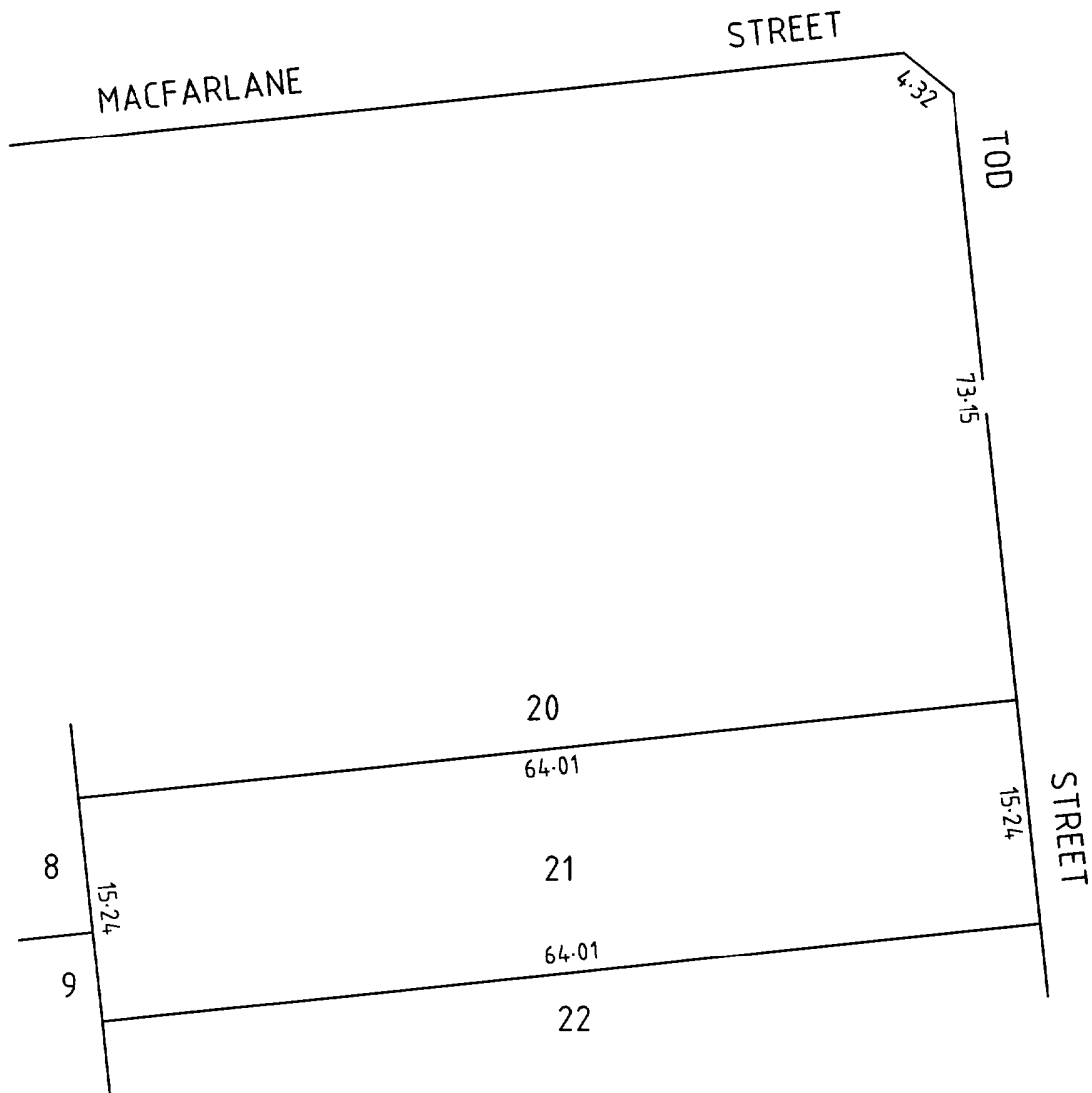
NIL

Schedule of Dealings

Dealing Number	Description
6454336	MORTGAGE TO AUSTRALIA & NEW ZEALAND BANKING GROUP LTD.

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



19 – 20 Adelphi Terrace
9 – 15 Tod Street
Glenelg North, SA

Planning Statement
for
Scott Salisbury Group



Proprietary Information Statement

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Prepared for: Scott Salisbury Group

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December 2018.

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1.0 Introduction

The Scott Salisbury Group has acquired a significant site addressing Adelphi Terrace and Tod Street at Glenelg North of just under 7000 m² in area. “The Adelphi” will be an exclusively residential development comprising of a residential apartment building and townhouses integrated across the site.

This proposal is in support of recently introduced zoning changes that encourages development uplift in proximity to high-frequency public transport services, taking into account the interface with adjacent residential properties that adjoin development sites.

The Scott Salisbury Group will deliver a high quality residential development that takes full advantage of its location in terms of panoramic views and access to facilities and amenity in the locality. The design of the apartment building has been undertaken by Aplin Cook Gardner who have previous experience in delivering developments of this nature, while the townhouse development has been designed developed in-house through the Scott Salisbury Group, consistent with the high level of design standards they have demonstrated elsewhere.

2.0 The Site and Locality

The subject land is located between Adelphi Terrace and Tod Street at Glenelg North. These street frontages represent the western and eastern boundaries of the site respectively, with existing low and medium density residential development adjoining the site to the north and south. The site is generally rectangular in shape and is currently comprised of 7 residential titles with a combined area of approximately 6800 m².



Figure 1: Site Plan.

The site faces west across Adelphi Terrace which fronts the broader Patawalonga recreational reserve and associated expansive district open space areas, including the nearby Wigley Reserve. Just 55m to the north of the subject land is the 0.6 ha Patawilya Reserve. The beach at Glenelg North and associated coastal reserve is approximately 300 m to the west across the King Street Bridge from the site. The site is generally flat, exhibiting a very slight fall from east to west. An existing dwelling with associated outbuildings, garden areas and tennis court front Adelphi Terrace. An additional 4 existing dwellings (3 dilapidated and unoccupied) currently front Tod Street (refer Appendix 1). All existing dwellings and structures will be demolished as part of the proposal.



Figure 2: The site from Adelphi Tce looking north-east.

The immediate locality is characterised by a mixture residential development comprising of single story detached dwellings (typically built between the 1930s and the 1960s) and 2 story semi-detached dwellings and residential flat buildings, typically constructed between the 1960s and the 1980s. A three-storey apartment building was constructed in the last several years on the corner of Adelphi Terrace and Macfarlane Street just north of the subject land. In addition a number of 3 and 4 story residential flat buildings are in close proximity to the site on Adelphi Terrace and Tod Street. Furthermore, a proposal for a 13 story hotel and apartment development has been approved at 6 Adelphi Terrace approximately 240m south of the subject site. More recently and application was lodged for a 6 story apartment development at 22 Adelphi Terrace immediately north of the subject site.

The broader locality is characterised by a number of larger scale residential apartment buildings that will be viewed in context with the proposed development. These include buildings such as Liberty Towers (12 stories - approximately 580m south of the subject site), Aquarius Towers (13 stories - approximately 380m south of the subject site) and the Atlantic Motor Inn (14 stories - approximately 550m south of the subject site).



Figure 3: Locality Plan.

The subject land is more particularly described as Allotments 7, 8, 9, 19, 20, 21, and 22 Filed Plan 1160, in the area named Glenelg North, Hundred of Noarlunga (refer to Appendix 2).

3.0 Planning Framework

3.1 Development Plan

The subject land falls under the Holdfast Bay Council Development Plan as consolidated on 2 June 2016. The subject site sits within 2 Zone/Policy areas. The majority of the site (extending approximately 98m east from the Adelphi Terrace frontage) sits within the Residential High Density Zone (Urban Glenelg Policy Area 15), with the remaining portion to the west sitting within the Residential Character Zone (Streetscape Character (Glenelg and Glenelg North) Policy Area 14).

Both components of the proposal are classified as Category 2 with regards to public notification given that there is a building greater than 11.5m within the Residential High Density Zone and dwellings within the Residential Character Zone having walls on side property boundaries that exceed 2.7m in height above natural ground level. The type of development proposed within both Zones/Policy areas are not identified as either “complying” or “noncomplying” development and therefore, in accordance with Section 35 (5) of the Development Act 1993, would be considered on a “merit” basis.

3.2 Planning Authority

Pursuant to Schedule 10 (4C) of the Development Regulations 2008, the State Commission Assessment Panel (SCAP) is the relevant authority for this application.

3.3 Staging

Given the differing development components and scale of the project it is proposed to construct the development in stages in order to manage timing and delivery issues on site and cash flow management issues. While Development Plan Consent is being sought for the overall project it is likely that the overall site redevelopment will be undertaken in stages that will initially deliver half of the townhouses in the north-eastern corner of the site first allowing for the south-eastern corner of the site to be used as a site construction compound. This would then enable construction of the apartment tower on the western section of the site followed by the final stage of townhouses.

Accordingly it is requested that SCAP extended the operative period of consent for the development (as prescribed under Regulation 48) for the substantial completion of the project to be extended to a period of 3 years from the operative date of the Development Plan Consent.

4.0 The Proposal

4.1 Overview

The proposal represents a balanced and cohesive development that is able to be serviced in an orderly and economic manner and is readily integrated into the existing context of the locality. The proposal will result in 63 dwellings and associated public and private space delivered via Community Title. The proposed staged development comprises:

- Demolition of all existing dwellings and structures on the land.
- Construction of a multilevel residential apartment building comprising 6 residential levels with undercroft car parking.
- A total of 46 apartments comprising 1, 2 and 3 bedroom configurations (refer to Section 4.3)
- Construction of 17 two-storey townhouses with associated integrated car parking.
- Delivery of public and private landscape amenity at the ground level within the site and to both primary street frontages, with an emphasis on providing pedestrian links through the site for residents of the development.

4.2 Design Philosophy

The proposed development has been designed by Aplin Cook Gardner (apartment building) and the Scott Salisbury Group (townhouses). The design evolution of the project has been underpinned by 2 PLP meetings with DPTI staff and 2 Design Review Meetings with ODASA. The feedback fed through to the design team as part of this process has been positively received and substantially incorporated into the final design.

The design of the apartment building has been underpinned by the desire to deliver a high level of amenity for apartment users. The Scott Salisbury Group has taken a considered approach in delivering an end product that should substantially appeal to 2nd and 3rd home buyers. Apartment layouts have been designed to take full advantage of expansive views in all directions, while concentrating on extended views to the east and west. Apartments are well served by generous living areas with ready access to extensive balconies. The layout ensures that natural lighting and ventilation benefits each apartment.

The design of the external elements of the building have been carefully considered to reflect its premium offering. At the same time careful consideration has been given to setbacks to adjoining boundaries, facade articulation, and reassessing of upper levels to minimise their visual impact in the context of height provisions within the Development Plan.



Figure 4: Visualisation looking south-east along Adelphi Tce.

The design of the townhouses has been chosen to complement the modern architectural expression of the tower, while still being sympathetic to the scale of dwellings in the immediate locality, particularly in Tod Street. Setbacks to Tod Street have been created to ensure the development is compatible with its surrounding neighbours while the same time creating usable private outdoor open space for dwellings fronting the street.



Figure 5: Visualisation looking north-west along Tod St.

An integrated landscape design will be delivered through the site that addresses not only the private residential amenity of residents within the development, but also by giving substantial benefit to the Tod Street streetscape and importantly Adelphi Terrace. This area benefits from a substantial setting back of the main apartment building and creating an area that is publicly accessible and beneficial to passing pedestrians in terms of public amenity.

4.3 Dwelling Sizes

The apartment building proposes a total of 46 apartments comprising 1, 2 and 3 bedroom floor plans and is broken down as follows:

Level	1 Bedroom	2 Bed + 1 Bath	2 Bed + 2 Bath	3 Bedroom	Total
1	1	3	4	1	9
2	1	3	4	1	9
3	1	3	4	1	9
4	1	3	4	1	9
5	0	0	4	2	6
6	0	0	0	4	4
Total	4	12	20	10	46

Apartment sizes vary from floor to floor but are generous compared to market averages, with one-bedroom apartments averaging over 95m² and two-bedroom apartments over 137m².

There are 17 townhouses proposed, 6 of which will be two-bedroom with the remaining being three-bedroom. Individual floor plans differ slightly depending on location and configurations are all include extensive ground floor living areas with direct access to private outdoor open space. Three-bedroom townhouses are provided with a double garages with two-bedroom townhouses provided with single carports (refer Appendix 3).

Townhouse Type	Number of Bedrooms	Car Accommodation	Floor Area
1,7	3	2	206m2
2,5,6	3	2	212m2
3,4	3	2	197m2
12,13	3	2	230m2
8,17	3	2	205m2
9,10,11,14,15,16	2	1	175m2

4.4 Colours and Materials

The proposed materials and finishes for the development were inspired by its location with a particular focus on the beach side environment and its inherent character. In both the apartment building and townhouses high-quality materials have been chosen with long life cycle and low maintenance values.

At the lower levels the apartment building conveys a rich visual impact of patterned brick which helps enrich the public realm environment along with layers of paving, public seating, plant groundcover and water. Elsewhere through the building conveys details through expressed joints, repetition of framing, material pattern and contrasting colour.

Materials proposed are a combination of timber for its warmth, prefinished precast concrete (for its robust long lifecycle which is softened with curves within the panels), face blockwork and breezeway in off-white tones (for detail, texture, pattern and human scale at podium level) and metal cladding with seemed joints to provide detail and lightness to the façade and glass. The upper two floors contrast the lower 5 levels with change in colour from off- white at the lower levels to charcoal at the upper floors.

The townhouses will similarly incorporate materials and finishes that reflect the coastal environment yet provide a slight contrast to the apartment building. Again, robust long life-cycle materials will be used with an emphasis on the high quality finishes.

5.0 Planning Assessment

5.1 Land Use and Desired Character

The proposed development incorporates land both within the Residential High Density Zone and Residential Character Zone.

The Residential High Density Zone seeks form and character that should provide a variety of dwelling sizes and anticipates high density development in buildings over 4 stories achieving net densities more than 67 dwellings per hectare. Furthermore the zone seeks high-quality aesthetic and urban design outcomes with an emphasis on street front landscaping, and apartments that maximise short-term and long-term views. The Urban Glenelg Policy Area 15 more specifically expresses a desire for high architectural quality through the Desired Character provisions.

“Development will be of the highest architectural standard, contemporary in style and contribute positively to the quality of the public realm. Its built form will contrast with the open character of the adjacent foreshore and reserve public spaces. It will capitalise on the highly desirable location through significant scale, with built form between three and twelve stories in height. This development will demonstrate excellence in urban design. It will create design relationships between buildings at ground level and the street frontage that acknowledge and respect the existing context, ensuring that scale and the built form edge protects and enhances significant visual and movement corridors (including key vistas to the sea and views through to public spaces). Views into and out of development sites will also reinforce visual connectivity and way-finding within the policy area.

Building form and setbacks will vary to provide large-scale articulation within the streetscape. Building form will also use light and shade through articulation, eaves, verandas, canopies and balconies, to provide architectural detail, summer shade and promote greater energy efficiency. Likewise, buildings will use a balanced approach to the use of solid materials and glazing so to provide an attractive backdrop to key public spaces and streets.”

The proposed development meets these aspirations in terms of its design integrity particularly with regards to its relationship to adjoining properties and the surrounding public realm. The Urban Glenelg Policy Area 15 also notes the area being well serviced by quality public open space and public transport.

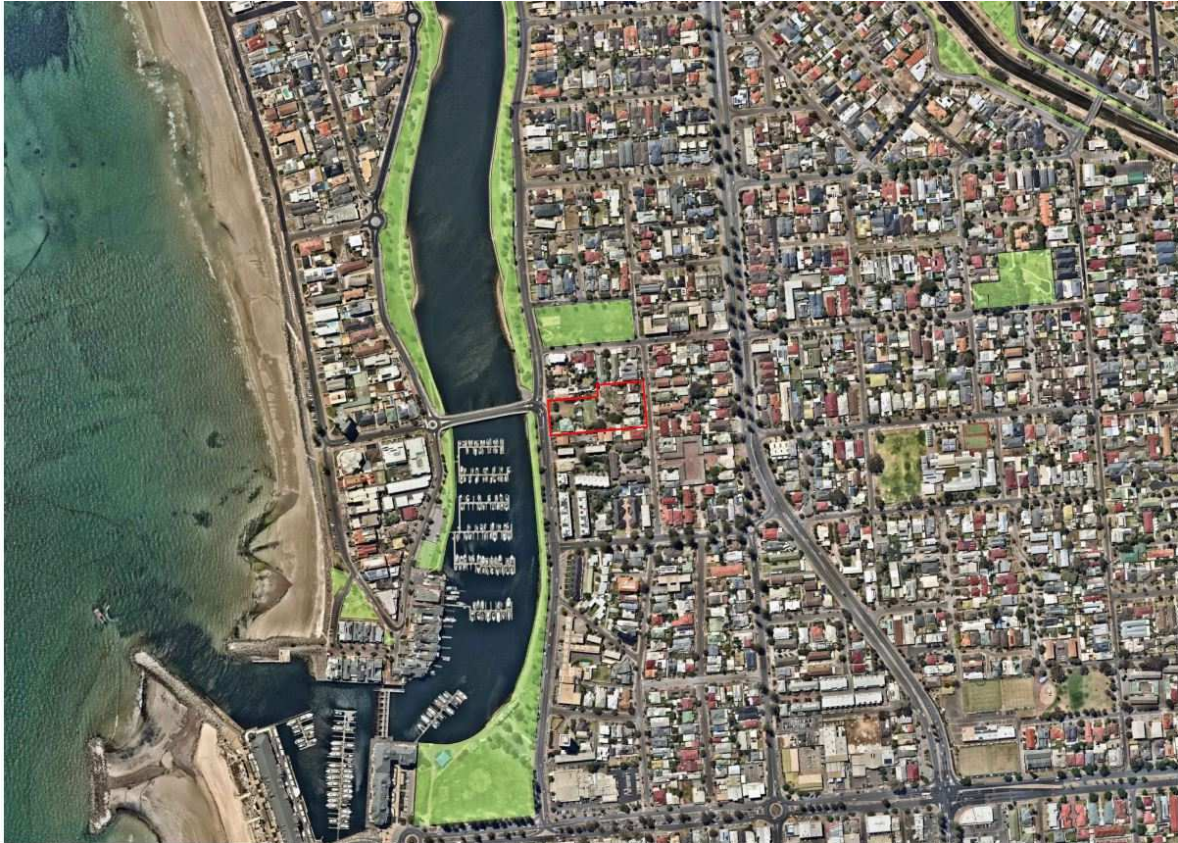


Figure 6: Open Space and Reserves in the locality.

The proposed development is consistent with a number of other key elements expressed under the Desired Character provisions.

“The policy area 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 and private open space (when compared to suburban localities in other zones and policy areas). Similarly, a higher degree of overshadowing and loss of privacy is expected in the policy area given the medium-to-high density nature of development (and heights).

Basement or undercroft car parking is contemplated where site circumstances allow appropriate design and integration with the streetscape / built form. Where ventilation is required for basement car parks, vehicles should be screened and landscaped.

Landscaping will contribute to the high quality of the adjacent public areas, open space and streetscapes. Car parking areas that are not visible from public spaces will be shared and consolidated.”

The subject land sits within Precinct 4 Five Storey and while it is acknowledged that the apartment component of the proposed development exceeds 5 stories (or 18.5 m) a number of initiatives have been included into the design to offset this. These include the significant setbacks to Adelphi Terrace of 9.4m to the podium level increasing to 11.5m for levels 1 to 4, and up to 17.1m to the upper level. While the podium level is set back 1.0m to the north and south, setbacks increase to around 3.0m to the main building line for levels 1 to 4 and up to 7.3m to the north elevation for the upper level. In addition the building façade includes extensive articulation on all sides that present a design outcome that will be visually compatible with existing and future development in the locality. The proponent initially proposed 2 five-storey apartment buildings with a significantly larger footprint extending back to the full extent possible within the Zone. Further design advice and refinement of the proposal resulted in a significantly reduced footprint from a single apartment tower with the balance of the Residential High Density Zone on the subject land being occupied by 10 of the proposed two-storey townhouses.

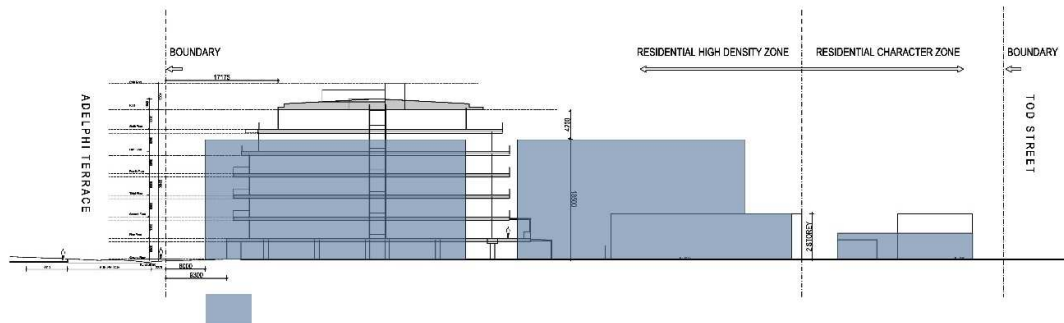


Figure 7: X section showing Development Plan height and mass provisions (blue shade).

Massing and overshadowing diagrams have been produced showing the impact of both design scenarios which demonstrate a significant reduction in terms of overall impact from the development as proposed. The two-storey townhouse component also acts as a transition to adjoining residential development which reflects the provisions of PDC 5 and 6 which refer to minimising impact of overlooking, overshadowing and massing on existing lower density development in adjoining zones/policy areas. Furthermore the Desired Character provisions recognise that a higher degree of overshadowing is expected in the policy area given its medium to high density nature.



Figure 8: 12pm winter solstice comparison. Development Plan v Proposed Development.

As outlined in Section 2.0, the broader locality contains a number of existing taller buildings up to 14 stories in height, with more recently approved developments and projects under consideration ranging from 6 stories to 13 stories. When viewed in this context (either from Adelphi Terrace or surrounding residential streets or from across the western side of the Patawalonga) the proposed apartment building presents a height and scale that sits coherently with nearby existing and proposed development of similar scale. In light of the architectural merits of the proposal and its treatment of the upper floors and public realm it is argued that this sufficiently balances with the height provisions outlined within the Zone.



Figure 9: Building heights in the locality.



Figure 10: Visualisation looking north of King St Bridge to the south-west.

Furthermore it is considered that the proposed development is consistent with the following Principles of Development Control under Urban Glenelg Policy Area 15. (2, 3, 4, 5, 6, 14)

The eastern portion of the subject land is contained within the Residential Character Zone - Streetscape Character (Glenelg and Glenelg North) Policy Area 14. The Objectives for this zone include:

“A residential zone primarily accommodating single storey detached dwellings on individual allotments, while providing opportunities for compatible infill development, and the preservation of the existing development patterns and built form.

Development that is designed to reflect the traditional character elements of the area, particularly as presented to the streetscape.”

The full extent of the Streetscape Character (Glenelg and Glenelg North) Policy Area 14 stretches from MacFarlane Street in the north, approximately 500 m south almost to Anzac Highway and covers an area east to west from Old Tapleys Hill Road to Sturt Street. The majority of this area is broadly reflective of the Desired Character expressed in the Development Plan as it contains streets where dwellings constructed between the 1880s and 1920s exist in greater numbers.

However, Tod Street which sits at the northern portion of this Policy Area does not exhibit dwellings at the same characteristic in any substantial number. A review of the built form

and character of this extent of Tod Street indicates that the majority of the street is significantly at odds with the Objectives, Desired Character and Principles of Development Control for both the Zone and Policy area.

Outside of the subject land, the existing built form in Tod Street is an eclectic mix of 1950s, 1960s and 1970s residential flat buildings, and detached and semi-detached buildings built over the last 30 to 40 years. A number of bungalow style detached dwellings built in the 1930s and 1940s also exist but these fall outside the character period expressed in the Development Plan. It is also significant to note that approximately 30% of the built form in the street is 2 story which is contrary to the Zones provision for single storey development. Building setbacks on Tod Street range from 2.5 m up to 9.5 m with no particular area demonstrating a consistent set back character. The street is also characterised by an eclectic mix of front fences and courtyard walls (or no fencing), and the footpath/verge area is devoid of street trees. The application of the Zone and Policy Area to this extent of Tod Street appears to be misjudged. Notwithstanding the policy settings affecting this part of the subject land, the proposal seeks to introduce a high quality level of built form that is respectful to adjoining properties in terms of design, bulk and scale and will contribute positively to the surrounding streetscape.



Figure 11: Tod St looking north-east.



Figure 12: Tod St looking south-west.

7, two-storey townhouses are proposed to address Tod Street with a contemporary elevation that utilises a high level of materials and finishes. Dwellings are set back 4.0 m from the street front property boundary and incorporate private front courtyards with feature front fencing that strikes a balance between providing privacy for each dwelling while the same time providing a strong level of passive surveillance to the street. Each dwelling fence has been provided with recessed landscape areas that will incorporate landscaping and tree planting to give some level of street tree character to Tod Street that is

presently non-existent. A single driveway crossover has been provided central to the Tod Street frontage to service the site.



Figure 13: Aerial visualisation Tod St looking north-west.

5.2 Design and Appearance

As outlined above, the proposal is consistent with the key Objectives, Desired Character and relevant Principles of Development Control as expressed in the Residential High Density Zone Urban Glenelg Policy Area 15. The architects design statement for the apartment building states:

- The podium provides screening to the car park and apartment services while providing public amenity to the street with use of landscaping, bench seating, breezeway, water feature and use of textual materials and pattern.
- The setback of the podium is in line with the existing built forms adjacent with the apartment then set back further from the street, offering a wider pedestrian path and opportunities for landscaping to Adelphi Terrace.
- A lightweight arbour entry structure spills and extends out to the porte cochere where there is further landscaping connecting the two spaces.
- A strong entrant detail of vertical blades extends up the building above the lobby entry defining the entrance and providing a break down in scale of the building. A soft curved block work wall guides pedestrians into the building.
- A pedestrian and bicycle pathway is integrated into the broader public footpath enabling social interaction and safer transitions. Visitor bicycle parking is located conveniently in the landscaped garden secure bicycle storage for residents within the car park.
- A higher amenity is provided through the provision of large open private balconies which exceed minimum standards.
- A range of floor plans have been provided all with natural light and ventilation. Sustainable features such as a large open landscaped public realm, planters on southern podium balconies and solar panels on the roof have been included.
- The upper levels incorporate various design techniques (setbacks, smaller footprints, changing materials and scale of material) to transition from level 4 to 5 and then to 6, thereby reducing visual prominence.

The design of the townhouses has been chosen to complement the modern architectural expression of the apartment building, while still being sympathetic to the scale of dwellings in the immediate locality, particularly in Tod Street. The townhouse design by the Scott Salisbury Group has been chosen to reflect more contemporary facades using materials and finishes that will be sympathetic to the existing streetscape. The dwellings have been designed to provide a strong sense of street appeal to all publicly visible areas both internal and external to the site. The townhouse interface with the internal driveway has been designed to create more of a pedestrianised feel by utilising timber finish gates as opposed to conventional roller doors, while incorporating landscaping to the townhouse entry areas and enabling solar penetration through to the main living areas. Setbacks to Tod Street have been created to ensure the development sits comfortably with its surrounding neighbours while the same time creating usable private outdoor open space for dwellings fronting the street.

With regards to the overall design and appearance of the development the proposal accords with PDC 1, 2, 3, 4, 5, 6, and 18. More specifically in response to relevant provisions the proposal provides:

- A variety of dwelling sizes and types distributed through both the apartment building and townhouses.
- The entrance to the apartment building is clearly defined off Adelphi Terrace both visually through the architectural expression and complemented by the landscape design in the public realm.
- All apartments are serviced with balconies that well exceed policy provisions and that are readily accessible from internal living spaces. They are all orientated north, east or west to provide solar access and have been designed to facilitate short and long-term views and passive surveillance of public areas.
- The area between the apartment building and Adelphi Terrace has been designed to give benefit to not only the residents of the facility but also to the public realm. Publicly accessible seating, bike racks and high level landscape design are provided in this area.
- Similarly fencing and landscaping to the townhouses fronting Tod Street has been designed to give amenity to the broader streetscape.
- The apartment building has been designed with increased setbacks to boundaries of adjoining existing properties and has been well articulated with further reduced setbacks to the upper floors to minimise visual impact. As outlined previously, a single tower component was chosen focused towards Adelphi Terrace as opposed to 2 towers extending further into the zone area to further minimise impact on adjoining properties.
- The combined effects of this have been to reduce the potential extent of overshadowing on adjoining properties while still recognising that the Desired Character of the Policy Area contemplates a higher degree of overshadowing given the medium to high density nature of development.
- All habitable rooms within the apartment building and townhouses that have the potential for overlooking onto adjoining properties have windows with minimum 1500 mm sill heights. In addition, where apartment balconies have the potential for overlooking to adjoining properties, they have been treated with screens/fins aligned to focus views away from such situations.
- The building interface with existing residential development directly abutting the zone has been addressed as this interface is only affected by two-storey townhouse development.
- Notwithstanding the provisions for reduced private open space, all apartments and townhouses have private open space requirements that exceed those expressed in the Development Plan.

- In addition the commentary provided previously about the proposed building height in the context of the broader locality, steps have been taken to minimise height impacts via reduced floor-to-ceiling heights, and architectural treatments to the exterior of the building including the recessing of and material finishes on upper floors. At grade undercroft car parking was chosen in lieu of subgrade or basement car parking given that the development sits directly within a flood prone site with sufficient floor-to-ceiling height being provided in the car park area to allow for natural ventilation to occur.

5.3 Medium and High-Rise Development

The Development Plan has specific provisions relating to Medium and High-Rise Development. The proposal accords with the key Objectives and Principles of Development Control, most notably Objective 1, 2 and 4 and PDC 1, 2, 3, 5, 6, 9, 11, 12, 13 and 14. More specifically in response to the relevant provisions of the proposal provides:

- Medium and high-rise development that provides a range of housing choices and a high level of amenity for a variety of accommodation and living needs.
- The apartment building has been designed and sited to be energy and water efficient with dwellings gaining significant benefit from solar access. Rainwater tanks will be installed to service the development that will feed to the communal open space throughout the site. In addition, the townhouses will have individual rainwater tanks in accordance with standard requirements.
- The apartment building achieves a human scale at ground level through the use of elements such as a podium level, entry arbour, building articulation and curvilinear proportions and significant landscaping and streetscape benefits to Adelphi Terrace. The entrance to the building is clear and legible for pedestrians and motor vehicles.
- Apartments have been designed to provide visual and acoustic privacy from within the development while the same time ensuring that living spaces have the benefit of short range and long-range views.
- As discussed previously the apartment building has been designed to minimise solar and shadow impacts on adjoining properties.
- The undercroft car parking roof deck acts as an effective podium level for the building which in conjunction with other design treatments on the facade will deflect downward travelling wind flows over the pedestrian areas and other properties.
- All dwellings will have a minimum of 8 m³ of covered storage as per Development Plan provisions with the majority well exceeding this.
- A dedicated area has been set aside for the on-site collection and sorting of waste materials (Refer to Section 5.8).

5.4 Private Open Space and Public Realm

The Residential High Density Zone outlines the following principles for the delivery of private open space.

Configuration	Open space requirement, other than for affordable housing
<i>Studio (without separate bedroom)</i>	<i>No minimum requirement</i>
<i>One-bedroom</i>	<i>8 square metres</i>
<i>Two-bedroom</i>	<i>11 square metres</i>
<i>Three-bedroom or greater</i>	<i>15 square metres</i>

The proposed apartment building exceeds these measures (substantially in most cases) for all apartments, as do the townhouses falling within this zone. The Residential Character Zone provides no specific guidance for the provision of private open space, however this is expressed under the General Section for Residential Development PDC 31, 32, 33 and 34. For dwellings with site areas less than 250 m², a minimum of 35 m² is sought of which 8 m² can consist of balconies, roof patios etc.

The 7 townhouses situated in this Zone face Tod Street have been designed with ground floor living spaces running through the dwelling from east to west. A 4.0 m setback has been nominated to Tod Street with this area having direct access off the ground floor living areas. A courtyard wall / fence to Tod Street (combination of solid material and open infill) combined with landscaping will provide for sufficient amenity and privacy for residents of these townhouses, with each having a minimum of 29.5 m² private outdoor courtyard space provided in this area. In addition each townhouse has private open space between the rear of the ground floor living area and the adjoining garage of 21 – 22 m².

In addition to private open space provision, an integrated landscape design concept prepared by Outerspace Landscape Architects will be delivered through the site that addresses not only the residential amenity of residents within the development, but also by giving substantial benefit to the Tod Street streetscape and importantly Adelphi Terrace (refer Appendix 4). This area benefits from a substantial setting back of the main apartment building and creating an area that is publicly accessible and beneficial to passing pedestrians in terms of increased amenity.



Figure 14: Adelphi Tce landscape X-section.

The design incorporates a high quality of landscape and paving finishes with pedestrian linkages to the apartment building being prioritised through the use of strong visual cues. In addition informal seating that can be used by residents or public alike will exist around the Adelphi Terrace frontage. This will be complemented by publicly accessible bike racks in this location. As discussed with Council, the landscape concept from the building has been continued beyond the property boundary to back of kerb ensuring that a fully integrated outcome is achieved for residents and pedestrians alike.

The Tod Street public frontage has a minimal 1.4 m wide public footpath reserve which is fully paved and devoid of any landscaping or street trees. The front courtyards to the 7 townhouses described previously include the incorporation of mature trees adjacent to the road frontage. The proposed tree is a Pyrus Chanticleer which has proven successful elsewhere in the Glenelg area. While the tree will be on private property it is proposed to be maintained as part of the communal open space on site and provide a high level of amenity to residents and pedestrians alike.



Figure 15: Tod St landscape X-section.

The driveway access through the site services both the apartment building and townhouses. This has been designed with the intent of the more fluid paving pattern so that it visually reads as more of a shared space rather than a traditional driveway. In addition significant landscaping beds have been provided to both sides of the entry driveway of Tod Street and where possible throughout the internal driveway to contribute to the overall amenity of this space. 2 existing Canary Island Palms are on the subject land and if possible these will be transplanted and used as signature trees at strategic locations on site.



Figure 16: Visualisation of internal townhouses looking north-west.

5.5 Access and Car Parking

GTA traffic consultants have undertaken an assessment of both the proposed parking provisions on site and the capacity of the surrounding residential street network (refer Appendix 5). Under PDC 15 of the Residential High Density Zone reference is made to Table HoB/1B with regards to parking provisions.

GTA note that this table prescribes a total of 95 parking spaces for the development. The proposal has an overall provision of 105 parking spaces servicing the site. The townhouse component will rely in part on excess spaces incorporated into the apartment undercroft area. Furthermore it should be noted that with the introduction of a single driveway access to the site of Tod Street, 3 existing crossovers will be removed thereby providing approximately 50m of uninterrupted kerb for on street parking. In addition secure bicycle storage is provided for up to 22 bicycles with an additional 3 visitor bicycle rails provided that more than meets the requirements for the development.

With regards to the traffic impact assessment of the proposal on the adjoining Street network GTA conclude that a total of 398 vehicle movements per day will be generated by the development, with a total peak hour generation of 40 vehicle movements. Their report goes on to conclude:

“Against existing traffic volumes in the vicinity of the site, the additional traffic generated by the proposed development could not be expected to compromise the safety or function of the surrounding road network. The turning volumes anticipated in the peak periods are very low (11 vehicles per hour or less) and as such is not expected to compromise the safety or function of the road network.

Moreover, the use of Adelphi Terrace and Tod Street by vehicles accessing residential uses which abut them is entirely appropriate and consistent with their functional role in the road network.”

5.6 Sustainable Development

The proposed development accords with the provisions of the Development Plan with Regards to Orderly and Sustainable Development and Energy Efficiency.

Aplin Cook Gardner architects have prepared an ESD statement that highlights the sustainability initiatives associated with the apartment building (refer Appendix 6). In summary the main initiatives of the development include:

- High-performance building envelope, glazing and the use of light-coloured facade materials with low solar absorption properties.
- External shading to reduce the summer heat load.
- Use of sustainable building materials and energy efficient air-conditioning in conjunction with crossflow ventilation through the apartments (and townhouses).
- All living and bedroom areas are externally located with access to natural daylight.
- The use of LED lighting will be maximised throughout the development.
- Water efficient fixtures will be used throughout and rainwater harvesting will be incorporated into the development.
- Waste management including the provision of a dual waste and recycling system and provision for e-waste on the ground floor of the apartment building.
- A roof mounted solar photovoltaic system will be provided on the roof of the apartment building to supply the development.

From an economic sustainability perspective the development has been designed to take into account the 1 in 100 year flood mapping that has a direct effect on the subject land.

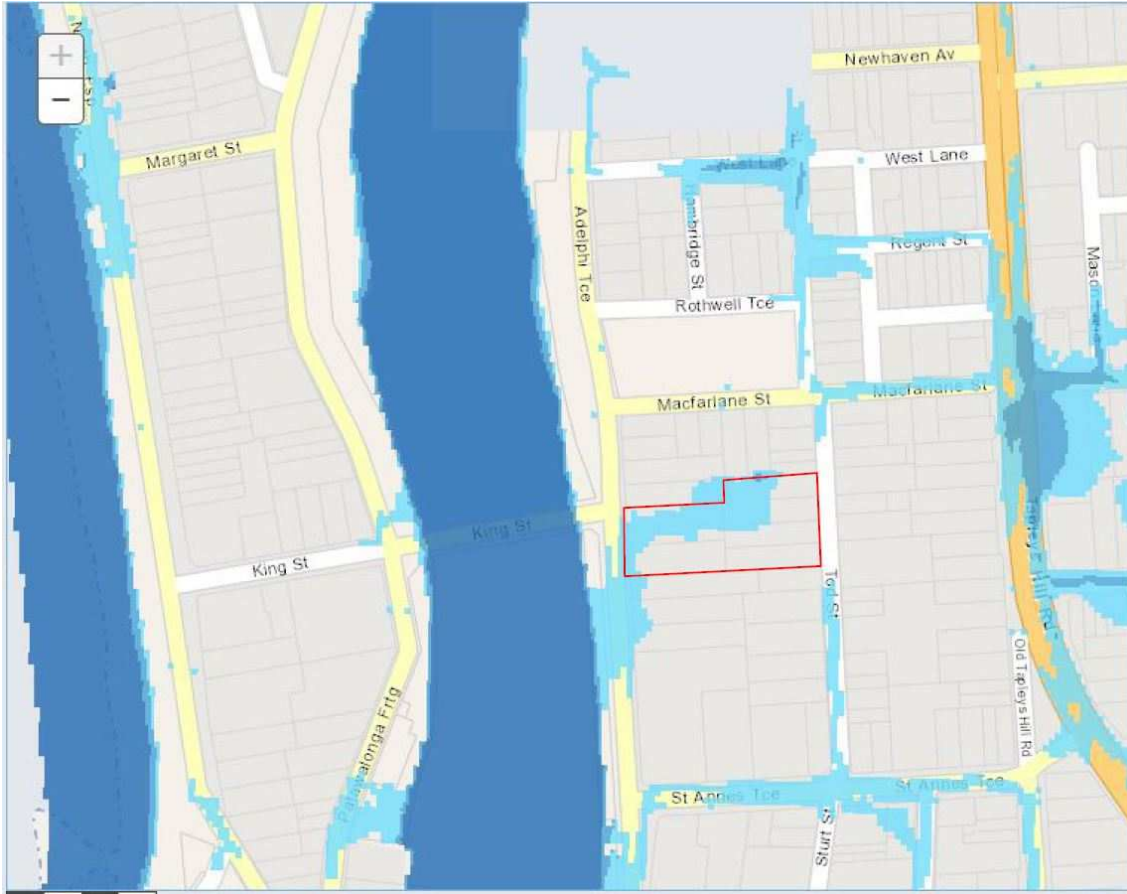


Figure 17: 1:100 Flood Mapping. Source: SA Govt. Water Connect Flood Awareness Map

Under the Hazards section of the Development Plan, Objective 4 and PDC 4 call for development to be designed and located so as to minimise the risks to safety and property damage from flooding. Investigations by PT Engineering (refer Appendix 7) have indicated that the finished floor level of the proposed apartment building and central townhouses should be RL 2.50 and RL 2.30 for the eastern townhouses. This sets the finished floor levels a minimum of 300mm above the adjacent water table and includes a 150mm freeboard protection above expected long-term floodplain levels. In addition the undercroft car park to the apartment building has been kept substantially at grade to minimise impacts from significant flood events on ground floor infrastructure and property.

5.7 Acoustics

Resonate acoustic consultants have been engaged to assess the proposal with regards to potential noise emission from the development and impact on the development in relation

to its proximity to Adelaide airport (refer Appendix 8). In both regards the report concludes that in adopting its recommendations the proposed development will reasonably and practicably comply with the intent of Council and Australian Standards with regards to noise emissions.

5.8 Waste Management

Rawtec have been appointed to produce a Waste Management Plan for the development which will be privately managed (refer Appendix 9). The report highlights that the proposed development can accommodate the provision of general waste, co-mingled recycling, and organic waste within the layout into separate areas servicing both the apartment building and townhouses respectively.

An 8.8 m Medium Rigid Vehicle will access the site of Tod Street with waste for the apartments and townhouses taking place on the same collection route. The internal driveway design and placement of waste collection areas can facilitate convenient access to and the manoeuvring of the vehicle on site to exit in a forward direction. Based on the expected waste generation from the development Rawtec estimate that 5 waste collection vehicle movements will occur per week.

5.9 Storage

For Residential Development the Development Plan seeks a storage area of not less than 8m² for each dwelling. All the apartments have been designed with very generous floor space with the majority achieving this storage area within the apartment layouts. Additional storage space has been provided for a number of apartments as part of their allocated parking spaces in the basement area. All townhouses have sufficient storage space included either in the lock-up garage or as part of the internal floor space, or availability within the private courtyard space.

5.10 Crime Prevention

The proposed development has been designed to ensure that there is excellent passive surveillance of adjoining public areas on Adelphi Terrace and Tod Street, and internally within the development's publicly accessible spaces. The proposal accords with the key principles for Crime Prevention under The Development Plan. The following design elements have been incorporated into the proposal with specific regards to CEPTED principles.

- The use of robust durable materials and finishes, particularly at ground level adjacent to the public realm.
- Providing clear sight lines as far as achievable through and around the development including visibility between the public and private courtyards.
- Use of appropriate lighting in accordance with Australian and New Zealand lighting standards throughout the development with suitable illumination levels and lighting spill that reduces blackspots while at the same time not contributing to glare.
- Installation of CCTV in key locations including around key entries to the building off Adelphi Terrace and Tod Street.
- The publicly accessible forecourt of the building of Adelphi Terrace has been designed to provide for informal pedestrian amenity and seating that will still be highly visible from the development and the broader Adelphi Terrace/Patawalonga precinct.
- A secure undercroft car park which will not be easily accessible by the general public.
- Secure building entrances for residents accessed from either end of the development encouraging activity at both the eastern and western end of the site.
- Enhanced passive surveillance around the site and on to the adjoining road network and public open space through the orientation of doors, windows, balconies etc.
- Use of suitable landscape in which includes a combination of lower ground level plantings and higher tree canopies minimising the opportunity for people to be obscured by landscaping.
- Use of wayfinding signage as appropriate to confirm building entrances for visitors/deliveries etc.

6.0 Summary

The proposed development is consistent with the Desired Character and key Zone Objectives and Principles of Development Control relevant to the subject land, contained in the Holdfast Bay Council Development Plan. The proposal provides for a mix of dwelling sizes through both the apartment building and townhouses which will appeal to a broad cross-section of the market.

The proposal exhibits a high quality architectural design and expression, has ready access to public open-space and is well serviced by the existing local road infrastructure which provides connectivity to nearby community facilities and services.

The proposed design is based on existing accepted standards within the City of Holdfast Bay and other contemporary developments. Accordingly, approval subject to standard planning conditions is considered appropriate.

Appendix 1

Site Survey

Appendix 2

Lands Title Plans



Appendix 3

Plans and Elevations



Appendix 4

Landscape Concept



Appendix 5

Traffic Report



Appendix 6

ESD Statement

Appendix 7

Engineering Report

Appendix 8

Acoustic Report

Appendix 9

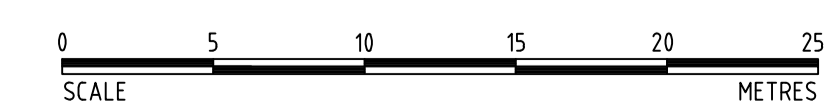
Waste Management Report

DETAIL SURVEY

SUBJECT LAND DETAIL
ALLOTMENT 7-9 & 19-22 IN F1160
HUNDRED OF NOARLUNGA
IN THE AREA NAMED
GLENELG NORTH
TITLE REFERENCES
C.T. 5440/999, 5788/770, 5234/254, 5758/265
C.T. 5474/496, 5442/696

STREET

MACFARLANE



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Resonate

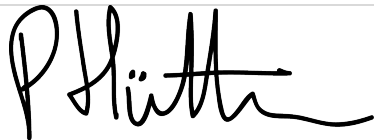
Adelphi Apartments

Planning Stage Acoustic Report

A180791RP1 Revision B

Wednesday, 12 December 18

Document Information

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Revision Table

Report revision	Date	Comments
0	15 November 2018	Draft for client comment
A	10 December 2018	For submission
B	12 December 2018	Update to s3.2.1

Glossary

ANEF	Australian Noise Exposure Forecast as defined in AS/NZS 2021. A single number index for predicting the cumulative exposure to aircraft noise in communities near aerodromes during a specified time period (normally one year).
ANR	Aircraft Noise Reduction as defined in AS/NZS 2021. For design purposes, the arithmetic difference between the aircraft noise level at a site and the indoor design level.
A-weighting	A spectrum adaption that is applied to measured noise levels to represent human hearing. A-weighted levels are used as human hearing does not respond equally at all frequencies.
Characteristic	Associated with a noise source, means a tonal, impulsive, low frequency or modulating characteristic of the noise that is determined in accordance with the Guidelines for the use of the Environment Protection (Noise) Policy (Noise EPP) to be fundamental to the nature and impact of the noise.
Continuous noise level	A-weighted noise level of a continuous steady sound that, for the period over which the measurement is taken using fast time weighting, has the same mean square sound pressure as the noise level which varies over time when measured in relation to a noise source and noise-affected premises in accordance with the Noise EPP
Day	Between 7 am and 10 pm as defined in the Noise EPP
dB	Decibel—a unit of measurement used to express sound level. It is based on a logarithmic scale which means a sound that is 3 dB higher has twice as much energy. We typically perceive a 10 dB increase in sound as a doubling of that sound level.
dB(A)	Units of the A-weighted sound level.
Frequency (Hz)	The number of times a vibrating object oscillates (moves back and forth) in one second. Fast movements produce high frequency sound (high pitch/tone), but slow movements mean the frequency (pitch/tone) is low. 1 Hz is equal to 1 cycle per second.
Indicative noise level	Indicative noise level determined under clause 5 of the Noise EPP.
L ₉₀	Noise level exceeded for 90 % of the measurement time. The L ₉₀ level is commonly referred to as the background noise level.
L _{eq}	Equivalent Noise Level—Energy averaged noise level over the measurement time.
L _{max}	The maximum instantaneous noise level.
L _{Smax}	The maximum instantaneous noise level with a slow time weighting.
Night	Between 10.00 p.m. on one day and 7.00 a.m. on the following day as defined in the Noise EPP
Noise source	Premises or a place at which an activity is undertaken, or a machine or device is operated, resulting in the emission of noise
Quiet locality	A locality is a quiet locality if the Development Plan provisions that make land use rules for the locality principally promote land uses that all fall within either or both of the following land use categories: (a) Residential; (b) Rural Living;

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1 Introduction

This report outlines the relevant noise assessments conducted for the proposed Adelphi Apartments project, located at 19-20 Adelphi Terrace, Glenelg.

The purpose of this report is to address the following key acoustic components:

- Comment on potential noise emission from the development.
- Conduct an aircraft noise assessment in accordance with the relevant standards and guidelines.

This report has been prepared for submission to the City of Holdfast Bay for the relevant approvals process.

2 Development plan

2.1 Holdfast Bay Council Development Plan

The proposed development is located within the Holdfast Bay Council area and should conform to the Principles of Development Control (PDCs) outlined in the Holdfast Bay Council Development Plan. The relevant PDCs for the development are summarised in Table 1 below.

Table 1 Holdfast Bay Council PDCs (noise)

PDC Number	Principles of Development Control
Building near Airfields	
6	Development within areas affected by aircraft noise should be consistent with <i>Australian Standard AS2021—Acoustics—Aircraft Noise Intrusion—Building Siting and Construction</i> .
Residential Development (Noise)	
42	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.
43	External noise and artificial light intrusion into bedrooms should be minimised by separating or shielding these rooms from: <ul style="list-style-type: none"> • active communal recreation areas, parking areas and vehicle access ways • service equipment areas and fixed noise sources on the same or adjacent sites.
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.
45	Residential development on sites abutting established collector or higher order roads, or a road indicated within the following table, should include front fences and walls that will supplement the noise control provided by the building facade. <ul style="list-style-type: none"> • Adelphi Terrace, Glenelg North
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.

The proposal site is located within the Residential High Density Zone, Policy Area 15. There are no specific PDCs relating to referenced under this section of the Plan.

Building near Airfields PDC 6 is addressed in Section 4 of this assessment. PDC 42 for Residential development is addressed in Section 3.1.

PDCs 43 and 46 relate to acoustic separation within the building. This will be addressed at the detailed design stage, by design and construction in accordance with the Building Code of Australia.

PDC 45 is not considered to be relevant to multi-storey residential or mixed use development where the ground floor is not noise sensitive. In this case the ground floor is car parking and would not benefit from a front fence or wall. We note that balconies and balustrades will provide some noise mitigation in addition to that proposed for mitigation of aircraft noise (refer to Section 4).

2.2 SA Environment Protection (Noise) Policy

The proposed site is within a Residential High Density zone within the Holdfast Bay Council Development Plan. Neighbouring sites to the north and south are in the same zone, with an adjacent site to the east in the Residential Character zone. The principal land use promoted in both zones is residential.

In accordance with Part 5 of the Noise EPP, the relevant criteria for this development will be the relevant indicative noise factors for Residential land use less 5 dB(A). The application of Part 5 results in the following environmental noise criteria:

- 47 dB(A) during the day, 7 am to 10 pm
- 40 dB(A) at night, 10 pm to 7 am.

In addition, neighbouring receivers are situated in a 'quiet locality' in accordance with the Noise EPP. An additional criteria of 60 dB(A) L_{max} therefore applies to predicted noise levels.

Penalties can also be applied to a noise source for a variety of characteristics, such as impulsive, low frequency, modulating or tonal characters. For a characteristic penalty to be applied to a noise source it must be fundamental to the impact of the noise and dominate the overall noise impact. A 5 dB penalty has been applied to vehicle noise in this assessment to account for modulating character.

3 Noise emission assessment

3.1 Mechanical services noise emission

At this stage of the development, design and selection of mechanical services units has not been undertaken. Therefore, no numerical analysis of proposed plant items has been conducted. Noise emissions from the development as a result of mechanical plant will be designed to satisfy the relevant requirements through appropriate design measures.

During the detailed design phase, noise emissions from the external plant will be assessed and mitigation treatments adopted to ensure noise levels do not exceed the relevant noise emission criteria at the most affected residential receiver.

Appropriate design mitigation might include, but is not limited to:

- Selection of the quietest plant to achieve the mechanical requirements
- Use of in-line attenuators and other source treatments
- Installing noise barriers around plant enclosures breaking line of sight to nearby noise sensitive receivers.

3.2 Car park/vehicle movement noise

Resonate have assessed car park noise emissions based on traffic volumes provided in the GTA Consultants *Access & Parking Feasibility Assessment* letter dated 28 August 2018. Up to 40 vehicle movements in the day-time peak hour are anticipated. The morning peak hour is within the daytime period in accordance with the definitions of the Noise EPP. We understand that residential land use typically generates a significantly lower number of vehicle movements during the night time.

For the purposes of this assessment it has been assumed 11 vehicle movements may occur within a worst-case daytime 15-minute period for the Adelphi Terrace entrance and nine for the Todd Street entrance.

3.2.1 Noise mitigation

It is noted a 50% ventilated wall is proposed to the north and south. Additional separation will be required at the boundary of the proposal site. At the eastern side the wall should continue past the eastern building footprint to incorporate the visitor car parks on the eastern side of the site.

Noise mitigation will be constructed as shown in Figure 1 below.

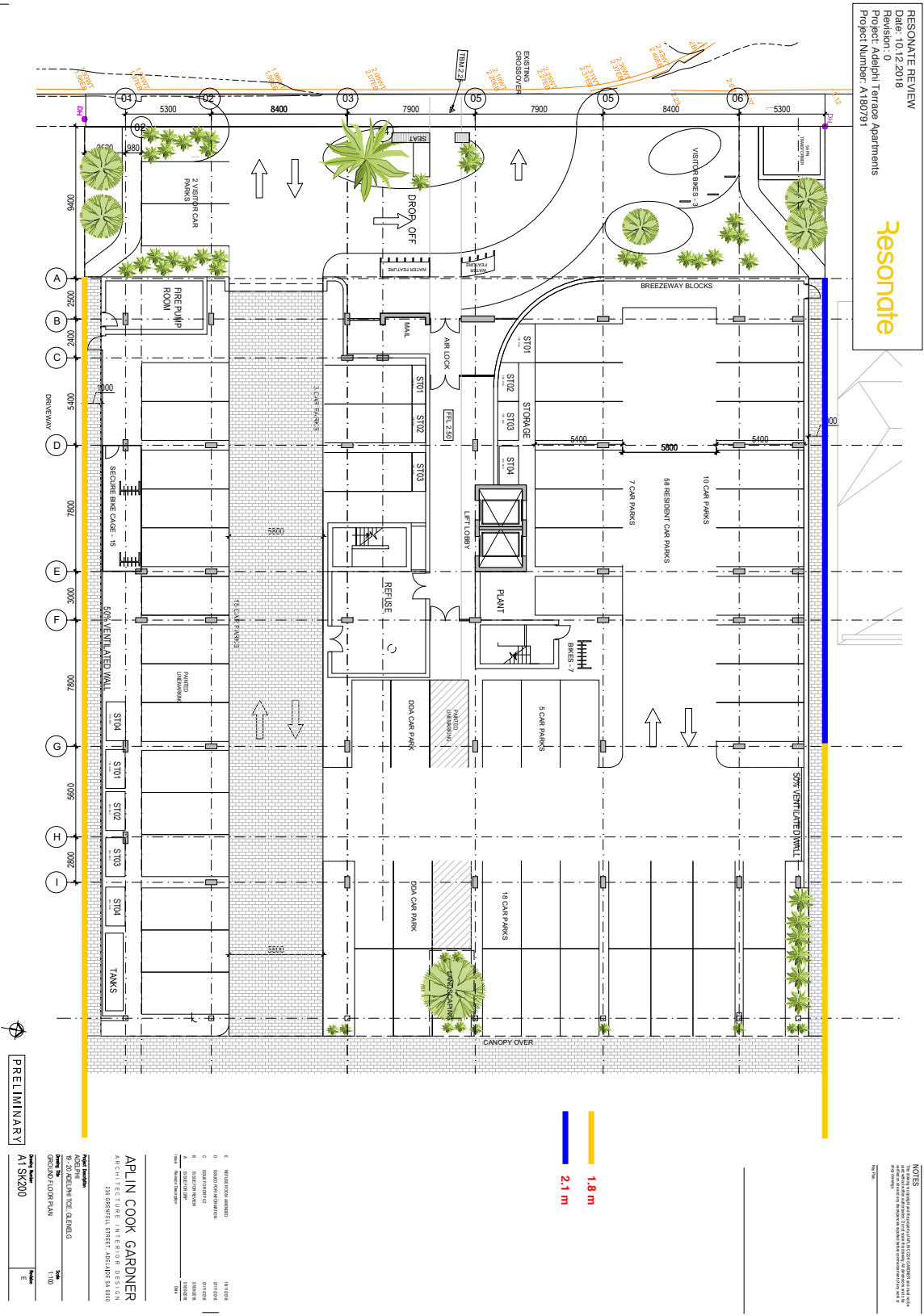


Figure 1 Recommended noise mitigation (ground floor)

Walls/fencing will be constructed to the height shown and with the following requirements:

- Minimum mass of 10 kg/m²
- No gaps between panels or other elements, including at the base

Suitable materials include double thickness Colorbond, 16 mm timber (with overlapping boards) or masonry.

3.2.2 Predicted noise levels

Based on the above vehicle volumes and mitigation measures, car park noise levels are expected to comply with the daytime and night-time noise criteria at all neighbouring residences (including a 5 dB penalty for modulation).

Noise levels from engine starts and door slams are also expected to comply with a criteria of L_{max} 60 dB(A) at all neighbouring dwellings.

On this basis, the car park associated with the proposed residential development will be able to operate within the requirements of the Development Plan and Noise EPP.

3.3 Rubbish collection

In order to minimise the potential noise impact from rubbish collection from the development, these activities should not occur outside the following time periods (as set out in the SA Noise EPP):

- 9 am and 7 pm on a Sunday or other public holiday
- 7 am and 7 pm on any another day.

If rubbish collection is required to occur outside these times, additional consideration of all reasonable and practicable measures must be made to minimise noise impact on the site and surrounding land uses.

4 Aircraft noise assessment

4.1 Noise criteria

4.1.1 Aircraft noise impact

Assessment of the impact of aircraft noise on building sites is undertaken under Australian Standard (AS) 2021–2015.¹ Under AS 2021, the acceptability of a development site is dependent on the ANEF (Australian Noise Exposure Forecast) zone that it is located in. The relevant zones for different building types are shown in Table 2.

Table 2 Extract from AS 2021 - Building site acceptability based on ANEF zones

Building type	ANEF zone of site		
	Acceptable	Conditionally acceptable	Unacceptable
House, home unit, flat, caravan park	< 20 ANEF	20 – 25 ANEF	>25 ANEF
Hotel, motel, hostel	< 25 ANEF	25 – 30 ANEF	>30 ANEF
School, university	< 20 ANEF	20 – 25 ANEF	>25 ANEF
Hospital, nursing home	< 20 ANEF	20 – 25 ANEF	>25 ANEF
Public building	< 20 ANEF	20 – 30 ANEF	>30 ANEF
Commercial building	< 25 ANEF	25 – 35 ANEF	>35 ANEF
Light industrial	< 30 ANEF	30 – 40 ANEF	>40 ANEF
Other industrial	Acceptable in all ANEF zones		

The proposal consists of a multi-storey residential tower sited within the 20—25 ANEF contour for the Adelaide Airport (ANEF 2034). The location of the proposal site is identified in Figure 2.

¹ Australian Standard 2021–2000 *Acoustics—Aircraft noise intrusion—Building siting and construction*.

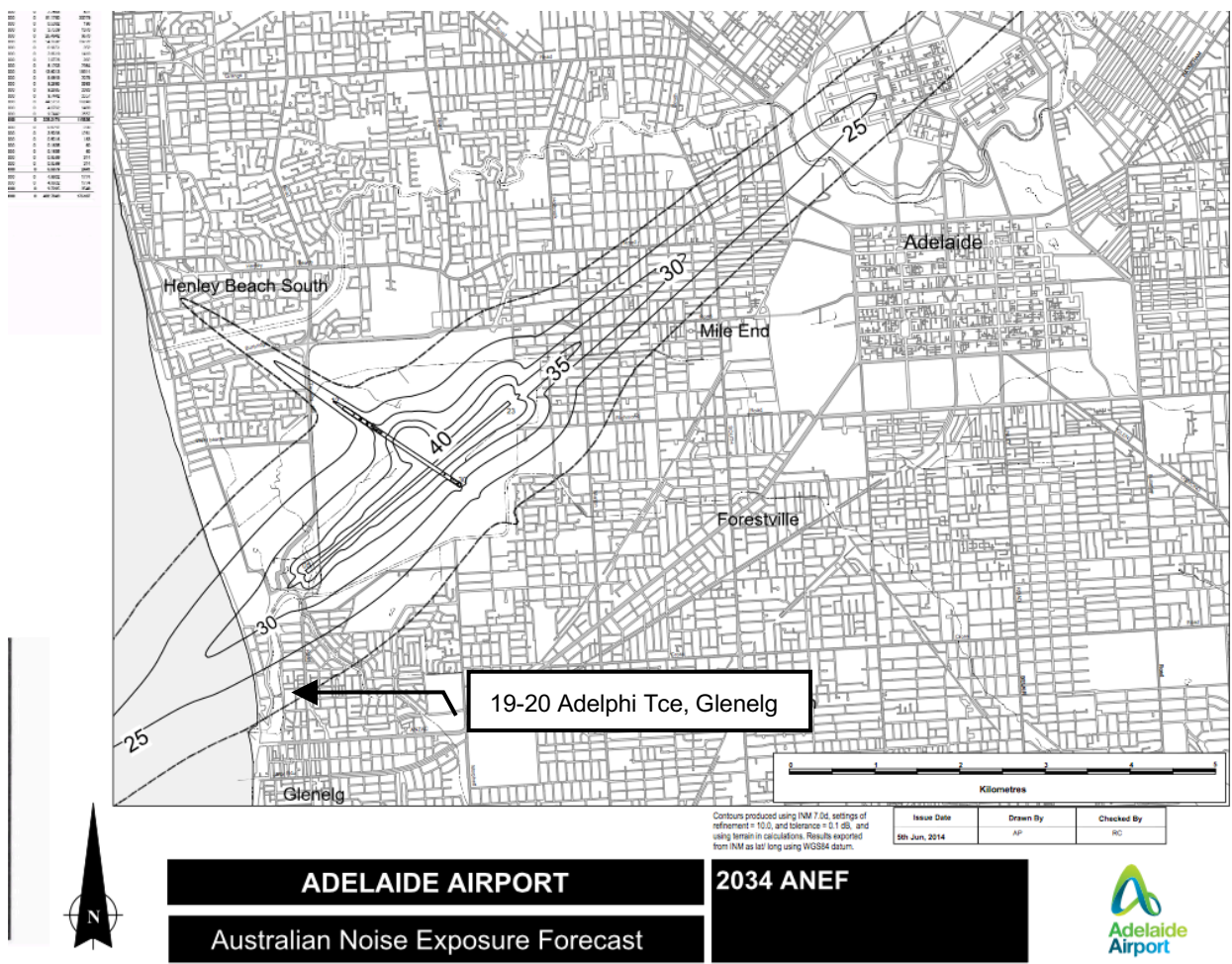


Figure 2 Adelaide Airport 2034 ANEF (extract from Adelaide Airport Master Plan 2014)

4.1.2 AS 2021—Internal noise levels

AS 2021 provides indoor design sound levels for the determination of the required aircraft noise reduction. Appropriate design internal noise criteria are outlined in Table 3.

Table 3 AS 2021 indoor design sound levels

Room types	Indoor design sound level, L_{Smax} dB(A)
Sleeping areas, dedicated lounges	50
Other habitable spaces	55
Bathrooms, toilets, laundries	60

4.2 Aircraft type and noise levels

The aircraft types and noise levels at the site have been determined based on proposed fleet mix for 2034 of Adelaide Airport Master Plan 2014 and in accordance with AS 2021, and they are presented in Table 4.

Table 4 Aircraft noise levels

Aircraft category	Aircraft type	Aircraft noise level, dB(A)		Percentage of movements ⁽¹⁾
		Departures	Arrivals	
A380	A380 – 800	71	58	0.3
Large Wide Bodied (LWB)	B777 – 300 ER A350 – 900	76	59	2
Medium Wide Bodied (MWB)	A330 – 300 A330 – 200	75	58	1.4
Medium Wide Bodied (MWB)	Boeing B787 – 900, Boeing B787 – 800	67	56	6.3
Large Narrow Bodied (LNB) and Other Categories	B737-800	74	58	90
	A320 and other aircraft types	69	54	

(1) The percentage of movements is based on information provided in the Adelaide Airport Master Plan 2014, proposed fleet mix for 2034.

4.3 Facade requirements

The required Aircraft Noise Reduction (ANR) levels for different living spaces are outlined in Table 5.

Table 5 Required ANR to comply during 100% of flight activity

Room types	ANR, dB(A)
Sleeping areas, dedicated lounges	26
Other habitable spaces	21
Bathrooms, toilets, laundries	16

Table 6 Indicative facade constructions and acoustic rating to achieve compliance

Façade element	R _w	Appropriate form of construction
External walls		
All	38	<ul style="list-style-type: none"> Any typical lightweight external wall construction is anticipated to meet the sound insulation requirements.
Roof and ceiling (Level 6 only)		
Bedrooms	36	<ul style="list-style-type: none"> Profiled metal roof sheeting Timber joist with minimum 200 mm cavity Minimum 50 mm, 11 kg/m³ insulation Minimum 10 mm standard plasterboard
Living/dining	32	
External windows		
Bedrooms	31	<ul style="list-style-type: none"> Minimum 4 mm float glass. Windows awning style with rubber compression seals around the perimeter such as Schlegel Q-Lon T-Slot seals, or sliding with seals as indicated for the sliding doors below
Living/dining	27	
External doors		
Glazed sliding door	24	<ul style="list-style-type: none"> Sliding doors are to have: <ul style="list-style-type: none"> Schlegel Q-Lon T-Slot seals on the lock and mullion Schlegel Fin-Seal on the rails.

5 Conclusion

A noise emission and aircraft noise intrusion assessment has been conducted for the proposed Adelphi Apartments, located at 19-20 Adelphi Terrace, Glenelg.

By adopting the recommendations set out in the body of the report, compliance with the intent of the Holdfast Bay Council Development Plan and AS 2021—Acoustics—Aircraft Noise Intrusion—Building Siting and Construction will be achieved to the extent that is reasonable and practicable.

ADELPHI APARTMENTS – ESD INITIATIVES

High Performance Thermal Envelope

The building's thermal envelope contributes a significant portion to the air-conditioning energy required to maintain a comfortable environment for occupants. Therefore, this building is targeting a higher performing thermal envelope to assist improve the NatHERS rating above 5 star minimum per apartment and 6 star average which is required in accordance with the 2016 National Construction Code Section J minimum requirements. The following elements of the thermal envelope will be specifically targeted:

- High performance building envelope; wall, floor and roof insulation R-values to meet best practice guidelines.
- High performance glazing selected with consideration of building-specific features, acoustics and climatic conditions.
- Light coloured façade materials with low solar absorptance proposed to reduce summer cooling and heat absorption and mitigate associated urban heat island effects.
- External shading to reduce the summer cooling load.

Sustainable Building Materials

Sustainable building materials to be maximised throughout this project. The following criteria will be used:

- Low Volatile Organic Compounds (VOC).
- Low formaldehyde emissions.

Energy Efficient Air Conditioning

Energy efficient air conditioning units exceeding Minimum Energy Performance Standards (MEPS).

Natural Ventilation

Each apartment and townhouse has been provided with a cross flow pathway that allows natural ventilation. This includes via the living space and bedrooms. Effective natural ventilation as described above results in two key benefits:

- Improved indoor air quality through provision of higher quantities of outside air.
- Reduced demand for mechanical air conditioning in summer and mid-season.

Natural Daylight

Daylight penetration is maximised to living and bedroom areas through floor-to-ceiling glass. All living and bedroom areas are externally located with access to natural daylight.

LED Lighting

LED lighting will be maximised throughout the building.

Water Efficient Fixtures

All water fixtures and fittings shall be proposed as low-flow where possible. The following WELS ratings are proposed:

- Taps with a WELS rating of not less than 5 Stars (6.0 L/min)
- Shower heads with a WELS rating of not less than 3 Stars (9.0 L/min)
- Water closets with a WELS rating of not less than 4 Stars (3.5 L/flush, dual flush)

Rain Water Harvesting

Rainwater harvesting is proposed to serve landscape irrigation, offsetting potable water usage. Rainwater harvesting pump and tank system is proposed to be located on the ground floor. Each Townhouse also proposed to harvest rainwater.

Waste Management

The refuse and recycling room located at ground floor is proposed with access from Tod Street. This will enable a waste removal truck to pull over and empty the bin contents for transportation off-site. The refuse room also comprises the termination point of a bin chute from the upper levels. The dual waste and recycling chute can be accessed from the common area at each level. Separation of waste streams has been provided at ground level with a diverter. A space for E waste/hard refuse is allowed for on the ground floor.

Sustainable Transport

Bicycle are provided to encourage building occupants to use a sustainable form of transport. Specific bicycle facilities include:

- 15x Secure bicycle storage racks for residents in a secure cage on the ground floor.
- 7 x Secure bicycle storage racks for residents on the ground floor.
- 3 x visitor bicycle storage racks on Adelphi Tce.
- Townhouses have bicycle storage capability within the garage.

On-Site Renewable Energy Generation and Storage

Roof mounted solar photovoltaic (PV) system will be considered to reduce electricity costs for the building owner and potentially the tenants and residents. This initiative is proposed to generate renewable energy on-site, offsetting electrical energy imported from the grid which has a higher Greenhouse Gas emissions factor.

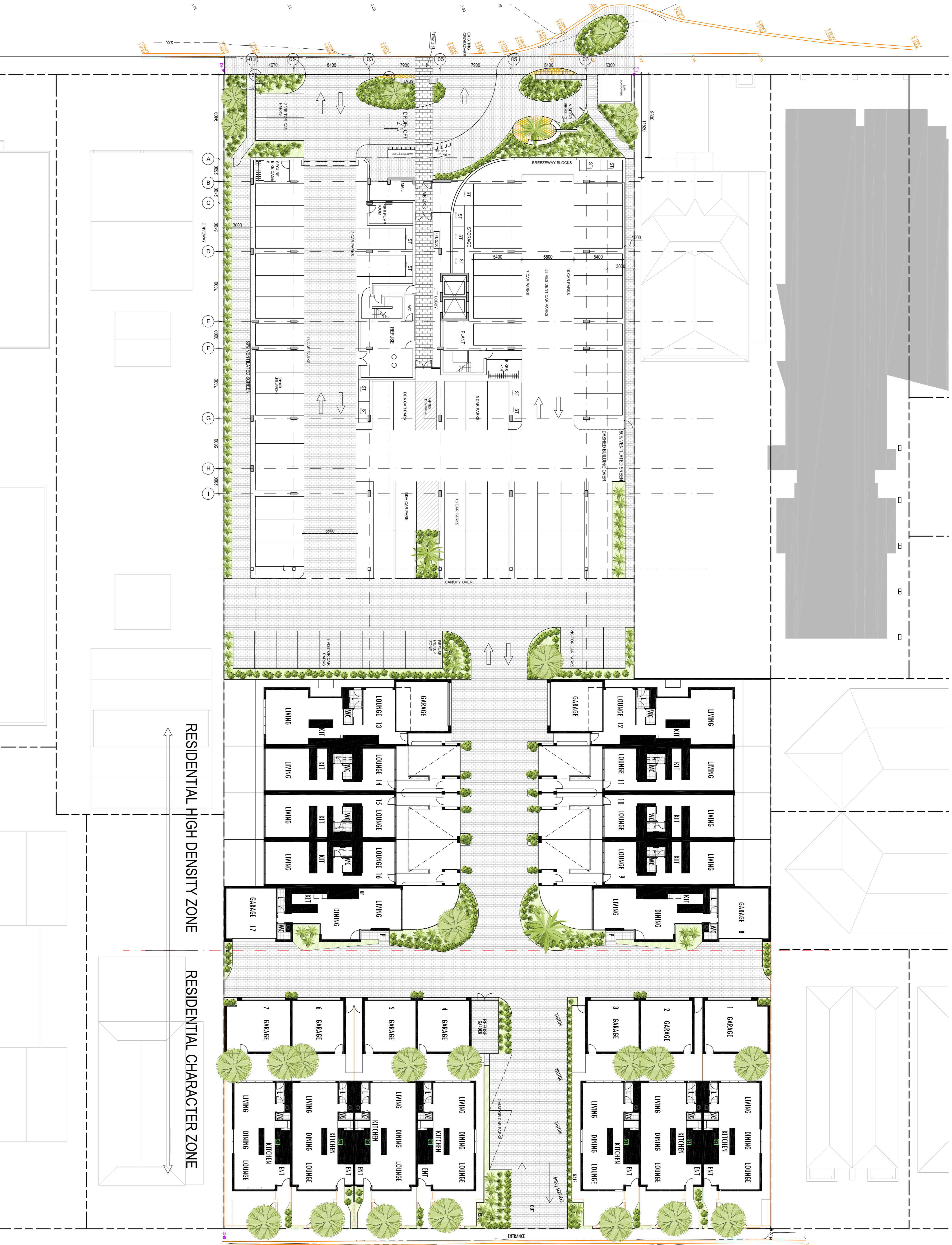
Battery energy storage system will also be considered for shifting solar energy generation yield to avoid export.

The usable roof area will have to be coordinated with any roof mounted equipment. Solar PV will also be considered for usable roof area of townhouses.

Solar energy intended to target base building facilitates (eg. Foyer and common area lighting) and will be further considered for apartment/townhouse operational use.

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Key Plan



Revision Description	Date
G GARAGE 1 & 7 GATE DELETED	16/01/2019
F ISSUED FOR PLANNING APPROVAL	12/10/2018
E AMENDED - REFUSE AND PARKING	19/10/2018
D ISSUE FOR DRP 02	01/11/2018
C ISSUE FOR R4-P	10/10/2018
B ISSUE FOR REVIEW	07/09/2018
A ISSUE FOR DRP	01/09/2018

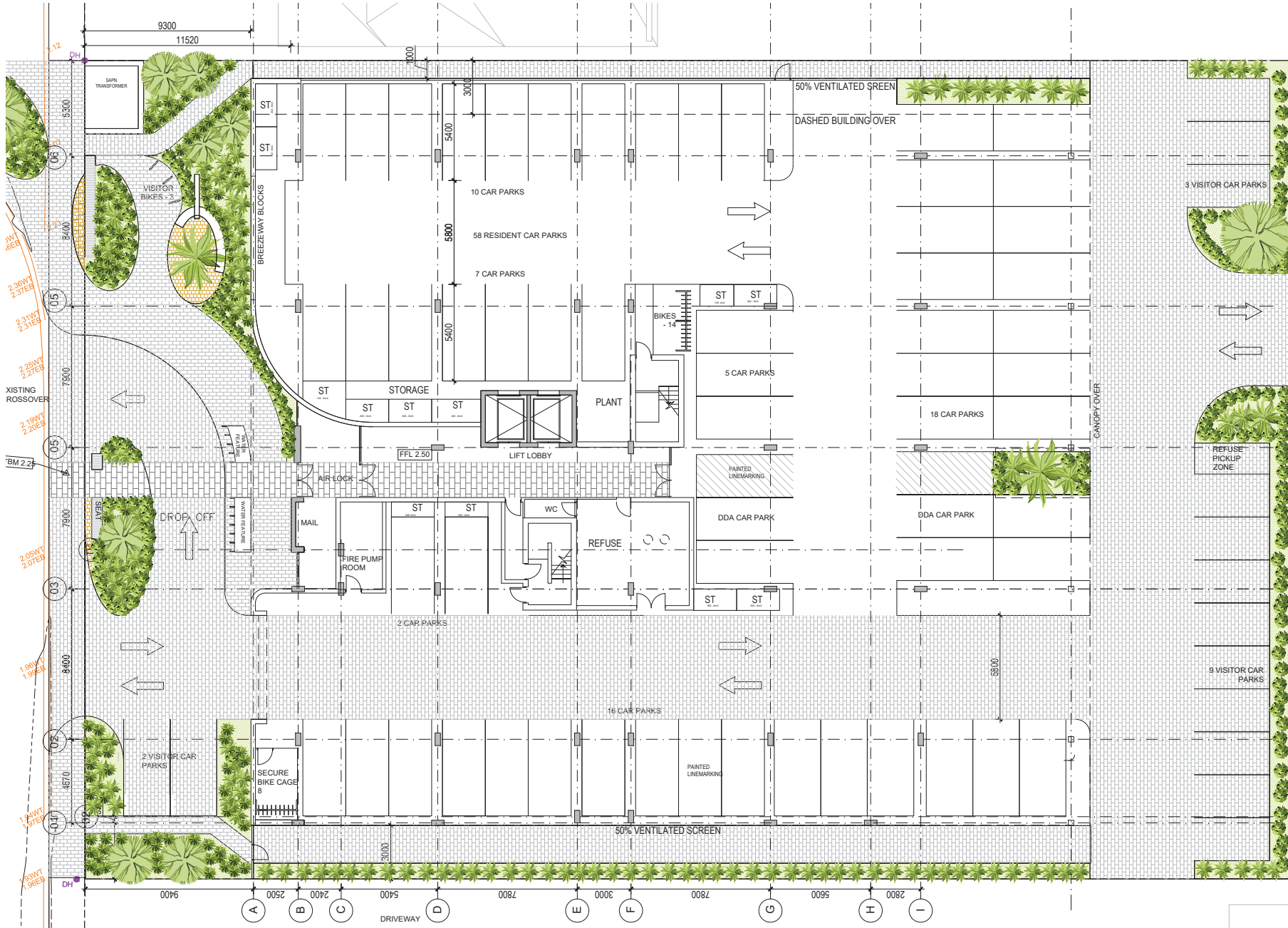
APLIN COOK GARDNER
 ARCHITECTURE INTERIOR DESIGN
 236 GRENFELL STREET, ADELAIDE SA 5000

Project Description
 ADELPHI
 19-20 ADELPHI TCE, GLENELG
 Drawing Title
 SITE PLAN

Scale
 1:200
 Drawing Number
 A1 SK100
 Revision
 G

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Issue	Revision Description	Date
F	ISSUED FOR PLANNING APPROVAL	13/12/2018
E	REFUSE ROOM AMENDED	19/11/2018
D	ISSUE FOR INFORMATION	01/11/2018
C	ISSUE FOR DRP 02	01/11/2018
B	ISSUE FOR REVIEW	07/08/2018
A	ISSUE FOR DRP	01/08/2018

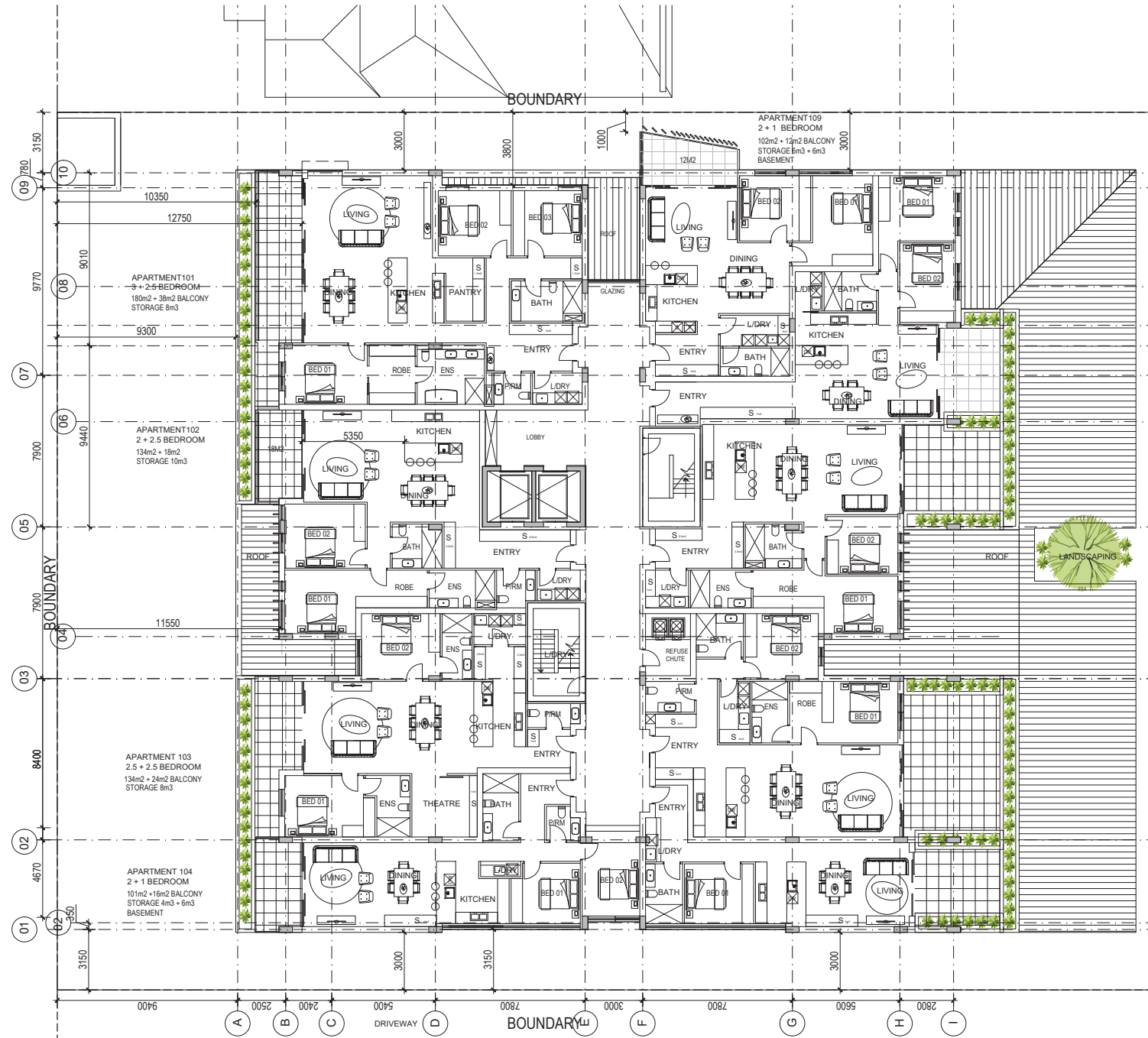
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 236 GRENFELL STREET, ADELAIDE SA 5000

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Scale	1:100
Drawing Number	A1 SK200
Revision	F

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Issue	Revision Description	Date
G	ISSUED FOR PLANNING APPROVAL	12/12/2018
F	PLANS AMENDED - ISSUED FOR REVIEW	20/11/2018
E	ISSUE FOR DRP 02	01/11/2018
D	PLP PRESENTATION	16/10/2018
C	ISSUE FOR PLP	10/10/2018
B	ISSUE FOR REVIEW	07/09/2018
A	ISSUE FOR DRP	01/09/2018

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 ARCHITECTURE INTERIOR DESIGN
 236 GRENFELL STREET, ADELAIDE SA 5000

Project Description
 ADELPHI
 19 - 20 ADELPHI TCE, GLENELG

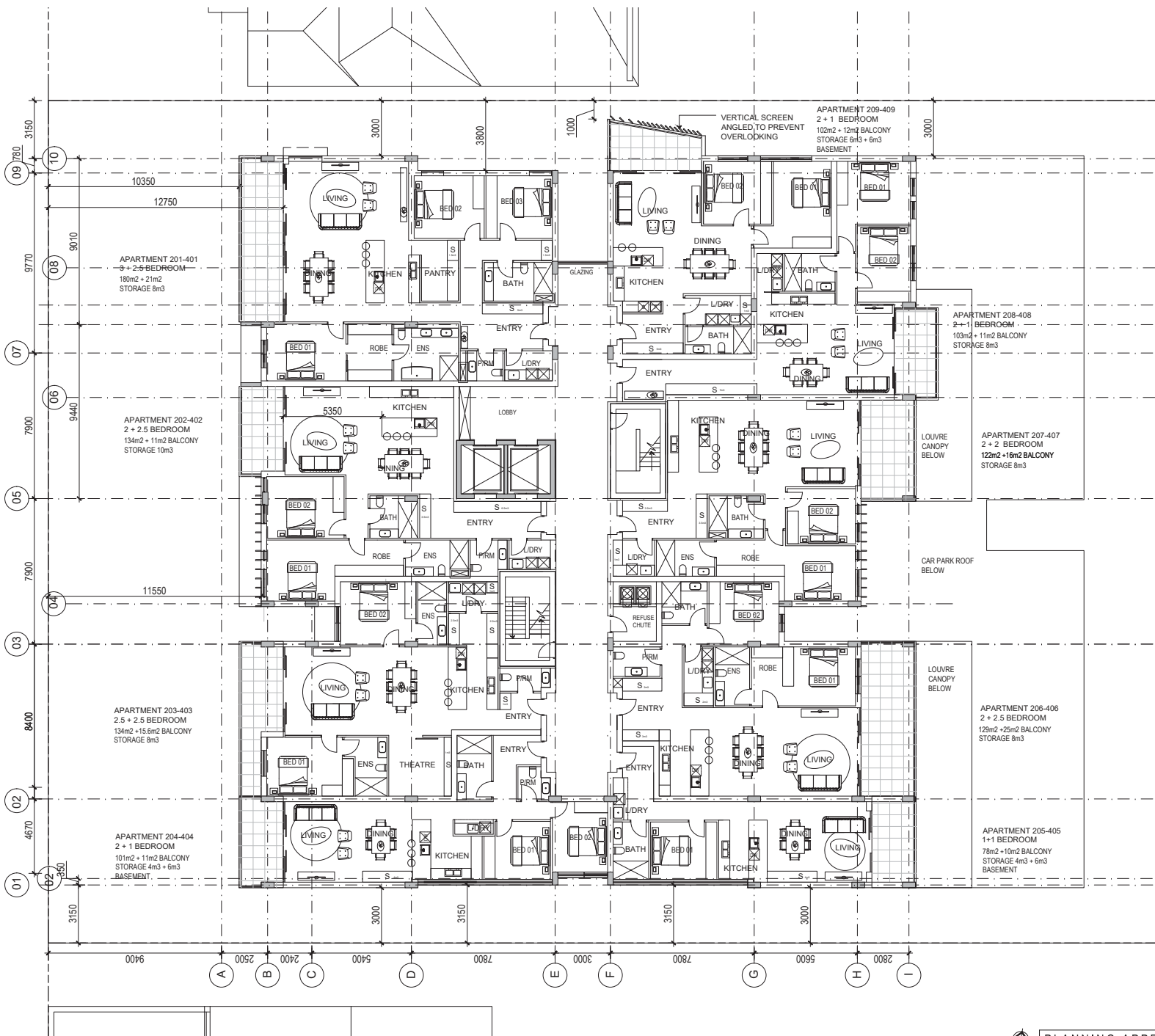
Drawing Title
 FIRST FLOOR PLAN

Drawing Number
 A1 SK201

Revision
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F	PLANS AMENDED - ISSUED FOR REVIEW	20/11/2018
E	ISSUE FOR DRP 02	01/11/2018
D	PLP PRESENTATION	16/10/2018
C	ISSUE FOR PLP	10/10/2018
B	ISSUE FOR REVIEW	07/09/2018
A	ISSUE FOR DRP	01/09/2018
Issue	Revision Description	Date

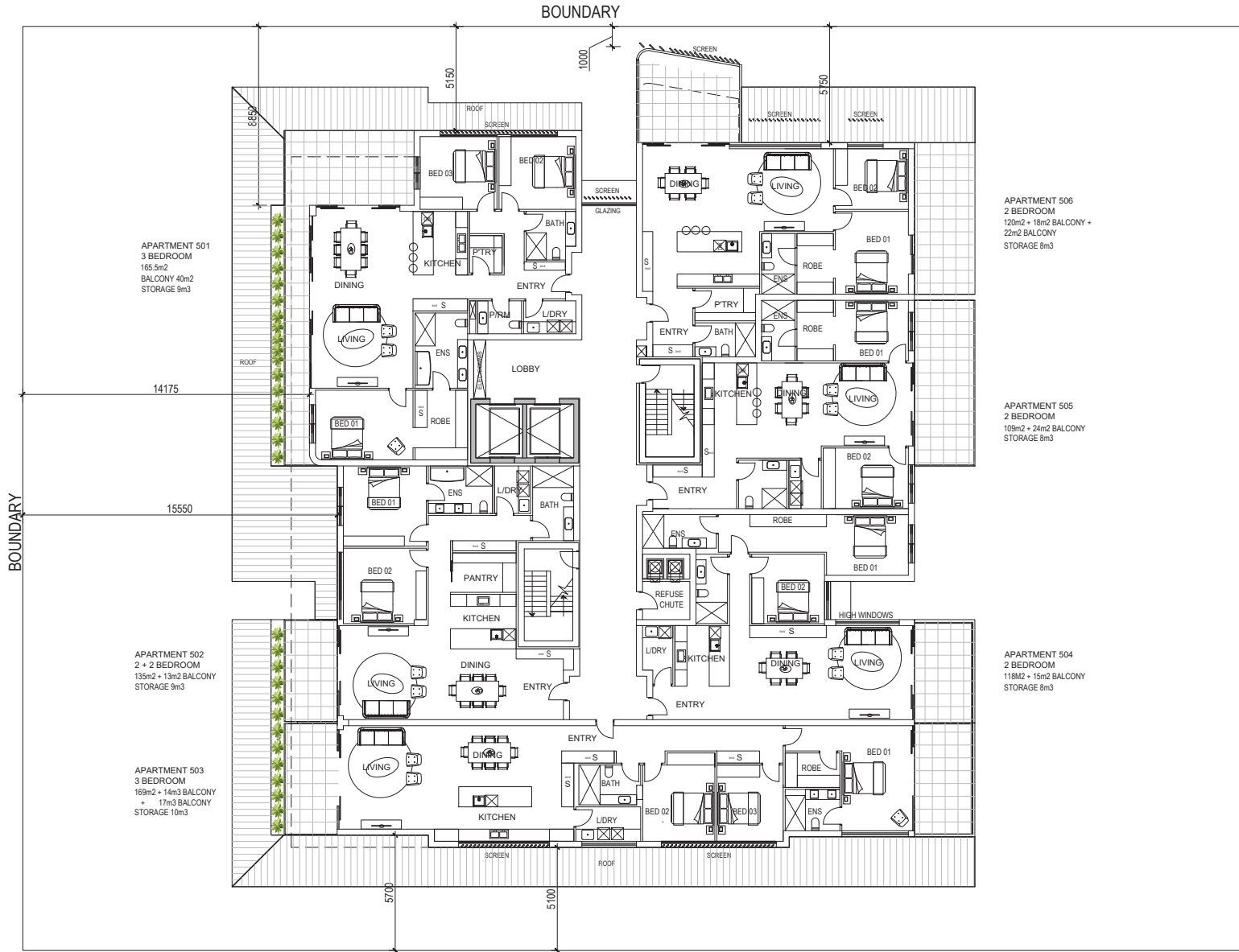
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 236 GRENFELL STREET, ADELAIDE SA 5000

Project Description	
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Drawing Title	Scale
LEVEL 2 - 4 FLOOR PLAN	1:100
Drawing Number	Revision
A1 SK202	G

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Key Plan.



APARTMENT 501
 3 BEDROOM
 165.5m²
 BALCONY 40m²
 STORAGE 9m³

14175

15550

APARTMENT 502
 2 + 2 BEDROOM
 135m² + 13m² BALCONY
 STORAGE 9m³

APARTMENT 503
 3 BEDROOM
 169m² + 14m³ BALCONY
 + 17m³ BALCONY
 STORAGE 11m³

APARTMENT 506
 2 BEDROOM
 120m² + 16m² BALCONY +
 22m² BALCONY
 STORAGE 8m³

APARTMENT 505
 2 BEDROOM
 159m² + 24m² BALCONY
 STORAGE 8m³

APARTMENT 504
 2 BEDROOM
 118m² + 15m² BALCONY
 STORAGE 8m³

Issue	Revision Description	Date
G	ISSUE FOR PLANNING APPROVAL	12/12/2018
F	PLANS AMENDED - ISSUED FOR INFORMATION	20/11/2018
E	ISSUE FOR DRP 02	01/11/2018
D	PLP PRESENTATION	16/10/2018
C	ISSUE FOR PLP	10/10/2018
B	ISSUE FOR REVIEW	07/09/2018
A	ISSUE FOR DRP	01/09/2018

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Project Description
 19 - 20 ADELPHI TCE, GLENELG

Drawing Title
 LEVEL 5 FLOOR PLAN

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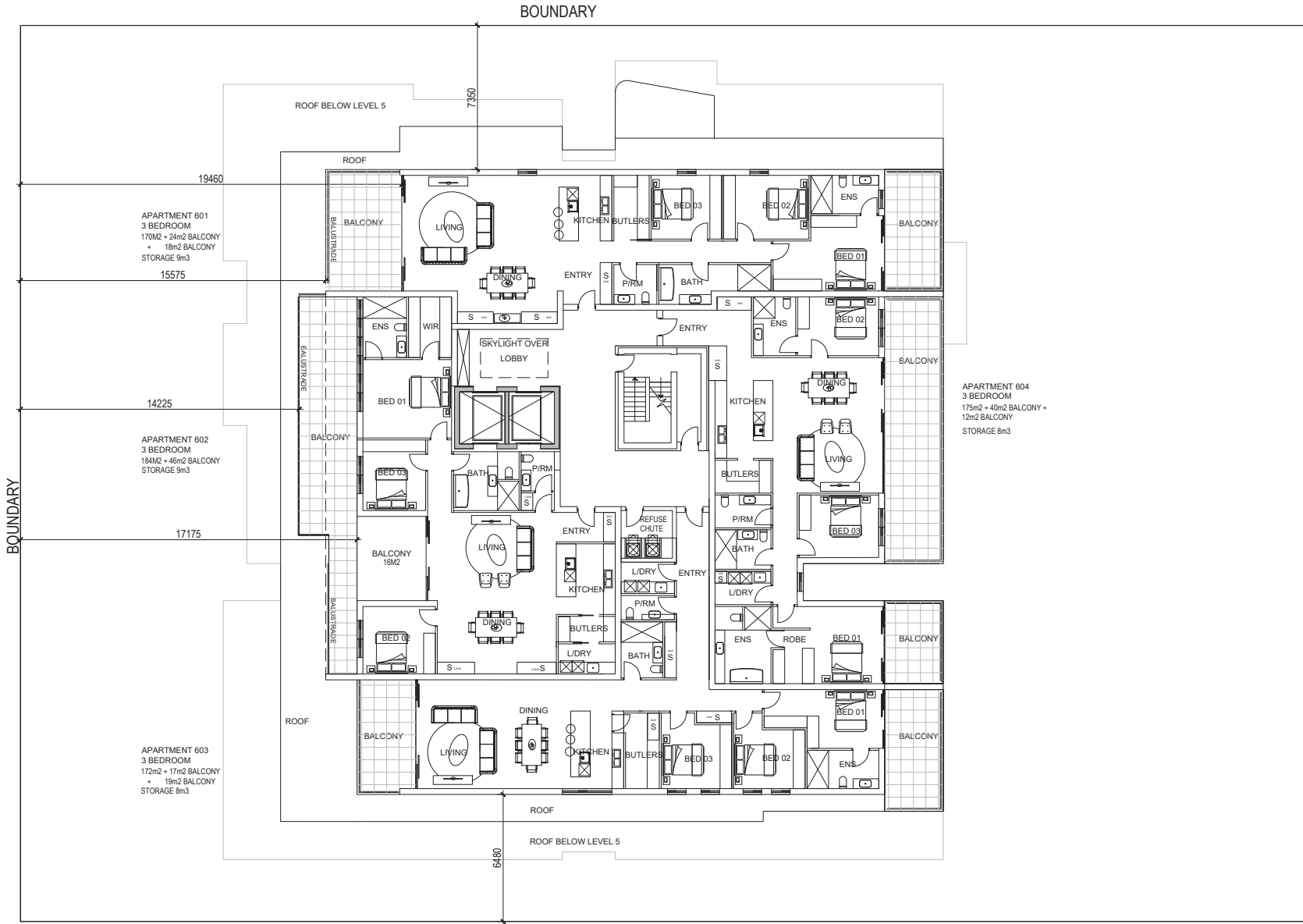
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Revision
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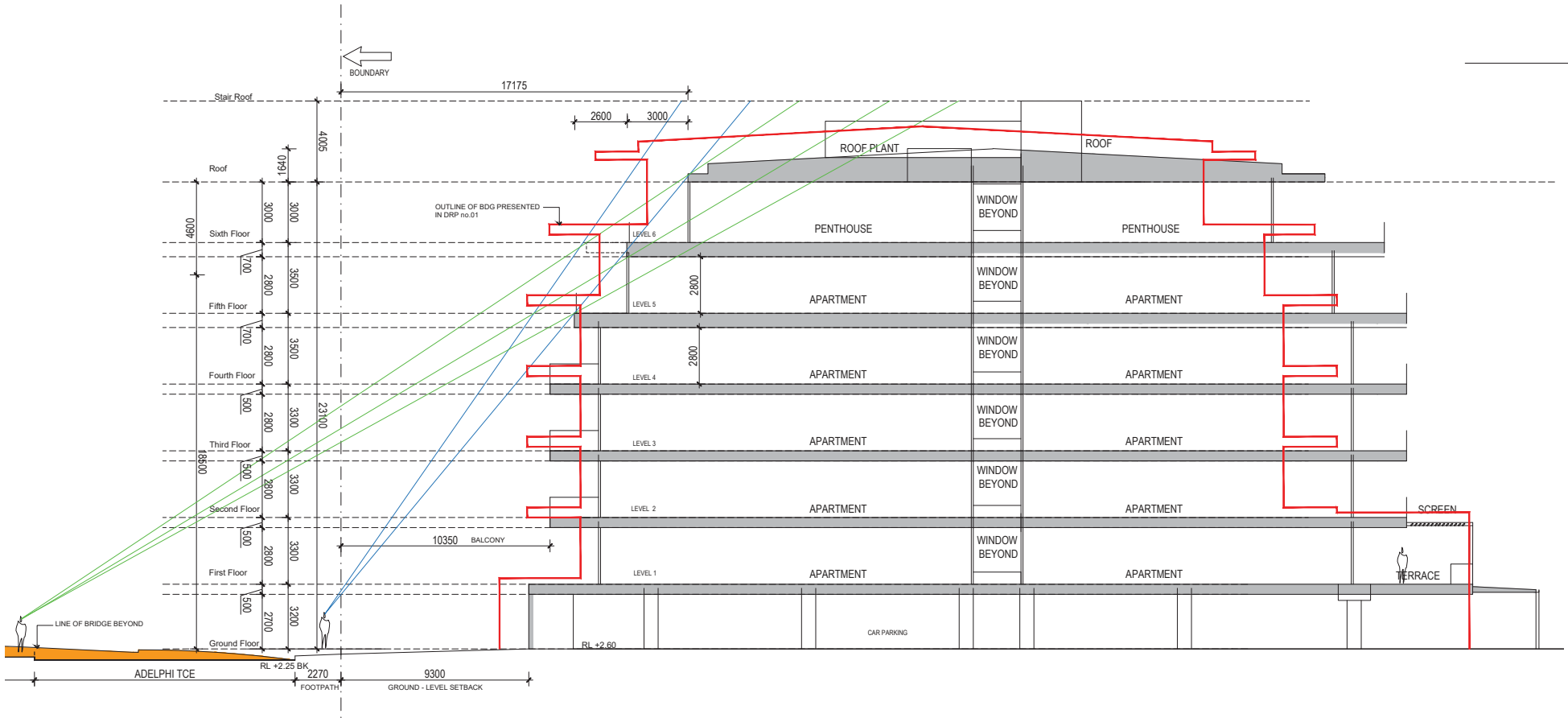
Issue	Revision Description	Date
F	ISSUED FOR PLANNING APPROVAL	13/12/2018
E	PLANS AMENDED - ISSUED FOR REVIEW	20/11/2018
D	ISSUE FOR DRP 02	01/11/2018
C	PLP PRESENTATION	18/10/2018
B	ISSUE FOR REVIEW	07/09/2018
A	ISSUE FOR DRP	01/09/2018

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Project Description ADELPHI 19 - 20 ADELPHI TCE, GLENELG	Scale 1:100
Drawing Title LEVEL 6 FLOOR PLAN	Revision F
Drawing Number A1 SK204	



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Issue	Revision Description	Date
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C	ISSUE FOR PLP	10/10/2018
B	ISSUE FOR REVIEW	07/09/2018
A	ISSUE FOR DRP	01/09/2018

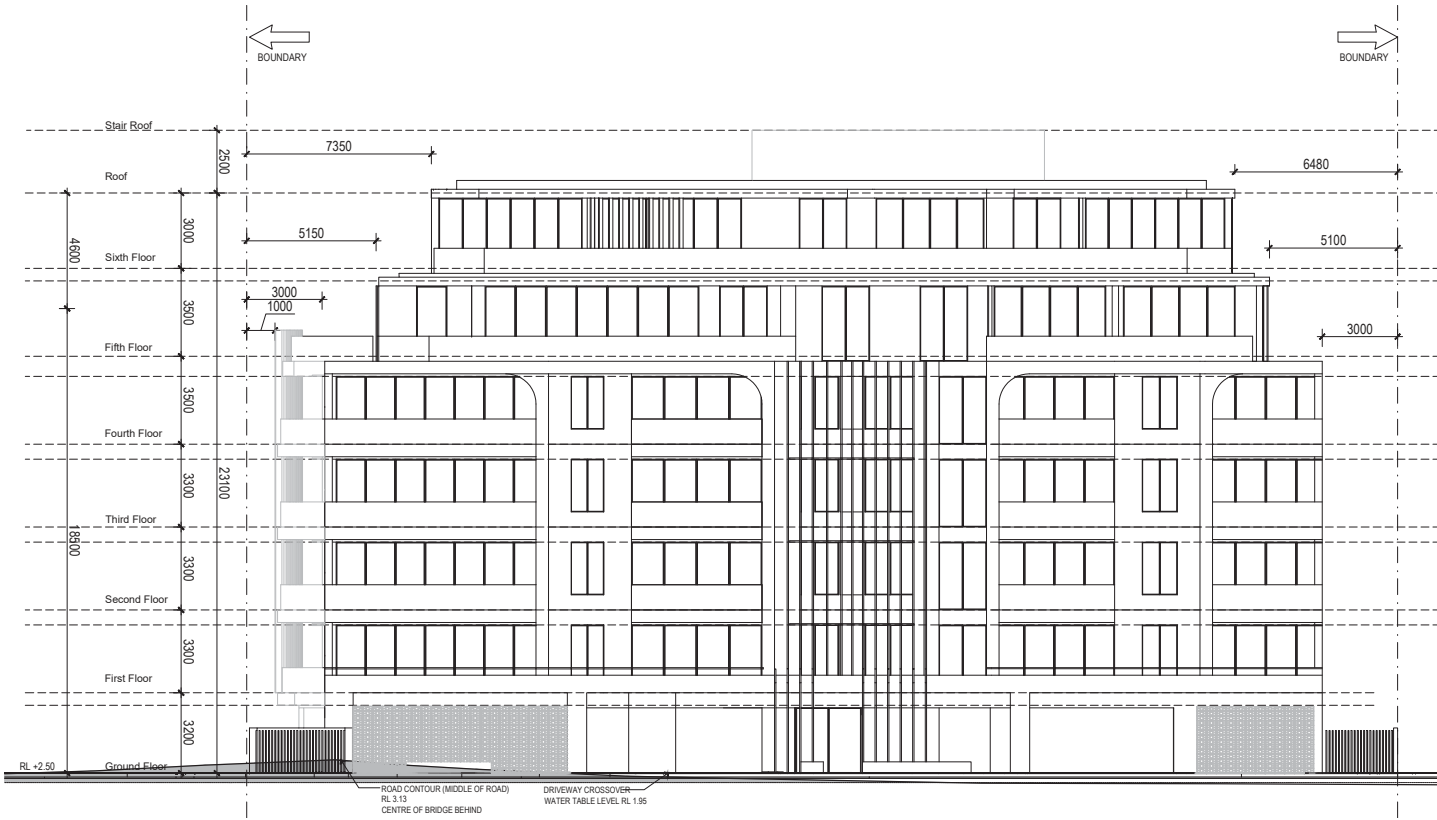
APLIN COOK GARDNER
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 236 GRENELL STREET, ADELAIDE SA 5000

Project Description	
ADELPHI	
19 - 20 ADELPHI TCE, GLENELG	
Drawing Title	Scale
SECTION	1:100
Drawing Number	Revision
A1 SK210	D

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WESTERN ELEVATION

Issue	Revision Description	Date
D	ISSUE FOR PLANNING APPROVAL	12/11/2018
C	ISSUE FOR PLP	10/10/2018
B	ISSUE FOR REVIEW	07/08/2018
A	ISSUE FOR DRP	01/08/2018

APLIN COOK GARDNER
 ARCHITECTURE INTERIOR DESIGN
 236 GRENFELL STREET, ADELAIDE SA 5000

Project Description	
ADELPHI	
19 - 20 ADELPHI TCE, GLENELG	
Drawing Title	Scale
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Drawing Number	Revision
A1 SK211	D

 **PLANNING APPROVAL**

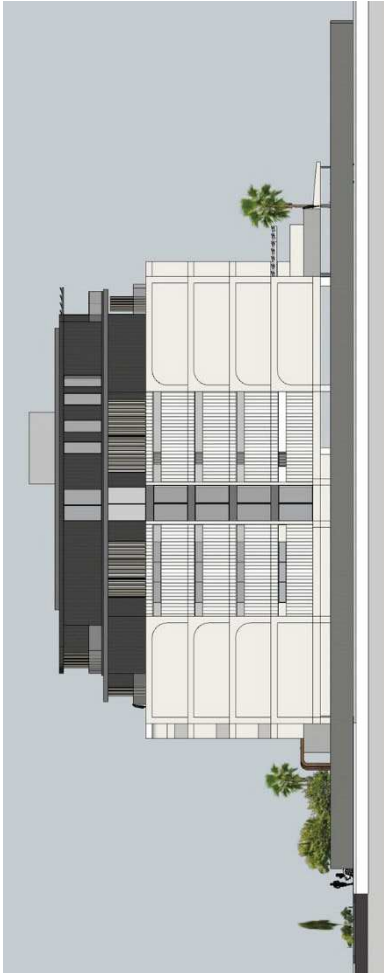
NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE CITY OF ADELPHI ZONING ORDINANCES AND ANY OTHER APPLICABLE ORDINANCES. THE CLIENT SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF ADELPHI AND ANY OTHER APPLICABLE AGENCIES. THE ARCHITECT SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF ADELPHI AND ANY OTHER APPLICABLE AGENCIES. THE ARCHITECT SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF ADELPHI AND ANY OTHER APPLICABLE AGENCIES.

REV: 01/2024



WESTERN ELEVATION



SOUTHERN ELEVATION



EASTERN ELEVATION



NOOK (NORTH) ELEVATION

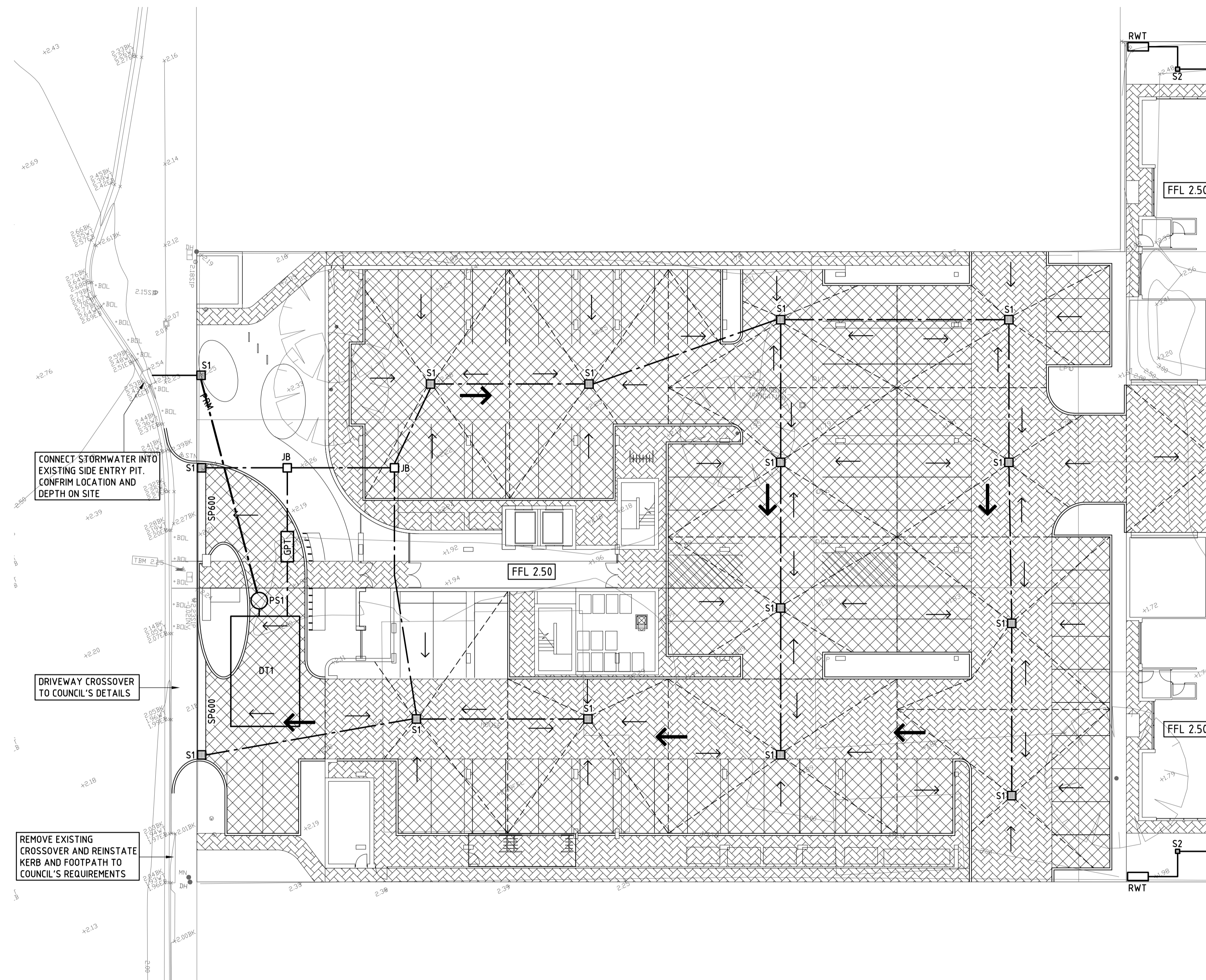
DATE	DESCRIPTION
12/15/23	ISSUE FOR PLANNING APPROVAL
12/15/23	ISSUE FOR PERMITS
12/15/23	ISSUE FOR REVIEW
12/15/23	ISSUE FOR PERMITS

APLIN COOK GARDNER
 ARCHITECTURE INTERIOR DESIGN
 218 GREENWELL STREET, ADELPHI, IA 50003

Project Location
 ADELPHI
 19 - 20 ADELPHI GLEN
 DRAWING TITLE
 ELEVATIONS

Scale
 1:200
 Revision
 0

PLANNING APPROVAL



LEGEND

- STORMWATER PIPE TO FUTURE DETAILS
- STORMWATER SUMP TO FUTURE DETAILS
- JUNCTION BOX TO FUTURE DETAILS
- STORMWATER SUMP TO FUTURE DETAILS
- SOLID POLLUTANT FILTER / OIL AND GREASE ARRESTOR TO FUTURE DETAILS
- 1.0 KL RAINWATER TANK TO MANUF'S DETAILS PLUMBED BACK INTO BUILDING AS PER AS 3500
- 38.0 KL DETENTION TANK STRICTLY IN ACCORDANCE WITH MANUF'S DETAILS PROVIDE INSPECTION OPENINGS, BREATHER VALVES, ETC. STRICTLY IN ACCORDANCE WITH MANUF'S DETAILS
- 66.0 KL DETENTION TANK STRICTLY IN ACCORDANCE WITH MANUF'S DETAILS PROVIDE INSPECTION OPENINGS, BREATHER VALVES, ETC. STRICTLY IN ACCORDANCE WITH MANUF'S DETAILS
- PRE-PACKAGED PUMP STATION TO PUMP MANUFACTURERS DETAILS PUMP RATE - 29.0 L/sec
- PRE-PACKAGED PUMP STATION TO PUMP MANUFACTURERS DETAILS PUMP 20.0 L/sec
- PUMP RISING MAIN TO PUMP MANUFACTURERS DETAILS
- GRADE LINE
- DIRECTION OF SURFACE FALL
- DIRECTION OF OVERLAND FLOW PATH DURING MAJOR STORM EVENT
- BITUMEN PAVING TO FUTURE DETAILS
- PAVING TO FUTURE DETAILS

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.

NOTE:

DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER CONSULTANTS DRAWINGS AS A PACKAGE. 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:

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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 SUPERINTENDENT & 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.

WHERE PROPRIETARY ITEMS ARE SPECIFIED, ALTERNATE EQUIVALENT PRODUCTS MAY BE ADOPTED WITH THE PRIOR WRITTEN APPROVAL OF THIS OFFICE.

Date	Revision	Issue
21.11.2018	ISSUED FOR PLANNING APPROVAL	B
15.11.2018	PRELIMINARY ISSUE	A



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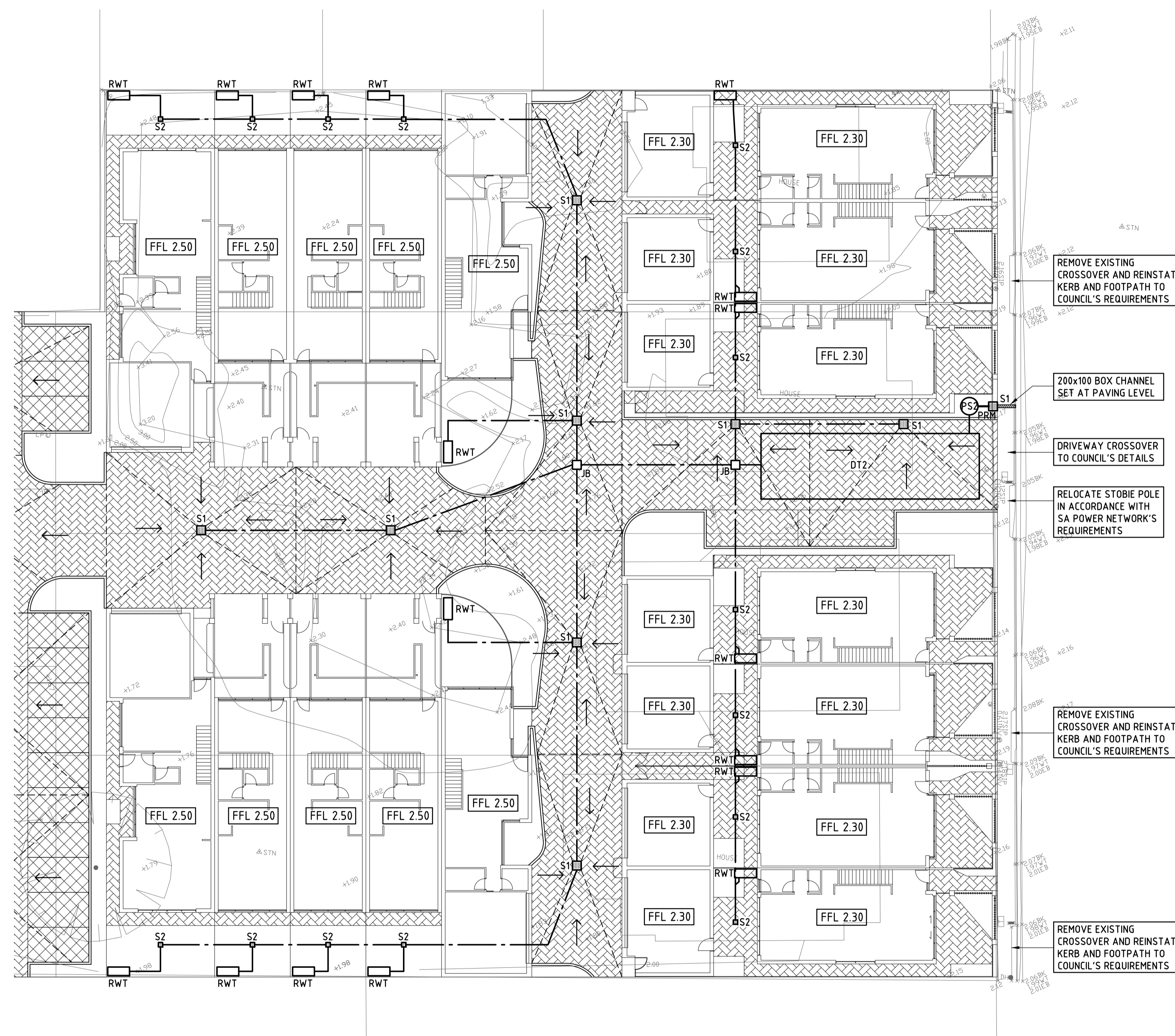
Designed	MP	Drawn	MP
Approved		Date	NOV '18
CIVIL		Sheet	1 of 2

Project
**PROPOSED DEVELOPMENT
19-20 ADELPHI TERRACE
GLENELG**

Client	SCOTT SALISBURY HOMES	N	
Drawing Title	STORMWATER MANAGEMENT PLAN	Scale	1:200
Drawing Number	20611-C01	Issue	B

0 5000 10000 15000
SCALE 1:200 @A1

FOR APPROVAL



LEGEND

- STORMWATER PIPE TO FUTURE DETAILS
- S1 STORMWATER SUMP TO FUTURE DETAILS
- JB JUNCTION BOX TO FUTURE DETAILS
- S2 STORMWATER SUMP TO FUTURE DETAILS
- GPT SOLID POLLUTANT FILTER / OIL AND GREASE ARRESTOR TO FUTURE DETAILS
- RWT 1.0 kL RAINWATER TANK TO MANUF'S DETAILS PLUMBED BACK INTO BUILDING AS PER AS 3500
- DT1 38.0 kL DETENTION TANK STRICTLY IN ACCORDANCE WITH MANUF'S DETAILS PROVIDE INSPECTION OPENINGS, BREATHER VALVES, ETC. STRICTLY IN ACCORDANCE WITH MANUF'S DETAILS
- DT2 66.0 kL DETENTION TANK STRICTLY IN ACCORDANCE WITH MANUF'S DETAILS PROVIDE INSPECTION OPENINGS, BREATHER VALVES, ETC. STRICTLY IN ACCORDANCE WITH MANUF'S DETAILS
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Project
**PROPOSED DEVELOPMENT
19-20 ADELPHI TERRACE
GLENELG**

Client	SCOTT SALISBURY HOMES	N	
Drawing Title	STORMWATER MANAGEMENT PLAN	Scale	1:200
Drawing Number	20611-C02	Issue	B

FOR APPROVAL



STORMWATER MANAGEMENT REPORT

Adelphi Apartments, Glenelg North

Prepared by:

PT Design ABN 35 008 116 916
141-149 Ifould Street, ADELAIDE SA 5000
Tel: (08) 8412 4300

Project No: 20611
Revision: -00-
Date of Issue: 15/11/2018

INTRODUCTION

A new residential development consisting of an apartment complex and a series of townhouses is proposed to be constructed over a number of existing sites at 19-20 Adelphi Terrace and 9-15 Tod Street Glenelg. The site is located in a residential area with buildings of a similar nature in the vicinity. This report considers the stormwater management including detention in accordance with council's requirements.

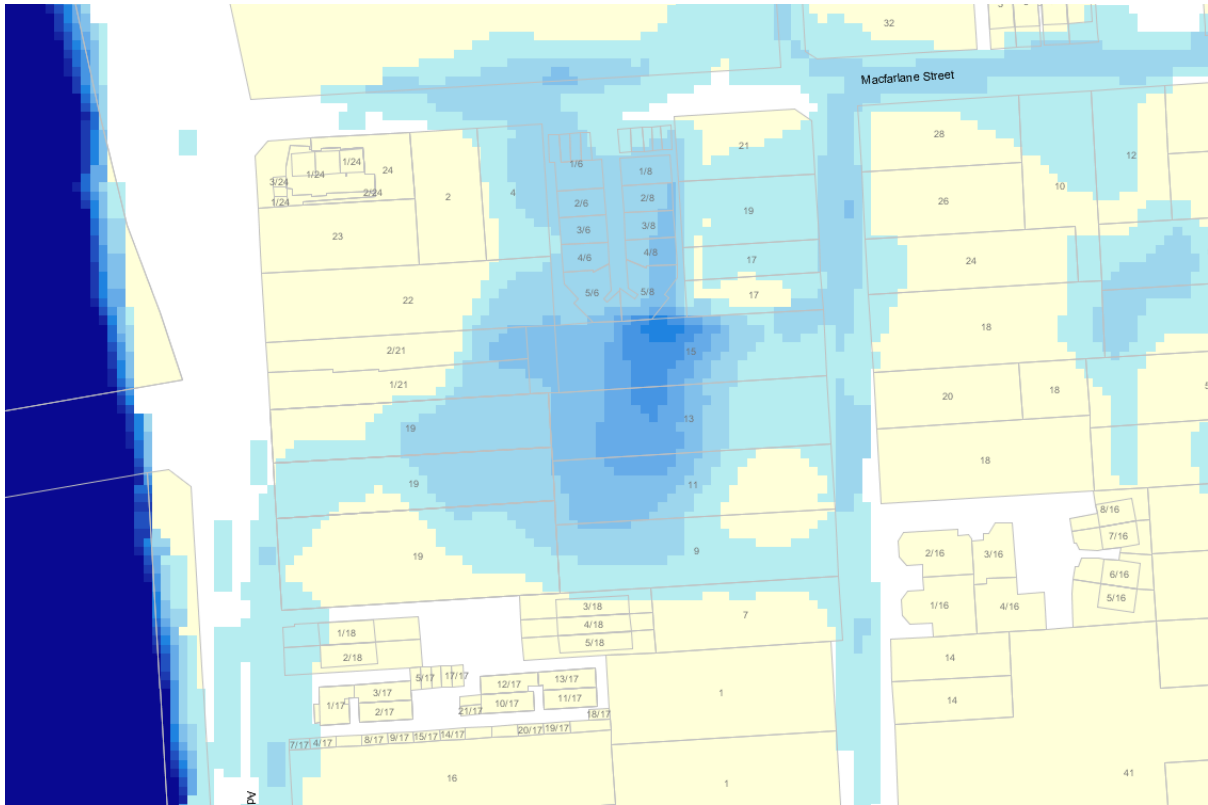
THE SITE

The site is made up of two adjoining rectangular pieces of land. The site is fronted by Adelphi Terrace to the west, Tod Street to the east and residential allotments to the north and south. The pre-developed site is made up of a series of residential allotments with numerous houses and out buildings with associated paved areas. The site is typically relatively flat with only about 300mm of level difference from the eastern boundary to the western boundary. There is a low spot in the northern most allotment approx. 700mm deep. Council flood mapping shows that during a 1 in 100 year rain event the pre-developed site can expect some inundation from outside of the site.

There is a side entry pit on Adelphi Terrace that will allow for direct connection of the stormwater. There is no stormwater infrastructure in Tod Street immediately adjacent the site.



Aerial photograph of proposed site



Council 'Long Term' Flood mapping showing evidence of water ingress during major storm'

STORMWATER DETENTION

The City of Holdfast Bay have advised that we must detail the stormwater from the site such that the stormwater flow from the critical 1 in 100 post development ARI event does not exceed the flow from the pre-development minor ARI event.

We have proposed to split the site up into two separate systems. The western half of the site will discharge to the side entry pit at the pre-development flow rate. The eastern half of the site will discharge direct to the kerb at the lesser of no more than pre-development flows or 20L/sec (max. allowable discharge rate to the kerb).

Calculations show that for the western half of the site we must provide 30.8 kL of detention storage at a discharge rate of 29.0L/sec. Refer to appendix A for calculations.

Calculations show that for the eastern half of the site we must provide 66.0 kL of detention storage at a discharge rate of 20.0 L/sec.

Detention will be provided by way of underground tanks beneath the driveway/landscaped areas that will be pumped out as required. The final makeup and or location of the tanks will be finalised during detailed design development in the future.

STORMWATER DESIGN

The proposed buildings FFLs are proposed to be set at RL 2.50 for the western apartment building and central townhouses. The eastern most townhouses are proposed to be set at RL 2.30. These FFLs are set at this level to be both a minimum of 300mm above the nearest adjacent water table levels and also provide 150mm freeboard protection above the expected long term flood plain levels. All paved and garden levels will be set such that they provide a safe overland flow path during a major storm event. Final paving and garden levels will be determined during detail design stage.

All roof and paved catchment areas within the site will be directed to the stormwater detention system beneath the carpark. Final stormwater pipe layout and sizes will be determined in accordance with AS3500.3 during detailed design development stage in the future.

Given current nature of the site, Water Sensitive Urban Design measures cannot be achieved. A proprietary Gross Pollutant Trap and Oil and Grease Arrestor will be provided to the apartment complex side of the project prior to discharging from the site in an effort to reduce any potential pollutants. A suitably sized and selected treatment device will be specified once we get into detailed design development. The eastern townhouse section of the works does not require treatment as there are only two carparks exposed to the elements.

APPENDIX A

STORMWATER DETENTION CALCULATIONS

STORMWATER CALCULATIONS

Adelphi Apartments, Glenelg North

Prepared by:

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Tel: (08) 8412 4300

Project No: 20611
Revision: -00-
Date of Issue: 15/11/2018

Project: 19-20 Adelphi Terrace

Project # 20611

Glenelg

Date 14.11.2018

Design By: MP

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CRITICAL 1 IN 100 YEAR DETENTION VOLUME

WESTERN HALF OF SITE

PRE DEVELOPMENT FLOW (MINOR STORM)

Time of Concentration	5	mins
Rainfall Intensity	98.5	mm/hr

Catchment Area	C	Area (m ²)	
Roof	0.9	429.3	10.6
Impervious	0.75	265.8	5.5
Pervious	0.2	2368.4	13.0
Total			29.0 L/sec

POST DEVELOPMENT FLOW (MAJOR STORM)

Time of Concentration	t	mins (critical TBC)
Rainfall Intensity	¹⁰⁰ I _t	mm/hr

Catchment Area	C	Area (m ²)	
Roof	0.9	2011.5	0.50
Impervious	0.75	867.9	0.18
Pervious	0.2	184.1	0.01
Total			0.69 ¹⁰⁰ I _t

Project: 19-20 Adelphi Terrace

Project # 20611

Glenelg

Date 14.11.2018

Design By: MP

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CRITICAL STORAGE VOLUME

$$\underline{\underline{0.69}}^{100} t$$

$$\underline{\underline{29.0}} \text{ L/sec}$$

Tc (mins)	Intensity, I (mm/hr)	Q in (L/sec)	Pump initiated t (mins)	V total (L ³)
5	185	128.4	1.1	23084
6	171	118.7	1.2	25711
10	135	93.7	1.5	32810
20	92.8	64.4	2.3	37709
30	72.7	50.4	2.9	34931
60	46.4	32.2	4.5	10693
120	29	20.1	7.2	-59982
180	21.9	15.2	9.5	-141037
360	13.6	9.4	15.4	-404247
720	8.42	5.8	24.8	-965358
1440	5.11	3.5	40.9	-2135666

PEAK STORAGE REQUIRED 37709 L³

Project: 19-20 Adelphi Terrace

Project # 20611

Glenelg

Date 14.11.2018

Design By: MP

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CRITICAL 1 IN 100 YEAR DETENTION VOLUME

EASTERN HALF OF SITE

PRE DEVELOPMENT FLOW (MINOR STORM)

Time of Concentration	5 mins
Rainfall Intensity	98.5 mm/hr

Catchment Area	C	Area (m ²)	
Roof	0.9	805.3	19.8
Impervious	0.75	289.5	5.9
Pervious	0.2	2661.3	14.6
Total			40.3 L/sec
			20.0 L/sec

Max. allowable discharge to kerb

POST DEVELOPMENT FLOW (MAJOR STORM)

Time of Concentration	t mins (critical TBC)
Rainfall Intensity	¹⁰⁰ I _t mm/hr

Catchment Area	C	Area (m ²)	
Roof	0.9	2049.4	0.51
Impervious	0.75	1324.4	0.28
Pervious	0.2	382.3	0.02
Total			0.81 ¹⁰⁰ I _t

CRITICAL STORAGE VOLUME

$$\underline{\underline{0.81}}^{100} t$$

$$\underline{\underline{20.0}} \text{ L/sec}$$

Tc (mins)	Intensity, I (mm/hr)	Q in (L/sec)	Pump initiated t (mins)	V total (L ³)
5	185	149.8	0.7	33729
6	171	138.4	0.7	37500
10	135	109.3	0.9	48668
20	92.8	75.1	1.3	61744
30	72.7	58.9	1.7	65971
60	46.4	37.6	2.7	60415
120	29	23.5	4.3	24136
180	21.9	17.7	5.6	-23767
360	13.6	11.0	9.1	-189300
720	8.42	6.8	14.7	-557942
1440	5.11	4.1	24.2	-1347591

PEAK STORAGE REQUIRED 65971 L³

Proposed Residential Development

Adelphi Terrace, Glenelg
Transport Impact Assessment

Prepared by: GTA Consultants (SA) Pty Ltd for Aplin Cook Gardner

on 21/11/18

Reference: S158020

Issue #: A-Dr



GTA consultants

Proposed Residential Development

Adelphi Terrace, Glenelg Transport Impact Assessment

Client: Aplin Cook Gardner

on 21/11/18

Reference: S158020

Issue #: A-Dr

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A-Dr	21/11/18	Draft	Lydia Kairl	Ian Bishop		
A-Dr 2		Draft – amended				
A		Final				
B		Final – amended				

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1. INTRODUCTION

1.1. Background

A Development Application is currently being sought for a proposed residential development on land located at 19-20 Adelphi Terrace and 9-15 Tod Street in Glenelg. The proposed development incorporates a six-storey apartment building with undercroft parking and 17 townhouses with garage parking.

GTA Consultants was commissioned by the Applicant to undertake a transport impact assessment of the proposed development.

1.2. Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the proposed development, including consideration of the following:

1. existing traffic and parking conditions surrounding the site
2. parking demand likely to be generated by the proposed development
3. suitability of the proposed parking in terms of supply (quantum) and layout
4. traffic generation characteristics of the proposed development
5. proposed access arrangements for the site
6. transport impact of the development proposal on the surrounding road network.

1.3. References

In preparing this report, reference has been made to the following:

- Holdfast Bay Council Development Plan (consolidated 02 June 2016)
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004
- Australian Standard, Parking Facilities, Part 2: Off-Street Commercial Vehicle Facilities AS 2890.2:2002
- Australian Standard / New Zealand Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS/NZS 2890.6:2009
- plans for the proposed development prepared by Aplin Cook Gardner
- traffic and car parking surveys undertaken by GTA Consultants as referenced in the context of this report
- various technical data as referenced in this report
- an inspection of the site and its surrounds
- other documents as nominated.

2. EXISTING CONDITIONS

2.1. Subject Site

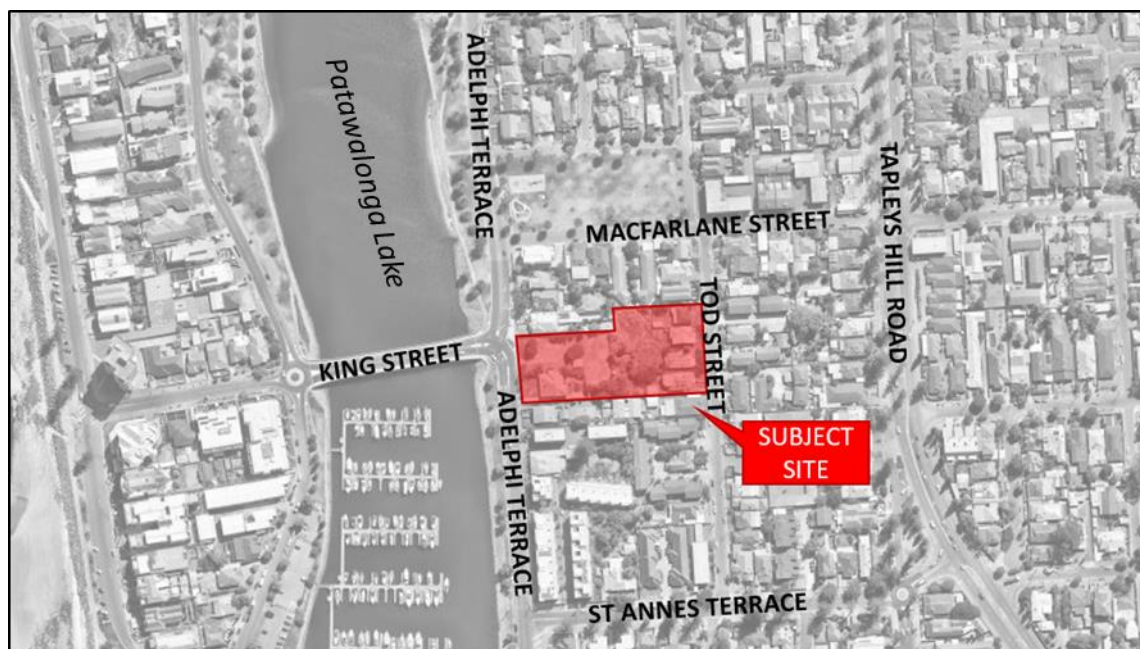
The subject site is located at 19-20 Adelphi Terrace and 9-15 Tod Street in Glenelg. The site of approximately 6,750sq.m has frontages of approximately 60m to Tod Street and 46m to Adelphi Terrace.

The Holdfast Bay Council Development Plan identifies 19-20 Adelphi Terrace is located within the Residential High-Density Zone. However, it is noted that the allotments fronting Tod Street are located within a Residential Character Zone. The boundary between the two zones passes in a north-south direction through the site, approximately a quarter of the site length measured from Tod Street.

The site is currently occupied by residential dwellings. The surrounding properties include residential land uses. Patawalonga Lake is located to the west.

The location of the subject site and the surrounding environs is shown in Figure 2.1.

Figure 2.1: Subject Site and its Environs



(PhotoMap courtesy of NearMap Pty Ltd)

2.2. Road Network

2.2.1. Adjoining Roads

Adelphi Terrace

The Development Plan identifies Adelphi Terrace as being a secondary road and a cycle route. It is a local road under the care and control of City of Holdfast Bay Council and functions as a sub-arterial road. The road comprises of two-way traffic flow with one lane in each direction. A dedicated right turn lane is provided out the front of the site for a driver to store on Adelphi Terrace (South) while waiting to turn right to Adelphi Terrace (North).

There are on-street parallel parking spaces (both sides of Adelphi Terrace) south of the subject site. An urban default speed limit of 50 km/h applies. Adelphi Terrace (south) has a traffic volume of approximately 12,000 vehicles per day (2012 Council data).

King Street

King Street is a sub-arterial road under care and control of council, the western leg of the intersection with Adelphi Terrace, has a traffic volume of approximately 8,000 vehicles per day (2016 Council data), and has an urban default speed limit of 50 km/h.

Tod Street

Tod Street is a local street under the care and control of council with an approximately 6.2m wide carriageway adjacent the subject site. Kerbside parking is generally permitted on either side of the carriageway. Tod Street is subject to the default urban speed limit of 50 km/h.

Local Roads

Other local roads within the vicinity of the site include Macfarlane Street and St Annes Terrace.

2.2.2. Surrounding Intersections

The following intersections currently exist in the vicinity of the site:

- King Street/Adelphi Terrace (north)/Adelphi Terrace (south) (unsignalised)
- King Street/St Annes Terrace (unsignalised)
- St Annes Terrace/Tod Street (unsignalised)
- Tod Street/MacFarlane Street (unsignalised)
- MacFarlane Street/Adelphi Terrace (north) (unsignalised).

2.3. Crash History

A review of the reported crash history for the roads and intersections in close proximity to the subject site has been sourced from the Department of Planning, Transport and Infrastructure (DPTI) for the most recent five-year period (2012-2016).

Figure 2.2 illustrates the recorded crash locations near the subject site. A total of five incidents were recorded at the Adelphi Terrace/King Street intersection, three of which were a collision with fixed object, one was a right-angle collision and one involved a roll over. Each of the five incidents involved a bicycle, with one incident occurring at night.

Of the 5 crashes that have occurred at the intersection, 1 crash resulted in serious injury, 2 resulted in minor injury and 2 crashes resulted in property damage only to the vehicle.

Figure 2.2: Crash Locations (2011-2016)



2.4. Sustainable Transport Infrastructure

2.4.1. Public Transport

A bus stop is located on Adelphi Terrace approximately 50 metres south of the subject site. The stop is serviced by the J1 route which services Elizabeth Interchange, Adelaide Airport, Glenelg, Lyell McEwin Hospital, Golden Grove Interchange, Tea Tree Plaza Interchange, O-Bahn, city, Sir Donald Bradman Dr and Harbour Town.

2.4.2. Pedestrian Infrastructure

Footpaths are provided on the eastern side of Adelphi Terrace, and on the western side adjacent the Patawalonga Lake. Footpaths are also provided on either side of Tod Street.

A median refuge is available at the King Street/Adelphi Terrace intersection.

2.4.3. Cycle Infrastructure

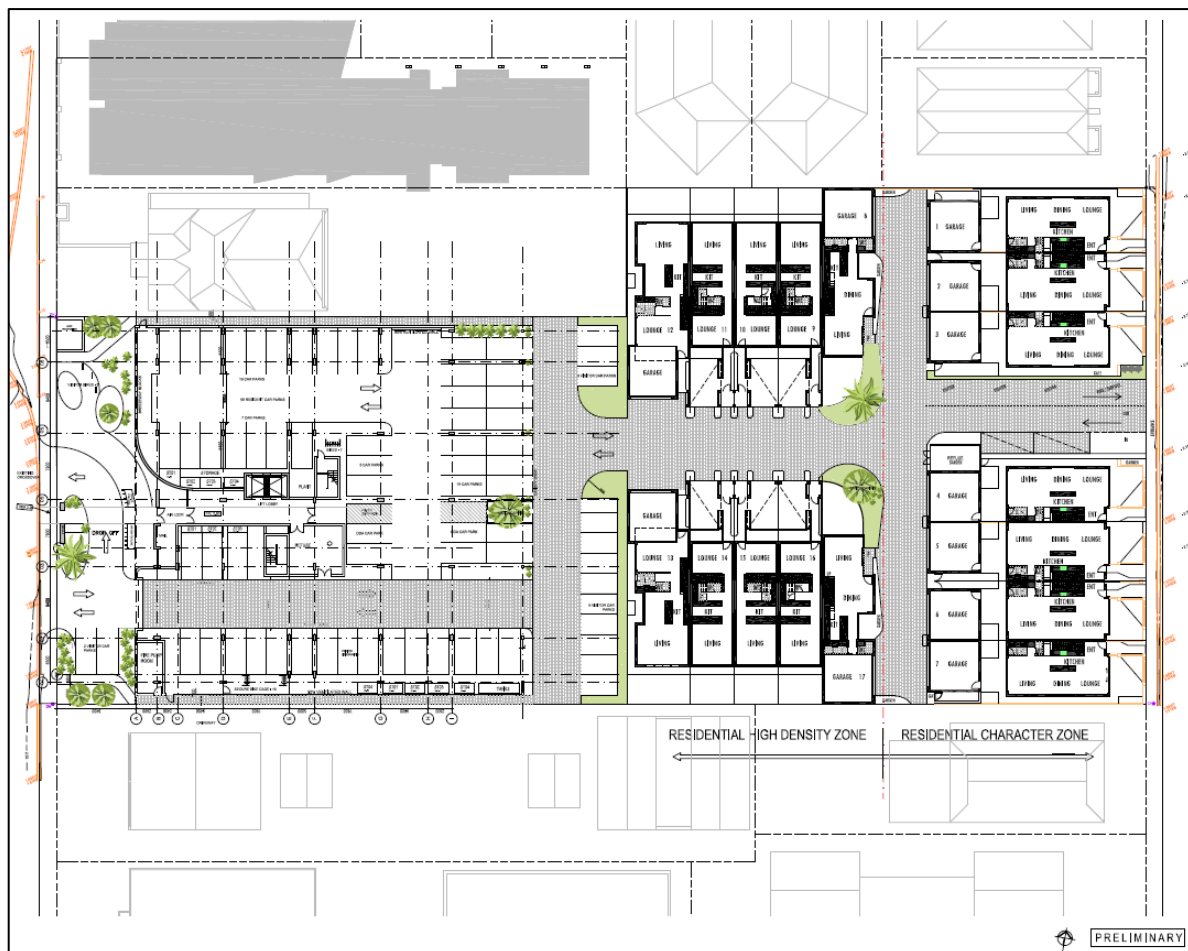
Adelphi Terrace generally includes a dedicated bicycle lane in each direction, but the bicycle lane on the western side ends just south of the site and then restarts around the bend on King Street.

3. DEVELOPMENT PROPOSAL

3.1. Land Uses

The proposal includes the construction of a six-storey apartment building for 46 apartments with undercroft parking and 17 townhouses with garage parking. A plan of the site is shown in Figure 3.1.

Figure 3.1: Site Plan



3.2. Car Parking

The proposal includes 58 undercroft car parking spaces, 19 additional spaces at ground level and 28 garage parking spaces for a total of 105 spaces including 2 parking spaces for people with disabilities. 19 spaces are dedicated as visitor spaces.

3.3. Vehicle Access

The proposed development includes the following access points:

- A two-way access point to Adelphi Terrace

- A one-way egress only access point to Adelphi Terrace as the porte-cochere drop off exit
- A two-way access point to Tod Street.

3.4. Bicycle Facilities

The proposed development includes secure bicycle parking for up to 22 bicycles as well as 3 bicycle rails on the Adelphi Street frontage for visitor bicycles.

3.5. Refuse Collection

Refuse collection will be undertaken by vehicles up to an MRV, which will be able to enter the site from Tod Street in a forward direction, manoeuvre within the site, then exit in a forward direction to Tod Street.

4. CAR PARKING

4.1. Development Plan Car Parking Requirements

Development Plan car parking rates have been sourced from Table HoB/1 and HoB/1B of the City of Holdfast Bay Council Development Plan.

The rates applicable to the proposed townhouses are as follows:

Detached dwelling	
Semi-detached	2 on-site parking spaces, 1 of which is covered (the second space can be tandem)
Row dwelling	

While the rates applicable within the Residential High-Density Zone are as follows:

Studio (no separate bedroom), 1, or 2 bedroom dwelling	1 space per dwelling plus 0.25 visitor spaces per dwelling
3+ bedroom dwelling	1.25 spaces per dwelling plus 0.25 visitor spaces per dwelling

Using the above rates an assessment of the Development Plan car parking requirements is set out in Table 4.1.

Table 4.1: Development Plan Car Parking Assessment

Description	Number of Dwellings	Development Plan Parking Rate	Parking Requirement(spaces)
Apartments - Studio (no separate bedroom), 1, or 2 bedroom dwelling	36	1 space per dwelling	36
Apartments - 3+ bedroom dwelling	10	1.25 space per dwelling	13
Townhouses	17	2 spaces per dwelling	34
Visitor Parking	46	1 visitor space per 4 Apartments	12
Total			95

Table 4.1 anticipates the development proposal has a Development Plan requirement of 95 spaces, incorporating 83 resident and 12 visitor spaces.

4.2. Adequacy of Parking Supply

The development will provide 105 spaces including 2 parking spaces for people with disabilities and therefore will exceed the requirements of the development plan.

However, while the overall provision exceeds the requirements, there will be a theoretical shortfall in parking directly providing for the townhouses (28 spaces provided in garages, 34 required). Since the Development Plan requires two spaces per town house (at least one of which should be covered), a reserved parking allocation for some of the townhouses therefore should be provided within the undercroft car park. There is sufficient resident designated parking to provide for the "shortfall" of 6 townhouse garage spaces within the undercroft car park. As such the proposed car parking is considered appropriate.

4.3. Car Parking Layout

The layout of the proposed car park has been assessed against the Australian Standards (AS/NZS2890.1:2004 – Parking Facilities – Off-street Parking). The proposed design offers the following characteristics:

- Spaces are 5.4 metres long by at least 2.4 metres wide and set within an aisle 5.8 metres wide complying with the requirements of a Class 1A parking facility in accordance with AS/NZS2890.1
 - Where required, blind aisle extensions of at least 1 metre have been provided at the end of blind aisles within the undercroft and visitor parking areas in accordance with AS/NZS2890.1.
- Two parallel visitor spaces will be provided adjacent townhouse 4. These spaces are required to be 2.1m wide with 300mm clearance to vertical obstructions and 6.2m long in accordance with AS2890.1. The proposed spaces are 2.5m wide and 6.3m long meeting the requirements of AS/NZS2890.1
- For double garages, the standards require an apron equivalent to the width of a standard parking aisle for a Class 1 facility (5.8 metres). In addition to this requirement, there should be an allowance of at least 300mm between the kerb face and the building wall, equating to a total width of 6.1 metres between building walls on either side of the lane. The proposal provides 6.2 metres in this location and thus the design is considered appropriate.
- At the end of the northern and southern lanes approximately 900mm will be provided from the edge of the garage door to the site boundary. Based on the swept path in Figure 4.1 below a blind aisle extension of approximately 900mm in this location will enable a B85 vehicle to successfully reverse exit the garage.

Figure 4.1: Blind aisle extensions with B85 reverse movement



- Spaces for people with disabilities are 5.4 metres long by at least 2.4 metres wide with an adjacent shared area of the same dimensions and set within an aisle 5.8 metres wide complying with the requirements of AS/NZS2890.6.

5. SUSTAINABLE TRANSPORT INFRASTRUCTURE

5.1. Bicycle End of Trip Facilities

The Development Plan sets out the following guidance on end of trip facilities in the *Transportation and Access* section. The Principles of Development Control (PDCs) applicable to the subject site are as follows;

PDC 20: Development should encourage and facilitate cycling as a mode of transport by incorporating end-of-journey facilities including:

- (a) showers, changing facilities and secure lockers
- (b) signage indicating the location of bicycle facilities
- (c) secure bicycle parking facilities.

PDC 21: On-site secure bicycle parking facilities should be:

- (a) located in a prominent place
- (b) located at ground floor level
- (c) located undercover
- (d) located where surveillance is possible
- (e) well lit and well signed
- (f) close to well used entrances
- (g) accessible by cycling along a safe, well-lit route.

The proposed development provides secure bicycle parking for up to 22 bicycles at ground level in the undercroft carparking area as well as 3 visitor parking rails on the Adelphi Terrace frontage. This provision of bicycle parking is considered appropriate and will allow for every second apartment to use a secure bicycle parking space. Notwithstanding this there will be opportunities for residents to park bicycles in their storage unit, apartment or townhouse if required. End of trip facilities will be available in each townhouse or apartment.

5.2. Walking and Cycling Network

The dwellings fronting onto Tod Street will have a direct link to the existing footpath on Tod Street, while all other dwellings will be able to access the footpaths on Tod Street via the slow speed driveway accesses. The Adelphi Street frontage provides a pedestrian realm connection adjacent the porte-cochere.

5.3. Public Transport

The site is accessible by public transport as discussed in Section 2.4.1.

6. REFUSE COLLECTION

6.1. Refuse Collection

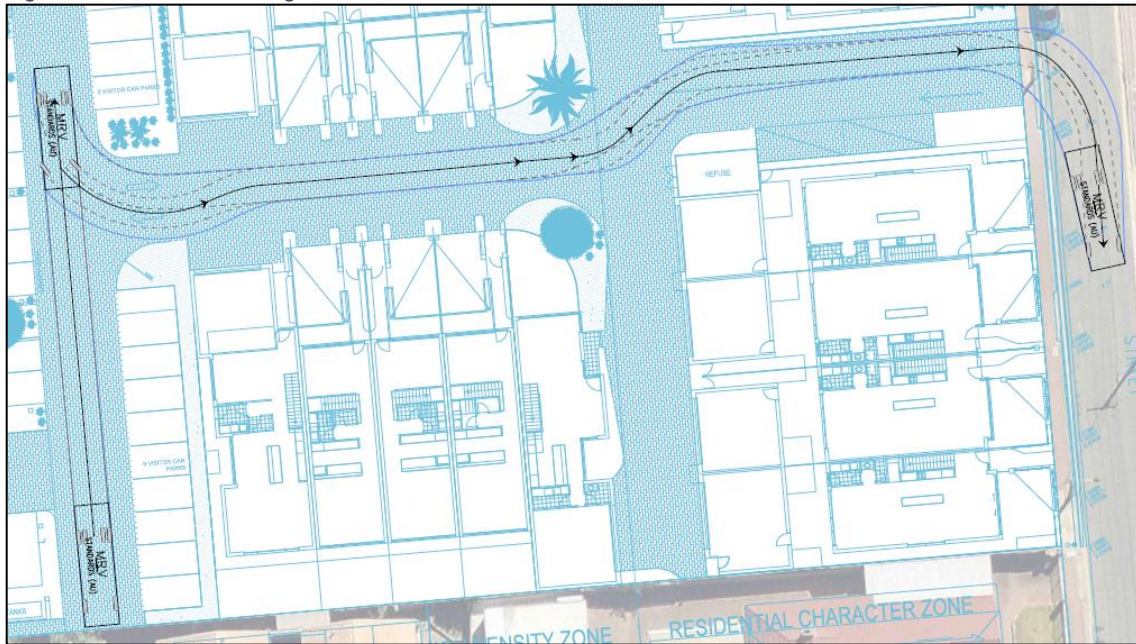
Based on the information provided to GTA refuse collection will be undertaken from the internal roadway adjacent the visitor parking area. It has been assumed that refuse bins will be able to be wheeled to the MRV for collection.

Swept paths have been assessed for this refuse collection arrangement using an 8.8 metre Medium Rigid Vehicle (MRV). The MRV will enter from Tod Street, reverse within the site and then exit in a forward direction to Tod Street. The swept path assessment is shown in Figures 6.1 and 6.2 below.

Figure 6.1: 8.8m MRV entering the site in a forward direction



Figure 6.2: 8.8m MRV exiting the site in a forward direction



The swept paths show that the refuse vehicle will be able to enter the site in a forward direction, reverse to the refuse collection area and then exit the site in a forward direction.

7. TRAFFIC IMPACT ASSESSMENT

7.1. Traffic Generation

7.1.1. Design Rates

Traffic generation estimates for the proposed development have been sourced from the NSW RMS (formerly RTA) *Guide to Traffic Generating Developments* (2002, henceforth referred to as the RTA Guide).

The following rates are applicable to the proposed development:

	Up to 2 bedrooms	3 or more bedrooms	Townhouses
Daily trips	4.0 - 5.0 trips per dwelling	5.0 - 6.5 trips per dwelling	9.0 trips per dwelling
Weekday peak hour trips	0.4 – 0.5 trips per dwelling	0.5-0.65 trips per dwelling	0.85 per dwelling

Estimates of peak hour and daily traffic volumes resulting from the proposal are set out in Table 7.1.

Table 7.1: Traffic Generation Estimates

Land Use	Number of Dwellings	Daily Traffic Generation		Peak Hour Traffic Generation	
		Rate	Trips/Day	Rate	Trips/Hour
Apartments 1-2 bedrooms	36	5.0 trips/dwelling	180	0.5 trips/dwelling	18
Apartments 3+ bedrooms	10	6.5 trips/dwelling	65	0.65 trips/dwelling	7
Townhouses	17	9.0 trips/dwelling	153	0.85 trips/dwelling	15
		Total	398		40

Table 7.1 indicates that the site could potentially generate 40 vehicle movements in a peak hour with approximately 400 vehicle movements over the entire day.

7.1.2. Distribution and Assignment

The directional distribution and assignment of traffic generated by the proposed development will be influenced by a number of factors, including the:

1. configuration of the arterial road network in the immediate vicinity of the site
2. existing operation of intersections providing access between the local and arterial road network
3. likely distribution of activity centres in relation to the site
4. configuration of access points to the site.

Having consideration to the above, for the purposes of estimating vehicle movements, the following directional distributions have been assumed:

- Todd Street 45% (with 25% to/from the north and 75% to/from the south)
- Adelphi Terrace to/from the south 35%
- Adelphi Terrace to/from the north 15%
- To/from King Street 5%

Based on the above distribution, the main movements to/from the site via Adelphi Terrace will be right turning movements in and left turning movements out.

In addition, the directional split of traffic (i.e. the ratio between the inbound and outbound traffic movements) has assumed to be 20:80 in the AM peak period, 80:20 in the PM peak period and 50:50 across the entire day.

Based on the above, Figure 7.1 to Figure 7.3 have been prepared to show the estimated marginal increase in turning movements in the vicinity of the subject property following full site development.

Figure 7.1: AM Peak Hour Site Generated Traffic Volumes

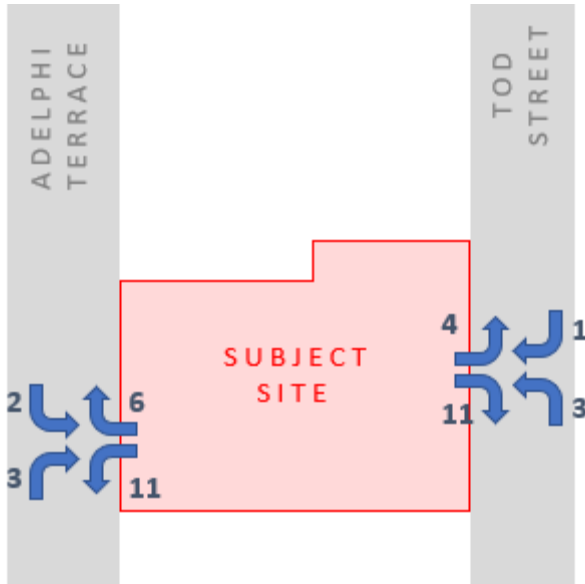


Figure 7.2: PM Peak Hour Site Generated Traffic Volumes

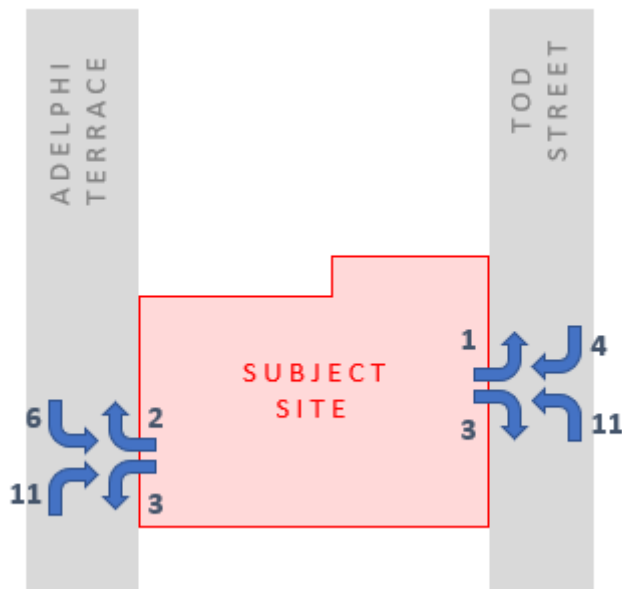
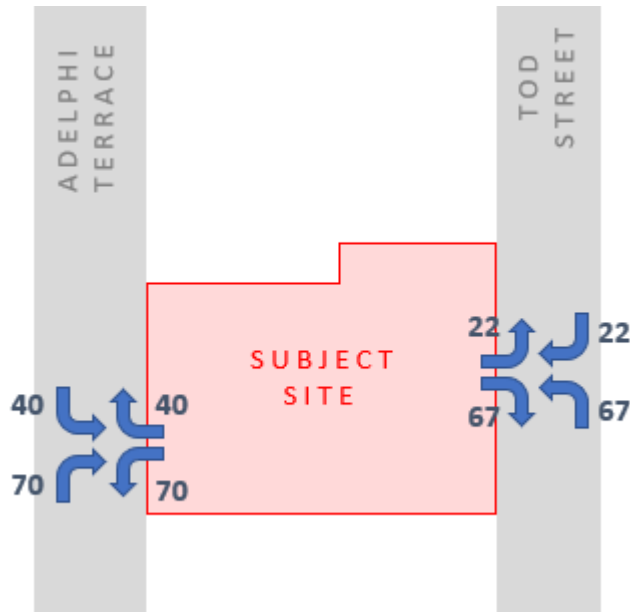


Figure 7.3: Daily Site Generated Traffic Volumes



7.2. Traffic Impact

Against existing traffic volumes in the vicinity of the site, the additional traffic generated by the proposed development could not be expected to compromise the safety or function of the surrounding road network. The turning volumes anticipated in the peak periods are very low (11 vehicles per hour or less) and as such is not expected to compromise the safety or function of the road network.

Moreover, the use of Adelphi Terrace and Tod Street by vehicles accessing residential uses which abut them is entirely appropriate and consistent with their functional role in the road network.

8. CONCLUSION

Based on the analysis and discussions presented within this report, the following conclusions are made:

1. The proposed development will incorporate 46 apartments and 17 townhouses with 105 parking spaces within the site with access to both Tod Street and Adelphi Terrace.
2. The Development Plan car parking requirements would require a total of 95 parking spaces, with 49 spaces for apartments, 34 spaces for townhouses and 12 spaces for visitors.
3. The proposed supply of 105 spaces will exceed the Development Plan requirements for the site.
4. The proposed parking layout will be consistent with the dimensional requirements as set out in the Australian/New Zealand Standards for Off Street Car Parking (AS/NZS2890.1:2004 and AS/NZS2890.6:2009).
5. The proposed supply of secure bicycle storage for up to 22 bicycles and 3 visitor bicycle rails is considered appropriate for the proposed development.
6. Refuse collection will be undertaken by an MRV which will be able to enter the site in a forward direction from Tod Street, collect refuse bins adjacent the visitor parking spaces, then exit in a forward direction to Tod Street.
7. The site is expected to generate up to 40 and 400 vehicle movements in any peak hour and daily respectively.
8. There will be adequate capacity in the surrounding road network to cater for the traffic generated by the proposed development, with safe and convenient access to the site available from Adelphi Terrace and Tod Street.

Scott Salisbury Adelphi Terrace Apartments

Waste Management Plan



Document verification

Date	Version	Title	Prepared by	Approved by
21/11/18	V1.0	Adelphi Tce Apartments - Waste management plan Draft	Kristian Le Gallou	Matt Allan
28/11/18	V1.1	Adelphi Tce Apartments - Waste management plan	Kristian Le Gallou	Matt Allan

Important notes

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Document summary

This waste management plan (WMP) has been developed at the planning stage of the development. The client, project manager, project architects, and traffic consultant have been consulted and consideration given to the relevant policy requirements (Appendix 1).

The proposed waste management system (WMS) is outlined in this document. This a high-level view and includes a preliminary design that demonstrates waste can be successfully managed at the site. If land uses and waste management arrangements for the development are altered during detailed design work, this WMP may need to be updated.

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1. Development summary

Project	Adelphi Terrace Apartments, 19-20 Adelphi terrace Glenelg
Client	Scott Salisbury
Project/ Planning Manager	Branford Planning and Design
Architect	Aplin Cook Gardner
Traffic consultant	GTA

1.1. Land use and occupancy

Table 1 outlines the proposed building and land uses of the development. This is based on the most recent architectural plans. The waste resource generation categories are based on the land use outlined in the plans.

Table 1 Land use and occupancy overview

Dwelling type	No. dwellings	No. bedrooms
Townhouses		
Two-bedroom townhouses	6	12
Three-bedroom townhouses	11	33
Total	17	45
Apartment building		
One-bedroom apartments	4	4
Two-bedroom apartments	32	64
Three-bedroom apartments	10	30
Total	46	98

1.2. Waste management considerations

The client and project architect have identified design preferences that may influence waste management (Table 2). These arrangements have been considered when designing the waste management system.

Table 2 Development waste management considerations

Consideration	Description
Waste management systems	There are two components to this development, the apartment building and the townhouses. Each will have their own waste management system to manage waste and recycling produced in these areas.
Managing townhouse waste and recycling	Due to the number of townhouses, managing waste and recycling for the townhouses is likely to be undertaken by a commercial collection contractor.
Apartment building height	The vehicle entry area under the apartment building is approximately 3.2 metres. A standard rear-lift collection vehicle is unlikely to be able to drive under the apartment building. Collection of waste and recyclables will therefore need to occur outside of this area.

1.3. Recommended services

For the development to achieve effective waste and recycling management it is recommended the services outlined in Table 3 be provided.

Table 3 Recommended waste management services

Required/recommended waste and recycling collection services			
Land use		Residential	Residential
Development land uses		Apartments	Townhouses
Routine collection (rear lift)	General waste	X	X
	Comingled recycling	X	X
	Organics recycling	X	X
On-call or external drop-off	Hard waste	X	X
	E-waste	X	X
	CFL/Lighting	X	X
	Batteries	X	X

X = Required/Desired

NS = Not serviced as separate service not required

These recommendations align with the *SA Better Practice Guide – Waste Management in Residential or Mixed-Use Developments* (Green Industries SA, 2014). Please note waste and recycling streams that have not been estimated in the analysis includes:

- CFL/lighting and batteries
 - These items (from carpark etc.) could be aggregated in the bin room until large enough quantities are achieved. They would then be taken to an appropriate receiveal facility (e.g. recycling depot or participating retailer) or collected by a certified collection contractor.



2. Waste management analysis

2.1. Estimated waste and recycling volumes

Table 4 below outlines the estimated volumes of waste and recycling produced within the development per stream each week.

Table 4 Estimated waste volumes produced by the development¹

Estimated waste generation volumes (litres per week)				
Land use type	Residential	Residential	Total	
Development land use	Apartments	Townhouses		
WRGR classification	Residential (High Density)	Residential (Medium Density - w/Garden)		
Waste stream	General waste	2,900	1,600	4,500
	Comingled recycling	2,500	1,400	3,900
	Organics recycling	1,000	900	1,900
	Hard waste	700	300	1,000
	E-waste	100	60	200
Total site volume	7,200	4,300	11,500	

*Totals have been rounded and may not equate

NE = Not Estimated as Not Required

2.2. Bin size and collection details

Table 5 estimates the number of bins and collections per week required to service the development. This is based on the total volumes of waste and recycling for the development, the assumption that all waste and recycling would be collected by one service provider and serviced at the same time.

Table 5 Estimated bin requirements and collections per week

	Apartments waste room			Townhouses waste area		
	Bin size (L)	Number of bins required	Collections per week	Bin size (L)	Number of bins required	Collections per week
General waste	1,100	2	2	660	3	1
Comingled recycling	1,100	2	2	660	3	1
Organics recycling	660	2	1	660	2	1
Total		6	5		8	3

*Totals have been rounded and may not equate

¹ Estimates are based on the proposed land use data provided by the client and architect, client expectations and waste management policies (Outlined in Appendix 1) relevant to the developments' land uses. The metrics used are based on the SA Better Guide Practice Guide and developed by Rawtec based on industry knowledge and experience.

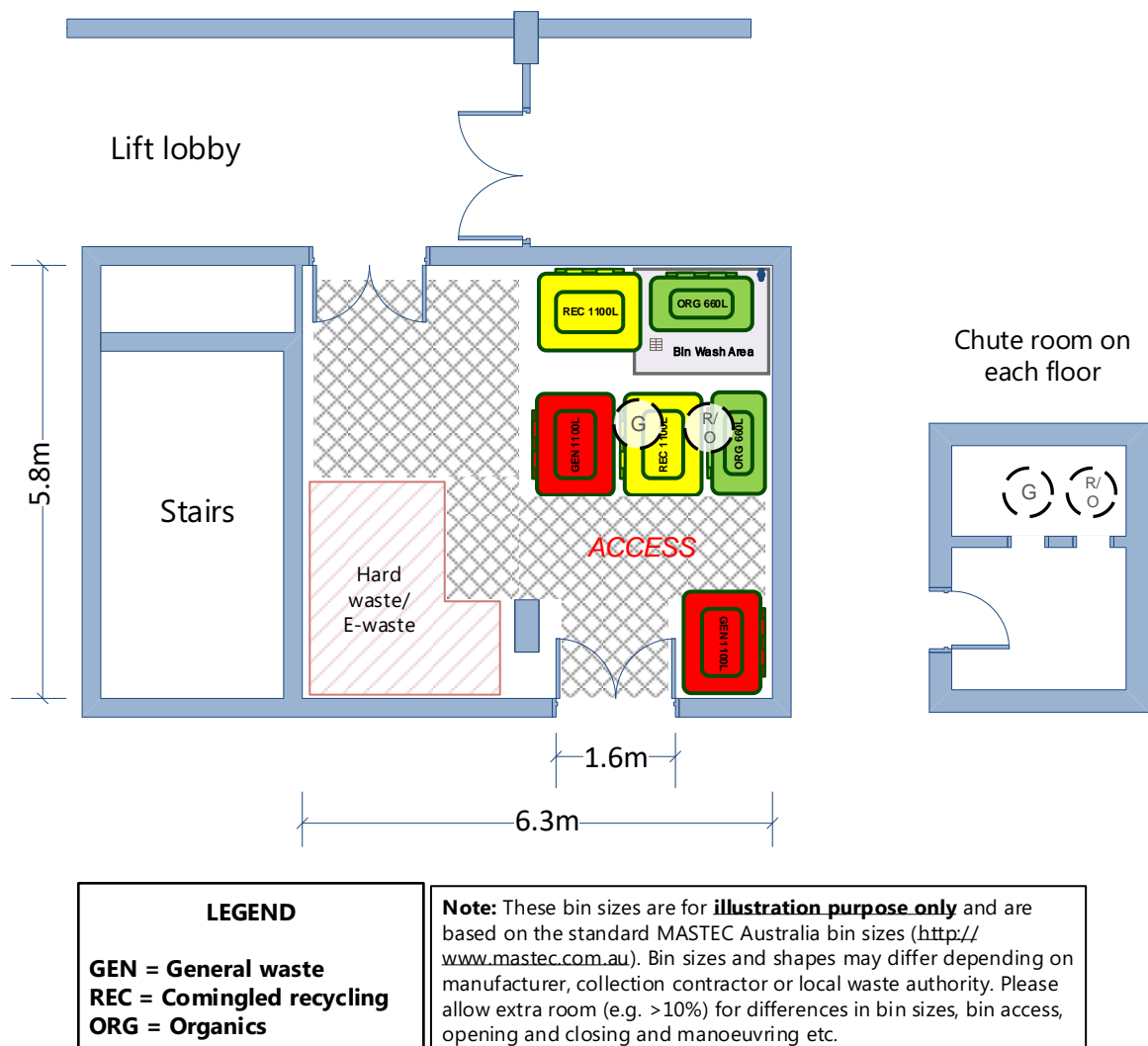
2.3. Waste storage area

Apartment waste storage room

Figure 1 outlines an indicative drawing of the waste storage area for the apartment building. This is an example configuration outlining the estimated size and layout of the waste storage area. Two chutes would be installed throughout the building, one for general waste ("G") and one for recycling and organics ("R/O"). The recycling and organics chute would have a diverter to drop the waste into the appropriate bin, and the general waste chute would extend over to the general waste bin in the ground floor waste room. Additional design advice and other considerations have been included in Appendix 2.

Space has been allocated for the storage of hard waste and E-waste. It is anticipated that residents will coordinate with building services to store hard waste in the bin room. Outside of these times, residents should not need access to this room.

Figure 1 Indicative waste storage area

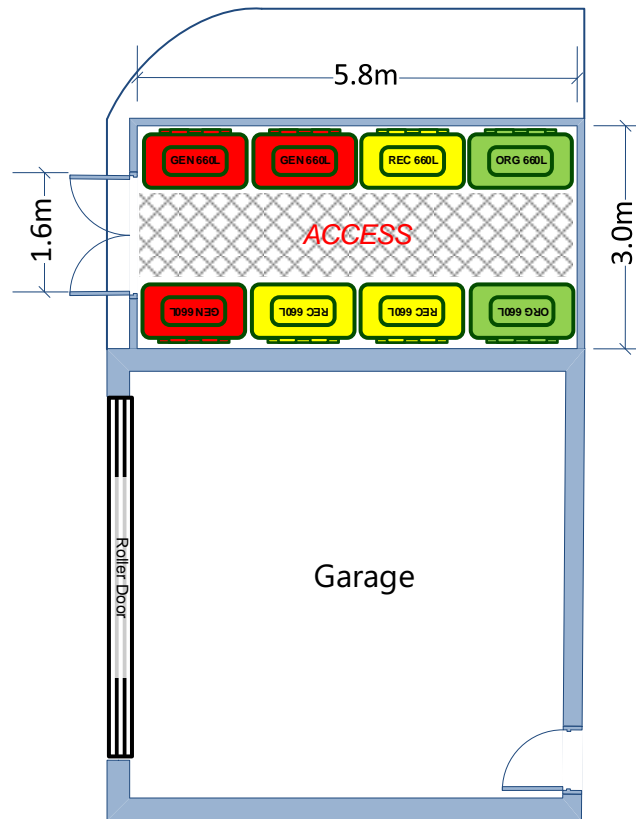


Townhouse waste area

The townhouses will have a shared waste storage area for the bulk bins. This is in a central location to reduce the distance that residents must travel to dispose of waste and recycling (approximately 30 metre maximum). Figure 2 outlines the example configuration outlining the estimated size and layout of the waste storage area.

It is anticipated that residents will store any hard waste/E-waste in their townhouse before taking it to an appropriate facility.

Figure 2 Townhouse waste storage area



LEGEND

GEN = General waste
REC = Comingled recycling
ORG = Organics

Note: These bin sizes are for **illustration purpose only** and are based on the standard MASTEC Australia bin sizes (<http://www.mastec.com.au>). Bin sizes and shapes may differ depending on manufacturer, collection contractor or local waste authority. Please allow extra room (e.g. >10%) for differences in bin sizes, bin access, opening and closing and manoeuvring etc.



3. Waste management system

A waste management system (WMS - Table 6) has been developed to effectively manage the waste generated at the development and considers the land use and appropriate policies (Appendix 1).

Table 6 Waste management system for the development

Proposed waste management system – apartments and townhouses	
Service	<ul style="list-style-type: none"> General waste, comingled recycling, organics recycling
WMS step	WMS notes
1. User storage	<ul style="list-style-type: none"> Each apartment/townhouse will store waste and recycling with their dwelling in small containers/bins. <ul style="list-style-type: none"> General waste aggregated in a liner Comingled recycling collected loose Organics recycling collected in kitchen organics baskets using compostable bags²
2. Transfer pathways	<p>Apartments</p> <ul style="list-style-type: none"> Residents will take their waste and recycling to the refuse room on each floor (chute access) and place into the chutes. General waste will be placed down the general waste chute. Comingled and organics recycling will be placed into the chute with the diverter and the relevant option selected by the resident. Access to bin/chute rooms by mobility impaired persons must be considered. Removal of hard waste and E-waste will be coordinated with the building manager and transferred via the lifts into the designated space in the bin room. <p>Townhouses</p> <ul style="list-style-type: none"> Residents will take their waste and recycling to the waste storage area and place into the appropriate bin.
3. Aggregation & storage	<p>Apartments</p> <ul style="list-style-type: none"> Waste and recycling will progress down the chutes into 1100 and 660 litre bulk bins. Bins will be rotated by building services when necessary. <p>Townhouses</p> <ul style="list-style-type: none"> Waste and recycling will be aggregated in the 660 litre bins.
4. Bin collection	<ul style="list-style-type: none"> It is anticipated that collection for apartments and townhouses will take place on the same collection route. The collection vehicle will enter in a forward direction from Todd street. It will then park in an appropriate location on site to empty the bins from the Townhouse waste storage area and the Apartment bin room. Impacts on resident's vehicle movements should be minimised. Apartment hard waste/E-waste to be picked up on a scheduled flatbed truck. The building manager/collection contractor may need to close off the chutes and empty the bins underneath the outlet, replace the empty bins and reopen the chutes. The waste vehicle will then exit in a forward direction via Todd street.

² Based on discussions with The City of Holdfast, all residences are eligible for a free kitchen organics basket and roll of compostable bags to assist recycling of food organics.



4. Collection requirements

4.1. Vehicle movements per week

The number of collection vehicle movements has been estimated at five (5) per week for the entire development. This is based on the estimated waste and recycling volumes and service frequency as outlined in Table 5 but does not include at-call collections such as hard waste. This also assumes that collection will take place by the same waste collection contractor for all the apartment building and townhouses.

4.2. Collection vehicle

Approximate truck dimensions are provided to help the Traffic Consultant's analysis (Table 7). Please note:

- Collection vehicle dimensions and operating requirements vary between waste collection contractors.
- Rawtec does not offer assurance that the collection areas can accommodate waste collection vehicles.
- It is advised that the Traffic Consultant independently confirm there is sufficient space for the collection vehicle to enter and exit the development safely.
- The client must ensure the preferred waste collection contractor can service the development before collection can begin.

Table 7 Truck dimensions for consideration

Collection vehicle dimensions ³		
Vehicle type	Rear Lift	Pan-tech/Flat Bed
Collection type	Collection of bins up to 1100 L	At call waste streams
Dimensions	Up to 4m (h) x 2.5m (w) x 8.8m (l) (up to 10m)	Up to 4.5m (h) x 2.5m (w) x 8.8m (l)
Rear loading space required	2m	-
Operational vehicle height	Up to 4m	Up to 4.5m
Vehicle turning circle	18-25m	10m

³ Vehicle width dimensions are based on Australian MRV standard specifications - AS 2890.2-2002. Vehicle length and heights are based on common collection vehicles currently operating in the SA market. However, it should be noted that waste and recycling collection vehicles are custom designed and may differ from these specifications.

Appendix 1 - Policies

This WMP has been prepared in consideration of the following policies, design and operational requirements:

- The South Australian Environment Protection (Waste to Resources) Policy 2010 (W2REPP) (Government of South Australia, 2011):
 - Waste is subject to resource recovery processes, which can include source separation, before disposal to landfill.
- South Australian Better Practice Guide - Waste Management in Residential or Mixed-Use Developments (Green Industries SA (previously Zero Waste SA), 2014):
 - Identifies need for areas to store waste and recyclable materials. They must be appropriate to the size and type of development, screened from public, minimises disturbance to residents and provides access to service vehicles.



Appendix 2 - Additional waste management and design considerations

This table provides additional considerations and advice for the development. This information is based on the SA Better Practice Guide Waste Management for Residential and Mixed-Use Developments.

Area	Consideration
Bin/chute rooms	<ul style="list-style-type: none"> • Access to bin/chute rooms by mobility impaired persons must be considered. • Allocating chutes in closed waste rooms on each floor may prevent odours or spillage issues compared to providing access directly from a hallway.
Bin design, colours and signage	<ul style="list-style-type: none"> • Bins and signage should conform to the Australian Standard for Mobile Waste Containers (AS 4213).
Bin transfer routes	<ul style="list-style-type: none"> • The Better Practice Guide recommends transfer routes be at least 1.25m wide, free of obstructions and steps and a slope of no more than 1:10. • These should not pass through living areas or dwellings.
Bin washing	<ul style="list-style-type: none"> • A bin washing station must: <ul style="list-style-type: none"> – Slope to a drain leading to the sewer – Have a tap and a hose with mains supply – Be at least 2m x 2m – Be slip resistant to prevent slippage during washing. • Note: <ul style="list-style-type: none"> – Line marking and bunding is not required around the bin wash area. – Bins can be stored on top of the bin wash area in the waste room. During washing, other bins can be placed outside the waste collection room while bins are washed in the waste room. Alternatively, the bin wash area can be installed outside the waste room. It may also be possible for the waste contractor to be contracted to provide this service (either on-site or off-site).
Detailed design and construction	<ul style="list-style-type: none"> • This WMP provides a high-level overview of waste management at the development. Appropriate design and construction advice should be sought during the detailed design phase to ensure equipment, infrastructure and building services can fulfil the functions proposed.
Education and training	<ul style="list-style-type: none"> • The developer should consider providing education and training for residents/tenants in the building's WMS to ensure appropriate waste management practices. • The inclusion of better practice waste management requirements within strata or commercial lease agreements should also be considered.
Hard waste	<ul style="list-style-type: none"> • An aggregation point for hard waste should be provided that is easy to access for collection vehicles.

Area	Consideration
	<ul style="list-style-type: none"> - This streamlines collection logistics. If stored in individual locations the building services manager, tenant and collection contractor will need to be present for collection. This may increase costs.
Health and amenity	<ul style="list-style-type: none"> • The Better Practice Guide stipulates effective WMS design should: <ul style="list-style-type: none"> - Minimise and mitigate odour and noise - Consider and preserve visual amenity for residents/tenants, neighbours and the public - Prevent waste spreading beyond the defined location - Specify washable services enabling periodic cleaning - Provide adequate ventilation.
Lid within a lid bin	<ul style="list-style-type: none"> • Bulk bins (e.g. 1100 litre) with a 'lid within a lid' system can be used to make waste and recycling disposal easier for tenants/residents. <ul style="list-style-type: none"> - A smaller, lighter lid reduces the weight and risk for people disposing of materials. - The larger lid can be locked, stopping oversize items being put into the bin.
Peak periods	<ul style="list-style-type: none"> • Peak periods during the year (e.g. Easter, Public Holidays, Christmas) can increase waste generation rates. Additional collections may need to be scheduled in these circumstances.
Waste collection timing	<ul style="list-style-type: none"> • Waste collection timing and frequency should be scheduled to minimise the impact of noise and traffic on residents, neighbours and the public.
Waste storage area	<ul style="list-style-type: none"> • A secure storage area should be provided to prevent interference with the bins and equipment from the public. <ul style="list-style-type: none"> - Waste storage areas should be external to all living areas and assigned to either locations within the dwelling or tenancy or in a designated area of the common property. - Better practice recommends this distance be no greater than 30 metres. This reduces inconvenience and the likelihood of spillage.
Waste streams	<ul style="list-style-type: none"> • The SA Better Practice Guide indicates that organics (food and/or garden) is a required/expected service for residents in South Australia. • It is beneficial for disposal points of all three streams (general waste, comingled recycling and food organics) located together.





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