Brown Falconer C/- Masterplan SA Pty Ltd

Construction of a seventeen (17) level student accommodation building.

54-58 Elizabeth Street, Adelaide

DA 020/A040/19

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OVERVIEW

Application No	020/A040/19
Unique ID/KNET ID	2019/07495/01
Applicant	Brown Falconer C/- Masterplan SA Pty Ltd
Proposal	Construction of a seventeen (17) level student accommodation building.
Subject Land	54-58 Elizabeth Street, Adelaide
Zone/Policy Area	Capital City Zone
Relevant Authority	State Commission Assessment Panel
Lodgement Date	19 June 2019
Council Area	City of Adelaide
Development Plan	Adelaide (City), consolidated 7 June 2018
Type of Development	Merit
Public Notification	Category 1
Referral Agencies	• Government Architect • Commonwealth Secretary for the Department of Transport and Regional Services (Adelaide Airport Limited) • Heritage South Australia • City of Adelaide (non-mandatory)
Report Author	Will Gormly, Senior Planning Officer
RECOMMENDATION	Development Plan Consent, subject to conditions

EXECUTIVE SUMMARY

This report assesses the suitability of the proposed construction of a seventeen level (52.5m) student accommodation building against the relevant policies and provisions contained within the Adelaide (City) Development Plan.

The proposed development, located at 54-58 Elizabeth Street, Adelaide, is located wholly within the Capital City Zone (the Concept Plan identifies a height of 43 metres for this site). The proposed development accords with the land use sought for the Zone, and is of a height that is suitable for its location, notwithstanding it requiring assessment against over-height provisions.

The proposed development is the third stage of the 'West Franklin' (formerly Balfours) development, which introduces student accommodation into this locality. It sits directly alongside 'Stage 1', which is a 19-storey mixed use development; however having a private residential focus. 'Stage 2' of the development is on hold, which was originally consented to another mixed use building, with a generous retail offering at ground level. It is considered that the proposed land use will complement the existing established mixes of land use.

The proposal is a Category 1, Merit development. Accordingly, no public notification was required. The application was referred to the Government Architect, Adelaide Airport Limited, Heritage South Australia, and the City of Adelaide council. The Government Architect and Council raise a number of concerns, however these are not considered fundamental to the success of the development and the issuing of planning consent of the application.

This report discusses the shortfalls and issues it presents against Development Plan policy, and summates with a recommendation for Development Plan Consent, subject to conditions.

ASSESSMENT REPORT

1. BACKGROUND

1.1 Case Management / Pre-lodgement Process

The applicant engaged with the case managed pre-lodgement service offered by the Department of Planning, Transport and Infrastructure. The process saw one pre-lodgement panel meetings and two design review panel sessions.

The concept and design iteration changed with a fair degree of substantiality since the project inception to the lodged documentation.

1.2 Land Management Agreement

The site is subject to a Land Management Agreement that was entered into by deed between the original developers of the 'West Franklin' precinct, and the City of Adelaide, which was originally established when the 'Balfours' site was sold by the council to its new land owner, in a way to develop the land in accordance with that agreement.

The Land Management Agreement requires that the owner must prepare and submit to the Council a detailed design scheme, prior to lodging a development application for the site. The applicant confirms they have fulfilled this requirement.

It should be noted that any consent given to a development application can be done so independently of, and does not need to consider the legal standings of, any Land Management Agreement – it is only necessary when development occurs on the land; which requires that this is done so in accordance with any Land Management Agreement that may exist.

2. DESCRIPTION OF PROPOSAL

The proposal is for the construction of a seventeen level student accommodation building, which incorporates 300 accommodation beds, a public lobby, bike store, managers office, communal facilities on levels 2 to 5, communal terrace on level 6, and student breakout spaces on levels 7 to 16. The proposal further incorporates a solar array and plant infrastructure on the rooftop, and signage zones.

Land Use Description	Construction of a seventeen (17) level student accommodation building.	
Building Height	17 levels; 52.5 metres above ground level	
Description of levels	**Ground**	Main entry with open promenade, including management office area, transformer, bin and services rooms
	Level 1	Study areas, gym, and games areas
	Level 2 to 5	4-bed cluster, 6-bed cluster, 8 studio, and 2 twin studios, with common rooms on each level (laundry on level 2, cinema on level 3, cyber games room on level 3, and study/library on level 4)
	Level 6	Terrace area, common kitchen area, two 4-bed clusters
	Level 7 to 16	15 studios, 2 DDA studios, 1 twin room, break out space
	Roof	Plant and solar arrays
	Cluster	9 square metres
	Studio	15, 17, and 18 square metres

Room floor area (excluding balconies)	**Twin Studio**	22 square metres
	Twin	25 square metres
	DDA	15 and 23 square metres
Site Access	Pedestrian access via main entrance from Elizabeth Street, with secondary entrance via Ranelagh Alley	
Car and Bicycle Parking	No car parking proposed. Provision for parking of 30 bicycles; a rate of 1 bicycle per 10 beds.	
Encroachments	No encroachments proposed.	
Staging	Three stages: Stage 1 – Substructure Stage 2 – Superstructure Stage 3 – Architectural (façade and internal fitout)	

3. SITE AND LOCALITY

3.1 Site Description

The subject site consists of three allotments and is legally described by the following:

Lot No	Street	Suburb	Hundred	Title Reference
11	Elizabeth Street	Adelaide	Adelaide	CT 6195/470
12	Elizabeth Street	Adelaide	Adelaide	CT 6195/471
13	Elizabeth Street	Adelaide	Adelaide	CT 6219/583

The subject site is located on the eastern side of Elizabeth Street, and approximately central between Waymouth Street to its north, and Franklin Street to its south. It has two road frontages; its primary frontage to Elizabeth Street with a frontage of 24.54 metres, and to Ranelagh Alley with the same distance.

The site has a depth of 26.2 metres generally throughout, which results in a total area of approximately 640 square metres.

The site is generally flat, and is currently vacant.

3.2 Locality

The locality is characterised by the varying land uses, however is predominantly residential and commercial in nature.

The site directly adjoins a previous stage of the overall development scheme for the site; the stage 1 of the 'West Franklin' development, and to its north exists a two-storey dwelling. Immediately opposite the site exists two-storey townhouses. The scale of development in this locality varies, ranging from one storey to 19 storeys.

Elizabeth Street, the primary frontage of the site, is a narrow two-directional carriageway that carries traffic in a north-south direction between Waymouth Street to its north and Franklin Street to its south. It has footpaths on each side. It does not feature any dedicated bicycle paths.

Ranelagh Alley, the secondary street frontage, is an 'L-shaped' alleyway that is generally indistinguishable from a public space, given the encroaching development over parts of this public road; namely an outdoor area of the directly adjoining residential property to the north of the subject site, and the at-grade car park to the east. It is not proposed to utilise this alley for any vehicle movements (its width would prevent this from occurring in any case), however pedestrian access is still possible by traversing the car park until such time that enforcement of encroachments has been

carried out by the City of Adelaide. As it currently stands, the proposed development does not rely on this occurring, and can function as the current site conditions allow.

Figure 1 – Location Map

4. COUNCIL COMMENTS or TECHNICAL ADVICE

4.1 City of Adelaide

The application was referred to the City of Adelaide council for comment.

The council make a number of technical comments in relation to the proposed development. They note that any creation of a loading zone on Elizabeth Street would be for public use, and not for the dedicated use for the proposed waste collection arrangement.

The planning comments of the referral response suggest that the courtyard be closed to Ranelagh Alley, given the outstanding issue of unauthorised development over this piece of Council land. It is understood that these discussion are ongoing, and I consider that it is not necessary to require this promenade to be blocked at one end. Their comments further make note of requiring management control of the gating of this promenade.

The City of Adelaide make a recommendation of 5 conditions, which relate to finished floor levels matching the existing footpath levels, lighting to the satisfaction of Council, adherence to Council's stormwater policies, drainage of planter box and other catchments, and the provision of a landscaping plan.

A copy of the City of Adelaide referral response is attached as an appendix to this report.

5. STATUTORY REFERRAL BODY COMMENTS

5.1 Government Architect

The application was referred to the Government Architect, as a mandatory referral required in accordance with Schedule 8 of the Development Regulations 2008. The State Commission Assessment Panel must have regard to this advice.

The Government Architect supports the applicant's aspiration to deliver a high quality student accommodation facility that positively contributes to activation of this part of the city. Whilst she generally supports the proposed development, she is of the view that the project will benefit from further refinement of the lower section of the podium to achieve a coherent expression for the entire podium and provide a positive contribution to the public realm.

The Government Architect supports the proposed height, noting that this provided in principle due to the site's direct adjacency to the taller 'Stage 1' development. This is further justified by the three metre built form setback to the north and south, and the six storey podium element which provides a convincing built form relationship with the height of the nearby Cumberland Arms Hotel and the scale and rhythm of the 'Stage 1' podium and tower elements which is well balanced. She does, however, feel that opportunity exists to further refine the built form composition of the lower two levels of the podium, with the view to express the entire podium form as one element and convincingly anchor it to the ground.

The Government Architect requests the provision of high quality materials for building, outdoor spaces, and street interface, which is supported by the provision of a materials sample board.

A copy of the Government Architect referral is attached as an appendix to this report.

5.2 Commonwealth Secretary for the Department of Transport and Regional Services (Adelaide Airport Limited)

The application was referred to Adelaide Airport Limited for their comments.

The proposed building, at 97.5 metres AHD, will penetrate the Adelaide Airport Obstacle Limitation Surface (OLS), which is protected airspace for aircraft operations. The development will penetrate the OLS by approximately 11 metres.

The application will require approval in accordance with the *Airports Act 1996*, and the Airports (Protection of Airspace) Regulations 1996, and therefore will be forwarded to the Department of Infrastructure and Regional Development for their approval.

Crane operations associated with construction, if approved, will also be subject to a separate application.

Adelaide Airport Limited do not object to the proposed building.

A copy of the referral is attached as an appendix to this report.

5.3 Heritage South Australia

The application was referred to Heritage South Australia, as, in accordance with Schedule 8 of the Development Regulations 2008, I deemed that the proposed building would materially affect the context within which the State heritage place (Cumberland Arms Hotel) is situated.

The subject site is located 17.5 metres from the rear (southern) wall of the two-storey Cumberland Arms Hotel, separated by a two-storey dwelling.

In their referral response, Heritage South Australia consider the proposed development as acceptable in relation to the Cumberland Arms Hotel, as the articulation of the building form responds and reinforces the podium datum of the adjacent 'Stage 1' development, further of which the two storey element (ground and first) of this podium acknowledges the lower scale of the Cumberland Arms Hotel; the expression and materiality between the podium and upper levels visually reinforces the articulation of the building, which provides fine grain and human scale which responds to the streetscape character of the Hotel; and the background views of the building's northern face from Waymouth Street in front of the hotel will be largely obscured by the hotel itself.

A copy of the Heritage South Australia referral is attached as an appendix to this report.

6. PUBLIC NOTIFICATION

The application is a Category 1 development pursuant to Principle of Development Control 40(a) of the Capital City Zone, as it is not a listed Category 2 form of development.

Accordingly, no public notification was required.

7. POLICY OVERVIEW

The subject site is located wholly within the Capital City Zone as described within the Adelaide (City) Development Plan Consolidated 7 June 2018. It does not share any Zone or Policy Area boundaries.

Relevant planning policies are contained in Appendix One and summarised below.

Figure 2 – Zoning Map

7.1 Capital City Zone

The Capital City Zone is the economic and cultural focus of the State and includes a range of employment, community, educational, tourism and entertainment facilities. It is anticipated that an increased population within the Zone will complement the range of opportunities and experiences provided in the City and increase its vibrancy.

High-scale development is envisaged in the Zone with high street walls that frame the streets. However an interesting pedestrian environment and human scale will be created at ground floor levels through careful building articulation and fenestration, frequent openings in building façades, verandahs, balconies, awnings and other features that provide weather protection.

In important pedestrian areas, buildings will be set back at higher levels above the street wall to provide views to the sky and create a comfortable pedestrian environment. In narrow streets and laneways the street setback above the street wall may be relatively shallow or non-existent to create intimate spaces through a greater sense of enclosure. Minor streets and laneways will have a sense of enclosure and an intimate, welcoming and comfortable pedestrian environment with buildings sited and composed in a way that responds to the buildings' context. There will be a strong emphasis on ground level activation through frequent window openings, land uses that spill out onto the footpath, and control of wind impacts.

New development will achieve high design quality by being contextual, durable, inclusive, sustainable, and amenable. Contemporary juxtapositions will provide new settings for heritage places.

The Concept Plan identifies a height of 43 metres for this site and 53 metres for the directly adjoining site (refer to the Concept Plan below). The Development plan has over height provisions that apply when certain criteria are met (refer to the assessment section for a summary).

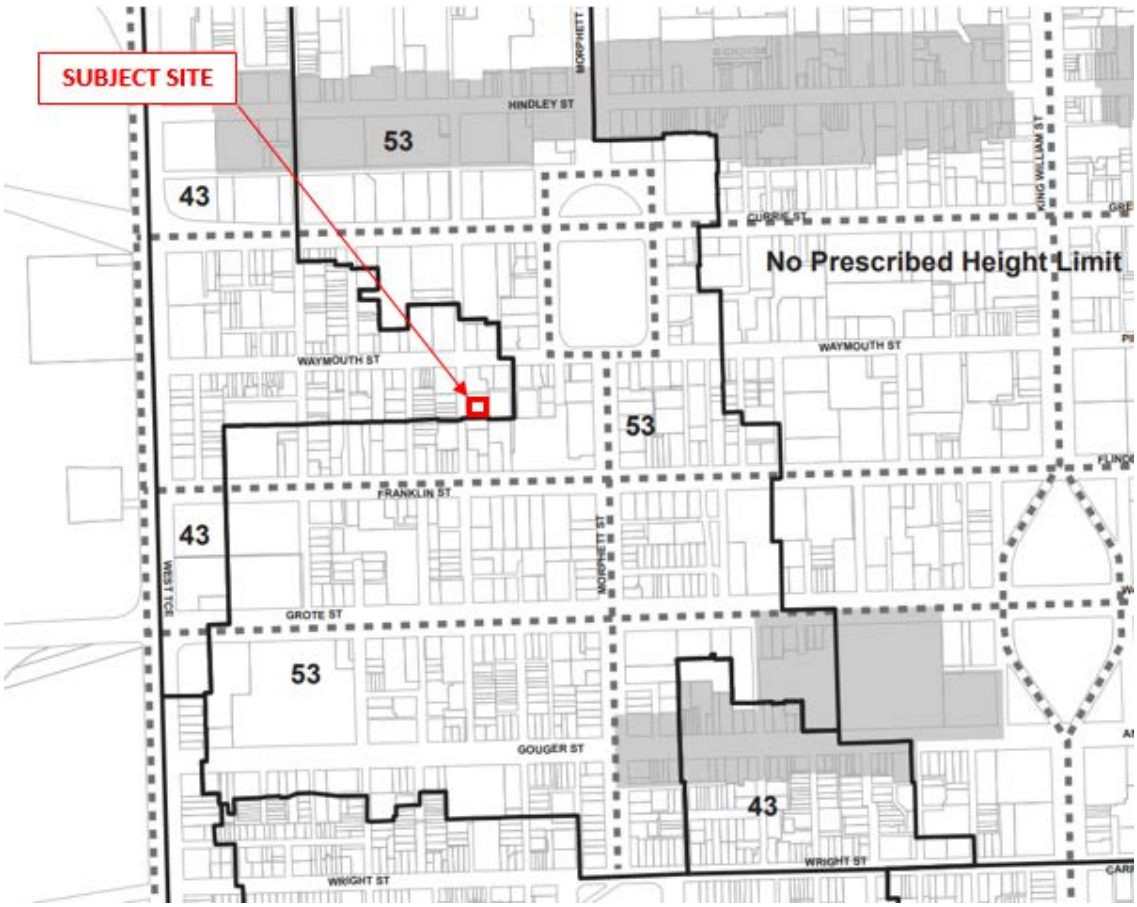


Figure 3 – Concept Plan Figure CC/1 (from Development Plan)

7.2 Council Wide

Council Wide provisions provide guidance on the desire for increased levels of activity and interest at ground level; a high standard of design; appropriate bulk and scale of buildings and positive contribution to streetscapes including interfaces with places of heritage significance.

Council Wide provisions provide further guidance to student accommodation buildings, Crime Prevention Through Urban Design, energy efficiency, built form including height, bulk and scale, composition and proportion, materials, colours and finishes, active street frontages, and access and movement.

The policies which have guided this assessment are included in the attachments of this report.

7.3 Overlays

7.3.1 Noise and Air Emissions

This site is located within the designated area for the Noise and Air Emissions Overlay, and as such requires assessment against *Minister's Specification SA 78B for Construction Requirements for the Control of External Sound.*

7.3.2 Airport Building Heights

Prescribed height limits are specified for the subject site, under the Adelaide (City) Airport Building Heights Map Adel/1 (Overlay 5).

Referral to the Department of Transport and Regional Services through Adelaide Airport Limited is required where a development would exceed the Obstacle Limitation Surface contours shown on Overlay 5. The referral confirms the OLS penetration of approximately 11 metres, which they state will require approval by the Department of Infrastructure, Regional Development and Cities; in line with the *Airports Act 1996* and the Airports (Protection of Airspace) Regulations 1996. Crane operations associated with construction, if approved by the Department of Infrastructure, Regional Development and Cities, will also be subject to a separate application.

A copy of the referral response is contained in the attachments.

8. PLANNING ASSESSMENT

The application has been assessed against the relevant provisions of the Adelaide (City) Development Plan, which are contained in Appendix One.

8.1 Quantitative Provisions

	Development Plan Guideline	Proposed	Guideline Achieved	Comment
Building Height	Maximum*: 43 metres	52.5 metres	**YES** ☒ NO ☐ PARTIAL ☐	Capital City Zone allows for overheight provisions, which the proposal satisfies
Land Use	Student accommodation	Student accommodation	**YES** ☒ NO ☐ PARTIAL ☐	
Car Parking	No minimum	Nil	YES ☐ NO ☐ **N/A** ☒	
Bicycle Parking	No guide for proposed land use	30 spaces	YES ☐ NO ☐ **N/A** ☒	1 for every 10 beds
Boundary Setbacks	Buildings should be positioned regularly on the site and built to the street frontage, except where a setback is required to accommodate outdoor dining or provide a contextual response to a heritage place.	Primary (Elizabeth Street/west) frontage: North: South: East:	YES ☐ **NO** ☒ PARTIAL ☐	

8.2 Land Use and Character

The proposed land use is entirely student accommodation, and uses ancillary to it; i.e. the manager's office and communal spaces.

Principle of Development Control 1 of the Capital City Zone sets out a number of envisaged land uses. Student accommodation is plainly set out in this list, and as such the land use is appropriate, and this policy is met.

Principle of Development Control 5 sets out that development should be consistent with the Desired Character for the Zone. The proposal is considered to accord with the Desired Character, as it provides for a high-scale development with high street walls that frames the street. It provides for an interesting pedestrian environment and human scale with its articulation and fenestration, and openings in building facades. The proposal responds to its surrounds and positively contributes to the character of the immediate area; is fit for purpose, displays excellent adaptability, and considers the existing development around it; integrates landscaping elements to its design; improves environmental performance and minimises energy consumption; and provides natural light and ventilation to habitable spaces.

8.3 Building Height

Development should not exceed (at this site) 43 metres, unless, notwithstanding its height, it has regard to the context that forms the positive character of the locality and is sympathetic to the desired character of the Zone or Policy Area and the anticipated city form expressed in the Concept Plan which guides its maximum height.

The Capital City Zone allows for overheight development, where it can display it meets a number of measures. These include: an orderly transition up to an existing taller building, high quality open space that is universally accessible, high quality pedestrian linkages, no on-site car parking, active uses to at least 75% of the public street frontages, and a range of dwelling types. Furthermore, to be permitted to exceed its maximum building height sought by the Concept Plan, the development will need to satisfy sustainable design measures; including: a communal useable garden integrated with the design of the building that covers the majority of a rooftop area, living landscaped vertical surfaces of at least 50 square metres, passive heating and cooling design elements, and solar photovoltaic cells on the majority of the available roof area.

The proposed development has a building height of 52.5 metres, with the top of the core extending to an overall height of 55.0 metres. The Development Plan provides a definition of building height, and from this definition, the building height is considered as 52.5 metres.

Directly adjacent the site, to the south, exists the ‘Stage 1’ of the West Franklin development, which has a building height of 60.95 metres to its rooftop (DA 020/A054/15 V3) – and is located within the 53 metre building height area of the Concept Plan. It is considered, at the proposed height of 52.5 metres, that this building will offer an orderly transition between the proposed building and the adjacent existing taller building.

The proposal incorporates a generous open space at the building’s ground level, a high quality pedestrian link between its two street frontages, no on-site car parking, and at least three-quarters of its frontage is considered active. Furthermore, the development includes a communal garden space at its sixth floor for use by its residents, passive heating and cooling elements through its architectural design, and a solar array comprises the majority of the roof area.

It is considered that the proposal achieves the requirements of over-height permissibility, and that the proposed building height will be congruous with the Zone policy, and will not present any concern at the proposed height.

8.4 Design and Appearance

Development should be of a high standard of architectural design and finish which is appropriate to the City's role and image as the capital of the State. Buildings should achieve a high standard of external appearance by the use of high quality materials and finishes, providing a high degree of visual interest through articulation, and ensuring lower levels contribute to a vibrant public realm. Buildings should present an attractive pedestrian-oriented frontage that adds interest and vitality to City streets. The proposed development presents a contemporary, tall building which features a mix of quality materials – including brick, glass and aluminium; and that of a more basic nature – including precast and in-situ concrete, however arranged in a way that will present a modern and attractive building, whilst being low-maintenance.

A six-level podium, which makes use of predominantly brick and glass materials at its Elizabeth Street frontage, provides visual interest, with these levels featuring an angled/faceted façade of alternate rhythm across four levels. At the ground and first level, three quarters of the frontage is visually permeable, with only the southern-most end of the Elizabeth Street frontage inactive – owing to the location of the transformer room and waste room access doors. This ground level (and first level) are set back slightly from the western boundary, which allows for a small strip of landscaping and further helps define the main entry point.

Proportionally, the podium element has a strong relationship to the podium of the adjacent 'Stage 1' of the West Franklin development, whilst also featuring similar setbacks of the upper levels (to its north and south elevations) as a response to natural light and ventilation; in addition to providing visual relief of the bulk of the building.

Separating the podium and the tower element is a negative/void level, at level 6, which is mostly made up of terrace, and common living. It does contain beds (and bed clusters) at this level, however the design language at this level contrasts that of the podium and the tower. This level makes use of a generous amount of glazing; most of which forms the balustrade to the terrace, and the walls of the common area and bedrooms. Vertical landscaping at its west and east elevations, at this level, provide additional softening of the appearance of the glass, and will also provide for some shading to the glazing.

The setbacks of the tower element respond to the adjacent existing development to the south, and offer light and ventilation to both the proposed building and the existing building (and their balconies). At this tower, visual interest is carried up the building with the use of an alternating angled façade to each studio/bed. This gives the façade a 'zig-zag' appearance, and also affords solar shading to the glazing where the slab edge protrudes beyond the vertical wall element which is angled inwards.

The contemporary building presents an attractive, and context-responsive building. It accords with design policy of the Development Plan, both of Council Wide provisions – including those which relate to Student Accommodation, and the facilities it should provide – as well as Zone provisions which seek a high standard of buildings.

8.4.1 Building Setbacks

The podium of the proposed building is built to its southern and northern boundaries – except for a portion of its northern boundary set back to create a light well for the podium levels; in the event that the site to the north is developed. The ground floor and first floor are set back generously from the northern boundary, which create the double-height entry point, and allow for landscaping and plaza area. The podium's eastern and western boundary setbacks vary, owing to the angled façade of these levels, however their extremities generally meet the site boundary.

The tower section of the building, above the podium, is set back 3.0 metres from the southern and northern boundaries. This results in an overall setback of 8.725 metres from the balconies of the adjacent 'Stage 1' of the West Franklin development, and further allows additional light and ventilation for the proposed building, and the existing adjacent building. The tower has a 0.7 metre setback from its eastern boundary, which is a 3.0 metre wide public road (Ranelagh Alley).

The setbacks accord with Zone policy, which seeks upper level setbacks in the order of 3 to 6 metres which relate to the scale and context of adjoining built form, provide a human scale at street level, create a well-defined and continuity of frontage, contribute to the interest, vitality and security of the pedestrian environment, maintains a sense of openness to the sky for pedestrians and brings daylight to the street.

Whilst the ground and first level of the main street frontage are not built to its boundary, as sought by Development Plan policy, it is considered that this small (approximately 1.5 metre) setback is appropriate as the area is landscaped, allows for a clearly defined entrance point, and allows egress doors to open within the confines of the subject site. Furthermore, the southern end provides a visual relationship with the inset balcony of the adjoining 'Stage 1' development.

8.4.2 Occupant Amenity

Council Wide provisions provide specificity to the way in which student accommodation buildings should be designed for its occupants. Policy seeks common facilities that enable a more efficient use of space (such as cooking, laundry, common rooms or communal open space), every room having access to natural light and external outlook, the easy adaptation or reconfiguration to accommodate alternate use, the design of which maximises opportunities to natural light and ventilation, private open space in the form of balconies or communal open space (including rooftop gardens and common rooms that is accessible to all occupants of the building, and the internal layout and facilities providing sufficient space and amenity for the requirements of student life and promote social interaction.

The proposed building is considered to offer a generous, and high quality amenity to its occupants. The ground floor features a covered promenade/courtyard with landscaping and seating areas, with a casual dining area located off the entry foyer. Directly above this, at the first floor, is a games area, study space, private study pods, gym, and arts room. This first floor is comprised almost entirely of communal spaces for use by its occupants. At residential levels 2 to 5, there is a common space set aside; which have different use on each level. Level 2 is the laundry; three is a cinema; four is a cyber games room; and 5 is a study/library. Level 6 features the expansive terrace which extends across its east and west axis, and is located to the north to afford natural light and ventilation at this terrace. Behind this terrace area is a common kitchen and living area. Levels 7 to 16 feature a breakout space, adjacent the core, at each level.

Whilst a true 'roof-top' garden is not provided, I consider the intent of this policy being met, where the positioning of this terrace at level 6 is still accessible to all occupants of the building, and it further having greater connection to the street – where it would be less legible and less connected to the ground if it were located at its rooftop level. The positioning of this terrace at level 6 further provides weather protection during inclement rainy and windy winter months, and similarly the sun and heat during summer months.

Every bedroom has access to natural light and ventilation through an opening window, and the design of these is such that they can be adapted for future alternate use. I provide additional assessment against adaptability in the section below.

8.5 Adaptability

The applicant has provided details demonstrating the ability for the building to be reconfigured for alternate use, should its operative life as student accommodation cease. The applicants note that the lightweight walls readily provide for an adaptable floor plate configuration that can accommodate a range of alternate land uses including various configurations of hotel accommodation.

Accordingly, this satisfies Principle of Development Control 72 of Council Wide provisions, where it seeks that student accommodation, specifically, be adaptable to larger dwellings or other alternative use.

8.6 Heritage

Whilst not directly adjacent – being separated by a two-storey dwelling to the immediate north of the site – the proposed building will form a backdrop to the Cumberland Arms Hotel when viewed from the north.

In accordance with Schedule 8 of the Development Regulations 2008, I consider the proposal to materially affect the context within which the State heritage place is situated, and accordingly have referred the application to the Minister for the time being administering the *Heritage Places Act 1993* – Heritage SA.

The delegate for the Minister for Environment and Water considers the proposal as acceptable in relation to the Cumberland Arms Hotel, as it provides differentiation in architectural expression and materiality between the podium and upper levels which respond to the established streetscape character of the Cumberland Arms Hotel and to the adjacent Stage 1 development, the setback above the podium acknowledges the lower scale of the Cumberland Arms Hotel, and the distance of 40 metres between the north face of the State heritage place and the proposed building offers a degree of obscurity, particularly when viewed on its oblique angles.

Heritage policy in the Development Plan is generally restrained to heritage places which directly adjoin or share the site, and as such offers little guidance from a policy perspective.

The proposal is not considered to diminish the heritage values of the Cumberland Arms Hotel.

8.7 Traffic Impact, Access and Parking

The application proposes no vehicle parking. This accords with over-height development provisions of the Capital City Zone, where one of the measures is that no on-site car parking is provided.

Access to the development is by the pedestrian paths along Elizabeth Street – its main frontage – and Ranelagh Alley to its east. Legibility of the entrance points are clearly defined, with an expansive double-height opening at its northern edge creating a focal point for its entrance.

The proposed development has no crossovers, and further proposes that no vehicles enter the site. This results in all waste collection occurring on-street, which is at odds with Development Plan policy which seeks that waste collection occurs on-site. The

applicant has engaged GTA Consultants to undertake an assessment to the suitability of this arrangement, who conclude that the on-street collection on Elizabeth Street is able to be done so by a 10 metre refuse vehicle. The GTA report suggests that a new loading zone (12 metres in length) replace the existing redundant crossovers which once served the subject site. It notes that bins will be wheeled from the bin storage area to the kerbside on Elizabeth Street for collection. Discussions of the suitability of the loading zone arrangements are required between Council and the applicant. I do not consider that the waste arrangement alone will be of a significant issue for the proposal. It should be further noted that there are existing parking (and loading) zones located on this eastern side of Elizabeth Street.

Bicycle Parking rates for development are contained in Table/6 of the Development Plan. The proposed land use has no prescribed rate, and as such there is little policy guidance for bicycle parking rates. GTA Consultants have undertaken an empirical assessment of bicycle parking at other student accommodation developments in Australia, including the 'Urbanest' development on Bank Street, Adelaide (with 503 beds and 22 bicycle spaces; a rate of 22.9 beds per bicycle demand). The data provided shows an average of 38.6 bedrooms per 1 bicycle are provided at these sites. The application proposes 30 bicycle spaces, with 300 beds; a rate of 1 space per 10 beds. Given the proximity to universities, public transport, and quality open space, I consider the provision of 30 spaces as acceptable.

8.8 Environmental Factors

8.8.1 Crime Prevention

The application provides a response to a number of CPTED measures which would ordinarily make rise for concern.

The presence of an on-site manager, generous communal amenity at ground and level 1, opening windows to every bedroom to provide passive surveillance, CCTV at the public areas and communal spaces within the building, clear lines of sight within the internal corridors on the accommodation levels, and the opportunity to secure the promenade after hours all provide a good response to CPTED principles.

Further to this, the movements of 300 residents – which is expected to occur at varying hours – will further afford passive benefit to the safety of the development.

8.8.2 Noise Emissions

The proposal sits amongst a number of noise sensitive receivers – being the residential land uses which surround the site.

The proposed building is anticipated to generate noise: generally by its mechanical ventilation, waste collection, and occupant noise.

A report prepared by Vipac makes an assessment against the noise generation of the proposed building, and that of noise received by the building from nearby noise sources. The report makes recommendation for building specification to accord with Development Plan policy, and as such this report will be conditioned as part of any consent that this application may receive.

The report mentions that details of the mechanical services plant are not yet available. Accordingly, the details of this (and an updated report) should be provided prior to Development Approval being issued, should planning consent

be granted, that satisfies Development Plan provisions around noise emissions and relevant acoustic attenuation.

8.8.3 Waste Management

A waste management report has been prepared by Rawtec. The report considers the proposed land use, and the intended number of bedrooms – including their typical waste generation.

A waste storage area has been provided. This houses general waste bins, recycling bins, green/organic bins, and hard and e-waste, and also includes a bin washing area.

Bin collection is proposed to be collected by a commercial contractor, at a frequency of 7 times per week; based on the estimated waste and recycling volumes. The transfer of bins from the bin room to the collection vehicle is done so by the collection contractor, who will park in the proposed loading bay adjacent the building, and access the bin room which has direct access to the Elizabeth Street frontage.

Whilst on-site collection is envisaged in the Development Plan, I consider the arrangement of an on-street (loading bay) collection as appropriate, where it would be detrimental to the overall proposal to allow waste vehicles to enter the site; which creates a crossover to the development, and further reduces the active street frontage. It is not possible for collection to occur from Ranelagh Alley.

8.8.4 Sustainability

Development Plan policy calls for development which is compatible with the long term sustainability of the environment, minimises consumption of non-renewable resources, and utilises alternative energy generation systems.

The proposal incorporates a substantial solar array at the rooftop of the building, which is stated to generate approximately 20-30 kilowatts of energy.

Further to the energy generation, the building is designed to incorporate angled concrete blade walls with alternating expressed floor slabs which will assist in shading the glazing on the western (and eastern) façade.

A report prepared by BCA Engineers further provides detail on the energy efficiency of the building, which is stated to comply with the requirements under Section J of the National Construction Code, and those in the Building Code of Australia.

8.8.5 Wind Analysis

A wind impact report has been prepared by Vipac. The report considers the wind exposure at a number of locations of the development, but importantly at its edges on the ground, the promenade at ground level, and the sixth level terrace.

The report summates that the proposed development would not generate wind conditions in excess for the criterion for safety for pedestrian level wind effects, that the wind conditions at the most ground level footpath and the promenade are within criterion for walking (with the western end possibly having higher wind conditions due to the washdown from the west façade and corner acceleration), and that the sixth level terrace would be expected to have wind conditions within the recommended walking criterion.

The report makes one recommendation, which is to consider a canopy at the western elevation to relieve this location of any adverse washdown or corner acceleration from prevailing winds – generally the south-west.

8.9 Signage

Building signage is shown notionally on the submitted plans. There are two signage zones proposed, which integrate with the architecture of the building. A vertical sign, spanning the upper two levels, is proposed for the northern end of the western elevation, and a horizontal sign at the upper eastern portion of the podium of the northern elevation.

No technical details of the signage are provided with the application, and accordingly no assessment has been made.

for the building, signage does not form part of this application. An advisory note will be attached to any consent of this application stating that all signage details are to be provided to the State Commission Assessment Panel before any approvals are to be granted.

9. CONCLUSION

The proposed development of a student accommodation building is an appropriate land use for the site. The built form is of suitable scale, and the policies which guide the way in which development shall occur at this site are well considered, and result in a suitable proposal.

The proposal is considered to satisfy the intent of policies it falls short on, with other matters able to be addressed by condition prior to Development Approval, and as the design documentation progresses.

Accordingly, the proposal warrants Development Plan Consent, subject to the conditions listed below.

10. RECOMMENDATION

It is recommended that the State Commission Assessment Panel:

1) RESOLVE that the proposed development is NOT seriously at variance with the policies in the Development Plan.

2) RESOLVE that the State Commission Assessment Panel is satisfied that the proposal generally accords with the related Objectives and Principles of Development Control of the Adelaide (City) Development Plan.

3) RESOLVE to grant Development Plan Consent to the proposal by Brown Falconer c/- Masterplan Pty Ltd for the construction of a seventeen (17) level student accommodation building at 54-58 Elizabeth Street, Adelaide, subject to the following conditions of consent.

PLANNING CONDITIONS

1. That except where minor amendments may be required by other relevant Acts, or by conditions imposed by this application, the development shall be established in strict accordance with the details and following plans submitted in Development Application No 020/A040/19.

   Reason: To ensure the development is undertaken in accordance with the approved documents.

2. Prior to Development Approval for superstructure works, the applicant shall submit a final detailed schedule of external materials and finishes in consultation with the State Commission Assessment Panel and the Government Architect to the reasonable satisfaction of the SCAP.

   Reason for condition: To ensure the development is constructed with high quality materials and finishes.

3. Landscaping shown on the approved plans shall be established prior to the operation of the development and shall be maintained and nurtured at all times, with any diseased or dying plants being replaced.

   Reason for condition: To ensure the development maintains its appearance.

4. The finished floor level of the ground floor level at the entry points to the development shall match the existing footpath unless otherwise agreed to by the City of Adelaide Council in writing.

   Reason for condition: The Corporation of the City of Adelaide will not adjust footpath levels to suit finished building levels. The existing footpath levels are to be retained and entrance levels of the development must meet the existing back of footpath.

5. Lighting shall be installed to the awning at street level on Elizabeth Street in accordance with Council's guideline entitled "Under Verandah/Awning Lighting Guidelines" at all times to the reasonable satisfaction of the Council and prior to the occupation or use of the Development. Such lighting shall be operational during the hours of darkness at all times to the reasonable satisfaction of Council.

   Reason for condition: To ensure the development does not create public areas with insufficient lighting.

6. The connection of any stormwater discharge from the land to any part of the Council's underground drainage system shall be undertaken in accordance with the Council Policy entitled 'Adelaide City Council Storm Water Requirements' to the reasonable satisfaction of the Council.

   Reason for condition: To ensure that adequate provision is made for the collection and dispersal of stormwater.

7. All collected drainage water from any planter boxes, or seepage collection systems shall be discharged to the sewer to the reasonable satisfaction of the Council.

   Reason for condition: To ensure that adequate provision is made for the dispersal of collected water.

ADVISORY NOTES

a. This Development Plan Consent will expire after 12 months from the date of this Notification, unless final Development Approval from Council has been received within that period or this Consent has been extended by the State Commission Assessment Panel.

b. The applicant is also advised that any act or work authorised or required by this Notification must be substantially commenced within 1 year of the final Development Approval issued by Council and substantially completed within 3 years of the date of final Development Approval issued by Council, unless that Development Approval is extended by the Council.

c. The applicant has a right of appeal against the conditions which have been imposed on this Development Plan Consent. Such an appeal must be lodged at the Environment, Resources and Development Court within two months from the day of receiving this notice or such longer time as the Court may allow. The applicant is asked to contact the Court if wishing to appeal. The Court is located in the Sir Samuel Way Building, Victoria Square, Adelaide, (telephone number 8204 0289)

d. Signage does not form part of this development application. No advertising display or signage shall be erected or displayed on the subject land without any required Development Approval being obtained first.

e. The applicant is reminded of their obligations under the Local Nuisance and Litter Control Act 2016 and the Environment Protection Act 1993, with regard to the appropriate management of environmental impacts and matters of local nuisance. For further information about appropriate management of construction sites, please contact the City of Adelaide council.

f. A Building Site Management Plan is required prior to construction work beginning on site. The Building Site Management Plan shall be submitted to Council, and should include details of such items as: work in the public realm; street occupation; hoarding; site amenities; traffic requirements; servicing site; adjoining buildings; and reinstatement of infrastructure. Please contact the City Works team at Adelaide City Council on 8203 7203.

g. Any activity in the public realm, whether it be on the road or footpath, requires a City Works Permit. 48 hours' notice is required before commencement of any activity. The City Works Guidelines detailing the requirements for various activities, a complete list of fees and charges and an application form can all be found on Council's website at www.cityofadelaide.com.au
   When applying for a City Works Permit you will be required to supply the following information with the completed application form:

- A Traffic Management Plan (a map which details the location of the works, street, property line, hoarding/mesh, lighting, pedestrian signs, spotters, distances etc.);
- Description of equipment to be used;
- A copy of your Public Liability Insurance Certificate (minimum cover of $20 Million required);
- Copies of consultation with any affected stakeholders including businesses or residents.

Please note: Upfront payment is required for all city works applications.
Applications can be received by Council via the following:
Email: cityworks@cityofadelaide.com.au
Fax: 8203 7674
In Person: 25 Pirie Street, Adelaide

h. Section 779 of the Local Government Act provides that where damage to Council footpath / kerbing / road pavement / verge occurs as a result of the development, the owner / applicant shall be responsible for the cost of Council repairing the damage.

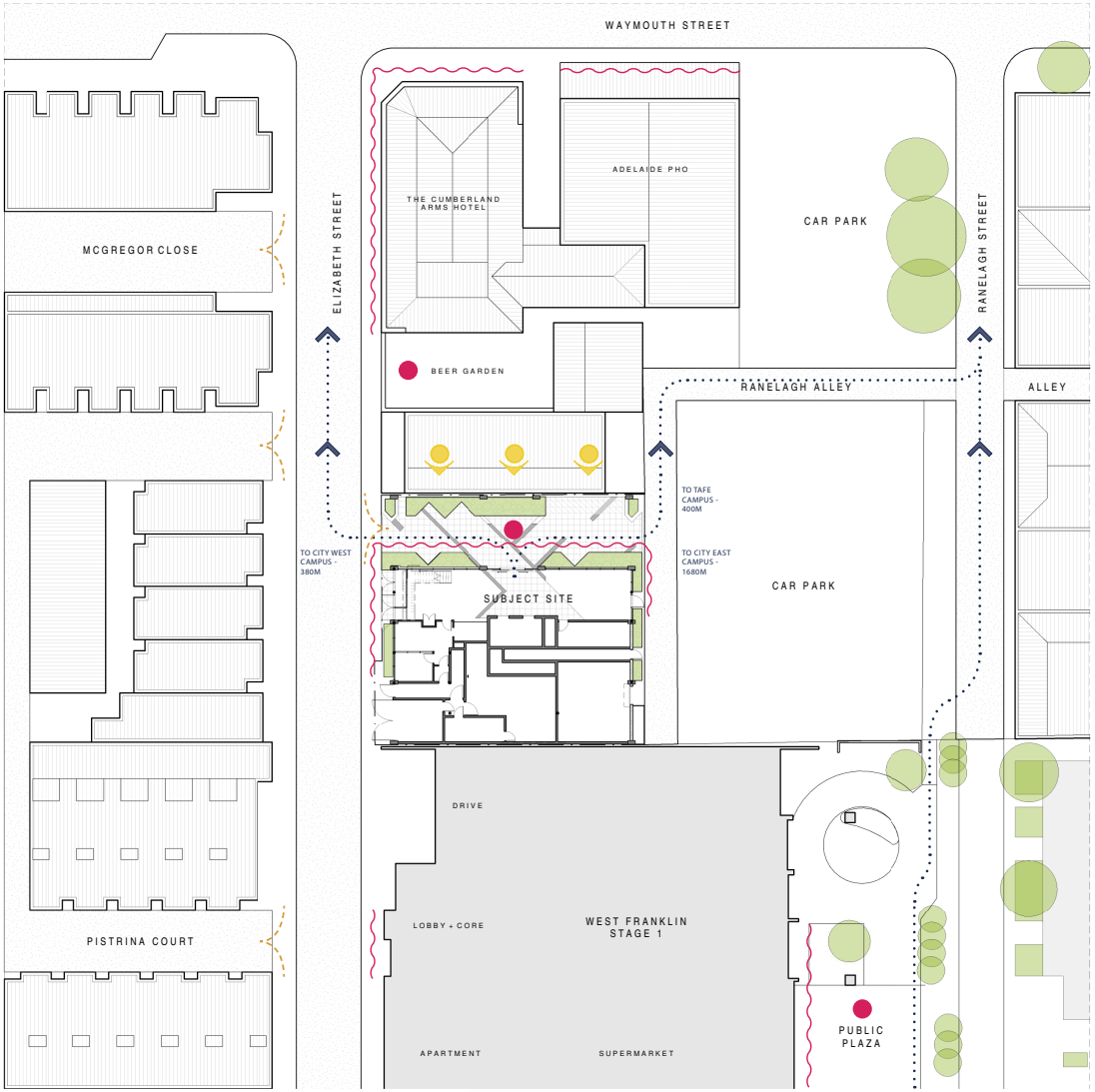
Will Gormly
Senior Planning Officer
DEVELOPMENT DIVISION
DEPARTMENT OF PLANNING, TRANSPORT and INFRASTRUCTURE

BROWN FALCONER

CONTACT
BROWN FALCONER
28 Chesser Street, Adelaide
South Australia 5000
Telephone 08 8203 5800
Fax 08 8223 2440
bfg.admin@brownfalconer.com.au
brownfalconer.com.au

CONTENTS

BROLA FALCONER



Site Plan
Scale - 1:250

Location Plan Legend

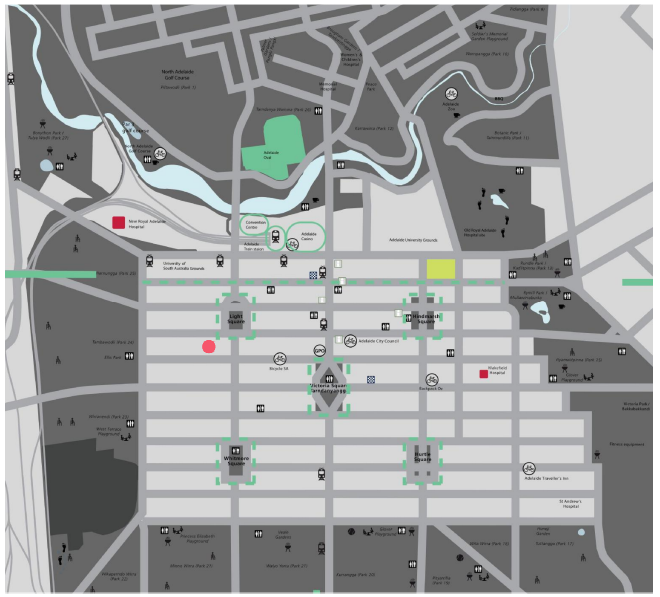
- Subject Site Location
- Sports + Recreation
- Adelaide Traveller's Inn
- Train
- Tram
- Pool
- Public Seating
- Public BBQ
- Public Restrooms
- Information
- Parking
- Hospital
- Police
- Park
- Cafe

Site Plan Legend

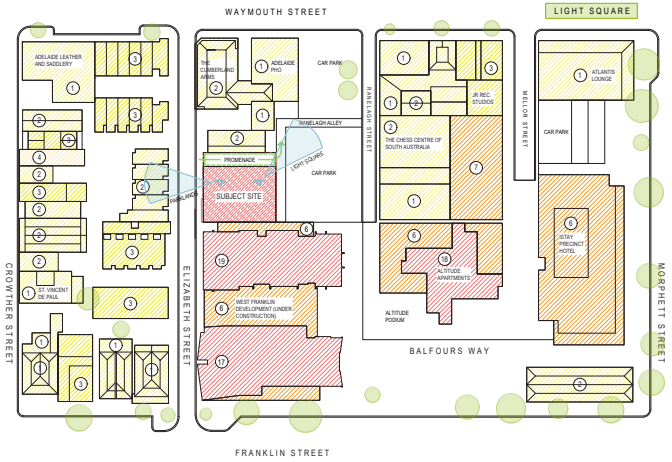
- Sunlight
- Community node
- Activated frontage
- Thoroughfare
- Laneway entrance

Context Plan Legend

- Number of Storeys
- Progression from 1 - 19 Storeys
- Subject Site
- Key Views
- Open Space



Location Plan

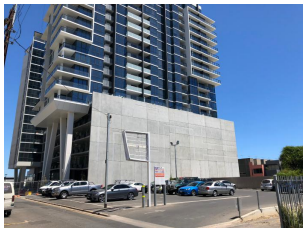


Context Plan

West Franklin Stage 3 - Student Accommodation
Site + Precedent Images

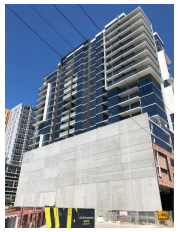
BROLA FALCONER

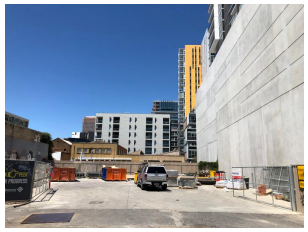
Site Context


West Franklin development observed from Ranelagh Street


North-Eastern view of Light Square beyond

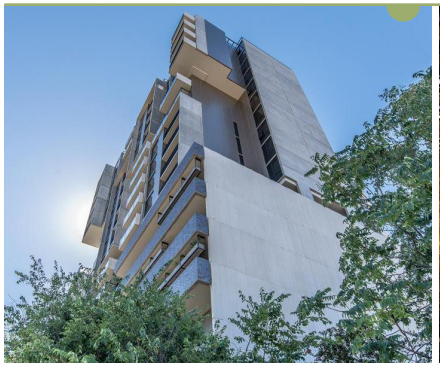

Entrance to The Cumberland Arms


West Franklin from Elizabeth Street


Subject site observed from Elizabeth Street


Neighbouring residential development to the North of site

Precedents

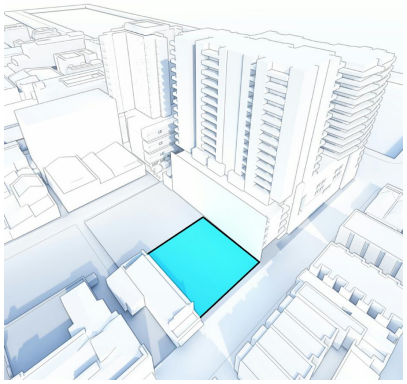


Bohem Apartments

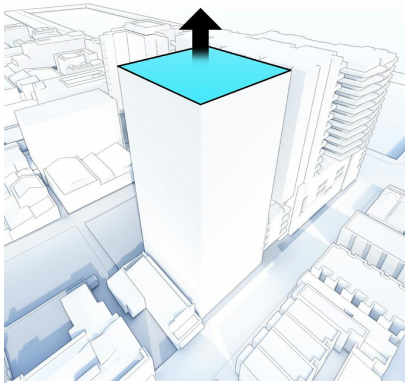
- Located on Whitmore Square, Adelaide
- Use of brick in a multi-res project to achieve a residential aesthetic
- Colour and tone of brick
- Grey concrete on prominant facade

1 King William

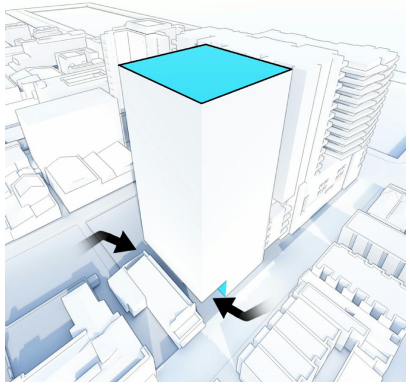
- Located on corner of King William Road and North Terrace, Adelaide
- Landscaped green band around ground floor
- Scale of entry and proportion of structure
- Transparency of services on the facade



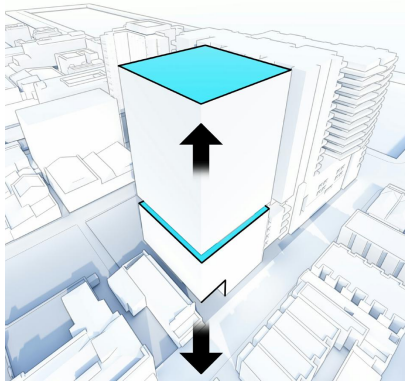
Subject Site



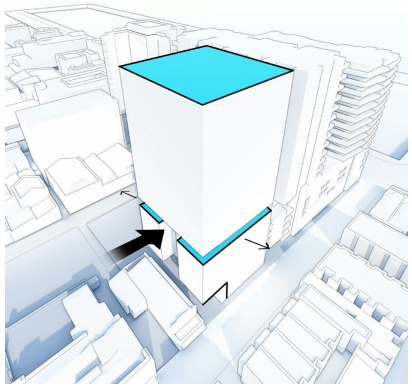
Gesture 1



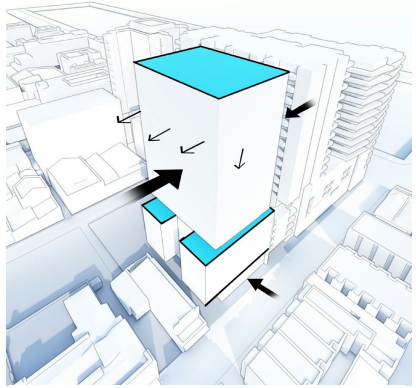
Gesture 2



Gesture 3

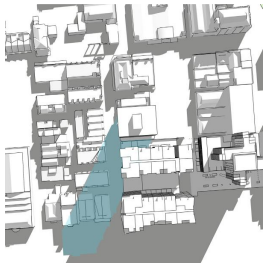


Gesture 4



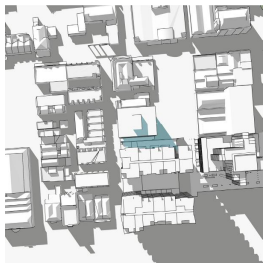
Gesture 5

Sun Study
Winter Solstice - 21st of June



10 AM

12 PM



2 PM

Sun Study
Summer Solstice - 22nd of December

10 AM

12 PM

2 PM

BROLA FALCONER

West Elevation

Key design principles

Interface Conditions

- Upper levels are set back 3.0m on the south to provide relief to the Stage 1 apartments.
- Upper levels are set back 3.0m on the north to activate the prominant facade and utilise northern light and aperture.
- A terrace at level 6 engages with the streetscape and provides a visual connection with the podium of Stage 1.

Streetscape

- Activation at ground plane through East-West linkning promenade. Refer landscape concept plan.

Sustainability

- Sustainability provisions incorporated into the design. Refer page 12.

Materiality

- In-situ grey concrete blade columns at ground level support the brick podium above.
- Angled brick podium facade relates to Stage 1 development adjacent.
- High quality grey precast double-height facade to tower component.
- Extended off-form concrete slab edges.

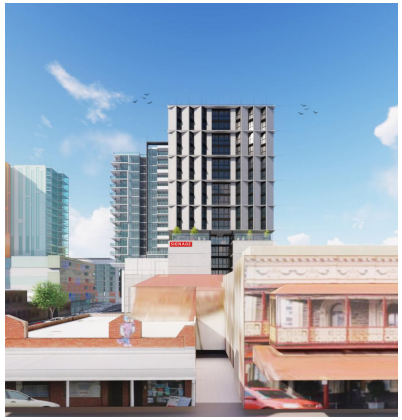
Amenity

- Large outdoor common area within promenade, with access to natural light.
- Large common facilities at level 1, included study, games, gym and arts spaces to activate street frontage.
- Open terrace at level 6 with internal dining and kitchen facilities.
- Breakout space provided to every level above podium.
- Additional space created within studios by angled facade.

North-East Elevation

Elizabeth Street Entryway

Elizabeth Street Entryway



North Elevation

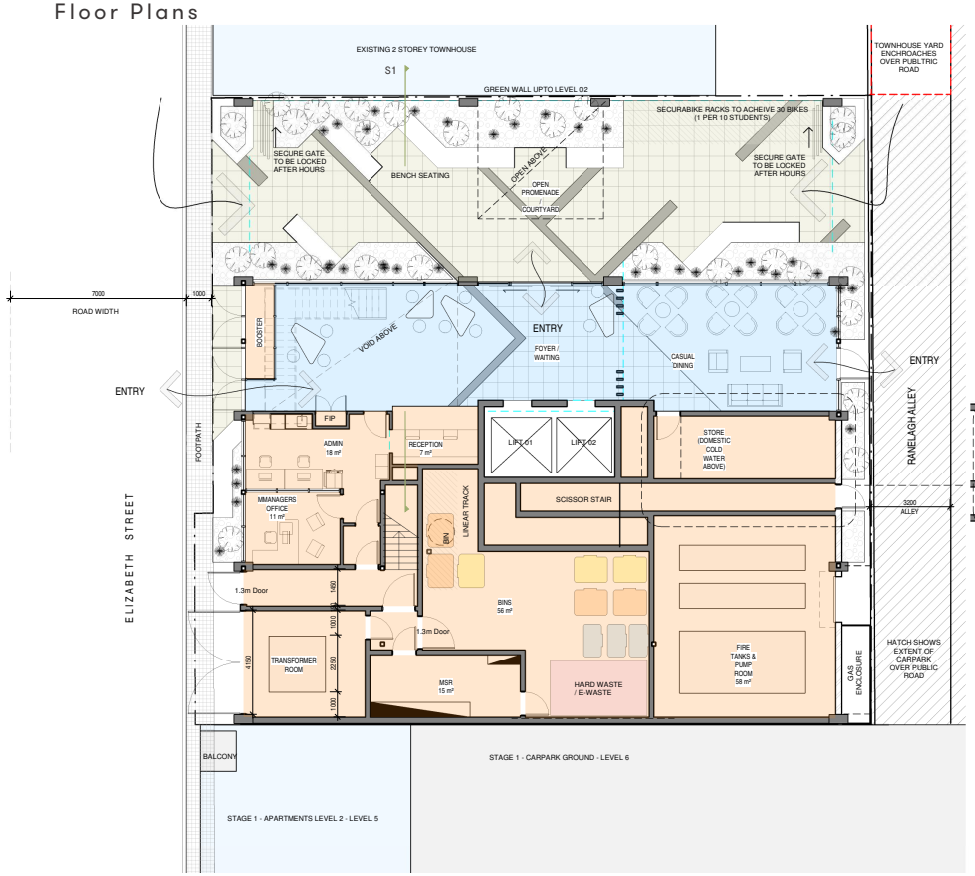
North-West Elevation


West Facade

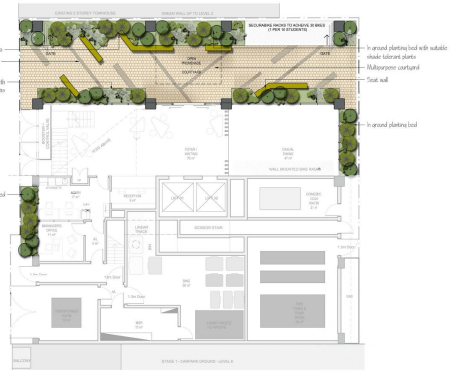

Promenade looking South


Promenade looking North

BROLA FALCONER



Ground Floor Plan
Scale - 1:100



First Floor Plan
Scale - 1:100

Ground Floor Landscape Plan
Scale - 1:200

	Studio Apartments	DDA / Queen	Twin Studio	6 bed cluster	4 bed cluster	Total Beds	BUILDING AREA	EXTERNAL	TOTAL GBA	Common Space
Lv16	18	0	2	0	0	20	480		480	28
Lv15	18	0	2	0	0	20	480		480	28
Lv14	18	0	2	0	0	20	480		480	28
Lv13	18	0	2	0	0	20	480		480	28
Lv12	18	0	2	0	0	20	480		480	28
Lv11	18	0	2	0	0	20	480		480	28
Lv10	18	0	2	0	0	20	480		480	28
Lv9	18	0	2	0	0	20	480		480	28
Lv8	18	0	2	0	0	20	480		480	28
Lv7	18	0	2	0	0	20	480		480	28
Lv6	0	0	0	0	8	8	350	230	580	290
Lv5	8	1	4	6	4	23	580		580	50
Lv4	8	1	4	6	4	23	580		580	50
Lv3	8	1	4	6	4	23	580		580	50
Lv2	8	1	4	6	4	23	580		580	50
Lv1	0	0	0	0	0	0	365		365	310
Ground	-	-	-	-	-	-	415	165	580	270
TOTAL BEDS	212	4	36	24	24	300	8250	395	8645	1,350
	71%	1%	12%	16%		AREA PER BED	28.8		Total Common area per bed	4.5

West Franklin Stage 3 Yield

Levels 2 - 5 Floor Plan (Typical)

Scale - 1:100

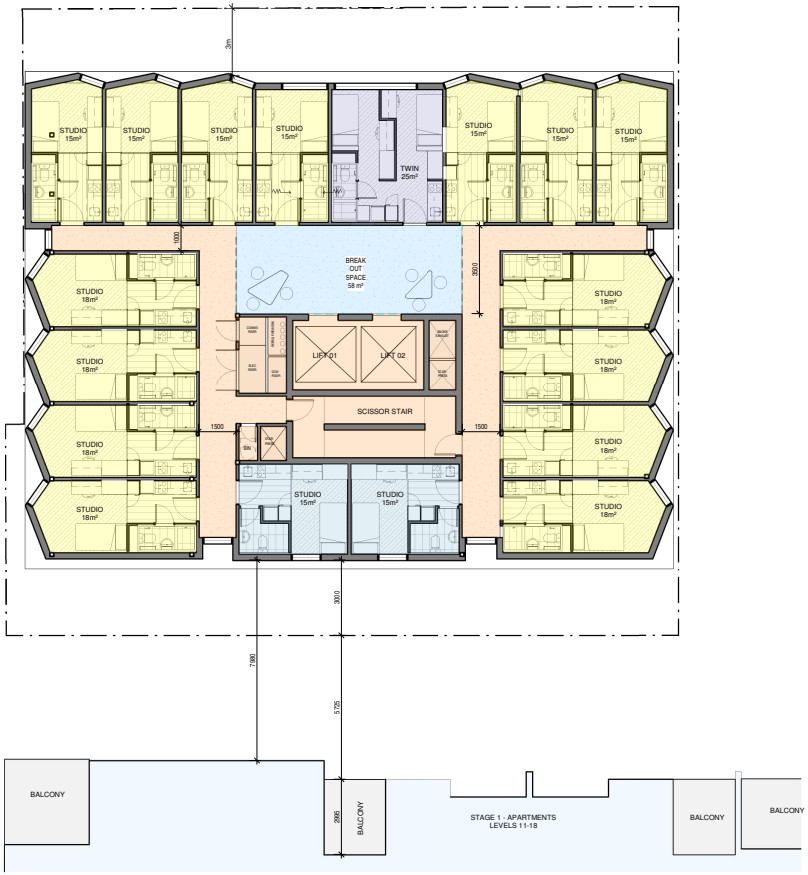
Level 6 Floor Plan (Terrace)

Scale - 1:100

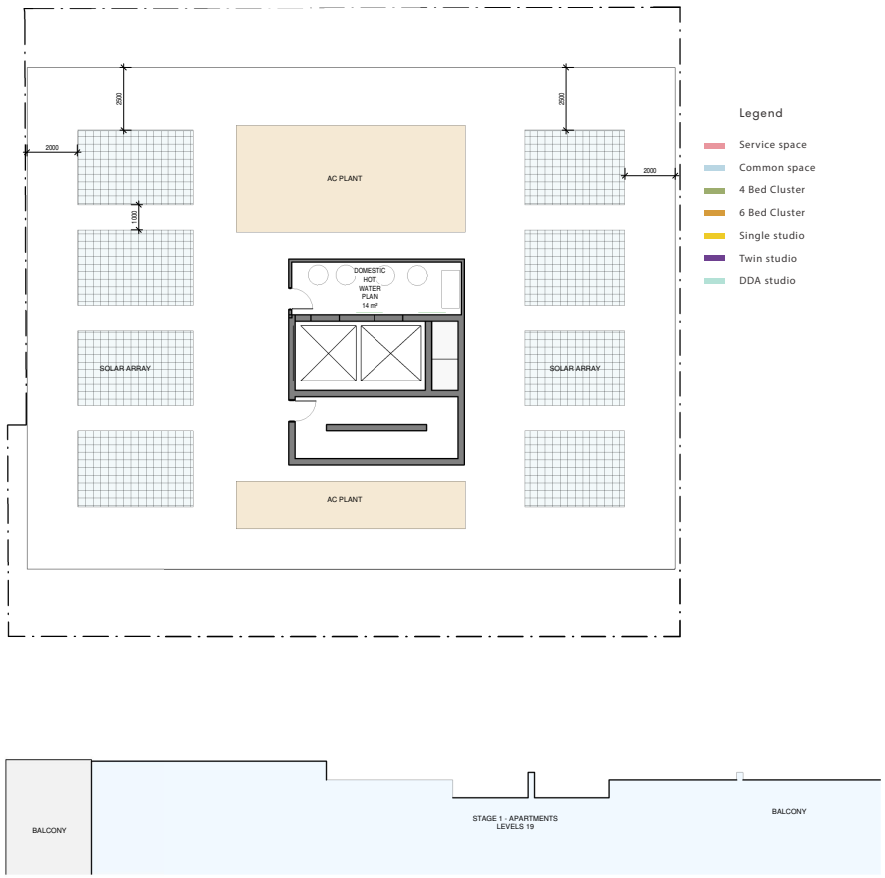
Elizabeth Street Facade

Terrace Perspective

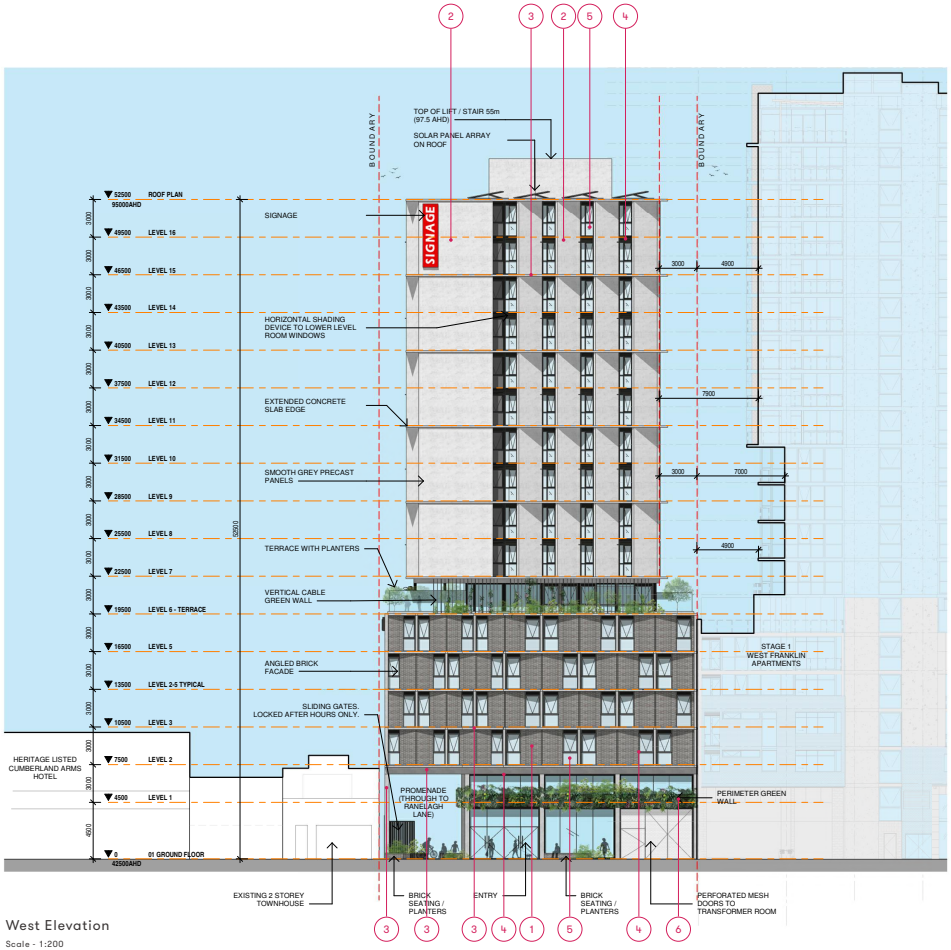
Terrace Perspective



Levels 7 - 16 Floor Plan (Typical)
Scale - 1:100

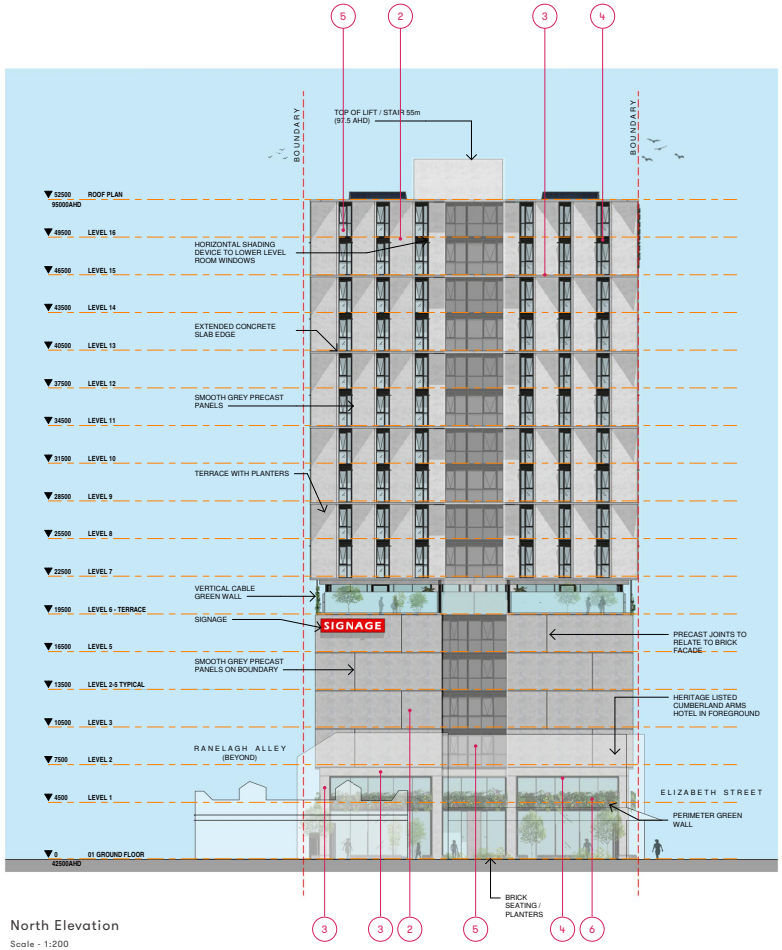


Roof Plan
Scale - 1:100



West Elevation

Scale - 1:200



North Elevation

Scale - 1:200

Material Legend

1 Dark coloured brick

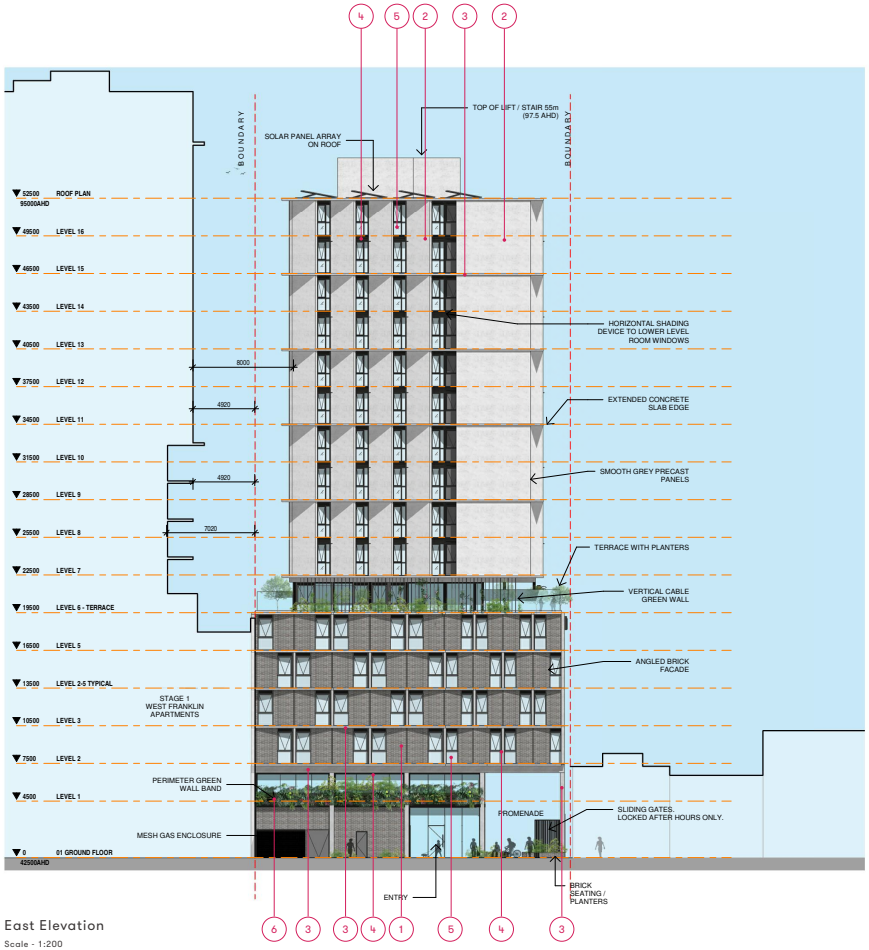
2 Precast concrete in standard grey

3 In-situ grey concrete

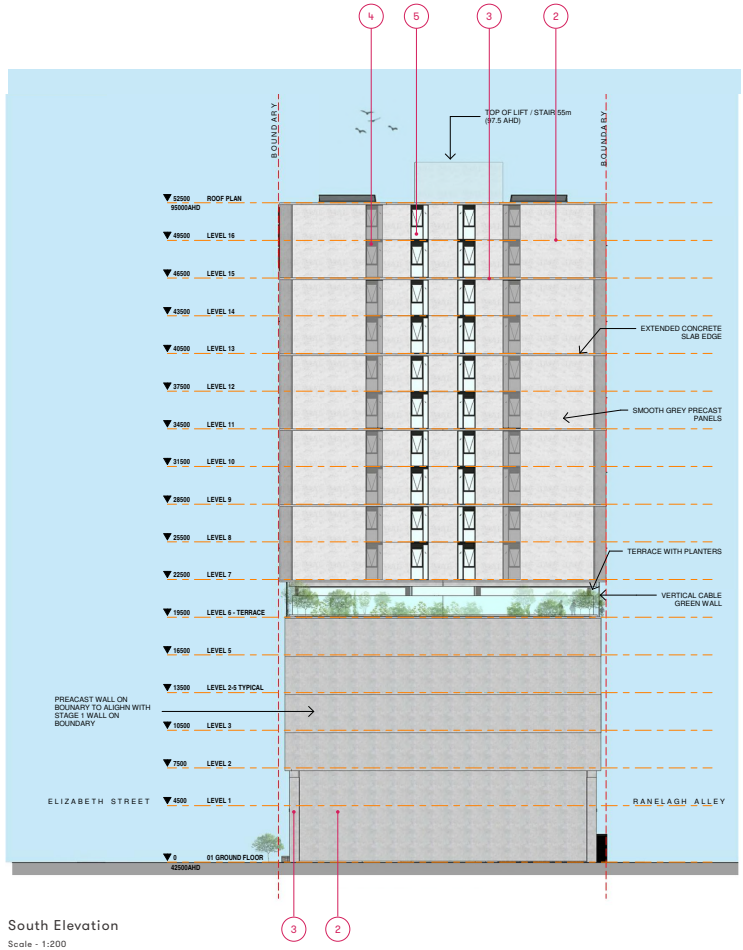
4 Aluminium charcoal frame

5 Glazing

6 Vegetation



East Elevation
Scale - 1:200

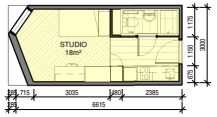


South Elevation
Scale - 1:200

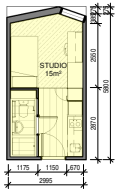
Material Legend

1 Dark coloured brick
2 Precast concrete in standard grey
3 In-situ grey concrete
4 Aluminium charcoal frame
5 Glazing
6 Vegetation

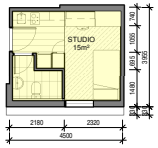
Single Studio



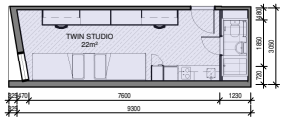
Single Studio



Single Studio

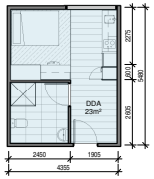


Single Studio

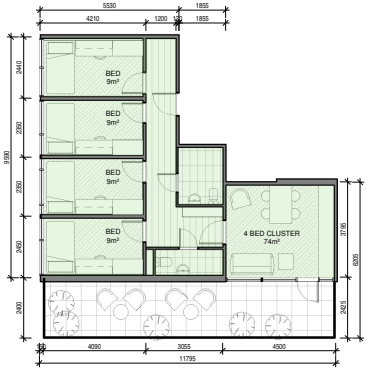


Twin Studio

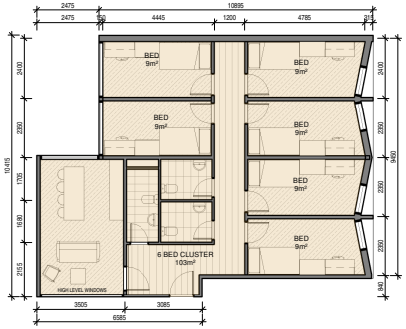
Twin Studio



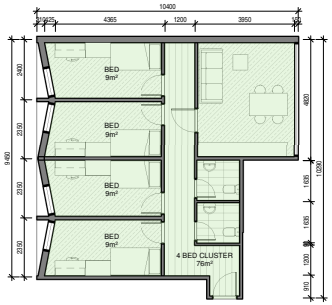
DDA Studio



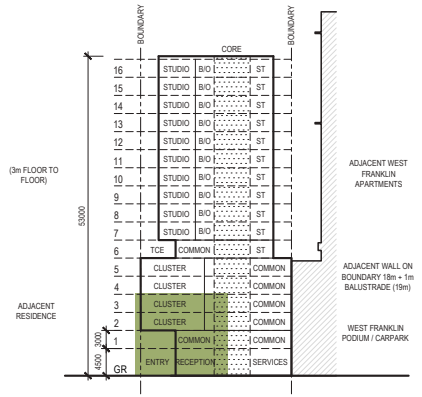
4 Bed Cluster



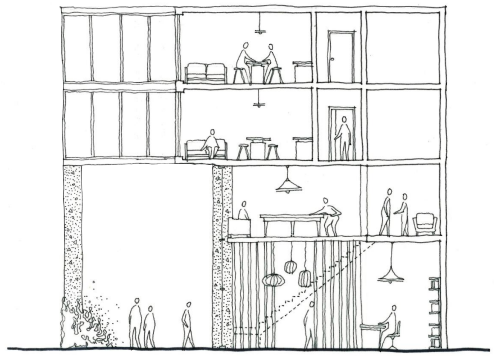
6 Bed Cluster



4 Bed Cluster

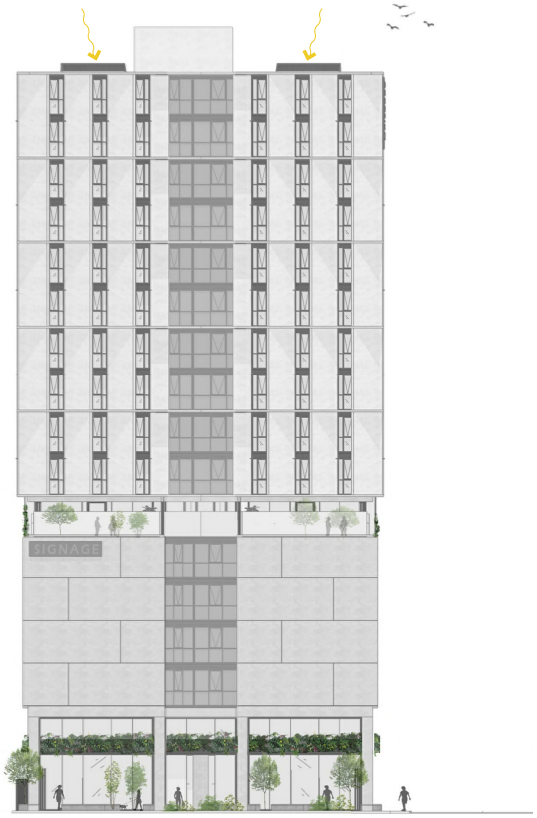


Building Section

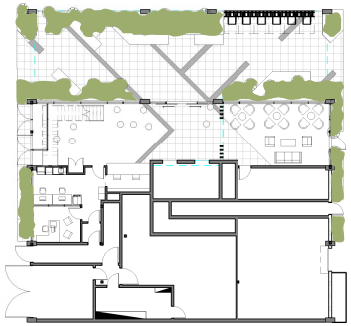


Section 1 - Promenade

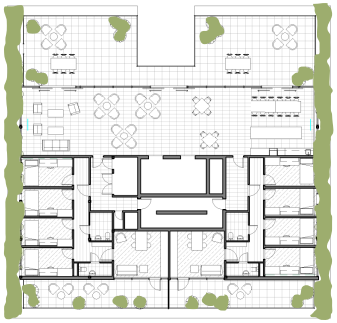
East/West Facade



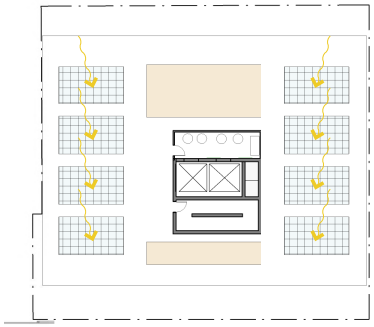
North Facade



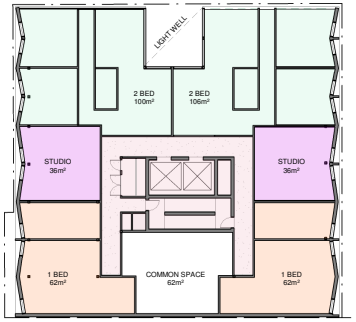
Ground Floor Plan - Sustainability
Scale - 1:200



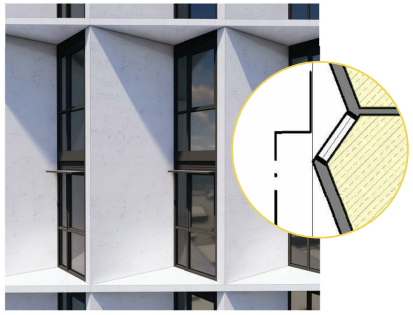
Level 6 Terrace Plan - Sustainability
Scale - 1:200



Roof Plan - Sustainability
Scale - 1:200



Adaptive Reuse Plan - Sustainability
Scale - 1:200



Innovative Shading

Principle of Development Control 21
Sustainable Design Measures:

1. a rooftop garden covering a majority of the available roof area supported by services that ensure ongoing maintenance;
2. a greenroof, or greenwalls / façades supported by services that ensure ongoing maintenance;
3. innovative external shading devices on all of the western side of a street facing façade; and
4. higher amenity through provision of private open space in excess of minimum requirements, access to natural light and ventilation to all habitable spaces and common circulation areas.

1

The proposed level 6 terrace:
- provides the functionality of a rooftop terrace which is north facing and extensively landscaped around the periphery for improved amenity;
- allows for full integration with other communal elements on level 6 including casual and formal dining/kitchen and lounge area;
- provides shelter for residents from the often-harsh Adelaide climate;
- is screened with glazing to prevent falls and other objects from being dropped over the edge whilst maintain views;
- appears as a green wall when viewed from the public realm;
- provides delineation from the podium and tower components of the proposal; and
- allows the rooftop space to be used for sustainable initiatives such as solar arrays.

2

- The proposal incorporates an extensive solar array located on the roof.
- 'Greenroof' is an undefined term and the placement of a solar array on the roof is clearly a green initiative for the proposal
- The proposal provides green wall elements up to level two of the building.
- The level 6 terrace also provides s green wall element to the built form.

3

The proposal incorporates the following innovative external shading devices on the western elevation:
- Angled concrete blade walls;
- Expressed floor slabs to provide shade on the podium component of the building;
- Expressed floor slabs on every second level of the tower; and
- Shade screens on the remaining level of the tower.

4

The proposed development is for student accommodation and therefore not defined as a dwelling. Notwithstanding this, the proposal provides:
- Significant communal areas at ground level and on the mezzanine level;
- Terrace level communal facilities and landscaping;
- Laundry on Level 2;
- A cinema on Level 3;
- A cyber games room on Level 4;
- Study/library on level 5;
- Cluster breakout rooms on levels 2 – 5;
- Breakout space on levels 7 16;
- Natural light and ventilation to all accommodation rooms.

DEVELOPMENT APPLICATION FORM

COUNCIL: STATE PLANNING COMMISSION

APPLICANT: BROWN FALCONER

Postal Address: C / MASTERPLAN

33 CARRINGTON STREET, ADELAIDE SA 5000

OWNER: ZHENGTANG PRECINCT T1 PTY LTD

Postal Address: 278 FLINDERS STREET

ADELAIDE SA 5000

BUILDER: TBA

Postal Address:

Licence No:

CONTACT PERSON FOR FURTHER INFORMATION:

Name: GREG VINCENT - MASTERPLAN SA PTY LTD

Telephone: 8193 5600

Email: GREGV@MASTERPLAN.COM.AU

Mobile: 0413 832 603

EXISTING USE:

VACANT

FOR OFFICE USE

Development No:

Previous Development No:

Assessment No:

❑	**Complying**	**Application forwarded to DA**
❑	**Non-complying**	**Commission/Council on:**
❑	**Notification Cat 2**	/ /
❑	**Notification Cat 3**	**Decision:**
❑	**Referrals/Concurrence**	**Type:**
❑	**DA Commission**	**Date:** / /

	Decision	Fees	Receipt No	Date
Planning:				
Building:				
Land Division:				
Additional:				
Dev Approval:				

DESCRIPTION OF PROPOSED DEVELOPMENT: MULTI-STOREY STUDENT ACCOMMODATION

LOCATION OF PROPOSED DEVELOPMENT:

House No: 54-58 Lot No: 11, 12 & 13 Street: ELIZABETH STREET Town/Suburb: ADELAIDE

Section No (full/part): Hundred: Volume: 6195 Folio: 470

Section No (full/part): Hundred: Volume: 6195 Folio: 471

Section No (full/part): Hundred: Volume: 6219 583

LAND DIVISION:

Site Area (m^2): Reserve Area (m^2): No of Existing Allotments:

Number of Additional Allotments - (Excluding Road and Reserve): Lease: YES: ☐ NO: ☐

BUILDING RULES CLASSIFICATION SOUGHT:

If Class 5, 6, 7, 8 or 9 classification is sought, state the proposed number of employees: Female: Male:

If Class 9a classification is sought, state the number of persons for whom accommodation is required:

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 1993 LEVY BEEN PAID? YES: ☐ NO: ☒

DEVELOPMENT COST (Do not include any fit-out costs): $ 26 000 000

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

SIGNATURE: Rowan Barbary **Dated:** 14 JUNE 2019

FOR AND ON BEHALF OF THE APPLICANT

DEVELOPMENT REGULATIONS 2008

Form of Declaration

(Schedule 5, Clause 2A)

To:	State Planning Commission
From:	BROWN FALCONER
Date of Application:	14/06/19

Location of Proposed Development:

House Number:	54-58	Lot Number:	11, 12 and 13
Street:	Elizabeth	Town/Suburb:	Adelaide
Section No (full/part):		Hundred:	
Volume:	6195	Folio:	470
Volume:	6195	Folio:	471
Volume:	6219	Folio:	583

Nature of Proposed Development:

Multi-Storey Student Accommodation.

I, Greg Vincent being a person acting on behalf of the applicant 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*.

14/06/19

Date

Signed

Note 1

This declaration is only relevant to those development applications seeking authorisation for a form of development that involves the construction of a building (there is a definition of 'building' contained in Section 4(1) of the *Development Act 1993*), other than where the development is limited to:

- an internal alteration of a building; or
- an alteration to the walls of a building but not so as to alter the shape of the building.

Note 2

The requirements of Section 86 of the *Electricity Act 1996* do not apply in relation to:

- a fence that is less than 2.0 m in height; or
- a service line installed specifically to supply electricity to the building or structure by the operator of the transmission or distribution network from which the electricity is being supplied.

Note 3

Section 86 of the *Electricity Act 1996* refers to the erection of buildings in proximity to powerlines. The regulations under this Act prescribe minimum safe clearance distances that must be complied with.

Note 4

The majority of applications will not have any powerline issues, as normal residential setbacks often cause the building to comply with the prescribed powerline clearance distances. Buildings/renovations located far away from powerlines, for example towards the back of properties, will usually comply.

Particular care needs to be taken where high voltage powerlines exist; where the development:

- is on a major road;
- commercial/industrial in nature; or
- built to the property boundary.

Note 5

Information brochures ‘Powerline Clearance Guide’ and ‘Building Safely Near Powerlines’ have been prepared by the Technical Regulator to assist applicants and other interested persons. Copies of these brochures are available from Council and the Office of the Technical Regulator. The brochures and other relevant information can also be found at www.technicalregulator.sa.gov.au

Note 6

In cases where applicants have obtained a written approval from the Technical Regulator to build the development specified above in its current form within the prescribed clearance distances, the applicant is able to sign the form.

Product	Register Search (CT 6195/470)
Date/Time	06/06/2019 04:17PM
Customer Reference	51138
Order ID	20190606009305

REAL PROPERTY ACT, 1886
South Australia

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

Certificate of Title - Volume 6195 Folio 470

Parent Title(s) CT 6151/747

Creating Dealing(s) RTC 12770071

Title Issued 18/08/2017 **Edition** 3 **Edition Issued** 08/03/2019

Estate Type

FEE SIMPLE

Registered Proprietor

ZHENGTANG PRECINCT T1 PTY. LTD. (ACN: 600 630 368)
OF 278 FLINDERS STREET ADELAIDE SA 5000

Description of Land

ALLOTMENT 11 DEPOSITED PLAN 114484
IN THE AREA NAMED ADELAIDE
HUNDRED OF ADELAIDE

Easements

NIL

Schedule of Dealings

Dealing Number	Description
12226659	AGREEMENT UNDER DEVELOPMENT ACT, 1993 PURSUANT TO SECTION 57(2)

Notations

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

Product	Register Search (CT 6195/471)
Date/Time	06/06/2019 04:18PM
Customer Reference	51138
Order ID	20190606009325

REAL PROPERTY ACT, 1886
South Australia

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

Certificate of Title - Volume 6195 Folio 471

Parent Title(s) CT 6151/747

Creating Dealing(s) RTC 12770071

Title Issued 18/08/2017 **Edition** 3 **Edition Issued** 08/03/2019

Estate Type

FEE SIMPLE

Registered Proprietor

ZHENGTANG PRECINCT T1 PTY. LTD. (ACN: 600 630 368)
OF 278 FLINDERS STREET ADELAIDE SA 5000

Description of Land

ALLOTMENT 12 DEPOSITED PLAN 114484
IN THE AREA NAMED ADELAIDE
HUNDRED OF ADELAIDE

Easements

NIL

Schedule of Dealings

Dealing Number	Description
12226659	AGREEMENT UNDER DEVELOPMENT ACT, 1993 PURSUANT TO SECTION 57(2)

Notations

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

LAND SERVICES SA

Product	Register Search (CT 6219/583)
Date/Time	06/06/2019 04:20PM
Customer Reference	51138
Order ID	20190606009365

REAL PROPERTY ACT, 1886
South Australia

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

REGISTRAR - GENERAL SOUTH AUSTRALIA

Certificate of Title - Volume 6219 Folio 583

Parent Title(s) CT 6195/472, CT 6195/473, CT 6195/474, CT 6195/477 AND OTHERS

Creating Dealing(s) ACT 13061567

Title Issued 12/02/2019 **Edition** 2 **Edition Issued** 08/03/2019

Estate Type

FEE SIMPLE

Registered Proprietor

ZHENGTANG PRECINCT T1 PTY. LTD. (ACN: 600 630 368)
OF CARE 278 FLINDERS STREET ADELAIDE SA 5000

Description of Land

ALLOTMENT 13 DEPOSITED PLAN 114484
IN THE AREA NAMED ADELAIDE
HUNDRED OF ADELAIDE

Easements

TOGETHER WITH EASEMENT(S) WITH LIMITATIONS OVER THE LAND MARKED N ON C41631 FOR THE TRANSMISSION OF TELECOMMUNICATION SIGNALS BY UNDERGROUND CABLE (ACT 13061567)

Schedule of Dealings

Dealing Number	Description
12226659	AGREEMENT UNDER DEVELOPMENT ACT, 1993 PURSUANT TO SECTION 57(2)

Notations

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

PLANNING REPORT

Proposed Multi-Storey Student Accommodation

54-58 Elizabeth Street, Adelaide
Brown Falconer

Prepared by
MasterPlan SA Pty Ltd
ABN 30 007 755 277, ISO 9001:2015 Certified

33 Carrington Street, Adelaide SA 5000
Telephone: 8193 5600, masterplan.com.au

June 2019

1.0 INTRODUCTION

MasterPlan SA Pty Ltd has been engaged by Brown Falconer to assist with the preparation of a development application for the construction of a multi-storey student accommodation building at 54-58 Elizabeth Street, Adelaide.

This report has been prepared in collaboration with Brown Falconer and contains a description of the subject land, the locality and the proposed development, as well as our assessment of the proposed development against the relevant provisions of the Adelaide (City) Development Plan.

The Planning Report is supported by:

- A completed Development Application Form.
- A completed Office of Technical Regulator Power Line Clearance Declaration.
- Certificates of Title.
- The compendium of Architectural Drawings undertaken by Brown Falconer.
- A building services report undertaken by BCA Engineers.
- A traffic impact assessment report undertaken by GTA Consultants.
- A waste management plan undertaken by Rawtec.

We have concluded from our detailed and balanced assessment of the proposed development that it sufficiently accords with the relevant provisions of the Adelaide City Development Plan for the reasons set out herein.

2.0 BACKGROUND AND PRE-LODGEMENT DISCUSSIONS

2.1 Pre-lodgement

The applicant, Brown Falconer voluntarily participated in the State Planning Commission's (the Commission's) Pre-Lodgement Panel (PLP) Process, including the Design Review Panel (DRP) Process with the Office for Design and Architecture South Australia (ODASA).

Brown Falconer, through their project team, sought and obtained feedback from the key stakeholders which was then incorporated into the proposed development at the following Pre-Lodgement and ODASA Design Review meetings:

- Pre-Lodgement Panel Meeting, 18 March 2019;
- Design Review #1, 27 March 2019; and
- Design Review #2, 14 May 2019

Through the pre-lodgement process, general stakeholder support of the following elements in the design were noted:

- support the project team's aspiration to deliver a high-quality student accommodation facility that positively contributes to the activation of the locality;
- strongly support the significant changes made to the building setbacks in response to the recommendations provided at Design Review #1;
- acknowledging the proposal is overnight for the zone, support the proposed height in principle;
- strongly support the 3.0 metre setbacks to the north and south side boundaries of the site;
- strongly support the increased separation from the adjoining Stage 1 apartment balconies and full height glazed walls to the living areas;
- proposed setbacks positively contribute to the management of the interface conditions and protection of the amenity of the adjoining residents;
- the proposed increased podium element height is supported and provides an improved built form relationship to the State heritage listed Cumberland Arms Hotel and the scale and rhythm of the adjoining Stage 1 podium element;
- built form proportions of the proposed podium and tower is well balanced at the proposed building height;
- support the ground floor configuration and pedestrian connection between Elizabeth Street and Ranelagh Alley which increases the opportunity for activated frontages;
- support the interconnection between the two communal floors on ground level and Level 1;
- support the revised architectural expression for the northern elevation;
- support the mix and variety of student accommodation options proposed;
- support the provision of outlook, natural light and ventilation to all bedrooms;
- support the increased size of breakout spaces and inclusion on every residential floor above the podium, with access to natural light and outlook;
- strongly support the distribution of sufficiently sized communal spaces and shared student infrastructure throughout the building;
- support the relocation of the communal terrace to a lower level, as it improves user amenity, strengthens the visual connection with the street level and increase the potential for the development to make a positive contribution to the public realm;

- support the intent of the proposed sustainability measures included to satisfy the Development Plan over height criteria; and
- support the provision of solar arrays on the rooftop in lieu of a landscaped terrace, give usable communal outdoor space has been proposed elsewhere in the development.

The critical elements identified by DPTI Staff and ODASA through the PLP and DRP process in addition to the requests for further clarification include:

- Refinement of the architectural expression of the lower part of the podium fronting Elizabeth Street;
- Development of an integrated signage strategy;
- Increase the depth of slab projections to increase the façade depth;
- Review articulation approach to the solid concrete panels on the north facing walls; and
- Increase the ceiling height of the level 6 terrace;

In the development of the final plans the above matters have been considered and where relevant amendments to the design have responded to the comments expressed.

In particular, the design team has considered the preliminary comments and a summary of the response is detailed below:

Refinement of the architectural expression of the lower part of the podium

The proposal now achieves a cohesive podium expression through the even placement of the ground level columns. In addition, the columns on the terrace level have now been reduced in prominence to remove the appearance of misalignment with the ground floor pillars.

Development of an integrated signage strategy

The proposal now incorporates signage zones integrated with the overall design and architectural expression of the building's architecture. There is a vertical sign located on the upper two levels of the northern side of the Elizabeth Street frontage and a horizontal sign located on the upper eastern portion of the north facing podium wall.

Increase the depth of slab projections to increase the façade depth

The depth of the concrete slab edge has been increased on all elevations to increase the façade depths which emphasises the building articulation and increases solar shading of the glazing panels below.

Review articulation approach to the solid concrete panels on the north facing walls

Increased expression of the precast joints has been incorporated on the north facing podium wall to improve articulation and visual interest of the northern boundary wall elevation.

Increase the ceiling height of the level 6 terrace

The ceiling height of the terrace has not been increased as this would further increase the height of the building which already exceeds the maximum building height guideline for the site's location.

The ground floor already includes a significant floor to ceiling height to accommodate the spatial requirements of the required infrastructure in the form of transformer fronting Elizabeth Street evident by the inclusion of a mezzanine to accommodate the cold water break tank and pumps at the rear of the site. The existing ground floor height is also accentuated in the main student space at ground floor with openings in the first floor accommodating the void and stair connection creating a visual interconnection with the first-floor space.

This is further reinforced with the 2-storey high breezeway entry along the northern edge of the site connecting Elizabeth Street and Ranelagh Alley.

3.0 SUBJECT SITE AND LOCALITY

3.1 Subject Site

The subject site is centrally located on the eastern side of Elizabeth Street, a narrow street orientated north/south linking Franklin Street and Waymouth Street. The site has a primary frontage of 24.54 metres to Elizabeth Street and a secondary (rear) frontage to Ranelagh Alley of the same distance. The site has a typical depth of 26.2 metres providing a total area of approximately 640 square metres.

The site, for the purpose of the proposed development is currently contained within three allotments which are formally described below:

ALLOTMENT	CT VOLUME/FOLIO	PLAN
Lot 11	Volume 6195, Folio 470	Deposited Plan 114484
Lot 12	Volume 6195, Folio 471	Deposited Plan 114484
Lot 13	Volume 6219, Folio 583	Deposited Plan 114484

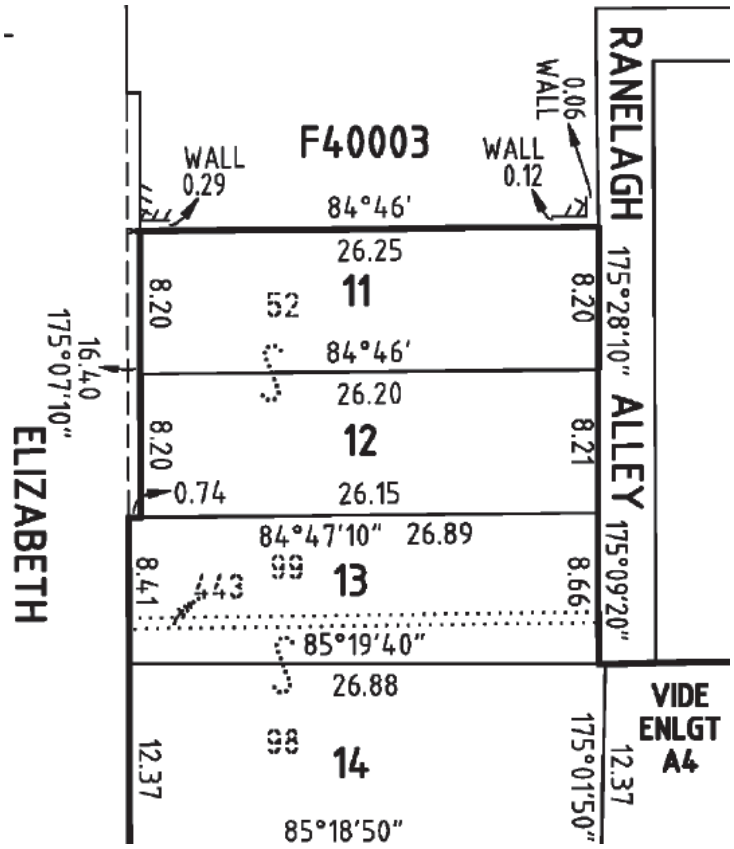


Figure 1: Deposited Plan 114484

The Elizabeth Street boundary of Lots 11 and 12 is stepped back 740 mm from the current street alignment formed by the West Franklin Stage 1 Development street alignment and that of Lot 13.

Allotment 13 is subject to an easement for the transmission of telecommunication signals by underground cable.

The subject land is currently vacant and was utilised for the construction of the adjacent Stage 1 of the West Franklin development. Vehicle access to the site is currently achieved from Elizabeth Street.

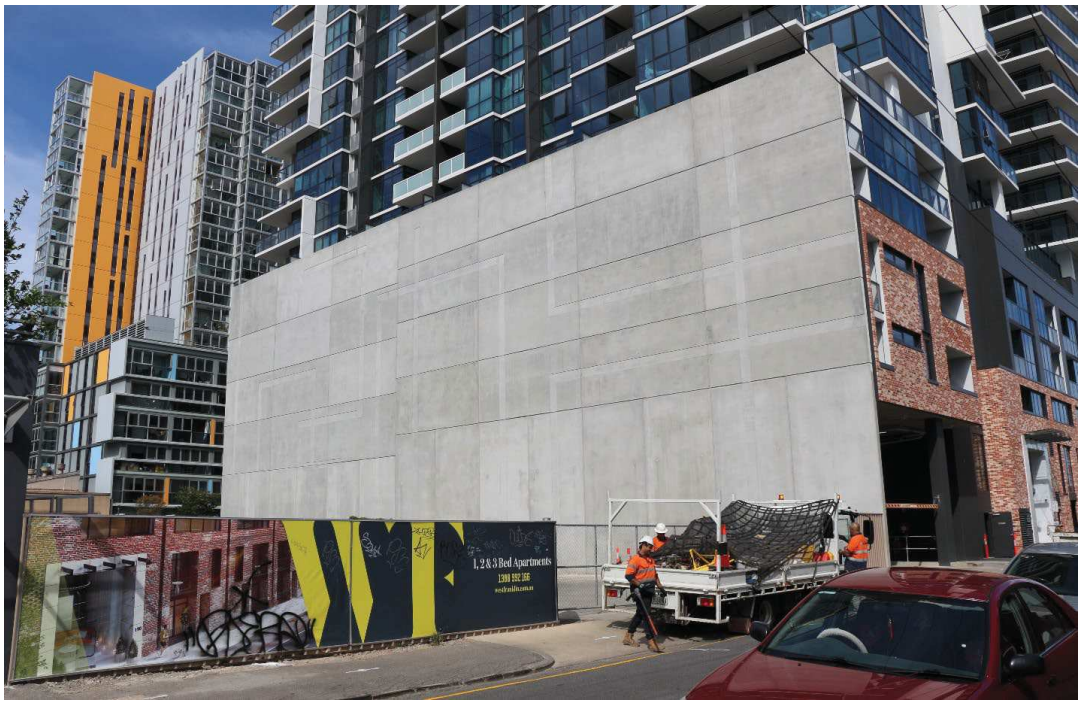


Photo 1: Subject Site

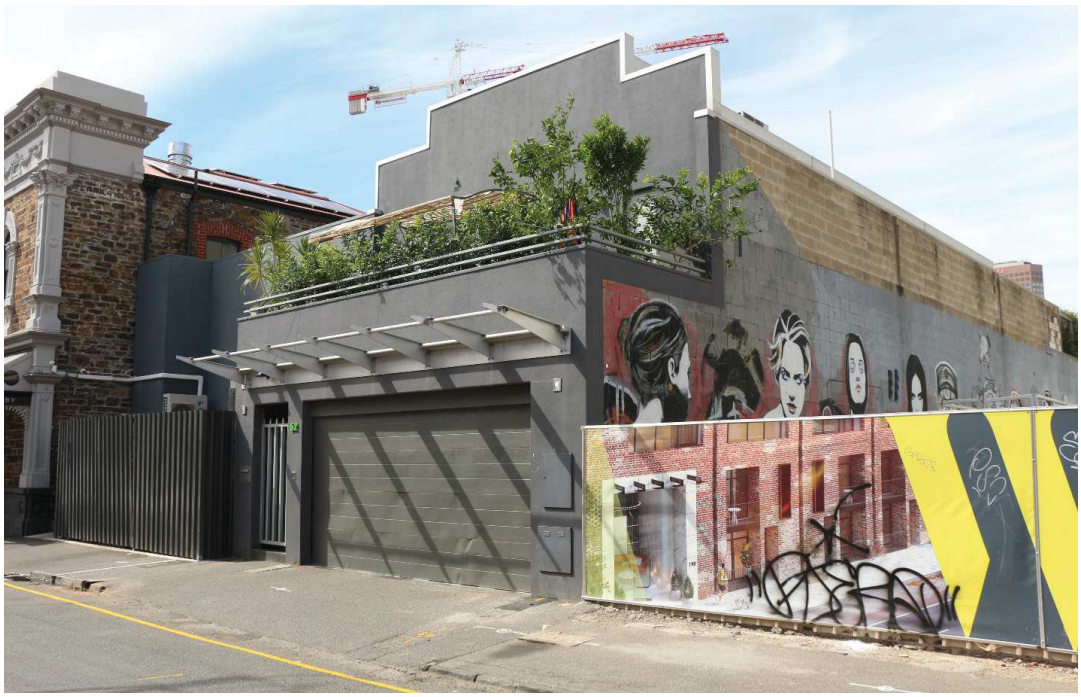


Photo 2: Subject Site

The site is subject to a Land Management Agreement that was entered into by deed between the original developers of the West Franklin precinct and the Adelaide City Council. The Land Management Agreement establishes a number of obligations upon the owner of the land and sets development criteria.

The Land Management Agreement requires that, prior to making application for development plan consent on the land, the owner must prepare and submit to the Council a detailed design scheme. The detailed design scheme reflecting this application has been prepared and submitted to Council.

3.2 Nature of the Locality

The locality is characterised by varying forms of residential and commercial land uses. Adjacent south of the site is the Stage 1 (West Franklin) development comprising a 19 storey mixed use building with the 18 storey Altitude Apartments located further east.

Adjacent the north of the site is a two storey dwelling built boundary to boundary and the State heritage listed Cumberland Arms Hotel is located at the intersection of Elizabeth and Waymouth Street. Adjacent to the rear of the site is an at grade car park that has been constructed encroaching over Ranelagh Alley, which has been confirmed by the Adelaide City Council as a public road.

Elizabeth Street, a narrow street that accommodates two-way vehicle movements and on-street car parking, defines the immediate locality. Across Elizabeth Street from the subject site is residential townhouse development ranging in height from 2 to 3 storeys.

Waymouth and Franklin Street being the main east west streets forming part of the Adelaide grid network exhibit a mix of commercial, retail and institutional land uses.

The Cumberland Arms Hotel represents a notable building within the Elizabeth Street streetscape and is State Heritage listed. The two-storey stone building is located 17.5 metres to the north of the site, separated by a two storey dwelling and the beer garden associated with the hotel operations.

The Atira Waymouth student accommodation facility is also a notable building, located 75 metres to the west of the site. The recently constructed building provides a modern high-rise building design within what is a largely low scale streetscape.

Light Square is located 125 metres to the north-east of the subject site, providing public open space in the form of the City Square.

The area is well serviced by public transport, with Currie Street being the main thoroughfare for buses entering the city from the western and eastern suburbs. Currie Street is located approximately 200 metres from the subject site.

Importantly, the subject site is a short 600 metre walk from the city west campuses of the University of Adelaide, the University of South Australia and Tafe SA.

4.0 PROPOSED DEVELOPMENT

The Applicant seeks Development Plan Consent from the Commission to construct a 17 storey student accommodation building comprising:

- public lobby, bike store, managers office and service infrastructure at ground level;
- a total of 300 purpose-built student accommodation beds, 4 of which are DDA compliant;
- communal facility facilities on Levels 2, 3, 4 and 5 including a laundry, cinema, cyber games room and study/library;
- a communal terrace on Level 6 with northern orientation;
- student breakout spaces on levels 7 to 16; and
- plant infrastructure and solar array on Level 17.

The proposed development is represented in the compendium of architectural drawings **attached**.

The proposed development is described in detail below in the following sections and more fully illustrated in the compendium of plans accompany the application prepared by Brown Falconer, identified in Table 1 – Architecture Drawing Schedule.

Table 1: Architectural Drawing Schedule

PLAN REFERENCE	PLAN TITLE	REVISION
01	Context Plan & Analysis	(A)
02	Form, Massing & Shadows	(A)
03	Perspectives	(A)
04	Perspectives	(A)
05	Floor Plans	(A)
06	Floor Plans	(A)
07	Floor Plans	(A)
08	Room Types & Common Areas	(A)
09	Elevations	(A)
10	Elevations	(A)
11	Sections	(A)
12	Sustainability & Adaptive Re-use	(A)

4.1 Land Use

The proposed development is best described as a 17-storey purpose built Student Accommodation building. The communal facilities associated with the student accommodation are subservient and ancillary to that use and form part of the services provided as part of the overall accommodation experience.

4.2 Accommodation Mix

The proposed student accommodation rooms provide five different types of accommodation typologies with variations therein, which include the following:

- studio apartments with private ensuite and kitchenette;
- DDA apartments with private ensuite and kitchenette;
- twin studio apartments with private ensuite;
- four bed cluster with two shared bathrooms and communal lounge/kitchen; and
- six bed cluster three shared bathrooms and communal lounge/kitchen;

The details and breakdown of the student accommodation rooms are outlined in Table 2 below:

Unit Type	Number of Beds
Studio apartments with private ensuite and kitchenette	212
DDA apartments with private ensuite and kitchenette	4
Twin studio apartments with private ensuite	36
Four bed cluster with two shared bathrooms and communal lounge/kitchen	24
Six bed cluster three shared bathrooms and communal lounge/kitchen	24
TOTAL	**300**

4.2.1 Student Breakout/Amenity Spaces

Student Break out and amenity areas are conveniently located vertically throughout the building. The amenity spaces provide different activity opportunities for the students as detailed below:

- Ground Floor: Open promenade/courtyard, foyer and casual dining;
- Level 1: Gym, games area, arts room, open study areas and study pods;
- Level 2: Laundry;
- Level 3: Cinema;
- Level 4: Cyber games room;

- Level 5: Study/Library;
- Level 6: Common kitchen/living area and open north facing roof terrace; and
- Level 7 to 16: 58 square metre break out space on each floor adjacent the lifts.

4.3 Built Form

4.3.1 Building Height

The Adelaide (City) Development Plan provides a definition of building level within Schedule 1 of the Development Plan, which is identified as:

> ***building level:*** *that portion of a building which is situated between the top of any floor and the top of the floor next above it and if there is no floor above, that portion between the top of the floor and the ceiling above it. It does not include a floor located more than 1.5 metres below the median natural or finished ground level or the roof top location of plant and mechanical equipment.*

Accordingly, the proposed built form comprises the construction of a multi-storey building comprising 17 building levels with a maximum building height of 52.5 metres (95.0 metres AHD) above the Elizabeth Street finished ground level.

4.3.2 Setbacks

Ground level and Level 1 setbacks vary from the respective front, side and rear boundaries of the site to allow the building to:

- accommodate the double height open promenade/breezeway along the northern side boundary providing a pedestrian link between Elizabeth Street and Ranelagh Alley; and
- landscaping and services on the Elizabeth Street and Ranelagh Alley.

The Ground Level and Level 1 is to be built the southern side boundary adjacent the Stage 1 development.

The podium portion of the building is to be built to the southern and northern side boundaries. The northern façade of the podium levels also contains a centrally located indented portion to create a light well. The eastern and western side boundaries vary due to the angled façade. The Level 6 terrace is further setback from the eastern and western boundaries to allow for the placement and maintenance of the green climbing wall created on tensioned steel cables.

The tower component of the building is to be setback 3.0 metres from the southern and northern side boundaries.

The tower is setback 700mm from the eastern side boundary of the site and is separated from the existing car parking allotment by Ranelagh Alley, being a 3.0-metre-wide public road. The proposed blade windows increase the setback a further 1.2 metres and obscures the view over the car park allotment.

4.3.3 Architectural Design Statement

The architectural report prepared by Brown Falconer accompanying the lodgement documents provides:

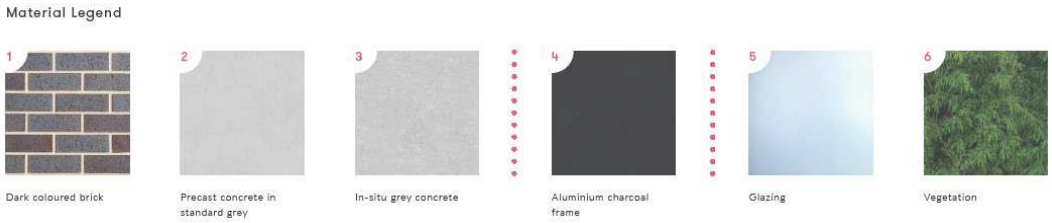
- context and site analysis;
- form, massing and sun sturdy;
- key design principles;
- 3D perspectives; and
- drawings.

The architectural report depicts the contextual setting of the subject site with reference to both the Elizabeth Street character and broader Adelaide CBD setting. Given the site dimensions there is a focus on the building's vertical amenity, its connection with adjacent built form and the design principles that optimise the sites development opportunities. The design response presents as a podium and tower built form that incorporates shared amenities with the activation of Elizabeth Street and are provided through 3D imaging of internal and external components, material description, elevation perspectives and floor plans.

4.3.4 Materials and Finishes

The palette of external materials and finishes is detailed within the Architectural Report comprising:

- Precast concrete in standard grey;
- In-situ grey concrete;
- Podium façade of dark coloured brick; and
- highlight features of glazing with aluminium charcoal frames and landscaping including green wall features.



4.3.5 Signage

The proposal incorporates integrated signage zones, including two sign areas directly associated with the use of the site. There is a vertical sign located on the upper two levels of the northern side of the Elizabeth Street frontage and a horizontal sign located on the upper eastern portion of the north facing podium wall.

4.4 Traffic and Parking

No onsite parking is proposed in association with the use. Service vehicles will utilise on-street loading on Elizabeth Street.

Provision for the secure parking of 30 bikes is accommodated within the development which equates to 1 secure bike park per 10 beds.

4.5 Waste Management

The details of the waste management strategy are outlined in the Waste Management Plan prepared by Rawtec.

In summary, the waste in the proposed development is to be managed as follows:

- at ground level through the provision of mobile waste bins stored within a dedicated bin room;
- waste is to be delivered to the ground level through a single chute system, with a diverter system that separates general waste and comingled recycling;
- food organic bins will be paces in common areas which will be collected by cleaners;
- e-waste is to be manually disposed of at ground level;
- the ground level waste will be overseen by the facilities Manager. Weight sensors can be employed to alert Management of required bin rotations in addition to the linear track proposed; and
- a private contractor will be employed to undertake waste removal three times a week.

4.6 Services

BCA engineers have provided a Building Services Design Summary report outlining the special allocations provided to accommodate the following services with the design drawings:

- Mechanical services;
- Electrical services;
- Fire protection services;
- Hydraulic services; and
- Energy Efficiency.

The proposal also incorporates a roof top solar array which is anticipated to generate between 20-30 kilowatts.

The subject site is provided with sufficient access to public infrastructure services to accommodate the anticipated demand. Further, the design drawings appropriately accommodate the internal service infrastructure requirements of a building of this scale.

4.7 Staging

The construction of the building is to occur in three consecutive stages for the purposes of issuing staged Building Rules Consents. The staging of the proposed development is as follows:

- Stage 1: Substructure;
- Stage 2: Superstructure; and
- Stage 3: Architectural (façades and internal fit-out)

5.0 DEVELOPMENT PLAN ASSESSMENT

The relevant version of the Adelaide (City) Development Plan for procedural and assessment purposes was consolidated on 7 June 2018.

The subject land, under this version of the Adelaide (City) Development Plan, is situated entirely within the Capital City Zone as shown on Adel/23. The site is not located within a Policy Area.

Figure 2: Zone Map Adel/19 Extract

5.1 Procedural Matters

5.1.1 Relevant Authority

The Relevant Authority for the purpose of the assessment of the application is the State Commission Assessment Panel in accordance with Schedule 10 Part B which in accordance with Section 34 (1)(b) of the *Development Act, 1993* the Development Assessment Commission is constituted by the regulations as the relevant authority.

> **4B—City of Adelaide—developments over $10m**
>
> **(1) Development in the area of The Corporation of the City of Adelaide where the total amount to be applied to any work, when all stages of the development are completed, exceeds $10 000 000.**
>
> **(2) Subject to subclause (3), development— (a) under an application to vary a development authorisation given by the Development Assessment Commission under this clause; or (b) which, in the opinion of the Development Assessment Commission, is ancillary to or in association with a development the subject of an authorisation given by the Development Assessment Commission under this clause.**
>
> **(3) Subclause (2) does not apply to development involving a building in relation to which a certificate of occupancy has been issued.**

The proposed development comprises the construction of a building with a Development Cost that exceeds $10 million in the City of Adelaide.

5.1.2 Nature of Development

The proposed development of a multistorey student accommodation building is neither listed as Complying Development nor Non-complying Development under Capital City Zone Principles 38 and 39 respectively and accordingly the application is required to be assessed on its merits.

5.1.3 Category of Development

Capital City Zone Principle of Development Control 40 identifies those developments that are listed as Category 1 or Category 2 for the purpose of public notification in addition to those expressed in Schedule 9 of the *Development Regulations 2008*.

All forms of development are listed as Category 1, except that classified as non-complying or Category 2.

The proposed development is not listed as non-complying or Category 2 and accordingly is Category 1 for the purpose of Public Notification.

5.1.4 Statutory Referrals

The following agencies have been identified as requiring referrals under Section 37 of the *Development Act, 1993*:

- Government Architect or Associate Government Architect (ODASA):

  24—Certain development in City of Adelaide

  Development in the area of the Corporation of the City of Adelaide for which the Development Assessment Commission is the relevant authority under Schedule 10 clause 4B (excluding variations of applications—see clause 1(5a) of this Schedule).

- Commonwealth Secretary for the Department of Transport and Regional Services:

  9—Airports

  If the relevant Development Plan contains a map entitled Airport Building Heights, development within the area shown on the map which would exceed a height prescribed by the map.

- State Heritage Department

  5—State heritage places

  (1) Other than development to be undertaken in accordance with a Heritage Agreement under the heritage Places Act 1993 or in a River Murray Protection Area under the River Murray Act 2003, development with directly affects a State heritage place, or development which in the opinion of the relevant authority materially affects the context within which the State heritage place is situated.

5.2 Land Use

We are of the opinion that this student accommodation proposal is appropriate on the basis that:

- student accommodation is listed as an envisaged land use under PDC 1 of the Capital City Zone;
- the Desired Character Statement for Capital City Zone states, in part, that:" it *is anticipated that an increased population within the Zone will complement the range of opportunities and experiences provided within the City and increase vibrancy"*; and
- all of the rooms have been designed in a manner which would allow for adaptive re-use of the building (as discussed further below).

5.3 Character and Setbacks

The Desired Character Statement for the Capital City Zone expresses the built form and character desired to be achieved. The following extracts from the Capital City Zone Desired Character Statement in addition to PDC 11 are relevant to the assessment of the application:

> *"High-scale development is envisaged in the Zone with high street walls that frame the streets.*
>
> *However an interesting pedestrian environment and human scale will be created at ground floor levels through careful building articulation and fenestration, frequent openings in building façades, verandahs, balconies, awnings and other features that provide weather protection.*
>
> *In important pedestrian areas, buildings will be set back at higher levels above the street wall to provide views to the sky and create a comfortable pedestrian environment. In narrow streets and laneways the street setback above the street wall may be relatively shallow or non-existent to create intimate spaces through a greater sense of enclosure. In the Central Business Policy Areas, upper level setbacks are not envisaged.*
>
> *Non-residential land uses at ground floor level that generate high levels of pedestrian activity such as shops, cafés and restaurants will occur throughout the Zone. Within the Central Business Policy Area, residential land uses at ground level are discouraged. At ground level, development will continue to provide visual interest after hours by being well lit and having no external shutters.*
>
> *There will also be a rich display of art that is accessible to the public and contextually relevant.*
>
> *Exemplary and outstanding building design is desired in recognition of the location as South Australia's capital. Contemporary juxtapositions will provide new settings for heritage places.*
>
> *Innovative forms are expected in areas of identified street character, referencing the past, but with emphasis on modern design-based responses that support optimal site development."*
>
> *"Minor streets and laneways will have a sense of enclosure (a tall street wall compared to street width) and an intimate, welcoming and comfortable pedestrian environment with buildings sited and composed in a way that responds to the buildings' context. There will be a strong emphasis on ground level activation through frequent window openings, land uses that spill out onto the footpath, and control of wind impacts."*
>
> *"Development in minor streets and laneways with a high value character will respond to important character elements and provide a comfortable pedestrian environment…"*

PDC 11 Buildings should be positioned regularly on the site and built to the street frontage, except where a setback is required to accommodate outdoor dining or provide a contextual response to a heritage place.

The ground floor and Level 1 of the building provide double height glazing on the streetscape façade and a framed entrance point promenade and lobby. The location of the primary entrance/reception to the Student Accommodation reinforces the interesting pedestrian environment and human scale envisaged within Elizabeth Street, providing a high degree of pedestrian permeability and increase activated frontages.

The two-tier façade in addition to the podium component of the building reinforces the envisaged "high scale" development with the façade built to the street alignment maintaining the high street walls that complement the scale and proportions of the adjacent West Franklin Stage 1 development. The design contrast of glazing at the lower levels and the boundary development of the podium above provides the sense of 'enclosure' while retaining an open and visually permeable lower levels of the building within the streetscape. The proposed development delivers on the desired character for the Capital City Zone.

5.4 Built Form

5.4.1 Design and Appearance

The following Built Form and Townscape Council-wide Objectives and PDCs outline the intent to be attained by development within the City of Adelaide, and directly reflect the importance of the built form and architectural expression contemplated within the CBD.

Capital City Zone

Objective 5 Innovative design approaches and contemporary architecture that respond to a building's context.

Objective 6 Development should be of a high standard of architectural design and finish which is appropriate to the City's role and image as the capital of the State.

Materials, Colours and Finishes

PDC 187 The design, external materials, colours and finishes of buildings should have regard to their surrounding townscape context, built form and public environment, consistent with the desired character of the relevant Zone and Policy Area.

PDC 188 Development should be finished with materials that are sympathetic to the design and setting of the new building and which incorporate recycled or low embodied energy materials. The form, colour, texture and quality of materials should be of high quality, durable and contribute to the desired character of the locality. Materials, colours and finishes should not necessarily imitate materials and colours of an existing streetscape

PDC 189 Materials and finishes that are easily maintained and do not readily stain, discolour or deteriorate should be utilised.

PDC 190 Development should avoid the use of large expanses of highly reflective materials and large areas of monotonous, sheer materials (such as polished granite and curtained wall glazing).

The importance of the proposed built form quality in the Capital City Zone is recognised in the relevant Zone and Council Wide Principles of Development Control that variously seek:

> *"high standard of architectural design and finish which is appropriate to the City's role and image as the capital of the State"*
>
> *"Development which incorporates a high level of design excellence"*

The proposed development was the subject of the "Design Review Process" with the Office of Design and Architecture South Australia where the quality of the design was critiqued, reviewed and developed recognising the site constraints, its context and the prominence of a building of this scale.

The design responds to the contextual setting with the use of high-quality materials and finishes on the façade including expansive glazing at ground level and the use of horizonal elements, feature dark coloured brick on the podium levels and precast concrete in standard grey on the upper levels.

The design intent of the podium and tower elements of the built form creates building proportions that not only relate to the adjacent Stage 1 development but also reduce the bulk and scale of the upper tower levels through increase setbacks. The tower component contains elegant horizontal elements consisting of extended concrete blade edges at two storey intervals which provide both articulation to the façade and shading the glazing below.

The terrace on Level 6, with vertical tensioned cable green walls provide separation and relief between the podium and tower components of the building.

At ground level, the innovative design and contemporary architectural presentation of the building responds subtly to their design cues of the adjacent built form, and therefore sits comfortably in the context of Elizabeth Street.

The Architectural Report prepare by Brown Falconer accompanying the lodgement documents provides a detailed description of the Key Design Principles and the Contextual reference for the design.

5.4.2 Building Height

PDC 22 of the Capital City Zone and Council Wide PDC 172 provide guidance with respect to the height of buildings. Together, they recommend that:

PDC 22 **Development should have optimal height and floor space yields to take advantage of the premium City location and should have a building height no less than half the maximum shown on Concept Plan Figures CC/1 and 2, or 28 metres in the Central Business Policy Area, except where one or more of the following applies:**

- **(a) a lower building height is necessary to achieve compliance with the Commonwealth Airports (Protection of Airspace) Regulations;**
- **(b) the site is adjacent to the City Living Zone or the Adelaide Historic (Conservation) Zone and a lesser building height is required to manage the interface with low-rise residential development;**
- **(c) the site is adjacent to a heritage place, or includes a heritage place;**
- **(d) the development includes the construction of a building in the same, or substantially the same, position as a building which was demolished, as a result of significant damage caused by an event, within the previous 3 years where the new building has the same, or substantially the same, layout and external appearance as the previous building.**

PDC 172 **Buildings and structures should not adversely affect by way of their height and location the long-term operational, safety and commercial requirements of Adelaide International Airport. Buildings and structures which exceed the heights shown in Map Adel/1 (Overlay 5) and which penetrate the Obstacle Limitation Surfaces (OLS) should be designed, marked or lit to ensure the safe operation of aircraft within the airspace around the Adelaide International Airport.**

Principle 21 of the Zone provide an allowance for over height buildings if certain criteria is met.

PDC 21 **Development should not exceed the maximum building height shown in Concept Plan Figures CC/1 and 2 unless;**

- **(a) it is demonstrated that the development complements the context (having regard to adjacent built form and desired character of the locality) and anticipated city form in Concept Plan Figures CC/1 and 2, and**
- **(b) only if:**

  (i) at least two of the following features are provided:

  - **(1) the development provides an orderly transition up to an existing taller building or prescribed maximum building height in an adjoining Zone or Policy Area;**
  - **(2) the development incorporates the retention, conservation and reuse of a building which is a listed heritage place;**
  - **(3) high quality universally accessible open space that is directly connected to, and well integrated with, public realm areas of the street;**
  - **(4) universally accessible, safe and secure pedestrian linkages that connect through the development site as part of the cities pedestrian network on Map Adel/1 (Overlay 2A);**
  - **(5) on site car parking does not exceed a rate of 0.5 spaces per dwelling, car parking areas are adaptable to future uses or all car parking is provided underground;**

(6) residential, office or any other actively occupied use is located on all of the street facing side of the building, with any above ground car parking located behind;

(7) a range of dwelling types that includes at least 10% of 3+ bedroom apartments; and

(8) more than 15 per cent of dwellings as affordable housing.

(ii) plus all of the following sustainable design measures are provided:

(1) a rooftop garden covering a majority of the available roof area supported by services that ensure ongoing maintenance;

(2) a greenroof, or greenwalls / façades supported by services that ensure ongoing maintenance;

(3) innovative external shading devices on all of the western side of a street facing façade; and

(4) higher amenity through provision of private open space in excess of minimum requirements, access to natural light and ventilation to all habitable spaces and common circulation areas.

Concept Plan Figure CC/1 identifies the subject site as being located within the 43-metre building height guideline.

The proposed building will be 17 storeys or 52.5 metres (95.0 metres AHD) above the Elizabeth Street finished ground level. It will therefore exceed the prescribed height as shown Concept Plan Figure CC/1,

as the subject land falls within the 43-metre building height area. It should be noted that the subject site is directly adjacent to the 53-metre building height area.

The building will also exceed the relevant Obstacle Limitation Surface (OLS) Contour shown on Map Adel/1 (Overlay 5) of 70 metres AHD however the building will be lower than the adjacent West Franklin Stage 1 development.

The intent of development within the Capital City Zone is to 'optimise' floor space yields through the provision of tall buildings to ensure an appropriate density is achieved. The proposal is considered to support the intent of providing appropriate residential density within this strategically important CBD location with the provision of an appropriate development height.

Notably, ODASA has considered the height of the building in the context of its surrounds and have provided their endorsement of the height in the context of the locality, subject to the relevance of design.

The proposed development has been designed to respond and relate to the adjacent Stage 1 West Franklin Development and the transition in maximum height provisions. The proposal provides a continuation of the podium level from Stage 1 providing a consistent streetscape character whilst the tower element allows for height transition between the 53 metres maximum height guideline adjacent land to the south and east and the 43 metres maximum height to the north (including the subject site).

It should be noted that both the Stage 1 West Franklin and Altitude developments exceed the 53 metres height guideline of the Development Plan.

The following extracts from the Desired Character of the Zone further supports the development of High Scale development:

> *High-scale development is envisaged in the Zone with high street walls that frame the streets. However an interesting pedestrian environment and human scale will be created at ground floor levels through careful building articulation and fenestration, frequent openings in building façades, verandahs, balconies, awnings and other features that provide weather protection.*

The proposed development provides a podium level consistent with the adjacent West Franklin Stage 1 development that frames both street frontages. The proposal also provides three active frontages and a pedestrian link between Elizabeth Street and Ranelagh Alley provide an interesting and convenient pedestrian environment.

> *In important pedestrian areas, buildings will be set back at higher levels above the street wall to provide views to the sky and create a comfortable pedestrian environment.*

The proposal incorporates a podium level to frame the street frontages and a tower at the upper levels to allow views to the sky from the street level pedestrian environment.

> *There will also be a rich display of art that is accessible to the public and contextually relevant.*

The existing artwork along the southern boundary wall of the adjacent dwelling to the north is to be retained and form a key feature to the open promenade linking Elizabeth Street to Ranelagh Alley. The artwork will also be visible from the active ground level foyer and dining area along with the mezzanine level.

> *Minor streets and laneways will have a sense of enclosure (a tall street wall compared to street width) and an intimate, welcoming and comfortable pedestrian environment with buildings sited and composed in a way that responds to the buildings' context. There will be a strong emphasis on ground level activation through frequent window openings, land uses that spill out onto the footpath, and control of wind impacts.*

The proposed development provides an active western frontage to Elizabeth Street with a glazed faced to the Managers office, admin area and foyer in addition to the visually permeable mezzanine level above. The open promenade provides full activation to the northern aspect of the development and the casual dining area along with the gym and common area on the mezzanine level addresses the pedestrian link to the east.

The proposal provides an orderly transition up to the height of the adjacent Stage 1 West Franklin Development and provides high-quality open space that is well integrated with the public realm in the form of the ground level promenade / breezeway. This promenade also functions as a safe and secure pedestrian link that connects Elizabeth Street and Ranelagh Lane through the site. The street frontage presents as an open and active frontage with the promenade and communal areas for students comprising the majority of the first two levels of the Elizabeth Street frontage.

The proposed development achieves sub-clause 1, 3, 4, 5 and 6 of Principle 21(B)(i). The proposal is for student accommodation and therefore sub-clause 7 and 8 are not applicable.

A north facing terrace is provided at level 6 which is fully integrated with other communal elements on the level including indoor casual and formal kitchen and lounge area. This terrace will essentially function as a rooftop garden as it is north facing and allows for substantial landscape plantings around the periphery.

Relocating the north facing rooftop garden to level 6 terrace provides additional benefits to the development including the provision of shelter to occupants from the often-harsh Adelaide climate and a periphery landscaped terrace to act as a safety buffer, preventing falls and other objects from being dropped over the edge, and appear as a green wall from the public realm. The terrace also frees up the roof space for the placement of a solar array forming a green roof element to the development.

The proposal incorporates an extensive solar array located on the roof. 'Greenroof' is an undefined term and the placement of a solar array on the roof is clearly a green initiative for the proposal. Therefore, the use of the roof space for a green and sustainable initiative is considered to fulfil the intent of the policy for a 'Greenroof'.

Further to this, the proposal incorporates a green wall up to level two of the northern façade of the building together with street frontage greenwall elements along the mezzanine level. The terrace at level 6 also provide a green wall element to the built form and separate the podium component of the building from the tower.

The proposal incorporates angled concrete blade walls with alternating expressed floor slabs and shade blades on the western façade of the building to provide innovative external shading devices.

The proposed development is for student accommodation and is therefore not defined as dwellings. Notwithstanding this, the proposed development provides and increased level of amenity for occupants with significant common areas at ground level, the mezzanine level, a cinema, a cyber games room, a study/library, terrace level common facilities and breakout areas on every level of the building. The breakout areas on level 7 to 16 all receive natural light from the four associated corridors.

Further to this, every student accommodation room has access to natural light and ventilation.

The intent of Principle 21 is to ensure that over height buildings incorporate suitable sustainable design measures and improved amenity for occupants. As described above, the proposal achieves the intent of Principle 21.

5.4.3 Building Composition

The following Capital City Zone Principles provide guidance with respect to the composition of building.

PDC 6 **Development should be of a high standard of architectural design and finish which is appropriate to the City's role and image as the capital of the State.**

PDC 7 **Buildings should present an attractive pedestrian-oriented frontage that adds interest and vitality to City streets and laneways.**

PDC 8 **The finished ground floor level of buildings should be at grade and/or level with the footpath to provide direct pedestrian access and street level activation.**

PDC 9 **Providing footpath widths and street tree growth permit, development should contribute to the comfort of pedestrians through the incorporation of verandahs, balconies, awnings and/or canopies that provide pedestrian shelter.**

PDC 10 **Buildings should be positioned regularly on the site and built to the street frontage, except where a setback is required to accommodate outdoor dining or provide a contextual response to a heritage place.**

The architectural form of the proposed development has been designed to prevent the massing of blank façades and provide an identifiable podium and upper level tower to the building. The ground level active frontage to Elizabeth Street is extended by the promenade and frontage to Ranelagh Alley establishes an open and permeable base, while the student accommodation levels above present a clearly defined section of the building.

The composition and nature of activities at ground level together with the upper levels of the building combine with the architecture to respond to, and enhance the desired character of the locality, recognising the pedestrian focus of Elizabeth Street Street.

5.4.4 Building Adaptability

The following image represents a typical structural floor plate configured within the load bearing structures to accommodate 2 double, 2 single and 2 studio dwellings. It is important to note that the internal walls are light weight structures readily provide for an adaptable floor plate configuration that can accommodate a range of alternate land uses including various configurations of hotel accommodation. The floor plate configuration allows for a functional hotel arrangement, further enhanced with the existing front of house format at ground level. The capability for a hotel conversion is achievable, functional and practically manageable.

Adaptive Reuse Plan - Sustainability

5.4.4 Building Setbacks

Ground level and Level 1 setbacks vary from the respective front, side and rear boundaries of the site to allow the building to:

- accommodate the double height open promenade/breezeway along the northern side boundary providing a pedestrian link between Elizabeth Street and Ranelagh Alley; and
- landscaping and services on the Elizabeth Street and Ranelagh Alley.

The Ground Level and Level 1 is to be built the southern side boundary adjacent the Stage 1 development.

The podium portion of the building is to be built to the southern and northern side boundaries. The northern façade of the podium levels also contains a centrally located indented portion to create a light well. The eastern and western side boundaries vary due to the angled façade. The Level 6 terrace is further setback from the eastern and western boundaries to allow for the placement and maintenance of the green climbing wall created on tensioned steel cables.

The tower component of the building is to be setback 3.0 metres from the southern and northern side boundaries. This provides a setback of 8.725 metres from the existing balconies of the West Franklin Stage 1 development.

The tower is to be setback 700mm from the eastern side boundary of the site and is separated from the existing car parking allotment by Ranelagh Alley, being a 3.0-metre-wide public road. The angled windows on the eastern façade of the tower also provide a setback of 1.2 metres and obscure the view to the car parking allotment.

The combination of Ranelagh Alley and the angled windows provides a 4.2 metres setback from any future development of the cap park allotment. This is considered sufficient for the future development of the car park allotment to accommodate an appropriate and achievable separation between the two buildings, forming a light well.

5.5 Student Accommodation Configuration

Council Wide Objective 9 and Council Wide Principles 10, 11, 12 and 13 provide guidance with respect to the configuration of student accommodation. Together, they recommend that:

Objective 9: **High-quality student accommodation that creates an affordable, safe, healthy and comfortable living environment.**

PDC 10 **Residential development specifically designed for the short-term occupation of students may provide reduced internal floor areas, car parking, storage areas and/or areas of private open space provided that:**

- **(a)** **residents have access to common or shared facilities that enable a more efficient use of space (such as cooking, laundry, common rooms or communal open space);**
- **(b)** **every living room has a window that provides an external outlook and maximises access to natural light;**
- **(c)** **the development is designed to enable easy adaptation or reconfiguration to accommodate an alternative use;**
- **(d)** **the development is designed to maximise opportunities to access natural ventilation and natural light;**
- **(e)** **private open space is provided in the form of balconies and/or substituted with communal open space (including rooftop gardens, common rooms or the like) that is accessible to all occupants of the building; and**
- **(f)** **the internal layout and facilities provide sufficient space and amenity for the requirements of student life and promote social interaction.**

PDC 11 **Internal common areas should be capable of being used in a variety of ways to meet the study, social and cultural needs of students.**

PDC 12 **Development should provide secure long-term storage space in both communal and private areas.**

PDC 13 **Student accommodation with shared living areas should ensure bedrooms are of a suitable size to accommodate a single bed, bookshelves, a desk and workspace, and a cupboard/wardrobe.**

The fundamental land use for the building is for the purpose of providing high quality Student Accommodation. The presence of an onsite manager, the effective design implementation of CPTED principles, generous communal amenity areas and a high architectural design standard will provide the successful delivery of a pleasant and safe student residential experience.

The location of the proposed development within close proximity to public transport and the institutional City West precinct accommodating the Adelaide University, the University of South Australia and Tafe SA Campuses is pivotal in providing conveniently located student accommodation services. Pedestrian access to each University campus is highly populated, safe, convenient, generally protected from the elements and provides a short walking distance of less than 600 metres.

The site has close access to the student's place of education, whilst also providing the convenience of services associated with retail, recreation and entertainment afforded by the proximity to Hindley Street, the Central Markets and surrounding precincts. The outdoor recreation opportunities of the closely located Light Square also add to the amenity experience for student residents.

The nature of the accommodation rooms ensure that:

- the rooms provide for and accommodate the fundamental necessities of its student occupants including a bed, bookshelves, a desk and workspace, and a cupboard/wardrobe;
- there is an appropriate outlook from each of the rooms; and
- natural ventilation and light are provided to each proposed room.

The development provides for five different typologies of accommodation rooms as detailed in Section 4.2 of this Report.

The diversity in accommodation types will ensure that there are a range of options for occupants in both style and price point, including:

- studio apartments with private ensuite and kitchenette;
- DDA apartments with private ensuite and kitchenette;
- twin studio apartments with private ensuite;
- four bed cluster with two shared bathrooms and communal lounge/kitchen; and
- six bed cluster three shared bathrooms and communal lounge/kitchen.

The variety in accommodation typology ensures a healthy social mix with the general promotion of shared living environments while also providing independent living opportunities. The model of four and six student residents sharing kitchen facilities enable social cross pollination, adding to the sense of community within the building.

As an integrated student accommodation facility, the proposed development includes a range of indoor and outdoor communal areas to meet the social, educational and cultural needs of the student residents. These facilities are exclusive to the occupants of the building and enhance the comfortable living environment.

Diverse Building Amenity

Unique to this application is the provision of communal amenity facilities. These spaces are strategically spread throughout the building and will provide occupants with a variety of spaces and experiences to encourage collaboration and learning, these are summarised as follows;

- Ground Floor: Open promenade/courtyard, foyer and casual dining;
- Level 1: Gym, games area, arts room, open study areas and study pods;
- Level 2: Laundry;
- Level 3: Cinema;
- Level 4: Cyber games room;
- Level 5: Study/Library;
- Level 6: Common kitchen/living area and open north facing terrace; and
- Level 7 to 16: 58 square metre break out space on each floor.

Ground Floor

The ground floor provides an informal dining space with indoor and outdoor seating opportunities and a direct connection with Elizabeth Street and Ranelagh Alley. The double height courtyard, extensive glazing and void above provides a spacious and light environment of high amenity value, representing an inviting place for resident students to meet. Notably, there is a direct connection with the communal level above, linking the two spaces.

Level 1

Incorporating an open plan study area, study pods, gym, arts room and games area, the communal level provides a direct connection with the ground level communal space via a void and stairwell. The communal area provides excellent access to natural breezes and light due to the expansive glazing and vistas to Elizabeth Street and Ranelagh Alley.

Level 2 - 5

Every level between Level 2 and Level 5 contains a large common room accommodating the following:

- Level 2: Laundry
- Level 3: Cinema
- Level 4 Cyber Games Room
- Level 5 Study/Library

The 4 bed and 6 bed clusters on these levels also each contain an 18 square metre lounge.

Level 6

Level 6 has been designed to incorporate a large north facing open terrace area, large communal kitchen and living area and two 4 bed clusters with private terraces.

The Level 6 communal areas have been designed as a versatile space, providing an opportunity to integrate both the indoors and outdoors with the inclusion of large sliding doors.

5.6 Signage

Capital City Zone Principles of Development Control 33, 34 and 35 provide guidance on appropriate signage displays, as follows:

PDC 33 Other than signs along Hindley Street, advertisements should use simple graphics and be restrained in their size, design and colour.

PDC 34 In minor streets and laneways, a greater diversity of type, shape, numbers and design of advertisements are appropriate provided they are of a small-scale and located to present a consistent message band to pedestrians.

PDC 35 There should be an overall consistency achieved by advertisements along individual street frontages.

Two signage zones have been integrated within the design including a vertical sign located on the upper two levels of the northern side of the Elizabeth Street frontage and a horizontal sign located on the upper eastern portion of the north facing podium wall. The signage provides building identification typical of a building of this nature. Each sign will be consistent and simple in design and style. The signs are of appropriate size, scale and number for a building of this size, providing effective proportions and a simple presentation.

5.7 Access, Parking and Traffic

5.7.1 Pedestrian Access

Capital City Zone Principles of Development Control 27 and 28 together with Council-Wide PDC 239 provide guidance with respect to pedestrian access and movements. They recommend that:

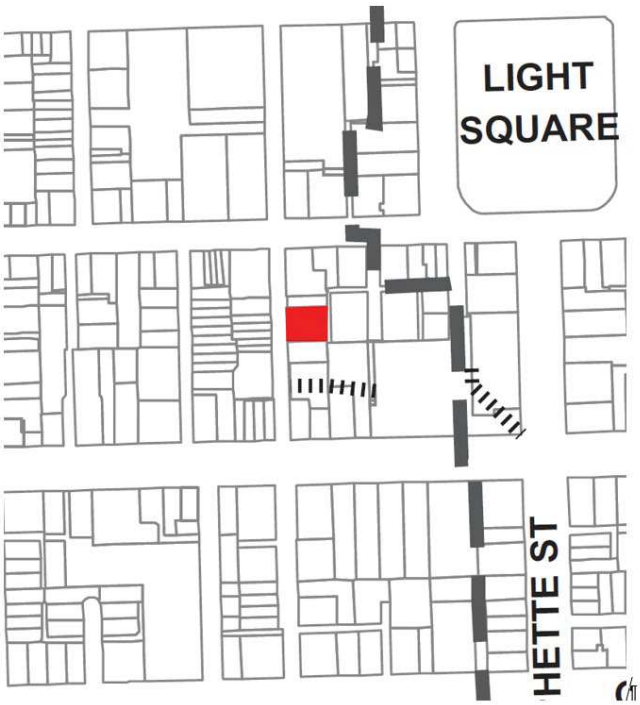
PDC 27 Development should provide pedestrian linkages for safe and convenient movement with arcades and lanes clearly designated and well-lit to encourage pedestrian access to public transport and areas of activity. Blank surfaces, shutters and solid infills lining such routes should be avoided.

PDC 28 Development should ensure existing through-site and on-street pedestrian links are maintained and new pedestrian links are developed in accordance with Map Adel/1 (Overlay 2A).

PDC 239 Development along high concentration public transport routes identified in Map Adel/1 (Overlay 4) should:

- **(a) ensure there are pedestrian links through the site if needed to provide access to public transport;**
- **(b) provide shelter (e.g. verandahs) for pedestrians against wind, sun and rain;**
- **(c) provide interest and activity at street level; and**
- **(d) where possible, avoid vehicle access across high concentration public transport routes identified in Map Adel/1 (Overlay 4). Where unavoidable, vehicle access should be integrated into the design of the development whilst retaining active street frontages.**

Map-Adel/1 (Overlay 2A) does not provide guidance for Elizabeth Street, as illustrated on the following excerpt:



Notwithstanding that there are no policy expressions seeking a pedestrian link through the site, the proposed development provides a new pedestrian link between Elizabeth Street and Ranelagh Alley, improving the pedestrian amenity and circulation through the locality building upon the intent of the connected pedestrian city.

5.7.2 Vehicular Access

Council Wide Objective 70 and Council-wide PDCs 240 and 241 provide guidance with respect to access, as well as the loading and unloading of goods. Together, they recommend that:

Objective 70: **Adequate off-street facilities for loading and unloading of courier, delivery and service vehicles and access for emergency vehicles.**

PDC 240 **Development should be designed so that vehicle access points for parking, servicing or deliveries, and pedestrian access to a site, are located to minimise traffic hazards and vehicle queuing on public roads. Access should be safe, convenient and suitable for the development on the site, and should be obtained from minor streets and lanes unless otherwise stated in the provisions for the relevant Zone or Policy Area and provided residential amenity is not unreasonably affected.**

PDC 241 **Facilities for the loading and unloading of courier, delivery and service vehicles and access for emergency vehicles should be provided on-site as appropriate to the size and nature of the development. Such facilities should be screened from public view and designed, where possible, so that vehicles may enter and leave in a forward direction.**

While it is acknowledged that trucks will be required to utilise on-street loading, contrary to the intent of the above policy, given the low speed and low traffic volume environment, this is not considered to represent an unsafe manoeuvre. The delivery and waste management truck movements associated with the use have been considered in the GTA Consultants report who surmise that the proposed on-street loading/refuse collection zone will be able to accommodate vehicles up to a 10m refuse vehicle. The proposed loading arrangement is that the vehicle will enter Elizabeth Street via Waymouth Street in a forward direction, access the loading zone and exit onto Franklin Street in a forward direction.

5.7.3 Car Parking

PDC 26 of the Capital City Zone provides guidance with respect to the provision of on-site car parking. It recommends that:

PDC 26 Car parking should be provided in accordance with Table Adel/7.

According to Table Adel/7 of the Adelaide (City) Development Plan, there is no minimum statutory car parking requirement for student accommodation in the Capital City Zone. Given the excellent pedestrian access to educational institutions and public transport options on Currie Street, no on-site car parking has been provided.

5.7.4 Bicycle Parking and Facilities

Council wide Principles of Development Control 234, 235 and 236 are most relevant for the assessment of on-site bicycle parking

PDC 234 An adequate supply of on-site secure bicycle parking should be provided to meet the demand generated by the development within the site area of the development. Bicycle parking should be provided in accordance with the requirements set out in Table Adel/6.

PDC 235 Onsite secure bicycle parking facilities for residents and employees (long stay) should be:

- **(a) located in a prominent place;**
- **(b) located at ground floor level;**
- **(c) located undercover;**
- **(d) located where passive surveillance is possible, or covered by CCTV;**
- **(e) well-lit and well signed;**
- **(f) close to well used entrances;**
- **(g) accessible by cycling along a safe, well-lit route;**
- **(h) take the form of a secure cage with locking rails inside or individual bicycle lockers; and**
- **(i) in the case of a cage have an access key/pass common to the building access key/pass.**

Table Adel/6 does not specify a bike parking rate for student accommodation. GTA consultants have however considered an appropriate bike parking rate for this form of development. The GTA Consultant report suggests a demand for the proposal of 13 bicycle parking places. The proposed development easily exceeds this demand with a provision of 30 bicycle parking places.

Further, the design and location of the internal bicycle parking facility satisfies all of the clauses (a) to (i) recommended in PDC 235.

5.8 Services

Council Wide Objective 41 and Council Wide PDCs 132, 133 and 135 provide guidance with respect to the provision of services. Together, they recommend that:

Objective 41: Provision of services and infrastructure that are appropriate for the intended development and the desired character of the Zone or Policy Area.

PDC 132 Provision should be made for utility services to the site of a development, including provision for the supply of water, gas and electricity and for the satisfactory disposal and potential re-use of sewage and waste water, drainage and storm water from the site of the development.

PDC 133 Service structures, plant and equipment within a site should be designed to be an integral part of the development and should be suitably screened from public spaces or streets.

PDC 135 Development should only occur where it has access to adequate utilities and services, including:

(a) electricity supply;
(b) water supply;
(c) drainage and stormwater systems;
(d) effluent disposal systems;
(e) formed all-weather public roads;
(f) telecommunications services; and
(g) gas services.

The Building Services Design Summary accompany the application documentation lists all the mechanical, electrical, fire protection and hydraulic services that will be provided as part of the proposed development

5.9 Environmental Considerations

5.9.1 Heritage and Conservation

The site of the proposed development is located to the south a State Heritage Place, separated by an existing two storey dwelling, with consideration of the following Council-Wide Objectives and Principles of Development Control:

Objective 43: Development that retains the heritage value and setting of a heritage place and its built form contribution to the locality.

PDC 140 Development on land adjacent to a heritage place in non-residential Zones or Policy Areas should incorporate design elements, including where it comprises an innovative contemporary design, that:

(a) utilise materials, finishes, and other built form qualities that complement the adjacent heritage place; and
(b) is located no closer to the primary street frontage than the adjacent heritage place.

PDC 142 Development that abuts the built form/fabric of a heritage place should be carefully integrated, generally being located behind or at the side of the heritage place and

without necessarily replicating historic detailing, so as to retain the heritage value of the heritage place.

The design team has been very conscious of providing a northern facade outcome that respects the context and setting of the State Heritage listed Cumberland Arms Hotel. To this end, the northern boundary wall of the podium component of the building now incorporates expressed precast joints to provide further articulation to the north façade as a backdrop to the context of the Heritage listed property.

A northern boundary setback distance of 3.0 metres for the tower component of the building also aids in enabling a greater architectural expression to the façade of the tower when viewed from the State Heritage Listed item.

5.9.2 Crime Prevention Through Urban Design

Inherent in design is the need to ensure that development provides for a safe secure and crime resistant environment as envisaged in the relevant Council-wide CPTED objectives and principles.

This is further reinforced through the nature of the proposed accommodation for students where the feeling of a safe and secure environment adds to their experience of the accommodation facility.

Objective 24: A safe and secure, crime resistant environment that:

- **(a) ensures that land uses are integrated and designed to facilitate natural surveillance;**
- **(b) promotes building and site security; and**
- **(c) promotes visibility through the incorporation of clear lines of sight and appropriate lighting.**

PDC 82 Development should promote the safety and security of the community in the public realm and within development. Development should:

- **(a) promote natural surveillance of the public realm, including open space, car parks, pedestrian routes, service lanes, public transport stops and residential areas, through the design and location of physical features, electrical and mechanical devices, activities and people to maximise visibility by:**
  - **(i) orientating windows, doors and building entrances towards the street, open spaces, car parks, pedestrian routes and public transport stops;**
  - **(ii) avoiding high walls, blank facades, carports and landscaping that obscures direct views to public areas;**
  - **(iii) arranging living areas, windows, pedestrian paths and balconies to overlook recreation areas, entrances and car parks;**
  - **(iv) positioning recreational and public space areas so they are bound by roads on at least two road frontages or overlooked by development;**
  - **(v) creating a complementary mix of day and night-time activities, such as residential, commercial, recreational and community uses, that extend the duration and level of intensity of public activity;**
  - **(vi) locating public toilets, telephones and other public facilities with direct access and good visibility from well-trafficked public spaces;**
  - **(vii) ensuring that rear service areas and access lanes are either secured or exposed to surveillance; and**

(viii) ensuring the surveillance of isolated locations through the use of audio monitors, emergency telephones or alarms, video cameras or staff eg by surveillance of lift and toilet areas within car parks.

(b) provide access control by facilitating communication, escape and path finding within development through legible design by:

(i) incorporating clear directional devices;
(ii) avoiding opportunities for concealment near well travelled routes;
(iii) closing off or locking areas during off-peak hours, such as stairwells, to concentrate access/exit points to a particular route;
(iv) use of devices such as stainless steel mirrors where a passage has a bend;
(v) locating main entrances and exits at the front of a site and in view of a street;
(vi) providing open space and pedestrian routes which are clearly defined and have clear and direct sightlines for the users; and
(vii) locating elevators and stairwells where they can be viewed by a maximum number of people, near the edge of buildings where there is a glass wall at the entrance.

(c) promote territoriality or sense of ownership through physical features that express ownership and control over the environment and provide a clear delineation of public and private space by:

(i) clear delineation of boundaries marking public, private and semi-private space, such as by paving, lighting, walls and planting;
(ii) dividing large development sites into territorial zones to create a sense of ownership of common space by smaller groups of dwellings; and
(iii) locating main entrances and exits at the front of a site and in view of a street.

(d) provide awareness through design of what is around and what is ahead so that legitimate users and observers can make an accurate assessment of the safety of a locality and site and plan their behaviour accordingly by:

(i) avoiding blind sharp corners, pillars, tall solid fences and a sudden change in grade of pathways, stairs or corridors so that movement can be predicted;
(ii) using devices such as convex security mirrors or reflective surfaces where lines of sight are impeded;
(iii) ensuring barriers along pathways such as landscaping, fencing and walls are permeable;
(iv) planting shrubs that have a mature height less than one metre and trees with a canopy that begins at two metres;
(v) adequate and consistent lighting of open spaces, building entrances, parking and pedestrian areas to avoid the creation of shadowed areas; and
(vi) use of robust and durable design features to discourage vandalism.

The internal and external design of the proposed development considers the fundamental principles of CPTED and therefore satisfies the afore-quoted Development Plan provisions through the following design and operation techniques:

- the ground floor frontage to Elizabeth Street has a lobby and lounge with extensive glazing to avoid potential areas of entrapment;

- the Student Accommodation reception desk is centrally located with lines of sight achievable to Elizabeth Street, the lift core and open promenade;
- the open promenade contains security gates to be lock after hours;
- CCTV coverage is provided to the public areas and communal spaces within the building;
- Level 1 provides direct line of sight to Elizabeth Street; and
- the internal circulation corridors on the student accommodation levels provide clear lines of sight and are of an appropriate width.

Further to the above design and operation techniques is the fundamental passive benefit derived from the accommodation of up to 300 residents, their comings and goings and use of the adjacent street network.

5.9.3 Waste Management

Council-wide PDCs 101 and 103 provide guidance with respect to the management of waste. Together, they recommend that:

PDC 101 A dedicated area for on-site collection and sorting of recyclable materials and refuse should be provided within all new development.

PDC 103 Development greater than 2000 square metres of total floor area should manage waste by:

(a) containing a dedicated area for the collection and sorting of construction waste and recyclable building materials;
(b) on-site storage and management of waste;
(c) disposal of non-recyclable waste; and
(d) incorporating waste water and stormwater re-use including the treatment and re- use of grey water.

Full details of the waste management solutions to be implemented throughout the proposed development are contained within the Waste Management Plan accompany the application documentation.

It is relevant for the Commission to note that the waste associated with the proposed development is to be managed as follows:

- at ground level through the provision of mobile waste bins stored within a dedicated bin room;
- waste is to be delivered to the ground level through a single chute system, with a diverter system that separates general waste and comingled recycling;
- Food organic bins will be paces in common areas which will be collected by cleaners;
- e-waste is to be manually disposed of at ground level;

- the ground level waste will be overseen by the facilities Manager. Weight sensors can be employed to alert Management of required bin rotations in addition to the linear track proposed; and
- a private contractor will be employed to undertake waste removal three times a week.

5.9.4 Stormwater Management

Council Wide PDCs 128, 129, 130 and 131 provide guidance with respect to the management of stormwater. Together, they recommend that:

> **PDC 128 Development should incorporate appropriate measures to minimise any concentrated stormwater discharge from the site.**
>
> **PDC 129 Development should incorporate appropriate measures to minimise the discharge of sediment, suspended solids, organic matter, nutrients, bacteria and litter and other contaminants to the stormwater system and may incorporate systems for treatment or use on site.**
>
> **PDC 130 Development should not cause deleterious effect on the quality or hydrology of groundwater.**
>
> **PDC 131 Development should manage stormwater to ensure that the design capacity of existing or planned downstream systems are not exceeded, and other property or environments are not adversely affected as a result of any concentrated stormwater discharge from the site.**

Given the modest size of the allotment, stormwater received from the proposed development:

- the existing stormwater infrastructure surrounding the subject land is unlikely to experience increased post-development flows;
- on-site detention to reduce peak flows before entering the existing stormwater infrastructure surrounding the subject land is not required; and
- it will not be necessary to treat any of the runoff generated by the proposed development.

With this in mind, the proposed development is considered to satisfy Council Wide PDCs 128, 129, 130 and 131.

5.9.5 Wind Effects

Council Wide PDCs 119 and 125 seek to minimise the micro-climatic impact of buildings on their immediate surrounds. Together, they recommend that:

> **PDC 119 Development should be designed and sited to minimise micro-climatic and solar access impact on adjacent land or buildings, including effects of patterns of wind, temperature, daylight, sunlight, glare and shadow.**
>
> **PDC 125 Development that is over 21 metres in building height and is to be built at or on the street frontage should minimise wind tunnel effect.**

A Qualitative Wind Assessment is currently being finalised and will be forwarded to the Commission once finalise. Whilst the full effects of the proposed building on wind flows in this locality are to be outlined in detail in the Qualitative Wind Assessment report, it is important for the Commission to note that:

- given the height of the building, there will be some effect on the local wind environment;
- the impacts on pedestrian comfort and safety are not expected to be significant; and
- With consideration of the Lawson comfort perspective, the wind conditions around the development are expected to be classified as acceptable for pedestrians standing or waking and pass the distress/safety criterion.

5.10 Building Services

The proposed development has been informed by detailed services engineering advice regarding the positioning and spatial arrangements for building services.

Objective 40 **Minimisation of the visual impact of infrastructure facilities.**

Objective 41 **Provision of services and infrastructure that are appropriate for the intended development and the desired character of the Zone or Policy Area.**

PDC 13 **Provision should be made for utility services to the site of a development, including provision for the supply of water, gas and electricity and for the satisfactory disposal and potential re-use of sewage and waste water, drainage and storm water from the site of the development.**

PDC 133 **Service structures, plant and equipment within a site should be designed to be an integral part of the development and should be suitably screened from public spaces or streets.**

The services infrastructure is located away from the primary entry to the building and lobby area and designed as an integral part of the building. Plant and Equipment is located in the southern portion of the site at ground level adjacent the Stage 1 boundary wall and on the rooftop. The design and location of the building's infrastructure is considered to be an effective design outcome separating it from public view while being functionally practical, consistent with the intent of Council Wide Objective 40, 41 and PDC 132 and 133.

5.11 Environmentally Sustainable Design

Council Wide Objective 30 and Council Wide PDC 108 combine to call for environmentally sustainable development. Together, they recommend that:

Objective 30: **Development which is compatible with the long term sustainability of the environment, minimises consumption of non-renewable resources and utilises alternative energy generation systems.**

PDC 108 **Energy reductions should, where possible, be achieved by the following:**

(a) **appropriate orientation of the building by:**

(i) **maximising north/south facing facades;**

(ii) designing and locating the building so the north facade receives good direct solar radiation;
(iii) minimising east/west facades to protect the building from summer sun and winter winds;
(iv) narrow floor plates to maximise the amount of floor area receiving good daylight; and/or
(v) minimising the ratio of wall surface to floor area.

(b) window orientation and shading;
(c) adequate thermal mass including nighttime purging to cool thermal mass;
(d) appropriate insulation by:

(i) insulating windows, walls, floors and roofs; and
(ii) sealing of external openings to minimise infiltration.

(e) maximising natural ventilation including the provision of openable windows;
(f) appropriate selection of materials, colours and finishes; and
(g) introduction of efficient energy use technologies such as geo-exchange and embedded, distributed energy generation systems such as cogeneration*, wind power, fuel cells and solar photovoltaic panels that supplement the energy needs of the building and in some cases, export surplus energy to the electricity grid.

BCA Engineers have been engaged to provide advice on requirement for energy efficiency and note that the Building is subject to requirements for energy efficiency prescribed within Section J of the current edition of the NCC. All Building Engineering Services shall be designed to meet the Deemed to satisfy requirements prescribed within BCA Section J5, J6, J7 and J8.

Notably, the proposal incorporates a roof top solar array that will generate approximately 20-30 kilowatts. Further, the design of the building incorporates angled concrete blade walls with alternating expressed floor slabs and shade blades on the western façade of the building to provide innovative external shading devices.

6.0 CONCLUSION

We conclude that the proposed development of an integrated Student Accommodation facility, together with pedestrian thoroughfare at ground level, complies with the relevant Capital City Zone and Council-wide provisions of the Adelaide (City) Council Development Plan.

In particular, the proposed development:

- establishes a land use that is expressly envisaged within the Zone and Central Business Policy Area;
- supports the existing tertiary education institutions in close proximity to the site;
- establishes a building that exhibits design excellence and will make a positive contribution to the pedestrian intimacy of Elizabeth Street and the skyline of the broader CBD;
- reinforces and enhances the active street frontage to Elizabeth Street;

- provides a contextual response to the setting of the State Heritage listed Cumberland Arms Hotel located to the north;
- incorporates facilities and services as part of the integrated student accommodation facility that will enhance the experience for the occupants of the building;
- the proposal incorporates generously sized communal recreation areas evenly spaces throughout the building, providing a high level of amenity for resident students with the provision of space, natural sun light and breezes;
- is ideally located within close proximity to the City West Precinct and Light Square, providing high amenity communal open space and convenience to the large educational establishments for student residents;
- provides for a diversity in accommodation options available to students through the provision of different accommodation rooms that allow for affordable accommodation;
- incorporates construction methodology that allows for the flexible re-use of the building in the event that an alternate land use is warranted; and
- provides for the necessary services and operation functions without detriment to the locality.

Accordingly, the proposal meets the land use, design and functional expectations of the Development Plan.

We conclude that the proposed development is not seriously at variance with the provisions of the Development Plan, and we therefore invite the State Commission Assessment Panel to accept that the proposal meets the provisions of the Development Plan in a manner sufficient to enable the application to be approved.

Greg Vincent MPIA
B/A in Planning

14 June 2019

Gormly, Will (DPTI)

From: James Cummings <JamesC@masterplan.com.au>
Sent: Monday, 22 July 2019 4:29 PM
To: Gormly, Will (DPTI)
Subject: RE: Elizabeth Street, Adelaide - Student Accommodation

Good afternoon Will,

Please follow the dropbox link below to the Landscaping Plan and Preliminary Acoustic Assessment for the above application. I have also provided an updated set of plans as the northern slab extension was missing from the upper levels floor plan (page 8).

https://www.dropbox.com/sh/anbtor0nkywv2p0/AABLM3VHnx_pMp_W5qAlt2gQa?dl=0

Please also note that the following paragraph on page 3 of our Planning Report is incorrect:

> ***Increase the depth of slab projections to increase the façade depth***
> *The depth of the concrete slab edge has been increased on all elevations to increase the façade depths which emphasises the building articulation and increases solar shading of the glazing panels below.*

The depth of the slab projections have not been increased.

Let me know if you have any questions.

Kind regards,

James Cummings
0439 925 777
www.masterplan.com.au

From: Gormly, Will (DPTI) <Will.Gormly@sa.gov.au>
Sent: Wednesday, 10 July 2019 4:41 PM
To: James Cummings <JamesC@masterplan.com.au>
Subject: RE: Elizabeth Street, Adelaide - Student Accommodation

Thanks James.

Cheers
Will

WEST FRANKLIN STAGE 3

STUDENT ACCOMMODATION

Landscape Report

Prepared by

Hemisphere Design Pty Ltd

June 2019

Content

Design Objectives

The West Franklin Stage 3 Student Accommodation will be a high quality student housing accommodation where a key feature of the quality of life will be the landscape amenity afforded to residents. The external public realm experience will be of a high standard with quality hard and soft elements providing the level of amenity desired.

The design and arrangement of space in the open promenade and multipurpose courtyard affords opportunities for a myriad of uses of different size and scale, from large gatherings to intimate informal meetings. Feature seat walls and bins will support the envisaged 'active' all seasonal use of the space. Secure gates to be locked after hours at both ends of promenade to ensure security of the residents.

The landscape experience will be underpinned by the use of high quality paving arranged in patterns to define spaces and enhance building entrance, in ground planting beds with shade tolerant colourful shrubs and ground covers, evergreen flowering trees and a generous provision of seating. A permanent irrigation system will be installed to support vigorous tree and shrub growth.

Night time statutory lighting and feature lighting incorporated into series of seat walls will create an ambient inviting environment.

On level 2 green wall facade will be installed on north, east and west façade using green wall module kits. A another key feature of the landscape design will be the terrace garden on Level 6 which consist of north facing balcony with lightweight GRC planter boxes and fruiting citrus trees and small shrubs and south facing balcony with shade tolerant planters in planter boxes whilst vertical green wall on east and west facing will be planted with climbers trained on cable wires.

The execution of the landscape works will be delivered through the attached drawings and specification which requires a high level of materials and workmanship to be executed in both construction and during 12 months establishment maintenance.

At the conclusion of the contractual maintenance period the established landscape will be handed over to the building Property Manager who will ensure a satisfactory level of landscape maintenance is undertaken to ensure the plantings continues to thrive.

Appendix

West Franklin Stage 3
Student Accommodation
Landscape Technical Specification

Hemisphere Design (Aust) Pty Ltd
June 2019

PLANTING

1 GENERAL

General
West Franklin Stage 3 Student Accommodation will be a high quality student housing accommodation where a key feature of the quality of life will be the landscape amenity afforded to residents. As such the execution of the landscape works is expected to be of the highest quality throughout the site, but in particular in the entrance to building and main courtyard area.

The extent of the work includes, but is not limited to the following:

- Source and supply of trees, shrubs, groundcovers and grasses
- Arrange for delivery to site all plants and trees.
- Preparation of planting holes, fertilising, staking, mulching and planting trees
- Preparation of planting beds, fertilising, planting and mulching
- Supply and installation of tree stakes
- Establishment maintenance
- 12 Month Maintenance after Practical Completion has been awarded

Associated work sections
Earthworks, Preliminaries

1.1 INTERPRETATION

Definitions
For the purposes of this work section, the following definitions apply:

- Description and classification of soils: To AS 1726.
- Bad ground: Ground unsuitable for the purposes of the works, including fill liable to subsidence, ground containing cavities, faults or fissures, ground contaminated by harmful substances and ground which is or becomes soft, wet or unstable.
- Discrepancy: A difference between contract information about the site and conditions encountered on the site, including but not limited to discrepancies concerning the following:
  . The nature or quantity of the material to be excavated or placed.
  . Existing site levels.
  . Services or other obstructions beneath the site surface.
- Site topsoil: Soil excavated from the site which contains organic matter, supports plant life, conforms generally to the fine to medium texture classification of AS 4419 (loam, silt, clay loam) and is free from:
  . Stones > 25 mm diameter.
  . Clay lumps > 75 mm diameter.
  . Weeds and tree roots > 75 mm.
  . Sticks and rubbish.
  . Material toxic to plants.
- Healthy: The current condition of the plant specimen is to be free from pests or diseases, hardened off and well-shaped and that the plant sizes are as scheduled.

1.2 PROGRAMMING ACTIVITIES

All planting shall be programmed to enable the works to be co-ordinated with other works. Confine machinery operation within a limited area as agreed by the Superintendent. Do not plant in unsuitable weather conditions such as extreme heat, cold, wind or rain.

1.3 TREE PROTECTION

General

Where works are undertaken in close proximity to trees identified as being 'significant' the contractor shall liaise with the superintendent before any works commence so that, where required advice from a qualified arborist can be obtained.

Warning sign: Display a sign in a prominent position at each entrance to the site, warning that trees and plantings are to be protected during the contract. Remove on completion.

Lettering: Road sign type sans serif letters, 100 mm high, in red on a white background, to AS 1744.

Protection

Protect trees specified or shown to be retained from damage by groundworks. Provide protective fencing located 2.5m from the outer face of the trunk of each tree likely to be affected by the works. Protective fencing to consist of star droppers and 3 wire strands. Take necessary precautions, including the following:

Harmful Materials

Do not store or otherwise place bulk materials and harmful materials under or near trees. Do not place spoil from excavations against tree trunks, even for short periods. Prevent wind-blown materials such as cement from harming trees and plants.

Damage

Prevent damage to tree bark. Do no attach stays, guys and the like to trees.

Work Under Trees

Do not add or remove topsoil within the drip line of trees. If it is necessary to excavate within the drip line, use hand methods such that root systems are preserved intact and undamaged. Open up excavations under tree canopies for as short a period as possible.

Roots

Do not cut tree roots exceeding 50mm diameter unless permitted. Where it is necessary to cut tree roots, use means such that the cutting does not unduly disturb the remaining root system. Immediately after cutting, apply a bituminous fungicidal sealant to the cut surface to prevent the incursion of rot or disease.

Backfilling

Backfill to excavations around tree roots with a mixture consisting of three parts by volume of topsoil and one part of well-rotted compost with a neutral pH value, free from weed growth and harmful materials.

Place the backfill layer to 200mm maximum depth, compacted to a dry density similar to that of the original or surrounding soil. Do not backfill around tree trunks to a height greater than 200mm above the original ground surface. Immediately after backfilling, thoroughly water the root zone surrounding the tree.

Compacted Ground

Avoid compaction of the ground under trees. If compaction nevertheless occurs, for example from the operation of heavy constructional plant, loosen the soil by coring.

2 PRODUCTS

2.1 MATERIALS

Trees and Plants

- Contractor to source all tree, shrubs and groundcovers required for these works.

- The contractor is to arrange for the delivery and planting of all nominated material.
- Co-ordinating delivery and quality control of all plants is the responsibility of the Contractor.

Taking delivery of plants

Contact the nursery to arrange for batching and taking delivery of plants at least one week prior to the planned date of delivery. Inspect the stock to ensure it is true to species, healthy and free from pests or diseases, hardened off and well-shaped and that the plant sizes are as scheduled. Ensure all plants are batched in single species prior to leaving the nursery and each species and a minimum of 5% of randomly selected shrubs have been name-tagged using botanic nomenclature. Taking delivery of the plants shall be deemed acceptance and responsibility for their performance becomes that of the contractor. The Contractor is to notify the Superintendent of any plants not conforming to the Specification.

Inspection

Plants and trees are subject to inspection by the Superintendent at all times. If found necessary, the rejected plants and trees shall be removed from site and replaced with plants conforming to this Specification.

Mulch

Use 'Jeffries Recover Mulch' or a similar product as approved by Superintendent to all mulched planter beds. Allow to remove any large pieces of mulch deemed unacceptable by the Superintendent and provide sample for inspection prior to use.

Suggested supplier: Jeffries Garden Soils
Landscape Suppliers
412 Hanson Rd
North Wingfield, SA 5013
Ph: 08 8368 3555

Fertiliser

Use "Terracottem®" soil conditioner or similar approved by the Superintendent for all trees and shrubs in planter beds.

Advanced Trees

Before the tree has been planted in tree hole add 500 gram Gypsum, 15 gram sulphate ammonia, Water in to subgrade. After the tree has been placed in the hole and backfilled to halfway, apply "Terracottem®" soil conditioner to manufactures recommendation or similar as approved by the Superintendent, shall be evenly placed around the root ball, approximately 50 mm from the root tips.

Suggested application for advanced tree "Terracottem®" granules 1.5 kilograms per m3 of mixed soil.

Shrubs, Groundcovers and Grasses

After each plant has been placed in the hole, apply "Terracottem®" soil conditioner to manufactures recommendation or similar as approved by the Superintendent. Suggested application "Terracottem®" granules 500grams – 1 kilograms per m3 of mixed soil, granules to be mixed evenly to soil surrounding the root zone.

Tree stakes

Stakes for trees shall be 1500 x 50 x 50 hardwood, for all plants a suitable sized stake shall be provided to act as a 'marker' for each tree to avoid damage during routine maintenance.

Imported topsoil

Mulched Planter Beds

All planter beds to be filled with "Jeffries Special Soil" or similar as approved by superintendent to a depth of 300mm. Topsoil used shall be in accordance with AS 4419 (Int) or as approved by the Superintendent.

Planterbox seating wall

All planterbox to be filled with “Jeffries Special Soil” to a depth of 300mm.

3 EXECUTION

3.1 WORKMANSHIP

General

Rubble and rubbish clean-up: As the work proceeds, remove all rubbish exposed during earthworks and cart to an approved tip.

Minor trimming or levelling

Prior to planting the sub grade will have been ripped thoroughly by contractor before spreading topsoil mix.

Transport and storage

Do not take delivery of any plant not conforming to this Specification. Keep plants well-watered at all times and plant on the day of delivery to the site. Ensure careful handling of plants during delivery, transport and planting. Replace any damaged trees by the tenderer once delivery has occurred, at no cost to the Principal.

The contractor shall be responsible for receipt and delivery or rejection of trees due to damage during transportation. The contractor shall be solely responsible for the condition of trees on acceptance from the nursery.

Planting

Before any excavation is carried out the contractor shall ensure that any existing underground services are identified prior to planting and that precautionary measures are put in place to prevent damage to such services. Any damage to any underground service arising out of neglect of this provision shall be immediately repaired by the contractor at the Contractor’s own cost.

Ensure that all plants are maintained in a healthy vigorous condition before Practical Completion of the works is awarded.

Trees

Excavation and Backfill

Holes shall be excavated to an appropriate size following confirmation of root ball size. The sides of hole shall not be polished or smooth and the sides and base to be broken up to allow root penetration.

Holes for tree planting to be backfilled with imported topsoil mixed with existing soil at a ratio of 50/50.

Holes to be cultivated under trees to 200mm

Perforated Pipe

Install 50mm diameter perforated upvc pipe to monitor watering frequency during establishment.

Planting procedure for trees

The setting out of all plants shall be subject to the approval of the Superintendent.

Remove the plants from the containers, ensuring the root ball is fully moist and that the roots are not disturbed. Place in hole, complete backfilling with a soil mixture as specified above. Ensure that the trunk emerges at the same height as in the container.

For trees in mulched areas, form a weed-free saucer-shaped depression 1000 mm in diameter and 125 mm deep with the top of the bowl at grade. Plant as specified above before placing the organic mulch in the saucer to a consolidated depth of 75 mm.

Thoroughly water in all plants immediately after planting, with initial watering to include ‘Seasol’ or similar as approved as per manufacturers rates.

All plants shall be in position and the horticultural practices as specified in the Maintenance Period shall be carried out to ensure that plants are maintained in a healthy vigorous condition before Practical Completion of the works is awarded.

Remove from the site all containers, rubbish, debris, contaminated spoil and other surplus material.

All trees located within 1.5m of a path, road or wall require a 500mm deep root barrier, type to be approved by Superintendent prior to installation.

Planting procedure for all shrubs and groundcovers

Remove the plants from the containers, ensuring the root ball is fully moist and that the roots are not disturbed. Place in hole, complete backfilling with a mixture of existing and imported topsoil and subsoil and firm down to remove air pockets.

For plants in tubes excavate hole by hand with a trowel or planting apparatus, excavate watering bowl of 300mm. Ensure that the plant stem or trunk emerges at the same height as in the container. Ensure that the plant stem is not damaged and that it emerges vertically through the mulch. All plants shall be watered in. The Contractor shall allow for regular watering to ensure the plants are healthy and thrive in the local conditions, all plants shall be watered in response to them showing signs of water stress.

Mulch

To mass planting beds shown on plan spread mulch to 100mm depth finishing 25mm below adjacent levels. Place mulch after completion of all other work including preparation of mass planted areas, planting and staking. Lightly tamp down after placing. Allow for trenching along edges of planting beds as required for mulch to finish to specified depths. Avoid contact of the stem with mulch. No mulch required for corrugated raised planter beds.

3.2 COMPLETION

Notice of completion

General: Give at least 7 working days' notice of completion of planting so that it may be inspected by superintendent.

Clean-up

Remove from site all surplus mulch, plant containers, stakes and trees, debris, contaminated spoil and other surplus material. Leave the site in a clean and tidy condition on completion of planting.

Making good: Make good any damage arising out of demolition work. Obtain written acceptance from the owner of each adjoining property of completeness and standard of making good.

4 SCHEDULE OF PLANT SPECIES

Refer to Landscape Documentation Drawing HD_V024_DA01

IRRIGATION

1 GENERAL

1.1 CROSS REFERENCES

General

The extent of the work includes, but is not limited to the following:

- Contractor to allow for design and construction of an automatic subsurface drip irrigation system to mulched planter beds, planter boxes and trees.

REFER TO HYDRAULIC ENGINEERING DRAWINGS AND SPECIFICATION FOR GUIDANCE

Associated work sections

Earthworks, Preliminaries

1.2 IRRIGATION INSTALLATION - TECHNICAL SPECIFICATIONS

This section is a general specification for the installation of turf sprinkler irrigation systems. Situations may arise where clauses in this section may not be applicable.

The irrigation is to be installed on a design and construct basis.

1.2.1 General

All control box locations to be approved by superintendent, prior to installation. All control boxes to be situated in a safe secure position inside lockable units.

The contractor shall be responsible for confirming the take off point, for supply and availability of water.

The contractor shall install a separate metre system to measure usage.

Standard Codes of Practice

The whole of the works as specified herein and shown on the drawings shall conform where applicable with regard to materials and workmanship to the current edition of the relevant code. The Contractor must familiarise himself with each code and a working knowledge is thereby assumed. The codes shall form an integral part of these Specifications. Should any discrepancies arise, it shall be referred immediately to the Superintendent or his representative in accordance with AS 2124 Clause 8.1.

A summary of the codes as used in these Specifications is as follows:

CA24.1 General Conditions of Contract for Civil Engineering Works.

Pipework:

Shall be of a standard suitable for recycled water use.

AS A185	Pipework: solvent Cement for use with rigid PVC pipe and fittings.
AS 2032 - (1977)	Code of Practice for Installation of uPVC Pipe Systems
AS 2129 - (1982)	Flanges for Pipes, Valves and Fittings
AS 1477 - (1988)	Parts 1 & 4 uPVC Pipes and Fittings for Pressure Applications
AS 1572 - (1985)	Copper and Copper Alloys Seamless Tubes for Engineering Purposes
AS 1432 - (1983)	Copper Tube for Water, Gas and Sanitation
AS 1074 - (1980)	Hot Dipped Galvanised Steel Pipe

Valves:

BS 5154 - (1974)	Copper Alloy Globe Type, Stop and Check Valves

	Check and Gate Valves for General Purposes
AS 1830 - (1986)	Iron Castings - Grey Cast Iron
AS 3500.1 - (1990)	National Plumbing and Drainage Code Part 1: Water Supply

AS 2845 Water Supply, Mechanical Backflow Preventers, Materials, Design, Performance Requirements

Reticulation Equipment:

AS 1565 - (1974)	Copper and Copper Alloys - Ingots and Casting
AS 2544 - (1982)	Grey Iron Pressure Pipes and Fittings

Electrical:

AS 3000 - (1986)	Electrical Installation of Buildings, Structures and Premises (SAA Wiring Rules)
AS 3126 - (1981)	Extra Low Voltage Transformers

ETSA Service Rules and Conditions of Supply - (1989)

Trenches: The Contractor is to provide for excavation of all trenches including the supply of all necessary equipment and plant of sufficient capacity and size for trenching conditions that will be encountered on the site.

No extras will be paid for excavation except where material cannot be removed by backhoe. The Contractor shall advise the Superintendent before trying to remove the rock by other means. The two parties will agree upon a method and price of removal. The price will be based on per cubic metre of rock excavated.

The Contractor shall provide all necessary equipment for the backfilling of trenches, compacting and levelling, and shall be responsible for top-dressing trenches that have subsided after completion. When trenching is carried out in wet weather the Contractor shall ensure that the trenches remain safe and free from water at all times.

Layout and Alignment

Layout: Trenches shall be pegged by the Contractor and checked by the Superintendent before trenching commences. Trench layout shall only be altered where necessary and with the written approval of the Superintendent.

Trench alignment: Unless sweeping arcs are required to avoid obstacles, trenches shall be straight and with less than a trench width deviation from true. The Contractor shall peg all mainline and lateral paths and use string lines for all straight line trenching. The trench shall not vary more than one trench width from the string line.

When there is a need to divert around obstacles, the trench shall be offset parallel to the first trench and 45 degree angles used to join the pipes. Deflecting the pipe will be allowed when the radius is not less that the recommended 130 times the nominal pipe diameter.

Size of trenches:

Trench depth: All pipework shall have a minimum of 450 mm coverage unless otherwise stated.

Trench width: All pipes up to and including 50 mm shall be installed in a 150 mm wide trench.

- 80 mm pipe shall be installed in a 200 mm wide trench Trenching areas for advanced tree planting.
- 100 mm pipe shall be installed in a 300 mm wide trench.

If two pipes (up to and including 50 mm diameter) are laid in the same trench a 200 mm wide trench shall be used. If two pipes above 50 mm are laid in the same trench the trench shall be 450 mm wide.

Bedding and backfilling of pipework: Unless otherwise stated and provided that in the opinion of the Superintendent it is suitable, the excavated spoil may be used as backfill.

Trench bottom: The trench bottom shall be continuous, firm, relatively smooth and free of rocks, rubble or sharp objects. The pipe shall be uniformly and continuously supported over its entire length.

Pipe embedment and backfill: A 75 mm bed of approved sand shall be laid beneath the pipe work. For pipe coverage a sand backfill shall be used for the first 150 mm above the pipe prior to final backfilling.

All surplus spoil shall be stockpiled for reuse, see 'Demolition'.

Note: Approved sand to be supplied by the Contractor.

Backfilling prior to testing: The Contractor may backfill after a visual inspection by the Superintendent. In the event of pipe or fittings failure during testing the Contractor shall rectify any problems at his own expense and have no claim against the Principal. Alternatively, the Contractor may partly backfill the trenches leaving the joints visible for testing.

Final backfill: Subsidence of trenches and removal of surplus material after completion of the works shall be the responsibility of the Contractor.

The Contractor shall allow for mechanical compaction (hand tamping is only acceptable for the first 150 mm above the pipe) of the final backfill material in all trenches. All trenches must be backfilled so that they are consolidated and level with existing ground surface. The Contractor shall ensure all trenches are kept topped up and recompacted for the duration of the defects liability period.

In the event of any trench settlement, the Contractor shall top up all trenches and recompact.

Seeding of trenches: Upon completion of irrigation installation the contractor shall turf all trenches- see grass specification.

Pipe Work

All pipework shall be of a standard suitable for recycled water us, ie the 'purple pipe' system.

All pipework shall be class 12. All pipework and fittings shall be installed according to manufacturer's recommendations. Where multiple pipes are laid in one trench, pipes must be apart by at least one diameter of the largest pipe. Clean pipe ends and deburrs prior to making joints. All pipework shall be flushed and completely cleaned of debris.

PVC pipe: All pipe that is under mains pressure shall be class 12. Rubber ring joint pipe shall be used when the pipe is 80 mm diameter and above. All pipe on the non-pressure side of the solenoid valves shall be class 12 solvent weld joint. No PVC pipework shall be used above ground.

Copper pipe: All copper piping shall be seamless hard drawn copper tube complying AS 1432 and AS 1572 types, A, B, C, and D as specified for the installation. Copper pipe shall be used under paving, roadways or above ground.

Galvanised steel pipe: All steel pipe shall be hot dipped galvanised and shall conform to AS 1074. Galvanised steel pipework shall only be used above ground.

Fittings

PVC fittings: All moulded fittings shall comply with AS 1477 and shall be solvent welded using approved solvent cement to AS A185. Connections to steel or copper pipework and all valves shall be made using PVC male thread adaptors for all sizes up to an including 50 mm. All sizes above 50 mm to use Table E PVC flanges and galvanised steel backing plates.

Copper fittings: Connections to copper pipework shall be made by copper weld on fittings or optional compression fittings up to an including 50 mm. 80 mm diameter and above shall be made by weld on Table E bronze flanges fitted with suitable gaskets.

Galvanised steel fittings: Connections to steel pipes shall be made with galvanised steel fittings. All connections to valves shall be made by galvanised barrel unions up to and including 50 mm diameter. 80 mm diameter and above connections shall be made using Table E screwed galvanised steel flanges conforming to AS 2129. All flanges shall be fitted with suitable gaskets.

Testing of Pipework

Flushing reticulation system: When all pipework has been installed and before testing the Contractor shall flush the system to remove any foreign material.

Mains pipework: All mains pipework shall be tested to 1.5 times the working pressure for a minimum period of 15 minutes or however long it takes to inspect the system providing there is no drop in pressure.

Pressure drop: If the gauge indicates a drop in pressure the Contractor shall locate fault and rectify. In the case of faulty PVC joints no tests shall be conducted less than 24 hours after repairs. In the case of faulty screwed fittings the testing may be carried out as soon as the fault has been rectified.

Valves: If any valves have been installed that cannot be tested in line without damage, the valves shall be isolated from the system at the time of testing. Alternatively, the mainline may be tested prior to the valves being installed.

Notice of testing: The Contractor shall given the Superintendent 24 hours notice of testing. The time nominated for the testing shall be after the Contractor has set up the test and allowed for bleeding of air from system.

Valves

Approval certificates: All valves shall have current approval certificates issued by the SA Water and shall be installed as per manufacturer's instructions.

Sizing of valves: Valves shall be of the same nominal size as the pipeline in which they are installed unless otherwise indicated. Solenoid valves and pressure reducing valves shall be sized according to flow.

Installation: All valves shall be installed as per manufacturer's installation instructions.

Termination of pipework: No valve shall be used to terminate pipework. A minimum length of two (2) metres shall be left between a valve and the end of a line. The end of the pipe shall be capped and anchored.

Maintenance: All valves that require maintenance shall be installed to allow for easy access. No valve shall be installed at the same depth as the pipework. All valves should be installed closer to the surface to aid maintenance.

Solenoid valves: Solenoid valves shall be installed according to the Typical Solenoid Valve Installation Detail on the Installation Drawing and should be serviceable without removing the valve body from the pipeline. The valves shall be ‘Richdel’ or similar approved and shall be slow opening and closing to avoid damage from water hammer. Each solenoid control valve shall have a manual bleed screw, flow control system, tapered BSP threads angle and/or globe pattern and electric 24 VAC low watt solenoids.

The operating voltage of the solenoid valve shall be a 24 volts AC.

The valves shall be installed within 100 mm of the surface in separate rectangular valve boxes. Where possible, valves shall be installed in an angle configuration with 45 degrees elbows back into lateral pipe work.

Solenoid valves shall have a minimum pressure rating of 1000 kPa.

Backflow prevention devices: At each meter site install a 50 mm or 32 mm double check backflow preventer. The SA Water shall approve this backflow device and have double test cocks for maintenance and testing. The backflow device shall have 50 mm or 32 mm SA Water approved dezinc resistant ball valves either side.

Immediately upstream of the backflow device, install a 50 and 32 mm bronze Y - Strainer (to SA Water approval). On the upstream of the Y strainer there shall be a 50 and 32 mm screwed bronze flange. On the outlet side of the check valve there shall be a 50 and 32 mm screwed bronze flange. All fittings shall be dezinc resistant brass.

The backflow device shall be installed in a concrete valve box: internal dimension of 1200 mm x 450 mm x 600 mm deep. The thickness of wall and base shall be 100 mm. The lid shall consist of 6 mm galvanised checker plate steel with drop down handles and be lockable.

A person licensed to install backflow devices shall install the backflow preventer. The Contractor shall obtain all necessary permits and approvals from the SA Water.

Connect the SA Water meter to the backflow device with hard drawn copper tube as shown on the installation detail. All pipework from the SA Water meter to the outside of the box on the outlet side shall be copper.

Valve chambers: Unless otherwise specified all valves shall be installed in valve chambers of suitable size as to allow easy access for maintenance. The chamber shall be constructed from green high-density polypropylene. Solenoid valves shall be installed in rectangular valve boxes, set 50 mm below final grade. Install metal detection tape on the valve box lids.

Isolating valve boxes shall allow ready access to the hand wheels or control levers.

All valve boxes, excluding concrete boxes, shall be mounted on bricks and backfilled with approved clean sand to prevent contact with the pipe. No part of the valve chamber shall rest on any pipe or fittings. Bricks and chambers shall be constructed so that the soil level remains lower than the isolating valve.

Backfill around all valve chambers with approved clean sand.

Sprinklers

Type and size: Sprinklers shall be 'Hunter' or similar approved for the use in a recycled water system. The Contractor shall supply data to confirm that the sprinklers submitted will perform as required.

Performance details: Type No. 1	
Operating Pressure:	280 kPa
Discharge (full circle):	3.5-nozzle size
Diameter of throw:	
Arcs required:	Adjustable 150 3600
Performance Details: Type No. 2	
Operating Pressure:	280 kPa
Discharge (full circle):	Various nozzle sizes
Diameter of throw:	
Arcs required:	Adjustable 150 3600
Performance Details: Type No. 3	
Operating Pressure:	150 kPa
Discharge (full circle):	
Diameter of throw:	3.6m
Arcs required:	Adjustable 150 3600

Part circle sprinklers shall be set to the arc as shown on the Drawings or as directed by the Superintendent. Part circle sprinklers shall be adjustable.

All sprinkler heads shall be set on compacted soil at finished ground level and be reset by the Contractor for a period of up to 6 months from date of Practical Completion.

Connection: All sprinklers shall be installed to manufacturer's instructions. Each sprinkler shall be connected to the mains using a TSR-25 micro adjusting riser with a 200 mm; three-(3) way articulated riser. The thread size of the riser shall be the same as the inlet thread size of the sprinkler.

Surface treatment: A strip of turf 0.5m long by 0.3m wide shall be installed both side of all sprinklers and set at final surface level.

Automatic Irrigation Controller

Technical data: The controller shall have a minimum of 24 stations and may be hybrid or digital. Technical Data should be supplied with the tender so that the Principal can assess the suitability of the controller offered. All controllers shall comply with the rules of the Electricity Trust of South Australia.

Control cabinet: The control cabinet shall be supplied by the contractor and set in concrete in the position as indicated on the Drawings.

Electrical: Electrical supply 240 volt: A qualified, registered electrician shall provide a new 240-volt electrical service to the control cabinet in accordance with ETSA regulations and requirements. A double GPO shall be provided in the Control cabinet.

Earthing: Controllers with metal parts and power outlets must be earthed in accordance with ETSA requirements and the SAA Wiring Rules.

24 volt supply: The extra low voltage supply to the solenoid valves shall be made through a 240V - 24V transformer mounted in the controller cabinet. 24-volt cable used for the installation shall be suitable for direct burial. The cable shall be sized to allow a maximum of 10% voltage drop to the most distant valve when opening (ie inrush current). The minimum wire size shall be 1.5 mm² for runs up to 200 metres.

Installation: All above ground ELV. wiring shall be installed in conduit. Where ELV. cables are laid in the same trench as water pipes, they shall be laid below pipes and covered with a layer of soil or sand. There must be a minimum of one metre of both active and common cables at each solenoid valve to facilitate the removal of the coil when maintenance work is carried out. Wiring around and adjacent valve boxes shall be enclosed in soft conduit. All connections shall be made with water tight and corrosion resistant connectors. (3M Scotch Lock or similar.)

Conduits

Underground conduits shall be rigid uPVC or galvanised steel pipe. Where cables are exposed to vandalism, conduits shall be galvanised steel electrical conduit.

System Handover

Operating Instructions: When the Contractor has completed the installation he shall instruct a person nominated by the Superintendent on how to program the controller and other necessary day to day operations.

Precipitation Calculations: Part of the instructions shall consist of the calculations required to determine the amount of time each station must run to achieve the desired precipitation rate.

Maintenance

Maintenance period: From the date of Practical Completion the Contractor shall maintain the system for the period of 52 weeks. During the maintenance period the Contractor shall attend to all emergency calls as quickly as possible.

Emergency calls: If during the maintenance period or summer the Contractor does not promptly attend to the emergency, the Principal will have the right to engage others to rectify the problem and recover costs from the Contractor.

Maintenance manuals: At the end of the Maintenance Period the Contractor shall provide the Principal with three (3) sets of operating and maintenance instructions. The instructions shall cover the type of system and operating and maintenance procedures on all equipment installed.

Spare parts: A comprehensive spare parts list shall also be provided. All information shall be placed in a folder containing plastic pouches for protection.

As installed drawings: Before the end of the Maintenance Period the Contractor shall provide the Principal with a set of "as installed drawings". These drawings must be accurate and detail any changes made during installation. As the Principal requires high quality drawings, it is suggested that the Consultant draw up all changes. This will be paid for by the Contractor.

Theft and vandalism - maintenance period: The cost of works required to repair damage caused by theft or vandalism shall be borne by the Principal. All such cases shall be immediately reported to the Superintendent.

Special Items

Encountered rock: When in the opinion of the Contractor the material to be excavated cannot be excavated with a chain trencher, the Contractor is to advise the Superintendent before trying to remove the rock by other means. The two parties will have to agree upon a method of removal and a price. The price will be based on per cubic metre of rock excavated.

Existing services: When a connection is to be made into an existing service, this shall be carried out at a time suitable for the Principal. This may mean that the work will have to be done out of normal working hours. The Contractor shall allow for this in his tender.

Quick coupling valves: Quick Coupling Valves shall be of a bronze construction with BSP threads and installed in the positions as indicated on the drawing. They shall be installed on 25 mm single bend copper risers with a galvanised stabiliser plate. They shall be backfilled in 9 litres of coarse gravel and housed within a 250 mm-diameter valve chamber as shown on the installation drawing. Connection to the mainline via. Tapping saddle. The quick coupling valve shall be of the make and model specified by Council. The Principal shall be provided with coupler keys to suit.

Thrust blocks: Concrete thrust blocks shall have a minimum volume of 0.025m3. Plastic sheeting shall be placed between the pipe and the concrete. The concrete shall not encase more than half the

diameter of the pipe and shall be cured for a minimum of 48 hours prior to testing. (Refer to drawing details.)

1.2.2 Drip Irrigation

Trenches

Trench depth shall be 150 mm below soil level.

Poly Pipe

Low Density Poly pipe shall conform to AS 2698. Sizes to be used shall be 4 mm, 13 mm, 19 mm and 25 mm.

Pipe Fittings

Fittings shall be barbed "Wingfield" type and all joints shall be clamped using "Cray" type fittings.

Drippers

Drippers shall be 2 5l/hr pressure compensating as indicated on the drawings. All drippers shall be pressure compensating type. 4 mm riser tube shall be used to connect drippers to Poly Pipe. Drippers shall extend just above the mulch so that they may be checked for operation.

Button drippers: Install button type drippers with Rootgard to trees in lawn areas.

Dripper position: Single row planting: For single row planting install two (2) drippers per plant: one dripper 200 mm from plant stem and the other to be 400 mm on opposite side.

Garden beds: Install drippers on a triangular pattern to information as shown on the drawing.

Flushing points: At the end of a dripper line there shall be a valve the same size as the pipe. Attached to the valve shall be a short length of hose to allow water to be directed on to the garden area during flushing. The valve and hose shall be housed in a valve box marked by a painted marker stake.

Valves

All valves shall have current approval certificates issued by SA Water. Valves shall be of the same nominal size as the pipe line in which they are installed unless otherwise indicated. Solenoid valves and pressure reducing valves shall be sized according to flow. All valves shall be installed as per manufacturer's installation instructions. No valve shall be used to terminate pipework. A minimum length of two (2) metres shall be left between a valve and the end of a line. The end of the pipe shall be capped and anchored.

All valves that require maintenance shall be installed to allow for easy access. No valve shall be installed at the same depth as the pipework. All valves should be installed closer to the surface to aid maintenance. Refer to drawings for installation procedure.

Solenoid valves: These valves shall be installed in angle pattern and be serviceable without removing the valve body from the pipeline. The valves shall be slow opening and closing to avoid damage from water hammer. The operating voltage of the solenoid valve shall be 24 volts AC.

Pressure regulating valve: "Senninger" or similar type. The valve shall be of a type that will adjust to the flow requirements within a set limit and maintain a fixed pressure. When choosing a valve, allowance must be made for Friction Losses within the pipe work.

Filters

Inline: A filter similar to "Wingfield" type may be used on small installations and shall be connected to the pressure reducing valve via a length of garden hose. This will allow the filter to be removed from the valve box for cleaning (refer drawing detail).

Screen filter: A filter similar to "Spin Clean Screen Filter" may be used. This filter shall be of the type to withstand 700 kPa pressure. When the filter has back flushing facilities the filter shall be installed before the pressure reducing valve to allow mains pressure to be used for back flushing. Allow to connect a short length of garden hose to the back flushing outlet to allow water to be discharged into garden bed. Position filter so that the screen can be removed for cleaning.

Valve chambers: Unless otherwise specified all valves shall be installed in valve chambers of suitable size as to allow easy access for maintenance. Isolating valve boxes shall allow ready access to the hand wheels or control levers. Bricks to prevent contact with the pipe shall support all valve boxes, excluding concrete boxes.

Automatic Drip Irrigation Controller

Supply and install a controller with a minimum number of stations as indicated on the drawings. Technical Data should be supplied with the tender so that the Superintendent can assess the suitability of the controller. All controllers shall comply with the rules of the Electricity Trust of South Australia. The controller shall be capable of running for periods of up to 8 hours. When the controller is a "Dual Program" type there must be an independent start time for each program.

Control cabinet: In the event that the controller is installed on an outside wall, the controller shall be mounted in a ventilated, weatherproof and lockable cabinet similar to a B & R IZ switchboard cabinet.

Electrical supply: 2.7.3. 240 volt: The drip irrigation controller shall be connected to the 240 volt power supply via a General Purpose Outlet.

Extra low voltage 24 volt: The extra low voltage supply to the solenoid valves shall be made through a 240V - 24V transformer mounted in the controller. 24 volt cable used for the installation shall be suitable for direct burial. The cable shall be sized to allow a maximum of 10% voltage drop to the most distant valve. All above ground ELV. wiring shall be installed in conduit. Where ELV. cables are laid in the same trench as water pipes, they shall be laid below pipes and covered with a layer of soil or sand.

There must be a minimum of one metre of both active and common cables at each solenoid valve to facilitate the removal of the coil when maintenance work is carried out. All connections shall be made with water tight and corrosion resistance connectors.

Earthing: Controllers with metal parts and power outlets must be earthed in accordance with ETSA requirements and the SAA Wiring Rules.

Conduits: Underground conduits shall be rigid PVC or galvanised steel pipe with a minimum diameter of 50 mm. Where cables are exposed to vandalism, conduits shall be galvanised water pipe.

Operating Instructions

When the Contractor has completed the installation, he shall instruct a person nominated by the Superintendent on how to program the controller and other necessary day to day operations. Part of the instructions shall consist of the calculations required to work out the amount of time each station must run to achieve a set amount of water.

Maintenance

From the date of Practical Completion the Contractor shall maintain the system for the period as set down in the Contract. During the maintenance period the Contractor shall attend to all emergency calls as quickly as possible. If during the establishment and summer periods the Contractor does not promptly attend to the emergency, the Superintendent will have the right to engage others to rectify the problem and back charge the Contractor.

Maintenance manuals: At the end of the Maintenance Period the Contractor shall provide the Superintendent with three (3) sets of operating and maintenance instructions. The instructions shall cover the type of system and operating and maintenance procedures on all equipment installed. A comprehensive spare parts list shall also be provided. All information shall be placed in a folder containing plastic pouches for protection.

As constructed drawings: At the end of the Maintenance Period the Contractor shall provide the Superintendent with a set of "as installed drawings". These drawings must be accurate and detail any changes made during installation.

Special Items

Connection to existing services: When a connection is to be made into an existing service, this shall be carried out at a time suitable for the Superintendent. This may mean that the work will have to be done out of normal working hours. The Contractor shall allow for this in his tender.

Dripper spacing: Dripper spacing shall be to each plant along the polypipe. Row spacing shall be 1.000 metre where possible.

Pressure Regulating Valve

The Pressure Regulating Valve shall have a minimum flow of 7.5 LPM to maximum of 60 LPM at an outlet pressure of 210 kPa

MISCELLANEOUS

1 GENERAL

1.1 CROSS REFERENCES

General
The extent of work includes, but is not limited to the following:

- Supply and installation of seat wall
- Supply and installation of GRC planter box
- Supply and installation of bench seat
- Supply and lay pavement at open promenade at ground floor

Associated work sections
Earthworks, Preliminaries

1.2 PROGRAMMING ACTIVITIES

All miscellaneous items shall be programmed to enable the works to be co-ordinated with other works. Confine machinery operation within a limited area as agreed by the Superintendent.

2 PRODUCTS

2.1 MATERIALS

2.1.1 BENCH

6no. Spark Furniture Utility Bench 1800 L x 340 W x 450 H
Refer to manufacturers' specifications for footing details

Suggested supplier:

2.1.2 BRICK PAVED PAVEMENT

All bevelled edge paving to be installed to AS1428.1.

Open Promenade
'BEST Traditional header paver 40' - 400x400x40mm,
Colour:, Laid: Stackbond

Suggested Supplier: Best Point
Telephone 1300 076 468
Facsimile 08 8132 0800
22 Fullarton Road, Kent Town
South Australia, Australia

Contractor shall refer to Civil engineering drawings and specification for all construction and finished levels and details. Landscape drawings describe the type, location and orientation of paving patterns to be achieved.

3 SUPPLY AND INSTALLATION

Shall be installed to manufactures specifications.

4 EXECUTION

4.1 PROTECTION

Dust protection
General: Provide dust-proof screens, bulkheads and covers to protect existing finishes and the immediate environment from dust and debris.

MAINTENANCE PERIOD

1.1 EXTENT OF WORK

The extent of works comprises:

- **Twelve months maintenance period**
- weed and pest control on paths and planting areas
- replacement of plants and stakes
- fertilising and re-mulching
- watering of trees and planter beds through temporary irrigation system weed and pest control on planting areas
- replacement of plants and stakes fertilising, foliar and direct to root area, re-mulching repair and replacement of inoperative irrigation items

1.2 PROGRAMME

The contractor will provide a programme that defines the total number of each activity with nominal dates over the twelve month period. This will be approved by the project Superintendent before any payments are made.

1.3 RECURRENT WORKS

Throughout the maintenance period continue to carry out recurrent works of a maintenance nature following acceptable horticultural practices.

1.4 DEFECTS LIABILITY PERIOD

A twelve month defects liability period will apply to all new track, artificial lawn, planting areas, mulch, shelters, seats, bins, lighting and electrical work.

1.5 PLANTING

Watering

Water plants as required to maintain healthy, vigorous growth. During periods of extended rainfall or high soil moisture, suspend the watering programme as required. Do not allow soil to become waterlogged due to excessive irrigation. During periods of extended heat, increase the frequency of watering as required.

Weed and pest control

Eradicate all grass, weeds and pest plants within 1 metre diameter of each plant (excluding existing mature trees) and from within mass mulched areas using an approved herbicide. Remove all persistent weed debris from the site after completion of the herbicide action. Ensure that the tree dishes in the grassed and paved areas are kept free from grass cuttings. Use an approved herbicide to ensure paths are kept free of grass and weeds.

Monitor all areas at least monthly for the presence of pests or diseases, including insects, fungal disease (e.g. root-rot symptoms), and vermin, and notify the Superintendent if any significant occurrence is observed. Allow to eradicate or control any such occurrence as directed by the Superintendent.

Mulching

Maintain mulch in a neat and tidy condition. Clear hard surfaces of any spillage from mulched planting beds. Re-mulch as necessary to maintain mulched areas and individual mulching to the specified depths (generally 100mm). Mulch type to match existing mulch.

Plants

Treat or replace injured plants and replace unhealthy plants that are deemed unsatisfactory by the Superintendent.

Staking

Reposition stakes as necessary and replace any damaged stakes and ties.

Edging and trimming

Do not use mechanical edgers or trimmers to trim around the tree trunk area, form a neat clean edge to the root zone of each street tree, clean spaded area of approximately 600mm around each tree is required.

Trim edges at or after every second mowing operation. Remove all trimmings from paved surfaces, garden beds and the like and ensure they do not enter the stormwater system through roadside or other pits, sumps, etc.

The use of “Roundup Biactive” or equal approved herbicide to maintain the area around trees, posts, is acceptable in all grassed areas. Apply only at the recommended rate and in suitable weather conditions. Apply in a band around each tree as directed by the Superintendent.

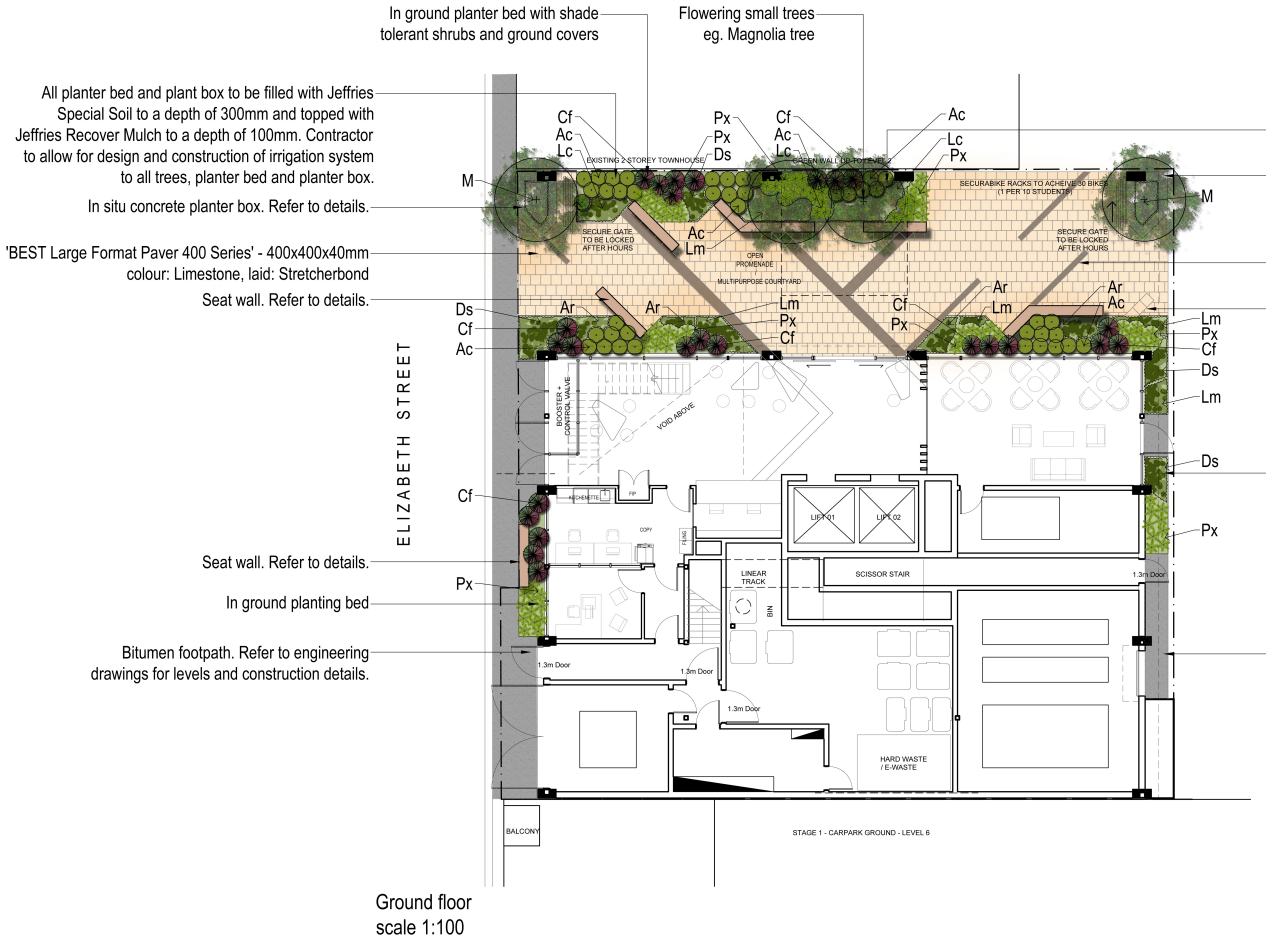
1.6 OPERATION AND MAINTENANCE OF THE IRRIGATION SYSTEM

During the Maintenance Period, an irrigation system shall be used as required to ensure the landscape works are kept in a vigorous state of growth. The system shall be fully maintained, including all repairs, adjustments and cleaning to ensure continuous reliable performance.

1.7 HANDOVER

Two weeks prior to the end of the maintenance period, notify the Superintendent that the works are ready for handover. Final completion will only be awarded when the Superintendent approves of the works and the condition of maintenance

Sheet 1 : Ground Floor
Landscape Documentation
For Development Approval



Ground floor
scale 1:100

Suggested Plant Species List

Code	Botanical Name	Spacing (mm)	Size Height (mm)	Quantity
Small size tree				
M	Magnolia grandiflora 'little gem'	As shown		
L	Lemon tree (dwarf size)	As shown		
F	Ficus benjamina	As shown		
Medium and Small Shrubs			Pot size (mm)	
Ac	Arthropodium cirratum	500	200	
Px	Philodendron xanadu	500	200	
Cf	Cordyline fruiticosa	600	200	
Ro	Rosemary officinalis	500	200	
Ground covers and climbers				
Ar	Ajuga reptans	400	200	
Lc	Loropetalum chinense 'Purple Pixie'	500	200	
Pj	Pandorea jasminoides	300	200	
Tj	Trachelospermum jasminoides	300	200	
Pc	Philodendron cordatum	300	200	
Grasses				
Lm	Liriope muscari	300	200	
Ds	Dianella silver streak variegated	400	200	

Plants suggested for ground floor

Magnolia grandiflora 'little gem' | Cordyline fruiticosa 'rubra' | Arthropodium cirratum | Philodendron xanadu | Loropetalum chinense 'purple pixie' | Dianella silver streak variegated | Liriope muscari

N

0 1 2 5m

HEMISPHERE DESIGN

PROJECT
WEST FRANKLIN STAGE 3 STUDENT ACCOMMODATION

DRAWING
LANDSCAPE DOCUMENTATION

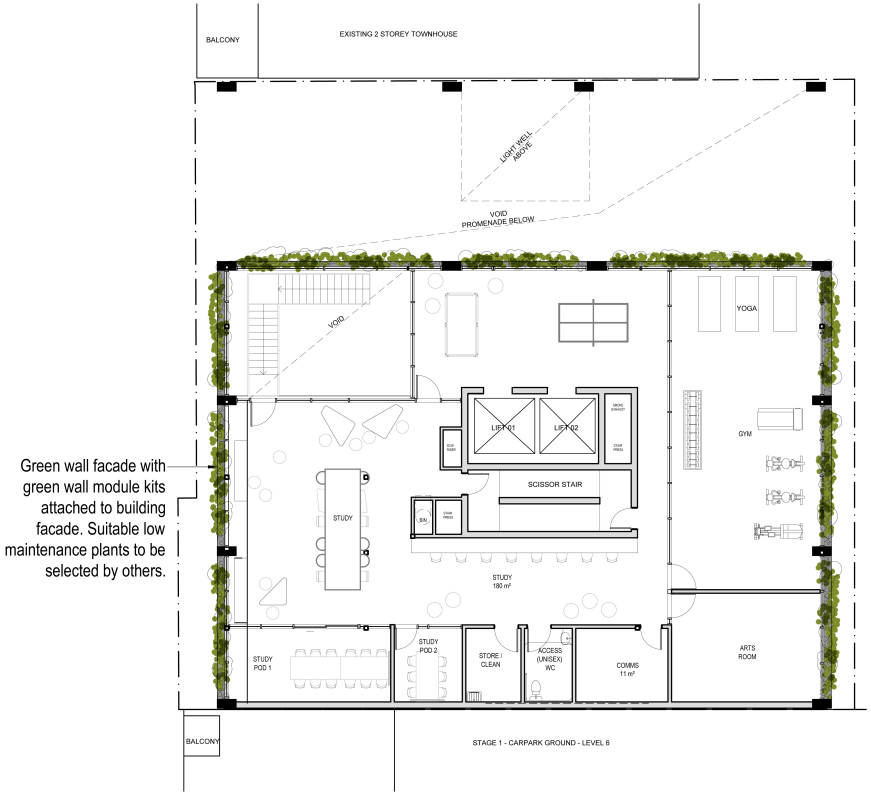
CLIENT
GREATON DEVELOPMENT

DWG NO HD_V024_DA01 SHEET NO 1
DRAWN SW CHECKED SH
SCALE 1:100 @ A1 DATE JUNE 19
REVISION -

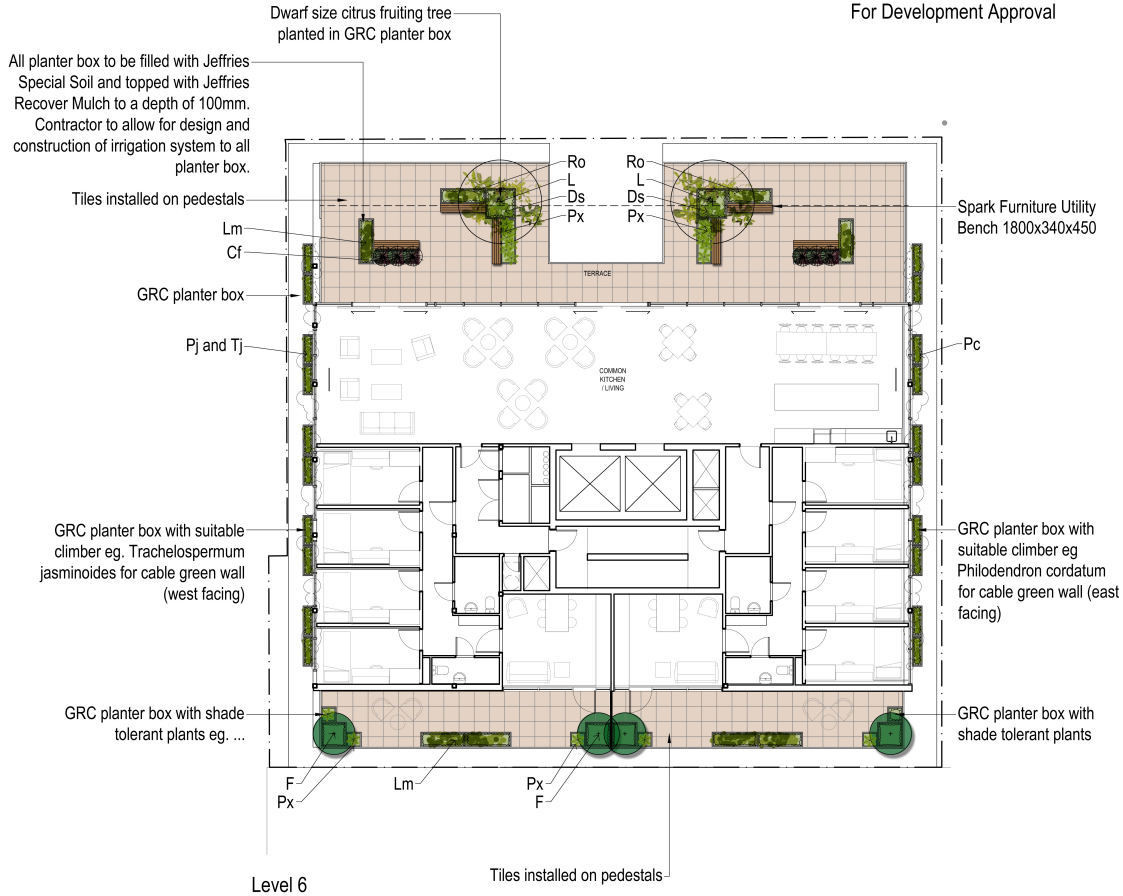
STATUS FOR DEVELOPMENT APPROVAL

Hemisphere Design (Aust) Pty Ltd
PO BOX 858 MITCHAM CENTRE, TORRENS PARK SA 5062
P 08 8277 7640 F 08 8277 7641 E admin@hemispheredesign.com.au
ACN 114 553 506

Sheet 2: Level 1 and Level 6
Landscape Documentation
For Development Approval



Level 1
scale 1:100



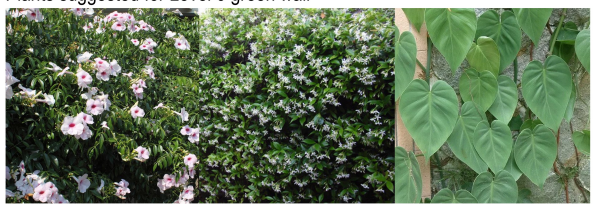
Level 6
scale 1:100

Suggested Plant Species List

Code	Botanical Name	Spacing	Size	Quantity
Small size tree		(mm)	Height (mm)	
M	Magnolia grandiflora 'little gem'	As shown		
L	Lemon tree (dwarf size)	As shown		
F	Ficus benjamina	As shown		
Medium and Small Shrubs			Pot size (mm)	
Ac	Arthropodium cirratum	500	200	
Px	Philodendron xanadu	500	200	
Cf	Cordyline fruiticosa	600	200	
Ro	Rosemary officinalis	500	200	

Ground covers and climbers				
Ar	Ajuga reptans	400	200	
Lc	Loropetalum chinense 'Purple Pixie'	500	200	
Pj	Pandorea jasminoides	300	200	
Tj	Trachelospermum jasminoides	300	200	
Pc	Philodendron cordatum	300	200	
Grasses				
Lm	Liriope muscari	300	200	
Ds	Dianella silver streak variegated	400	200	

Plants suggested for Level 6 green wall



Pandorea jasminoides | Trachelospermum jasminoides | Philodendron cordatum

N

0 1 2 5m

HEMISPHERE DESIGN

PROJECT
WEST FRANKLIN STAGE 3
STUDENT ACCOMMODATION

DRAWING
LANDSCAPE DOCUMENTATION

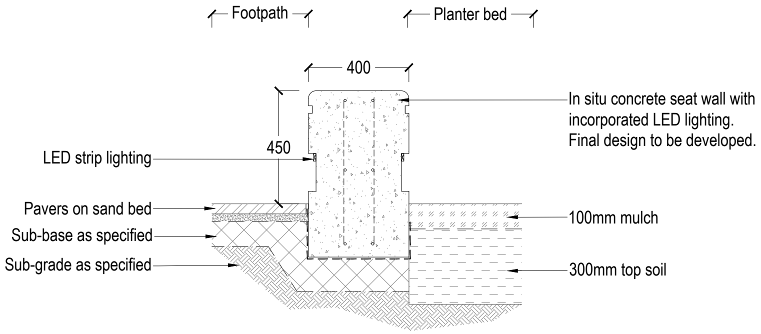
CLIENT
GREATON DEVELOPMENT

DWG NO	HD_V024_DA01	SHEET NO	2
DRAWN	SW	CHECKED	SH
SCALE	1:100 @ A1	DATE	JUNE 19
		REVISION	-

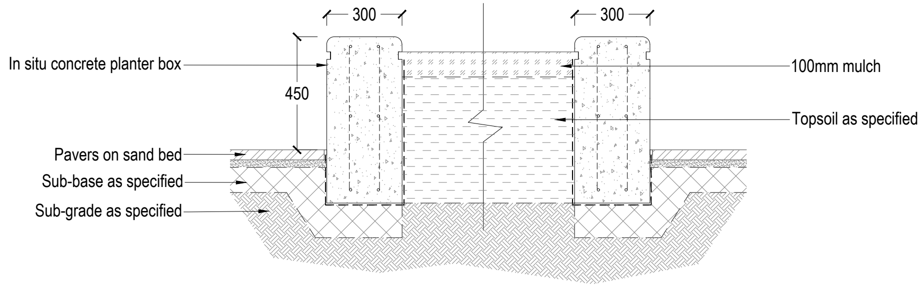
STATUS FOR DEVELOPMENT APPROVAL

Hemisphere Design (Aust) Pty Ltd
PO BOX 858 MITCHAM CENTRE, TORRENS PARK SA 5062
P 08 8277 7640 F 08 8277 7641 E admin@hemispheredesign.com.au
ACN 114 503 936

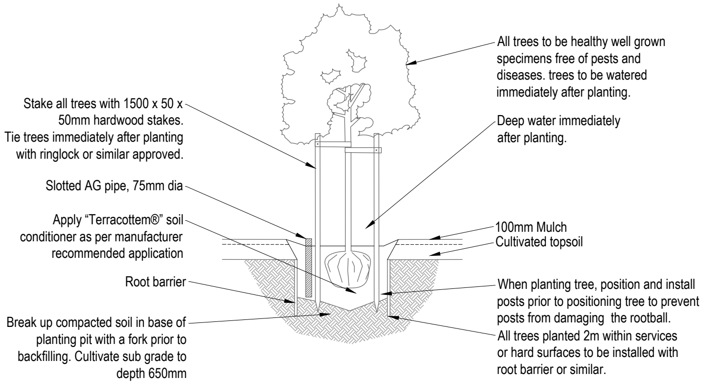
Sheet 2: Details
Landscape Documentation
For Development Approval



Detail: Seat wall
Scale 1:10



Detail: Planter box
Scale 1:10



Notes
1. Contractor to verify all dimensions on site prior to commencement of any work.
2. Contractor to verify all service locations prior to undertaking of excavation work.

Scope of works
1. Excavate planting hole, remove any rocks or debris over 50mm in size from fill and dispose off site.
2. Contractor to allow a provisional sum for the importing of clean grade subsoil for backfilling of tree pit where existing material is unsuitable.
3. Place tree in planting pit and backfill hole, consolidate soil around rootball.
4. After the tree has been placed in the hole and backfilled halfway, apply 'Terracottem' soil conditioner as per manufacturer recommended application and shall be placed evenly around the root ball, approximately 50mm from root tips.
5. Secure tree to posts with tree ties.
6. Remove all soil and debris from site and dispose of off site.

Detail: Typical tree planting
Scale 1:50

HEMISPHERE DESIGN

PROJECT
WEST FRANKLIN STAGE 3
STUDENT ACCOMMODATION

DRAWING
LANDSCAPE DOCUMENTATION

CLIENT
GREATON DEVELOPMENT

DWG NO	HD_V024_DA01	SHEET NO	3
DRAWN	SW	CHECKED	SH
SCALE	as shown @ A1	DATE	JUNE 19
		REVISION	-

STATUS FOR DEVELOPMENT APPROVAL

Hemisphere Design (Aust) Pty Ltd.
PO BOX 858 MITCHAM CENTRE, TORRENS PARK SA 5062
P 08 8277 7640 F 08 8277 7641 E admin@hemispheredesign.com.au
ACN 114 503 936

REF: S171730

DATE: 14 June 2019

Brown Falconer
28 Chesser Street
Adelaide SA 5000

Attention: Mr. Rowan Barbary (Architect)

Dear Rowan,

RE: WEST FRANKLIN STAGE 3, STUDENT ACCOMMODATION

Pursuant to the proposed Student Accommodation to be located at 54 Elizabeth Street in Adelaide CBD, GTA has prepared a Transport Impact Assessment of the proposed development. The assessment has been undertaken based on plans prepared by Brown Falconer.

Subject Site and Surrounds

The subject site is located at 54 Elizabeth Street in Adelaide, within the Capital City Zone. The site of approximately 730sq.m has a frontage of approximately 28 metres to Elizabeth Street. The properties surrounding the subject site are a mix of residential, retail and commercial. Figure 1 shows the subject site in relation to its surrounds.

Figure 1: Subject Site and Surrounds

(PhotoMap courtesy of NearMap Pty Ltd)

VIC | NSW | QLD | SA | WA
Level 5, 75 Hindmarsh Square
ADELAIDE SA 5000
PO Box 119
RUNDLE MALL SA 5000
t// +618 8334 3600
ABN 66 137 610 514
www.gta.com.au

Elizabeth Street is a local road under the care and control of the City of Adelaide Council. It is a two-way road aligned in an approximate north/south direction. Elizabeth Street is configured with a 7-metre-wide road carriageway set within a 11-metre-wide road reserve. Elizabeth Street accommodates a total of 13 parking spaces with timed restrictions and up to 3 loading zone spaces. Photos of Elizabeth Street viewing north and south are shown in Figure 2 and Figure 3.

Figure 2: Elizabeth Street viewing north

Figure 3: Elizabeth Street viewing south

Public Transport

The locality of the subject site in relation to public transport is shown in Figure 4. The site is located approximately 250m to Currie Street which is identified as a High Concentration Public Transport Route in the Adelaide (City) Development Plan, facilitating many bus services to various destinations. The site is also located approximately 600m to City West tram stop, 800m to Pirie Street tram stop and 1km to Adelaide Railway Station.

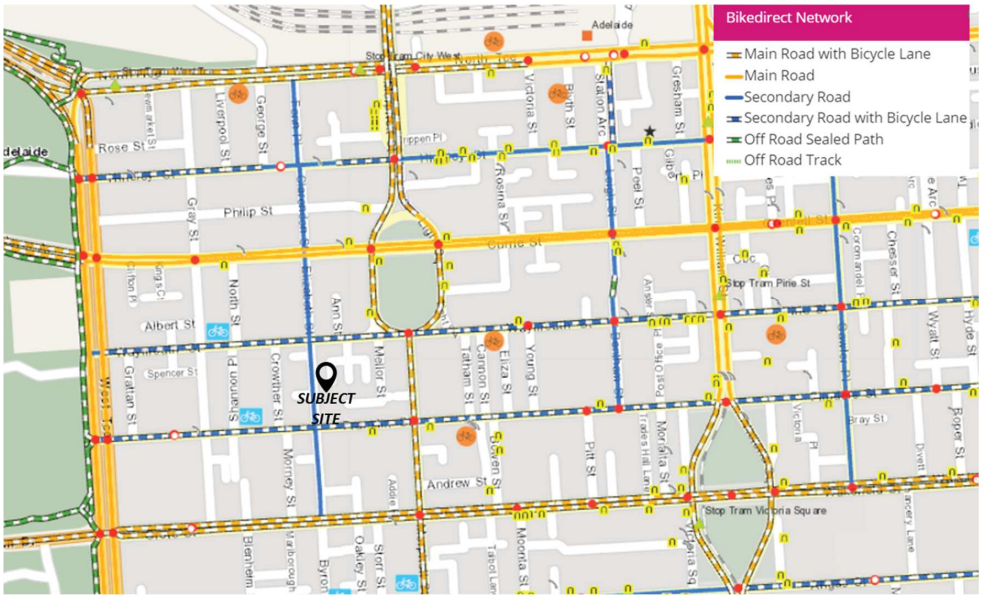
Figure 4: Public Transport in vicinity of the subject site

Source: Adelaide Metro City Map

Cycling Network

The BikeDirect Network in vicinity of the site is shown in Figure 5. Franklin Street and Waymouth Street are both designated as secondary roads with bicycle lanes. The bicycle lanes on both streets are full time in both directions of travel. Elizabeth Street is identified as a secondary road without bicycle lanes.

Figure 5: Cycling network in vicinity of the subject site

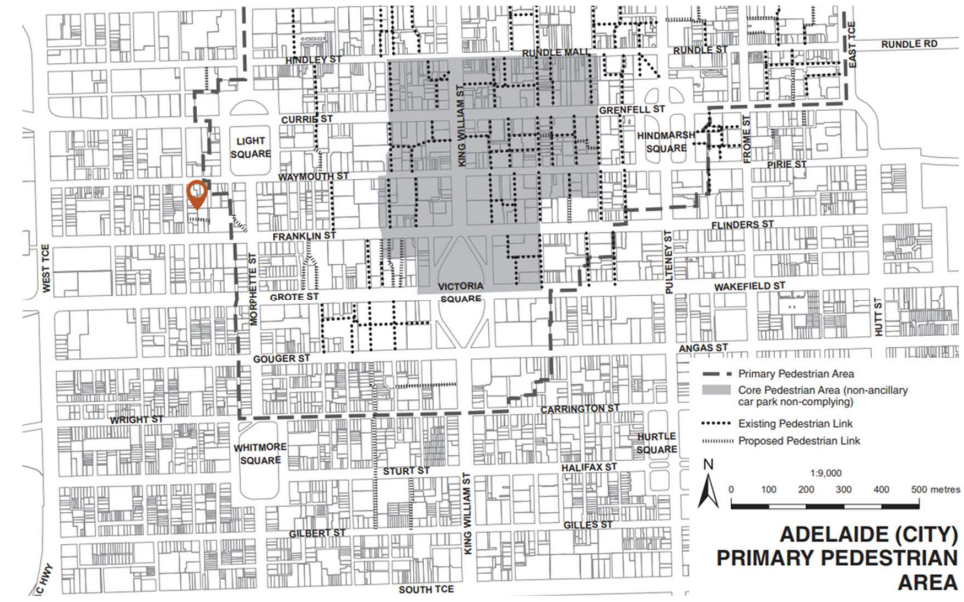


Source: CycleInstead

Pedestrian Connectivity

The site has good pedestrian connectivity in the vicinity with paved footpaths on both sides of the roads. It is located close to the Primary Pedestrian Area, as shown in Figure 6. The following activity centres are within 800m walking distance: University of South Australia City West Campus and MOD. building, TAFE SA Adelaide Campus, University of Adelaide Health and Medical Sciences Building, Adelaide Central Market, and various retail shops and restaurants.

Figure 6: Pedestrian connectivity in vicinity of the subject site



Source: Adelaide (City) Development Plan

Proposed Development

The proposed development includes the construction of a multi-storey student accommodation building with a total of 300 beds across Level 2 to Level 16. The ground floor plan is shown in Figure 7.

The proposed development does not include any car parking spaces. Bicycle parking provision of 30 spaces is included in the promenade, which caters for 1 bicycle parking space per 10 students. The bike parking area in the promenade will have a secure gate which will be locked after hours. Refuse collection and delivery is proposed via a new on-street loading zone on Elizabeth Street.

Figure 7: Ground Floor Plan

BROWN FALCONER

Ground Floor

Source: Planning Application Drawings, 06/06/19 by Brown Falconer

Car Parking Requirement

Table Adel/7 in the Adelaide (City) Development Plan (consolidated 07 June 2018) provides car parking requirements for developments within the City Living Zone, Adelaide Historic (Conservation) Zone and North Adelaide Historic (Conservation) Zone. The subject site is located within the Capital City Zone and does not generate any car parking requirement.

Bicycle Parking Provision

Recommended bicycle parking rates for new development in the City of Adelaide are contained in Table Adel/6 of the Adelaide (City) Development Plan. Given an absence of a specific bicycle parking rate in the Development Plan for

Student Accommodation, GTA has undertaken an empirical assessment of bicycle parking requirements at other student accommodation developments in Australia (including one on Bank Street in Adelaide).

Table 1 summarises the bicycle parking provision and demand at other student accommodation developments in Australia.

Table 1: Bicycle parking provision and demand – student accommodation developments

Location	Total Beds	Total Spaces Provided	Total Spaces Occupied	No. Beds Per Bicycle Demand	Comments
Quays Street, Haymarket, Sydney	334	44	10	33.4	City centre location, close proximity to UTS and Sydney University.
Bank Street, Adelaide	503	24	22	22.9	City centre location, Close proximity to Uni SA and University of Adelaide
South Bank, Brisbane	755	75	29	26.0	City centre location
City Road, Sydney	440	98	5	88.0	Sydney University on campus location (opened July 2015)
Cleveland Street, Sydney	461	135	15	30.7	Chippendale, close proximity to UTS and Sydney University
Sydney Central	665	86	13	51.2	Ultimo, close proximity to UTS
Melbourne Central	461	81	11	41.9	Carlton, close proximity to University of Melbourne
Carlton	272	41	18	15.1	Carlton, close proximity to University of Melbourne
Average Number of Beds Per Bicycle				**38.6**	

Based on the bicycle parking demands at similar student accommodation developments across Australia, the average bicycle parking demand rate is approximately 1 space per 38.6 beds. Using this rate, the proposed 300 beds would generate a bicycle parking demand of 8 spaces. Based on the most comparable Adelaide site at Urban Nest in Bank Street, the proposed site would generate a bicycle parking demand of 13 spaces. The provision of 30 spaces (1 space per 10 beds) will therefore be adequate to meet the anticipated bicycle parking demand.

As the proposed development is located within walking distance of many destinations within the CBD, as well as bus, tram and train services, there may be a lower demand for bicycle ownership and use.

Based on the above discussion, the proposed bicycle storage area in the promenade with a secure gate capable of accommodating 30 bicycles is considered appropriate for the proposed student accommodation development.

Loading facilities

The Adelaide (City) Development Plan (dated 07 June 2018) provides guidance for loading/unloading facilities. Principle of Development Control (PDC) 241 in the Transport and Access section of the Development Plan that applies to the proposed development. PDC 241 is as follows:

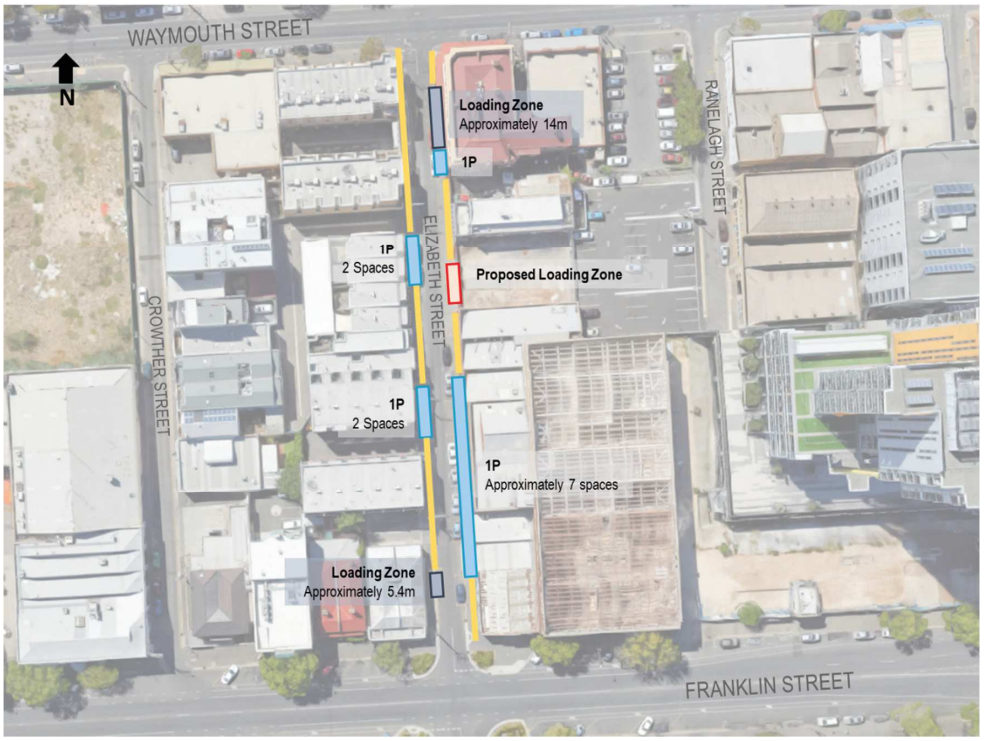
"Facilities for the loading and unloading of courier, delivery and service vehicles and access for emergency vehicles should be provided on-site as appropriate to the size and nature of the development. Such facilities should be screened from public view and designed, where possible, so that vehicles may enter and leave in a forward direction."

Current parking restrictions and the proposed loading zone are shown in Figure 8. An existing loading zone of approximately 14m is located near the northern end of Elizabeth Street on the eastern side, with a 10-minute restriction applied 8am-6pm Monday - Friday and 8am -12noon Saturday, and no restriction at other times. Another loading zone of approximately 5.4m is located at the southern end of Elizabeth Street in the northbound direction with a 10-minute restriction applied to 8am-6pm Mon-Fri and No Standing at other times. Both loading zones allow an exemption of 30 minutes for commercial vehicles.

Apart from the loading zones, Elizabeth Street currently has a total of 13 timed car parking spaces. Parking restrictions of 1 hour applies 8am-6pm Monday - Friday and 8am - 12noon Saturday to these car parking spaces.

It is proposed that loading and refuse collection will occur on-street on Elizabeth Street in a new proposed loading zone of 12m in length replacing the existing redundant crossovers in front of the site. The proposed location is shown in Figure 8 and Figure 9. The loading zone has been designed to accommodate a refuse collection vehicle up to 10.0 metres long, which is the largest standard refuse vehicle, and the identified 2m rear loading space for rear lift collection. Bins will be wheeled from the bin storage area to the kerbside on Elizabeth Street for collection.

Figure 8: Proposed Loading Zone on Elizabeth Street



DRAFT

Figure 9: Approximate location of loading zone

Traffic Impact

As the proposed development does not provide any on-site car parking, there will be limited vehicular traffic volumes associated with the site. Occasional taxi, rideshare and other drop-off and pick-up could be expected and this can be accommodated on Elizabeth Street outside the site or locally on Waymouth Street or Franklin Street. Such use is expected to be primarily at times when public transport options are less readily available and traffic volumes generally lower such as evenings and weekends. These movements would not be expected to compromise the operation of the street.

The waste management plan has identified an estimate of 7 collections per week, which are anticipated to be on weekdays only. Each collection is likely to pick-up a maximum of 3 bins for the separated waste streams and would be expected to be in the loading zone for no more than 15 minutes. Collection of the different waste streams would be timed to avoid a risk of conflicting demand in the loading zone. This volume of traffic and duration of stay can be accommodated within the proposed loading zone with limited impact to existing traffic volumes.

Occasional other delivery and service vehicles could also be expected to the development but these would be on an occasional basis and may also make use of other on-street car parks when they are unoccupied.

Conclusion

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

1. The proposed student accommodation incorporates a total of 300 beds and a bicycle storage room capable of accommodating 30 bicycles.
2. The proposed development does not include any car parking spaces and does not generate a minimum car parking requirement.
3. The site has good pedestrian access to universities and shopping districts such as Rundle Mall and Central Market. The site also has good accessibility to bus, train and tram stops.
4. The proposed development is expected to generate demand for up to 13 bicycle parking spaces. The proposed 30 bicycle parking spaces will be able to accommodate the anticipated bicycle parking demand.

5. The proposed on-street loading/refuse collection zone will be able to accommodate vehicles up to a 10m refuse vehicle and associated loading area. The proposed loading arrangement is that the vehicle will enter Elizabeth Street via Waymouth Street in a forward direction, access the loading zone and exit onto Franklin Street in a forward direction.

Naturally, should you have any questions or require any further information, please do not hesitate to contact me on (08) 8334 3600.

Yours sincerely

GTA CONSULTANTS

Paul Froggatt
Associate Director

Greaton Development
West Franklin Stage 3

DRAFT Waste Management Plan

Document verification

Date	Version	Title	Prepared by	Approved by
8/5/19	V1	West Franklin Stage 3 - Greaton Draft WMP	Kristian Le Gallou & Matt Allan	Matt Allan

Important notes

Document summary

This waste management plan (WMP) has been developed at the planning stage of the development. The client, project managers, 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.

1. Development summary

Project	West Franklin Stage 3 - 56 Elizabeth Street, Adelaide
Client	Greaton Development
Architect	Brown Falconer
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

Level	Tenancy	Waste resource generation category[1]	Number of beds
Ground - Level 16	Student accommodation*	Serviced Apartments, Backpacker, Boarding House	298

**Note that this includes the associated land uses within the building (e.g. kitchens, common spaces, gym). It has been assumed that only residents will have access to these spaces and any waste generated is captured under the waste resource generation category.*

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
Chutes and management of ground floor waste room	Waste and recycling will likely be managed using one chute with a diverter system that separates general waste and comingled recycling. To reduce the daily management requirements of the bins underneath the chutes, a track system is likely to be installed for the general waste stream.
Food organics	As there is no chute room (the chute is accessed via the hallway), food organics bins will be placed in common areas (such as kitchens) which will be collected by cleaners.

[1] Waste Resource Generation land use categories are based on the SA Better Practice Guide – Waste Management in Residential or Mixed Use Developments (Green Industries SA, 2014).

1.3. Recommended services

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

Table 3 Recommended waste management services

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

2. Waste management analysis

2.1. Estimated waste and recycling volumes, bin size and collection details

Table 4 below outlines the estimated volumes of waste and recycling produced within the development per stream each week. It also provides estimates of the number of bins and collections per week required to service the development.

Table 4 Estimated waste volumes produced by the development[2]

	Waste room			
	Total volumes (L per week)*	**Bin size (L)**	**Number of bins required**	**Collections per week**
General waste	8,900	1,100	3	3
Comingled recycling	6,000	1,100	3	2
Organics recycling	3,000	660	3	2
Hard waste	2,100	-	-	On call
E-waste	400	-	-	On call
Total	20,400		9	7

*Totals have been rounded and may not equate

The following irregular waste streams will be managed as they occur onsite:

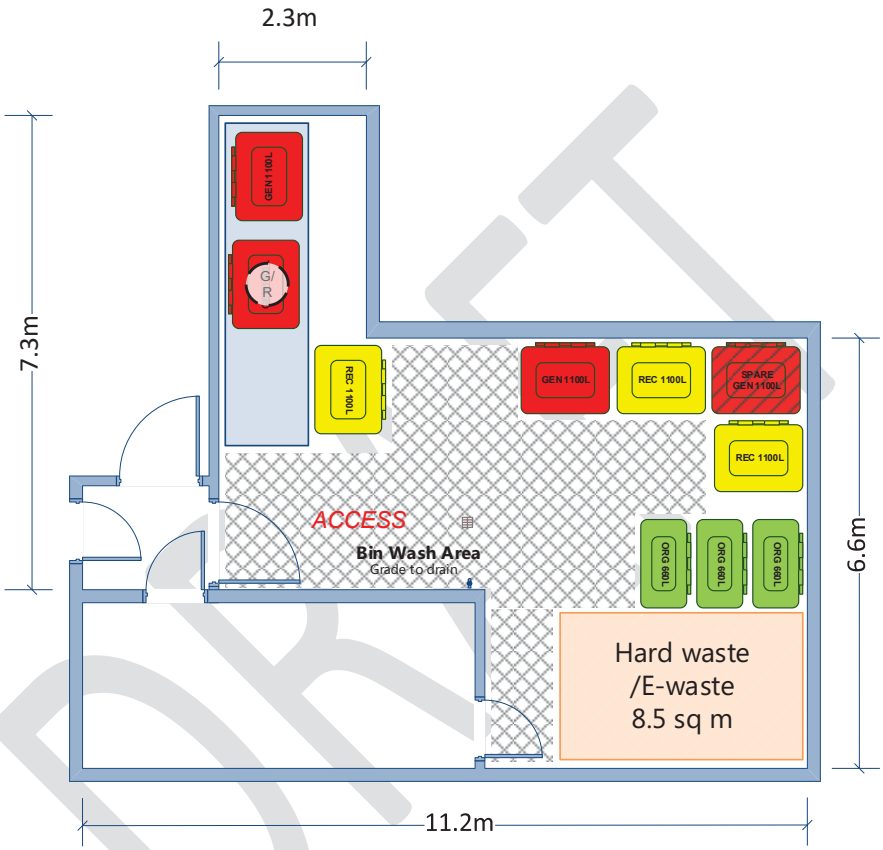
- Electronic waste (batteries, printer cartridges, lighting)
  - E-waste will be temporarily stored within the development's ground floor waste room. Ideally this will be coordinated by the building manager with students to avoid access to the waste room. It would then be taken to an appropriate receival facility (e.g. recycling depot or participating retailer) or collected by a certified collection contractor.
- Hard Waste (during tenancy fit out, or when residents move out)
  - Hard waste will be temporarily stored within the development's ground floor waste room. Ideally this will be coordinated by the building manager with students to avoid access to the waste room. This service can be managed via a pull-in/pull-out collection service arranged by the building manager to ensure that collection via the on-property loading area is undertaken at an appropriate time.
  - It is also recommended that a donations bin be provided that allows students to donate unwanted clothing and other items that are still in good condition.

[2] 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 those found in The SA Better Guide Practice Guide – Waste Management for Residential and Mixed-Use Developments and developed by Rawtec based on industry knowledge and experience.

2.2. Waste storage area

Figure 1 outlines an indicative drawing of the waste storage area for the development. This is an example configuration outlining the estimated size and layout of the waste storage area. Note, a chute provider will need to design an appropriate system during detailed design. Additional design advice and other considerations have been included in Appendix 2.

Figure 1 Indicative waste storage area



LEGEND

GEN = General waste
REC = Comingled recycling
ORG = Organics
CAR = Cardboard recycling

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 has been developed to effectively manage the waste generated at the development. The WMS outlined in Table 5 addresses each land use within the development and considers the appropriate policies for waste management (Appendix 1).

Table 5 Waste management system for the development

Proposed waste management system	
Waste/recycling services	• General waste • Comingled recycling • Organics recycling
WMS step	**WMS notes**
1. User storage	• Waste and recycling will be stored in bins in student apartments and common areas: – General waste will be collected using black bin liners – Comingled recycling will be collected loose – Organics recycling will be collected in small bins with compostable bin liners. • Organics recycling bins will also be available in common areas/kitchens and collected in kitchen caddies or bins using compostable bin liners. • Any large pieces of cardboard (during moving in) should be collected loose on each floor. The building manager can then coordinate with the residents to transfer this directly to the waste room comingled recycling bins. • Hard waste or E-waste will be stored in resident's room prior to contacting the building manager.
2. Transfer pathways	• Residents or cleaners will place waste and comingled recycling into the chute on each level. They will select the appropriate option depending on the material (general waste or comingled recycling). • Residents will move organics recycling collected in their apartments to the organics recycling bins in the common areas. • Cleaners will collect the organics recycling in common areas on each level and transfer via the lifts to the ground floor waste room. • Transfer routes must be at least 1.25m wide, free of obstructions and steps and a slope of no more than 1:10.
3. Aggregation & storage	• Waste placed into the chutes will fall into the appropriate bin • Organics recycling will be deposited into the 660 litre organics recycling bins in the waste room by the cleaners.
4. Bin collection	• Waste and recycling will be collected by a commercial contractor. • The collection contractor will park adjacent the building and access the ground floor waste room. They will wheel bins to the collection vehicle, empty and then return the bins to their original positions (ground floor waste room). • Transfer routes must be at least 1.25m wide, free of obstructions and steps and a slope of no more than 1:10. • Further information on collection vehicles is outlined overleaf.

4. Collection requirements

4.1. Vehicle movements per week

The number of collection vehicle movements has been estimated at seven per week. This is based on the estimated waste and recycling volumes and service frequency as outlined in **Error! Reference source not found.**.

4.2. Collection vehicle

Approximate truck dimensions are provided to help the Traffic Consultant's analysis (Table 6). Please note:

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

Table 6 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 minimum 8.8m, up to 10m (l)	Up to 4.5m (h) x 2.5m (w) x minimum 8.8m, up to 10m (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.
- The City of Adelaide Operating Guideline – Waste & Recycling Services (The City of Adelaide, previously Adelaide City Council, 2014)
  - Identifies Council's proposed basic and enhanced services for collection of waste and recycling from high density and mixed-use developments and businesses.
- Adelaide (City) Development Plan (Department of Planning, Transport & Infrastructure, 2017).
  - OBJ 28: Development which supports high local environmental quality, promotes waste minimisation, re-use and recycling, encourages waste water, grey water and stormwater re-use and does not generate unacceptable levels of air, liquid or solid pollution.
  - PDC 101: A dedicated area for on-site collection and sorting of recyclable materials and refuse should be provided within all new developments.
  - PDC 102: A dedicated area for the collection and sorting of construction waste and the recycling of building materials during construction as appropriate to the size and nature of the development should be provided and screened from public view.
  - PDC 103: Developments greater than 2,000 square metres of total floor area should manage waste by:
    - Containing a dedicated area for the collection and sorting of construction waste and recyclable building materials;
    - On-site storage and management of waste;
    - Disposal of non-recyclable waste; and
    - Incorporating waste water and stormwater re-use including the treatment and re-use of grey water.

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	• 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	• Bins and signage should conform to the Australian Standard for Mobile Waste Containers (AS 4213).
Bin transfer routes	• 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	• A bin washing station must: – 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: – 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	• 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	• 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	• An aggregation point for hard waste should be provided that is easy to access for collection vehicles.

Area	Consideration
	– 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	• The Better Practice Guide stipulates effective WMS design should: – 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	• 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. – 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	• 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	• 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	• A secure storage area should be provided to prevent interference with the bins and equipment from the public. • Residential – 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	• 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.

info@rawtec.com.au
+(618) 8294 5571
11 Paringa Ave, Somerton Park,
South Australia 5044

BUILDING SERVICES DESIGN SUMMARY

Project: West Franklin Development Stage 3 Student Accommodation

Issue: Preliminary

Revision: P2

Reference: 5445.190219.G.1

Dated: June 2019

BCA Engineers / Adelaide
33 Rundle St, Kent Town SA 5067
PO BOX 2620, Kent Town SA 5071
T +61 8 8132 1700
enquiry@bcaengineers.com
bcaengineers.com

Report Register

The following report register documents the development and issue of this report as undertaken by BCA Engineers (BCAE) in accordance with our Quality Assurance policy.

Revision	Issue Date	Revision Description	By	Checked
P1	24/04/2019	Preliminary	LH, ARC, RJS, DAE, FML	LH
P2	03/06/2019	Development Approval	LH, ARC, RJS, DAE, FML	ARC

Contents

1.0 Introduction

BCA Engineers have been engaged by Greaton Development for the Building Engineering Services design of this new student accommodation project located on Elizabeth Street in Adelaide's CBD.

This Design Summary aims to present the proposed infrastructure solutions and major building systems parameters for the Building Engineering Services.

The information presented within this report is fundamentally based upon:

- Brown Falconer drawing set dated May 2019;
- Correspondence and discussions with relevant authorities;
- BCA Engineers preliminary Concept Design sketches.

2.0 General

2.1 Description of Building

The proposed development is generally described as follows:

- Ground Floor Foyer, Reception and Administration
- Level 1 Study, Games, Fitness & Wellbeing areas
- Level 2 – 16 of Student Accommodation
- Level 6 Kitchen / Dining / Lounge / Terrace areas
- Cinema, Laundry & Breakout areas
- Utilities and amenities
- Approximately 300 Student Beds

The proposed Building Engineering Services infrastructure solutions fundamentally included in this document are summarised as follows:

2.2 Mechanical Services

- Air conditioning
- Ventilation and exhaust
- Smoke hazard management
- Thermal assessment

2.3 Electrical Services

- High voltage transformer infrastructure
- Low voltage power distribution infrastructure
- Telecommunications infrastructure

2.4 Fire Protection Services

- Fire water supply infrastructure
- Fire hydrant systems
- Automatic sprinkler systems
- Fire hose seels
- Control and indicating equipment
- Smoke hazard management (smoke detection)

2.5 Hydraulic Services

- Sanitary drainage
- Trade waste
- Domestic water connection
- Gas connection

2.6 Vertical transportation

- Passenger / goods lifts

Additional requirements pertaining to fit-out and systems to suit UniLodge or other student accommodation facility operator requirements shall also apply.

2.7 Referenced Legislation, Standards & Authorities

The proposed development is subject to, but not limited to, the following reference legislation, standards and authorities:

- SA Development Act and Regulations;
- South Australian OHS and Welfare Act and Regulations;
- South Australian Environment Protection Act;
- National Construction Code (NCC) / Building Code of Australia (BCA) 2019;
- Minimum Energy Performance Standards (MEPS);
- Environment Protection Authority (EPA);
- Various Authorities shall have jurisdiction over the proposed development; such Authorities may include SA Power Networks, Telstra, SAMFS, SA Water, APA, Safework SA, Noise Abatement Authority, local Authorities; other Authorities may also have jurisdiction.
- Relevant Australian Standards and Guidelines applicable to the proposed building services systems.

2.8 Requirements for Energy Efficiency

The Building is subject to requirements for energy efficiency prescribed within Section J of the current edition of the NCC. All Building Engineering Services shall be designed to meet the Deemed to satisfy requirements prescribed within NCC (2016 unless otherwise advised) Sections J5, J6, J7 and J8.

The proposed development shall not be registered for Australian Green Building Council (AGBC) Greenstar or NABERS Energy ratings. The proposed development shall otherwise meet or exceed industry good practice for sustainable design principles.

3.0 Mechanical Services

3.1 Air Conditioning

VRF Systems

VRF air conditioning systems are split air conditioning systems that comprise multiple indoor fan coil units connected to the one (1) outdoor, condensing unit and allow for great flexibility of installation as there are many variants of indoor units available.

The following areas shall be served by ceiling concealed cassette-type air conditioning systems.

- Ground floor foyer, lounge, office and reception
- First Floor gym, open study and games
- Second floor Cinema
- Fourth floor common
- Twelfth floor communal kitchen/dining and games

Individual bedrooms and cluster living areas are to be served by wall mounted type air conditioning systems positioned above the entry hallway to each room.

Ground floor comms/NBN room shall be served via one-to-one, cooling only type wall mounted type air-conditioning system. Condensing unit will need to be located externally at ground level (final position to be determined during detailed design and in coordination with architect)

3.2 Ventilation & Exhaust

Amenities areas

Each amenities area is to be provided with mechanical exhaust in compliance with AS 1668.2.

Outside air

Outside air shall generally be provided throughout via mechanical ventilation either via ducted outside air supply systems or via ducted air conditioning systems.

Studio/Cluster/Common Kitchenettes

Each domestic cooking appliance (electric stoves) are to be provided with domestic style rangehood and exhaust fan complete with ductwork and atmospheric discharge.

Utilities Area

The following areas shall be provided with mechanical exhaust in compliance with AS 1668.2:

- MSB Room
- Bins
- Fire Pump Room
- Student Laundry
- Hydraulic Pump Room

Transformer Room

To be naturally ventilated in compliance with NCC Section F4.6 via louvred/perforated external doors and in accordance with SAPN requirements.

3.3 Smoke Hazard Management

Each stairwell within the building is to be provided with stairwell pressurisation systems (one per scissor stair). Each stairwell shall be served by a roof mounted pressurisation fan and in compliance in with AS1668.1.

Corridor pressurisation relief will be via dedicated smoke exhaust system with intake grill on each floor. Smoke exhaust system shall be served via a roof mounted fan in compliance with AS1668.1

3.4 Thermal Assessment

BCA Engineers will undertake a detailed Thermal Assessment of the building in accordance with NCC 2016 Section J unless otherwise advised fundamentally for the purposes of validating the following:

- Glazing selections
- Mechanical Plant selection

It is our preliminary advice based on recent experience with similar projects that this WFS3 development incorporates passive design attributes that will have positive technical outcomes for façade glazing selections and achieve passive efficiencies in capacity requirements of mechanical plant.

This is particularly significant given the large extent of façade works in respect to the remainder of the building development.

Façade designs incorporate qualitative attributes and passive elements such as:

- Limited % of glass when compared to extent of pre-cast concrete panel or other solid fabric materials
- Different orientations of glass on the same facade enable the reduction of heat load and improved control of natural light entry from the sun across the duration of the day
- Shading elements provide a physical limitation of the natural light and heat load on the building façade

These innovations in design result in an aesthetic façade with high levels of visual interest, and practical construction outcomes in terms of sensible design criteria, minimisation of capital costs, and ensuring sustainable ongoing costs.

- Reduction in glazing costs (high performance glass vs. second tier performance specification)
- Reduction in capital mechanical air-conditioning plant capacity and costs
- Reduction in ongoing electricity costs associated with running of mechanical air-conditioning plant

4.0 Electrical Services

4.1 Clearances from Power Lines

Existing overhead LV powerlines are located on the west side of Elizabeth Street. Existing DB4UD records do not demonstrate any underground HV/LV in immediate vicinity of this development.

The development site is situated on the east side of Elizabeth Street. New HV is proposed to enter perpendicular to a new HV Transformer Room facing Elizabeth Street.

On this basis the building architectural design and electrical concept design appears to comply with statutory requirements of Section 86 of the Electricity Act and OTR legislation for "Building safely near powerlines".

The builder's construction methodology shall have to comply with OTR legislation for "Working safely near overhead powerlines".

4.2 Temporary Power Supply for Construction

BCA Engineers have not undertaken any assessment or commenced any liaison with SA Power Networks in respect to temporary power supply for construction.

A minor temporary power supply for general builder's power appears readily available in Elizabeth Street. If an electric 'tower crane' or similar is necessary then significant power supply capacity may be required and this would typically require an application to SA Power Networks with sufficient timeframe in advance.

Alternatively a diesel-engine driven 'tower crane' should be used.

4.3 High Voltage Transformer

A nominal +/- 1MVA size substation transformer unit is anticipated to serve the proposed new development, although this size is subject to further assessment, liaison with SA Power Networks, stakeholders, and final design.

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

- Physical infrastructure rated nominal 1MVA
- Initial declared demand of nominal +/- 800kVA (ie. nominal minimum 20% spare; this remains subject to various design parameters)

Based on our experience, this initial declared demand is considered a reasonable approximation for the purpose of progressing necessary authority liaison and seeking indicative quotation from SA Power Networks. A more accurate assessment of maximum demand will be undertaken prior to any recommendation for acceptance of firm contracts.

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

Spatial considerations for Transformers shall be provided in accord with reference document TS 108 and some key points are summarised as follows:

- Transformer room size shall not be less than 4,250mm W x 4,450mm D x 4,000mm H.
- 3.0-m Operating Area in front of transformer shall be at the same level as the transformer
- Two (2) personal access doors opening outwards to be used as Exits under emergency situations
- SA Power Networks 24/7 access
- 3 hours fire rated construction
- In-ground Vault
- Sufficient free-air for natural ventilation; otherwise forced ventilation and room cooling facilities may be required and shall be used where natural ventilation is not practical
- Earthing Requirements
- Various other design and construction parameters apply to indoor substations

- For all aspects of indoor substation design and construction, consultation with an SA Power Networks assigned project officer is necessary for approval
- Refer in particular extract of TS 108 Distribution Equipment & Transformer Rooms Figure 3 for spatial requirements
- BCA Engineers shall continue liaison with SA Power Networks in respect to finalising the high voltage arrangements for this proposed development

4.4 Low Voltage Power Distribution Infrastructure

4.4.1 Site Main Switchboard

The premises Site Main Switchboard shall be located in immediate proximity to the substation transformer and final location shall be determined in Design Development phase. The Site Main Switchboard shall typically be positioned not less than 4.0m or greater than 10.0m from the new Transformer asset (this remains subject to provisions for consumer mains cable protection). Exact spatial requirements are to be confirmed and the MSB Room size will be rationalised as design progresses.

The Site Main Switchboard (MSB) shall comprise minimum specification as follows:

- Nominal 1600A 400V 3Ph 4 Wire 50Hz
- IP52 for interior application
- Form 3
- minimum 30% spare physical chassis / pole capacity

Note: minimum 30% spare is considered industry accepted practice, and is typically the 'next size up' in terms of modular components without significant premium. Any less than 30% target design may be impractical or compromise any future flexibility of the installation.

MSB design shall incorporate a main switch device / current limit circuit breaker device / meter isolator device. MSB design shall incorporate distribution circuit breakers for each main sub-distribution board.

4.4.2 Main Distribution Boards

General Main Distribution Boards or sub-distribution board(s) shall typically comprise specification as follows:

- From 100A up to 250A 400V 3Ph 4 Wire 50Hz
- IP52 for interior application
- Form 2
- minimum 30% spare physical chassis / pole capacity

Note: Sub-distribution board(s) shall typically be physically located in riser closets to suit the building architectural and logical / functional layout. Exact quantity and final locations of sub-distribution boards shall be determined in in Design Development phase.

4.5 Metering

MSB / MDB design shall have all facilities for Retail Authority metering and private submetering.

It is proposed that only one (1) Retail Authority electricity meter shall be provided for the entire development. Private submetering shall be provided where necessary for compliance to NCC Section J8.3.

In addition, it has been requested that provisions for "future" submetering of student accommodation power and lighting are incorporated. This may simply be spatial provision with MDB cabinets / or spatial provision within electrical services closets.

This remains to rationalised and determined in Design Development phase.

4.6 Photovoltaic Power Generation System

It is proposed that a photovoltaic (PV) power generation system is provided to the roof top of the building.

Exact locations for inverter(s) are yet to be determined but it is recommended that ventilated accommodation for minimum three (3) wall mounted / or custom frame mounted inverters are provided which equates to approximately 3.0m width of wall space.

For this project it has been discussed and accepted that a PV system capacity nominal 20 - 30kW shall be implemented. This is a practical limitation based on available roof space utilizing nominal +/- 275W rated panels with approximate dimensions of 1.7m x 1.0m. i.e. 150W/m2 exclusive of any limitations in framework, angle/pitch of installation (if any), and clearances for safe access and maintenance. Exact system capacity will be determined in due course in coordination with architectural plans and mechanical / hydraulic plant and equipment.

BCA Engineers will commence liaison with SA Power Networks in respect to necessary approvals for this photovoltaic (PV) power generation system.

Compliance to various Clean Energy Council requirements and SA Power Networks technical standards may be triggered if large embedded generation > 30kVA (NICC 270 and TS130).

This system shall be accredited under the Small Scale Renewable Energy Scheme for systems <100kW and immediate capital rebates shall be available from Small-scale Technology Certificates (STCs).

Battery storage will not be provided.

4.7 Telecommunications Infrastructure

4.7.1 National Broadband Network

BCA Engineers have informally liaised with NBNCo in respect to fibre telecommunications services to this development. It is anticipated that fibre telecommunications cable shall enter the development from Elizabeth Street. In due course formal application to NBNCo shall be progressed.

4.7.2 Lead-In Telecommunications Service Provisions

Design shall include lead-in conduits for incoming telecommunications services to Main Communications Room:

- Nominal 1 x 100mm dia. PVC communications conduit; or
- Nominal 2 x 50mm dia. PVC communications conduits

4.7.3 Main Communications Room

A Main Communications Room of nominal 3.5m x 4.5m dimensions (TBC) is proposed on the ground floor. This Main Communications Room is intended to incorporate the National Broadband Network Premises Distribution Hub (PDH), any other entrance facilities necessary, Main Communications Cabinets (CCs), and other Landlord head-end security, access control, CCTV, specialist information and telecommunications service provider equipment, centralised television distribution and other miscellaneous equipment.

4.7.4 Telecommunications Systems

Design shall include spatial provisions in Main Communications Room for the following National Broadband Network active equipment:

- Premises Distribution Hub (PDH)
- Network Termination Devices (multiple NTDs)

Physical allowance for PDH shall be not less than nominal 1200mm W typically for full height of wall x 400mm D plus 900mm clearance zone in front.

Design shall include Main Communications Cabinet(s) of sufficient capacity to service all passive termination requirements of the facility plus minimum 100% spare.

Passive termination requirements shall include all structured cabling solutions, specialist information and telecommunications service provider equipment (SuperLoop, VostroNet or equivalent to be approved by student accommodation facility operator), as well as head-end CCTV system, head-end audio visual systems, and other miscellaneous equipment.

Nominal three (3) Communications Cabinets is considered appropriate for spatial planning and design. Main Communications Cabinets shall typically be not less than the following specification:

- 48RU; 800mm width; 1000mm depth;
- floor standing;
- front perspex doors; solid sides; ventilated / perforated accessible rear;
- dual power rails;
- integral exhaust fan.

Vertical design may be provided via state-of-the-art GPON / or conventional Category 6 structured cabling solutions. Passive fibre splitter devices / active optical termination unit devices / passive copper termination devices shall be located in communications closet on each floor. Exact GPON or conventional telecommunications architectural arrangement will be determined in Design Development phase.

Horizontal design shall be provided and installed via Category 6 structured cabling solutions. The extent of outlets to WAP devices and to each student accommodation room shall be determined in Design Development phase.

5.0 Fire Protection Services

5.1 Fire Water Supply Infrastructure

Fire water supply to the site is to be provided by two (2) new 150mm connections to the SA Water main within Elizabeth Street. The existing SA Water main within Elizabeth Street is 150mm. SA Water regulations require this main to be upgraded to 200mm to service the proposed development (at a capital cost attributed to the developer).

The results of SA Water Network Analysis indicating flow and pressure for the existing 150mm town main have been received and are appended to this report.

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

- Fire pump set assembly comprising of 1x electric and 1x diesel duty pumps and a pressure maintenance pump

- Pumps are to be located within a dedicated Fire Pump Room; direct access to Fire Pump Room is required from outside or from a fire isolated stair
- Consideration needs to be given to the location of the diesel exhaust from the pump room given accommodation windows are most likely located above
- Two (2) off 25,000L suction break tanks are proposed located adjacent the Fire Pump Room. Tank size has been approved in principle by the SA Metropolitan Fire Service (SAMFS).
- Combined fire hydrant/sprinkler boost facilities for use by attending fire brigade (4 boost inlets), including tank suction point; Booster is required to have street front access and recommended to be located at the same level or below the level of the tanks
- Provision of back flow prevention for all boost points and sprinkler supply locations; Backflow valves to be located within 3m of the site boundary
- Internal 150mm fire risers within building and fire stairs to serve internal fire hydrant valves
- The proposed fire water storage tanks and pump set arrangements have been approved in principle by the SAMFS

5.2 Combined Fire Hydrant & Automatic Sprinkler System

A combined site fire hydrant / sprinkler system is proposed to serve the building comprising of:

- Internal hydrant valves located within each side of the fire isolated scissor stair
- 150mm combined fire risers – ring main configuration on top floor
- Provision of new fast response sprinkler heads to the entire building (residential sprinkler heads within accommodation units)
- Concealed ceiling space sprinkler protection based on 21m^2 spacing throughout
- Sprinkler control valves at each floor (located on the same side of the scissor stair)
- All pipework and associated valves and fittings

Drenching sprinklers would be required to all exposures within 3m of site boundaries to the north and south.

5.3 Fire Hose Reels

Fire hose reels are not proposed as the building is considered Class 3 throughout.

5.4 Control & Indicating Equipment

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

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

NOTE: a fire control room will be required if the building exceeds 50m “effective height”. A fire control room is required to be a separate room and fire rated from the rest of the building. The room must be accessible via two paths of travel; one from the front entrance of the building and one direct from a public place or fire isolated passageway that leads to a public place. A fire control room is required to have a floor area of not less than 10m^2 and the length of any internal side must be not less than 2.5m.

5.1 Fire Detection & Alarm

Smoke detection in public areas to be installed in accordance with AS1670.1 requirements.

All accommodation rooms are to be provided with an automatic smoke detection and alarm in accordance with BCA Specification 2.2a.

Occupant warning is to be provided within common areas and accommodation rooms. Minimum of 75dB is to be achieved at the bedhead of all bedrooms.

False alarms are a common cause of concern for student accommodation type buildings. It is proposed that an Alarm Delay Function (ADF) (automatically programmed into the Fire Indicator Panel) is provided to enable occupants an "acknowledgement period" that allows them to clear smoke from a false alarm.

Activation of a smoke detector within a Sole-Occupancy Unit (SOU) will only activate the occupant warning within that particular SOU (via sounder base). If after 5 minutes the smoke detector is still in alarm, the occupant warning will cascade to the entire floor and the alarm will be sent to the SAMFS monitoring unit.

Activation of a smoke detector within a corridor or any sprinkler will immediately send the entire floor into alarm and immediately notify the SAMFS.

It is proposed the following fire alarm programming for "clusters":

- Activation of a detector within a bedroom of a "SOU cluster" will sound alarm in all rooms of the "cluster" and if not cleared would "latch" to the SAMFS monitoring service after 5 minutes (via the ADF) and sound occupant warning throughout the floor.
- Activation of a detector within the kitchen of the "cluster" would sound alarm in all rooms of the "cluster" but would not latch to the SAMFS monitoring at any stage.
- Activation of a smoke detector within the corridor of the "cluster" would latch straight away to the SAMFS and sound occupant warning throughout the floor.

It is recommended that a hold-open device be provided to the kitchen door within the "cluster", to release on fire alarm, to discourage the door being "chocked" open.

It is our understanding that the student accommodation operator prefers the provision of multi-criteria detectors to be installed within each SOU in lieu of smoke detectors to assist in minimising false alarms. The SAMFS have advised that they will not support the installation of multi-criteria detectors.

An Emergency Warning and Intercommunication System (EWIS) will be provided within the building, including a Public Address (PA) facility at the ground floor panel and Warden Intercom Phones (WIPs) on each floor to aid SAMFS in evacuated occupants.

Refer mechanical section for more information regarding Smoke Hazard Management.

6.0 Hydraulic Services

6.1 Sanitary Drainage

The site is currently served by 150mm connection from Elizabeth Street and a 100mm connection from Ranelagh Alley. A sewer loading calculation has been undertaken and a 150mm sewer connection will be required. The existing 150mm connection is proposed to be retained for this purpose.

6.2 Trade Waste Drainage

No trade waste pre-treatment has been proposed for the student communal kitchen nor the bin wash down facilities on the basis of the following:

- Based on initial client discussion, catering activities with on-site meal preparation will not be provided for this site.
- The installation of external BBQ's with wash up facilities (sinks) will not be considered for this development.

On the basis of the above, the requirement for a trade waste grease arrestor is considered unlikely. The negation of a trade waste system remains subject to the approval of SA Water and is at the discretion of the SA Water Trade Waste Officer.

6.3 Domestic Cold Water Reticulation

The site is currently not serviced by any existing Authority Domestic Cold Water connections / meters.

Proposed domestic cold water infrastructure connection is summarised as follows:

- 2-off new 50mm Authority domestic cold water meter are to be provided to serve the new development. The new connections are to be drawn from the existing Authority 150mm meter main within Elizabeth Street (the existing 25mm SA Water main within Ranelagh alley is undersized.
- The meters can be located within the footpath in an Authority meter box.
- Due to the elevation of the building, there will not be sufficient pressure within the Authority cold water distribution system to accommodate the buildings pressure requirements and a break tank with pump set is to be provided to meet the required pressure demands.
- The domestic cold water pump set is to be an 'up-feed' type which pumps water from the ground floor. This system is more cost effective than a 'top down' system as it eliminates the structural requirements to support the domestic cold water break tanks at roof level. One disadvantage of the up-feed system is that water supply is unavailable in the event of a power supply interruption.

6.4 Gas Reticulation

Natural gas is proposed to be utilised for a centralised domestic hot water system.

The gas authority (APA) has confirmed mains reticulated natural gas is only available from Elizabeth Street.

A new gas meter enclosure will need to be incorporated into the building's façade in order to accommodate the Authority new gas meter. The enclosure will require the following minimum internal dimensions:

- 1.3m Width x 0.8m Depth x 1.5m Height

The available reticulation pressure will be Low Pressure (nominal 1.2 kPa).

7.0 Vertical Transportation Services

It is proposed to provide an efficient and modern machine room-less (MRL) passenger lift / goods lift.

Current lift technology enables the lift drive mechanism to be located within the lift shaft rather than providing a separate and dedicated machine room. This reduces the space necessary for building plant and improves utilization of valuable floor area (increases net lettable area).

The proposed technology generally includes the following:

- Intelligent variable frequency control systems (generally 15% more efficient) enabling quicker car turn-arounds and therefore quicker call times
- Modern and durable lift car internal finishes and lift cars to current Australian Standards
- Modern lift landing finishes / call buttons / indicators to current Australian Standards
- Complete programmable access control systems if desired

We have reviewed the minimum requirements of the National Construction Code of Australia (NCC) for the proposed building. We provide below a summary of the minimum requirements:

- Disable access lift required
- Emergency Services Lift (effective height >25m) and fire rated power supply required
- Stretcher access required (effective height >12m)
- Signage required to alert occupants when not to use passenger lift
- Landing required to comply with Section D of the NCC
- Fire service controls are required
- Other general NCC and Australian Standards requirements
- Note: NCC does not stipulate the minimum number of passenger lifts required to serve a building

The proposed development shall provide two (2) lifts for the student accommodation Building. This is to provide redundancy in case one lift is out of service. Type generally as follows:

- Seventeen (17) Person MRL Lift Cars @ 1.75m/s travel speed

Appendix A – Dial Before You Dig (Elizabeth Street)

A1. Agile

A2. APA

A3. iFibre

A4. NBN

A5. NextGen

A6. Optus

A7. PIPE Networks

A8. SA Water

A9. SA Power Networks

A10. StateNet

A11. Telstra

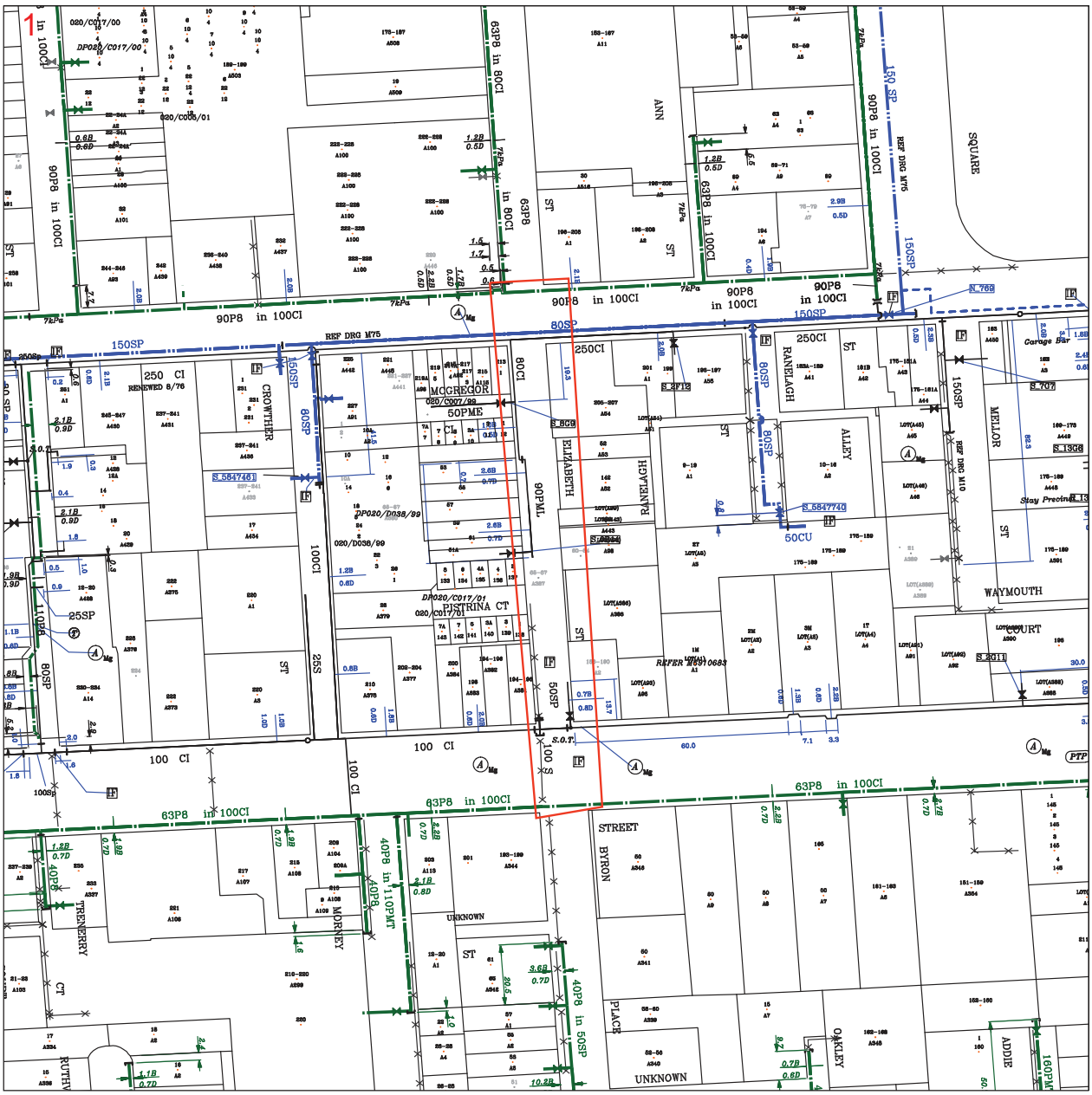
A12. Vocus

DIAL BEFORE YOU DIG www.1100.com.au
The Essential First Step

operated by apa

Site Address	Elizabeth Street Adelaide 5000	**Sequence No**	80213297
Email	antonycaruso@bcaengineers.com	**Map Reference**	UbdAde 118C11,118C12

Before you commence any works you are required to complete the attached 'Work In The Vicinity Of Critical Gas Assets' request form and forward this to APA asap



ITEM	SYMBOL	TERMS	ITEM	SYMBOL
LOW PRESSURE 1.2 - 1.7kPa		B = BOUNDARY	DIAL BEFORE YOU DIG REQUESTED AREA	
MEDIUM PRESSURE 35 - 100kPa		D = DEPTH	PRIORITY MAIN COVERAGE	
HIGH PRESSURE 70 - 350kPa		Bok = BACK OF KERB		
TRANSMISSION PRESSURE 900 - 15000kPa		Fok = FRONT OF KERB		
PROPOSED MAIN (COLOUR BY PRESSURE)				
ABANDONED MAIN				

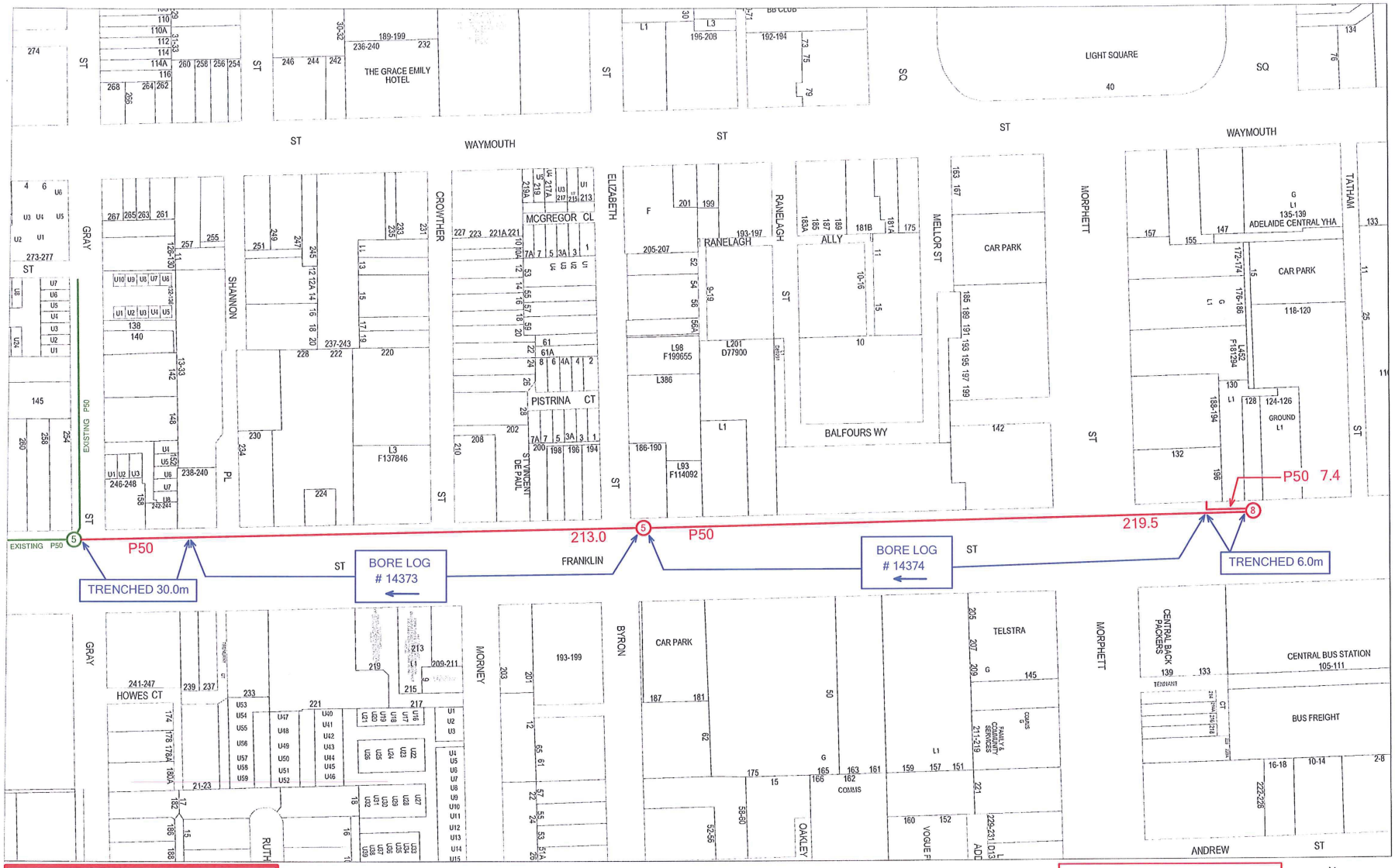
Map Key

1

Scale 1:1000

0 0.01km

NORTH



ASBUILT PLAN

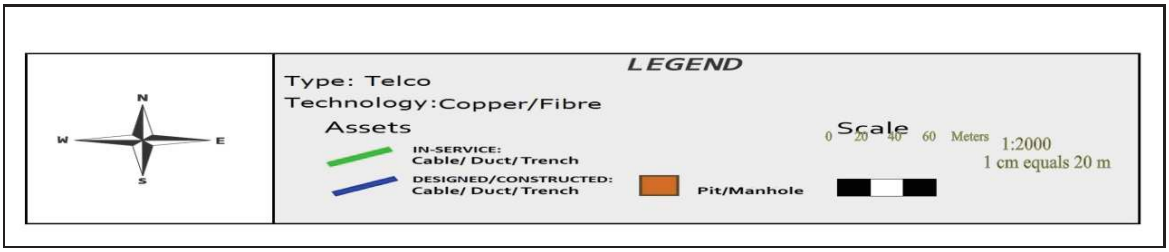
LEGEND

- EXISTING PIT
- EXISTING iFIBRE CONDUIT
- PROPOSED NEW iFIBRE PIT
- PROPOSED NEW iFIBRE CONDUIT

TPC 13036 iFIBRE Project
Section 2 - Franklin St
ADELAIDE SA 5000

Constructed by TPC
T van Dyk 26/05/16

N

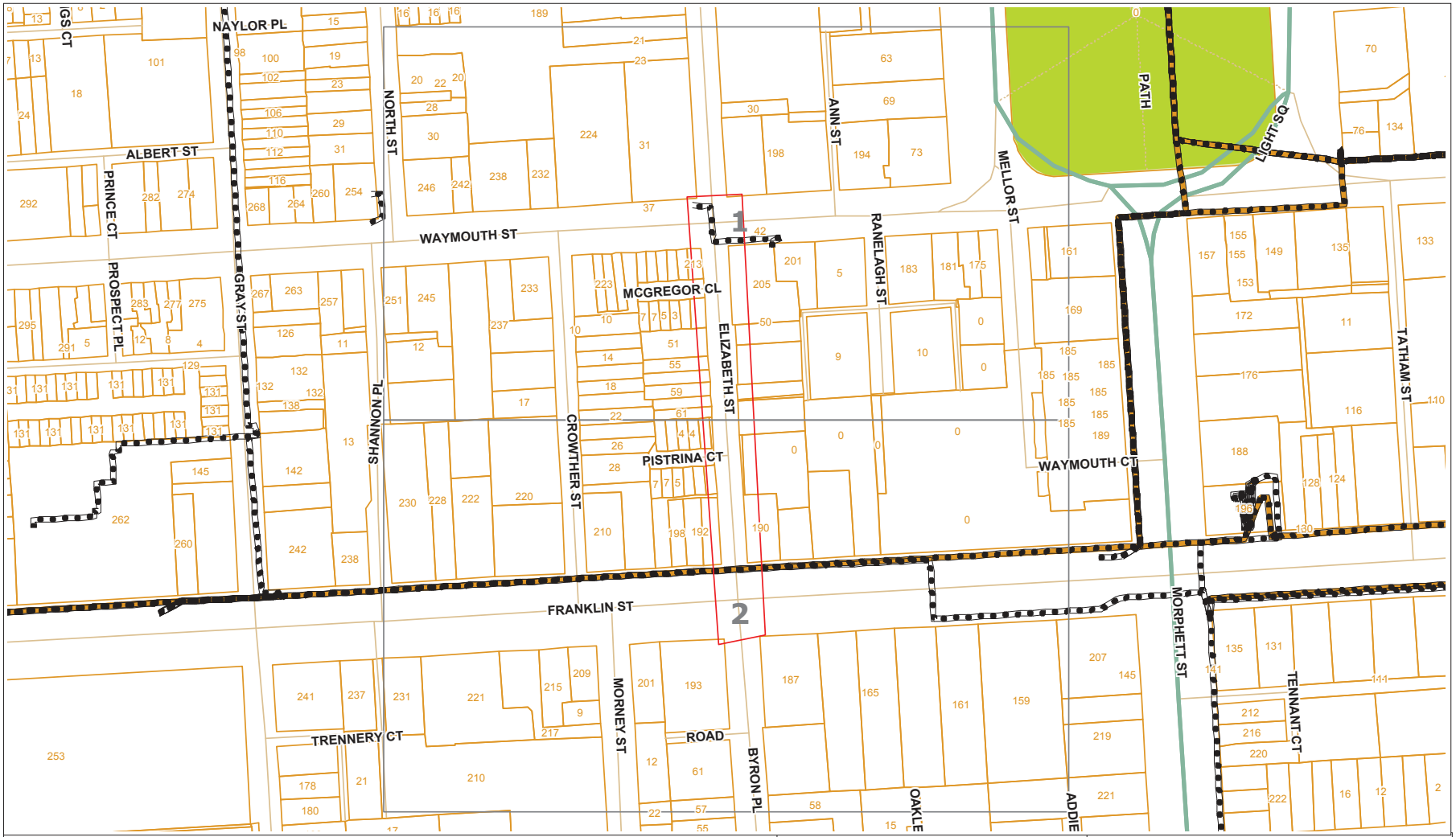


Level 11, 100 Arthur Street, North Sydney NSW 2060

Email info@nbn.com.au Web nbn.com.au

Emergency Contacts

You must immediately report any damage to **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.



Sequence Number: 80213291

Date: 14/02/2019

DISCLAIMER: THIS DRAWING SHOULD NOT BE SCALED TO LOCATE CABLES. NO WARRANTY IS GIVEN THAT THE INFORMATION IS ACCURATE OR COMPLETE. IF YOU REQUIRE INFORMATION REGARDING LOCATING THE CABLE PLEASE CALL NEXTGEN. THIS DOCUMENT HAS BEEN PREPARED SOLELY FOR DIAL BEFORE YOU DIG USE. THIS PLAN CONTAINS COMMERCIALLY SENSITIVE INFORMATION AND IS TO BE TREATED ACCORDINGLY. NO SUCH INFORMATION IS TO BE PASSED ONTO OTHER PARTIES WITHOUT WRITTEN CONSENT FROM NEXTGEN PTY LTD.

nextgen GROUP

LEGEND

Digsite	Assets
Point	Cable
Line	3rd Party Duct
Area	Marker Post

Sequence Number: 80213296

Date Generated: 14/02/2019

For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208

DBYD Notification Response

TransACT Capital Communications
Contact: 02 62298009
ABN – 23 093 966 888

TransACT Victoria Communications
Contact: 02 62298009
ABN - 55 647 895 442

Enquiry Number: 80213289

Map Sheet: 2

Scale: 1:750

0 0.008km

LEGEND

DBYD Request Area		Conduits			
Line		6 Conduits		100/110 - 4 Conduits	
		4 Conduits		100/110 - 3 Conduits	
Area		2 Conduits		100/110 - 2 Conduits	
		1 Conduit		100/110 - 1 Conduit	

N

WARNING:
This plan contains commercially sensitive information and is to be treated accordingly. No such information is to be passed onto other parties without the written consent of TransACT Captial Communications.

Note: *If the works fall in an area that is adjacent to TransACT Captial Communications infrastructure, a pre-inspection is required prior to commencement of works. Contact TransACT Captial Communications to arrange an inspection time.* ***NO WORKS TO COMMENCE PRIOR TO INSPECTION.***

Only TransACT's duct displayed.

Government of South Australia

SA Water

South Australian Water Corporation

WASTEWATER RETICULATION

DBYD Sequence No: **80213298**

Map Tile: 1

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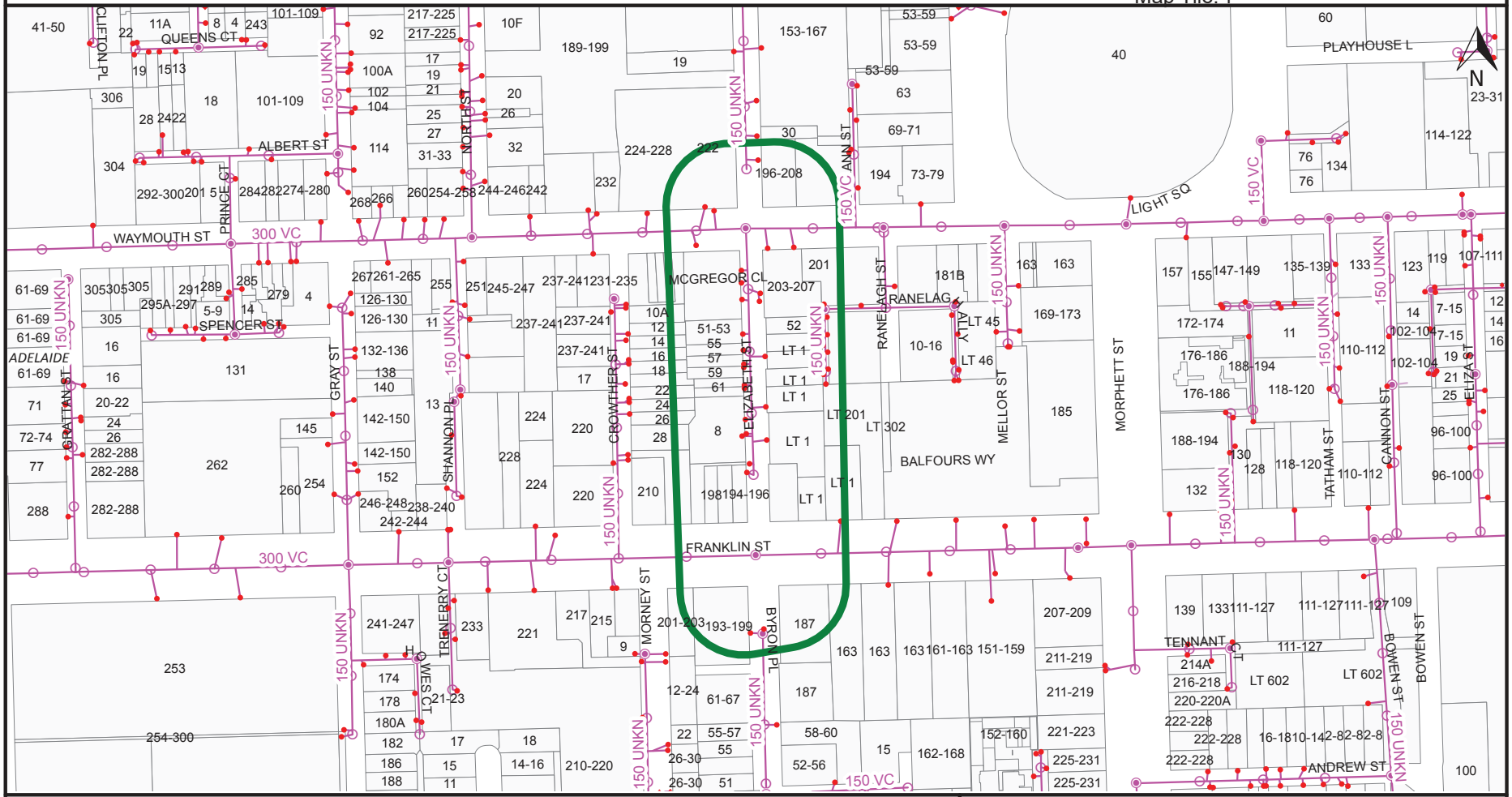


GIP	Inspection Opening	Gravity Mains	Railway	CP Anode/Cathode Cables
Valve	Wastewater Connections	Low Pressure	Land Parcels	CP Electricity Supply Cables
Maintenance Hole	Decommissioned Asbestos Mains	Pumping Mains	CP Facility	CP Anode Bed Outlines
Maintenance Shaft	Ancillary Pipes	Vacuum Mains		

Scale @ A4: 1:2500

Government of South Australia

SA Water

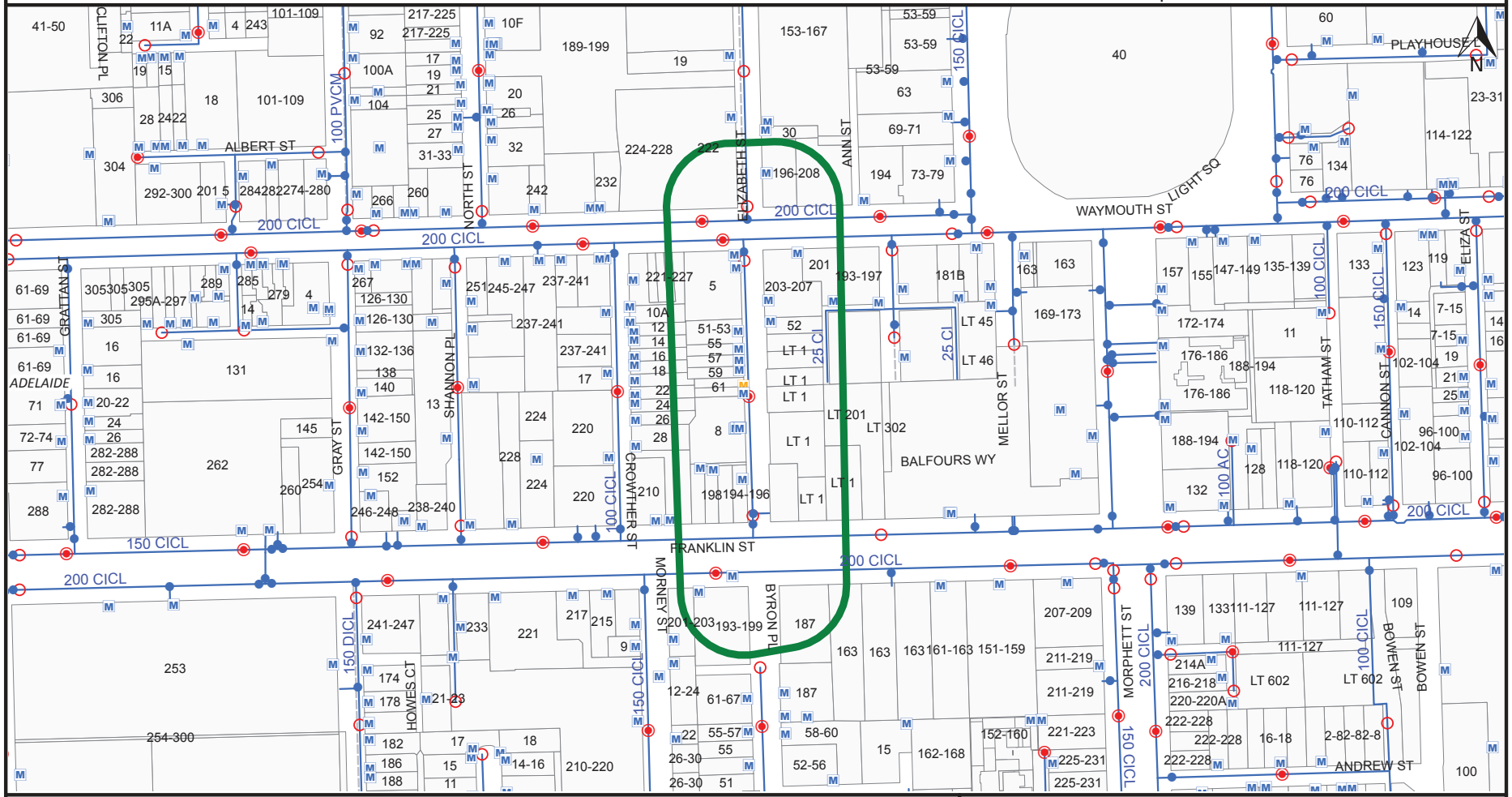
South Australian Water Corporation

WATER RETICULATION

DBYD Sequence No: **80213298**

Map Tile: 1

DIAL BEFORE YOU DIG www.1100.com.au



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

CP = Cathodic Protection

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

** Connection between water meter and pipe not shown*

Scale @ A4: 1:2500

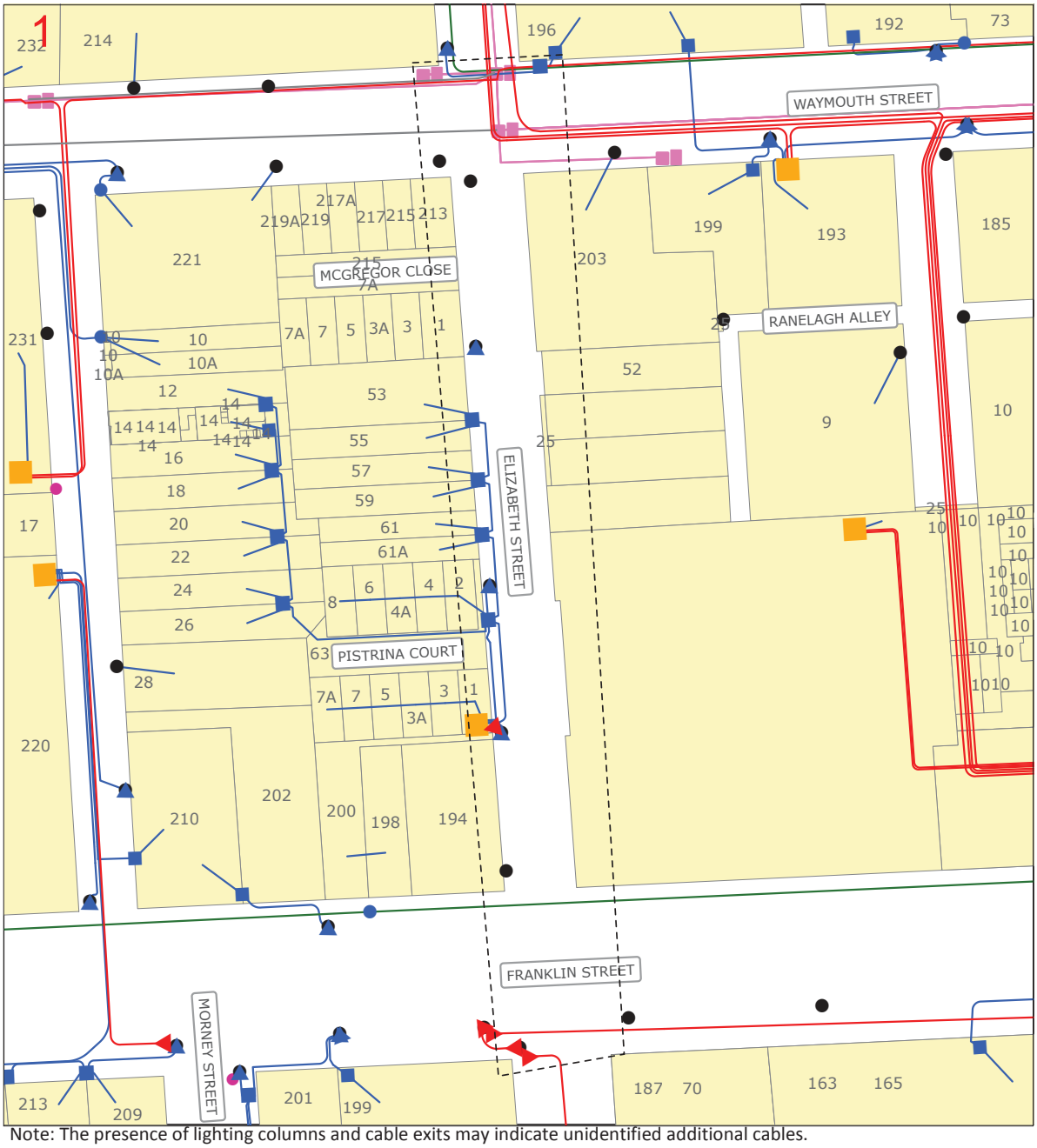
Date: 14/02/2019

SA Power Networks

Map 1

Sequence No: 80213294

Elizabeth Street Adelaide



Note: The presence of lighting columns and cable exits may indicate unidentified additional cables.

LEGEND:

Cable Exits	Cables		
66kV/132kV	66kV/132kV	DBYD Requested Area	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

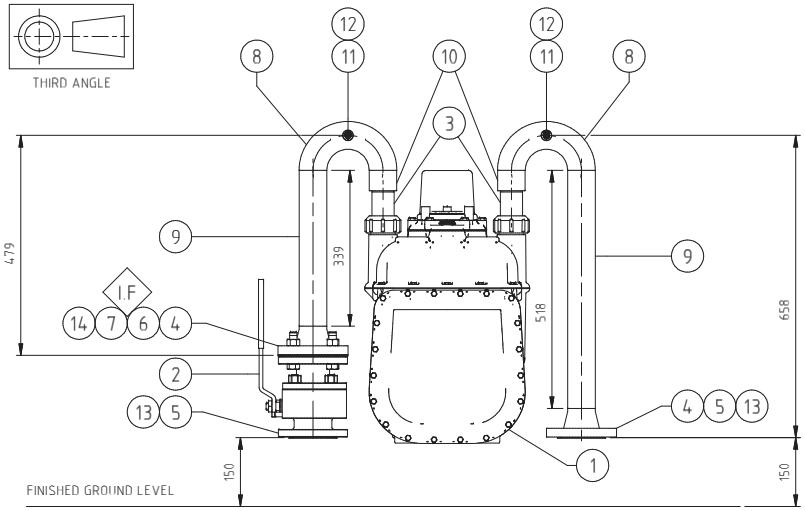
0 0.009km

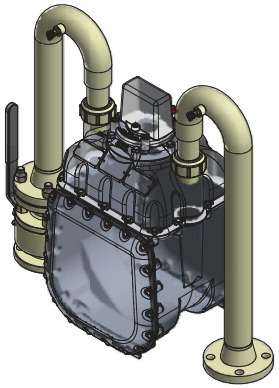
Appendix B – Authorities

B1. APA

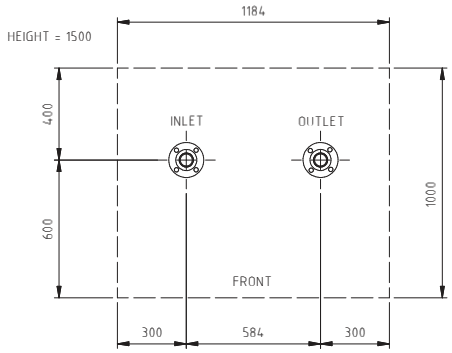
B2. SA Water

B3. SA Power Networks



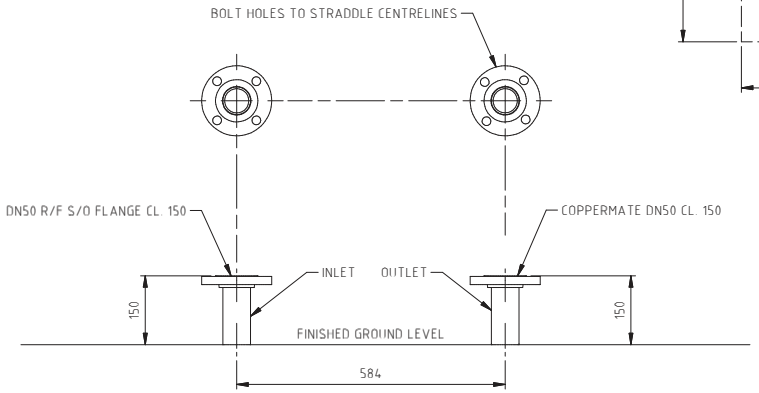


BILL OF MATERIALS			
ITEM	DESCRIPTION	STOCK NUMBER	ITEM QTY
1	AL1000 METER L/P CASE	N/A	1
2	DN50 BALL VALVE ASME B16.10 CL. 150	N/A	1
3	METER COUPLING	N/A	2
4	DN50 R/F W/N FLANGE STD. WT ASME B16.5 A105N CL. 150	1009405	2
5	DN50 API RING GASKET ASME B16.21 CL. 150	1005920	2
6	DN50 INSULATING GASKET CL. 150	1005953	1
7	DN50 INSULATING GASKET KIT CL. 150	1005961	1
8	DN50 RETURN BEND L/R ASME B16.9 A234-WPB STD. WT	N/A	2
9	DN50 PIPE ASME B36.10 A106 Gr. B STD. WT	N/A	2
10	1 1/2" BSP SOCKET (BLACK)	1005893	2
11	1/4" BSP SOCKET	1005881	2
12	1/4" BSP PETE PLUG	1014514	2
13	5/8 x 55mm UNC BOLT AND NUT ASME B18.2.1 Gr. 8 ZINC PLATED	N/A	8
14	5/8 x 70mm UNC BOLT AND NUT ASME B18.2.1 Gr. 8 ZINC PLATED	N/A	4



MINIMUM METERSET FOOTPRINT

SCALE 1:20



STAND PIPE REQUIREMENTS

SCALE 1:10

NOTES:

1) ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE STATED
2) REFER TO PROCEDURE 7813 FOR PNEUMATIC TESTING OF STATION PIPING WITH MAOP ≤ 1,050 kPag
3) REFER TO ES-WI-02 - GAS METER SET FABRICATION - CONSTRUCTION AND TESTING
4) REFER TO ES-WI-15 - METER SET AND ABOVE GROUND FACILITY COATING
5) REFER TO APAND00069 - SITE REQUIREMENTS FOR I&C AND MULTIPLE METER INSTALLATIONS

DESIGN CODES	
Design Code	AS4041-2006 CLASS 3 (typ) / AS 4645.1-2008
Welding Code	AS/NZS 3992-2015
NDT (Visual Inspection)	AS 4037-1999
External Surface	AS 2312-2002
Hazardous Zone Area	AS/NZS 60079.10.1-2009

bsi. ISO 9001 Quality Management

Network Engineering & Integrity

REVISION TABLE							
F		DESIGN CODE AND NOTES CHANGED. REMOVED ITEMS 3 & 17. BALL VALVE NOW FLANGED	09/05/16	D.P.	M.R.	S.F.	S.S.
E		CHANGED DESIGN CODE & WELDING CODE	06/06/07	D.P.	K.K.	S.S.	M.D.P.
D		ADDED ITEM 18, ITEM 15 & 16 ADDED TO INLET. 90° ELBOWS NOW 180° RETURN BENDS	30/06/06	I.L.	K.K.	P.C.	S.S.
C		ADDED ITEMS 15, 16 AND 17	01/04/03		S.D.L.		
B		ADDED No'S & UPDATED MATERIALS LIST	19/03/03				
A		ADDED BOLTS FOR INLET & OUTLET AND GASKET FOR OUTLET	17/07/00			G.R.	
REV	ECP	DESCRIPTION	DATE	DSGN	DRN	CHKD	APPR

DATE	17/07/2000
DESIGNED	
DRAWN	
CHECKED	
APPROVED	
PROJECT No.	
TASK No.	
ASSEMBLY	
QTY REQ'D	

Australian Gas Networks
A.B.N. 19 078 551 685

apa

TITLE
STANDARD I&C METERSET
L/P INLET TO L/P OUTLET
AL1000 DIAPHRAGM METER

SCALE	SIZE	DWG No.	SHEET No.	REV.
1:10	A3	SM 100	1 OF 1	F

Memo

To	CC@sawater.com.au		
CC	Jack Nelson: Water Network Retic Asset Planner Paul Hutchinson: Metering Officer MeteringTechnicalServices@sawater.com.au Dee Baric: Snr Connections Officer Stephen Gadaleta: Mgr Connections Rowan Steele: Asset Partner		
From	Patrick Hayde: Mgr. Systems Planning Water		
Phone	+61 8 7424 2006	**Email**	patrick.hayde@sawater.com.au
Date	13/03/2019	**SA Water Ref**	H0082303
Subject	FF 201902_30 54 Elizabeth Street, Adelaide H0082303 – Network Analysis		

1.0 CUSTOMER REQUEST

I refer to your memo requesting a network analysis for a fire service based on the following customer request details:

Customer Request Details

- Customer/Applicant: BCA Engineers
- Property Owner/Client: Not Provided
- Location Details: 54 Elizabeth St, Adelaide
- Date of Request received by SA Water: 14 Feb 2019
- Date of Request received by Systems Planning: 27 Feb 2019
- Estimate of Peak Flow Rate in Litres per Second (L/s)
  - Unassisted (L/s) 50 L/s
  - MFS/CFS Boosted (L/s) 50 L/s
- Map provided showing locations points for analysis Yes ☒ No ☐
- Development Plan and Building Details Provided : Yes ☐ No ☒
- Maximum Height and number of Storeys above GL Not Provided
- Internal Fire Reticulation Plan Provided Yes ☐ No ☒
- Supply to:
  - Hydrant Yes ☐ No ☐ Unknown ☒
  - Sprinkler Yes ☐ No ☐ Unknown ☒
  - Booster Assembly Yes ☐ No ☐ Unknown ☒
  - Tank Yes ☐ No ☐ Unknown ☒
  - Inline Pumps Yes ☐ No ☐ Unknown ☒

    if Yes also fill in Inline Pump Engagement Form
- Using existing fire connection Yes ☐ No ☐ Unknown ☒
- Hydrant Hydraulic Assessment Report provided Yes ☐ No ☒ Unknown ☐
- Requesting new fire connection Yes ☐ No ☐ Unknown ☒
- Certainty rating that project will proceed: High ☐ Med ☐ Low ☐ Unknown ☒
- Development start date: Not Provided

"Disclaimer - The pressures and flows provided are indicative only and have been derived by theoretical network analysis for normal summer operating conditions. SA Water cannot guarantee that these pressures and flows will be available from the system at all times and accepts no responsibility for any loss or damage that may result from reduced flow or pressure in the mains".

Associated Cases

- PI/DAC Assessment CAMS Reference: Not provided
- Water Meter Connection CAMS number Not provided
- Fire Plug Test Results CAMS Reference Not provided
- Fire Flow Network Analysis CAMS Reference Not provided
- Fire Connection Application CAMS Reference Not provided
- 'Other' Associated Cases SA Water CAMS Reference Not provided

2.0 ANALYSIS

Network

- The subject main is contained in the following water supply zone: Metro EL103
- Approximate ground level at the fire service location is: EL 42 m
- The maximum static head at the no flow condition is approximately: 61 mH (EL103 – 42 m)

Existing Connections

- There are no existing connections to the land parcel shown in Aquamap

Offtake Location

- Ex.150 CICL main along Elizabeth Street, **shown at A on Figure 1**
- Ex.200 CICL main along Waymouth Street, **shown at B on Figure 1**

Model

The following WaterGems model was used to simulate the performance of the system with the nominated flows under steady state conditions only (i.e. excluding transient conditions).

- WaterGems model: EL103&EL170_Feb2019_FF.wtg
- Scenario: FF 201902_30 Elizabeth Street Adelaide

Flows Analysed

- 0, 10, 20, 30, 40, 50 L/s

Results

The ground level residual pressure results (within the estimated peak demand 24 hour period) are *shown on* **Figures 2 and 3.** Results are based on the main offtake location rather than the customer end of the fire connection, i.e. do not account for minor losses in the customer connection. These results are presented on the basis that requested flows are not occurring simultaneously at multiple locations.

4.0 CONCLUSION

Steady state network modelling results indicate that the requested flow of 0, 10, 20, 30, 40 and 50 L/s from the following locations are currently available, but not simultaneously:

- Ex.150 CICL main along Elizabeth Street, Adelaide
- Ex.200 CICL main along Waymouth Street, Adelaide

Notwithstanding the above conclusion, given that the supply mains are aging CICL mains, there is a risk that these mains have some internal corrosion on the mains or fittings which may impact on their hydraulic capacity. This impact on hydraulic capacity may give rise to flow and pressures lower than those modelled.

These results were not cross referenced with any pre-existing on site fire plug tests.

Disclaimer

The pressures and flows provided are indicative only and have been derived by theoretical network analysis for normal summer operating conditions. SA Water cannot guarantee that these pressures and flows will be available from the system at all times and accepts no responsibility for any loss or damage that may result from reduced flow or pressure in the mains.

General notes

- An available water main ≥DN100 must be adjacent to the property. Water mains that connect to supply by measure connections are not considered available as they only have water available during periods of transfer pumping.
- The fire service connection cannot be larger than the water main in the street. For example a DN150 fire service connection will not be approved from an Ex.100 water main.
- Fire service connections are not to be interconnected with other pressure supply zones.
- Approval to be sought from Connections SA Water if pumps inline are proposed or used.
- If the proposed fire service is for a multi-storey development the applicant is referred to SA Water TS 0522 for minimum allowable distribution main sizes.

Regards

Patrick Hayde
Mgr. Systems Planning Water, Customer Growth

WSP - SW 13th Mar 2019

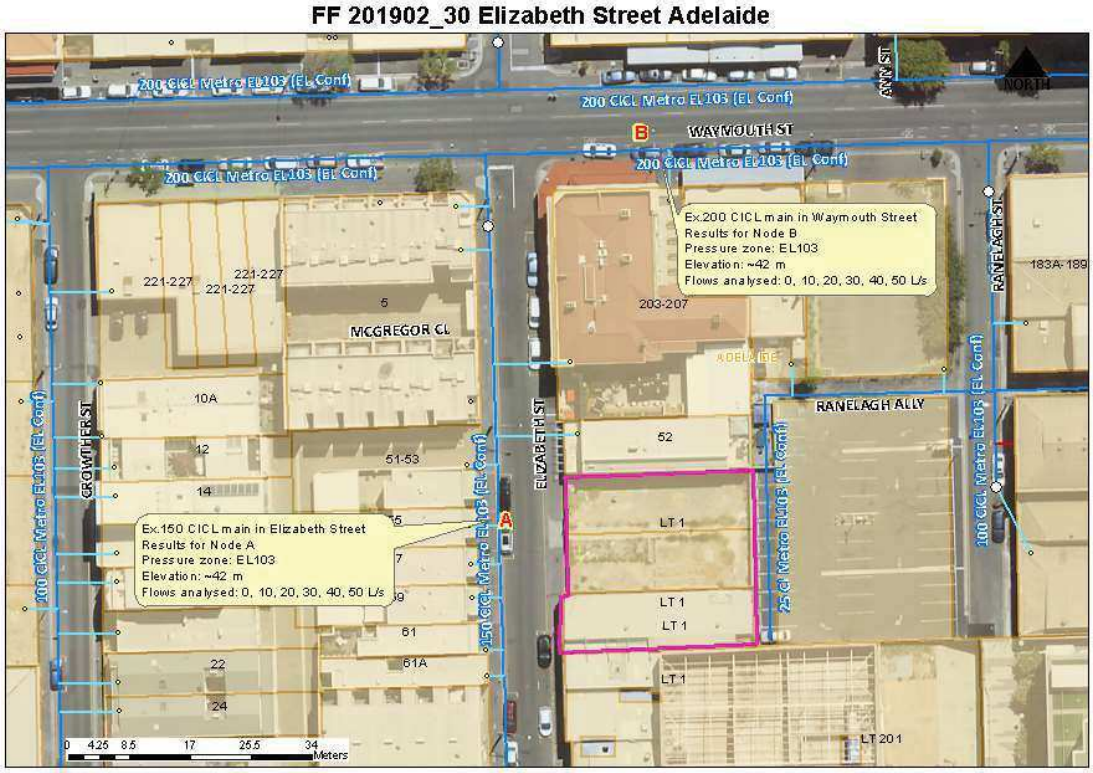


Figure 1. Location Plan

"Disclaimer - The pressures and flows provided are indicative only and have been derived by theoretical network analysis for normal summer operating conditions. SA Water cannot guarantee that these pressures and flows will be available from the system at all times and accepts no responsibility for any loss or damage that may result from reduced flow or pressure in the mains".

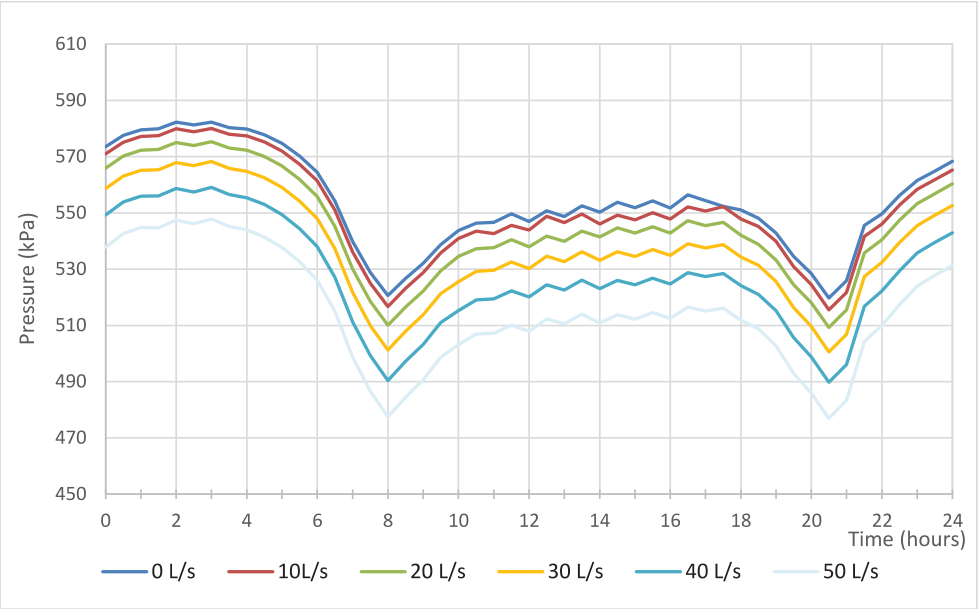


Figure 2. Available pressure at Node J-67890 on Ex.150 CICL main on Elizabeth Street, Adelaide

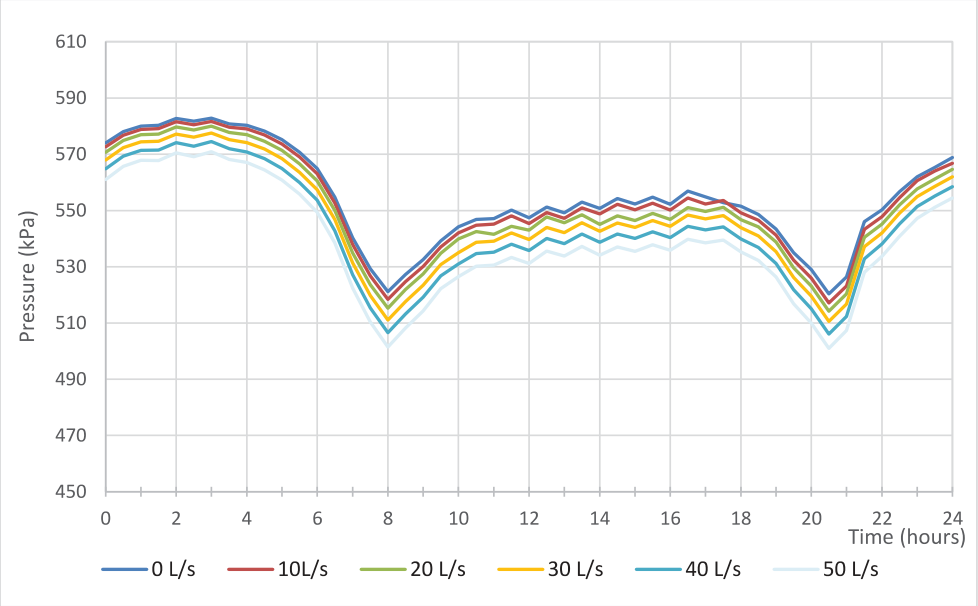


Figure 3. Available pressure at Node J-53659 on Ex.200 CICL main on Waymouth Street, Adelaide

Our Ref: 500020839

01 March 2019

BCA ENGINEERS
% GREATON – ELIZABETH ST, ADELAIDE
33 RUNDLE ST
KENT TOWN SA 5067

Attn: Mr. Antony Caruso

Dear Sir,

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

Re: Proposal to Establish A New Electricity Supply Connection at:
ELIZABETH ST, WFS3 STUDENT ACCOMMODATION, ADELAIDE SA 5000.

We acknowledge receipt of your request concerning your proposal to Establish A New Electricity Supply Connection at Elizabeth St, WFS3 Student Accommodation, Adelaide SA 5000 ('**Project**').

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

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

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

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

What is an Offer Preparation Fee?

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

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

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

Indicative Offer:

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

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

Any indicative estimate we provide will not be binding on us and will be based on the information you have provided at that time. There will be a charge of $2,101 (GST Inclusive) for us to prepare an indicative estimate.

Contestability:

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

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

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

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

Which type of offer do you require?

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

Option 1 – All Work

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

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

Option 2 – Non-Contestable Work Only

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

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

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

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

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

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

project cost is likely to exceed $100,000) our estimate of our actual cost to prepare the technical specification.

Customer Payment

The methods used to determine the customer payment associated with the customer demand of 800kVA outlined in your initial enquiry will be calculated in accordance with the SA Power Networks Connection policy for 2015-2020.

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

If you need any assistance or information please contact Muhammad Asad at our SA Power Networks - 1 Anzac Highway, Keswick SA 5035 office on 0447 650 626 or muhammad.asad@sapowernetworks.com.au .

Yours faithfully

Muhammad Asad
Network Project Officer – Adelaide

Encl:

Annexure 1 - Connection Enquiry Pro-Forma (including Table 1 – Further Information Required)
Annexure 2 - SA Power Networks - Negotiated Connection Service Process Flow (high-level)
Annexure 3 – Connection Policy 2015 – 2020

Annexure 1

CONNECTION ENQUIRY PRO-FORMA

SA Power Networks Ref:	500020839, Elizabeth St, WFS3 Student Accommodation, Adelaide SA 5000
Date:	01 March 2019
SAPN Project Manager:	Muhammad Asad
Contact details:	SA Power Networks – 1 Anzac Highway, Keswick SA 5035
Telephone	0447 650 626
Email	muhammad.asad@sapowernetworks.com.au

Please indicate your decision regarding this project by ticking *one* of the following boxes.

I/We hereby agree that:

1.	**OPTION 1 Firm Offer:** SA Power Networks to provide a Formal Offer to undertake all work (both contestable and non-contestable) for the Project $2,101.00 (GST Inclusive) Offer Fee based on the estimated project cost.	☐
2.	**OPTION 2 Firm Offer:** SA Power Networks to provide a Formal Offer to undertake non-contestable work only $2,101.00 (GST Inclusive) Offer Fee based on the estimated project cost. $3,520.00 (GST Inclusive) Specification Fee based on the estimated project cost.	☐
3.	**Indicative Offer:** SA power Networks to provide the likely costs associated with the project. The $2,101.00 (GST Inclusive) Indicative Fee is based on the estimated cost to prepare a response.	☐
4.	**DO NOT PROCEED:** I/We do not wish to proceed with this project	☐

By ticking either box 1, 2 or 3, signing this Acceptance Form and returning it to the SA Power Networks Project Manager nominated above, you are entering into a binding legal contract and undertaking a commitment to pay the amounts referred to in this Contract. That Contract is constituted by this letter (including all of its attachments).

I have enclosed payment for the Offer Preparation Fee, and Specification Preparation Fee, as selected above and request a Tax Invoice to be prepared and issued to the undersigned.

Alternatively, if you require a Tax Invoice prior to making payment of the appropriate Fee outlined above, please complete the attached Annexure 1 (Connection Enquiry pro-forma) and return to our office. SA Power Networks will not commence preparation of the Offer and where appropriate, the Design Specification until payment is received.

SA Power Networks Ref:	500020839, Elizabeth St, WFS3 Student Accommodation, Adelaide SA 5000
Date:	01 March 2019
SAPN Project Manager:	Muhammad Asad
Contact details:	SA Power Networks – 1 Anzac Highway, Keswick SA 5035
Telephone	0447 650 626
Email	muhammad.asad@sapowernetworks.com.au

If the signatory is not the Customer, then the signatory warrants that they are authorised to accept the Offer for and on behalf of the Customer.

Signed by, or for and on behalf of, the Customer:

..... **Date** .....
Signature

Name of signatory: (print) .....

Relationship to Customer: (print) .....

Customer's ABN: (print) .....

Company Name: (print) .....

Address for forwarding Invoices: (print) .....

.....

Contact Phone: Mobile ..... Office: .....

Please note: if unable to provide an ABN, the Customer must provide a 'Reason for not quoting an ABN' statement on the appropriate Australian Taxation Office form obtainable at http://www.ato.gov.au/uploadedFiles/Content/MEI/downloads/BUS38509n3346_5_2012.pdf.

The following parties are hereby authorised to receive correspondence from SA Power Networks related to the design of Contestable Works:

Relationship to Customer: (print) .....

Company Name: (print) .....

Contact Person: (print) .....

Email Address: (print) .....

Contact Phone: Mobile ..... Office: .....

If additional parties are authorised to receive correspondence from SA Power Networks please provide the above detail in writing to the Project Manager named above.

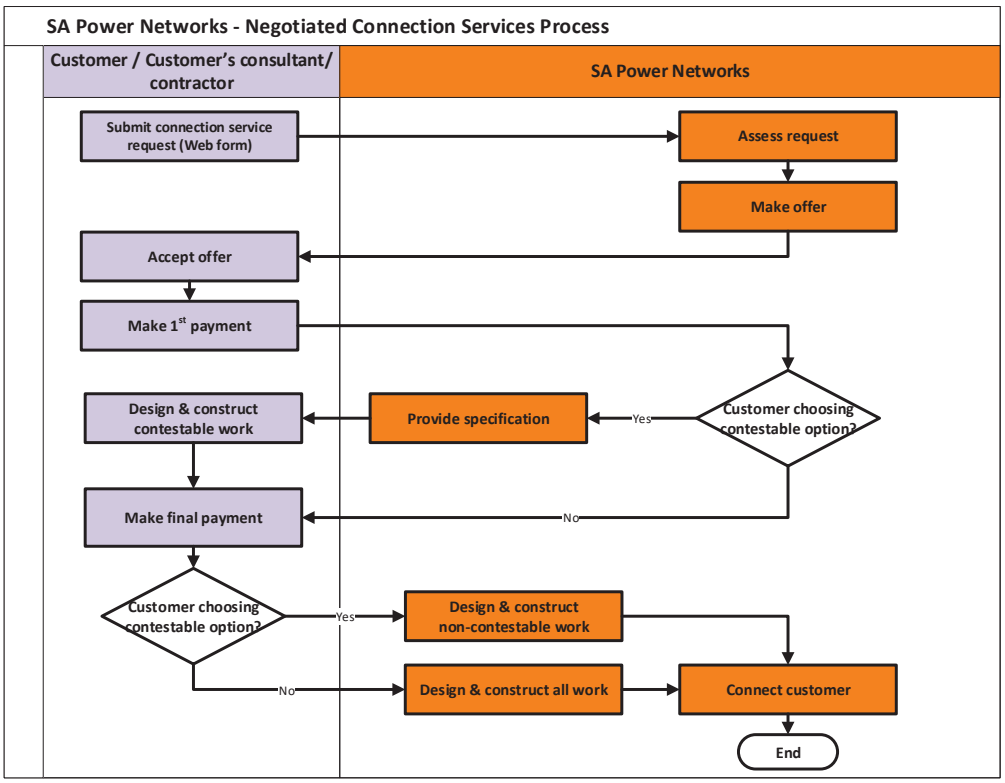
TABLE 1. FURTHER INFORMATION REQUIRED FROM YOU

Please provide the requested information for **each ticked item**.

Information required	Description	Information, Notes & Feedback (attach information separately as required)
1 ☑	**Program Dates** • Construction Start & Completion • Forecast connection date • "Your Works Program"	
2 ☑	**Supply Type –** 3 phase , single phase, other **Proposed use/Type of installation** **Load details**	
3 ☑	**Tenancy Type –** commercial, industrial, residential, apartments or combination	
4 ☑	**Customer's electrical load requirements (i.e. Maximum Demand** – **Existing** (AS3000))	
5 ☑	**Customer's electrical load requirements (i.e. Maximum Demand** – **Proposed** (AS 3000))	
6	**Load Operation Cycle** – **Existing & Proposed** operation cycle (i.e. typical operating times of plant & equipment)	N/A
7	**Motor Starting** - Magnitude & incidence per day of anticipated plant inrush currents (i.e. for motors include DOL / Soft Start characteristics)	N/A
8	**Harmonic distortion** expected if any (in % odd / even terms)	N/A
9 ☑	**Main Switch Board** details • Consumer mains size / number of cables	
10 ☑	**Drawings & Plans** • Site Plans - detailed site / location / elevation / plans • Survey Plans - • Sewer • Road Designs	
11 ☑	**Land Title Status** (i.e. Torrens, Community, Strata, Other) Installation address	
12 ☑	**Easements** acquisition responsibility: • SA Power Networks overall (if constructed by SA Power Networks) • Customer overall (if constructed by Contractor)	
13 ☑	**Metering**: • Quantity & Type • Preliminary metering arrangement anticipated (for future confirmation) • Account and / or existing meter numbers & serial numbers for all existing site services	
14 ☑	**Retailer** • Name of Retailer for proposed single customer consumers greater than 160MWh / annum & where existing tariff structure will not be retained.	
15 ☑	**Contact Details** - If other than the customer, the nominated agencies and their respective point of contact acting on behalf of the customer re: • Overall Project Management • Electrician. • Builder.	

Annexure 2

SA Power Networks - Negotiated Connection Service Process Flow (high-level)



Appendix C – Concept Design

BCA Engineers / Adelaide
33 Rundle St, Kent Town SA 5067
PO BOX 2620, Kent Town SA 5071
T +61 8 8132 1700
enquiry@**bca**engineers.com
bcaengineers.com

Vipac Engineers and Scientists Limited
215 Portrush Road, Maylands, SA 5069, Australia

t. +61 8 8334 0900 | **f.** +61 8 8362 0793 | **e.** adelaide@vipac.com.au
w. www.vipac.com.au | A.B.N. 33 005 453 627 | A.C.N. 005 453 627

Vipac Engineers & Scientists

Greaton Development

West Franklin Street Stage 3 – Student Accommodation

Preliminary Acoustic Report

50B-19-0100-DRP-8950695-0

3 July 2019

Report Title: Preliminary Acoustic Report **Job Title: West Franklin Street Stage 3 – Student Accommodation**	
DOCUMENT NO: 50B-19-0100-DRP-8950695-0 **PREPARED FOR:** Greaton Development **CONTACT:** Helanna Marra **Tel:** 08 8212 7988 **Fax:**	**REPORT CODE:** DRP **PREPARED BY:** Vipac Engineers and Scientists Limited 215 Portrush Road, Maylands, SA 5069, Australia **Tel:** +61 8 8334 0900 **Fax**: +61 8 8362 0793

PREPARED BY:		
Author:	Saksham Garg Acoustic Engineer	Date: 3 Jul 2019
REVIEWED BY:		
Reviewer:	Mark Ogilvie Consulting Engineer	Date: 3 Jul 2019
AUTHORISED BY:	Saksham Garg Acoustic Engineer	Date:3 Jul 2019

REVISION HISTORY		
Revision No.	Date Issued	Reason/Comments
0	3/07/2019	Initial Issue
1		
2		

DISTRIBUTION		
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1	Project	
2	Client (PDF Format)	Uncontrolled Copy
3		

KEYWORDS:

TABLE OF CONTENTS

1 INTRODUCTION

Vipac Engineers & Scientists were engaged by Greaton Development to provide acoustic engineering services for the proposed multi-storey student accommodation development at 54-58 Elizabeth Street, Adelaide, SA 5000. This report provides the review of architectural drawings, acoustic design criteria and preliminary recommendations to achieve the criteria as required.

2 REFERENCES

[1] Australian / New Zealand Standards AS/NZS 2107:2016 *Acoustics – Recommended design sound levels and reverberation times for building interiors*.

[2] National Construction Code, Building Code of Australia 2019 (BCA).

[3] South Australian *Environment Protection (Noise) Policy 2007* (EPP 2007).

[4] World Health Organisation (1999) *Guidelines for Community Noise.*

[5] *Adelaide City Council Development Plan*, consolidated 07 June 2018.

[6] Architectural drawings of WFS3 development, provided by Greaton Development, in their correspondence of 28 June 2019.

[7] Australian Standard AS 12239:2004 *Fire detection and alarm systems - Smoke alarms (ISO 12239:2003, MOD).*

[8] Minister's Specification SA 78B, *'Construction Requirements for the control of external sound'*, February 2013.

[9] AS 1055.1-1997 'Acoustics – Description and measurement of environmental noise – Part 1: General procedures', Standards Australian (1997).

3 PROPOSED DEVELOPMENT

The proposed development site is located at 54-58 Elizabeth Street, Adelaide, with the following surrounding existing developments:

- Northern Boundary – The Cumberland Arms Hotel (The Cumby).
- Western Boundary – 2-storey residential developments separated by Elizabeth Street.
- Southern Boundary – Adjoining multi-storey mixed use development.
- Eastern Boundary – Adjoining public carpark.

With reference to the architectural plans provided by Greaton Development, Vipac notes the following components within the proposed development:

- Ground floor – Manager Office, administration office, reception, refuse area, pump room, transformer room, casual dining area, foyer/waiting area and open promenade.
- Level 1 – Study area, 2-off study POD's, amenities, Comms room, arts room, games room and gymnasium.
- Level 2-5 – 2-off twin studio apartments, 1-off 4 bed cluster, 1-off 6-bed cluster, 8-off studio apartments and common rooms (laundry, cinema, cyber games room, study/library, etc.)
- Level 6 – 2-off 4 bed clusters and common kitchen/living area with open terrace.
- Level 7-16 – 17-off studio apartments and 1-off twin studio apartment.
- Roof – Engineering services plant.

4 NOISE SURVEY

4.1 SURVEY LOCATIONS

The attended and unattended noise surveys were conducted at the western boundary of the site. Survey locations with respect to the nearest noise sensitive receivers are presented in Figure 1, with location description provided below:

- Location L1 – Measurement location for attended noise measurements
- Location L2 – Location for unattended continuous noise monitoring campaign

Attended measurements were conducted during day-time (peak hour traffic period) and night-time (during peak hour music noise from The Cumby).

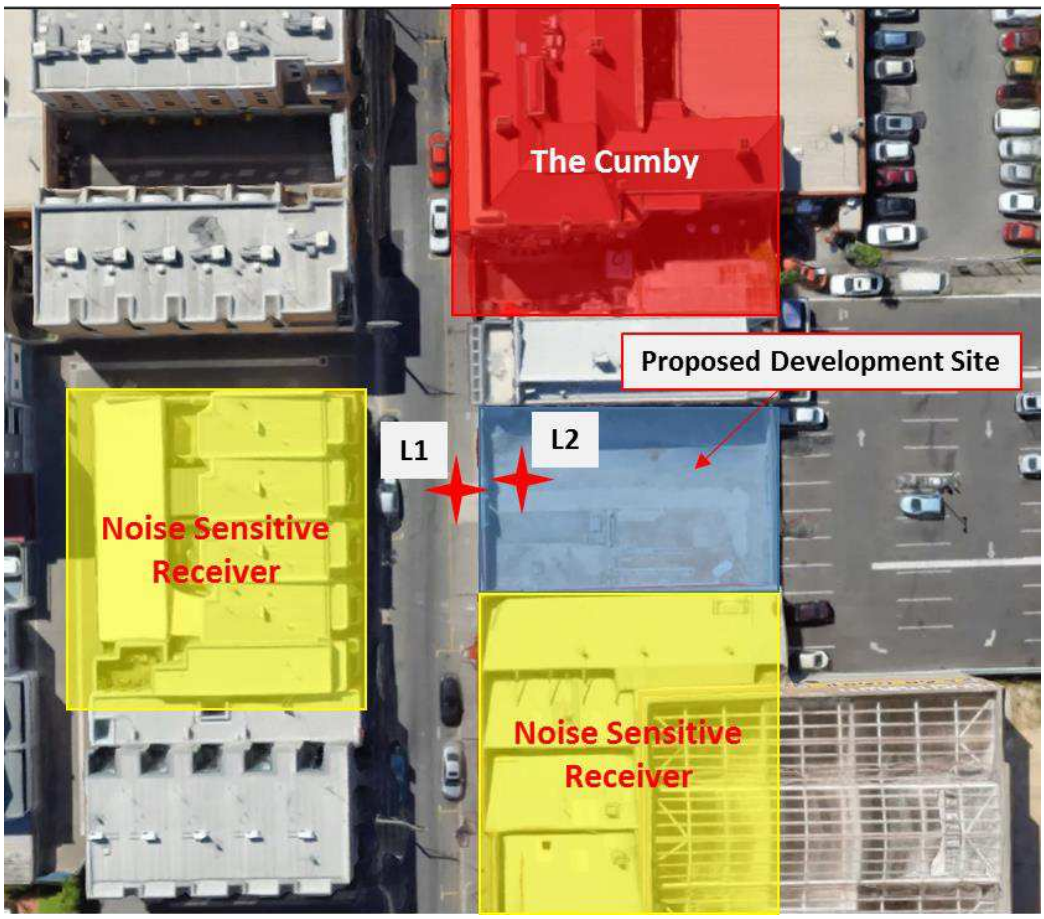


Figure 1: Survey Locations

4.2 EQUIPMENT & METHODOLOGY

Continuous unattended noise monitoring was conducted for a period between Thursday, 27 June 2019 and Tuesday, 02 July 2019, and the attended survey was conducted on Thursday, 27 June 2019 (day-time) and Saturday, 29 June 2019 (night-time). The noise logging comprised of consecutive 15-minute interval measurements. Attended noise monitoring was conducted during both the day-time and night-time periods as defined in the Noise EPP [3]. All measurements were conducted in general accordance with AS 1055.1-1997 [9].

All the equipment used in conducting the noise monitoring held current traceable calibration certification during the time when the noise monitoring was conducted. Field calibration of each noise logger and the handheld sound level analyser was conducted immediately before and after each logging period using an acoustic pistonphone calibrator, with no drift in sensitivity observed. The noise loggers and handheld sound level analyser were each fitted with a ½" condenser microphone and manufacturer-approved windshield.

The equipment details are as follows:

- **Larson Davis Model 831 Sound Level Meter**
  - Serial Number – 0002058
  - Calibration due on – 14 March 2021
- **Brüel & Kjær Type 1 Hand-held Analyser model 2250**
  - Serial Number – 3002841
  - Calibration due on – 1 March 2020

4.3 SURVEY RESULTS

4.3.1 UNATTENDED NOISE MONITORING

The results of the unattended noise logging are presented as day-time and night-time averages in Table 1.

Table 1: Unattended noise logging results

Day	Day-time average noise levels (dB(A))				Night-time average noise levels (dB(A))			
	(7am to 10pm)				(10pm to 7am)			
	L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}
Thursday, 27 June 2019	61	80	62	55	58	73	61	54
Friday, 28 June 2019	61	80	62	56	57	76	59	52
Saturday, 29 June 2019	59	74	61	55	55	71	57	51
Sunday, 30 June 2019	59	79	60	53	54	74	56	50
Monday, 01 July 2019	61	81	62	56	56	76	59	50
Tuesday, 02 July 2019	-	-	-	-	51	65	52	48
Average Levels	**60**	**79**	**61**	**55**	**55**	**73**	**57**	**51**

4.3.2 ATTENDED NOISE MONITORING

The unattended noise logging was supplemented by attended noise monitoring adjacent to the development site. Noise measurements were conducted during both the day-time and night-time periods (as defined by the Noise EPP [3]) and are presented in Table 2 below:

Table 2: Attended noise measurement results

Date & Time Period	Location	Noise level descriptors (dB(A))				Conditions
		L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	
27 June 2019 (Day)	L1	62	78	64	55	- Continuous noise from traffic movements on Franklin Street and Waymouth Street - Noise from the adjacent carpark for multi-storey building on southern boundary (approximately 10 cars entry/exit in the 15-minute measurement period)
29 June 2019 (Night)	L1	57	71	59	52	- Patron noise from The Cumby with music noise (possibly from the beer garden) - Traffic noise from Franklin Street and Waymouth Street - Noise from 4 cars entering the adjacent carpark for the multi-storey building in the 15-minute measurement period.

5 ACOUSTIC DESIGN CRITERIA

5.1 ENVIRONMENTAL NOISE (CONTINUOUS NOISE)

5.1.1 ADELAIDE (CITY) COUNCIL DEVELOPMENT PLAN

The proposed development is located within the Capital City Zone of the Adelaide City Council. Principles of Development Control 93 and 94 of the Adelaide City Council Development Plan [5] provides noise criteria for assessment of noise impact of the proposed development to nearby noise-sensitive premises:

> *"**Principle of Development Control 93***
>
> *Mechanical plant or equipment, should be designed, sited and screened to minimise noise impact on adjacent premises or properties. The noise level associated with the combined operation of plant and equipment such as air conditioning, ventilation and refrigeration systems when assessed at the nearest existing or envisaged noise sensitive location in or adjacent to the site should not exceed:*
>
> *(a) 55 dB(A) during daytime (7.00am to 10.00pm) and 45 dB(A) during night time (10.00pm to 7.00am) when measured and adjusted in accordance with the relevant environmental noise legislation except where it can be demonstrated that a high background noise exists.*
>
> *(b) 50 dB(A) during daytime (7.00am to 10.00pm) and 40 dB(A) during night time (10.00pm to 7.00am) in or adjacent to a City Living Zone, the Adelaide Historic (Conservation) Zone, the North Adelaide Historic (Conservation) Zone or the Park Lands Zone when measured and adjusted in accordance with the relevant environmental noise legislation except where it can be demonstrated that a high background noise exists.*

Principle of Development Control 94

To ensure minimal disturbance to residents:

(a) ancillary activities such as deliveries, collection, movement of private waste bins, goods, empty bottles and the like should not occur:

(i) after 10.00pm; and

(ii) before 7.00am Monday to Saturday or before 9.00am on a Sunday or Public Holiday.

(b) *typical activity within any car park area including vehicles being started, doors closing and vehicles moving away from the premises should not result in sleep disturbance when proposed for use after 10.00pm as defined by the limits recommended by the World Health Organisation.*"

5.1.2 ENVIRONMENT PROTECTION (NOISE) POLICY 2007

The Environment Protection (Noise) Policy 2007 (EPP 2007) [3] sets out the maximum allowable L_{Aeq} noise levels based on the time of day and zoning / use of land in which the noise source and receiver are located. With reference to the Adelaide City Council Development Plan [5], we note that the proposed development is located within Capital City (CC) Zone. The Capital City Zone is an essentially Mixed Use zone comprising a mixture of Commercial and Residential uses. Therefore, the following indicative noise factors based on time of day and land-use as stipulated in Table 2 of the EPP 2007 [3] apply.

- Residential Land Use Category
  - Day-time (7:00 a.m. to 10:00 p.m.): 52dB(A)
  - Night-time (10:00 p.m. to 7:00 a.m.): 45dB(A)
- Commercial Land Use Category
  - Day-time (7:00 a.m. to 10:00 p.m.): 62dB(A)
  - Night-time (10:00 p.m. to 7:00 a.m.): 55dB(A)

Since the Mixed Use area is intended for commercial and residential purposes, the Environment Protection (Noise) Policy [3] states that the indicative noise level is the average of the indicative noise factors for the land use categories. In addition, *'Part 5 Clause 20'* of the EPP 2007 [3] states that predicted continuous noise due to the proposed development (for application for development authorisation) should not exceed the indicative noise level less 5dB(A). Based on the average of the "Commercial" and "Residential" land use categories less 5dB(A) for planning the applicable day and night time noise criteria are as follows:

Table 3: Applicable continuous environmental noise criteria

Continuous Environmental Noise Criteria	Day-time (7:00 a.m. to 10:00 p.m.)	Night-time (10:00 p.m. to 7:00 a.m.)
Proposed Development impacting on adjacent mixed use zone developments	52	45

Note that if noise emitted by the proposed development contains any tones, modulation, impulsive or low frequency characteristics, the continuous noise level of the noise source must be adjusted as follows:

- Noise containing 1 characteristic – 5dB(A) penalty added to source continuous noise level;
- Noise containing 2 characteristics – 8dB(A) penalty added to source continuous noise level;
- Noise containing 3 or 4 characteristics – 10dB(A) penalty added to source continuous noise level.

5.2 TRAFFIC NOISE

In addition to Noise EPA, Minister's Specification SA 78B [8], provides specific criteria to protect occupants of Class 2 or 3 buildings from the impact of existing or future road and rail sound. The Specification states that the level of attenuation provided by the building envelope and ventilation system against the external airborne noise from roads must be sufficient to provide internal sound levels not exceeding the internal sound criteria values stated in Table 4 below:

Table 4: Internal sound criteria for rail sound intrusion

Type of room	Internal sound criteria		Applicable time period
	Building design target average over the total number of such rooms in the building	***Maximum allowable for individual rooms in the building***	
Bedroom	30dB(A) $L_{eq,9hr\ (transport)}$ 30dB(A) $L_{eq,15min\ (people)}$	35dB(A) $L_{eq,9hr\ (transport)}$ 35dB(A) $L_{eq,15min\ (people)}$	Night (10pm-7am)
Other habitable room, other than a bedroom	35dB(A) $L_{eq,15hr}$	40dB(A) $L_{eq,15hr}$	Day (7am-10pm)

5.3 MUSIC NOISE

Principle of Development Control 98 in the Adelaide City Council Development plan states that noise sensitive development adjacent to existing entertainment premises, that the music noise level (L_{10}), in any bedroom with the windows closed, being:

(i) *Less than 8dB above the level of background noise ($L_{90,\ 15min}$) in any octave band of the sound spectrum, and*

(ii) *Less than 5dB(A) above the level of background noise ($L_{A90,\ 15min}$) for the overall (sum of all octave bands) A-weighted levels.*

Based on typical L_{A90} background noise levels from mechanical services inside a bedroom, from Appendix C of AS2107 [1], the music noise criteria shown in Table 5 have been determined.

Table 5: Frequency (Hz) dependent music noise criteria for inside a bedroom/studio at the proposed development

Frequency	Sound Pressure Level (SPL), dB ref 20μPa.									Overall SPL, dB(A)
	31.5	63	125	250	500	1k	2k	4k	8k	
Typical Background Noise level, L_{A90} (from AS 2107)	70	52	42	34	29	25	22	20	18	30
Music noise criteria, LA_{10}	78	60	50	42	37	33	30	28	26	35

5.4 INTERMITTENT NOISE LEVELS

The criteria provided above relate to continuous noise sources, and do not cater for intermittent noise events, such as slamming of car doors, car horns sounding, etc. We recommend the use of the World Health Organisation (WHO) guidelines [4], which recommends a maximum noise level, L_{Amax}, of 45dB(A) in a bedroom, which is equivalent to approximately 55dB(A) to 60dB(A) at the façade of the residential building with windows partially open.

In addition, the EPP 2007 provides assessment criterion of L_{Amax} of 60dB(A) for night-time for the proposed development (for application for development authorisation)[4], which agrees with the criterion stipulated by the WHO [3].

5.5 BUILDING ACOUSTICS

Principles of Development Control 95 and 97 in the Adelaide City Council development plan [5] state that:

> *"**Principle of Development Control 95***
>
> *Noise sensitive development should incorporate adequate noise attenuation measures into their design and construction to provide occupants with reasonable amenity when exposed to noise sources such as major transport corridors (road, rail, tram and aircraft), commercial centres, entertainment premises and the like, and from activities and land uses contemplated in the relevant Zone and Policy Area provisions.*"
>
> "***Principle of Development Control 97***
>
> *Noise sensitive development adjacent to noise sources should include noise attenuation measures to achieve the following:*
>
> *(a) Satisfaction of the sleep disturbance criteria in bedrooms or sleeping areas of the development as defined by the limits recommended by the World Health Organisation;*
>
> *(b) The maximum satisfactory levels in any habitable room for development near major roads, as provided in the Australian/New Zealand Standard AS/NZS 2107:2000 – 'Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors';"*

As such, based on AS2107:2016 [1] and our experience in similar projects, Vipac proposes the following criteria:

Table 6: Recommended background noise criteria

Type Occupancy/Space	Background Noise Criteria, dB(A)	Reverberation Time, Seconds	Speech Privacy Level, D_W
Foyer/Waiting	45 – 50	Minimise as practical	N/A
Shared Amenities & Laundry	< 55	-	40 – 45
Plant Rooms	-	-	45 – 50
Managers Office	40 – 45	< 0.6	35 – 40
Admin & Reception	40 – 45	Minimise as practical	
Living areas (near major roads)	35 – 45	-	-
Sleeping areas (near major roads)	35 – 40	-	-
Work areas (near major roads)	35 – 45	-	-
Apartment common areas (e.g. foyer, lift lobby)	45 – 50	-	-
Games Room	45 – 50	< 1.0	40 – 45
Gymnasium & Yoga Room	< 50	< 1.0	40 – 45

Type Occupancy/Space	Background Noise Criteria, dB(A)	Reverberation Time, Seconds	Speech Privacy Level, D_w
Arts Room	40 – 45	< 0.8	35 – 40
Study Pods	40 – 45	< 0.6	35 – 40
Cinema	30 – 40	0.6 – 0.8	45 – 50
Common Kitchen/Living	40 – 45	Minimise as practical	N/A

5.5.1 BACKGROUND NOISE

The Australian / New Zealand Standard AS/NZS 2107:2016 [1] sets out the recommended noise levels due to steady-state noise sources (such as traffic and air-conditioning systems) within internal spaces based on the type and use of the space. The design criteria for background noise (as presented in Table 6 above) are provided in terms of equivalent continuous A-weighted noise levels (L_{Aeq}). Table 7 details the subjective response of individuals to the proposed sound levels for interpretation of the recommendations.

Table 7: Subjective response to individuals to average sound pressure levels

Average Sound Pressure Levels, dB(A)	Subjective Rating
35 – 40	Audible but unobtrusive.
40 – 45	Moderate but unobtrusive.
45 – 50	Unobtrusive with low levels of surrounding activities.
50 – 55	Unobtrusive with high levels of surrounding activities.

5.5.2 SPEECH PRIVACY

There are no Australian or International Standards giving recommendations of sound insulation ratings for adjoining spaces. Instead recommendations are based on experience from previous projects, with these recommendations reflecting budget constraints and user expectations. The privacy rating is dependent on the sound absorption and background noise levels in the adjoining space as well as the area and acoustic performance of the dividing partition.

Recommendations for speech privacy are provided in terms of D_w rating (Weighted Sound Level Difference as defined by AS/NZ ISO 717.1:2004), related to the sound level difference between two spaces. In some cases a D_w rating is inappropriate as these ratings are only suitable for mid-high frequency noise sources rather than low frequency noise sources such as mechanical plant. Table 8 details the subjective response of individuals to the proposed privacy ratings for interpretation of the recommendations.

Table 8: Subjective response to individuals to speech privacy ratings

D_w Rating	Subjective Rating
50 – 55	Confidential privacy.
45 – 50	Very Good Speech Privacy *Speech inaudible unless raised*
40 – 45	Good Speech Privacy *Speech audible but unintelligible*
35 – 40	Normal Speech Privacy *Neighbouring conversations are audible and may be understood*

5.5.3 ROOM ACOUSTICS

The Australian / New Zealand Standard AS/NZS 2107:2016 [1] sets out the design criteria for reverberation times within occupied spaces. The reverberation time defines the time taken for sound to decay within a space and thus the degree of intelligibility of both unassisted speech and sound reinforcement systems. The criterion for a given space depends on the volume of the space, with Table 9 outlining the subjective impression for spaces with various volumes.

Table 9: Subjective response to individuals to reverberation times

Reverberation Time, sec			Subjective Rating
Small (100m^3)	Medium (1,000m^3)	Large (10,000m^3)	
<0.3	0.3 – 0.5	0.6 – 0.8	Dead
0.3 – 0.5	0.5 – 0.7	0.8 – 1.0	Medium dead
0.5 – 0.7	0.7 – 1.0	1.0 – 1.5	Average
0.7 – 1.0	1.0 – 1.5	1.5 – 2.5	Medium live
1.0 – 2.0	1.5 – 2.5	2.5 – 4.5	Live

5.6 SOUND INSULATION

Part F5 (Sound Transmission and Insulation) of the Building Code of Australia (BCA) [2] stipulates the required weighted sound reduction index (R_w), weighted sound reduction index with spectrum adaptation term ($R_w + C_{tr}$) and weighted normalised impact sound pressure level ($L_{n,w}$) for building elements separating sole-occupancy units. We note that the proposed student accommodation apartments would be classified as Class 2 or 3 buildings, and therefore note the following applicable criteria in accordance with NCC 2019 [2]:

"F5.4 Sound insulation of floors

(a) A floor in a class 2 or 3 buuilding musty have an $R_W + C_{tr}$ (airborne) not less than 50 and an $L_{n,w}$ (impact) not more than 62 if it separates:

(i) Sole-occupancy units; or

(ii)A sole-occupancy unit from a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification.

F5.5 Sound insulation rating of walls

(a) A wall in a Class 2 or 3 building must—

(i) have an $R_w + C_{tr}$ (airborne) not less than 50, if it separates sole-occupancy units; and

(ii) have an R_w (airborne) not less than 50, if it separates a sole-occupancy unit from a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification; and

(iii) be of discontinuous construction if it separates—

(A) a bathroom, sanitary compartment, laundry or kitchen in one sole-occupancy unit from a habitable room (other than a kitchen) in an adjoining unit; or

(B) a sole-occupancy unit from a plant room or lift shaft.

(b) A door may be incorporated in a wall in a Class 2 or 3 building that separates a sole-occupancy unit from a stairway, public corridor, public lobby or the like, provided the door assembly has an R_w not less than 30.

(e) Where a wall required to have sound insulation has a floor above, the wall must continue to—

(i) the underside of the floor above; or

(ii) a ceiling that provides the sound insulation required for the wall.

(f) Where a wall required to have sound insulation has a roof above, the wall must continue to—

(i) the underside of the roof above; or

(ii)a ceiling that provides the sound insulation required for the wall.

F5.6 Sound insulation rating of internal services

(a) If a duct, soil, waste or water supply pipe, including a duct or pipe that is located in a wall or floor cavity, serves or passes through more than one sole-occupancy unit, the duct or pipe must be separated from the rooms of any sole- occupancy unit by construction with an $R_w + C_{tr}$ (airborne) not less than—

(i) 40 if the adjacent room is a habitable room (other than a kitchen); or

(ii) 25 if the adjacent room is a kitchen or non-habitable room.

(b) If a storm water pipe passes through a sole-occupancy unit it must be separated in accordance with (a)(i) and (ii).

F5.7 Sound Isolation of pumps

A flexible coupling must be used at the point of connection between the services pipes in a building and any circulating or other pump. ***”***

6 ASSESSMENT & RECOMMENDATIONS

6.1 GENERAL

6.1.1 ACOUSTIC SEALANTS

We note that for the acoustic integrity of building elements to be maintained, all gaps and interfaces along the junctions and joints of linings must be sealed with an appropriate acoustic grade sealant. Penetrations for mechanical or electrical services must be properly blocked and sealed around the ductwork / cabling to ensure the intended acoustic rating of the partition is retained.

Appropriate acoustic caulking products include:

- Bostik Firemastic
- Bostik Seal-n-flex 2637
- Pyropanel Multiflex
- Boral Fyreflex
- Dow-Corning 790 Silicone
- Dow-Corning 795 Silicone

- Sika Sikaflex-11 FC
- Fosroc Flamex 3

6.1.2 CAVITY INFILL

Where cavity infill is recommended, equivalent alternatives are:

- Fibreglass – 50mm, 12kg/m^3
- Rockwool – 50mm, 32kg/m^3
- Polyester – 900gsm.

6.1.3 CEILING OVERLAY

Where ceiling overlay is recommended, equivalent alternatives are:

- Glasswool – 100mm, 12kg/m^3
- Rockwool – 100mm, 32kg/m^3
- Polyester – 100mm, 32kg/m^3

Where higher durability and/or water resistance is required, 6mm compressed fibre cement sheeting could be used in lieu of the 13mm fire-rated plasterboard and 9mm CFC in-lieu of 16mm fire-rated plasterboard.

6.2 NOISE INTRUSION (BUILDING ENVELOPE / FAÇADE DESIGN)

Based on the architectural drawings, Vipac provides the following preliminary recommendations for the building envelope design:

- External glazing – The following glazing construction would be sufficient from acoustic perspective, however, subject to change to meet structural and thermal requirements. The glazing requirements will be reassessed once the mechanical services design has progressed.
  - Ground Floor: 6.38mm laminated glass
  - Level 1: 6.38mm laminated glass
  - Level 2 – 4: Minimum 10.38mm laminated glass
  - Level 5 – 6: Minimum 6.38mm laminated glass
  - Level 7 – 16: Minimum 6.38mm laminated glass

Please note that where the glazing to the living areas and bedrooms is operable, compressible acoustic seals are required (e.g. Schlegel, Raven ranges).

- Façade – The following are acceptable alternatives for the construction of the building façade:
  - Precast concrete panel - 150mm thick,
  - Lightweight construction - 1 layer of 9mm FC externally of 92mm steel studs - 1 layer of 13mm FRPB to the internal side with cavity infill of 50mm, 12kg/m^3 glasswool.
- Roof / ceiling structure:
  - We recommend conventional profiled roof decking with R1.5 insulation, 200mm purlins and ceiling of 1 layer of 13mm plasterboard. Please note that the roof/ceiling construction will be reviewed/reassessed once the mechanical services plant (roof plant) design has progressed.

6.3 SOUND INSULATION

We note that the apartments have a combined open plan kitchen and living area and therefore recommend the following constructions to achieve the NCC 2019 requirements:

6.3.1 WALLS

- Walls separating apartments – We recommend construction consisting of 2 rows of 64mm steel studs separated by minimum 20mm gap, with minimum 2 layers of 13mm fire-rated plasterboard (FRPB) to each side of the separate studs, with cavity infill as specified above. The wall should extend full height from floor to the underside of the floor slab above, and from floor to the underside of the roof sheeting above.
- Walls separating apartments from public corridors/foyers – We recommend construction consisting of 1 layer of 13mm FRPB to one side of 64mm staggered studs in minimum 92mm track and 2 layers of 13mm fire-rated plasterboard to the other side, with cavity infill as specified above. The wall should extend full height from floor to the underside of the floor slab above, and from floor to the underside of the roof sheeting above.
- Walls separating lift shafts and stairwells from apartments – Assuming that the lift shafts and stairwell walls would be minimum 150mm thick precast concrete panels, we recommend construction consisting of minimum 13mm plasterboard installed to one side (i.e. apartment side) of 64mm steel studs offset from the precast concrete panel by minimum 20mm gap, with cavity infill as specified above.
- Walls separating apartments from common areas (cinema, cyber games room, etc.) – We recommend construction consisting of 92mm steel studs with minimum 2 layers of 16mm fire-rated plasterboard (FRPB) to each side of the studs, with cavity infill as specified above. The wall should extend full height from floor to the underside of the floor slab above, and from floor to the underside of the roof sheeting above.

  Please note that the construction to this wall/partition will be reassessed once the purpose of these common areas are specified.
- Walls separating Study Pods, Arts room and Managers office from adjoining spaces – Minimum 1 layer of 13mm plasterboard to both sides of 92mm steel studs, extending to the ceiling level, with cavity infill as specified. An additional ceiling overlay (as specified above) extending minimum 1200mm to either sides of the partition will be required.
- Walls separating shared amenities, games room, library, gymnasium from adjoining spaces – Minimum 2 layers of 13mm plasterboard to one side and 1 layer of 13mm plasterboard to other side of 92mm steel studs, with 1 layer of plasterboard extending to the structure above and cavity infill as specified above.

6.3.2 FLOOR SEPARATION

- Floor / ceiling construction separating apartments – We recommend the floor / ceiling system separating the apartments vertically to be constructed of one of the following alternative structures (minimum requirements)
  - Either 150mm thick in-situ concrete slab, with 13mm thick flush plasterboard ceiling on 50mm furring channels and resilient mounts to the underside of the floor slab. The cavity between the 13mm plasterboard ceiling and the floor slab should be installed with 50mm, 32kg/m^3 polyester insulation; or

- BONDEK or Kingspan steel pan with 150mm thick concrete topping, with 13mm thick flush plasterboard ceiling on suspension system (minimum 300mm air gap between the ceiling and the underside of the concrete floor slab).

Note: Where a hard floor finish is used in a room above habitable spaces (bedrooms and open plan living / kitchen areas), for NCC 2019 compliance they must be installed on *resilient underlay* (e.g. Thermotec Impact Foam, Regupol, Construction Chemicals, Damtec). The resilient underlay is not required for where bathrooms and balconies exist above/below each other on adjacent floors of the building.

- Floor / ceiling construction separating the gymnasium from spaces below and apartments above:

  For the gym, to avoid transfer of impact noise to the apartments below from the use of weights, weight machines or treadmills, we recommend a floating floor construction be installed. The construction should consist of 100 mm thick reinforced concrete slab, on top of 3 layers of elastomeric material with steel shins. Required static deflection will be determined once further detail is understood about the gym (i.e approximate mass of equipment).

6.4 DOORS

- Apartment entry doors – We recommend that entry doors to the apartments be minimum 45mm thick solid core doors with properly fitted medium duty acoustic seals (Raven RP10 and RP8).
- Stairwell/Lift Lobby doors – We recommend the stairwell doors to be 55 mm solid core. In order to avoid noise from slamming of stairwell doors into the apartment lobbies, we recommend installing a soft closer mechanism (e.g. damping piston) to the stairwell doors.
- Doors to Study Pods, Arts room and Managers office – Minimum 40mm solid core doors or glazed aluminium framed doors with minimum 10.38mm glass. Doors would require medium duty acoustic seals (Raven RP10 and RP8).
- Doors to games room, library, gymnasium – Minimum 45mm solid core doors or glazed aluminium framed doors with minimum 10.38mm glass. Doors would require medium duty acoustic seals (Raven RP10 and RP8).
- Doors to shared amenities – 40mm solid core doors would be sufficient. However, we note that air relief grilles to amenities are not desirable from acoustic point of view.
- Doors to plant rooms – We recommend minimum 55mm solid core doors with acoustic seals (Raven RP10 or equivalent).

6.5 HYDRAULIC SERVICES

The following stipulates recommend design in order to reach NCC 2019 compliance with hydraulic systems. Where a wall separates a room of a sole-occupancy unit from a duct, soil, waste or water pipe serving or passing through more than one sole-occupancy unit, we recommend the following constructions:

- Where the adjacent room is a habitable room (i.e. bedroom, open plan living room, etc.), the pipes should be lagged with Soundlag 4525C or equivalent and enclosed with 1 layer of 13mm fire-rated plasterboard with cavity infill as specified in Section 6.1 (See Figure 2 attached).
- Where a waste water pipe is running within the ceiling space of a habitable room or the waste water pipe is running within the ceiling space next to a habitable room, the pipes should be lagged with Soundlag 4525C or equivalent with ceiling overlay of 100mm, 32kg/m^3 polyester extending minimum 1,500mm each side of the pipe. Please note that down lights should be avoided in these areas (See Figure 3 attached).

We note that the specified constructions above will achieve a rating of R_W + C_{tr} 40, and will meet the BCA requirements for a services riser adjoining a habitable space.

- Where the room is a non-habitable room (See Figure 4 attached):
  - The pipes should be lagged with Soundlag 4525C or equivalent, and the wall construction would be as per architectural requirements, or
  - The pipes left unlagged and enclosed with 1 layer of 13mm fire-rated plasterboard with cavity infill as specified.

We note that both the constructions specified will achieve a rating of R_W + C_{tr} 25, and will meet the BCA requirements for services riser adjoining a kitchen or non-habitable room.

6.6 ENVIRONMENTAL NOISE ASSESSMENT

6.6.1 MECHANICAL SERVICES

The details of the mechanical services plant are not available at this stage, therefore, recommendations to control noise emissions from the plant and to achieve the environmental noise criteria will be provided once the services design has progressed.

Appendix A: PIPEWORK DETAILS TO ACHIEVED BCA COMPLIANCE

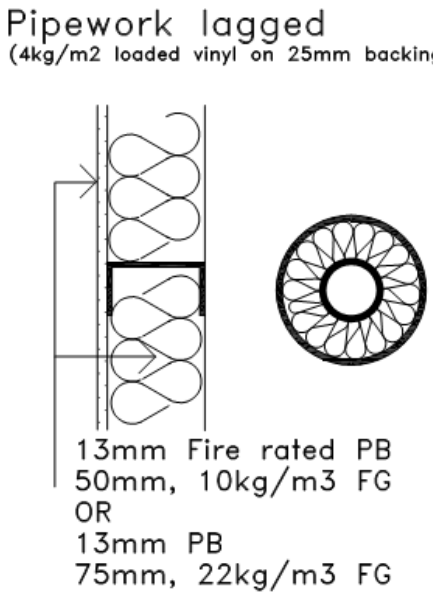


Figure 2: Construction to achieve R_w+C_{tr} 40, for pipes running adjoining habitable spaces (Bedroom, Living)

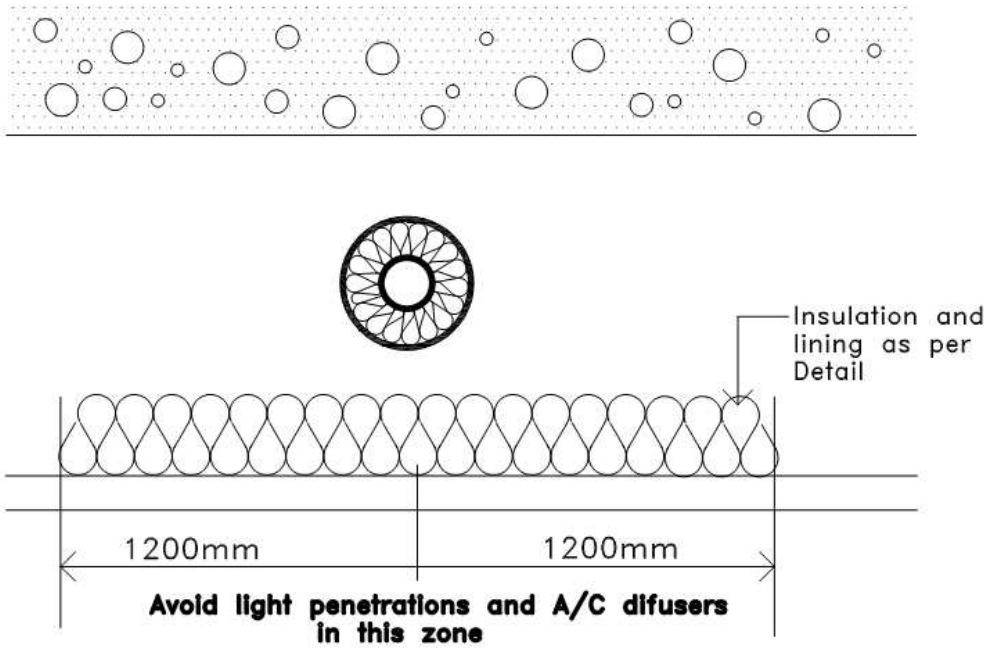


Figure 3: Construction for pipes running through ceiling of habitable spaces

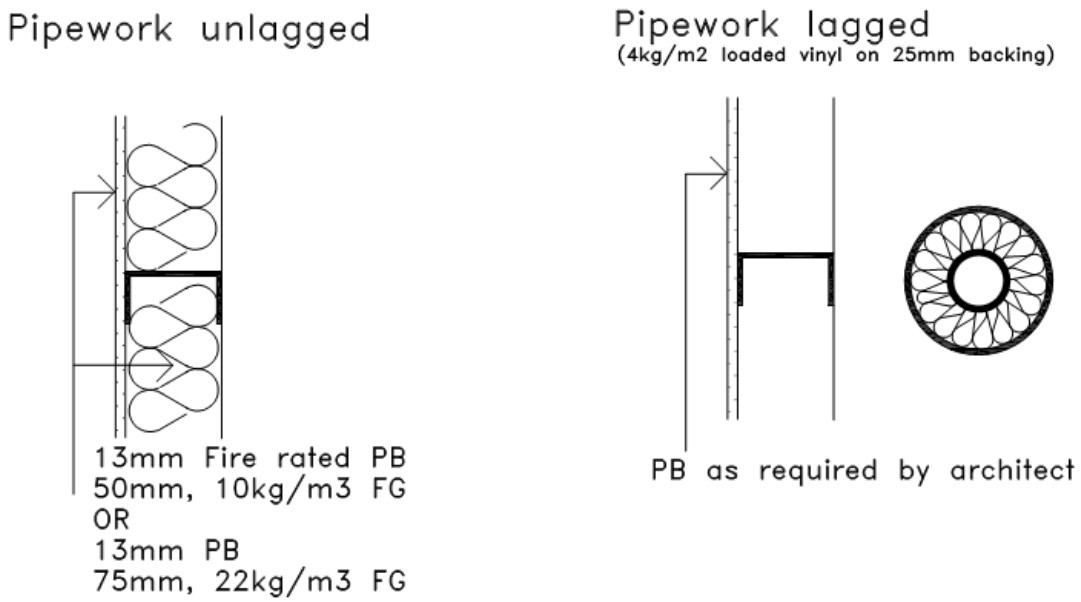


Figure 4: Construction to achieve R_w+C_{tr} for pipes adjoining non-habitable spaces (e.g. Bathroom, Laundry)

Appendix B: GLOSSARY OF ACOUSTIC TERMINOLOGY

dBA A unit of measurement, decibels(A), of sound pressure level which has its frequency characteristics modified by a filter ("A-weighted") so as to more closely approximate the frequency response of the human ear.

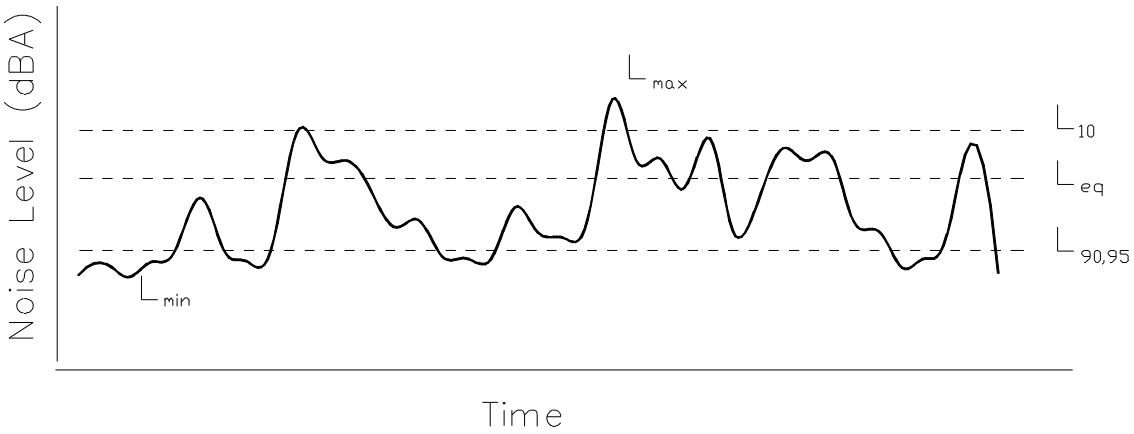
L_1 The noise level which is equalled or exceeded for 1% of the measurement period. L_1 is an indicator of the impulse noise level, and is used in Australia as the descriptor for intrusive noise (usually in dBA).

L_{10} The noise level which is equalled or exceeded for 10% of the measurement period. L_{10} is an indicator of the mean maximum noise level, and is used in Australia as the descriptor for intrusive noise (usually in dBA).

L_{90} The noise level which is equalled or exceeded for 90% of the measurement period. L_{90} or L_{95} is an indicator of the mean minimum noise level, and is used in Australia as the descriptor for background or ambient noise (usually in dBA).

L_{eq} The equivalent continuous noise level for the measurement period. L_{eq} is an indicator of the average noise level (usually in dBA).

L_{max} The maximum noise level for the measurement period (usually in dBA).



Note: - The *subjective reaction or response to changes in noise levels can be summarised as follows*: A 3 dBA increase in sound pressure level is required for the average human ear to notice a change; a 5 dBA increase is quite noticeable and a 10 dBA increase is typically perceived as a doubling in loudness

STC/Rw

Sound Transmission Class or Weighted Sound Reduction Index. Provides a single number rating (from the sound transmission loss or sound reduction index for each frequency band) of the sound insulation performance of a partition. The higher the value, the better the performance of the partition. The subjective impression of different ratings is shown in the table below.

Type of noise source	STC/Rw Rating				
	40	45	50	55	60
Normal Speech	Audible	Just Audible	Not Audible		
Raised speech	Clearly Audible	Audible	Just Audible	Not Audible	
Shouting	Clearly Audible	Clearly Audible	Audible	Just Audible	Not Audible
Small television/small entertainment system	Clearly Audible	Clearly Audible	Audible	Just Audible	Not Audible
Large television/large hi-fi music system	Clearly Audible	Clearly Audible	Clearly Audible	Audible	Just Audible
DVD with surround sound	Clearly Audible	Clearly Audible	Clearly Audible	Audible	Audible
Digital television with surround sound	Clearly Audible	Clearly Audible	Clearly Audible	Audible	Audible

FSTC/Rw'

The equivalent of STC/Rw, but the performance is for the building element measured in the field.

C1, Ctr

The ratings (Rw, DnTw, LnTw) are weighted according to a spectrum suited to speech. This term modifies the overall rating to account for noise with different spectra, such as traffic (Ctr) or footfalls (C1). The ratings may be written as Rw+Ctr, or DnTw/LnTw+C1.

NNIC/DnTw

Normalised Noise Isolation Class, or Weighted Standardised Sound Level Difference. Provides a single number rating of the sound level difference between two spaces, and incorporates the effects of flanking noise between two spaces. This rating is generally accepted to be about 5 points less than the STC/Rw rating.

IIC/Lnw

Impact Insulation Class, or Weighted Normalised Impact Sound Level. Lnw=110-IIC. The higher the IIC rating, or the lower the Lnw rating the better the performance of the building element at insulating impact noise. The table below gives the subjective impression of different ratings:

IIC	Lnw	Subjective Rating
40	70	Clearly Audible
45	65	Clearly Audible
50	60	Audible
55	55	Audible
60	50	Just Audible
65	45	Inaudible

FIIC/LnTw'

The equivalent of IIC/Lnw, but the performance is for the building element measured in the field.

dBA

A-weighted noise level. The A-weighting corrects for the lack of response of the human ear to low frequency sounds. The subjective rating of different ambient noise levels is shown in the table below.

Noise Level (dBA)	Subjective Rating
25-30	Barely audible and very unobtrusive.
30-35	Audible but very unobtrusive.
35-40	Audible but unobtrusive.
40-45	Moderate but unobtrusive.
45-50	Unobtrusive with low levels of surrounding activity.
50-55	Unobtrusive with high levels of surrounding activity.

Vipac Engineers and Scientists Limited
279 Normanby Rd, Port Melbourne, VIC 3207, Australia
Private Bag 16, Port Melbourne, VIC 3207, Australia
t. +61 3 9647 9700 | **f.** +61 3 9646 4370 | **e.** melbourne@vipac.com.au
w. www.vipac.com.au | A.B.N. 33 005 453 627 | A.C.N. 005 453 627

Vipac Engineers & Scientists

Structural Systems Pty Ltd

West Franklin Stage 3, Adelaide

Wind Impact Assessment

30N-19-0124-TNT-6763444-0

5 July 2019

Report Title: Wind Impact Assessment **Job Title: West Franklin Stage 3, Adelaide**	
DOCUMENT NO: 30N-19-0124-TNT-6763444-0 **PREPARED FOR:** Structural Systems Pty Ltd 108 Wright Street Adelaide , 5000, **CONTACT:** Chong Tzu **Tel:** 08 8231 6000 **Fax:**	**REPORT CODE:** TNT **PREPARED BY:** Vipac Engineers and Scientists Limited 279 Normanby Rd, Port Melbourne, VIC 3207, Australia **Tel:** +61 3 9647 9700 **Fax**: +61 3 9646 4370
PREPARED BY: Author: Zhuyun Xu Senior Wind Consultant	Date: 5 Jul 2019
REVIEWED BY: Reviewer: Sophie Lamande Wind Group Leader	Date: 5 Jul 2019
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1		
2		

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KEYWORDS:

EXECUTIVE SUMMARY

Structural Systems Pty Ltd commissioned Vipac Engineers and Scientists Ltd to prepare a statement of wind effects for the ground level areas adjacent to the proposed West Franklin Stage 3 development in Adelaide, SA. This appraisal is based on Vipac's experience as a wind-engineering consultancy. Drawings of the proposed development were provided by Brown Falconer in July 2019.

The findings of this study can be summarized as follows:

With the proposed design:

- The proposed development would not generate wind conditions in excess of the criterion for safety.
- Wind conditions at ground level footpath areas would be within the criterion of acceptability for walking.
- Wind conditions at east building entrance would be within the criterion for acceptability for standing.
- Wind conditions at the west and north entrances may exceed the recommended standing comfort criterion.
- The communal terrace areas on the podium rooftop would be expected to have wind conditions within the standing comfort criterion.

With the proposed design **and the recommended wind control measures**,

- The proposed development would be expected to have acceptable wind environment.

As a general statement, common to all medium rise developments, educating residents about wind conditions at high-level balconies and terrace areas during high-wind event and tying down loose lightweight furniture are highly recommended.

The assessments provided in this report have been made based on experience of similar situations in Adelaide and around the world. As with any opinion, it is possible that an assessment of wind effects based on experience and without experimental validation can be in error. Vipac recommends a scaled wind tunnel study in the detail design stage to verify the predictions and determine the optimal wind control measures.

TABLE OF CONTENTS

1 INTRODUCTION

Vipac Engineers & Scientists Ltd was commissioned by Structural Systems Pty Ltd to carry out an appraisal of the pedestrian level wind effects for the proposed West Franklin Stage 3 development in Adelaide, SA, located approximately 0.5 km to the west of Adelaide's Central Business District (CBD).

The proposed development site is bounded by Elizabeth Street to the west, an open car park to the east, and the existing buildings to the north and south (see Figure 1-1).

The proposed development has a rectangular plan and a height of approximately 52.5 m from the street level. The surrounding developments (within 1.5 km radius) are suburban housing from northeast through east to southeast, suburban housing and some parklands in the other directions (Figure 1-2). Figure 1-3 depicts the East elevation of the proposed development showing the overall height. All drawings of the proposed development were provided by Brown Falconer in July 2019 [4].

This report details the opinion of Vipac as an experienced wind engineering consultancy regarding the wind effects in ground level public areas and access-ways adjacent to the development as proposed. No wind tunnel testing has been carried out for this development at this stage. Vipac has carried out wind tunnel studies on a large number of developments of similar shape and having similar exposure to that of the proposed development. These serve as a valid reference for the prediction of wind effects for this development. Empirical data for typical buildings in boundary layer flows has also been used to estimate likely ground level wind conditions adjacent to the proposed development [2] & [3].

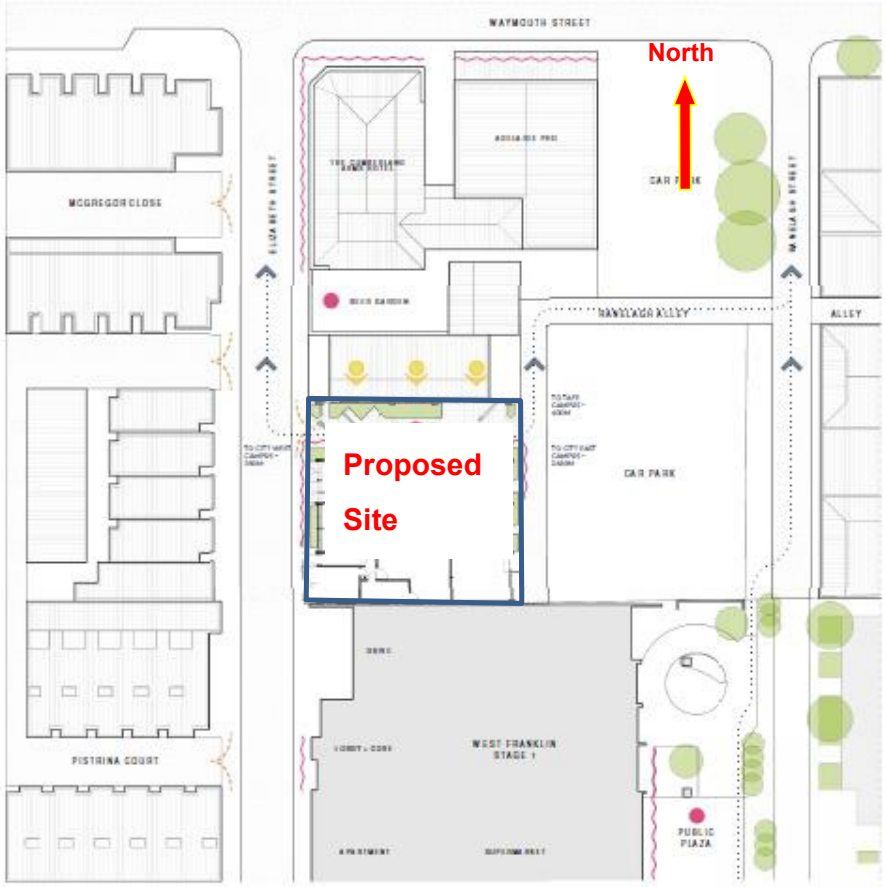


Figure 1-1: Site plan of the proposed development

Figure 1-2: Satellite image of the proposed development site and surrounding terrain

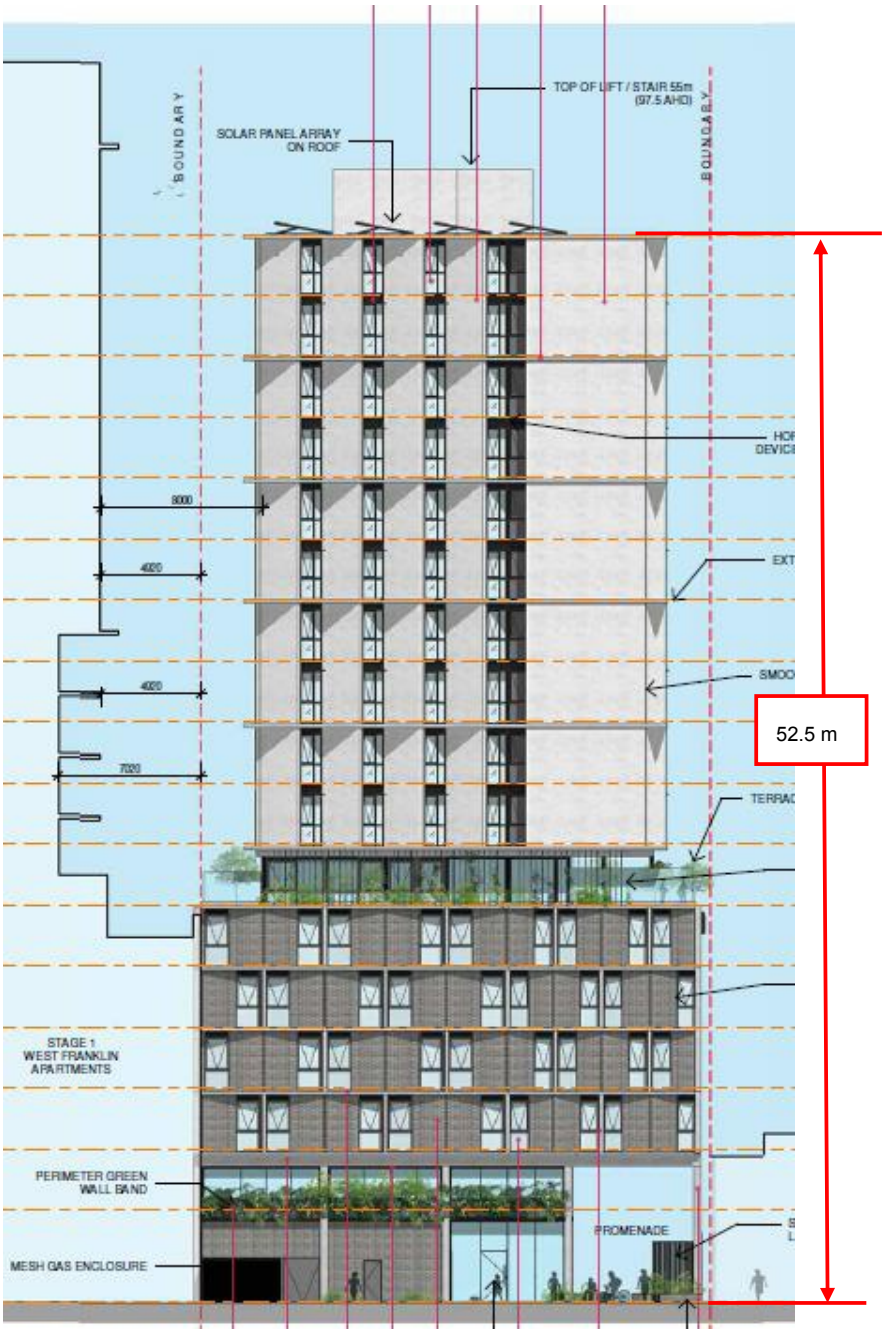


Figure 1-3: East Elevation of the proposed development showing the approximate height

2 REFERENCES

[1] *Structural Design Actions, Part 2: Wind Actions*, Australian/New Zealand Standard 1170.2:2011;

[2] *Wind Effects on Structures* E. Simiu, R Scanlan, Publisher: Wiley-Interscience;

[3] *Architectural Aerodynamics* R. Aynsley, W. Melbourne, B. Vickery, Publisher: Applied Science Publishers;

[4] West Franklin Stage 3 Planning Application (low resolution).pdf –received in July 2019;

3 ANALYSIS APPROACH

When considering whether a proposed development is likely to generate adverse wind conditions in adjacent ground level areas, Vipac considers five main points:

- The exposure of the proposed development to wind,
- The regional wind climate,
- The geometry and orientation of the proposed development,
- The interaction of flows with adjacent developments,
- The assessment criteria, determined by the intended use of the public areas affected by wind flows generated or augmented by the proposed development.

The pedestrian wind comfort at specific locations around a site may be assessed by predicting the worst annual 3-second wind gust expected at that location. The location may be deemed generally acceptable for its intended use if the annual 3-second gust is within the threshold values noted in Section 3.5. For cases where Vipac predicts that a location would not meet its appropriate comfort criterion we may recommend the use of wind control devices and/or local building geometry modifications to achieve the desired comfort rating. For complex flow scenarios or where predicted flow conditions are well in excess of the recommended criteria, Vipac recommends scale model wind tunnel testing to determine the type and scope of the wind control measures required to achieve acceptable wind conditions.

3.1 SITE EXPOSURE

The proposed development is a student accommodation building. It is rectangular in plan and has a height of approximately 52.5 m from the street level. The surrounding developments (within 2.5 km radius) are suburban housing from northeast through east, south, west to northwest, suburban housing and some parklands in the other directions.

Therefore, for the current study, considering the proximity to Adelaide's CBD and the immediate presence of medium to low rise buildings, the site of the proposed development is considered to be Terrain Category 2.5 from northwest through north to northeast wind directions and Terrain Category 3 for all other wind directions [1] (see Figure 3-1).

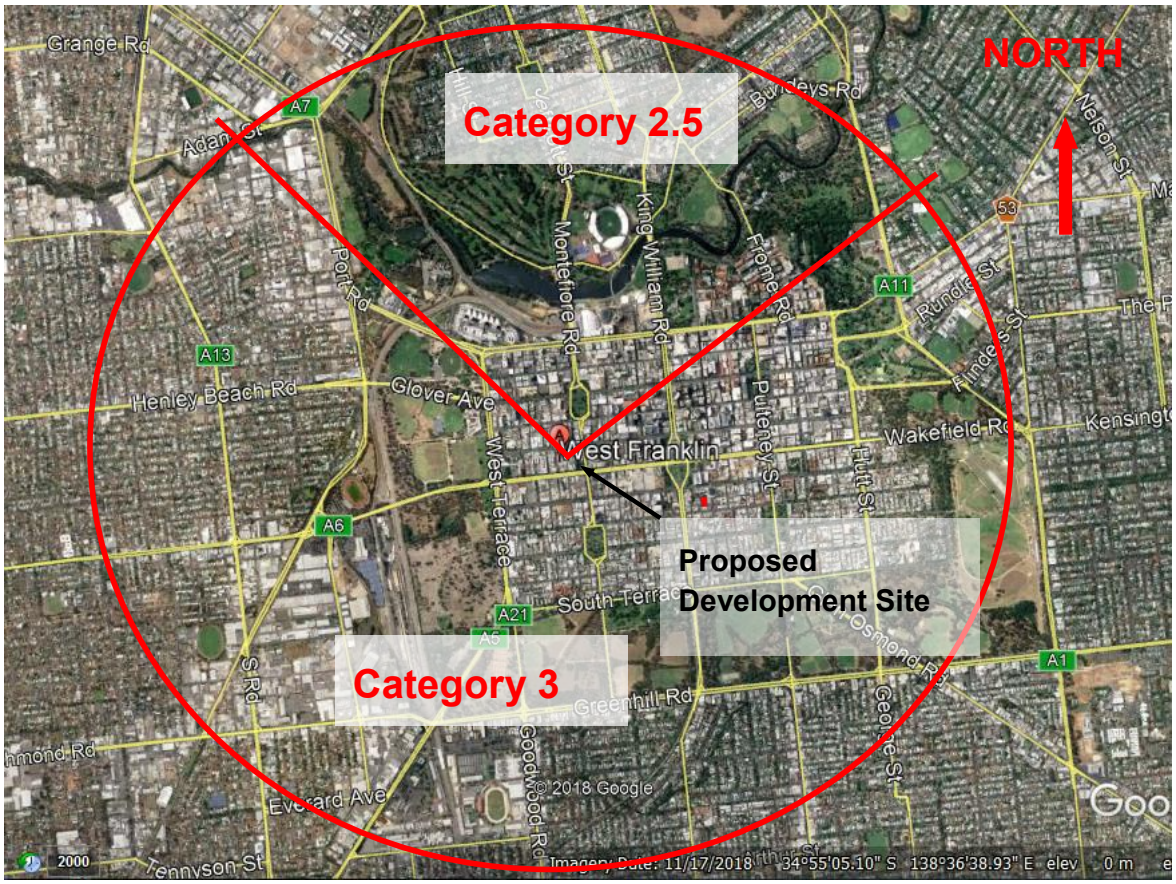


Figure 3-1: Terrain Categories for the site of the proposed West Franklin Stage 3 development at Adelaide, SA

3.2 REGIONAL WIND CLIMATE

The mean and gust wind speeds have been recorded in the Adelaide area for 30 years. These data have been analysed and the directional probability distribution of wind speeds have been determined. The directional distribution of hourly mean wind speed at the gradient height (≈500m), with a probability of occurring once per year (i.e. 1 year return period) is shown in Figure 3-2. The wind data at this free stream height are common to all Adelaide city sites and may be used as a reference to assess ground level wind conditions at the site. Figure 3-2 indicates that the stronger winds can be expected from the south-westerly, north-westerly and westerly directions.

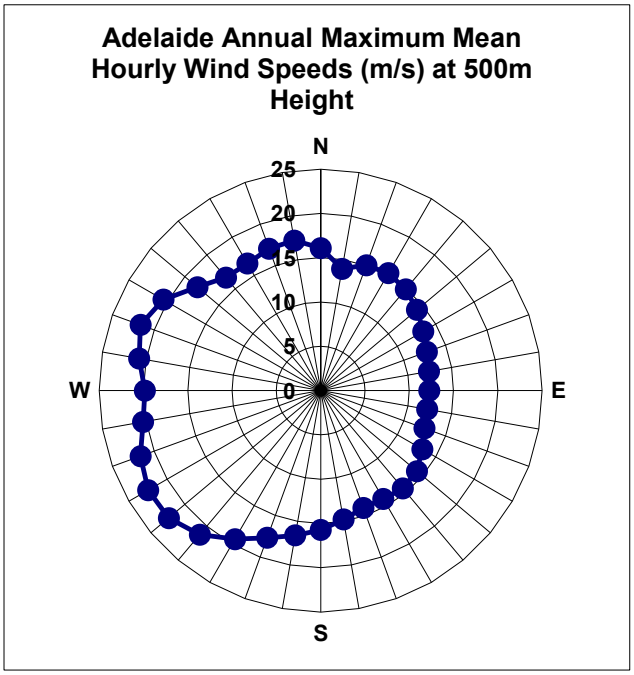


Figure 3-2: Directional Distribution of Annual Return Period Maximum Mean Hourly Wind Velocities (m/s) at gradient height of 500m in Adelaide

3.3 BUILDING GEOMETRY AND ORIENTATION

The proposed development has a rectangular in plan and a height of approximately 52.5 m from the street level. The plan-form dimensions are 26 m x 28 m (approximately) with the long axis running south to north. The main building entrances are on the west and east sides of the proposed development (See Figure 3-3).

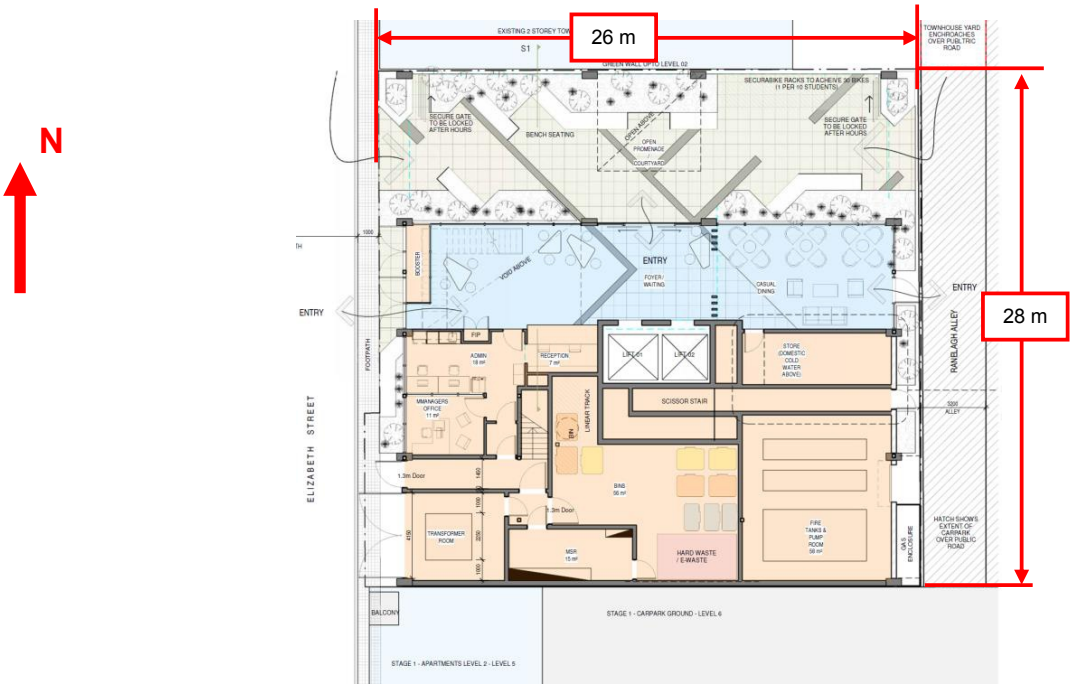


Figure 3-3: Ground floor plan of the proposed development

3.4 FLOW INTERACTIONS WITH ADJACENT DEVELOPMENTS

The buildings immediately adjacent to the proposed development, with their number of floors, are shown in Figure 3-4.

The proposed development is surrounded by 2-3 storey buildings in the north, east and west directions, and 16-18 storey buildings in the south directions.

The west footpath is along Elizabeth Street facing west, and east footpath is along Ranelagh Alley facing a ground car park to east. The courtyard at the north has some seating areas and the main entry is in the middle of the yard facing north. The winds from north are mid-strength at the proposed site from the regional climate.

The communal amenity area on the podium rooftop is above the shielding effect of the adjacent developments and will be relatively exposed to direct winds.

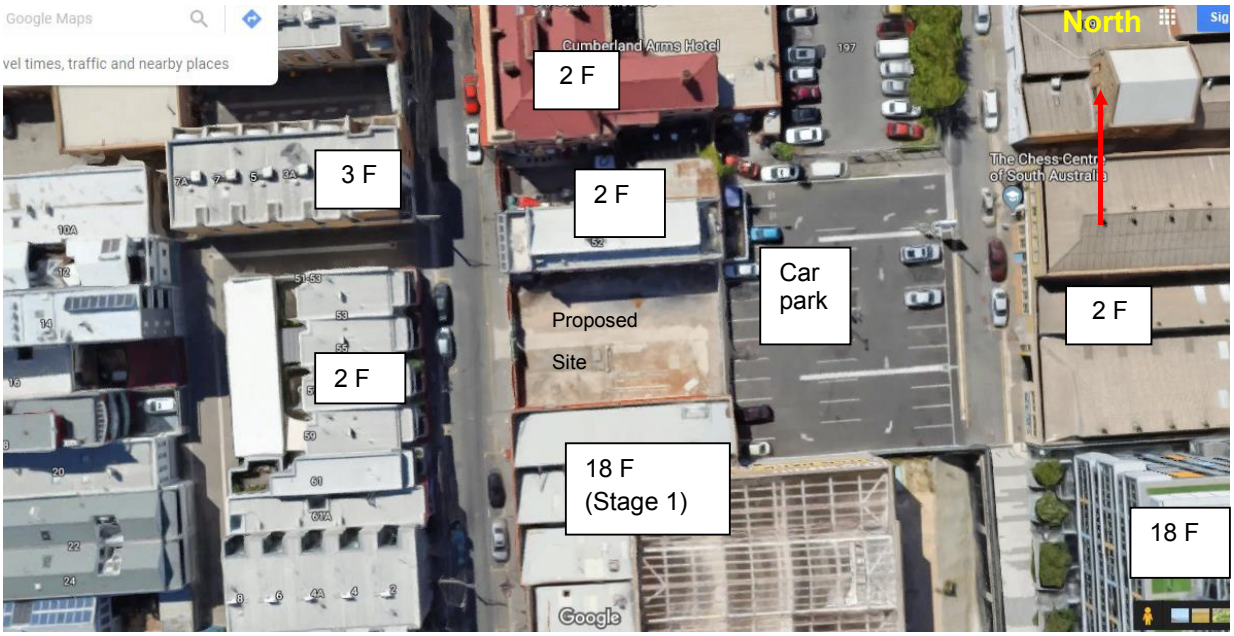


Figure 3-4: Immediately adjacent buildings and their number of floors

3.5 ASSESSMENT CRITERIA

With some consensus of international opinion, pedestrian wind comfort is rated according to the suitability of certain activities at a site in relation to the expected annual peak 3-second gust velocity at that location for each wind direction. Each of the major areas around the site are characterised by the annual maximum gust wind speeds. Most patrons would consider a site generally unacceptable for its intended use if it were probable that during one annual wind event, a peak 3-second gust occurs which exceeds the established comfort threshold velocity (shown in Table 3.1).

If that threshold is exceeded once per year then it is also likely that during moderate winds, noticeably unpleasant wind conditions would result, and the windiness of the location would be voted as unacceptable.

Table 3.1: Recommended Wind Comfort and Safety Gust Criteria

Annual Maximum Gust Speed	Result on Perceived Pedestrian Comfort
>23m/s	**Unsafe** (frail pedestrians knocked over)
<20m/s	Acceptable for **fast walking** (waterfront or particular walking areas)
<16m/s	Acceptable for **Walking** (steady steps for most pedestrians)
<13m/s	Acceptable for **Standing** (vehicle drop off, queuing)
<11m/s	Acceptable for **Sitting** (outdoor cafés, pool areas, gardens)

In a similar manner, a set of hourly mean velocity criteria (see Table 3.2).) with a 0.1% probability of occurrence are also applicable to ground level areas in and adjacent to the proposed development. An area should be within both the relevant mean and gust limits in order to satisfy the particular human comfort and safety criteria in question.

Table 3.2: Recommended Wind Comfort and Safety Mean Criteria

Mean Speed in 0.1% of Time	Result on Perceived Pedestrian Comfort
>15m/s	**Unsafe** (frail pedestrians knocked over)
<13m/s	Acceptable for **fast walking** (waterfront or particular walking areas)
<10m/s	Acceptable for **Walking** (steady steps for most pedestrians)
<7m/s	Acceptable for **Standing** (vehicle drop off, queuing)
<5m/s	Acceptable for **Sitting** (outdoor cafés, pool areas, gardens)

Intended Use of Adjacent Ground Level Areas

The ground level areas adjacent to the proposed development likely to be affected by wind conditions generated or augmented by the proposed development are the footpaths on Elizabeth Street and Ranelagh Alley and the walkway linked them. A building entrance is proposed at the middle of the link walkway/courtyard (see Figure 3-5). There is a proposed podium rooftop amenity area as shown in Figure 3-6.

Recommended Criteria

The following table lists the specific areas adjacent to the Development and the corresponding recommended criteria. Figure 3-5 and Figure 3-6 highlight the recommended comfort criteria for the public and communal areas on the ground floor and the podium roof terraces.

Table 3.3 – Recommended application of criteria

Area	Recommended Criteria
Footpaths and Walkway	to comply with the criterion for Walking
Building Entrances	to comply with the criterion for Standing
Seated areas in Walk through	to comply with the criterion for Sitting
Podium roof Terraces	to comply with the criterion for Walking (see the discussion below)

Apartment Balcony and Rooftop areas Recommended Criterion Discussion

Apartment balconies are located on all facades of the proposed Development. Vipac recommend as a minimum the apartment balcony/rooftop terrace areas meet the criterion for walking since,

- these areas are not public spaces,
- the use of these areas is optional,
- many similar developments in Adelaide and other Australian capital cities experience wind conditions on balconies and elevated deck areas in the vicinity of the criterion for walking.

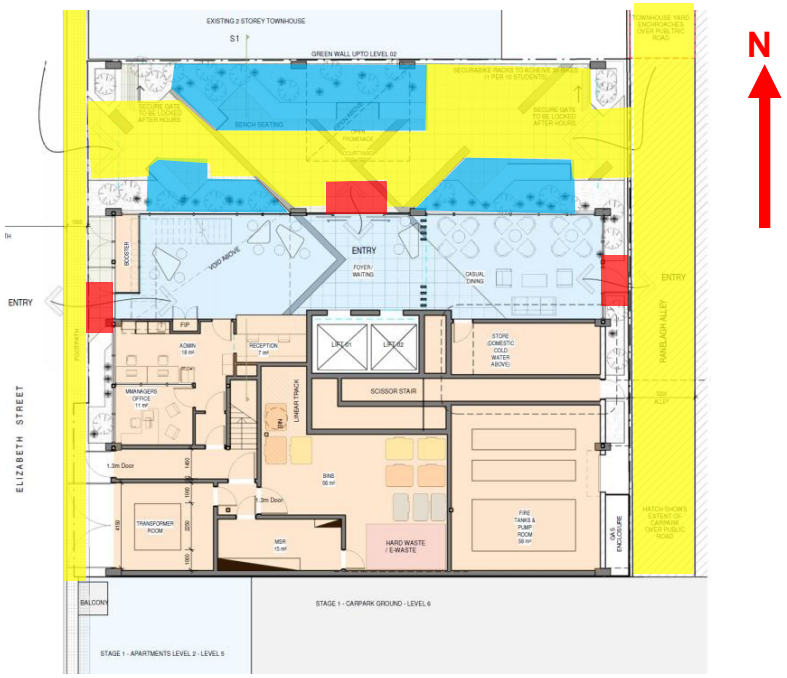


Figure 3-5: Schematic plan view of the proposed development with the recommended wind criteria overlaid on adjacent ground level areas.

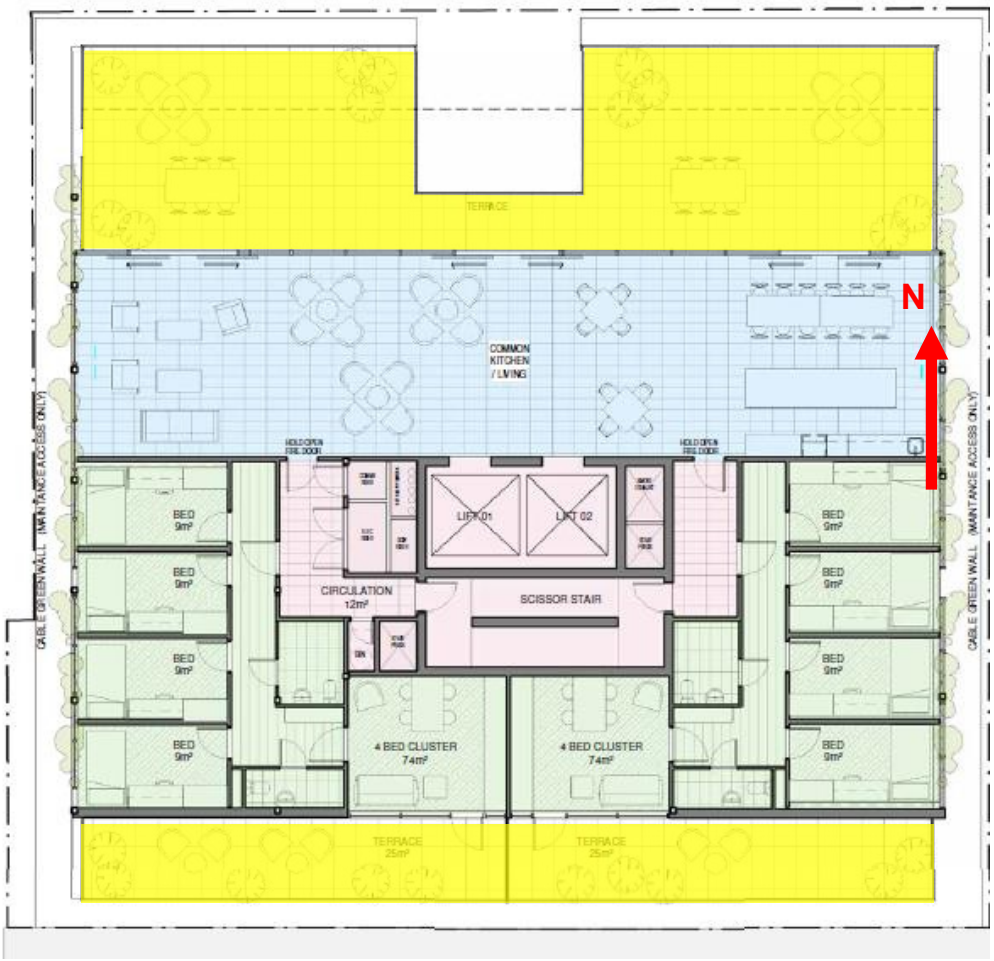


Figure 3-6: Schematic plan view of the proposed Development with the recommended wind criteria overlaid on podium roof (Level 6) amenity area.

4 PEDESTRIAN LEVEL WIND EFFECTS AND RECOMMENDATIONS

Key Points:

- The proposed development would not generate wind conditions in excess of the criterion for safety.
- The wind conditions at the most ground level footpath and walkthrough arcade areas would be within the criterion for walking. The west end of the walkthrough might have high wind conditions due to the downwash from west façade and corner acceleration.
- The wind conditions near the east entrance area would be within the criterion for standing. The west entrance might have some high wind conditions due to the downwash flow; and the main entry at the west east walk through might have high wind conditions due to the downwash through the light well.
- The podium roof deck areas would be expected to have the wind conditions within the recommended walking criterion and would also be expected to achieve the more stringent standing comfort criterion.

Ground Level

The proposed development is surrounded by 2-storey developments in the west and north and a ground car park to east. Downwash flows from north and west façade may be the main issues to the pedestrian level winds. The west façade has no set back and, as such, the downwash flows would affect the west entrance and entry to the walkthrough. The downwash from north façade would be flow through the light well to affect the north entry and the nearby area as the area is open directly to the sky.

The skylight roof, attached at any level of the podium, could be used to break the downwash through the well.

We recommend incorporating a canopy on the west façade to break the downwash flows (Figure 4.1).

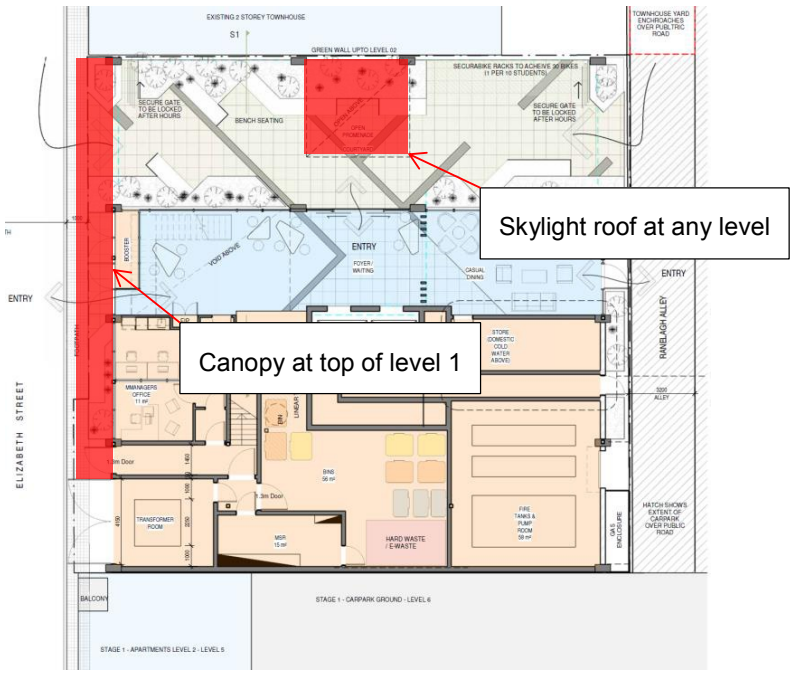


Figure 4.1: Ground floor plan of the proposed development with the recommended wind control measures overlaid

Podium Rooftop Amenity Area

The podium rooftop is relatively exposed to winds from the SW. As can be seen in Figure 4-2, proposed are transparent parapets (about 1.6 m high) and landscaping in the podium perimeter that will act to shelter the communal spaces from adverse winds. Considering this, it is expected that the proposed amenity area on the podium rooftop would have wind levels within the recommended walking comfort criterion, and would likely also achieve the more stringent standing comfort criterion.

Figure 4.2: Proposed Parapet and landscaping at Podium roof

As a general statement, common to all medium-rise developments, educating residents about wind conditions at high-level balconies during high-wind events and tying down loose lightweight furniture are recommended.

5 CONCLUSIONS

An appraisal of the likely wind conditions adjacent to and within the proposed West Franklin Stage 3 development in Adelaide, SA has been made.

Vipac have carefully considered the flow structures likely to be generated by the proposed development that would affect ground level areas. From this analysis, Vipac predicts that adjacent ground level pedestrian areas would have some areas close to/over the recommended criteria and would have acceptable wind levels with the recommended wind control strategy.

The podium terrace amenity area is expected to have wind conditions within the walking to standing comfort criterion. As a general statement, educating residents about wind conditions at high-level balconies and terrace areas during high-wind event and tying down loose lightweight furniture are highly recommended.

The assessments provided in this report have been made based on experience of similar situations in Adelaide and around the world. As with any opinion, it is possible that an assessment of wind effects based on experience and without experimental validation may not account for all complex flow scenarios in the area. Vipac recommends a scaled wind tunnel study in the detail design stage to verify the predictions and determine the optimal wind controls measures if necessary.

This Report has been Prepared

For

Structural Systems Pty Ltd

By

VIPAC ENGINEERS & SCIENTISTS PTY LTD

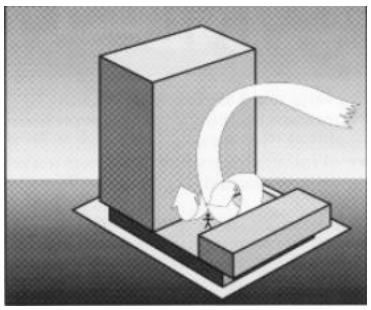
APPENDIX A - ENVIRONMENTAL WIND EFFECTS

Atmospheric Boundary Layer

As wind flows over the earth it encounters various roughness elements and terrain such as water, forests, houses and buildings. To varying degrees, these elements reduce the mean wind speed at low elevations and increase air turbulence. The wind above these obstructions travels with unattenuated velocity, driven by atmospheric pressure gradients. The resultant increase in wind speed with height above ground is known as a wind velocity profile. When this wind profile encounters a tall building, some of the fast moving wind at upper elevations is diverted down to ground level resulting in local adverse wind effects.

The terminology used to describe the wind flow patterns around the proposed Development is based on the aerodynamic mechanism, direction and nature of the wind flow.

Downwash – refers to a flow of air down the exposed face of a tower. A tall tower can deflect a fast moving wind at higher elevations downwards.

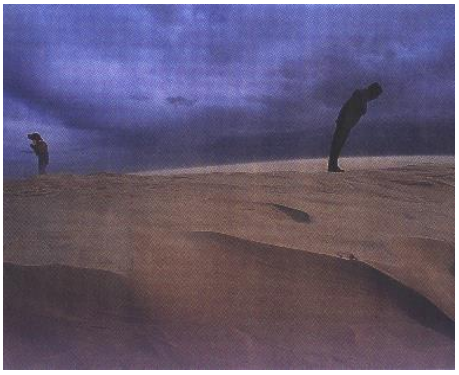


Corner Accelerations – when wind flows around the corner of a building it tends to accelerate in a similar manner to airflow over the top of an aeroplane wing.

Flow separation – when wind flowing along a surface suddenly detaches from that surface and the resultant energy dissipation produces increased turbulence in the flow. Flow separation at a building corner or at a solid screen can result in gusty conditions.

Flow channelling – the well-known “street canyon” effect occurs when a large volume of air is funnelled through a constricted pathway. To maintain flow continuity the wind must speed up as it passes through the constriction. Examples of this might occur between two towers, in a narrowing street or under a bridge.

Direct Exposure – a location with little upstream shielding for a wind direction of interest. The location will be exposed to the unabated mean wind and gust velocity. Piers and open water frontage may have such exposure.



8 July 2019

Will Gormly
Department of Planning, Transport & Infrastructure
GPO Box 1815
ADELAIDE SA 5001

Dear Will

DEVELOPMENT NUMBER: **020/A040/19**
APPLICANT: **Brown Falconer C/- Masterplan SA Pty Ltd**
NATURE OF DEVELOPMENT: **Construction of a seventeen (17) level student accommodation building**
SUBJECT LAND: **54-58 Elizabeth Street, ADELAIDE, SOUTH AUSTRALIA, 5000**

The application has been assessed and the building at a proposed height of RL 97.5mm AHD the application **will** penetrate the Adelaide Airport Obstacle Limitation surfaces (OLS) which is protected airspace for aircraft operations.

The application will require approval in accordance with the Airports Act 1996 and the Airports (Protection of Airspace) Regulations 1996 and therefore will be forwarded to the Department of Infrastructure and Regional Development for their approval.

The developments will penetrate the OLS by approximately 11 metres.

If the development is approved by the Department of Infrastructure, Regional Development and Cities any associated lighting would also need to conform to the airport lighting restrictions and shielded from aircraft flight paths.

Crane operations associated with construction, if approved, will also be subject to a separate application.

Should you require any additional information or wish to discuss this matter further please contact the undersigned on 8308 9245.

Yours sincerely,

Brett Eaton
Airside Operations Manager

Adelaide Airport

Adelaide Airport Limited
1 James Schofield Drive
Adelaide Airport
South Australia 5950

T +61 8 8308 9211
F +61 8 8308 9311
adelaideairport.com.au
ABN 78 075 176 653

OFFICE FOR DESIGN + ARCHITECTURE SA

File No:
2014/11234/01

Ref No:
14292750

26 July 2019

Will Gormly
Senior Planning Officer – City & Inner Metro Development Assessment
Planning and Land Use Services
Department of Planning, Transport and Infrastructure
Level 5, 50 Flinders Street
Adelaide SA 5000

will.gormly@sa.gov.au

For the attention of the State Commission Assessment Panel

54-58 Elizabeth Street, Adelaide
West Franklin Stage 3

Further to the referral 020/A040/19 received 19 June 2019 and the revised documents received 23 July 2019 pertaining to the development application at the above address and in my capacity as a statutory referral in the State Commission Assessment Panel, I am pleased to provide the following comments informed by the Design Review process for your consideration.

The proposal was presented to the Design Review panel on two occasions, over which period the design response substantially progressed. A pre-lodgement agreement was not reached in advance of lodgement.

I support the project team's aspiration to deliver a high quality student accommodation facility that positively contributes to activation of this part of the city. While I generally support the proposed development, I am of the view that the project will benefit from further refinement of the lower section of the podium to achieve a coherent expression for the entire podium and provide a positive contribution to the public realm.

The proposal is the final stage of the three-staged West Franklin redevelopment, located on the northern side of Franklin Street between Morphett and Elizabeth Streets. The Stage 1 development is a 19 storey mixed use development with a residential focus, located on the corner of Franklin and Elizabeth Streets. The Stage 1 building has been completed and apartments are being occupied. The Stage 2 site is located to the east of the Stage 1 apartment building and has a long Franklin Street frontage. The Stage 2 proposal is currently on hold.

The subject site is currently vacant and is located directly north of the Stage 1 site, with dual frontage to two public roads, Elizabeth Street to the east and Ranelagh Alley to the rear. The site footprint is almost square in shape with approximately 600 square metres in site area. On the eastern side of Elizabeth Street, large scale recent developments are located to the south and east of the

Level 1
26-28 Leigh Street
Adelaide SA 5000

GPO Box 1533
Adelaide SA 5001

DX 171

T- +61(0)8 8402 1884
E- odasa@sa.gov.au

Government of South Australia

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DESIGN +
ARCHITECTURE SA

File No:
2014/11234/01

Ref No:
14292750

site, including the Stage 1 West Franklin building and 18 storey Altitude Apartments. To the north of the site, the existing built form context is smaller in scale, including at grade car parks and single and double storey commercial and residential buildings. The Cumberland Arms Hotel, a State heritage place, is located on the south east corner of Waymouth and Elizabeth Streets, separated from the subject site by a two storey detached dwelling. Along the western side of Elizabeth Street, the existing streetscape is low scale, comprising one, two and three storey residential properties, including apartment buildings and townhouses.

The proposal is for a 17 level student accommodation development with an above ground height of 52.5 metres, excluding lift overrun and rooftop plant. A six storey podium form extends to the north and south boundaries. A 6.5 metre facade setback from the northern boundary is proposed for the lower two levels, creating a double height open promenade through the site connecting the two public roads at the front and rear of the site. Approximately one metre setbacks are also proposed along the east and west boundaries to accommodate projecting angled windows of the bedrooms on the residential floors above within the site boundaries. On levels two to five within the podium form, a lightwell is proposed centrally on the northern boundary, which opens to the promenade below. The built form above the podium is set back three metres from the north and south boundaries, and separated from the podium form by an outdoor communal space on level six, expressed as a built form break.

Acknowledging the proposal exceeds the 43 metre maximum envisaged height for the site as prescribed by the Development Plan, I support the proposed height in principle due to the site's direct adjacency to the larger Stage 1 development. In my opinion, an exemplary design outcome must be demonstrated in order to justify my support for any over height proposals. To that end, I strongly support the three metre built form setbacks to the north and south to provide adequate separation from the adjoining apartment balconies and full height glazed walls to the living areas. In my opinion, the setbacks positively contribute to the management of the interface conditions and protection of the amenity of the adjoining residents. I also support the height of the six storey podium element, as in my opinion, it provides a convincing built form relationship with the height of the State heritage listed Cumberland Arms Hotel building and the scale and rhythm of the adjoining Stage 1 podium elements. In addition, I am of the view that the built form proportion of the podium and tower elements is well balanced. However in my opinion, an opportunity exists to further refine the built form composition of the lower two levels of the podium, with the view to express the entire podium form as one element and convincingly anchor it to the ground.

On the ground floor, the proposal includes a double storey open promenade along the northern boundary to create a pedestrian connection between Elizabeth Street and Ranelagh Alley. I support the ground floor configuration to create an east-west link and increase the opportunity for an activated frontage, including the provision of integrated ground and landscaping treatments. I also support the programming within the ground and first floors and the interconnection between the two communal floors. I acknowledge and support the engagement of a landscape architect to improve the lower level presentation to Elizabeth Street, maximise the proposal's engagement with the street and ensure the successful delivery of the landscaping elements.

Level 1
26-28 Leigh Street
Adelaide SA 5000

GPO Box 1533
Adelaide SA 5001

DX 171

T- +61(0)8 8402 1884
E- odasa@sa.gov.au

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of South Australia

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File No:
2014/11234/01

Ref No:
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On levels two to five within the six storey podium, the proposal includes studio, twin and cluster rooms are proposed on the perimeter of the floors with the centrally located communal facilities, such as laundry and cinema, on the southern boundary. The bedroom walls along the east and west boundaries form angular facades, framed within the horizontally expressed concrete projections. A dark coloured face brick material is proposed for these angled walls with the intent to respond to the adjoining brick podium of the Stage 1 building, and to provide a fine grain character to the building at the lower level. The north facing podium walls on the boundaries are expressed as standard grey precast concrete panels. At the top of the podium, the indoor and outdoor communal spaces are proposed to the northern half of level six to provide a built form break between the podium and the tower above. From level seven and above, angled studio room walls and full height glazing units are expressed as double height elements that span between expressed slabs every two floors. On the east and west elevations, the northern third of the tower walls comprise solid precast concrete panels.

I support the architectural expression of the proposal in general, as in my view, the built form composition and architectural expression achieves a convincing response to the existing streetscape. In my opinion, an opportunity exists to increase the depth of slab projections to increase the facade depths, emphasise building articulation and improve opportunities for solar shading of glazing panels. I do not object to the smooth concrete finish proposed for the north facing podium walls and the northern third of the east and west tower walls. I also acknowledge the introduction of expressed joints on the north facing walls that relate to the composition of the brick facades. However I note the challenges of controlling the concrete finishes to deliver the intended consistent visual outcome. I acknowledge the introduction of the face brick walls to the east elevation on the ground and first floors, with the view to better integrate the lower podium element with the brick faced section above. I also support the indicative signage strategy.

The residential floors offer a mix of student accommodation options, including four and six bedroom clusters, studios, twin rooms and DDA compliant rooms. I support the variety of residential options proposed and the provision of outlook, natural light and ventilation to all bedrooms. While I consider that the proposed size of student rooms within the cluster units are constrained, I acknowledge the planning is based on the established international model for student accommodation. I also note that the size and proportion of the shared spaces within the cluster units appears convincing. I strongly support the configuration of the studio and twin rooms, where in my opinion additional floor space created by the angled walls provides improved amenity. In addition to the consolidated communal areas on the ground and first floors, communal facilities such as a cinema and laundry are proposed on the residential floors between levels two to five. I support the proposed size of the breakout space and inclusion on every residential floor above the podium, with access to natural light and outlook. I strongly support the distribution of sufficiently sized communal spaces and shared student infrastructure throughout the building and creation of a sense of community for the resident students.

The outdoor communal space with associated internal facilities, such as common kitchen and living spaces, is proposed on level six. I support the central location of the shared outdoor facility, as it promotes usability, strengthens the

Level 1
26-28 Leigh Street
Adelaide SA 5000

GPO Box 1533
Adelaide SA 5001

DX 171

T- +61(0)8 8402 1884
E- odasa@sa.gov.au

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visual connection with the street level and increases the potential for the development to make a positive contribution to the public realm. In my opinion, an opportunity exists to increase the ceiling height of level six to further improve the amenity of the communal open space and reinforce the built form separation between the podium and tower forms.

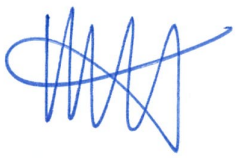
I support the inclusion of the double height open promenade to extend the public realm and create a pedestrian connection between the two site frontages. I acknowledge that the security gates are proposed to be locked after hours, with the view to optimising the balance between the permeability of the site, user safety and residents' security and privacy.

In general, I support the intent of the proposed sustainability measures included to satisfy the Development Plan's over height criteria. I support the provision of solar arrays on the rooftop in lieu of a landscaped terrace, given usable communal outdoor space has been proposed elsewhere within the development.

To ensure the most successful design outcome is achieved the State Commission Assessment Panel may like to consider particular aspects of the project, which would benefit from protection as part of the planning permission, such as:

- A high quality of external materials for building, outdoor spaces and street interface, supported by the provision of a materials samples board.

Yours sincerely



Kirsteen Mackay
South Australian Government Architect

cc Aya Shirai-Doull ODASA aya.shirai-doull@sa.gov.au

Level 1
26-28 Leigh Street
Adelaide SA 5000

GPO Box 1533
Adelaide SA 5001

DX 171

T- +61(0)8 8402 1884
E- odasa@sa.gov.au

Government of South Australia

Government of South Australia
Department for Environment and Water

Heritage South Australia

Environment, Heritage and Sustainability Division

81-91
Waymouth Street
Adelaide SA 5000

GPO Box 1047
Adelaide SA 5001
Australia
DX138

Ph: +61 8 8124 4922
Fax: +61 8 8124 4980

www.environment.sa.gov.au

Ref: SH/13383D
Date: 26 July 2019

Secretary - Ms Alison Gill
State Commission Assessment Panel
GPO Box 1815
ADELAIDE SA 5001

Attention: Will Gormly

Dear Mr Gormly

DESCRIPTION: THE CUMBERLAND ARMS HOTEL – CONSTRUCTION OF A SEVENTEEN (17) LEVEL STUDENT ACCOMMODATION BUILDING – 54-58 ELIZABETH STREET, ADELAIDE

Application number:	020/A040/19
Referral received:	19/06/2019
State heritage place:	Cumberland Arms Hotel, 205 Waymouth Street ADELAIDE
Documentation:	As lodged

The above application has been referred to the Minister for Environment and Water in accordance with Section 37 of the *Development Act 1993* as development that directly affects a State heritage place or, in the opinion of the relevant authority, materially affects the context within which a State heritage place is situated.

The subject site is located 17.5 metres from the rear (southern) wall of the two-storey Cumberland Arms Hotel, separated by the hotel's beer garden and a two-storey dwelling. The north-western aspect of the proposed development will be prominent in views down Elizabeth Street with the hotel in the foreground. It will also be clearly visible from Waymouth Street while the sites to the east of the hotel remain in their current state of development, although from a position in front of the hotel it will be mostly obscured by the hotel's silhouette.

The proposed development is considered to be acceptable in relation to the above State heritage place for the following reason/s.

- The articulation of the building's form into a six-level podium with a set-back upper section responds to and reinforces the podium datum of the adjacent Stage 1 development on Elizabeth Street. The 2 + 4 articulation of the podium with its slender double-storey portal frame base acknowledges the lower scale of the Cumberland Arms Hotel.
- The differentiation in architectural expression and materiality between the podium and upper levels visually reinforces the articulation of the building's form. The fine grain and human scale of the podium levels respond appropriately to the established streetscape character of the hotel and to that of the Stage 1 development.
- Background views of the building's northern face from Waymouth Street in front of the hotel will be largely obscured by the hotel itself. From further to the east, the presence of the new building as a backdrop to the hotel raises no concerns of potential impact on the presence or prominence of the Cumberland Arms Hotel within its streetscape context, given the set-back distance of 40 metres or so and the fact that these views will generally be oblique. As evidenced by the raised 'North Elevation' view on sheet 4 of the drawing package, the hotel's skyline will be broken only from a position in the vicinity of its eastern edge.


North Elevation

General notes

1. Any changes to the proposal for which a development approval is sought or granted may give rise to heritage impacts requiring further consultation with the Department for Environment and Water, or an additional referral to the Minister for Environment and Water. Such changes would include for example (a) an application to vary the planning consent, or (b) Building Rules documentation that incorporates differences from the proposal as documented in the planning application.
2. In accordance with Regulation 43 of the *Development Regulations 2008*, please send the Department for Environment and Water a copy of the Decision Notification.
3. The relevant planning authority is requested to inform the applicant of the following requirements of the *Heritage Places Act 1993.*
   (a) If an archaeological artefact believed to be of heritage significance is encountered during excavation works, disturbance in the vicinity shall cease and the SA Heritage Council shall be notified.
   (b) Where it is known in advance (or there is reasonable cause to suspect) that significant archaeological artefacts may be encountered, a permit is required prior to commencing excavation works.

   For further information, contact the Department for Environment and Water.
4. The relevant planning authority is requested to inform the applicant of the following requirements of the *Aboriginal Heritage Act 1988.*
   (a) If Aboriginal sites, objects or remains are discovered during excavation works, the Aboriginal Heritage Branch of the Aboriginal Affairs and Reconciliation Division of the Department of the Premier and Cabinet (as delegate of the Minister) should be notified under Section 20 of the *Aboriginal Heritage Act 1988*.

For any enquiries in relation to this application, I can be contacted on telephone 8124 4935 or e-mail peter.wells@sa.gov.au.

Yours sincerely

Peter Wells
Principal Conservation Architect
DEPARTMENT FOR ENVIRONMENT AND WATER
as delegate of the
MINISTER FOR ENVIRONMENT AND WATER

CITY OF ADELAIDE

25 Pirie Street, Adelaide
GPO Box 2252 Adelaide
South Australia 5001

T (08) 8203 7203
F (08) 8203 7575
W cityofadelaide.com.au

ABN 20 903 762 572

Enquiries: Edouard Pool 8203 7771
The City of Adelaide Ref: S10/31/2019
SCAP Ref: 020/A040/19

29 July 2019

045

State Commission Assessment Panel
GPO Box 1815
Adelaide SA 5001

Attention: State Commission Assessment Panel

Dear Sir/Madam

Application: S10/31/2019
Applicant: BROWN FALCONER GROUP P/L
Address: VACANT LAND, 54-60 ELIZABETH STREET, ADELAIDE SA 5000
Description: CONSTRUCTION OF A SEVENTEEN (17) LEVEL STUDENT ACCOMMODATION BUILDING

Council has the following comment(s) to make on the above application:

TECHNICAL COMMENTS

ROADS / FOOTPATHS / ENGINEERING

There are no roads/footpath/bridges related objections to this development, subject to the following matter/s being addressed

- Any damage caused to the City of Adelaide's road, footpath and kerbing infrastructure during development will be the responsibility of the developer to rectify to a standard that equals or improves the pre development condition.
- Extent of make-good works to be agreed on site between the City of Adelaide and contractor, then formally submit via email for The City of Adelaide to accept, prior to works commencing.
- The City of Adelaide will inspect the works after completion for standards and specification compliance. Any non-compliance will need to be rectified at the developers costs to Councils' satisfaction.
- Existing boundary (back of path) levels must not be modified. Finished floor levels and entry point levels should be based around retaining the existing back of path levels
- Footpath reinstatements associated with works will need to match surrounding materials and pavement composition

If crossovers are proposed or impacted:

- All new or alterations to existing crossovers firstly require the City of Adelaide approval outside of the DA process. These need to be to the City of Adelaide's standards and specifications via the City Works Guidelines.

If footpath modifications/upgrades are proposed :

- Modifications to the City of Adelaide footpath and kerb infrastructure has been proposed in this DA on Waymouth Street and Elizabeth Street and Ranelagh Alley. No works in the public realm can be undertaken, without landlord approval from the City of Adelaide. This will require the developer to submit a detailed design, in accordance with the City of Adelaide electronic drafting guidelines, by a suitably qualified civil engineering consultancy to ensure the propose d works satisfy the City of Adelaide design and engineering standards (i.e. cross-fall, longitudinal grade, surface material, pavement details and specification, storm water). Landlord approval will be provided via formal written approval from City of Adelaide. The developer/designer must engage the City of Adelaide upfront and have a start up meeting prior to commencing detailed design.

TORRENS & STORM WATER

There are no storm water related objections to this development, subject to the following matter/s being addressed:

- Stormwater runoff from the proposed development must be contained within the property boundaries, collected and discharged to:
- Either existing Council underground stormwater infrastructure located within Elizabeth Street and Ranelagh Alley.
- All stormwater pipes shall be adequately sized to ensure a suitable flow to the stormwater pipe network.

LIGHTING / ELECTRICAL / CCTV

There are no lighting related objections to this development, subject to the following matter/s being addressed:

- The proposed development works may impact on the public lighting within the proximity of the development site. The existing street lighting in Elizabeth St is owned and maintained by SAPN, it consists of stobie poles and overhead cabling. It is installed on the opposite side of the building site. The existing street lighting in Ranelagh is owned and maintained by SAPN, it consists of stobie poles and overhead cabling. It is installed on the opposite side of the building site.
- All works to be undertaken to be fit for purpose in the public realm.
- All modifications requiring temporary removal/relocation/provision of temporary lighting/reinstatement of existing Council and/or SA Power Network's public lighting (including associated infrastructure such as cabling etc) shall meet Councils' requirements. The works shall be carried out to meet Councils' requirements and all costs borne directly by the developer.
- If temporary hoarding or site works require modification of existing Council and/or SA Power Network's public lighting (including associated infrastructure such as cabling etc.) shall meet Councils' requirements. The works shall be carried out to meet Councils' requirements and all costs borne directly by the developer.
- Obtrusive Lighting – Lighting design and installation to be fully compliant with Australian Standard - AS 4282 – 1997 Control of the obtrusive effects of outdoor lighting. Sign off by consultant required to confirm compliance. In addition, provide relevant lighting calculation grid detailing property boundary lines for Councils review and records.
- If new canopies are to be constructed as part of these works, then lighting to meet the City of Adelaide's under veranda/awning lighting requirements shall be installed.
- Existing underground services shall be identified and marked in the locality prior to undertaking any excavation works.
- All damage to the City of Adelaide's infrastructure, including damage to public lighting and u/g ducting etc caused by projects works or loading of site crane onto pathways will be repaired to meet

Councils requirements and the cost of the developer.

- If building mounted lit signage is to be installed onto the building, further review and approvals will be required by City of Adelaide.
- CCTV camera owned and maintained by the City of Adelaide, for any modifications to this asset contact City of Adelaide for further advice on process. SAPOL monitor this camera and will also be required to be consulted with for their approval.
- All assets to be handed over to the City of Adelaide to own and maintain shall be constructed to Councils' requirements and applicable legislative standards and requirements. All equipment gifted shall be Councils standards and applicable requirements.

TRAFFIC / TRANSPORT

There are no traffic/transport related objections to this development, subject to the following matter/s being addressed:

- The current clear width of footpath adjacent the site needs to be maintained along Elizabeth Street. The plans show only a 1 metre footpath remaining, but measurements undertaken via GIS indicate that a much wider (approx. 2.3m-2.5m) footpath currently exists as below. The walls of the neighbouring buildings also allow aligned with a wider footpath allowance. The applicant is advised to ensure that proposed building alignment does not encroach beyond the boundary.
- Council does not support an abrupt narrowing of the footpath. Narrowing would result in a reduction in level of service for pedestrians along Elizabeth Street and would require wheelchair users to use the footpath on the western side only (as clear widths including necessary roadside infrastructure -poles etc - would reduce the effective width below 0.9m required for disability access). In doing so, they are also removing the potential for a continuous accessible path of travel to the development. The development should seek to maintain the current width of pathways enjoyed by the public. Elizabeth Street is also identified by Council's Smart Move Strategy (under review) as a north-south active cross-city link; a core pedestrian and bicycle connection on this side of the City. A reduction to the footpath here would be in direct conflict with the Strategy.

- The report indicates that 30 bicycle parking spaces are proposed for student use within the "Open Promenade". There is no indication of whether this number of spaces can be accommodated and what impact this has on the presentation of the courtyard (and the proposed area this uses looks quite small). Additionally, as the area is planned to be left open for thoroughfare over the course of the day (once the link to Ranelagh Street is created), these are not secure parking spaces as required for residential use. The applicant should demonstrate how 30 secure residential bicycle parking can be provided.
- The pathway for bins appears quite circuitous and involves a door opening into the otherwise very narrow width of footpath. The bins themselves are quite large and could not be placed on this narrow pathway without completely impeding pedestrian movement along the footpath. Particularly in light of 7 collections being required per week, this represents an unacceptable safety hazard and high level of impact to pedestrians on Elizabeth Street.
- Any loading zone created on Elizabeth Street would be available for public use. No parking permits will be issued or dedicated parking spaces created.
- The proposed pedestrian link connects to an existing at grade car park encroaching upon a public road. Further negotiation with the City of Adelaide separate to this application, is required to determine how pedestrian access and safe travel can be facilitated to Ranelagh Street, including prevention of vehicle intrusion.

If there is a Land Management Agreement on this site as part of the original Balfours site redevelopment project, negotiations with Council regarding integration with existing and proposed stages are suggested to ensure integration of the overall precinct for safe and convenient access.

WASTE

We note that the development's draft Waste Management Plan and proposed Waste Management System prescribes 2 to 3 waste collections per week, depending on the waste stream (3 collections for general waste, 2 for recycling and 2 for organics collection). The intended service level can only be provided by a private contractor directly engaged by the building's services Management. This seems to be the plan, as the proposed waste management system includes reference to a "contractor" under the "bin collection" section. The City only provides a weekly collection service. Therefore, multiple weekly collections require a private contractor engagement and this should ultimately be listed as an approval condition.

All three doors to access/egress to//from bin storage room to present the bins for collection need to be 1.3 m wide.

Council is otherwise happy with the plan and reinforces the consultant's recommendations.

STREET TREE / LANDSCAPING

There are no street tree/landscape related objections to this development, subject to the following matter/s being addressed:

- All works around street trees is done in accordance with AS 4970-2009 Protection of Trees on Development Sites
- Any requirement to prune The City of Adelaide trees is to be done ONLY by The City of Adelaide staff once permission is granted.
- Tree removal will only be allowed when all alternative development options have been exhausted.
- Tree removals will activate the application of the City of Adelaide Amenity Tree Valuation Formula. The resultant valuation will be added to all other tree removal/replacement costs to be borne by the developer.

URBAN ELEMENTS

There are no urban elements related objections to this development.

PLANNING RELATED COMMENTS

Council Administration has not undertaken a thorough planning assessment of the proposal but makes the following comments in relation to the proposed development:

- It is suggested that the courtyard be considered as space with no access through to Ranelagh Street at this point in time, as the matter of creating public access through Ranelagh Alley has not been finalised and is the subject of separate discussions between Council and the developer.
- It is recommended that the courtyard be closed to public access at night time to protect residents of the development. Opening of the plaza area during daylight hours to Elizabeth Street is supported, as it would enliven the public realm.
- The Commission is advised that the creation of a pedestrian connection through to Ranelagh Street will require that future development of the land at 9-19 Ranelagh Street feature active land uses at ground level with surveillance from uses located above, along its frontages to Ranelagh Alley in order to create a space and path that is safe for users.

SUGGESTED CONDITIONS

1. **The finished floor level of the ground floor level at the entry points to the development shall match the existing footpath unless otherwise agreed to by the Council in writing.**

   Reason: The Corporation of the City of Adelaide WILL NOT adjust footpath levels to suit finished building levels. The existing footpath levels are to be retained and entrance levels of the development must meet the existing back of footpath.

2. **Lighting shall be installed to the awning at street level on Elizabeth Street in accordance with Council's guideline entitled "Under Verandah/Awning Lighting Guidelines" at all times to the reasonable satisfaction of the Council and prior to the occupation or use of the Development. Such lighting shall be operational during the hours of darkness at all times to the reasonable satisfaction of Council.**

   Reason: To ensure the development does not create public areas with insufficient lighting.

3. **The connection of any storm water discharge from the Land to any part of the Council's underground drainage system shall be undertaken in accordance with the Council Policy entitled 'Adelaide City Council Storm Water Requirements' which is attached to this consent to the reasonable satisfaction of the Council.**

   Reason: To ensure that adequate provision is made for the collection and dispersal of stormwater.

4. **All collected drainage water from any planter boxes, seepage collection systems, water features, swimming pools and/or spas located on the Land shall be discharged to the sewer to the reasonable satisfaction of the Council.**

   Reason: To ensure that adequate provision is made for the dispersal of collected water.

5. **A detailed landscaping plan specifying all areas of the Land to be landscaped, including a list of the species to be planted, the height of the species at the time of planting and the estimated mature height of all plants shall be submitted to and approved by the State Commission Assessment Panel prior to the granting of development approval to the Development. The establishment of all landscaping shall be undertaken within [insert number of months] months of the substantial completion of the Development and in any event prior to the occupation or use of the Development. Such landscaping shall be maintained in good health and condition to the reasonable satisfaction of the Council at all times. Any dead or diseased plants or trees shall be replaced forthwith to the reasonable satisfaction of the Council.**

   Reason: To provide amenity for the occupants of buildings and those of adjacent buildings through the provision of landscaping as part of the Development.

SUGGESTED ADVICES

1. Development Approval will not be granted until Building Rules Consent and an Encroachment Consent have been obtained. A separate application must be submitted for such consents. No building work or change of classification is permitted until the Development Approval has been obtained.

2. A Building Site Management Plan is required prior to construction work beginning on site. The Building Site Management Plan should include details of such items as:
   - Work in the Public Realm
   - Street Occupation
   - Hoarding
   - Site Amenities
   - Traffic Requirements
   - Servicing Site
   - Adjoining Buildings
   - Reinstatement of Infrastructure.

   Site Theft

   Unsecured building sites have been identified as a soft target for vandalism and theft of general building materials. The Adelaide Local Service Area Police and the Adelaide City Council are working together to help improve security at building sites. Items most commonly stolen or damaged are tools, water heaters and white goods. To minimise the risk of theft and damage, consider co-ordinating the delivery and installation of the goods on the same day. Work with your builder to secure the site with a fence and lockable gate. Securing the site is essential to prevent unauthorised vehicle access and establishes clear ownership.

3. Any activity in the public realm, whether it be on the road or footpath, requires a City Works Permit. 48 hours' notice is required before commencement of any activity.

   The City Works Guidelines detailing the requirements for various activities, a complete list of fees and charges and an application form can all be found on Council's website at www.cityofadelaide.com.au

   When applying for a City Works Permit you will be required to supply the following information with the completed application form:

   - A Traffic Management Plan (a map which details the location of the works, street, property line, hoarding/mesh, lighting, pedestrian signs, spotters, distances etc.);
   - Description of equipment to be used;
   - A copy of your Public Liability Insurance Certificate (minimum cover of $20 Million required);
   - Copies of consultation with any affected stakeholders including businesses or residents.

   Please note: Upfront payment is required for all city works applications.

   Applications can be received by Council via the following:

   Email: cityworks@cityofadelaide.com.au

   Fax: 8203 7674

   In Person: 25 Pirie Street, Adelaide

4. Section 779 of the Local Government Act provides that where damage to Council footpath / kerbing / road pavement / verge occurs as a result of the development, the owner / applicant shall be responsible for the cost of Council repairing the damage.

5. No on-street residential parking permits will be issued for use by occupants of, or visitors to, the development herein approved.

6. In addition to notification and other requirements under the Development Act and Fences Act, it is recommended that the applicant/owner consult with adjoining owners and occupiers at the earliest possible opportunity after Development Approval, advising them of proposed development work so as to identify and discuss any issues needing resolution such as boundary fencing, retaining walls, trees/roots, drainage changes, temporary access, waste discharges, positioning of temporary toilets etc.

Yours faithfully

Helen Dand
PRINCIPAL PLANNER - PLANNING ASSESSMENT

Development Plan Provisions

Extracted from
Adelaide (City) Development Plan
Consolidated 7 June 2018

54-58 Elizabeth Street, Adelaide

COUNCIL WIDE

Student Accommodation

OBJECTIVE

Objective 9: High-quality student accommodation that creates an affordable, safe, healthy and comfortable living environment.

PRINCIPLES OF DEVELOPMENT CONTROL

1 Residential development specifically designed for the short-term occupation of students may provide reduced internal floor areas, car parking, storage areas and/or areas of private open space provided that:

(a) residents have access to common or shared facilities that enable a more efficient use of space (such as cooking, laundry, common rooms or communal open space);

(b) every living room has a window that provides an external outlook and maximises access to natural light;

(c) the development is designed to enable easy adaptation or reconfiguration to accommodate an alternative use;

(d) the development is designed to maximise opportunities to access natural ventilation and natural light;`

(e) private open space is provided in the form of balconies and/or substituted with communal open space (including rooftop gardens, common rooms or the like) that is accessible to all occupants of the building; and

(f) the internal layout and facilities provide sufficient space and amenity for the requirements of student life and promote social interaction.

2 Internal common areas should be capable of being used in a variety of ways to meet the study, social and cultural needs of students.

3 Development should provide secure long-term storage space in both communal and private areas.

4 Student accommodation with shared living areas should ensure bedrooms are of a suitable size to accommodate a single bed, book shelves, a desk and workspace, and a cupboard/wardrobe.

Medium to High Scale Residential/Serviced Apartment

OBJECTIVE

Objective 22: Medium to high scale residential (including student accommodation) or serviced apartment development that:

(a) has a high standard of amenity and environmental performance;

(b) comprises functional internal layouts;

(c) is adaptable to meet a variety of accommodation and living needs; and

(d) includes well-designed and functional recreation and storage areas.

PRINCIPLES OF DEVELOPMENT CONTROL

Building Entrances

5 Entrances to medium to high scale residential or serviced apartment development should:

(a) be oriented towards the street;

(b) be visible and easily identifiable from the street; and

(c) provide shelter, a sense of personal address and transitional space around the entry.

Daylight, Sunlight and Ventilation

6 Medium to high scale residential or serviced apartment development should be designed to maximise opportunities to facilitate natural ventilation and capitalise on natural daylight and minimise the need for artificial lighting during daylight hours.

7 All new medium to high scale residential or serviced apartment development should have direct ventilation and natural light.

8 Medium to high scale residential or serviced apartment development should be designed to ensure living areas, private open space or communal open space, where such communal open space provides the primary area of private open space, are the main recipients of sunlight.

Environmental

OBJECTIVES

Objective 24: A safe and secure, crime resistant environment that:

(a) ensures that land uses are integrated and designed to facilitate natural surveillance;

(b) promotes building and site security; and

(c) promotes visibility through the incorporation of clear lines of sight and appropriate lighting.

Noise Emissions

OBJECTIVES

Objective 26: Development that does not unreasonably interfere with the desired character of the locality by generating unduly annoying or disturbing noise.

Objective 27: Noise sensitive development designed to protect its occupants from existing noise sources and from noise sources contemplated within the relevant Zone or Policy Area and that does not unreasonably interfere with the operation of non-residential uses contemplated within the relevant Zone or Policy Area.

Energy Efficiency

OBJECTIVE

Objective 30: Development which is compatible with the long term sustainability of the environment, minimises consumption of non-renewable resources and utilises alternative energy generation systems.

Built Form and Townscape

OBJECTIVES

Objective 46: Reinforcement of the city's grid pattern of streets through:

(a) high rise development framing city boulevards, the Squares and Park Lands

(b) vibrant main streets of a more intimate scale that help bring the city to life

(c) unique and interesting laneways that provide a sense of enclosure and intimacy.

Objective 47: Buildings should be designed to:

(a) reinforce the desired character of the area as contemplated by the minimum and maximum building heights in the Zone and Policy Area provisions;

(b) maintain a sense of openness to the sky and daylight to public spaces, open space areas and existing buildings;

(c) contribute to pedestrian safety and comfort; and

(d) provide for a transition of building heights between Zone and Policy Areas where building height guidelines differ.

Objective 48: Development which incorporates a high level of design excellence in terms of scale, bulk, massing, materials, finishes, colours and architectural treatment.

Articulation and Modelling

9 Building facades fronting street frontages, access ways, driveways or public spaces should be composed with an appropriate scale, rhythm and proportion which responds to the use of the building, the desired character of the locality and the modelling and proportions of adjacent buildings.

Materials, Colours and Finishes

10 The design, external materials, colours and finishes of buildings should have regard to their surrounding townscape context, built form and public environment, consistent with the desired character of the relevant Zone and Policy Area.

11 Development should be finished with materials that are sympathetic to the design and setting of the new building and which incorporate recycled or low embodied energy materials. The form, colour, texture and quality of materials should be of high quality, durable and contribute to the desired character of the locality. Materials, colours and finishes should not necessarily imitate materials and colours of an existing streetscape

12 Materials and finishes that are easily maintained and do not readily stain, discolour or deteriorate should be utilised.

13 Development should avoid the use of large expanses of highly reflective materials and large areas of monotonous, sheer materials (such as polished granite and curtained wall glazing).

Active Street Frontages

OBJECTIVES

Objective 50: Development that enhances the public environment and, where appropriate provides activity and interest at street level, reinforcing a locality's desired character.

Objective 51: Development designed to promote pedestrian activity and provide a high quality experience for City residents, workers and visitors by:

(a) enlivening building edges;

(b) creating welcoming, safe and vibrant spaces;

(c) improving perceptions of public safety through passive surveillance; and

(d) creating interesting and lively pedestrian environments.

Landscaping

OBJECTIVE

Objective 55: Water conserving landscaping that enhances the local landscape character and creates a pleasant, safe and attractive living environment.

PRINCIPLES OF DEVELOPMENT CONTROL

14 Landscaping should:

(a) be selected and designed for water conservation;

(b) form an integral part of the design of development; and

(c) be used to foster human scale, define spaces, reinforce paths and edges, screen utility areas and enhance the visual amenity of the area.

15 Landscaping should incorporate local indigenous species suited to the site and development, provided such landscaping is consistent with the desired character of the locality and any heritage place.

16 Landscaping should be provided to all areas of communal space, driveways and shared car parking areas.

Transport and Access

Bicycle Access

OBJECTIVES

Objective 64: Greater use of bicycles for travel to and within the City and the improvement of conditions, safety and facilities for cyclists.

Objective 65: Adequate supply of secure, short stay and long stay bicycle parking to support desired growth in City activities.

PRINCIPLES OF DEVELOPMENT CONTROL

17 Onsite secure bicycle parking facilities for residents and employees (long stay) should be:

(a) located in a prominent place;

(b) located at ground floor level;

(c) located undercover;

(d) located where passive surveillance is possible, or covered by CCTV;

(e) well lit and well signed;

(f) close to well used entrances;

(g) accessible by cycling along a safe, well lit route;

(h) take the form of a secure cage with locking rails inside or individual bicycle lockers; and

(i) in the case of a cage have an access key/pass common to the building access key/pass.

CAPITAL CITY ZONE

DESIRED CHARACTER

This Zone is the economic and cultural focus of the State and includes a range of employment, community, educational, tourism and entertainment facilities. It is anticipated that an increased population within the Zone will complement the range of opportunities and experiences provided in the City and increase its vibrancy.

The Zone will be active during the day, evening and late night. Licensed entertainment premises, nightclubs and bars are encouraged throughout the Zone, particularly where they are located above or below ground floor level to maintain street level activation during the day and evening.

High-scale development is envisaged in the Zone with high street walls that frame the streets. However an interesting pedestrian environment and human scale will be created at ground floor levels through careful building articulation and fenestration, frequent openings in building façades, verandahs, balconies, awnings and other features that provide weather protection.

In important pedestrian areas, buildings will be set back at higher levels above the street wall to provide views to the sky and create a comfortable pedestrian environment. In narrow streets and laneways the street setback above the street wall may be relatively shallow or non-existent to create intimate spaces through a greater sense of enclosure. In the Central Business Policy Areas, upper level setbacks are not envisaged.

Non-residential land uses at ground floor level that generate high levels of pedestrian activity such as shops, cafés and restaurants will occur throughout the Zone. Within the Central Business Policy Area, residential land uses at ground level are discouraged. At ground level, development will continue to provide visual interest after hours by being well lit and having no external shutters. Non-residential and / or residential land uses will face the street at the first floor level to contribute to street vibrancy.

New development will achieve high design quality by being:

(a) **Contextual** – so that it responds to its surroundings, recognises and carefully considers the adjacent built form, and positively contributes to the character of the immediate area.

(b) **Durable** – by being fit for purpose, adaptable and long lasting, and carefully considers the existing development around it.

(c) **Inclusive** – by integrating landscape design to optimize pedestrian and cyclist usability, privacy, and equitable access, and also promote the provision of quality spaces integrated with the public realm that can be used for access and recreation and help optimize security and safety both internally and into the public realm, for occupants and visitors alike.

(d) **Sustainable** – by integrating sustainable systems into new buildings and the surrounding landscape design to improve environmental performance and minimise energy consumption.

(e) **Amenable** – by providing natural light and ventilation to habitable spaces.

Contemporary juxtapositions will provide new settings for heritage places. Innovative design is expected in areas of identified street character with an emphasis on contemporary architecture that responds to site context and broader streetscape, while supporting optimal site development. The addition of height, bulk and massing of new form should be given due consideration in the wider context of the proposed development.

There will also be a rich display of art that is accessible to the public and contextually relevant Minor streets and laneways will have a sense of enclosure (a tall street wall compared to street width) and an intimate, welcoming and comfortable pedestrian environment with buildings sited and composed in a way that responds to the buildings' context. There will be a strong emphasis on ground level activation through frequent window openings, land uses that spill out onto the footpath, and control of wind impacts.

PRINCIPLES OF DEVELOPMENT CONTROL

Land Use

1 The following types of development, or combinations thereof, are envisaged:

Affordable housing
Aged persons accommodation
Community centre
Consulting room
Convention centre
Dwelling
Educational establishment
Emergency services facility
Hospital
Hotel
Indoor recreation centre
Licensed entertainment premises
Library
Motel
Office
Pre-school
Personal service establishment
Place of worship
Serviced apartment
Restaurant
Residential flat building
Student accommodation
Shop or group of shops
Tourist accommodation

Form and Character

5 Development should be consistent with the Desired Character for the Zone.

Design and Appearance

6 Development should be of a high standard of architectural design and finish which is appropriate to the City's role and image as the capital of the State.

7 Buildings should achieve a high standard of external appearance by:

(a) the use of high quality materials and finishes. This may be achieved through the use of materials such as masonry, natural stone, prefinished materials that minimise staining, discolouring or deterioration, and avoiding painted surfaces particularly above ground level;

(b) providing a high degree of visual interest though articulation, avoiding any large blank facades, and incorporating design features within blank walls on side boundaries which have the potential to be built out;

(c) ensuring lower levels are well integrated with, and contribute to a vibrant public realm; and

(d) ensuring any ground and first floor level car parking elements are sleeved by residential or non-residential land uses (such as shops, offices and consulting rooms) to ensure an activated street frontage.

8 Buildings should present an attractive pedestrian-oriented frontage that adds interest and vitality to City streets and laneways.

9 The finished ground floor level of buildings should be at grade and/or level with the footpath to provide direct pedestrian access and street level activation.

11 Buildings should be positioned regularly on the site and built to the street frontage, except where a setback is required to accommodate outdoor dining or provide a contextual response to a heritage place.

12 Buildings should be designed to include a podium/street wall height and upper level setback (in the order of 3-6 metres) that:

(a) relates to the scale and context of adjoining built form;

(b) provides a human scale at street level;

(c) creates a well-defined and continuity of frontage;

(d) gives emphasis and definition to street corners to clearly define the street grid;

(e) contributes to the interest, vitality and security of the pedestrian environment;

(f) maintains a sense of openness to the sky for pedestrians and brings daylight to the street; and

(g) achieves pedestrian comfort by minimising micro climatic impacts (particularly shade/shelter, wind tunnelling and downward drafts);

other than (h) or (i):

(h) in the Central Business Policy Area;

(i) where a lesser (or zero) upper level setback and/or podium height is warranted to correspond with and complement the form of adjacent development, in which case alternative design solutions should be included to achieve a cohesive streetscape, provided parts (b) to (g) are still achieved.

14 Buildings, advertisements, site landscaping, street planting and paving should have an integrated, coordinated appearance and should enhance the urban environment.

15 Building façades should be strongly modelled, incorporate a vertical composition which reflects the proportions of existing frontages, and ensure that architectural detailing is consistent around corners and along minor streets and laneways.

16 Development that exceeds the maximum building height shown in Concept Plan Figures CC/1 and 2, and meets the relevant quantitative provisions should demonstrate a significantly higher standard of design outcome in relation to qualitative policy provisions including site configuration that acknowledges and responds to the desired future character of an area but that also responds to adjacent conditions (including any special qualities of a locality), pedestrian and cyclist amenity, activation, sustainability, and public realm and streetscape contribution.

Building Height

21 Development should not exceed the maximum building height shown in Concept Plan Figures CC/1 and 2 unless;

(a) it is demonstrated that the development complements the context (having regard to adjacent built form and desired character of the locality) and anticipated city form in Concept Plan Figures CC/1 and 2, and

(b) only if:

(i) at least two of the following features are provided:

(1) the development provides an orderly transition up to an existing taller building or prescribed maximum building height in an adjoining Zone or Policy Area;

(2) the development incorporates the retention, conservation and reuse of a building which is a listed heritage place;

(3) high quality universally accessible open space that is directly connected to, and well integrated with, public realm areas of the street;

(4) universally accessible, safe and secure pedestrian linkages that connect through the development site as part of the cities pedestrian network on Map Adel/1 (Overlay 2A);

(5) on site car parking does not exceed a rate of 0.5 spaces per dwelling, car parking areas are adaptable to future uses or all car parking is provided underground;

(6) residential, office or any other actively occupied use is located on all of the street facing side of the building, with any above ground car parking located behind;

(7) a range of dwelling types that includes at least 10% of 3+ bedroom apartments;

(8) more than 15 per cent of dwellings as affordable housing.

(ii) plus all of the following sustainable design measures are provided:

(1) a rooftop garden covering a majority of the available roof area supported by services that ensure ongoing maintenance;

(2) a greenroof, or greenwalls / façades supported by services that ensure ongoing maintenance;

(3) innovative external shading devices on all of the western side of a street facing façade; and

(4) higher amenity through provision of private open space in excess of minimum requirements, access to natural light and ventilation to all habitable spaces and common circulation areas.

Movement

27 Development should provide pedestrian linkages for safe and convenient movement with arcades and lanes clearly designated and well-lit to encourage pedestrian access to public transport and areas of activity. Blank surfaces, shutters and solid infills lining such routes should be avoided.