

The **Ordinary Meeting** of
Bayside Council
will be held in the Rockdale Town Hall, Council Chambers,
Level 1, 448 Princes Highway, Rockdale
on **Wednesday, 11 September 2019 at 7:00 pm**

UNDER SEPARATE COVER ATTACHMENTS

8 REPORTS

8.2 Draft Planning Proposal - 2 and 4 Guess Avenue, Wolli Creek

2 Draft Planning Proposal2

Draft Planning Proposal



Guess Avenue, Bayside

2-4 Guess Avenue, Wolli Creek

Prepared on behalf of: Bayside Council

July 31, 2019



Document control

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Project summary

Applicant	Bayside Council
Applicant's address	PO Box 21, Rockdale, NSW 2216
Land to be developed	2-4 Guess Avenue, Wolli Creek
Legal description	Lot 102 and 102 DP808944
Project description	Planning proposal to rezone 2 Guess Avenue to B4 Mixed Use

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Executive Summary

Background

On 13 December 2017, Bayside Council resolved that the previously planned open space at 2 and 4 Guess Avenue, Wolli Creek was beyond its capacity to deliver and that the land was no longer required for a public purpose. This resolution was made to address a shortfall in the local infrastructure contribution funds available for acquisition of open space within the area.

This report has been prepared on behalf of Council, and seeks to progress a Planning Proposal for the site having consideration to the public open space required to service existing and planned development in the Wolli Creek area.

Site and surrounding context

The subject site comprises 7,765 sqm of land at 2 and 4 Guess Avenue in Wolli Creek. The site has frontage to Arncliffe Street, Guess Avenue and Mt Olympus Drive. 2 Guess Avenue (Lot 101/808944) is currently owned by Nippon Trucks and comprises 4,188sqm of land with sheds and hard stand areas used for truck repairs and spare parts. 4 Guess Avenue (Lot 102/808944) comprises 3,577sqm of land owned by NSW Government Property. It is currently vacant and has undergone recent remediation but was previously used by Sydney Water as a depot and laboratory.

The site has three street frontages, being Guess Avenue to the south west, Mount Olympus Boulevard to the north west and Arncliffe Street to the south east. The site is largely surrounded by high rise residential / mixed use developments with some remaining industrial development located to the south. To the north west of the site beyond Mount Olympus Boulevard is the T4 Illawarra and Eastern Suburbs Train Line.

The site is located within Wolli Creek approximately 400m south west of Wolli Creek Train Station and is accessible to Wolli Creek town centre. The area has undergone a major urban renewal process over the past decade which has seen a shift from previous industrial uses to a high density residential and mixed use development.

Open space analysis

Given that this proposal has resulted from a resolution by Council that it no longer required the site for a public purpose (being local open space), a key component of this Planning Proposal has been the preparation of an open space assessment by SGS Economics and Planning, to consider the implications of this decision on the supply of and accessibility to open space for the Wolli Creek area.

SGS concluded that a component of open space should be provided on the site to meet draft Government Architect NSW criteria for proximity to public open space (200m walking distance) and that an area of 4,000sqm would be desirable to achieve a diversity of recreational activities within the space.

SGS noted that the site is well located within a broader open space network and offers opportunities to improve local connectivity of open space, and to reinforce the active transport network.

The open space assessment also highlighted, that beyond the site, it will be important to consider access to major district and regional reserves where access is constrained due to the absence of river crossings and barriers to crossing the Princes Highway as a pedestrian.

The proposal

The proposal for the site was developed with a view to delivering a component of open space on the site consistent with the SGS findings, whilst achieving an outcome within Council's capacity to deliver.

The preferred option to seek provide the northern portion of the site as a large scale 4,000sqm public open space within the 7,765sqm site. This land would accommodate a new local park fronting Mount Olympus Boulevard and Guess Avenue and has been located to maximise solar access to the park. The open space includes all of 4 Guess Avenue (3,577sqm) and a portion of 2 Guess Avenue (423sqm) to provide a consolidated area for the park. This comprises approximately 10% of 2 Guess Avenue which is considered to be an appropriate level of provision for a site of this size.

A concept plan identifies the potential for the remaining 3,765sqm of 2 Guess Avenue to be redeveloped to comprise:

- two separate buildings of 12 and 6 storeys respectively
- 144 apartments (12,220sqm of residential floor space)
- 115sqm of commercial floor space to accommodate a retail / café tenancy on the ground floor of the 12 storey building overlooking the park, and
- 99 car parking spaces across two basement levels.

To facilitate the redevelopment of the remainder of the site it is recommended that the following amendments be made to the *Rockdale Local Environmental Plan 2011* (Rockdale LEP) for 2 Guess Avenue:

- rezone to B4 Mixed Use
- apply a maximum height of buildings of 42m
- apply a maximum floor space ratio (FSR) of 3:1, and
- remove the obligation of Council to acquire the land.

It is envisaged that this would be supported by an amendment to the *Rockdale Development Control Plan 2011* (Rockdale DCP) to include site specific controls for the site.

This would include a requirement to provide at least 423sqm (approximately 10%) of 2 Guess Avenue as publicly accessible open space to compliment the park to be provided on 4 Guess Avenue. It would also include built form controls, design guidelines for the through site link and public domain interface, and the landscape concept plan for the proposed park.

The Wolli Creek Special Precinct within the Rockdale DCP would continue to apply, except where varied by the site specific controls.

The draft DCP amendment would be prepared following a Gateway decision.

Consideration of key issues

The Planning Proposal has been supported by a series of technical studies to enable consideration of key issues associated with the proposal, as outlined below.

- Urban design study (SJB Architects)
- Open space and community needs assessment (SGS Economics and Planning)
- Retail / commercial demand assessment (Hill PDA)
- Traffic impact assessment (Bitzios)
- Flooding and stormwater study (Northrop)
- Aeronautical height limit study (Landrum Brown)



- Contamination preliminary site investigation (Senversa)

These studies concluded that the proposal will have minimal impact on the surrounding area and that all issues associated with the proposal can be appropriately managed.

Conclusion

The Planning Proposal outlined in this report is considered the best means of balancing the need to provide a significant component of public open space on the site which is within Council's financial capacity to deliver.

The delivery of a 4,000sqm park on the site exceeds the recommended minimum area for a local park in the draft Open Space for Recreation Guide (Government Architect NSW), being a preferred minimum of 3,000sqm with an absolute minimum of 1,500sqm where more efficient provision cannot be accommodated. This will ensure that the local area has good access to local open space which can support a range of recreational activities.

On this basis it is recommended that Bayside Council initiate acquisition of 4 Guess Avenue from NSW Government Property for local open space whilst progressing the Planning Proposal as outlined in this report.

1 Background

Wolli Creek has been undergoing a transformation over the past decade from a predominantly industrial area into an urban precinct comprising a new town centre focused around Wolli Creek Train Station and high density residential buildings supported by new streets, parks, public open space and foreshore connections.

To support this renewal of Wolli Creek, 2 and 4 Guess Avenue (the site) was identified to be acquired by Bayside Council to accommodate a new park. This position was formalised in the *Rockdale Local Environmental Plan 2011* (Rockdale LEP) which zones the site RE1 Public Recreation and identifies Council as the relevant acquisition authority.

On the 13 December 2017, Council resolved that it no longer requires the site for a public purpose. This resolution was made to address a shortfall in the local infrastructure contribution funds available for acquisition of open space within the area.

The Council resolution is outlined below (resolution number 2017/263):

- 1) *That Council endorse the prioritisation of option 2 as noted in the body of this report (Note: option 2 outlined no acquisition 2-4 Guess Avenue and rezoning of the site)*
- 2) *That Council is of the opinion that it no longer requires the properties for a public purpose.*
- 3) *That Council take steps to amend the zoning of the land and the land acquisition reservation map in the Rockdale LEP so that the relevant properties are no longer designated for acquisition for a public purpose. This would involve the preparation of a Planning Proposal to be provided to the Minister.*
- 4) *That Council acknowledge that staff continue to advance matters associated with the options outlined in the report with a further report to be submitted to Council in early 2018.*
- 5) *That the Mayor and General Manager be authorised to undertake any statutory obligations and priority actions arising from these matters.*

This report has been prepared on behalf of Bayside Council and seeks to progress a Planning Proposal for the site having consideration to the public open space required to service existing and planned development in the Wolli Creek area.

2 Site and context

2.1 Land description

The subject site comprises 7,765 sqm of land at 2 and 4 Guess Avenue in Wolli Creek. The site has frontage to Arncliffe Street, Guess Avenue and Mt Olympus Drive. The subject parcels of land are described in the following table, and illustrated in **Figure 1**.

Table 1: Site description

	2 Guess Avenue	4 Guess Avenue
Title details	101/808944	102/808944
Land area	4,188sqm	3,577sqm
Ownership	Nippon Trucks	NSW Government Property
Existing and previous development	Sheds and hard stand areas.	Vacant land which has been subject of recent remediation. The site previously comprised sheds and hard stand areas.
Existing and previous uses	Truck repairs and spare parts.	Vacant. The site was previously used by Sydney Water as a depot and laboratory.
Existing vegetation	The site is largely cleared of vegetation, but has large established trees along its street frontages to Arncliffe Street and Guess Avenue.	The site is almost entirely cleared of vegetation with the exception of a single tree fronting Guess Avenue.



Figure 1: Subject site

2.2 Surrounding land uses

The site has three street frontages, being Guess Avenue to the south west, Mount Olympus Boulevard to the north west and Arncliffe Street to the south east. The site is largely surrounded by high rise residential / mixed use developments with some remaining industrial development located to the south.

To the north west of the site beyond Mount Olympus Boulevard is the T4 Illawarra and Eastern Suburbs Train Line. To the north east of the site are residential mixed use developments including a 15 storey tower located at 35B Arncliffe Street with ground floor retail uses and a nine storey building which is under construction at 4 Magdalene Terrace. The building at 35B Arncliffe Street is oriented north south with balconies of apartments overlooking the site. The development at 4 Magdalene Terrace comprises a two storey podium including an Aldi Supermarket with residential apartments above. The podium of this building is located directly on the boundary of 4 Guess Avenue presenting a blank façade to this site frontage.

A publicly accessible village square is also located to the north west of the site which is accessible from Magdalene Terrace and Arncliffe Street although it presents as privatised due to its internalised nature and access via narrow stairs.

To the south west of the site are existing eight and nine storey residential apartment buildings, with ground floor retail uses fronting Arncliffe Street.

To the south east of the site beyond Arncliffe Street are recently completed eight storey residential apartment building and an industrial freight warehouse.

2.3 Local context

The site is located within Wolli Creek approximately 400m south west of Wolli Creek Train Station. The area has undergone a major urban renewal process over the past decade which has seen a shift from previous industrial uses to a high density residential and mixed use development. A number of industrial uses continue to operate within the local area. The Wolli Creek Special Area under the *Rockdale Development Control Plan 2011* (Rockdale DCP) applies to the area, and a number of new open spaces have been identified for the area, including the subject site.

The Bayside West Precinct is located to the south of the site, which was nominated by the Department of Planning and Environment. The Precinct extends across the suburbs of Arncliffe, Banksia and Cooks Cove. The parts of the Precinct within Arncliffe and Banksia were rezoned in 2018 for a mix of high density residential, mixed use and employment. New open space was identified as part of the rezoning including a new 7,000sqm open space near Arncliffe town centre on the corner of Arncliffe Street and Burrows Road. This park will be developed to provide recreation space, children's play area and an off-leash dog area and opportunities for community facilities.

The site is well serviced by the retail and commercial uses within the Wolli Creek town centre which is located to the north east of the site. This includes a number of supermarkets with the recently completed Aldi supermarket adjacent to the site and Woolworths on Arncliffe Street.

Areas of open space are also located within proximity of the site including Discovery Park to the south west of the train station adjacent to the Cooks River. Many of the other larger areas of open space in the locality, such as Waterworth Park and Cahill Park, have poor accessibility due to barriers formed by the Cooks River and the Princes Highway. A detailed open space analysis is provided in Section 5.

The local context is shown in **Figure 2**.

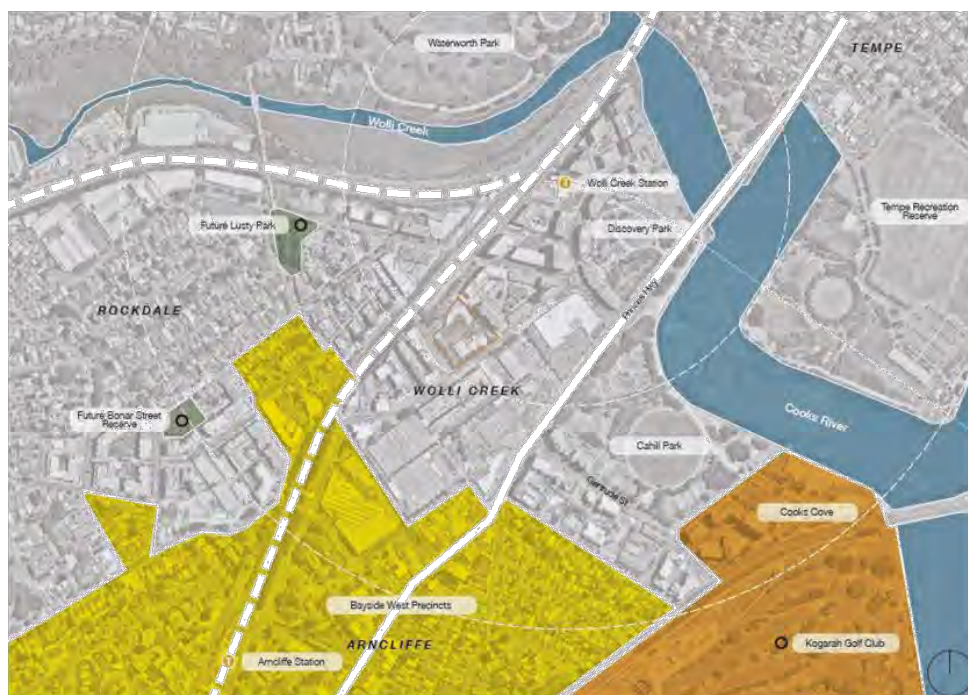


Figure 2: Local context

2.4 Site analysis

An urban design study has been prepared by SJB (Appendix B) and includes a detailed site analysis which has identified the following constraints and opportunities for the potential redevelopment of the site.

Constraints

- Provide adequate separation between surrounding residential interfaces and consider potential impact on views and solar access
- Mitigate noise impacts from nearby rail corridor
- Minimise outlook to existing blank facade on adjacent building
- Consider overshadowing impact from existing development adjacent to the north-east
- Respond to existing heights of surrounding recent development
- Provide design solutions to maximise development potential on irregular shaped site
- Minimise additional overshadowing to existing residential development to the south

Opportunities

- Retain existing planting along Guess Avenue and Arncliffe Street (with the exception of a single Camphor Laurel which has been recommended for removal)
- Opportunity to build to boundary along blank wall, from which separation requirements are minimised
- Utilise existing vehicular access points
- Opportunity to engage with existing on-road cycle path route
- Potential to enhance site access and align with future road from Arncliffe Street to the south (identified in the DCP)

- Maximise solar access for future development and open space.
- Retain open space uses originally proposed for the site.

3 Current planning controls

3.1 Rockdale Local Environmental Plan 2011

The principle planning instrument applying to the site is the *Rockdale Local Environmental Plan 2011* (Rockdale LEP). The site is zoned RE1 Public Open Space under the Rockdale LEP, and acquisition provisions (clause 5.1) apply which identify the land as local open space and the Council as the relevant acquisition authority.

No height or FSR controls apply to the site, however the surrounding B4 Mixed Use zoned land has height controls of 31m and 28m and floor space ratio controls of 2.85:1 and 3:1. The existing zone and controls are shown in **Figure 3** and **Figure 4**.

No heritage items are located within the site, or within the vicinity of the site.

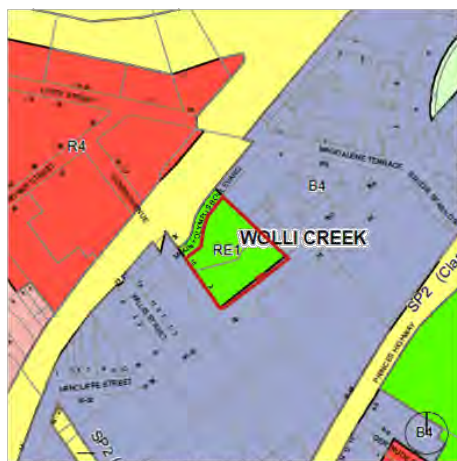


Figure 13: Rockdale LEP 2011 - Land Zoning Map

Zone	
B1	Neighbourhood Centre
B2	Local Centre
B4	Mixed Use
B6	Enterprise Corridor
IN2	Light Industrial
R2	Low Density Residential
R3	Medium Density Residential
R4	High Density Residential
RE1	Public Recreation
RE2	Private Recreation
RU4	Primary Production Small Lots
SP2	Infrastructure
SP3	Tourist
UL	Unzoned Land
State	Sydney Regional Environmental Plan No 33 - Cooks Cove

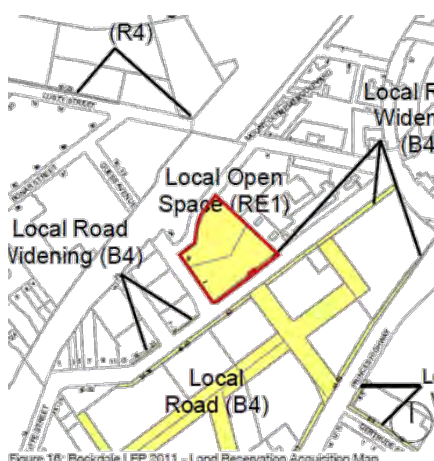


Figure 16: Rockdale LEP 2011 - Land Reservation Acquisition Map

Classified Road (SP2)
Local Open Space (RE1)
Local Open Space (Amdiffe) (RE1)
Local Road (B2)
Local Road (B4)
Local Road (R2)
Local Road (R3)
Local Road (R4)
Local Road Widening (B2)
Local Road Widening (B4)
Local Road Widening (R2)
Local Road Widening (R3)
Local Road Widening (R4)
Local Road Widening (SP2)
Car Park (B4)
Car Park (R2)
Regional Open Space (RE1)
School (R2)
School (SP2)
Stormwater (SP2)

Figure 3: Zoning and land acquisition controls

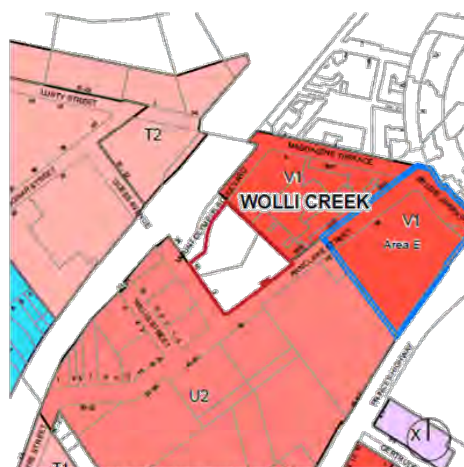


Figure 14: Rockdale LEP 2011 - FSR Map

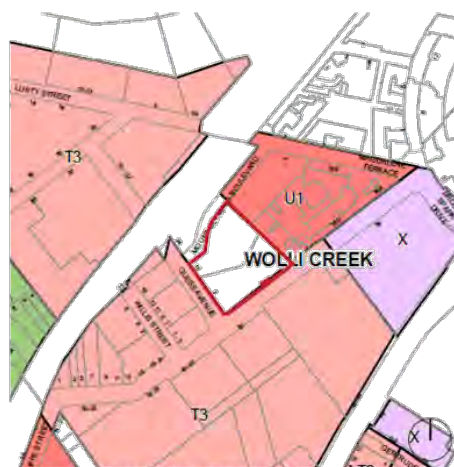


Figure 15: Rockdale LEP 2011 - Height of Building Map

Maximum Floor Space Ratio (n:1)	
D 0.5	V2 3.1
F 0.6	V3 3.4
N 1	W 3.93
P1 1.25	X 4
P2 1.26	Refer to Clause 4.4
S1 1.5	
S2 1.65	
S3 1.8	
T1 2	
T2 2.2	
T3 2.4	
U1 2.5	
U2 2.85	
V1 3	

Note: There is currently no FSR control designated for the subject site.

Maximum Building Height (m)	
I 8.5	T1 26.5
M 12	T2 27
N1 13	T3 28
N2 14.5	T4 29
O1 15	T5 29.5
O2 16	U1 31
P1 17.5	U2 33
P2 17.75	V 36
P3 18	W 42
Q1 19	X 46
Q2 20.5	X2 47.15
R1 21	Y 51
R2 22	AA 70
S 24	Refer to Clause 4.3

Note: There is currently no height control designated for the subject site.

Figure 4: Height and FSR controls

3.2 Rockdale Development Control Plan 2011

The site is included within the Wolli Creek Special Precinct within Section 7.1 of the *Rockdale Development Control Plan 2011* (Rockdale DCP). The section provides an overarching vision, objectives and development controls for the area. The structure plan for Wolli Creek is shown in **Figure 5**.

Consistent with the RE1 Public Recreation zoning the structure plan identifies the subject site as a 'town park'. The structure plan identifies the town centre to the north east between the site and Wolli Creek Train Station, mixed use areas to the south and west of the site, and high density residential uses on the other side of the train line to the north.

A recreation link is identified linking the northern side of the train line to the areas of the south of the Princes Highway. This travels along Guess Avenue adjacent to the site and via a proposed road between Arncliffe Street and the Princes Highway to the south of the site.



Figure 5: Rockdale DCP - Wollie Creek Structure Plan

The DCP also identifies built form controls on for the precinct. For the land surrounding the site the nominated heights are typically up to eight storeys, with 13 storeys and above nominated for the areas to the north east of the site fronting Arncliffe Street (**Figure 6**)

Street setbacks are also nominated (**Figure 7**), with 2 metre setbacks along the northern side of Mount Olympus Boulevard and on the western side of Guess Avenue and a 3m setback along the south side of Arncliffe Street.



Figure 6: Rockdale DCP – Building heights

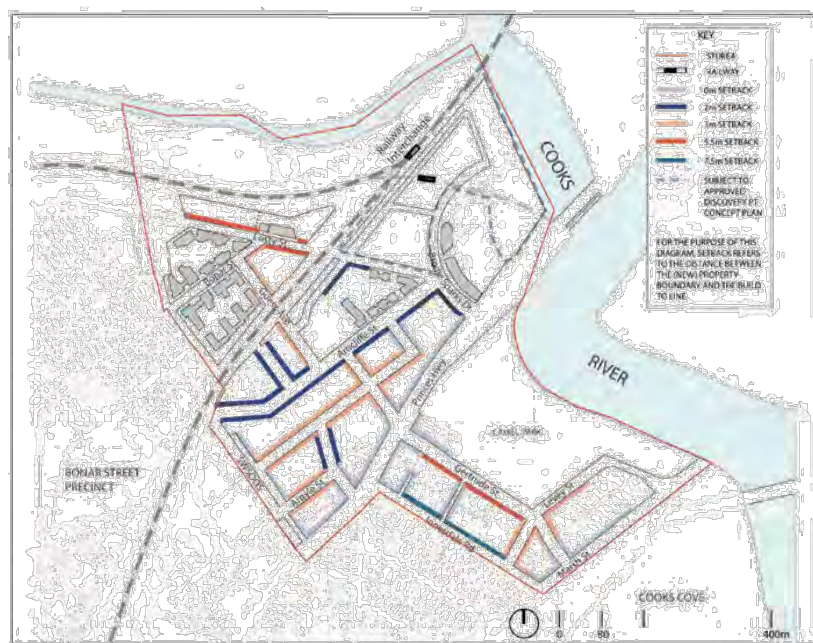


Figure 7: Rockdale DCP – Street setbacks

4 Strategic context

4.1 Greater Sydney Region Plan

The final Greater Sydney Region Plan, A Metropolis of Three Cities was released by the Greater Sydney Commission in March 2018. The Plan is built on a vision of three cities where most residents live within 30 minutes of their jobs, education and health facilities. It establishes directions, objectives and actions to achieve the 40-year vision which are focused around infrastructure and collaboration, liveability, productivity and sustainability.

The Greater Sydney Region Plan also aims to provide ongoing housing supply and a range of housing types in the right places to create more liveable neighbourhoods and support Sydney's growing population.

A number of the objectives of the plan are relevant to the Planning Proposal, in particular:

- Objective 1: Infrastructure supports the three cities
- Objective 10: Greater housing supply
- Objective 11: Housing is more affordable and diverse
- Objective 12: Great places that bring people together
- Objective 30: Urban tree canopy cover is increased
- Objective 31: Public open space is accessible, protected and enhanced
- Objective 37: Exposure to natural and urban hazards are reduced
- Objective 38: Heatwaves and extreme heat are managed

The aspirations of the Plan are further considered and expanded in the Eastern City District Plan which is discussed in Section 4.2 below.

4.2 Eastern City District Plan

The Eastern City District Plan has been developed to support the Greater Sydney Region Plan. The 20-year District Plan seek to manage growth in the context of economic, social and environmental matters to achieve the 40-year vision for Greater Sydney. It contains planning priorities and actions for implementing the Greater Sydney Region Plan at the district level and is a bridge between regional and local planning.

The proposal is considered to align with the relevant priorities and actions of the Plan in **Table 2** below.

Table 2: Eastern City District Plan

Action	Consideration
Planning Priority S1: Planning for a city supported by infrastructure	
Action 3: Align forecast growth with infrastructure	The proposal seeks to align growth with existing infrastructure including the T4 Illawarra and Eastern Suburbs Train Line.
Planning Priority S5: Providing housing supply, choice and affordability with access to jobs, services and public transport	
Action 16: Prepare local or district housing strategies that address the following: - the delivery of five-year housing supply targets (2016-2021) for each local government area - the delivery of 6-10 year (when agreed) housing supply targets for each local government area - capacity to contribute to the longer term 20-year strategic housing target for the District - the housing strategy requirements outlined in Objective 10 of A Metropolis of Three Cities.	The Proposal will contribute to the 6-10 year housing supply within the local area through the provision of approximately 144 dwellings.
Planning Priority S6: Creating and renewing great places and local centres and respecting the District's heritage	
Action 18: Using a place-based and collaborative approach throughout planning, design, development and management, deliver great places by: - prioritising a people-friendly public realm and open spaces as a central organising design principle - recognising and balancing the dual function of streets as places for people and movement - providing fine grain urban form, diverse land use mix, high amenity and walkability, in and within a 10-minute walk of centres - integrating social infrastructure to support social connections and provide a community hub - recognising and celebrating the character of a place and its people.	The proposal delivers great places by retaining a large 4,000sqm local open space within the site to accommodate a range of active and passive recreation activities adjacent to a town centre and high density residential uses. The proposal will enhance the fine grain and walkability by providing a through site link to Arndcliffe Street. It will enhance the character of the local area by providing enhanced streetscapes, increased landscaping and tree canopy cover, and high quality open space.
Planning Priority S17: Increasing urban tree canopy cover and delivering green grid connections	
Action 69: Expand urban tree canopy in the public realm.	The proposal will significantly expand the urban tree canopy cover. Trees will largely be retained and additional trees will be planted within the public open space.

Planning Priority S18: Delivering high quality open space	
Action 71: Maximise the use of existing open space and protect, enhance and expand public open space by: — providing opportunities to expand a network of diverse, accessible, high quality open spaces that respond to the needs and values of communities as populations grow. — investigating opportunities to provide new open space so that all residential areas are within 400 metres of open space and all high density residential areas (over 60 dwellings per hectare) are within 200 metres of open space. — requiring large urban renewal initiatives to demonstrate how the quantity of, or access to, high quality and diverse local open space is maintained or improved. — planning new neighbourhoods with a sufficient quantity and quality of new open space. — delivering shared and co-located sports and recreational facilities including shared school grounds and repurposed golf courses. — delivering or complementing the Greater Sydney Green Grid — providing walking and cycling links for transport as well as leisure and recreational trips.	The proposal is consistent with this action. It ensures that all dwellings within Wolli Creek will be within 200m of public open space. Further detailed analysis has been provided to demonstrate that an appropriate quantity and level of access to open space is maintained (see Section 5)
Planning Priority S20: Adapting to the impacts of urban and natural hazards and climate change	
Action 79: Avoid locating new urban development in areas exposed to natural and urban hazards and consider options to limit the intensification of development in existing urban areas most exposed to hazards.	A flood assessment has been prepared identifying that the proposal will not result in significant flood impacts and that flood impact can be appropriately managed.
Action 80: Mitigate the urban heat island effect and reduce vulnerability to extreme heat	The proposal seeks to retain a 4,000 sqm open space which will be the focus of additional landscaping and tree planting to provide increased canopy cover mitigating the urban heat island effect.

4.3 Draft Greener Places Policy

Greener Places is an urban green infrastructure state policy released in draft by the Government Architect NSW in November 2017. The policy establishes a framework to realise the following key green infrastructure objectives:

- To protect, conserve and enhance NSW's network of green and open natural and cultural spaces
- To secure a network of high quality, high performing and well-designed green space, establishing a crucial component of urban infrastructure to address the environmental challenges of the twenty-first century
- To promote healthy living, encouraging physical activity, social cohesion, and enhancing wellbeing by providing liveable places for the NSW community
- To create a more strategic approach to planning for Green Infrastructure, encouraging early and integrated investment through statutory planning
- To deliver better tools for the delivery of Green Infrastructure.

The draft Open Space for Recreation Guide was released for discussion to support the implementation of Greener Places. The Guide seeks to apply a new consistent framework for planning public open space and responds to the challenges of increasing density and decreasing land supply through a performance-based, as opposed to quantum-based approach.

Of particular relevance to the proposal, the Guide sets out performance criteria for planning for open space and recreation.

The Guide outlines the typical process for preparing an open space for recreation plan, involving the analysis of the existing and potential future provision of open space within a given area. This is assessed against performance criteria relating to accessibility and connectivity, distribution, size and shape, quantity, quality, and diversity. Each criteria has a set of performance indicators that are tailored to different development scenarios, ranging from greenfield to high density areas.

The performance criteria outlined in the plan which are of particular relevance to the site area are outlined in **Table 3** below.

Table 3: draft Open Space for Recreation Guide criteria

Type of open space	Performance indicator
Local open space	• for a high-density neighbourhood within 2–3 minutes walk / 200 m walking distance • for a high density neighbourhood size ranging from 0.5 – 2ha. • a desirable minimum size of 3,000sqm although in high density neighbourhoods where more efficient provision does not exist they may be as small as 1,500sqm
District open space	• within 25 minutes walk / 2km • size ranging from 2 – 5 ha.
Regional open space	• Up to 30 minutes travel time on public transport or by vehicle / within 5 – 10km. • Area of 5ha or greater.

A detailed consideration of the implications of the Planning Proposal on the supply of open space, including against the performance criteria outlined above is provided at Section 5.

4.4 Everyone Can Play – A Guideline to Inclusive Play Spaces

Everyone Can Play is a State Government policy which outlines key principles and includes best practice recommendations designed to encourage the creation of more inclusive playspaces. The Policy sets out a process for Council's to plan for, design and deliver inclusive play spaces, and is based around three principles:

- Can I get there? - Consider location, layout, signage, wayfinding and accessibility to ensure everyone can find their way to, in and around the playspace.
- Can I play? - The play experience, including the equipment and surfacing, should allow everyone to experience a variety of challenging and engaging play opportunities in a way that suits them.
- Can I stay? - Consider safety, facilities, landscape and the wider environment to ensure everyone can stay at the playspace for as long as they would like.

The Planning Proposal is considered to support the policy as it ensures an adequate supply of and accessibility to open space, including play spaces, for the Wolli Creek area. Accessibility to the surrounding area has been a key consideration of the indicative layout plan, with the park fronting two streets (Guess Avenue and Mount Olympus Boulevard), with access also provided via a through site link from Arncliffe Street.

The policy will need to be applied in the detailed design of the park to ensure that the play spaces included within the park are inclusive and can be easily accessed from the surrounding streets. Further the final topography of the park will need to consider the need for level access from the surrounding streets where possible.

4.5 Bayside Community Strategic Plan 2030

The Bayside Community Strategic Plan sets a vision for the LGA being, *A city built on trust, with engaged communities, effective leadership and access to decision making*. The Plan sets out strategic directions and actions to achieve the vision.

Of particular relevance to this Planning Proposal is the Strategic Direction *our places are acceptable to all* and the action *open space is accessible and provides a range of active and passive recreation opportunities to match our growing community*.

This Planning Proposal seeks to explore alternative uses for the site, whilst ensuring that an adequate supply and accessibility to open space can be achieved for the Wolli Creek area.

A detailed assessment against the strategic direction and actions is provided at Appendix A.

4.6 Rockdale Residential Strategy 2007

The Rockdale Residential Strategy seeks to build capacity to accommodate housing needs associated with population growth, whilst maintaining liveability and lifestyle quality.

The Residential Strategy 2007 highlights Wolli Creek as a key urban redevelopment area within the LGA, that will play an important role in meeting demand for additional housing and at completion will house approximately 6,500 residents by 2021. The proposal supports a number of the strategic directions of the Strategy including:

- residential areas with unique characteristics which are built around villages and neighbourhoods
- access to existing recreational, entertainment and personal services, and
- quality housing and urban design.

The Strategy also highlights the need to *ensure that there is adequate provision of public and private open space in areas which are planned for residential growth.*

The proposal supports the Residential Strategy by facilitating the development of one of the remaining industrial sites in Wolli Creek. The proposal also includes detailed analysis to ensure that there is an adequate provision of open space to support the Wolli Creek community.

4.7 Rockdale Urban Strategy 2010

The Rockdale Urban Strategy provides the basis for future direction and planning of the LGA's urban and natural environment. The Strategy identifies Wolli Creek as an emerging centre in the LGA. The Strategy highlights that new streets, parks, public open space and foreshore connections along the Cooks River will feature in the redevelopment of the area, and notes that this will be guided by the Wolli Creek Public Domain Plan which is discussed in Section 4.9.

4.8 Rockdale Open Space and Recreation Strategy 2010

The Rockdale Open Space and Recreation Strategy considers that current and future open space and recreation needs of the community and highlights future asset requirements. It identifies opportunities to enhance open space and recreation provision, and delivery mechanisms.

The Strategy highlights that high density areas such as Wolli Creek will require good access to open space.

The Strategy includes the following action (1.2.1) which is of relevance to the Planning Proposal:

Plan for and establish strategically located neighbourhood parks in Wolli Creek for local activity and urban relief, giving consideration to enhancing existing parks such as Walker Street Reserve and establishing new parks, eg Guess Avenue or other locations in Deferred Matter areas.

This action is identified as a high priority to be delivered in the medium term (commence in 5-10 years time).

The Planning Proposal seeks to facilitate the delivery of 4,000sqm of open space at Guess Avenue. Whilst this is a smaller area than was originally envisaged, a detailed analysis has been provided demonstrating an adequate supply of open space can be provided for the Wolli Creek area (Section 5).

4.9 Wolli Creek and Bonar Street Public Domain Plan 2011

The Wolli Creek and Bonar Street Public Domain Plan has been prepared to guide and coordinate design and construction of improvements to the public domain in the Wolli Creek and Bonar Street precinct.

The Public Domain Plan identifies the site as a new 'town park' for the Wolli Creek and Bonar Street precinct. An alternative town park location was also identified on the south side of Arncliffe Street, however it appears that Guess Avenue was taken forward as the preferred option given it is formalised within the Rockdale LEP and Rockdale DCP. The town park options are shown as item 3 in **Figure 8**.

The indicative layout for the Guess Avenue town park within the Public Domain Plan site is shown at **Figure 9**. The Plan also set out principles for the site which are considered in **Table 4**. This consideration demonstrates that whilst the overall park area would be reduced, the key principles would still be achieved.



Figure 8: Public Domain Plan – Parks and Open Space Plan



Figure 9: Public Domain Plan – Guess Avenue town park indicative layout plan

Table 4: Consideration of Guess Avenue Town Park principles

Type of open space	Performance indicator
Surrounding buildings shall take advantage of the outlook by addressing and opening up to public space to provide passive surveillance.	The indicative layout plan locates buildings to maximise outlook and passive surveillance of the park. A retail / café use is proposed to be located within the ground floor of the 12 storey building overlooking the park. The remainder of the frontage to the park and through site link would be addressed by residential uses with ground floor private open space overlooking the park.
A designated children's play area located towards the centre of the site provides a fenced and sheltered zone for children within the park.	A children's play area is located adjacent to the retail / café tenancy to allow for overlooking and passive surveillance. Planting would surround this area to provide demarcation of this space and serves as a barrier to adjacent roads.

Type of open space	Performance indicator
The park shall include amenities for park including seating and shelter. This space can also accommodate a meeting point along Arncliffe Street.	The park is not proposed to address Arncliffe Street, however a through site link has been provided from Arncliffe Street to connect to a meeting place on Guess Avenue adjacent to the retail / café.
Water sensitive urban design (WSUD) principles are to be implemented.	Appropriate WSUD measures for the park can be identified at development application stage.
Open space shall provide areas of refuge for passive use defined through planting.	This objective is addressed through the landscape concept plan, which includes planting to define various activities within the site including areas of passive use.
Maintain sight lines to surrounding streets and pedestrian crossings through a comprehensive network of access paths and the implementation of CPTED principles	Although the park would not provide site lines to Arncliffe Street, the park would have two major street addresses and sign lines across the park would be maximized. A through site link has also been included to provide a north south connection.
A variety of spaces within the park shall be defined with level changes, raised seating walls, terraced grass areas and swales, and planted terraces along development boundary to mediate level changes to existing buildings. These level changes are to be designed to ensure that CPTED principles are implemented and disabled access to a minimum standard of 1428.1 design for access and mobility.	The park includes a series of defined spaces to accommodate a range of activities on the site, including a nature play area, basketball half court, community garden and paved loop.

5 Open space analysis

Given that this proposal has resulted from a resolution by Council that it no longer requires the site for a public purpose (being local open space), a key component of this Planning Proposal has been the preparation of an open space assessment by SGS Economics and Planning (Appendix C) to consider the implications of this decision on the supply and accessibility of open space for the Wolli Creek area.

The Open Space Assessment has focused on the relevant performance criteria outlined in the Government Architect NSW draft Open Space for Recreation Guide which is discussed further in Section 4.3 of this report.

The key criteria of relevance to this proposal is accessibility to a local, district or regional open space within 2–3 minutes walk / 200m walking distance for high density areas. The Guide sets a desirable minimum size of 3,000sqm for local open space although it notes that in high density neighborhoods where more efficient provision does not exist they may be as small as 1,500sqm. The Guide also sets a criteria of 2km to district parks.

5.1 Existing open space network

The Open Spaces Assessment undertook an audit of existing and proposed open space within the Wolli Creek area and surrounds. **Figure 10** shows existing and planned open space within the local area, including:

1. Waterworth Park
2. Kendrick Park
3. Tempe Recreation Reserve
4. Cahill Park
5. Discovery Park
6. Ajax Reserve
7. Allen Street Reserve
8. Ray Oxford Reserve and Walker Street Reserve
9. Village Square 1
10. Village Square 2

Three proposed open spaces sit to the west of the site including Lusty Street Reserve and Bonar Street Reserve to the north of the rail corridor, and a new Park adjacent to Arncliffe Station (also shown at **Figure 10**).

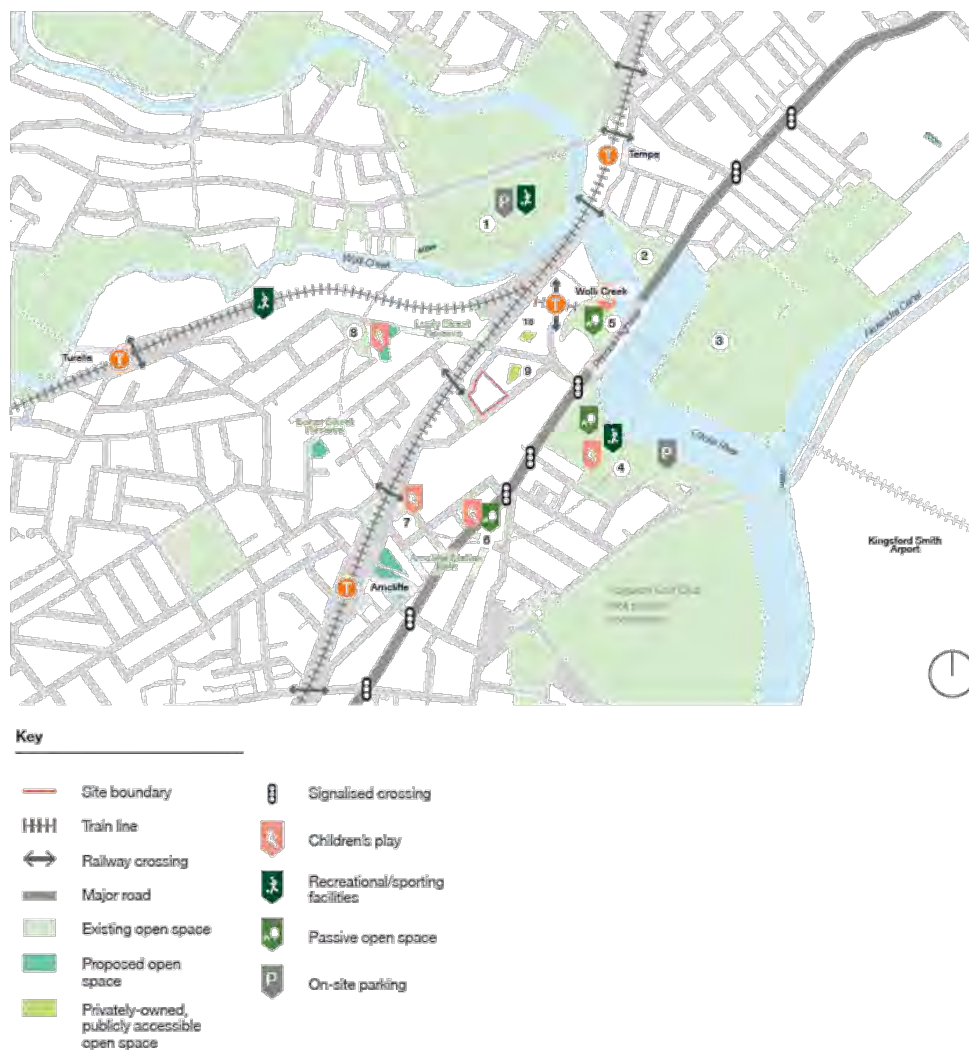


Figure 10: Open space context

5.2 Open space accessibility

An analysis has been provided by SGS to identify where areas of Wolli Creek would not be accessible to open space within 200m walking distance if no open space is provided within the site, which is illustrated in **Figure 11**. The analysis included all existing and proposed open space within the surrounding area. This is with the exception of Village Square 2 (located adjacent to the site) which was excluded on the basis that it has poor visibility and accessibility from the street (via three flights of stairs or lift) and is semi-privatised within a residential development. On this basis, whilst technically publicly accessible open space, it is not considered part of the functional open space network for the purposes of the analysis.

The analysis highlights that residential areas to the west and south-west of the subject site do not meet this 200m benchmark, but that this would be addressed through the provision of open space on the site subject of this Planning Proposal. Accordingly, based on the SGS analysis there is a need to provide some component of local open space on the site to ensure that the 200m access criteria can be met for the surrounding area.

The analysis also highlights that Cahill Park is critical in enabling areas to the south and east of the site to meet the 200m access standard. However, this park is over the very busy Princes Highway, which represents a major physical barrier. This further illustrates the value of providing open space within the site which is also within the 200m catchment of these areas.

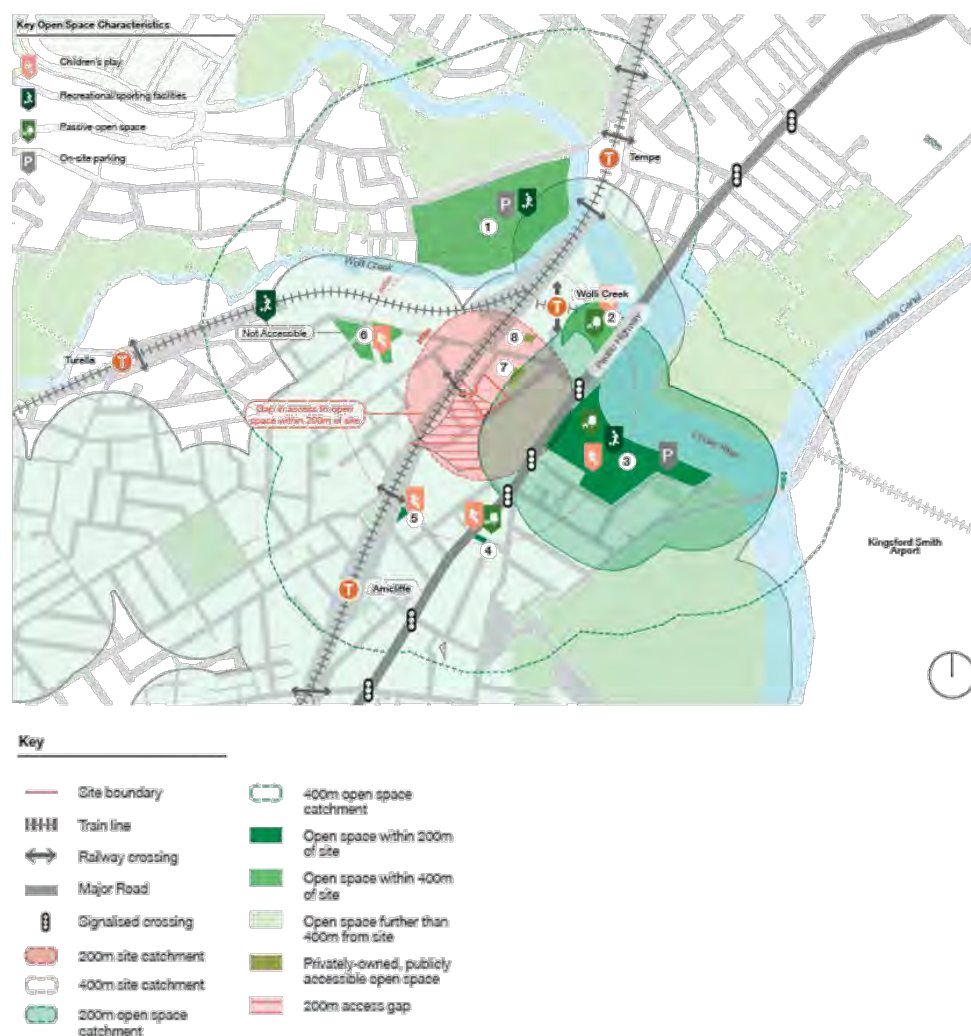


Figure 11: Open space accessibility analysis

5.3 Open space options

The assessment also considered the appropriate size of open space within the site. It noted that whilst the Government Architect NSW draft Guideline identifies an absolute minimum of 1,500sqm that this scale of open space would provide a relatively limited range of open space opportunities.

It noted that sites ranging from 1,500 to 5,000sqm allow for better quality open space opportunities including a wider range of play opportunities, more effective path networks and the ability to program multiple uses within the same space.

It also noted that a site greater than 5,000sqm would open up possibilities for uses that cannot occur on smaller spaces such as small informal fields for active recreation and dog play areas.

On this basis three options were considered by SGS for provision of open space on the site, which are discussed below.

1,500sqm open space

This is considered the minimum size possible and would allow for a limited range of activities to occur. It could incorporate a small playground, lawn, and infrastructure which would encourage people to stay in the park. (eg seating, shade and a basic path network).

The assessment noted that a park of this size would be slightly more than the 15% landscaped area requirement under the Rockdale DCP for apartment buildings, being 1,165sqm (although it is noted that the DCP does not require this to be publicly accessible). The assessment also noted that the existing local parks in the surrounding area are also small scale and have similar constraints in terms of their capacity to provide a diversity of activities.

4,000sqm open space

An open space of 4,000sqm would increase the open space offering in the local area in a meaningful way as it could include more diverse uses. In addition to those possible at 1,500sqm, other elements that could be incorporated include:

- new local play experiences such as nature play to complement existing traditional small playgrounds
- community gardens
- larger gathering lawns
- effective pedestrian links and visual links across the site, and
- small active recreation areas such as basketball half courts.

Existing local open spaces that are within 200m of Guess Avenue are small scale and are constrained in their ability to provide diverse open space experiences. A 4,000sqm park, if appropriately programmed, would increase the diversity of local public open spaces in the area. In order for this diversity of experience to occur, the 4,000sqm of open space should not be fragmented across the Guess Avenue site, but be consolidated in one part of the site.

Entire site for open space (7,765sqm)

If the entire site is used for open space, it would substantially diversify the open space offering within the Wolli Creek precinct. In addition to those elements possible at 1,500 and 4,000sqm, other elements that could be incorporated include:

- large gathering places (with shelters and bbq facilities)
- informal playing fields
- dog off leash areas, and
- exercise infrastructure.

However, the analysis also noted that these types of uses are typically found in district parks and that a number of district parks are located within proximity of the Guess Avenue site, which accommodate these uses. The assessment highlighted that these district parks whilst located in good proximity are constrained in terms of pedestrian access, and accessibility could be enhanced by providing improved pedestrian connections to across the Cooks River and Princes Highway.

5.4 Recommendations

The open space assessment concluded that an open space of 4,000sqm on the Guess Avenue site would mean that there is sufficient area for a large local park to be provided that significantly diversifies the open space offering in the area. It noted that the site is well located within the broader open space network and offers opportunities to improve local connectivity of open space, and to reinforce the active transport network.

The assessment also highlighted, that beyond the site, it will be important for Council to consider access to major district and regional reserves where access is constrained due to the absence of river crossings and barriers to crossing the Princes Highway as a pedestrian.

6 The proposal

6.1 Introduction

The proposal for the site was developed with a view to delivering the necessary component of open space on the site, whilst achieving an outcome within Councils capacity to deliver.

The Government Architect draft Open Space for Recreation Guide was used as a guide to inform an appropriate quantity of open space which should be delivered on the site. The Guide identifies the minimum size for a local park as 3,000sqm. Whilst it notes that this can be reduced to 1,500sqm where more efficient provision does not exist, a larger open space was seen as desirable. This was reinforced by the analysis of SGS which indicates that a park of 1,500sqm would allow for only limited range of activities.

Given that 3,000sqm is considered the preferred minimum size for a local park, it was noted that the northern portion of the site (4 Guess Avenue) exceeds this requirement being 3,577sqm. This part of the site would be best located to provide open space being to the north and able to achieve good solar access for most of the day. Further, the parcel is currently within Government ownership, being NSW Government Property, which may reduce the acquisition liability on Council if the site were to be acquired.

The approach aligns with the State Government's current policy focus on the delivery of new and improved parklands and open space. This approach is being delivered through the appointment of a new Minister for Public Spaces and the establishment of the Office of Open Space and Parklands. Further, the State Government has allocated \$150 million to secure and enhance green space across Sydney, including through the identification and protection of Government owned land that should be preserved for parkland or public space. This budget allocation could be explored as an alternative funding source for the acquisition of the site by Council.

It was noted that if 2 Guess Avenue was redeveloped for residential / mixed use, approximately 10% of the allotment could also be provided as publicly accessible open space. This quantity is considered appropriate for a site of this size and is generally consistent with the Rockdale DCP which identifies a requirement for 15% of sites to be allocated as landscaped area. This additional open space could complement a park on 4 Guess Avenue to enable the delivery of approximately 4,000sqm of public open space.

The delivery of a park of this size would significantly exceed the NSW Government Architect recommended minimum of 3,000sqm and also aligns with the advice from SGS Economics and Planning that a park of this size would support a greater diversity of open space uses.

On this basis an urban design study was prepared which explored a range of options for the site as discussed in Section 6.2 below, including an option where 4 Guess Avenue is retained as open space. This option was ultimately taken forward as the preferred option and forms the basis of the Planning Proposal outlined in this report.

It is considered that this approach achieves the best possible open space outcome for the site and provides for an outcome within Councils capacity to deliver.

6.2 Urban Design Study

An urban design study has been prepared by SIB which, along with the open space assessment, discussed in Section 5, and the analysis in Section 6.1, has informed the proposal for the site.

The urban design study considered a series of options for the site based on a range of sizes and configuration of open space from 1,500sqm to 4,000sqm and built form testing of the development

potential of the remainder of the site for mixed use / residential of a similar density as the surrounding area.

The preferred option seeks to provide the northern portion of the site as a large scale 4,000sqm public open space within the 7,765sqm site. This land would accommodate a new local park fronting Mount Olympus Boulevard and Guess Avenue and has been located to maximise solar access to the park. The open space includes all of 4 Guess Avenue (3,577sqm) and a portion of 2 Guess Avenue (423sqm) to provide a consolidated area for the park.

A concept plan identifies the potential for the remaining 3,765sqm of 2 Guess Avenue to be redeveloped to comprise:

- two separate buildings of 12 and 6 storeys respectively
- 144 apartments (12,220sqm of residential floor space)
- 115sqm of commercial floor space to accommodate a retail / café tenancy on the ground floor of the 12 storey building overlooking the park, and
- 99 car parking spaces across two basement levels.

The urban design proposal is illustrated in **Figure 12** to Error! Reference source not found. below.

The proposal includes a through site link connecting the local park to Arncliffe Street between the two proposed buildings, with a minimum width of 7m. This would improve the permeability of the site and improve accessibility from Arncliffe Street towards Wolli Creek Train Station.

The proposal is consistent with the surrounding built form character, which predominantly comprises lower scale perimeter block development with height consolidated within tower forms on block corners. The proposal will contribute to the existing height transition from Wolli Creek town centre towards the south and west, with site being located between a 15 storey building and nine storey building.

The urban design study was supported by an aboricultural assessment which identified the trees on the site as low to moderate significance, with the exception of a single Camphor Laurel which was recommended for removal. The proposal allows for the retention all trees identified as low and moderate significance with the exception of one tree which would need to be removed to accommodate the through site link.

The urban design study includes a landscape concept plan identifying a range of potential activities and uses within the park which was informed by the advice provided by SGS Economics and Planning, as summarised below.

- Seating, picnic tables, tree planting and passive recreation spaces at the centre of the park.
- A basketball half-court in the northern corner of the site for informal community use and activation of the existisng blank façade along the boundary of the site. This court could be slightly sunken to facilitate stepped seating and utilise the site's existing levels
- Through-site links to provide alternate connections from Arncliffe Street to Mount Olympus Boulevard.
- A nature play area located adjacent to the retail/cafe tenancy to allow for overlooking and passive surveillance. Planting surrounding this area would provide some demarcation of this space from the rest of the park and serve as a barrier to adjacent roads
- A community vegetable garden located to encourage activation adjacent to the blank facade.
- A paved loop to support the use of scooters and bicycles by children within the park

Further flood modelling will be required during detailed design stage to ensure any proposed filling of the park does not create additional flooding impact on the surrounds. SJB have indicated that the levels identified in the flood study can be accommodated within the future urban design of the park, including

through stairs, terracing or grading of the landscape. However, this may mean that some of the eastern areas of the park sit below the level of Mount Olympus Boulevard.



Figure 12: Indicative Layout Plan

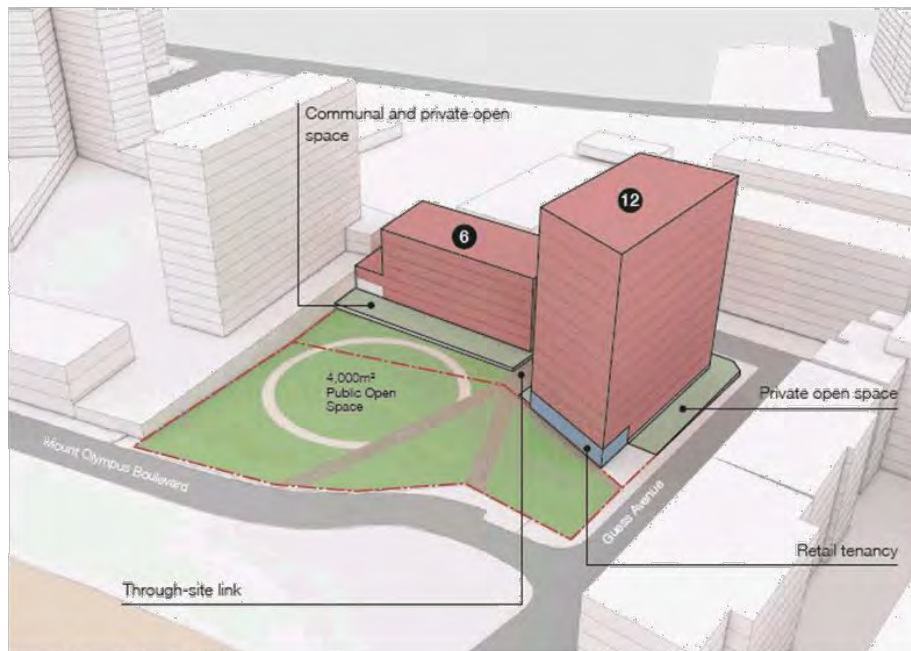


Figure 13: Block model (view from the north west)

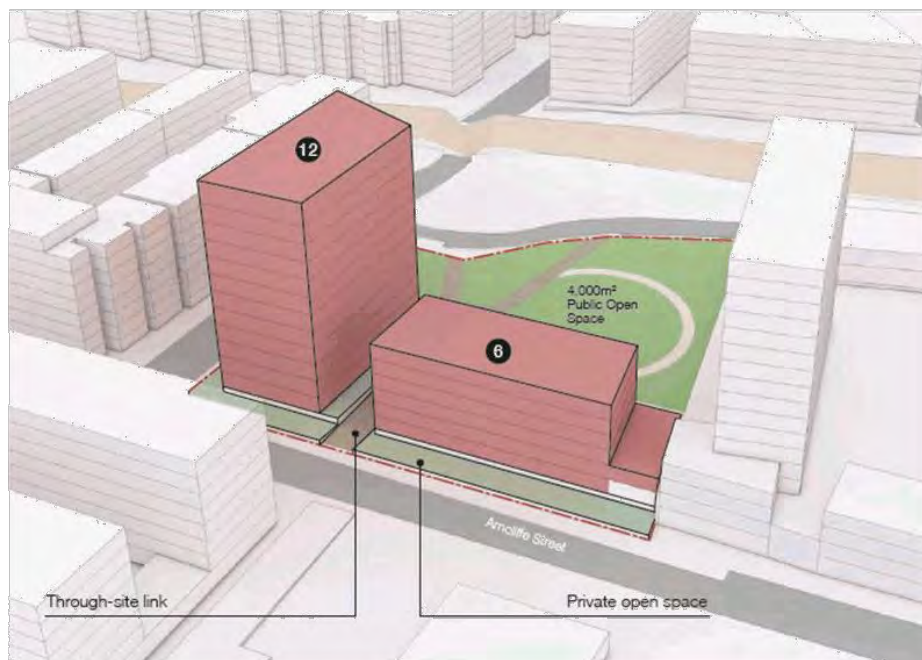


Figure 14: Block model (view from the south east)



Figure 15: Visualisation (view over the park from Mt Olympus Boulevard)



Figure 16: Visualisation (view from Arncliffe Street)



Figure 17: Visualisation (view of the ground floor retail from the park)

6.3 Proposed LEP amendments

The Planning Proposal would be facilitated by the following amendments to the Rockdale LEP for 2 Guess Avenue:

- rezone to B4 Mixed Use
- apply a maximum height of buildings of 42m
- apply a maximum floor space ratio (FSR) of 3:1, and
- remove the obligation of Council to acquire the land.

The existing controls would be retained for 4 Guess Avenue, including the RE1 Public Recreation zoning and nomination of Council as the relevant acquisition authority. The additional 423sqm of open space within 2 Guess Avenue would be required to be provided as publicly accessible open space through a DCP control as discussed below in Section 6.4.

The amendments to the Rockdale LEP are further outlined in Section 8, with proposed mapping in Section 11.

6.4 Proposed Development Control Plan amendments

An amendment to the Rockdale DCP would also be required to support the Planning Proposal.

It is proposed that this would be included as a separate site specific section of the Rockdale DCP. The draft DCP would be prepared following a Gateway decision, and would include the following:

- A requirement to provide at least 423sqm (approximately 10%) of 2 Guess Avenue as publicly accessible open space to complement the park to be provided on 4 Guess Avenue.
- Building height controls in storeys (as shown in the indicative layout plan at **Figure 12**)
- Building setback controls (as shown in the illustrated layout plan at **Figure 12**)
- A requirement for a through site link and associated design requirements (as shown in **Figure 18**)
- A requirement for an active frontage on the ground floor of the 12 storey building facing the park (as shown on the illustrated layout plan at **Figure 12**)

- Requirements for the relationship between the ground floor apartments and the public domain (see **Figure 19**).

The Wolli Creek Special Precinct within the Rockdale DCP would continue to apply, except where varied by the site specific controls.

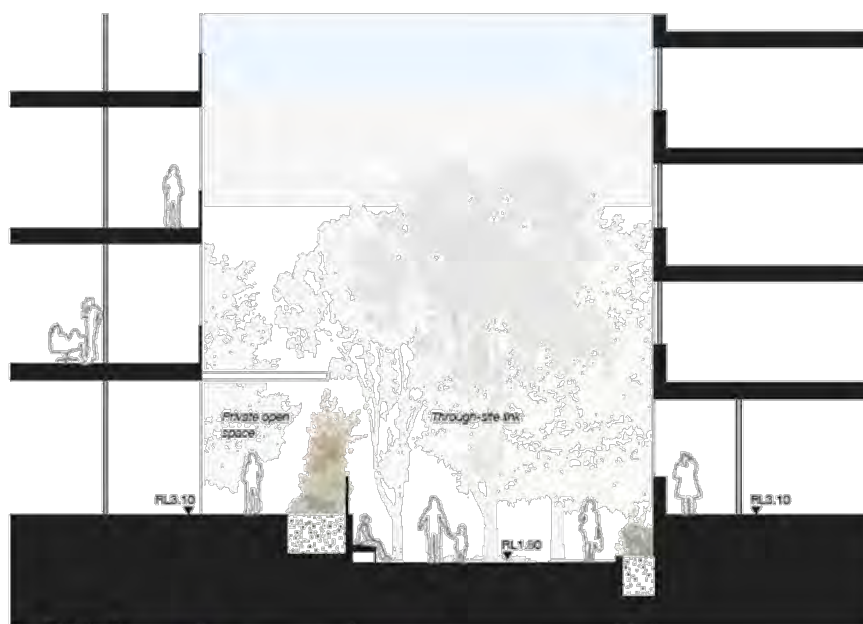


Figure 6a: Section C



Figure 18: Cross Section (through site link)

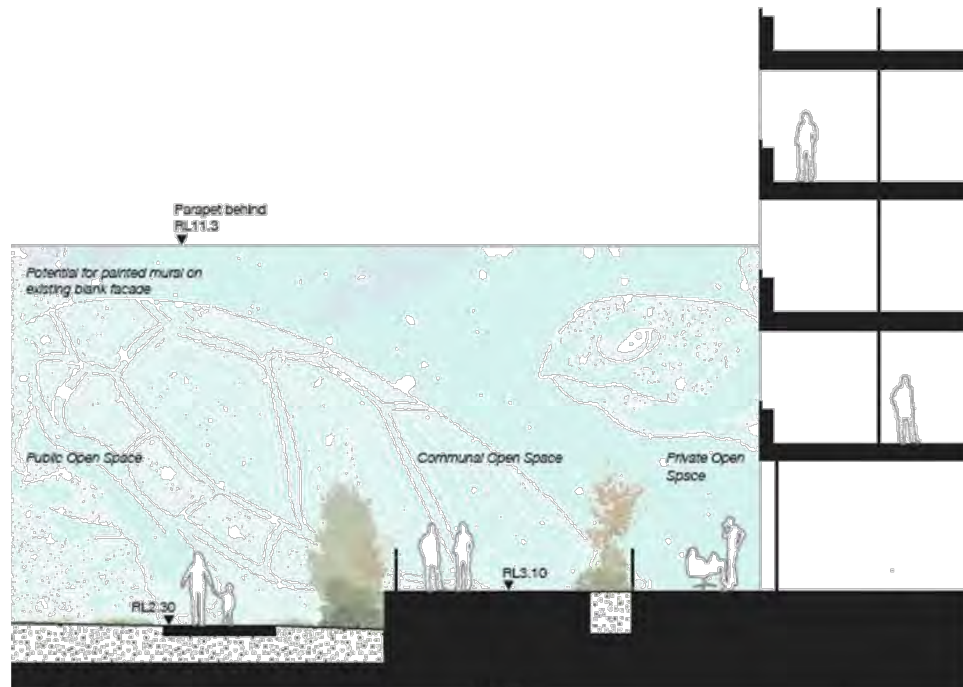


Figure 69: Section D



Figure 19: Cross section (relationship of ground floor apartments to park)

7 Objectives and intended outcomes

The objectives and intended outcomes of the proposal are to:

- Ensure adequate access to open space can be provided for the Wolli Creek area by providing a 4,000sqm local park within the site
- Provide an open space outcome within Councils capacity to deliver
- Retain the RE1 zone and acquisition requirements on 4 Guess Avenue
- Rezone 2 Guess to allow for mixed use development which could potentially accommodate 144 apartments and a ground floor retail / commercial space
- Require approximately 10% of 2 Guess Avenue to be provided as publicly accessible open space to compliment a local park on 4 Guess Avenue
- Remove Council's obligation to acquire 2 Guess Avenue as open space
- Provide for activation of the proposed local park through the location of a retail / commercial space overlooking the park
- Enhance permeability of the site by providing a through site link to Arncliffe Street,
- Retain the amenity of the surrounding residential uses by ensuring an adequate level of solar access and privacy is maintained
- Enhance the existing neighbourhood character through the provision of high quality public spaces and built form

8 Explanation of provisions

The Planning Proposal seeks to achieve the intended outcomes outlined at Section 7, by making the following amendments to the Rockdale LEP for 2 Guess Avenue:

- rezoning to B4 Mixed Use
- apply a maximum height of buildings of 42m
- apply a maximum floor space ratio (FSR) of 3:1, and
- remove the obligation of Council to acquire the land.

These changes would be made through amendments to the Land Zoning, Height of Buildings, Floor Space Ratio and Land Reservation Acquisition maps as shown in Section 11.

No changes would be made to the existing LEP provisions for 4 Guess Avenue.

It is also envisaged that this would be supported by an amendment to the Rockdale DCP to include site specific controls for the site as discussed in Section 6.4.

9 Justification

9.1 Need for the Planning Proposal

Q1. Is the Planning Proposal a result of any strategic study or report?

No. However the renewal of the site and the wider Wolli Creek area is envisaged under the Rockdale LEP, Rockdale DCP and the Wolli Creek and Bonar Street Public Domain Plan. These documents identify the site for acquisition by Council as a new park. The Planning Proposal seeks to progress Council's resolution for the site (outlined in Section 1) and to address a shortfall of local infrastructure contribution funds for the acquisition of open space whilst ensuring an adequate supply of open space to service the Wolli Creek area.

Q2. Is the Planning Proposal the best means of achieving the objective or intended outcomes or is there a better way?

The proposal is the best means of achieving the intended outcome, as amendments to the Rockdale LEP are required to implement the rezoning for 2 Guess Avenue and to apply new built form controls and remove Council's obligation to acquire this land.

9.2 Relationship to Strategic Planning Framework

Q3. Is the Planning Proposal consistent with the objectives and actions of the applicable regional or sub-regional strategy (including the Sydney Metropolitan Strategy and exhibited draft strategies)?

The Planning Proposal is consistent with the Greater Sydney Region Plan and the Eastern City District Plan as outlined in Section 4.

Q4. Is the Planning Proposal consistent with a council's local strategy or other strategic plan?

The proposal has been considered against the Bayside Community Strategic Plan 2030 and is consistent with all the relevant strategic directions and actions as outlined at Section 4.4 and Appendix A.

The proposal is also consistent with the Rockdale Residential Strategy 2007 and the Rockdale Urban Strategy 2010 as outlined in Sections 4.6 and 4.7 respectively. These strategies note the role of Wolli Creek as an urban renewal area which will accommodate housing growth and emphasise the importance of providing adequate open space to support the area.

The Rockdale Open Space and Recreation Strategy 2010 has been considered in Section 4.8. This Strategy identifies the establishment of a new park at Guess Avenue to commence within 5-10 years, the Planning Proposal demonstrates that an adequate area of open space can be maintained on the Guess Avenue site to service the wider Wolli Creek area. Further the Planning Proposal will facilitate the acquisition of 4 Guess Avenue by Council by addressing a funding shortfall for acquisition of open space.

Q5. Is the Planning Proposal consistent with applicable State Environmental Planning Policies

An analysis of the consistency of the proposed amendments with relevant State Environmental Planning Policies (SEPPs) is listed in **Table 5**.

Table 5: Analysis against State Planning Policies

Policy	Assessment
SEPP 55 – Remediation of Land	SEPP 55 introduces planning controls for the remediation of contaminated land. The policy states that the planning authority must consider whether the land is contaminated, and if so that the land is suitable in its contaminated state for the permitted uses in the zone, or that the land requires remediation before the land is developed for that purpose. A preliminary site assessment has been prepared which concludes that 4 Guess Avenue has already been remediated to an appropriate standard and that the remainder of the site (2 Guess Avenue) can likely be remediated and made suitable for land uses under B4 Mixed Use zone (see Section 9.3.7).
SEPP 65 – Design Quality of Residential Apartment Buildings	SEPP 65 seeks to promote good design of apartments through the establishment of the Apartment Design Guide. Key controls outlined in the Apartment Design Guide have informed the urban design scheme for the proposal. The proposal is capable of meeting key requirements of the Apartment Design Guide as outlined in the Urban Design Study (Appendix B).
SEPP (Building Sustainability Index: BASIX) 2004	SEPP BASIX requires all future residential developments to achieve mandated levels of energy and water efficiency, as well as thermal comfort. BASIX Certificates are included as part of future development applications to demonstrate compliance with SEPP BASIX requirements.
SEPP (Infrastructure) 2007: Development Near Rail Corridors and Busy Roads (Interim Guideline)	The SEPP (Infrastructure) 2007 sets out noise criteria for development adjacent to rail corridors and busy roads, which is supported by an Interim Guideline. The site is located in close proximity to the T4 Illawarra and Eastern Suburbs Train Line. Future development applications will need to demonstrate that noise criteria in the Interim Guideline can be achieved, which may require noise attenuation measures.

Q6. Is the Planning Proposal consistent with the applicable Ministerial Directions?

The proposal is consistent with all relevant Ministerial directions under Section 9.1 of the Environmental Planning and Assessment Act 1979 (previously Section 117).

An assessment of the proposal against the applicable Section 9.1 directions is supplied in **Table 6**.

Table 6: Analysis against Ministerial Directions

Ministerial Direction	Assessment
3. Housing, infrastructure and urban development	
3.1 Residential zones	The direction requires the relevant planning authority (RPA) to ensure that a Planning Proposal relating to residential land must include provisions to: — broaden the choice of building types and locations available in the housing market — make more efficient use of existing infrastructure and services — reduce the consumption of land for housing and associated urban development on the urban fringe, and

Ministerial Direction	Assessment
	— be of good design. The proposed LEP amendments will provide a greater range of housing options within close proximity to existing infrastructure and services. A detailed urban design study has also been prepared outlining appropriate public spaces and built form to ensure good design.
3.4 Integrating land use and transport	The direction requires the RPA to ensure that the Planning Proposal includes provisions consistent with the principles of Integrating Land Use and Transport as outlined in key polices and guidelines. The proposal meets these principles by locating retail / commercial uses, housing and open space in an area with good pedestrian and cycle connectivity and within close proximity to a range of public transport services and key roads.
3.5 Development near regulated airports and Defence airfields	This direction applies to Planning Proposals on land near a regulated airport. The direction requires the RPA to undertake consultation with the Commonwealth Department responsible for airports and the lessee / operator of the airport. It also requires the RPA to prepare appropriate development standards, such as height controls, for land affected by the prescribed airspace and not to allow development types that are incompatible with the current and future operation of that airport. The site is located within proximity of Sydney Airport. Accordingly, a preliminary height assessment has been carried to identify the prescribed airport limitations for the site. The proposed maximum height of 42m is below all airport limitations for the site. Accordingly, the proposal would not impact on the operations of Sydney Airport. Consultation would be carried out with the relevant Commonwealth Government agencies and the airport operator / lessee during the public exhibition of the proposal. The direction also includes requirements for land effected by aircraft noise above the ANEF 20 contour, however the site is outside the ANEF 20 contour.
4. Hazards and risks	
4.1 Acid Sulfate soils	The direction requires the RPA to prepare an acid sulfate soils study where it proposes an intensification of land uses on land identified as having a probability of containing acid sulfate soils. The Rockdale LEP identifies the site as having probability of containing acid sulphate soils (Class 3). Accordingly, an acid sulphate soil study will be prepared to support the Planning Proposal following a gateway decision.
4.1 Flood Prone Land	The direction applies when a Planning Proposal alters a zone or a provision that affects flood prone land. The direction requires the RPA to ensure that the Planning Proposal: Gives effect to the NSW Flood Prone Land Policy and principles of the Floodplain Development Manual 2005.

Ministerial Direction	Assessment
	The Planning Proposal <u>must not</u>: • rezone land within the flood planning areas from a recreation zone to a residential zone / business zone. • contain provisions that apply to the flood planning areas which: – permit development in floodway areas, – permit development that will result in significant flood impacts to other properties, – permit a significant increase in the development of that land, – are likely to result in a substantially increased requirement for government spending on flood mitigation measures, infrastructure or services, or – permit development to be carried out without development consent except for the purposes of agriculture (not including dams, drainage canals, levees, buildings or structures in floodways or high hazard areas), roads or exempt development. A Planning Proposal may be inconsistent with this direction only if the RPA can satisfy the Secretary of the Department of Planning and Environment (or delegate) that the Planning Proposal is in accordance with a floodplain risk management plan prepared in accordance with the principles and guidelines of the Floodplain Development Manual 2005. The flood assessment notes that the proposal meets the requirements of the direction as the site: • is not a floodway • does not result in significant impacts off-site • results in development consistent with the surrounding area • will include flood mitigation measures constructed by the developer of that land • only permit works with consent.
6. Local planning	
6.2 Reserving land for a public purpose	This direction requires the RPA to ensure that a Planning Proposal does not create, alter or reduce existing zonings or reservations of land for public purposes without the approval of the relevant public authority and the Secretary of the Department of Planning and Environment (or delegate). The proposal has been prepared by the relevant public authority (being Council). The approval of the Secretary (or delegate) will be sought through the planning process prior to rezoning. Detailed analysis has been provided to demonstrate the rezoning and removal of the reservation of the land for a public purpose is justified and that adequate access to public open space can be provided (Section 5).
5. Regional planning	
5.1 Implementing the Metropolitan Plan	This direction requires the RPA to ensure that a Planning Proposal is consistent with A Plan for Growing Sydney. A Plan for Growing Sydney was superseded by the Greater Sydney Region Plan in March 2018. The proposal is consistent with The Greater Sydney Region Plan as outlined in Section 4.1.

9.3 Section C: Environmental, social and economic impacts

Q7. Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?

The proposal is contained within a site long used for industrial purposes and is largely cleared of vegetation. No critical habitat or threatened species will be affected as a result of this proposal.

Q8. Are there any other likely environmental effects as a result of the Planning Proposal and how are they proposed to be managed.

9.3.1 Loss of open space

The Planning Proposal will result in some loss of proposed local open space, however the proposal ensures over 50% of the site is retained as open space. As demonstrated in Section 5 and in the Open Space Assessment prepared by SGS Economics and Planning, this will maintain an adequate supply and proximity to open space for existing and future residents in the local area.

9.3.2 Visual and privacy impact

The proposal will result in a changed urban environment than what is envisaged under the current zone, with two residential buildings of 6 and 12 storeys respectively to be located on the site fronting Arncliffe Street. This will result in some visual impact on the surrounding area and potential for overlooking of existing dwellings and balconies of adjacent apartments.

However, the delivery of 4,000sqm of open space on the site will maintain and enhance the outlook for many of these apartments, particularly those located directly to the east of the site. Further, the proposal incorporates separation distances in accordance with the Apartment Design Guide to ensure that privacy impacts are minimised.

The proposal appropriately responds to the surrounding built form character, which predominantly comprises lower scale perimeter block development with height consolidated within tower forms on block corners. The proposal will contribute to the existing height transition from Wolli Creek town centre towards the south and west, with site being located between a 15 storey building and 9 storey building.

9.3.3 Overshadowing and solar access

The proposed development in the southern portion of the site will create some additional overshadowing of buildings to its south along Guess Avenue and Arncliffe Street.

Shadow diagrams and solar access testing has been carried out by SJB and is included in the urban design study and summarised below.

Development along Guess Avenue is impacted by additional overshadowing by the proposed development from 10am-12noon. Apartments along this street should still be able to retain 2+ hours of solar access from 12:30-2:30pm during midwinter.

Development along Arncliffe Street is impacted by additional overshadowing from the proposed development from 10am to 3pm. Existing residential buildings along the southern edge of Arncliffe Street currently receive 2+ hours of direct solar access during midwinter. The proposed building will create additional overshadowing across both buildings with the most significant impact on the lower levels of 40-50 Arncliffe Street. The majority of apartments within 40-50 Arncliffe would retain 2+ hours of first solar access. It is expected that 52-62 Arncliffe Street should be able to maintain a minimum of 2+ hours of direct solar access to a minimum of 70% of its dwellings, to comply with the Apartment Design Guide, however more detailed studies will be required at development application stage to determine the full impact of the

proposed built form on 40-50 Arncliffe Street. There is no impact on the communal open space of 40-50 Arncliffe street, located on the roof of the development.

The urban design study also considered solar access to proposed apartments. It concluded that it is likely that 60% of apartments will be able to achieve 2+ hours of solar access in midwinter, to achieve the Apartment Design Guide requirements.

The proposed park has been located to the north of the site to enable good solar access. This is reflected in the shadow diagrams which show the park being receiving excellent solar access from 10AM onwards in midwinter.

9.3.4 Flooding and stormwater

A flooding and stormwater management assessment has been prepared by Northrop to support the proposal which is discussed below.

The flood assessment including flood modelling of the proposal using the Bonnie Doon, Eve Street / Cahill Park flood study prepared for Council by WMA Water (2017). The WMA flood model was updated to include recent development in the surrounding area, and was used to test the revised existing case against the development case (based on the proposal).

To test the development case, building blockouts were included for the proposed development, the site elevation on the eastern boundary of the public space was raised to 3m AHD to provide a low hazard evacuation route toward Mount Olympus Boulevard, and the levels in the western corner were lowered to 2m AHD to divert flows from entering from Mount Olympus Boulevard to Guess Avenue (**Figure 20**).

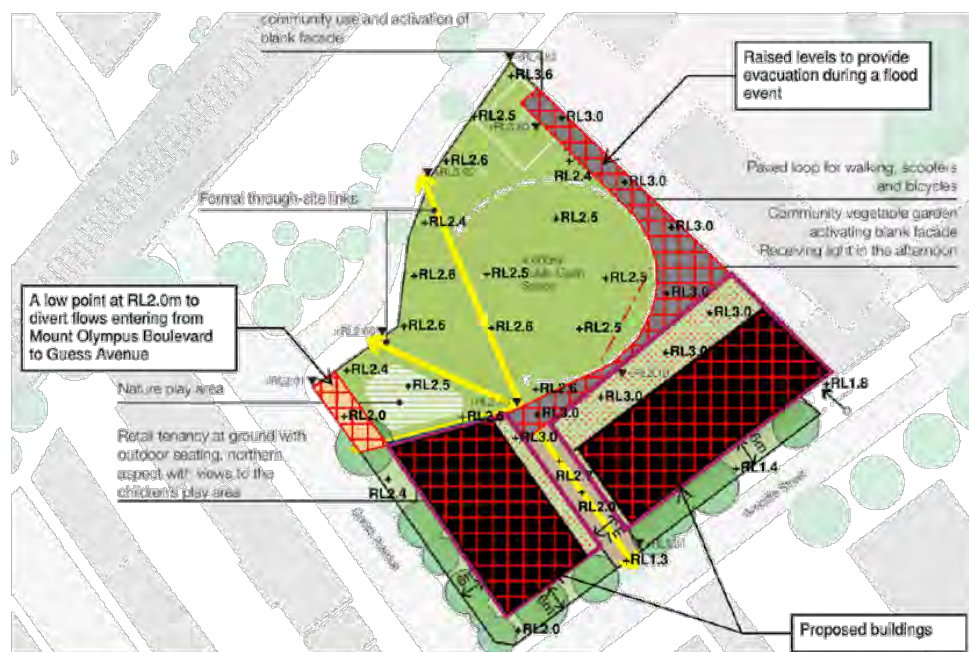


Figure 20: Proposed elevation changes to flood model

All other levels across the site were retained consistent with the existing WMA Model (which were surveyed prior to the remediation work on 4 Guess Avenue). It is noted that these levels are lower than the levels shown for the park in the indicative layout plan (**Figure 12**).

Further testing will need to be carried out to ensure that any future filling of the park does not result in any offsite flood impacts. SJB have indicated that the levels identified in the flood study can be accommodated within the future urban design of the park, including through stairs, terracing or grading of the landscape. However, this may mean that some of the eastern areas of the park sit below the level of Mount Olympus Boulevard.

A comparison of pre to post development 1% AEP levels is presented in **Figure 21**. With the development included in the model, there is an approximately 0.3m reduction in the flood levels along the western boundary of the park. This is due to the removal of the existing building in the western portion of the site as it allows more flows downstream through the proposed public open space.

From the assessment, it was determined there was no significant impacts to adjoining properties as a result of the development.

The flood assessment highlights that the solutions proposed in the assessment demonstrate the feasibility of complying with Council's floodplain development controls. It notes that this does not preclude different building arrangements or potential complying solutions from being investigated or approved on-site at the development stage including:

- flood storage tanks
- amended park topography
- vertical evacuation or refuge on-site in publicly accessible building areas
- suspended building elements to reduce displaced flood storage.

The stormwater management report identified the following requirements for the proposed development, which would be further addressed at development application stage:

- Water Quality measures would be required for the proposed zoning and development on this site. Water quality treatment could be achieved using proprietary filter cartridge devices or through bioretention treatment located in the landscaped areas of the site.
- A rainwater tank is required and must comply with requirements from BASIX for residential apartments, and Council's requirement in addition if a Commercial component is proposed.
- On-site Detention and Retention is not required, however a Section 7.11 contribution is necessary to provide for drainage augmentation.
- There are several possible stormwater connection points in Arncliffe Street. The legal point of discharge chosen should be coordinated with the Council's existing plans for drainage network upgrades in the area. Furthermore, the upgrades planned should ensure there is capacity to include the site drainage, now that a partly impervious development is proposed.

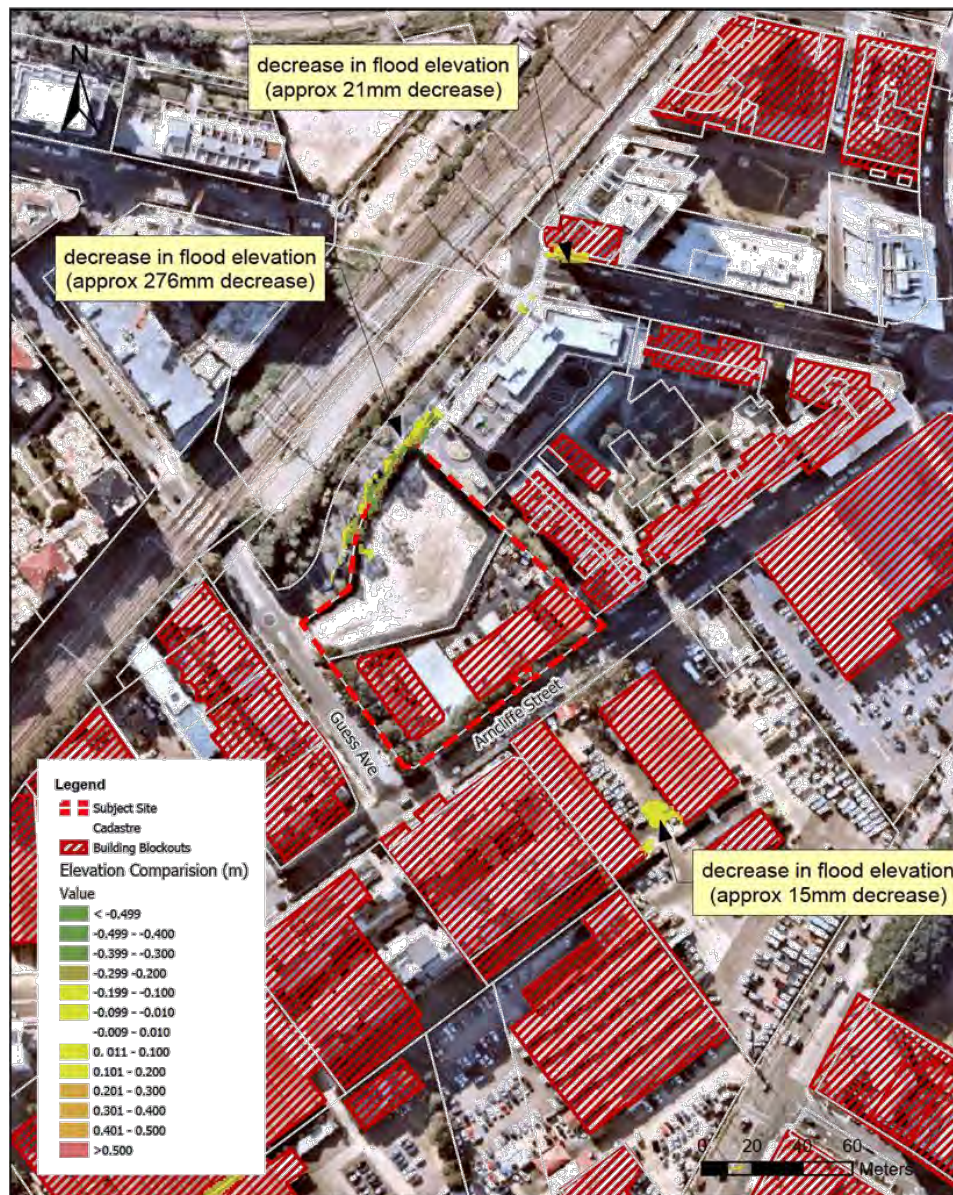


Figure 21: 1% AEP Post / Pre development flood elevation comparison

9.3.5 Traffic and car parking

A traffic impact assessment has been prepared by Bitzios Consulting (Appendix E) to support the Planning Proposal, which is summarised below.

Traffic impact

To determine the impacts of the development which would be facilitated by the Planning Proposal, Bitzios used an existing 'Paramics' microsimulation model of Wolli Creek, Turrella and Arncliffe which they prepared in 2012 on behalf of Council to ascertain the performance of the road network in 2031.

The traffic model was updated to input the proposed development and to reflect proposed changes to the road network on the streets surrounding the site which involves converting sections of Arncliffe Street, Guess Avenue, Mount Olympus Drive and Magdalene Terrace to one-way traffic.

The modelled impacts of the proposed development on the intersections of Princes Highway / Brodie Spark Drive, Magdalene Terrace / Arncliffe Street and Guess Avenue / Mount Olympus Boulevard in the year 2031 under the one way circuit scenario is provided in Bitzios Consulting concluded that Paramics modelling indicates that the proposed development has a negligible impact on the performance of the road network. This is illustrated in **Figure 22** and **Figure 23** below.

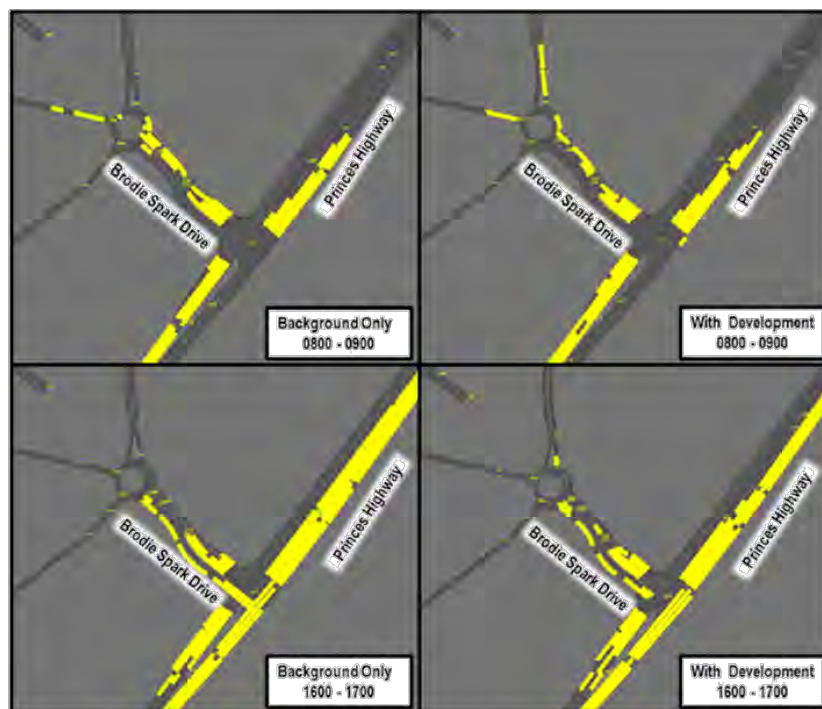


Figure 22: Traffic modelling results maximum queue Princes Highway / Brodie Spark Drive

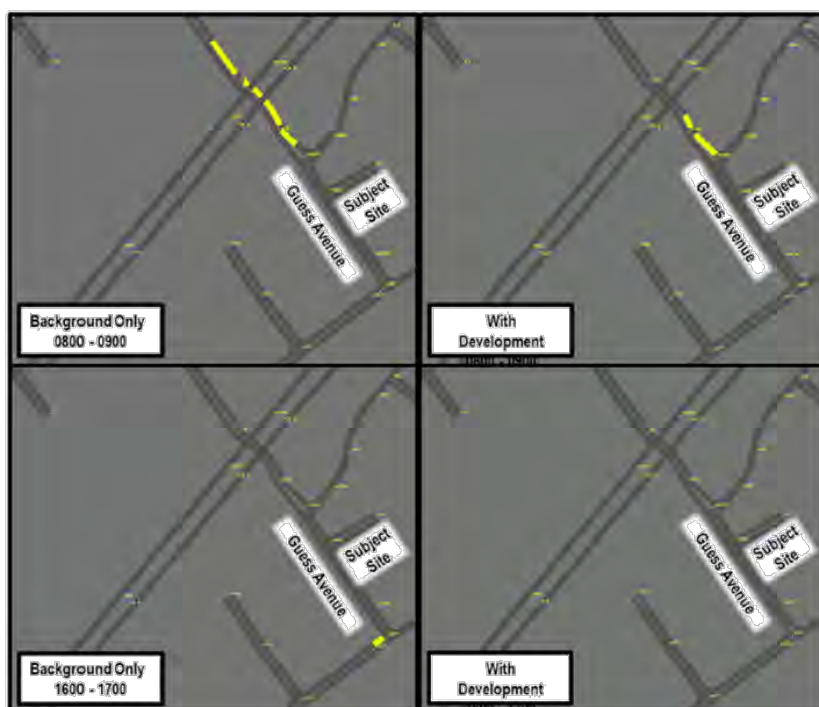


Figure 23: Traffic modelling results maximum queue Magdalene/Arncliffe and Guess /Mount Olympus

Parking

This traffic assessment recommended that, in accordance with the Apartment Design Guide, the lesser of the car parking requirements within the RMS Guide to Traffic Generating Developments or the Rockdale DCP will be taken as the site is within 800m of a railway station. The RMS rate for CBD development was also recommended to be applied, rather than the rate for metropolitan sub regional development, due to the site's close proximity to public transport.

The lower of these rates is identified in **Table 7** below and would result in the requirement for 122 car spaces, based on the indicative concept scheme that has been prepared.

Table 7: Car parking requirements

Land use	Type	Quantity	Source of rate	Car parking rate	Parking required
Residential units	1 bedroom	58 units	RMS	0.4 spaces per unit	23
	2 bedroom	58 units	RMS	0.4 spaces per unit	40
	3 bedroom	28 units	RMS	0.4 spaces per unit	35
	Visitor	144 units	RMS	1 space per 7 units	21
Cafe	114sqm	114sqm	DCP	1 space per 30sqm GFA	3
TOTAL					122

The assessment also noted that the café car parking could be further reduced, in accordance with the Rockdale DCP which allows for a 20% reduction to be applied due to its location within the Wolli Creek town centre.

The assessment also recommended that provision of car share spaces could be considered to allow for a relaxation in resident car spaces as part of any future development application/s over the subject site.

Based on the Rockdale DCP the assessment highlighted that 15 bicycle parking spaces and 10 motorcycle parking spaces would be required within the development.

9.3.6 Aeronautical

The site is located within 2.8km north west of Sydney Airports Aerodrome Reference Point. A preliminary height assessment has been undertaken by Landrum & Brown (Appendix F) to ensure that the proposal would not impact on the operations of Sydney Airport. The assessment concluded that the site has the following prescribed airport limitations:

- The Inner Horizontal Surface of the OLS for Sydney Airport - 51m AHD
- The Sydney Airport PANS OPS surface related to the RNAV-Z (GNSS) RWY 16R – 66.62 m AHD
- The Sydney Airport PANS OPS surface related to the RNAV-Z (GNSS) RWY 07 – 95.55 m AHD
- The Sydney TAR clearance planes of 67.5 m AHD (however the effect of a higher building would be mitigated by the Cecil Park TAR and ADS-B receivers in the area; and
- The RTCC protection surface - 152 m AHD.

The Planning Proposal seeks includes a maximum height of 42m which is below all of the prescribed airport limitations identified for the site. Accordingly, the proposal would not impact on the operations of the Sydney Airport.

Notwithstanding, further consultation would be carried out with relevant Commonwealth Government agencies and the operator / lessee of the Sydney Airport, in accordance with the requirements of Ministerial Direction 3.5 (see Section 9.2, **Table 6**).

9.3.7 Contamination

A preliminary site investigation report has been prepared by Senversa (Appendix G) to consider whether the site is likely to be contaminated and the potential for any contamination to impact on the suitability of the site for the proposed land use.

The report notes that there are a number of previous and current uses on the site with potential to result in contamination.

The historical records search indicated that the site has been used as market gardens, tramway yard/depot and a storage depot which may have included storage, handling and use of petroleum products, chemicals and potential hazardous substances.

The report notes that 2 Guess Avenue is currently used as a truck parts repairs and storage depot including external engine degreasing and cleaning areas, a waste oil underground storage tank, drums and truck parts depot, a caustic bath cleaning unit, a painting cabinet, a diesel above ground storage tank and internal storage areas. 4 Guess Avenue is currently vacant and has undergone a recent remediation process.

The preliminary site investigation reviewed a number of contamination studies that have been previously been carried out on the site, including an Environmental Site Assessment relating to 2 Guess Avenue (Coffey 2004), and a Detailed Site Investigation (Greencap 2016), Remedial Action Plan (JBS&G 2018) and Validation Report (JBS&G 2019) relating to 4 Guess Avenue. A site inspection was also undertaken.

The report outlined a detailed list of all contaminants of potential concern associated with current and historical land uses undertaken at the site and in the surrounding area and associated with imported fill material used on site.

Senversa recommended that additional investigation is required to assess the contamination status of the site, principally associated with Lot 2 Guess Avenue, and to identify any remediation or management requirements.

However, for the purposes of the rezoning Senversa concluded that, considering the type of redevelopment occurring in the surrounding area (high-density residential) and the recent successful remediation completed on the northern portion of the site (4 Guess Avenue), the remainder of the site (2 Guess Avenue) can likely be remediated, if required, and made suitable for land uses under B4 Mixed Use zone.

Q9. Has the Planning Proposal adequately addressed any social or economic effects?

9.3.8 Economic impact

The proposal will not result in any significant economic impacts. The redevelopment of the site is likely to generate jobs in the short term, and the location of a retail / café use at the site would generate a small number of jobs on the site.

The Planning Proposal will also provide for an open space outcome that serves the need of the local community and is within Council's capacity to deliver. The development of open space in this location will have indirect economic benefits for the Wolli Creek area by enhancing activation and improving the streetscape, amenity and visual appeal of the area.

A commercial and retail demand assessment has been prepared by Hill PDA to support the Planning Proposal (Appendix H). The assessment found that whilst there is demand for additional commercial floor space within Wolli Creek over the next 17 years, the site has various constraints on its ability to supply commercial floorspace, in particular the distance of the site from the existing Wolli Creek commercial core and a preference of tenants to be located within the commercial core. The assessment also noted that there is demand for additional retail space within Wolli Creek over the next 17 years. However, it concluded that this space would be better located closer to the train station and the existing retail centre / supermarkets. The assessment recommended some retail floor space (100-200sqm) could be accommodated within the site and that this could be located within a park setting facing open space to provide a restaurant or a few small cafes. The Planning Proposal has responded to this recommendation

through the inclusion of 115sqm of commercial floor space to accommodate a retail / café tenancy on the ground floor of the 12 storey building overlooking the park, within the indicative concept plan.

9.3.9 Social impact

The proposal will not result in any significant social impacts. Further, the proposal will facilitate the delivery of a large scale park on the site which will be a significant social benefit for existing and future residents to the area.

Q10. Is there adequate social infrastructure for the Planning Proposal

The open space and community needs assessment prepared by SGS Economics and Planning confirms that the proposal provides an adequate quantity and accessibility of local open space for the surrounding area. This is discussed in further detail in Section 5.

The SGS assessment also included a high level analysis of community infrastructure needs to support the proposal. The assessment noted an undersupply of child care and pre-school facilities within Wolli Creek and noted that access to these types of facilities improved including through accommodating this use within the future development of the site. It is noted that the proposed zone, B4 Mixed Use, allows for child care facilities.

10 Consultation

Q11. What are the views of the State and Commonwealth public authorities consulted in accordance with the Gateway determination

Consultation would be carried out with relevant State and Commonwealth public authorities following a Gateway decision. Consultation would also be carried out with the community at this stage.

11 Mapping

The proposed changes to the relevant maps in the Rockdale LEP are shown in **Figure 24** and **Figure 27**.



Proposed LEP Land Zoning Map

Key

- Site Boundary
- B4 Mixed Use
- R4 High Density Residential
- R2 Low Density Residential
- RE1 Public Recreation
- SP2 Infrastructure

Figure 24: Proposed Zoning Map

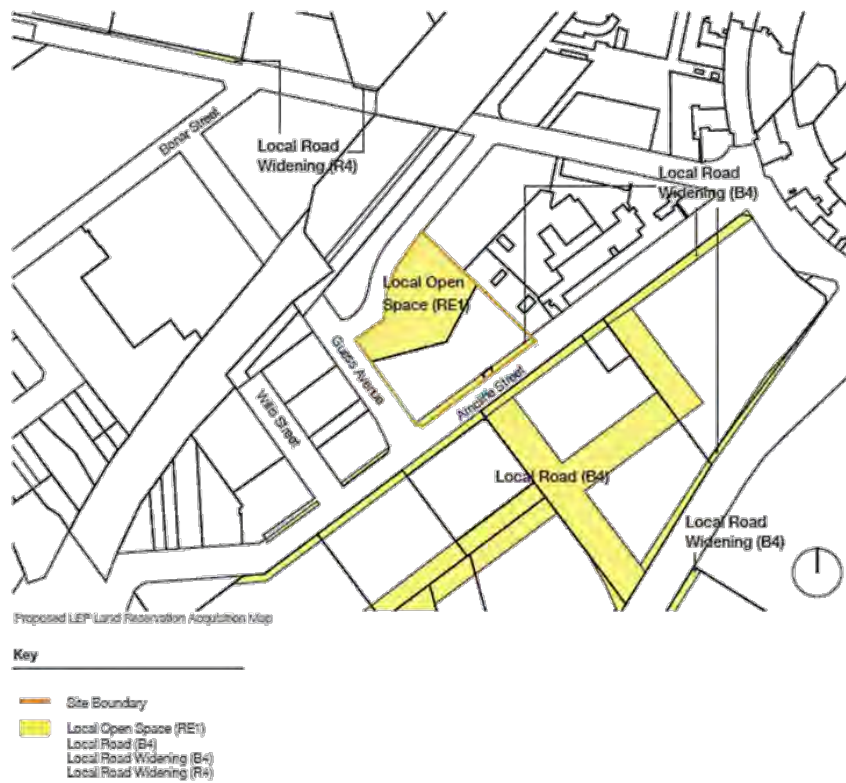
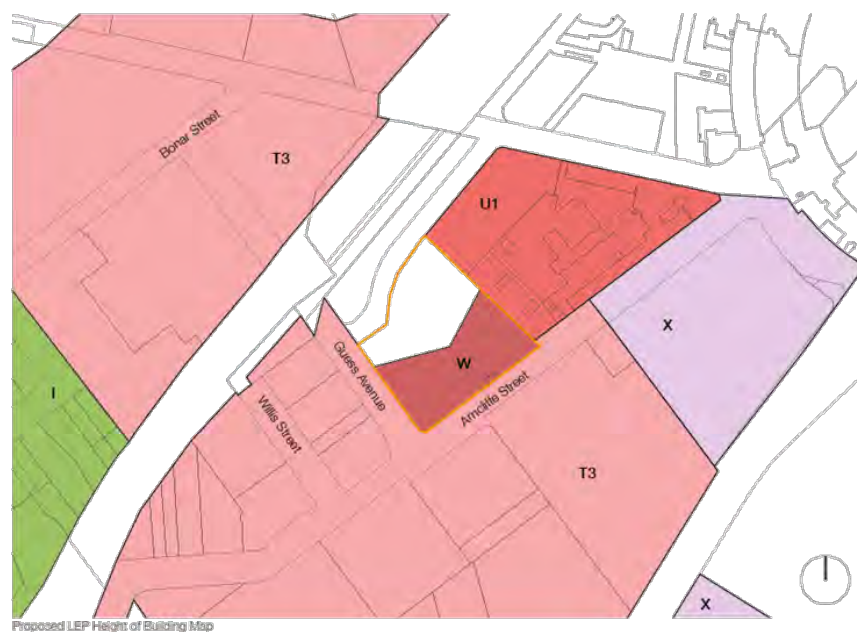


Figure 25: Proposed Land Reservation Acquisition Map



Figure 26: Proposed FSR Map

**Key**

- Site Boundary
- X - 46m
- W - 42m
- U1 - 31m
- T3 - 28m
- I - 8.5

Figure 27: Proposed Height of Buildings Map

12 Project timeline

An indicative project timeframe is set out in **Table 8** below.

Table 8: Anticipated project timeline

Task	Timing
Consideration by Local Planning Panel	15 August 2019
Consideration by Rockdale Council	September 2019
Rockdale Council submits Planning Proposal to DPE for review	September 2019
Receive Gateway determination	October 2019
Completion of public exhibition and public authority consultation	December 2019
Completion of review of submissions received during public exhibition and public authority consultation	January 2019
Approval by relevant planning authority	February 2019
Drafting of instrument and finalisation of mapping	February 2019
Amendment to Rockdale LEP notified	March 2019

13 Conclusion

This Planning Proposal has been progressed on behalf of Council to provide for an open space outcome that serves the need of the local community and is within Council's capacity to deliver.

A key component of this Planning Proposal has been the preparation of an open space assessment by SGS Economics and Planning to consider the implications of this decision on the supply and accessibility of public open space for the Wolli Creek area based on the relevant performance criteria outlined in the Government Architect NSW draft Open Space for Recreation Guide.

SGS concluded that a component of open space should be provided on the site to meet the criteria for proximity to public open space (200m walking distance) and that an area of 4,000sqm would be preferable to achieve a diversity of recreational activities within the space.

Accordingly, the proposal for the site was developed with a view to delivering a component of open space on the site, whilst achieving an outcome within Council's capacity to deliver.

The resulting proposal allows for delivery of a 4,000sqm local park on the northern parts of the site comprising 4 Guess Avenue (3,577sqm) and part of 2 Guess Avenue (423sqm / approximately 10% of the lot area). This part of the site is best located to provide open space being to the north and able to achieve good solar access for most of the day. Further, 4 Guess Avenue is currently within Government ownership, being NSW Government Property, which may reduce the acquisition liability on Council if the site were to be acquired.

The delivery of a 4,000sqm park on the site exceeds the recommended minimum area for a local park in the Government Architect NSW draft Open Space for Recreation Guide, being a preferred minimum of 3,000sqm with an absolute minimum of 1,500sqm where more efficient provision cannot be accommodated.

An indicative concept plan has been prepared which identifies the potential for the redevelopment of the remaining parts of 2 Guess Avenue for high density residential / mixed use delivering 144 residential apartments and 115sqm of ground floor commercial to accommodate a retail use / café to activate the park.

To facilitate the delivery of the park, Council would need to initiate acquisition of 4 Guess Avenue from NSW Government Property for local open space. To facilitate the redevelopment of the remainder of the site it is recommended that the following amendments be made to the Rockdale LEP for 2 Guess Avenue:

- rezone to B4 Mixed Use
- apply a maximum height of buildings of 42m
- apply a maximum floor space ratio (FSR) of 3:1, and
- remove the obligation of Council to acquire the land.

It is envisaged that this would be supported by an amendment to the Rockdale DCP to include site specific controls for the site. This would include a requirement to provide at least 423sqm (approximately 10%) of 2 Guess Avenue as publicly accessible open space to compliment the park to be provided on 4 Guess Avenue. It would also include built form controls, design guidelines for the through site link and public domain interface, and the landscape concept plan for the proposed park.

The Wolli Creek Special Precinct within the Rockdale DCP would continue to apply, except where varied by the site specific controls. The draft DCP amendment would be prepared following a Gateway decision.

Appendix A Consistency with Bayside 2030

Theme One – Bayside will be a vibrant place	How We Will Get There	Consistency
Strategic Direction – Our places are people-focussed	Local areas are activated with cafes, restaurants and cultural events	The proposal ensures that the open space will be activated through the provision of a new park and the location of a retail / café tenancy at the ground floor overlooking the park.
	Places have their own village atmosphere and sense of identity	The proposal will enhance the village atmosphere and identity of Wolli Creek by providing additional open space.
	My community and council work in partnership to deliver better local outcomes	The community will be consulted on the Planning Proposal through the process.
	The public spaces I use are innovative and put people first	This is addressed in the concept design for the new park which identifies a range of activities to meet the needs of the local community.
	There is an appropriate and community-owned response to threats	The community will be consulted through the Planning Proposal process.
Strategic Direction – Our places connect people	Walking and cycling is easy in the City and is located in open space where possible	The proposal will provide for enhanced walking and cycling by providing a park and through site link on the site enhancing the permeability of the street block between Guess Avenue and Magdalene Terrace.
	We are one community with shared objectives and desires	Not relevant
	Our heritage and history is valued and respected	Not relevant
Strategic Direction – Our places are acceptable to all	Open space is accessible and provides a range of active and passive recreation opportunities to match our growing community	The proposal ensures that adequate accessibility to open space is provided for existing and future residents of Wolli Creek.
	SMART Cities – making life better through smart use of technologies	Not relevant, how smart use of technology can be explored through subsequent development applications relating to the site.
	Assets meet community expectations	The proposal includes a detailed analysis to ensure an adequate provision of public open space is maintained. Community expectations will be further considered through community consultation on the Planning Proposal.
	Bayside provides safe and engaging spaces, places and interactions	The proposed includes an indicative layout plan and concept landscape plan for the proposed open space which considers the delivery of safe and engaging spaces. This includes identifying opportunities for passive surveillance and providing a variety of spaces within the park to meet varying needs of the community.
	People who need to can access affordable housing	Not relevant

	We welcome visitors and tourists to our City	Not relevant
Strategic Direction – My place will be special to me	Local developments reflect innovative, good design and incorporate open space and consider vertical families	The proposal has been informed by a detailed urban design analysis to ensure a good urban design outcome. This includes a concept landscape plan for the proposed open space. Design quality will also be considered in subsequent development applications relating to the site.
	Bayside will be a 30 minute City – residents work locally or work off-site – no-one has to travel for more than 30 minutes to work	The proposal supports this action by locating housing in close proximity to public transport which provides connections to a variety of employment centres within 30 minutes, including the Sydney CBD.
	Traffic and parking issues are a thing of the past	Traffic study
	Road, rates and rubbish are not forgotten	Not relevant
	Gateway sites are welcoming and attractive	Not relevant
Theme Two – In 2030 our people will be connected in a smart City	How We Will Get There	Consistency
Strategic Direction – We benefit from technology	Council engages with us and decision making is transparent and data driven	The community will be consulted through the Planning Proposal process.
	We can access information and services online and through social media	Not relevant
	We are a digital community	Not relevant
	Technological change has been harnessed and we are sharing the benefits	Not relevant
Strategic Direction – We are unified and excited about our future	Community leadership is developed and supported	Not relevant
	We are all included and have a part to play in the City	Not relevant
	The City is run by, with and for the people	Not relevant
	We are proud of where we live	The proposal will enhance the amenity, streetscape and visual appeal of the surrounding area enhancing pride in the Wolli Creek area.
Strategic Direction – The community is valued	Aboriginal culture and history is recognised and celebrated	Not relevant
	We are a healthy community with access to active recreation and health education	The proposal ensures adequate access to public open space and recreation opportunities for the Wolli Creek area.
	All segments of our community are catered for – children, families, young people and seniors	Not relevant
	Opportunities for passive and active activities are available to community members, including people with pets	The proposal ensures adequate access to passive and active open space for the Wolli Creek area.

	The value of pets in the community is recognised and they are welcomed across the city	Not relevant – council will apply relevant policies regarding access for pets to public open space at the development stage.
Strategic Direction – We treat each other with dignity and respect	We can participate in cultural and arts events which reflect and involve the community	Not relevant
	Flexible care/support arrangements for seniors, children and people with disabilities are available across the LGA	Not relevant
	Cultural diversity is reflected and celebrated in the City's activities	Not relevant
	Our public buildings are important community hubs and are well maintained and accessible	Not relevant
Theme Three – In 2030 bayside will be green, leafy and sustainable	How We Will Get There	Consistency
Strategic Direction – Our waste is well managed	I can reduce my waste through recycling and community education	Not relevant – waste management will be addressed at the DA stage, in line with relevant Council policies.
	Illegal dumping is a thing of the past	Not relevant – Council policies on management of dumping will apply.
Strategic Direction – We are prepared for climate change	We understand climate change and are prepared for the impacts	Flooding
	Our City is prepared for/able to cope with severe weather events	Flooding
	Our streetscapes are green and welcoming	The proposal seeks to retain street trees along Arncliffe Street and Guess Avenue and additional tree planting and landscaping would be provided within the public park.
Strategic Direction – We increase our use of renewable energy	Our City promotes the use of renewable energy through community education	Not relevant – BASIX will apply to future development.
	Our City models use of renewable energy and reports gains benefits to the community	Not relevant
Strategic Direction – Waterways and green corridors are regenerated and preserved	Water is recycled and re-used	Not relevant
	The community is involved in the preservation of our natural areas	Not relevant
	We have an enhanced green grid/tree canopy	The proposal will enhance the urban tree canopy. The site is largely cleared of trees. Existing trees will be retained and additional trees planted in within the proposed open space.
Theme Four – In 2030 we will be a prosperous community	How We Will Get There	Consistency
Strategic Direction – Opportunities for economic development are recognised	Major employers support/partner with local small business	Not relevant

	We are an international hub for transport and logistics-related business	Not relevant
	Industrial lands and employment lands are preserved – partnering with major employers to support local jobs	Not relevant – whilst the site is currently used for industrial purposes, the site is already envisaged for renewal. This is reflected in the RE1 Public Recreation zoning.
Strategic Direction – Local housing, employment and business opportunities area generated	Bayside will be a 30 minute City – residents work local or work off-site – no-one has to travel for more than 30 minutes to work	The proposal supports this action by locating housing in close proximity to public transport which provides connections to a variety of employment centres within 30 minutes including the Sydney CBD.
	Council is a major employer, supports local apprenticeships and cadetships	Not relevant
	People who need to can access affordable housing	Not relevant
Strategic Direction – The transport system works	We can easily travel around the LGA – traffic problems/gridlock are a thing of the past	Traffic study
	We can easily travel to work by accessible, reliable public transport	The proposal supports this action by locating housing in close proximity to public transport.
Strategic Direction – We are prepared for a sharing economy	Innovative businesses are supported to locate in Bayside	Not relevant.
	Local Plans and regulations have kept pace with the sharing economy	Not relevant.



Appendix B Urban Design Study



Appendix C Open space and community needs study



Appendix D Flood study



Appendix E Traffic assessment



Appendix F Aeronautical study



Appendix G Contamination study



Appendix H Retail and commercial demand study



We create amazing places



At SJB we believe that the future of the city
is in generating a rich urban experience
through the delivery of density and activity,
facilitated by land uses, at various scales,
designed for everyone.

Ref: #5995
Version: 07
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Issued	
01 - Draft for review	12.07.2019
02 - Draft for review	18.07.2019
03 - Draft w Visualisations	19.07.2019
04 - Draft for review	29.07.2019
05 - Final	30.07.2019
06 - Final	31.07.2019
07 - Final	31.07.2019

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Project Background

1

1.1 Purpose of Report

SJB has been engaged by Bayside Council (BSC) to prepare an urban design study to consider potential rezoning of 2&4 Guess Avenue to B4 Mixed Use, having consideration of the need to provide a component of public open space (RE1 Public Recreation) on the site.

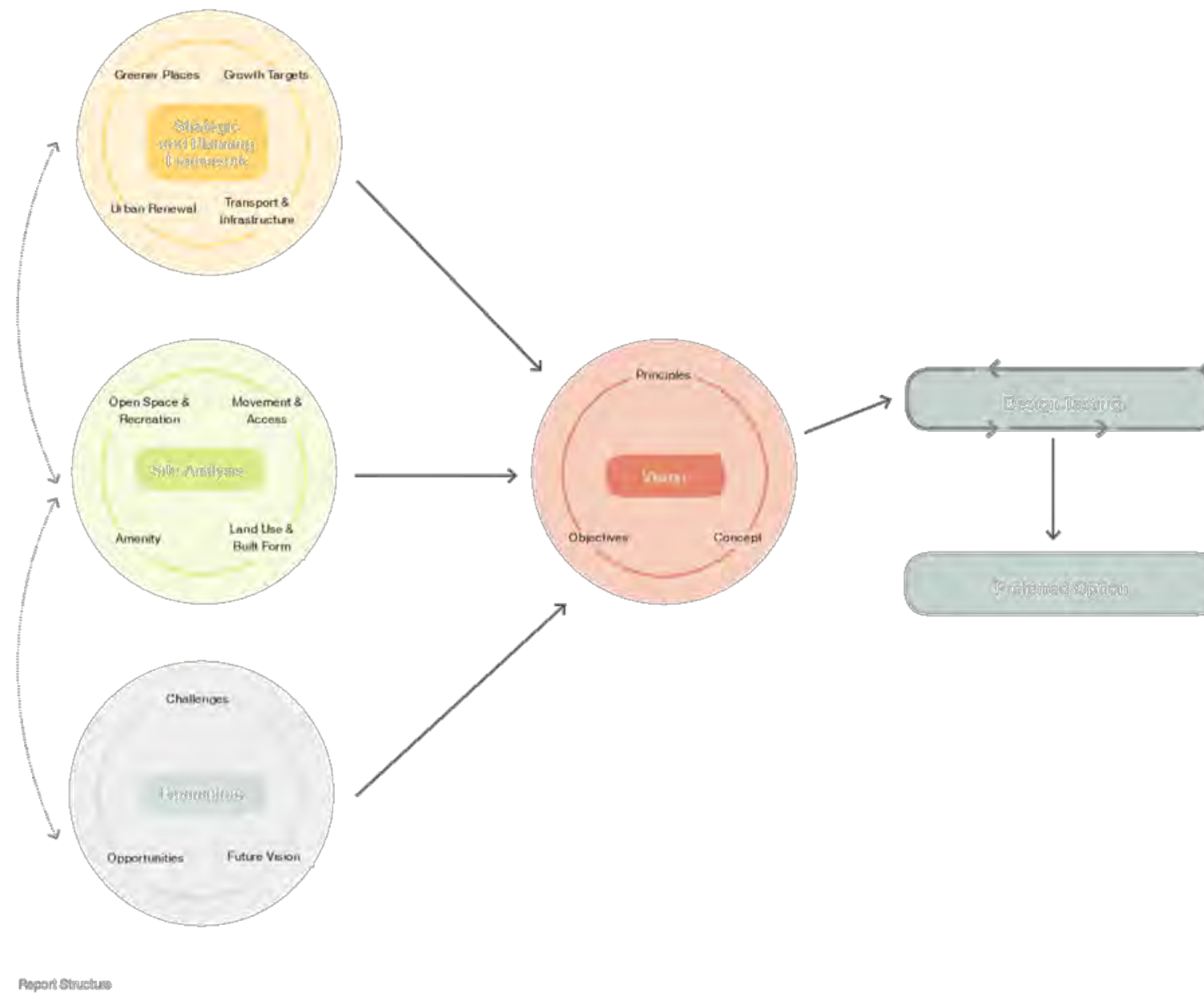
This study is supported by an open space needs analysis to better understand the provision, accessibility and quality of open spaces within and surrounding the Woll Creek Town Centre. This analysis has been benchmarked against the Government Architecture NSW's *Greener Places* and *Open Space for Recreation* (OSFR) Guide, which sets out performance criteria for the analysis of the existing and potential future provision of open space within a given area.

Analysis and site testing within this report has provided opportunities to:

- align the scale, configuration and quality of open space to principles set out in *Greener Places*
- provide a local park of as outlined in the OSFR Guide
- deliver complementary community uses within the park tailored to the existing and projected demographic
- support increased pedestrian connectivity, activation and safety of the park through provision of complementary land use
- identify the optimal development outcome that also enables the above to occur unencumbered

Better Placed, released in May 2017 by the Government Architect NSW (GANSW) is a state policy which provides guidance for quality design of our built environments. This document as well as the Apartment Design Guide, underpins built form testing within this study.

This urban design study is supported by research and findings from SGS on open space and community needs and Hill PDA on retail/commercial demand.



Project Background

1.2 Greener Places - GANSW

Greener Places

Greener Places is an urban green infrastructure state policy released in draft by the Government Architect New South Wales (GANSW) in November 2017. This policy underpins open space analysis and testing within this report.

The policy establishes a framework to realise the following key green infrastructure objectives:

- To protect, conserve and enhance NSW's network of green and open natural and cultural spaces
- To secure a network of high quality, high performing and well-designed green space, establishing a crucial component of urban infrastructure to address the environmental challenges of the twenty-first century
- To promote healthy living, encouraging physical activity, social cohesion, and enhancing wellbeing by providing liveable places for the NSW community
- To create a more strategic approach to planning for Green Infrastructure, encouraging early and integrated investment through statutory planning
- To deliver better tools for the delivery of Green Infrastructure across NSW

Open Space for Recreation (OSFR) Guide

The draft *Open Space for Recreation Guide (OSFR)* is a supporting document that facilitates the implementation of the Greener Places policy. Released in July 2018, the guide was intended to be used by industry professionals, private developers and government bodies in the preparation of strategic plans and architectural or urban design projects.

The guide proposes a new approach to the analysis and delivery of open space that is relevant to the current and anticipated future urban landscape for New South Wales. In particular, the document responds to the challenges of increasing density and decreasing land supply through a performance-based, as opposed to quantum-based approach.



Figure 01: Who Benefits from Green Infrastructure? - Greener Places, p.19

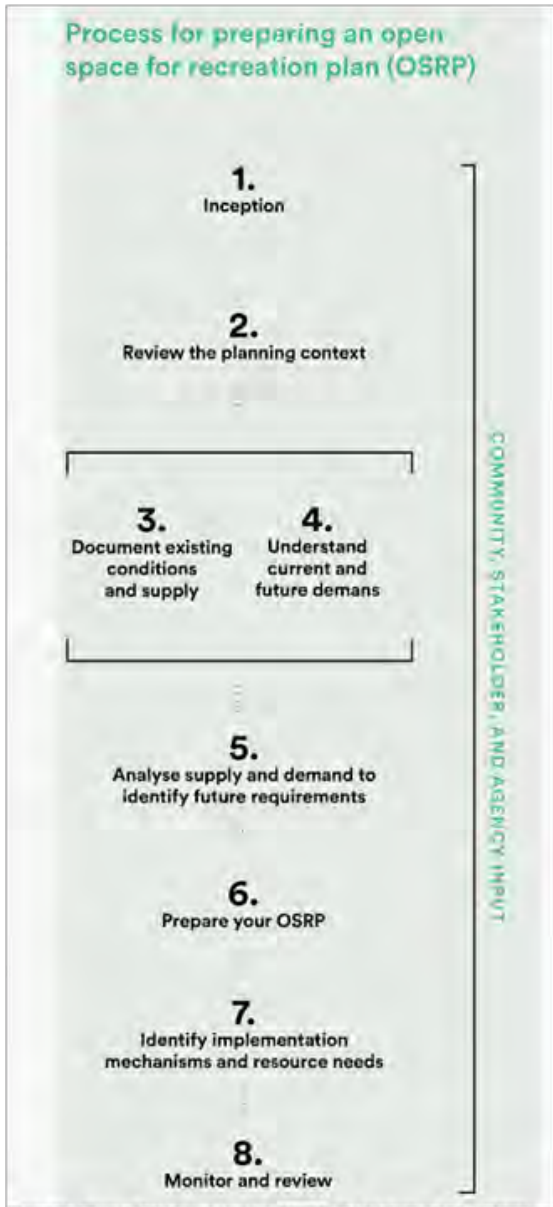


Figure 02: Process for preparing an open space for recreation plan - OSFR Guide, p.9

Project Background

OSFR Performance Criteria

The OSFR Guide outlines the typical process for preparing an open space for recreation plan, involving the analysis of the existing and potential future provision open space within a given area. This is assessed against performance criteria relating to accessibility and connectivity, distribution, size and shape, quantity, quality, and diversity. Each criteria has a set of performance indicators that are tailored to different development scenarios, ranging from greenfield to high density areas. These benchmarks have been included in Action 67 of the Greater Sydney Commission's (GSC) Eastern City District Plan.

The open space performance criteria summarised opposite are provided in the OSFR Guide. A set of performance indicators is provided for each criteria, focusing on the requirements for high density areas (>60-100 dwellings/hectare), which is most relevant for the immediate site context.

These performance indicators have been used to assess the existing open space conditions for the site and surrounding context in the following chapter of this report.

Accessibility and Connectivity

- For high density areas, residents must be within **2-3 minutes/200m walking distance** to a local, district or regional park
- For medium density areas, residents must be within 5 minutes/400m walking distance



Distribution

- For high density areas, residents must be within **2-3 minutes walk/200m of local open space**
- For medium density areas, residents must be within 5 minutes walk/400m of local open space
- Residents must be within 25 minutes walk/2km of district open space
- Residents must be within 30 minutes travel/5-10km to regional open space
- Workplaces must be within 400m of open space
- Schools must be within 400m of open space

Size and Shape

- Desirable minimum size of a local park is **0.3ha**
- Local open space: **0.15-0.5ha** for high density areas
- Consider specific size/shape requirements for sporting facilities



Quantity

- Quantity refers to the capacity of open space, meaning the quantum in relation to the population density within the access catchment.
- While the capacity of open space is important, other factors such as the quality and diversity of open space should also be considered.
- The World Health Organisation (WHO) states that on average, a **minimum of 9 sqm of accessible open space should be provided per person**.
- An average of **3 sqm of accessible local open space** should be provided per person
- An average of **11 sqm of accessible district open space** should be provided per person



Quality

Key characteristics that may influence the quality of open space include:

- visual and physical access
- landscape setting
- condition of facilities and equipment
- maintenance
- number of activation within the space
- size, shape and topography
- adjacent land uses
- amount of vegetation
- biodiversity outcomes

Diversity

The diversity of open space is determined by the types of recreation opportunities available. These are categorised as:

- local play for the very young
- local children's play
- youth recreation space
- local recreation space
- active recreation space
- large community outdoor recreation area
- fitness and exercise space
- trail and path-based recreation
- off-leash dog exercise area

Project Background

1.3 Better Placed - Government Architect NSW

Better Placed is "an integrated design policy for the built environment of NSW". Released in May 2017 by the Government Architect NSW (GANSW), the state policy provides guidance for quality design of our urban environments. This policy underpins built form testing within this report.

The document identifies the key priorities for NSW that future design should respond to. These include challenges in relation to climate resilience, rapid population growth, health, changing lifestyles and demographics, infrastructure and urban renewal and the delivery of major projects.

The document emphasizes the importance of good design processes to generate quality design outcomes. The key phases of the iterative design process are shown in Figure 12 and are identified as:

1. *Discover* - define/involve/research
2. *Create* - explore possibilities/synthesise/develop ideas
3. *Deliver* - prototype/evaluate/implement

The *Better Placed* policy is underpinned by seven objectives that outline the key design considerations for the built environment of NSW:

1. *Better fit* - contextual, local and of its place
2. *Better performance* - sustainable, adaptable and durable
3. *Better for community* - inclusive, connected and diverse
4. *Better for people* - safe, comfortable and liveable
5. *Better working* - functional, efficient and fit for purpose
6. *Better value* - creating and adding value
7. *Better look and feel* - engaging, inviting and attractive

The design approach undertaken in this study has been informed by the key priorities and design considerations outlined in the *Better Placed* document.

Urban Design Guide

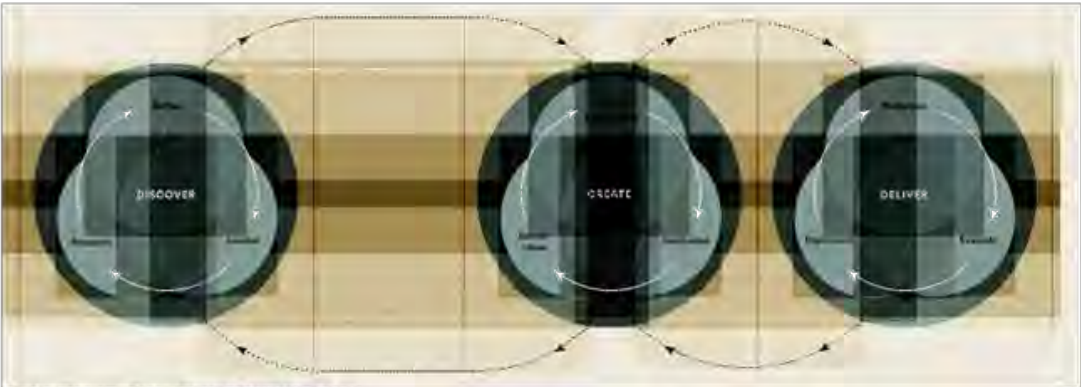
The draft *Urban Design Guide* is a supporting document that facilitates the implementation of the *Better Placed* policy. The document was released in draft by GANSW in 2018. The document provides detailed information and guidance in relation to the role, process and delivery of urban design.

The guide outlines key values that together, define a well-designed urban environment. These should dictate the approach and priorities for urban design projects and are listed as the following:

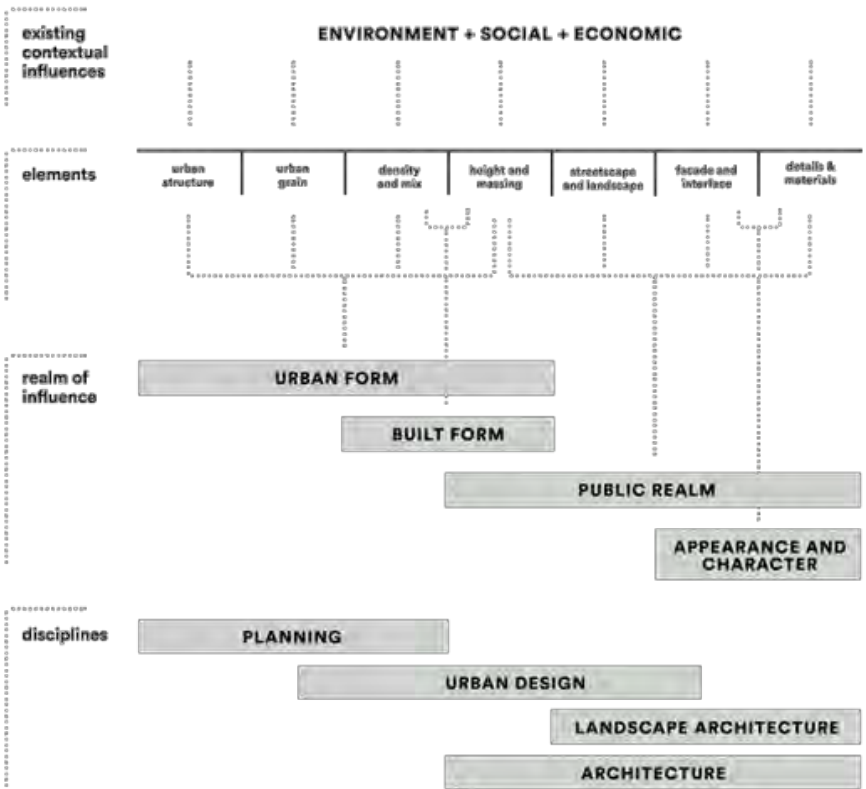
- *A Healthy Environment*
- *A Responsive Environment*
- *An Integrated Environment*
- *A Resilient Environment*
- *An Equitable Environment*

The document provides key urban design considerations, according to site context, condition, project scope and scale. These are largely informed by the core elements of urban design, which are associated with different aspects of the urban environment. These urban design elements and interwoven themes are identified in the diagram opposite.

The key learnings from this guide have been applied to the analysis and design concept phases presented in the following sections of this report.



Design Process - *Better Placed*, GANSW, p.28-29



The Elements of Urban Design - *Urban Design Guide*, GANSW, p.48

Introduction

2

Introduction

2.1 Regional Context

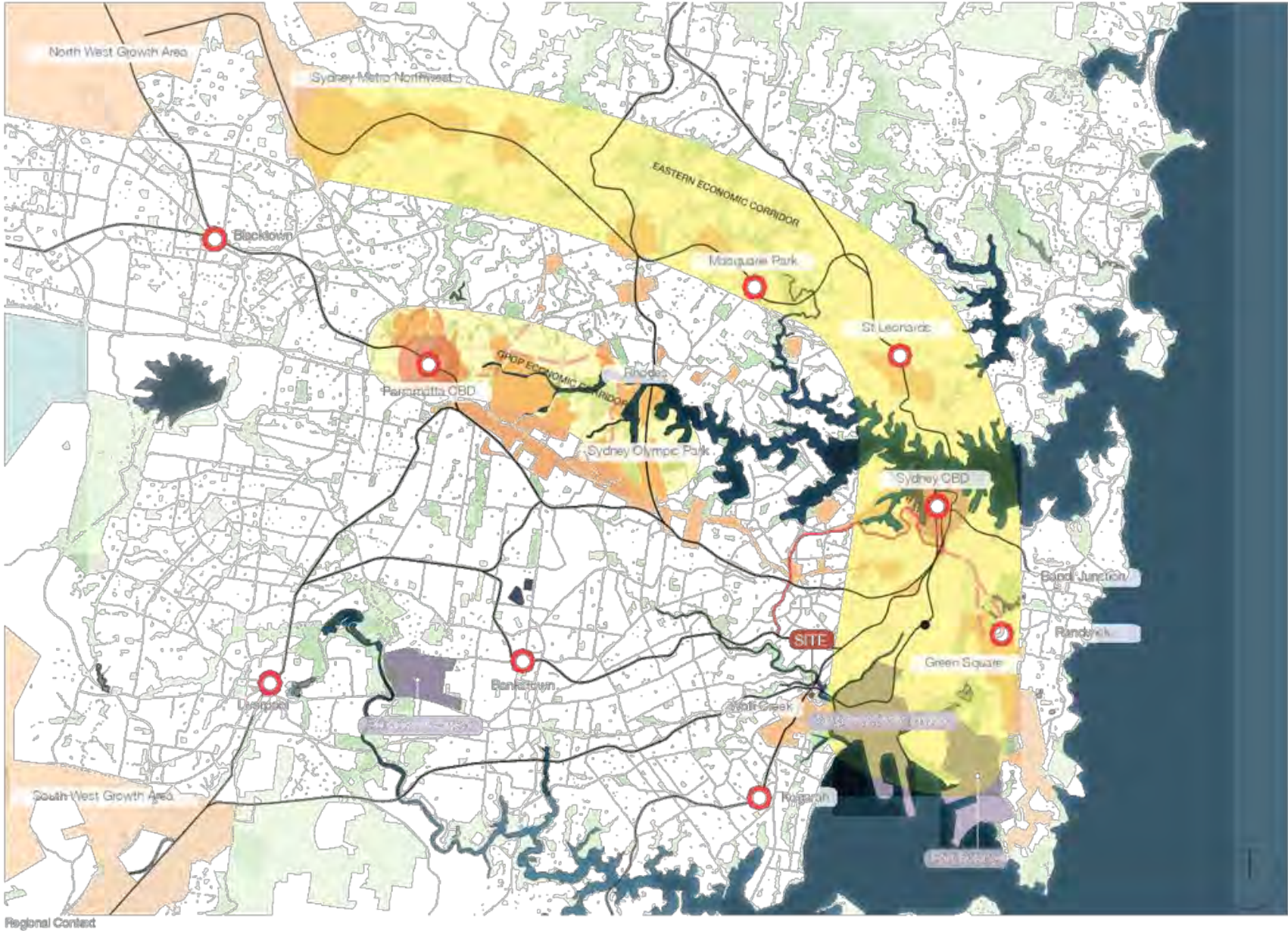
The site is located in Woll Creek in Sydney's south-east region. The site is situated between Green Square and Kogarah, identified as strategic centres in the *Greater Sydney Region Plan - a Metropolis of The Cities*, released by the Greater Sydney Commission (GSC) in 2018. Sydney CBD Metropolitan Centre is located approximately 10km from the site.

Woll Creek is well-connected to other major centres via the existing rail network located in close proximity to the site. An established road network provides direct access via the Princes Highway and M5 Motorway to Port Botany, Sydney CBD and south western and eastern Sydney.

A number of significant activity areas are located in proximity to the site. Located directly east of the site, the Eastern Economic Corridor is the primary focal area for employment and economic productivity for the Sydney Region. Kingsford Smith Airport is located to the south-east and an urban renewal area directly to the south of the site. The Bayside West Precincts 2036 study area established by the NSW Department of Planning and Environment, includes areas identified for urban renewal in Arncliffe and Banksia.

Key

- Metropolitan Centre (GSC)
- Health and Education Precinct (GSC)
- Rail and Metro
- Light Rail
- Proposed Light Rail
- Urban Renewal Areas
- Growth Areas
- Western Sydney Priority Growth Area Precinct
- Eastern Economic Corridor
- GPOP Economic Corridor
- Transport and Intermodal Hubs



Introduction

2.2 Bayside West Precincts 2036

The site is located to the north of the Bayside West Precincts 2036 study area, nominated by the NSW Department of Planning and Environment. Situated along the existing rail corridor, the Plan extends across the suburbs of Arncliffe, Banksia and Cooks Cove.

The precincts are identified as an opportunity for urban renewal to provide additional open space, jobs, housing and infrastructure in a well-connected area. The *Bayside West 2036 Precincts Plan*, released in August 2018, sets out strategic planning objectives for the area to guide this transformation. These objectives will be implemented primarily through future changes to planning controls. Some amendments to controls have already been implemented for the areas of Arncliffe and Banksia to the east of the train line.

In response to the growth targets outlined in the GSC's Greater Sydney Region Plan, the Bayside West Precinct Plan aims to provide for approximately 5,000 additional dwellings by 2036. The Plan also proposes to increase commercial and mixed use activity in order to improve employment opportunities within the area. This includes the revitalisation of the B6 Corridor along the Princes Highway, currently under review by Council.

The Plan includes recommendations for improved accessibility within the area through enhanced public and active transport connections, as well as upgrades to existing vehicular links. New green open space, in addition to upgrades of existing parks, are also proposed to support the desired growth.

Overall, the *Precincts Plan* focuses on the delivery of development that is well-connected, place-oriented, has a high level of amenity and responds to existing and future community needs.

Key

- Site Boundary
- High density housing with mixed use opportunities
- High density housing
- Medium and low density housing
- Employment corridor
- Train Station
- New open space and open space areas to be upgraded

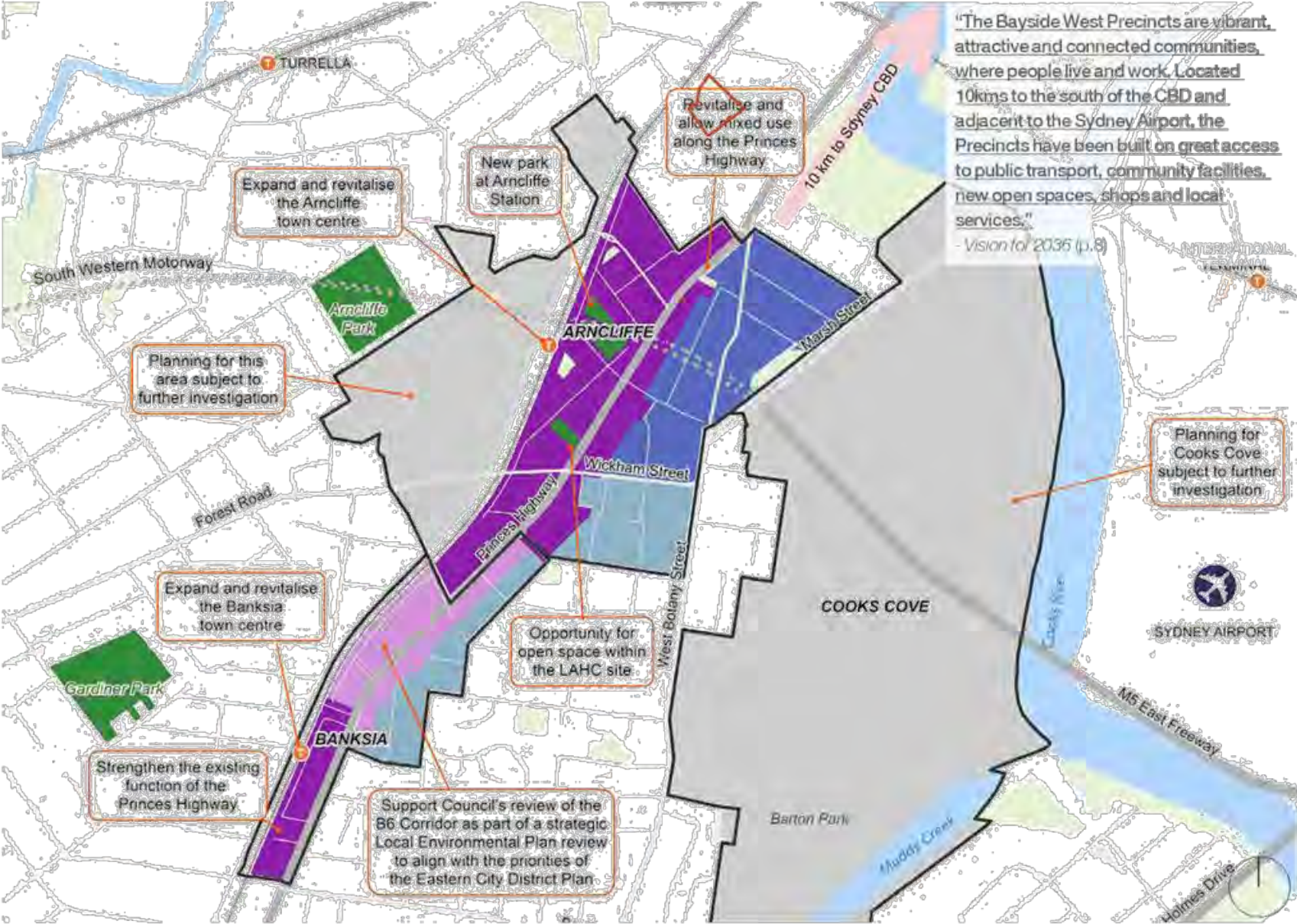


Figure 03: Structure Plan - Bayside West Precincts 2036 Plan, p.11

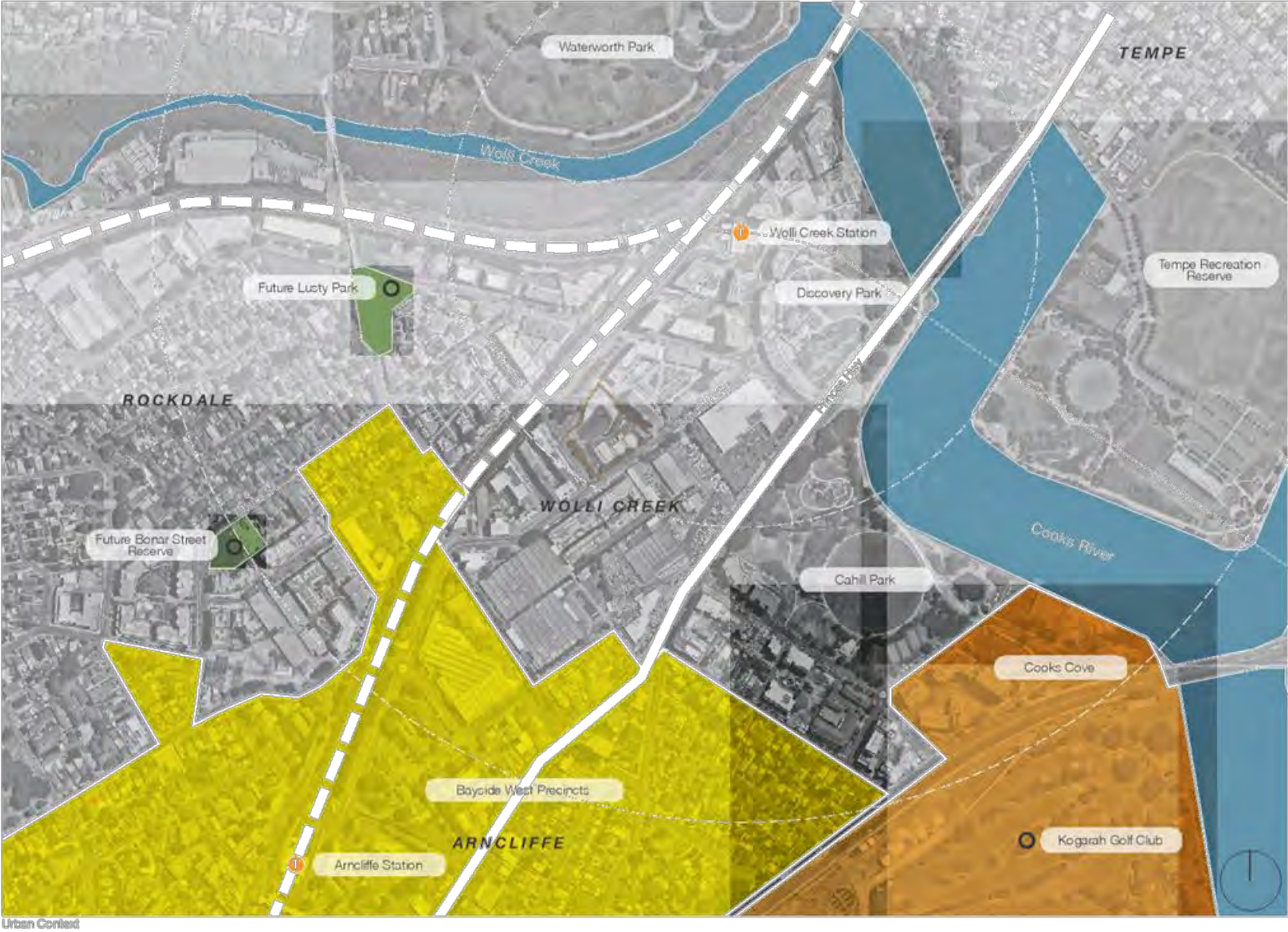
Introduction

2.3 Urban Context

The site is located 400m south-west of Wollri Creek Station on a site bordered by Arncliffe Street, Guess Avenue and Mount Olympus Boulevard. Wollri Creek is an area of transformation, with a mix of high density mixed-use and residential buildings and industrial uses that are generally concentrated between Arncliffe Street and Princes Highway.

To the north of the site is the rail corridor, the north-east Wollri Creek and the Cooks River and to the south-east, the Princes Highway. These are significant barriers to movement and limit accessibility to regionally significant open space and sporting facilities: Cahill Park, Tempe Recreation Reserve and Waterworth Park.

The site is located to the north of the Bayside West Precincts, highlighted by the NSW Department of Planning and Environment as a key area for targeted redevelopment and revitalisation.



Introduction

2.4 Site Context

The site has three street frontages to Arncliffe Street, Guess Avenue and Mount Olympus Boulevard. There are a number of established trees along the Guess Avenue and Arncliffe St frontages.

To the site's north-west is the rail corridor and adjacent lands which sit above the level of the site. To the site's north east are two buildings which present multi-storey blank facades to the boundary. The residential building located at 35B Arncliffe St is 15 storeys high, overshadowing and providing views into the subject site. To the site's south-east along Arncliffe St is an industrial freight depot and 8-storey residential building. To the sites south-west are several residential buildings, recently completed and under construction.

The site is made up of two lots; Lots 102 and 101, DP 808944. Lots 102 (the northern portion of the site) has been subject to recently completed site remediation works by Property NSW. Vehicular access to the site is off Guess Avenue, adjacent to the roundabout.

Lot 101 currently houses as a truck repair warehouse accessed off Guess Avenue and Arncliffe Street. There is a small retaining wall along the Arncliffe Street frontage. The notch along the site's south-east boundary is formed around an electrical substation.



Site Context

Introduction

2.5 Site Photos



Key Plan



Figure 04: Arncliffe Street looking south from Magdalene Terrace intersection



Figure 05: Through-site link to public square from Arncliffe Street



Figure 06: View south down Arncliffe Street to recent mixed use development



Figure 07: View of industrial and residential sites across site on Arncliffe Street



Figure 08: View north down Arncliffe Street towards Woll Creek Town Centre



Figure 09: View of site looking north down Arncliffe Street



Figure 10: View north-west down Guess Avenue from Arncliffe Street



Figure 11: Rail overpass along Guess Avenue



Figure 12: View looking south across site and adjacent development from Olympus Boulevards

Introduction

2.6 Rockdale Local Environmental Plan 2011

The key statutory planning controls for the site are outlined in the Rockdale Local Environmental Plan 2011 and are summarised below.

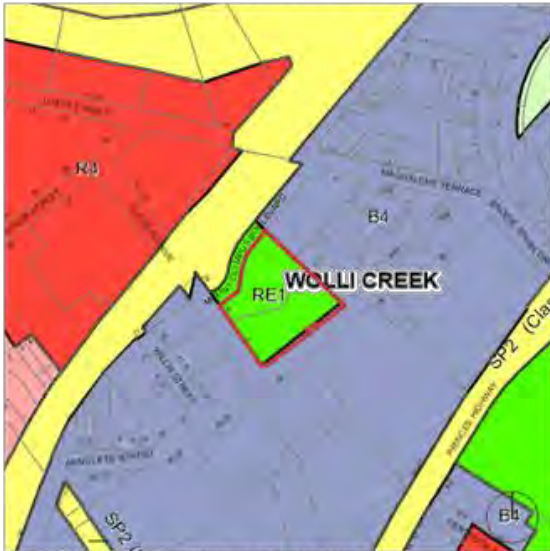


Figure 13: Rockdale LEP 2011 - Land Zoning Map

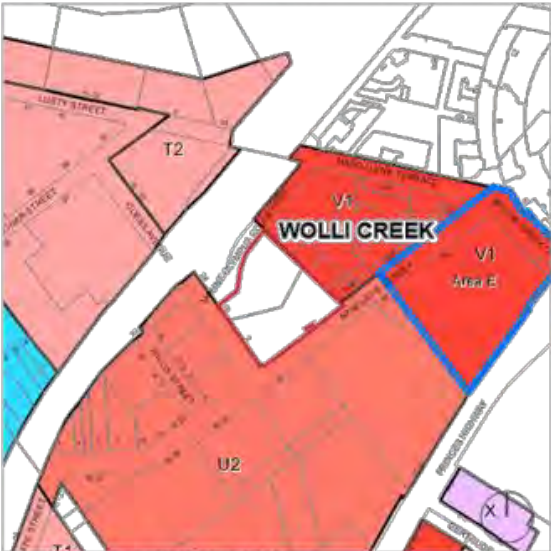


Figure 14: Rockdale LEP 2011 - FSR Map



Figure 15: Rockdale LEP 2011 - Height of Building Map



Figure 16: Rockdale LEP 2011 - Land Reservation Acquisition Map

Zone	
B1	Neighbourhood Centre
B2	Local Centre
B4	Mixed Use
B6	Enterprise Corridor
IN2	Light Industrial
R2	Low Density Residential
R3	Medium Density Residential
R4	High Density Residential
RE1	Public Recreation
RE2	Private Recreation
RU4	Primary Production Small Lots
SP2	Infrastructure
SP3	Tourist
UL	Unzoned Land
SRP3	Sydney Regional Environmental Plan No 33 - Cooks Cove

Maximum Floor Space Ratio (n:1)	
D	0.5
F	0.6
N	1
P1	1.25
P2	1.26
S1	1.5
S2	1.65
S3	1.8
T1	2
T2	2.2
T3	2.4
U1	2.5
U2	2.85
V1	3
V2	3.1
V3	3.4
W	3.93
X	4
	Refer to Clause 4.4

Note: There is currently no FSR control designated for the subject site.

Maximum Building Height (m)	
I	8.5
M	12
N1	13
N2	14.5
O1	15
O2	16
P1	17.5
P2	17.75
P3	18
O1	19
O2	20.5
R1	21
R2	22
S	24
T1	26.5
T2	27
T3	28
T4	29
T5	29.5
U1	31
U2	33
V	36
W	42
X	46
X2	47.15
Y	51
AA	70
	Refer to Clause 4.3

Note: There is currently no height control designated for the subject site.

Classified Road (SP2)
Local Open Space (RE1)
Local Open Space (Amcliff) (RE1)
Local Road (B2)
Local Road (B4)
Local Road (R2)
Local Road (R3)
Local Road (R4)
Local Road Widening (B2)
Local Road Widening (B4)
Local Road Widening (R2)
Local Road Widening (R3)
Local Road Widening (R4)
Local Road Widening (SP2)
Car Park (B4)
Car Park (R2)
Regional Open Space (RE1)
School (R2)
School (SP2)
Stormwater (SP2)

Introduction

2.7 Rockdale Development Control Plan 2011

Adopted in May 2011, the *Rockdale Development Control Plan 2011* (Rockdale DCP) specified planning controls and objectives within the local area.

The subject site is located within the Woll Creek Special Precinct, identified in Part 7, Section 7.1 Woll Creek. The section provides planning provisions for future development, underpinned by an overarching vision and set of objectives for the area. The Structure Plan for Woll Creek, shown opposite, illustrates the key principles guiding future development in the area.

Under its current RE1 LEP land use zoning, the site is identified as a 'town park'. Adjacent uses include mixed use, with mandated retail or commercial ground floors, as well as high density residential uses located across the railway line to the north-west. Non-residential uses and civic spaces are focused around the railway station in the north.

The built form controls specify an 8 storey street wall and 2m street setback along Mount Olympus Boulevard the on the area adjacent to the north of the site. A 3m street setback is identified along Guess Avenue frontage of the block across the site to the south.

A number of public domain and infrastructure projects are proposed. These include the pedestrianisation of some streets and the addition of new roads, to facilitate movement and access through the precinct. A green link runs along the site's south eastern and western boundary, extended in parts to provide continuous pedestrian and cycle connections between open space.

The DCP also notes that future development within flood-affected parts of Woll Creek should consider flood impact mitigation strategies including elevated ground floor levels, the location of sensitive uses and equitable accessibility configurations.

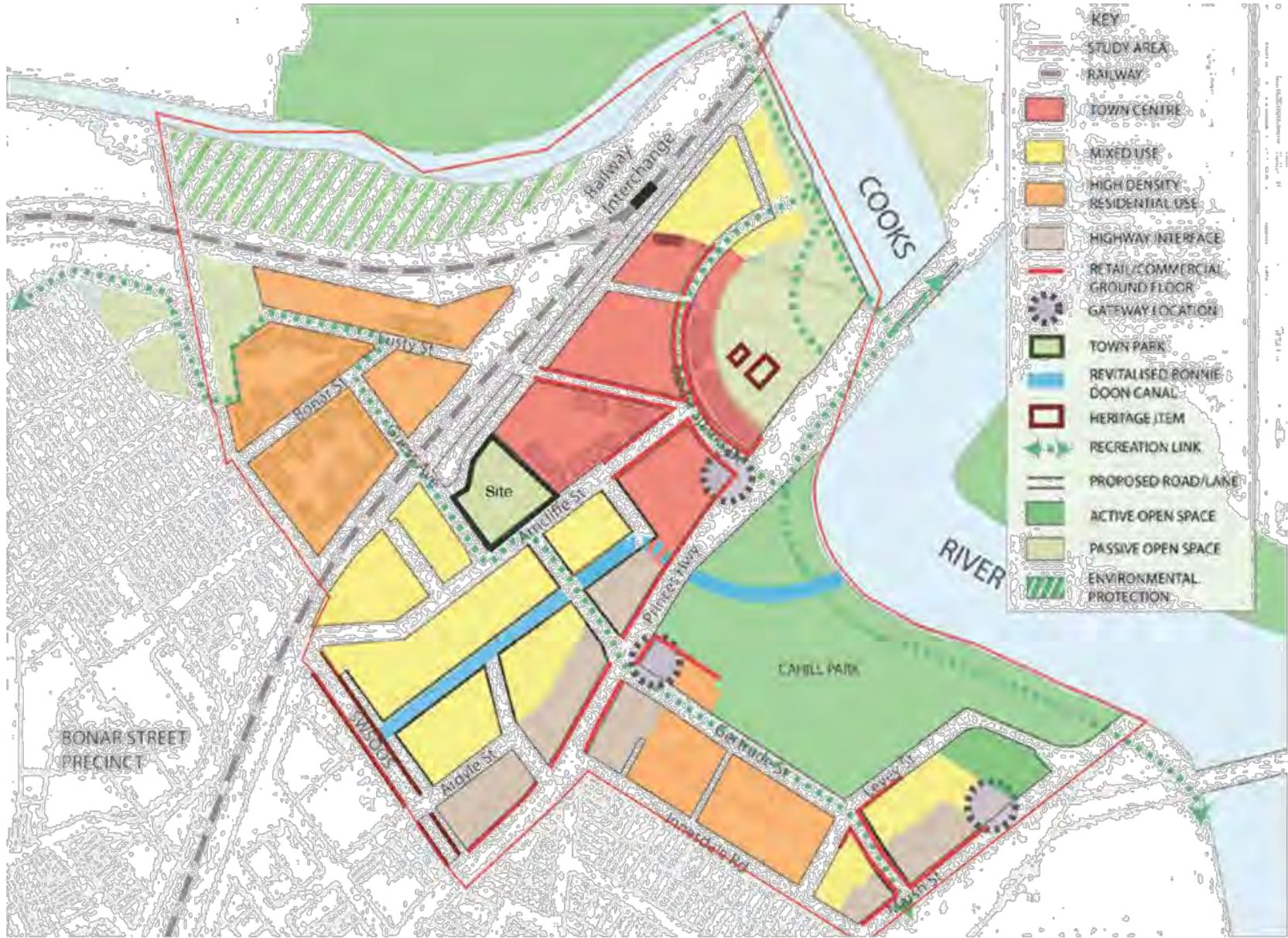


Figure 17: Structure Plan - 7.1 Woll Creek, Rockdale DCP 2011, p.164

Introduction

2.8 Woll Creek and Bonar Street Public Domain Plan

The Woll Creek and Bonar Street Public Domain Plan was prepared in 2011 by JILA on behalf of a previous Rockdale Council to inform the renewal of public domain which would support a future transformation of the industrial precinct to a "high quality, high density urban environment" (p3).

The document is "intended to guide and coordinate the design and construction of improvements to the public domain of Woll Creek and Bonar Street precinct. It identified opportunities for enhancement potential for provision of more pedestrian space" (p3). 28.4 Guess Avenue is outlined as one of two potential locations for a town park. It is described as a "Green space as relief from high density new development [with a] strong relationship with commercial character of Arncliffe Street and surrounding mixed use buildings" (p22).

- The report highlights a number of principles to inform the design of the park:
- Surrounding buildings shall take advantage of the outlook by addressing and opening up to public space to provide passive surveillance
 - A designated children's play area located towards the centre of the site provides a fenced and sheltered zone for children within the park
 - The park shall include amenities for park including seating and shelter. This space can also accommodate a meeting point along Arncliffe Street
 - Water Sensitive Urban Design (WSUD) principles are to be implemented. Opportunities include a swale down the centre of the park to relate to the movement of water on the surrounding micro catchment of streets. The central swale is to be incorporated in the stormwater management system as a temporary detention basin to address flooding in the area
 - Open space shall provide areas of refuge for passive use defined through planting
 - Maintain sight lines to surrounding streets and pedestrian crossing through a comprehensive network of access paths and the implementation of CPTED principles
 - A variety of spaces within the park shall be defined with level changes, raised seating walls, terraced grass areas and swales, and planted terraces along development boundary to mediate level changes to existing buildings. These level changes are to be designed to ensure that CPTED principles are implemented and disabled access to a minimum standard of AS1428.1 design for access and mobility



Figure 18: Woll Creek and Bonar Street Precinct Public Domain Plan (Fig 1.3)



Figure 19: Town Park Indictive Concept Plan Woll Creek and Bonar Street Precinct Public Domain Plan (Fig 2.2)

Site and Context Analysis

3

Site and Context Analysis

3.1 Open Space and Recreation

Woll Creek Town Centre is currently serviced by a number of local and regional open spaces which support open passive/active recreation and organised sport. These space located within 800m of the site include:

- 1. Waterworth Park
- 2. Kendrick Park
- 3. Tempe Recreational Reserve
- 4. Cahill Park
- 5. Discovery Park
- 6. Ajax Reserve
- 7. Allen Street Reserve
- 8. Ray Oxford Reserve and Walker Street Reserve

A number of these spaces including, Kendrick Park and Tempe Recreational Reserve have low accessibility from Woll Creek due to the physical barriers of Woll Creek, Cooks River, the rail corridor and Princes Highway. Spaces within 400m of the subject site will be included in the open space analysis benchmarked against the OSFR Guide.

There are two privately owned-publicly accessible spaces to the site's north-east including:

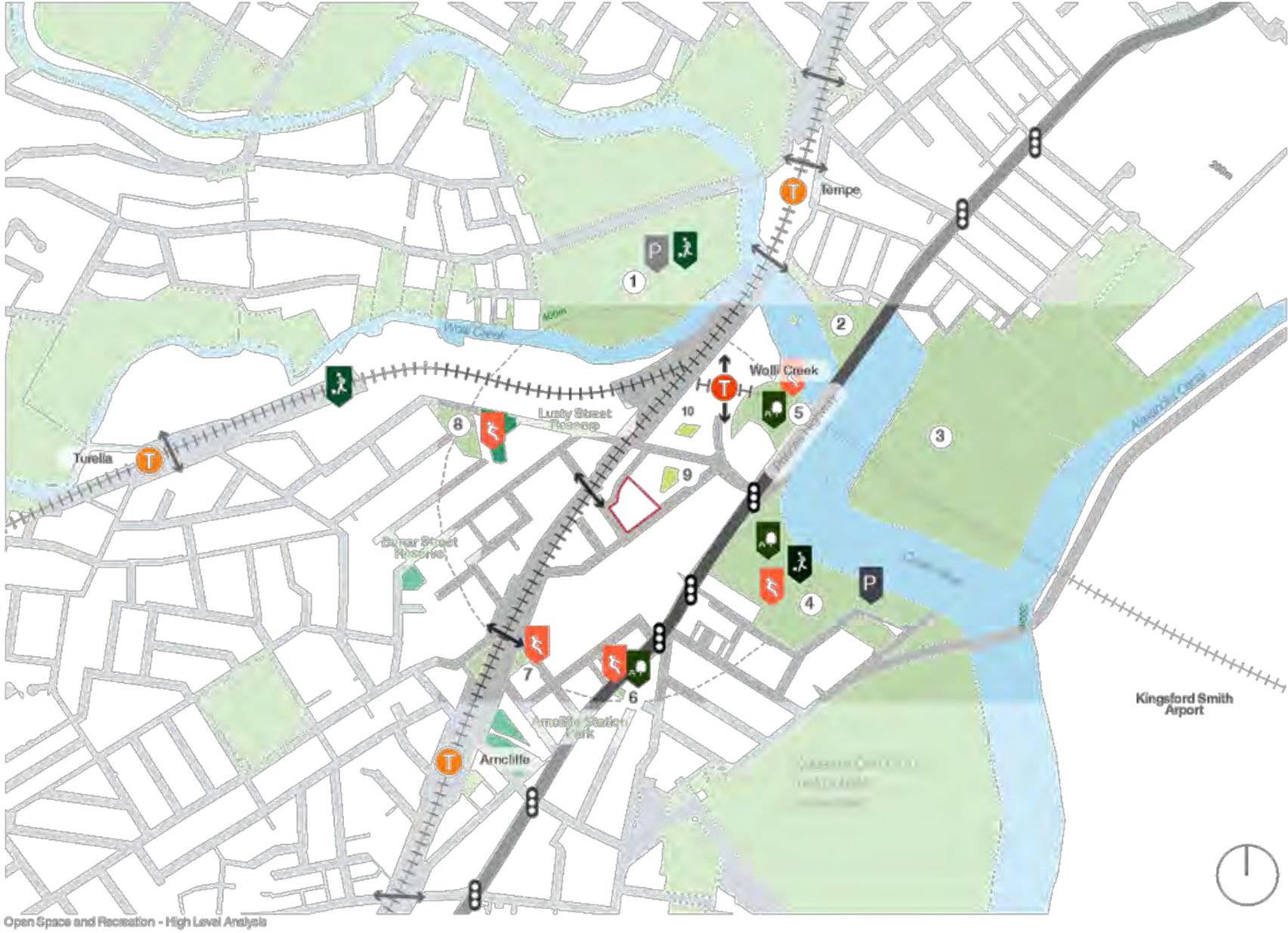
- 9. Village Square Park
- 10. Village Square 2

Village Square Park is not included within benchmarking due to poor accessibility and limited visibility from the street.

Three proposed open spaces sit to the west of the site Lusty Street Reserve and Bonar Street Reserve to the north of the rail corridor, and a new Park adjacent to Arncliffe Station.

Key

Site boundary	Signalled crossing
Train line	Children's play
Railway crossing	Recreational/sporting facilities
Major road	Passive open space
Existing open space	On-site parking
Proposed open space	
Privately-owned, publicly accessible open space	



Site and Context Analysis

3.2 Proposed Parks

Lusty Street Reserve

The principles and indicative concept plan for the Lusty Street Reserve is outlined within the *Wolli Creek and Bonar Street Precinct Public Domain Plan* (Rockdale Council, 2011). Within that document is noted as the Thomas Street Reserve, a local park to "function as a recreational open space as Water Sensitive Urban Design (WSUD) treatment site for surrounding high density development" (p.47). It is located near the existing Ray Oxford Reserve and Walker Reserve on the western edge of Thompson Street.

The key design principles for this space includes:

- Access views over surrounding area from top of heritage stormwater aqueduct
- As the lower part of the site is a critical point for micro catchment stormwater treatment before it reaches Wolli Creek's Environmental Protection Zone, establish a detention basin and wetland biofiltration system integrated with the overall stormwater strategy. Additionally, a flood/ risk management plan should be prepared
- Extend the play space in Walker Street reserve across Thomas street to the heritage stormwater aqueduct with an emphasis on free play over equipment
- Provide open grassed area suitable for informal games on Ray Oxford Reserve
- Backfill along existing development on corner of Lusty Street and Thompson Street to meet the existing reserve level, and provide secure access from internal courtyard to the reserve
- The heritage aqueduct provides distinctive character to the site as a heritage feature and point of orientation within the district. A strong link between the three reserves should be provided. This should be achieved through planting, pathways, lighting and signage
- Create viewing platform on top of the existing aqueduct hardstand if feasible
- Incorporate stormwater management system including detention and a flood management strategy



Thompson Street Park Indicative Concept Plan, Wolli Creek and Bonar Street Precinct Public Domain Plan, 2011 (p.50)

Bonar Street Community Park

The principles and indicative concept plan for the Bonar Street Community Park is outlined within the *Wolli Creek and Bonar Street Precinct Public Domain Plan* (Rockdale Council, 2011). It is noted as "a local park for the surrounding residential area and specifically for the new high density residential development within the Bonar Street Precinct...It provides a meeting point between the existing residential area and the new residential development"(p.53)

It is also highlighted to provide a new north/south and east/ west pedestrian connections and provide better visual access from Bonar Street to a new road immediately south.

The key design principles for this spaces includes:

- The community park should maintain clear and open sight lines and reinforce legibility of the public thoroughfare from the park to internal access roads.
- The eastern area of the park is to remain primarily open to enable use for informal recreation. It is to include seating and children's playground in areas that are under passive visual surveillance from residential buildings.
- The western section of the park is to include grouped tree and understorey planting with seating areas to establish a shaded passive open space zone.



Bonar Street Reserve Indicative Concept Plan, Wolli Creek and Bonar Street Precinct Public Domain Plan, 2011 (p.54)

Site and Context Analysis

3.3 Open Space and Recreation - High Level Analysis

The open space analysis highlights that residential areas to the west and south-west of the subject site are not located within 2-3 minutes/200m walking distance of a local, district or regional park, the accessibility and connectivity target set for high density areas within the OSFR Guide. There is a need to provide some component of local open space on the subject site.

As the OSFR guide sets targets local open space between 0.15-0.5Ha for high density areas (>60-100 dwellings/hectare), there remains an opportunity to deliver a local park alongside other complementary uses including residential and commercial uses.

These parks are located within 400m of the site:

1. Waterworth Park
2. Discovery Park
3. Cahill Park
4. Ajax Reserve
5. Allen Street Reserve
6. Ray Oxford Reserve, Walker Reserve and Lusty Street Reserve

There are two privately owned-publicly accessible spaces to the site's north-east, including:

7. Village Square Park
8. Village Square 2

Village Square Park is not included within benchmarking due to poor accessibility and limited visibility from the street.

Key

Site boundary	400m open space catchment
Train line	Open space within 200m of site
Railway crossing	Open space within 400m of site
Major Road	Open space further than 400m from site
Signalised crossing	Privately-owned, publicly accessible open space
200m site catchment	200m access gap
400m site catchment	
200m open space catchment	



Site and Context Analysis

3.4 Open Space and Recreation - Detailed Analysis

Within a 200m catchment of the site is limited public open space. There are, however, two pieces of publicly accessible privately owned open space which is either poorly connected or highly transactional. Increased pedestrian connectivity through the site should also be considered due to the limited opportunities to traverse the large block.

Key Open Space Characteristics

	Children's play		On-site parking
	Informal Recreation		Swimming Pool - Private
	Sporting Fields		Gym Facilities - Private
	Barbecue Facilities		Educational Facility
	Seating		Cultural Building / Community Venue
	Public Toilet		

Key

	Site boundary
	Railway corridor
	Railway Bridge
	Major Road
	Signalled crossing
	Pedestrian crossing
	200m site catchment
	Public open space
	Private open space - publicly accessible
	Communal open space
	Nature reserve (not publicly accessible)
	No Access
	Public access
	Existing Trees



Open Space and Recreation - Detailed Analysis

Site and Context Analysis

3.5 Publicly Accessible Open Space

The following images are of significant parks that are publicly accessible and are located within the site's local context. The location of these spaces are annotated on the diagram shown in 2.4.

The parks shown are all located within 400m of the subject site and vary in accessibility, size and quality of space. Though privately owned and maintained, Discovery Park and the Village Squares are accessible to non-residents through public thoroughfares and through-site links.

The accessibility and character of these spaces is largely shaped by the type of land use and activity that they interface with. These range from residential units and ground floor retail and dining, as well as areas adjacent to the river waterfront, railway corridor and Pacific Highway.

The recreational opportunities and types of facilities available vary significantly across the different parks. The function of these spaces are largely determined by the size, shape and location of the open space. The expansive areas of Discovery Park and Cahill Park are able to cater for multiple uses, including children's play, barbecue facilities, recreational space and pedestrian and cycle paths. The smaller village squares serve as passive open space, providing opportunity to gather and creating a green refuge within the high density development zone. Lusty Street Reserve is primarily used as a thoroughfare and could be better utilised as an active open space.

1. Discovery Park



Accessed: <https://www.frasersproperty.com.au/nsw/discovery-point>

2. Village Square 1



3. Lusty Street Reserve



4. Village Square 2



5. Cahill Park



Site and Context Analysis

3.6 Access and Movement



Figure 20: Access and Movement

The site is located within 400m of Wolli Creek train station and bus stop. The site is bordered by a series of primary access roads (Amcliffe Street and Guess Avenue) and a secondary road (Mount Olympus Boulevard) which connects the site to the north. While the bus route extends around the site, there are no bus stops adjacent to the site. The site can also be accessed through on-road cycle paths.

Rockdale DCP outlines a number of new connections through the existing industrial block between Amcliffe Street and the Princes Highway. The delivery of these connections will create a new T-intersection along the site's south-west boundary and likely increased traffic along Amcliffe Street.

- Key**
- Site Boundary
 - Arterial Road
 - Primary Road
 - Future DCP Road
 - Secondary Road
 - On-road Cycle Path
 - Bus Route
 - Signalled Intersection
 - Parking
 - Landscaped Open Space

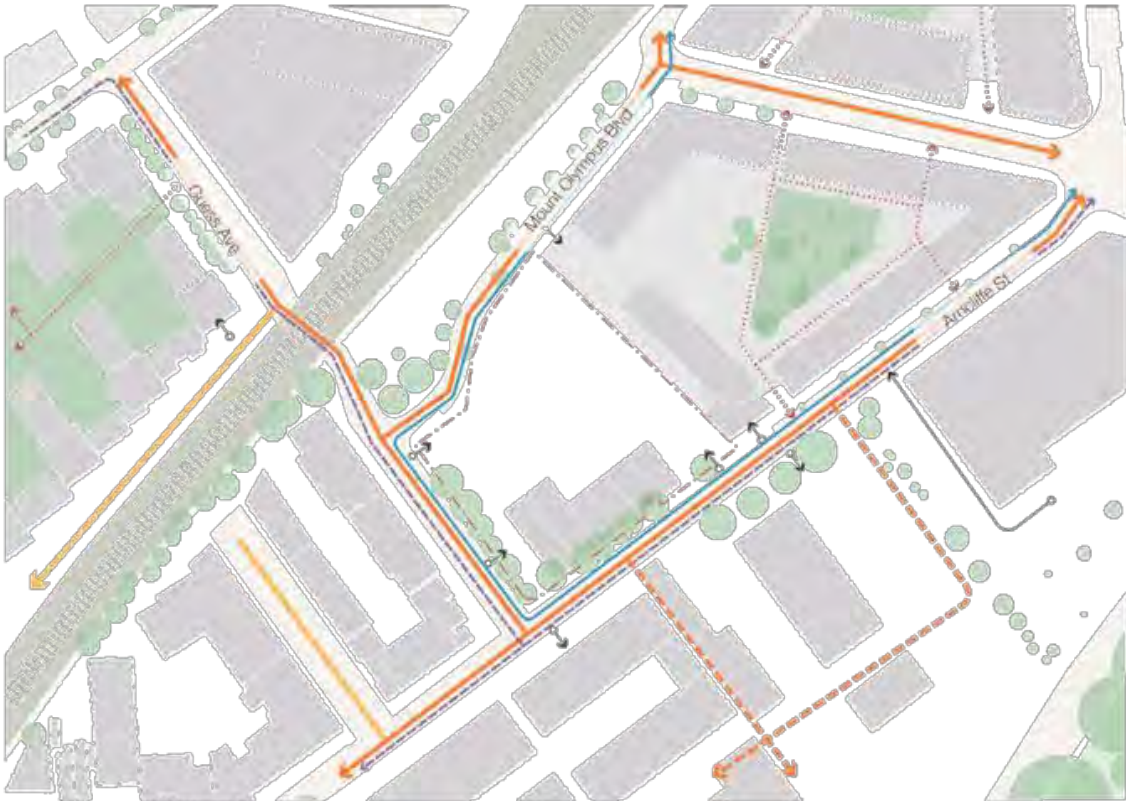


Figure 21: Access and Movement

The site has three vehicular entrance points - one off Amcliffe Street and two from Guess Avenue. The sites to the north-east both locate key vehicular entrance points adjacent to the shared boundary. The provision of these access points and parking within a podium has created blank 2-4 storey facades to the site.

Future proposals from Bayside Council for vehicular movement in the area include the creation of a one way loop around the site. The timing around this proposal is yet to be confirmed.

To facilitate new bus turning lane around the Guess Avenue and Mount Olympus Boulevard corner, a 3m x 3m section of the site will be removed and not available for future development.

- Key**
- Site Boundary
 - Primary Road
 - Future DCP Road
 - Secondary Road
 - Pedestrian Through-site Link
 - On-road Cycle Path
 - Bus Route
 - Vehicular Entry
 - Landscaped Open Space

Site and Context Analysis

3.7 Built Form and Overshadowing

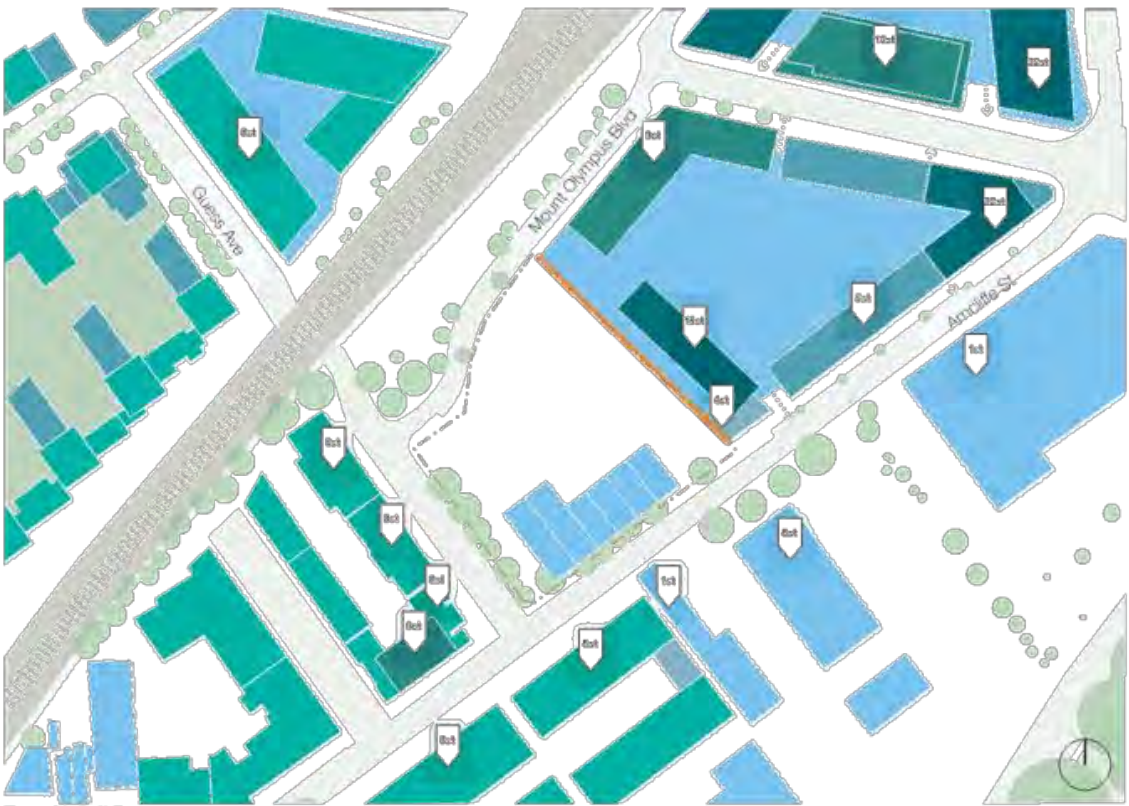


Figure 22: Built Form

The building typology within Wolli Creek around the train station generally features a lower scale perimeter block with height consolidated within tower forms on block corners. Sites further away from the train station are generally a maximum of 8 storeys. Industrial buildings in the area, including those on the subject site are 1-2 storeys high.

Due to flooding impact, many buildings in Wolli Creek are raised to place habitable floor levels above the 100 ARI flood level and located upon a podium or slightly raised above street level. This creates uncomfortable relationships between the street, "ground floor" uses and privately owned, publicly accessible open space, which is not visible or easily accessible from the street.



Figure 23: Shadow Analysis

The site is overshadowed by development in the north-east from both its 1-2 storey podium and 15 storey residential tower. The diagram above features the overshadowing of the site from 9am to 3pm during winter solstice. The eastern corner of the site is significantly overshadowed throughout the day. The ability to deliver residential uses, open space or significant planting in this area is impacted by this overshadowing

Future development on the subject site will need to consider its potential overshadowing impact in addition to existing overshadowing created by existing development on residential uses to the south and south-west.



Site and Context Analysis

3.8 3D Context

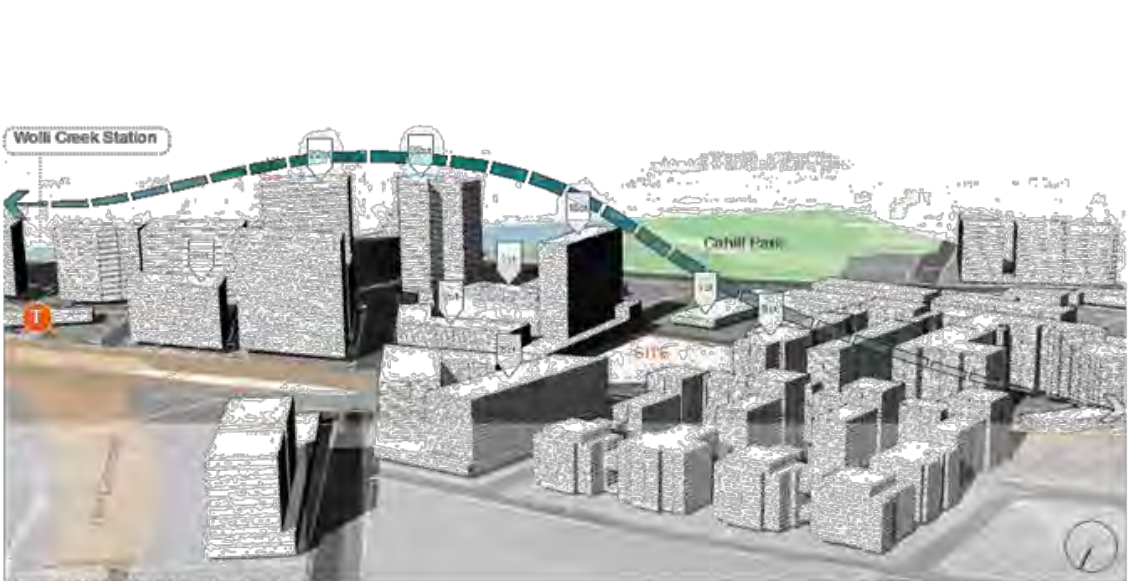


Figure 24: 3D Context - View from North-east

The diagram above presents the site within the existing 3D context, viewed from a north-east direction. A 3D representation of the built environment reveals the predominant skyline, generated by existing built form surrounding the site.

Height is focused within the mixed-use precinct immediately to the south of Woolli Creek Train Station, stepping down to the south and west. The site's location marks a significant step in height between adjacent sites, jumping from 15 to 8 storeys. Thus, the site's position offers the opportunity to create a more gradual height transition that mediates between development zones.

- Key**
- Site Boundary
 - Rail Corridor
 - Open Space
 - Water
 - Indicative Height Line

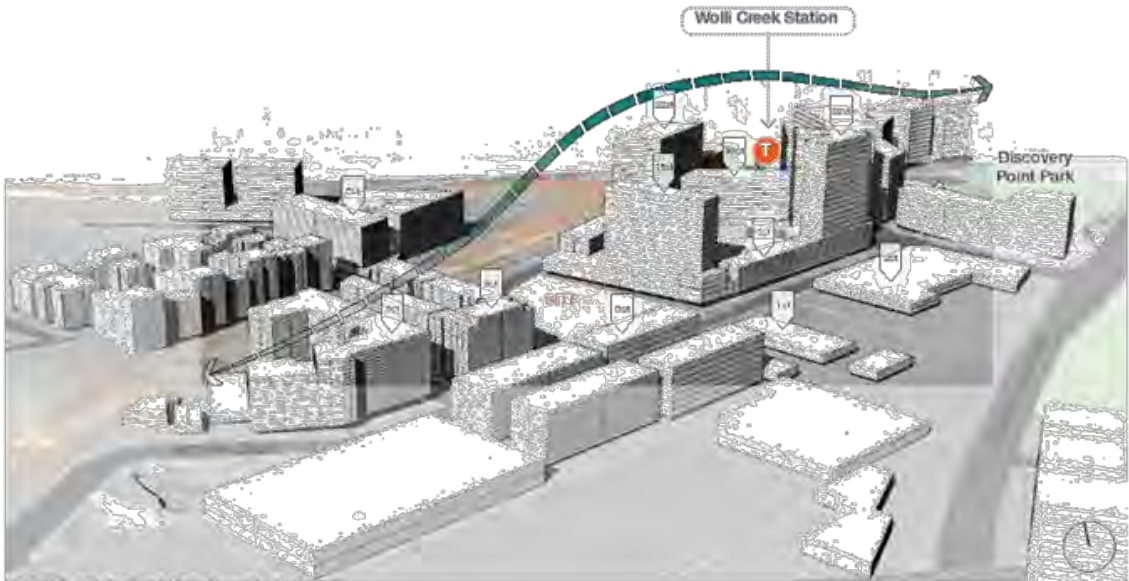


Figure 25: 3D Context - View from South-west

A view of the 3D context from the south-west reveals a clear distinction in built form located to the north and south of Amcliffe Street.

Height falls away to the south of the site across Amcliffe Street and towards the Princes Highway. This area largely consists of large industrial lots ranging from 1-2 storeys, with little transition provided to nearby sites that reach up to 22 storeys.

- Key**
- Site Boundary
 - Rail Corridor
 - Open Space
 - Water
 - Indicative Height Line

Site and Context Analysis

3.9 Solar Insolation at Midwinter

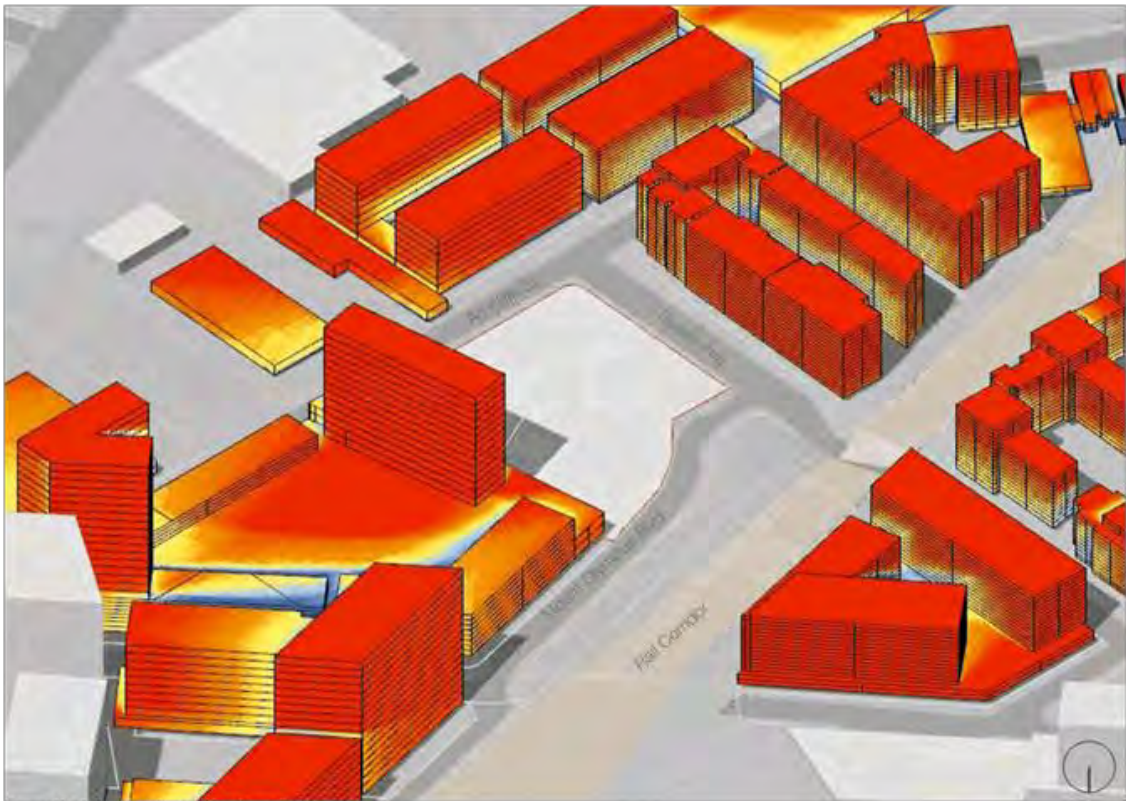


Figure 26: Solar Insolation - View from North

The following diagrams present a solar insolation study for the surrounding built form, occurring between 9am-3pm at midwinter.

These diagrams illustrate that a level of direct solar access received for existing facades oriented to the north and east. These include the residential buildings located immediately to the west along Guess Avenue and opposite to the south along Arncliffe Street.

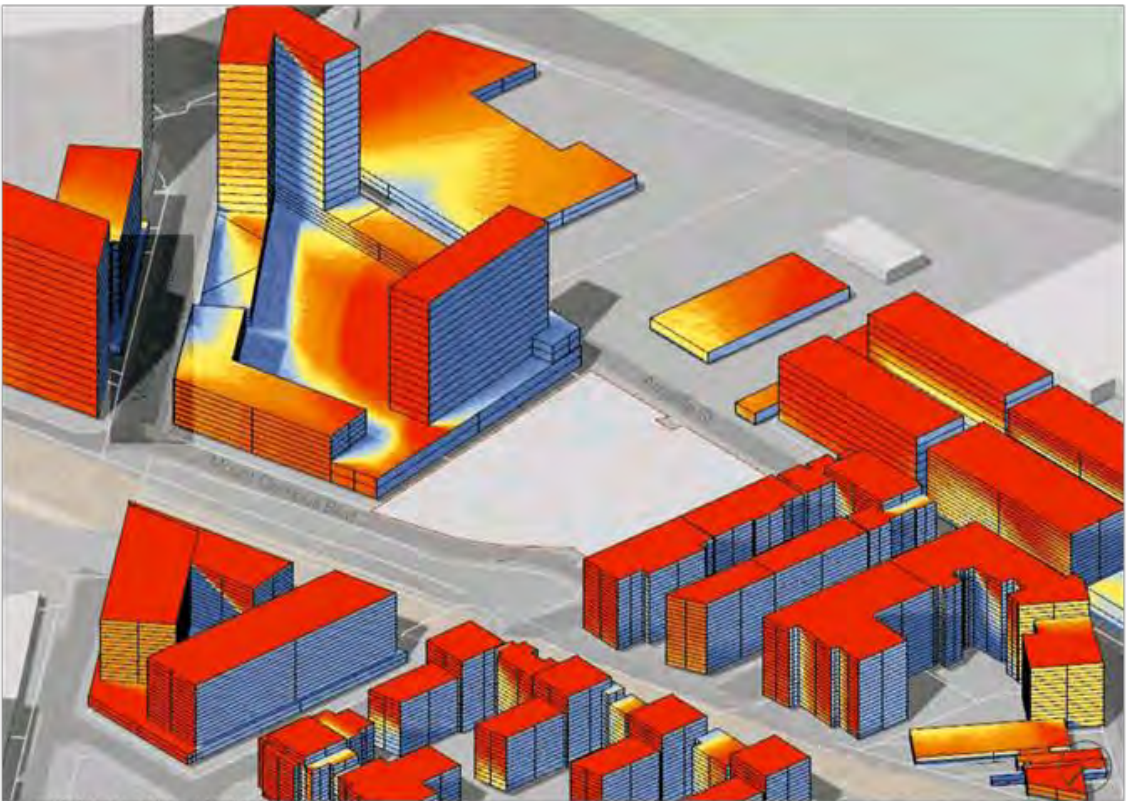
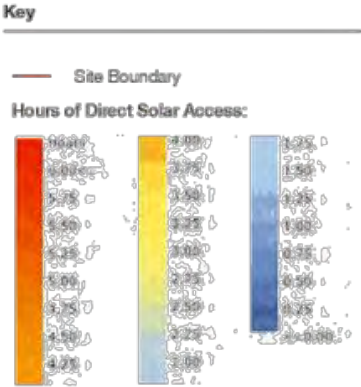
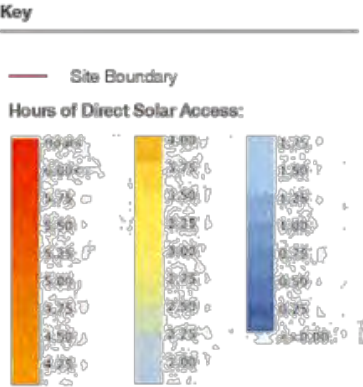


Figure 27: Solar Insolation - View from North-west

The above diagram indicates facades oriented to the south/south-west currently receive minimal solar access. This includes the blank wall on the development adjoining the site along its eastern boundary.



Site and Context Analysis

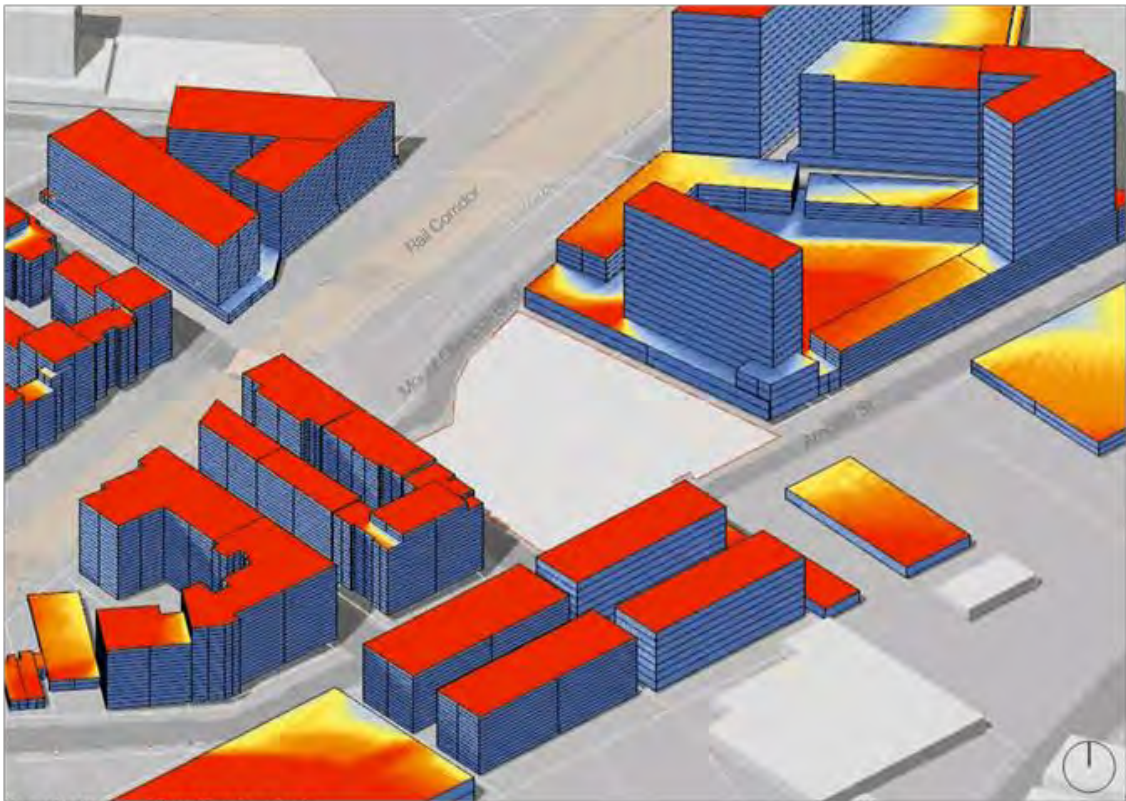


Figure 28: Solar Insolation - View from South

The above diagram indicates facades facing south/south-west currently receive minimal solar access, as expected of this orientation.

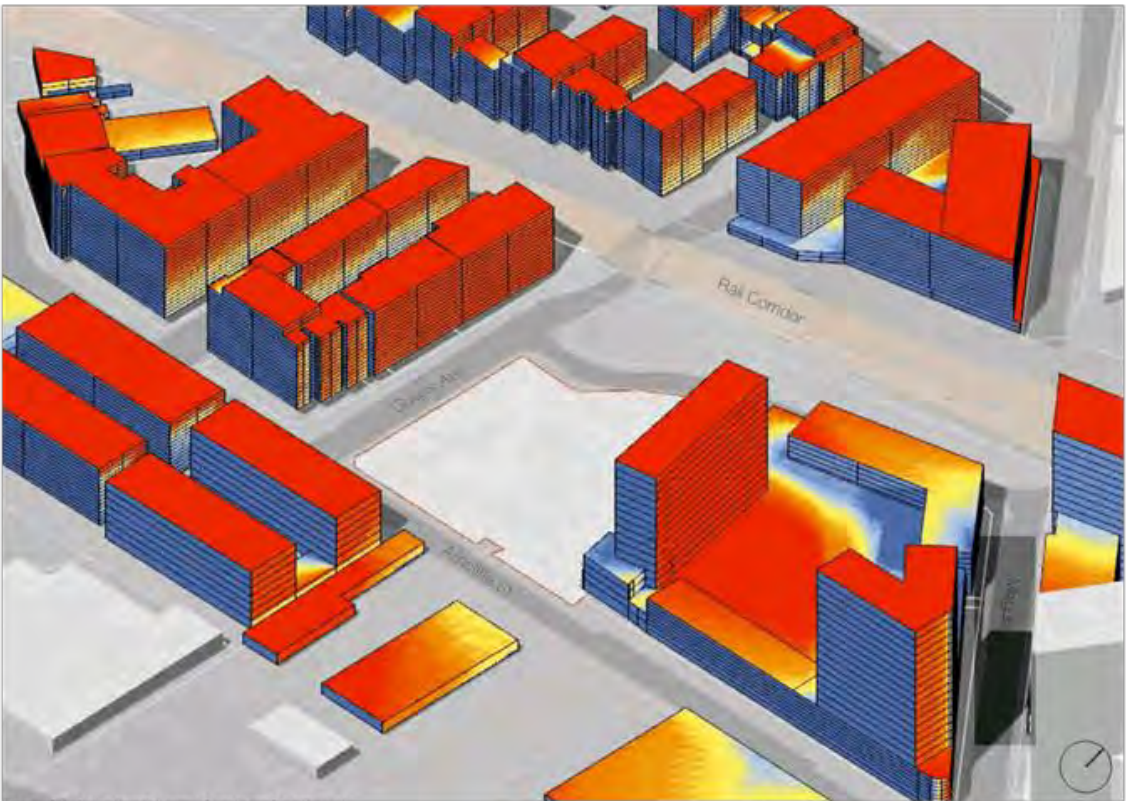
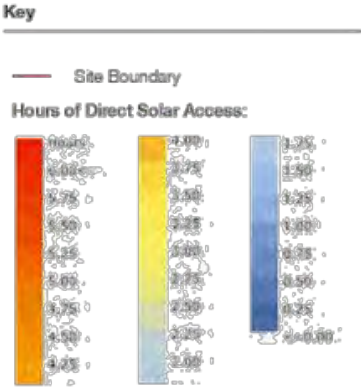
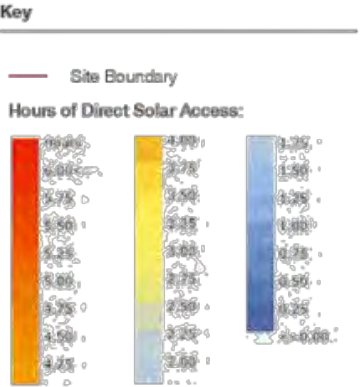


Figure 29: Solar Insolation - View from South-east

The above diagram indicates that the site located to the west across Guess Avenue decreases in solar access along the southern portion of the north-east facing facade.



Site and Context Analysis

3.10 Land Use

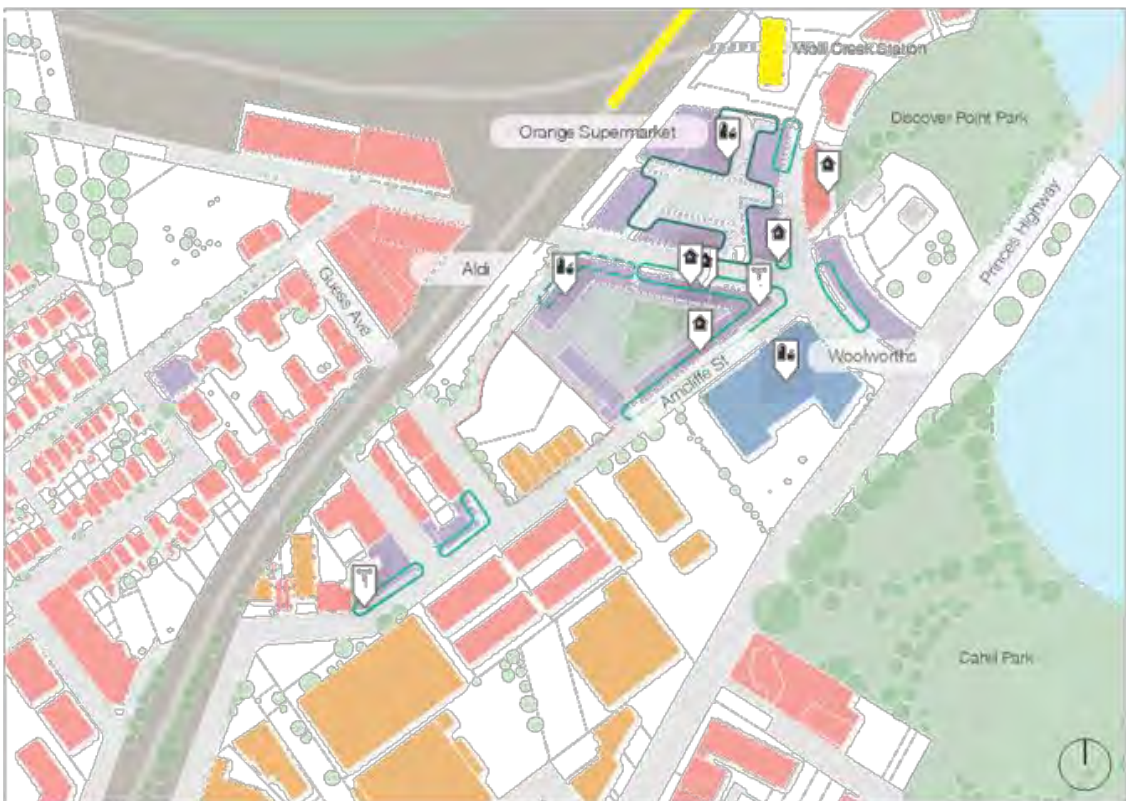


Figure 30: Land Use

Non-residential uses are generally located around Woll Creek Station in a piecemeal manner that results in a fractured active street frontage. South of Woll Creek Station is a cluster of food and beverage uses located around a piece of privately-owned, publicly-accessible open space. These uses are key to servicing the increased residential densities in this area. Further away from the station, the ground floor uses increasingly become service-based with a number of real-estate agents, beauty and medical services. There are a number of new ground floor commercial spaces to the south-west of the site along Arncliffe Street.

The site is within walking distance of a number of supermarkets including the recently completed Aldi on Mount Olympus Boulevard and Woolworths on Arncliffe Street.

To the west and north-west of the site are predominantly residential uses. Industrial uses are still predominately located in the block between Arncliffe Street and the Princes Highway.



Figure 31: Land Use

Immediately to the site's south-west are predominantly residential uses with some ground floor non-residential uses along Arncliffe Street. They provide limited street activation and passive surveillance due to a significant street setback and raised levels.

The interface of residential uses located to the south of the site along Arncliffe Street is poor in quality with a significant setback and limited street planting. Key building services are generally housed within single storey structures within this setback.

Existing industrial uses to the south-east support distribution, freight and produce a significant amount of large vehicle traffic along Arncliffe Street.



Site and Context Analysis

3.11 Character



Figure 32: Character Areas

The character areas are typically classified according to the predominant land use. The experience of these areas are also shaped by interfaces with key infrastructural elements and the character of adjoining precincts.

The subject site falls within an industrial zone, characterised by large lots occupied by low scale buildings and unbuilt areas. To the north and west, the site adjoins a residential area characterised by recently developed medium-high density residential. A mixed use area, also identified as Wolli Creek Town Centre (Rockdale DCP 2011), is located to the east. The site's northern boundary interfaces with the railway corridor, with some landscaping provided as a buffer from heavy rail infrastructure.

The Arncliffe Urban Renewal Precinct, established by the NSW Department of Planning and Environment, is also identified nearby to the south-west. This area is anticipated to undergo significant growth and development.

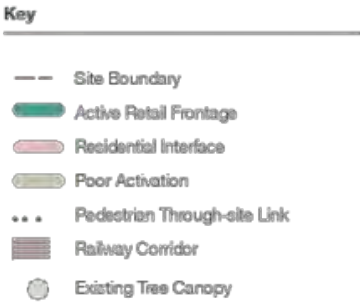


Figure 33: Streetscape Character and Interfaces

Within the site's immediate context, the streetscape character is largely shaped by the level of engagement of interfaces at ground level. A range of interfaces types are identified above. They range from active retail frontages that engage with the street, residential interfaces offering some passive surveillance and edges with poor activation and minimal street engagement due to features such as blank façades and street setbacks.

Currently the site's edges are poorly activated and offer minimal engagement with the streetscape and surrounding context.

The extent of tree canopy also contributes to the character of streets. While minimal in most parts, the existing trees located on the site and some nearby industrial sites contribute to the landscaped character of parts of Arncliffe Street and Guesse Avenue.



Site and Context Analysis

3.12 Existing Planting

The subject site has a number of mature trees located along its Guess Avenue and Arncliffe Street frontages. Botanics Tree Wise People were engaged to prepare an aboriginal pre-construction impact assessment and management plan to understand the significance of these existing trees.

"A total of seventeen (17) trees have been assessed on site. These comprise one (1) *Camphor laurel* and sixteen (16) *Lophstemon confertus* or Brush Box trees. All have a history of lopping to reduce canopy height and spread...This has however resulted in multiple tree wounds and consequential decay.

Several of the trees particularly in the southern corner have died or are dying back. This will likely be the result of multiple issues including compaction, mechanical damage and soil contamination." (Pre-construction Impact Assessment and Management Plan, 2-4 Guess Avenue, 2019)

The key findings from the assessment is that none of the existing trees are of high significance and are rather of moderate to low significance.

Any proposed development should consider these trees for retention. If any removal is proposed, this could provide the opportunity to replace existing planting with suitable plant stock and species to improve the site's agricultural amenity contribution in the long term.

Excerpt from the Aboriginal pre-construction impact assessment and management plan

- Pre-DA aboriginal assessment
- The combined amenity of these trees provide a visual screen primarily along the Arncliffe Street boundary. These are the largest and most healthy of the stand and have been partially protected by the building footprint and setback
 - Trees within and around the southern edge of the parking bay are in poor health with multiple issues and limited life expectancies
 - The Camphor laurel on the western boundary is a poor tree species for a range of reasons and should not be considered for retention in any proposed development.
 - These trees are supported on trunks of approximately 50cm with basal flares of up to 80cm in diameter. Construction setback of 5-6m would be required under AS4970 guidelines to allow for preservation. Existing construction footprints have however affected root development and any construction within the existing would be fine.
 - None of these trees are part of the locally native plant community and all will have been planted as part of earlier landscape works. The *Lophstemon confertus* specific is however native and well suited for these localised environmental conditions and can be expected to continue to grow towards their full biological potential here
 - There are numerous sections of visible surface decay and bark inclusions throughout these plantings. These are structural defects that may lead to failure. The size and scale of these also affect aboriginal significance. None of the trees assessed are of High Value, with all being Moderate (Consider for retention) or Low.



Figure 34: Indicative Existing Tree Plan



Figure 35: View of existing planting within site along Guess Avenue (Source: Botanics Tree Wise People)



Figure 36: View of existing planting within the site along Arncliffe Street

Site and Context Analysis

3.13 Constraints and Opportunities

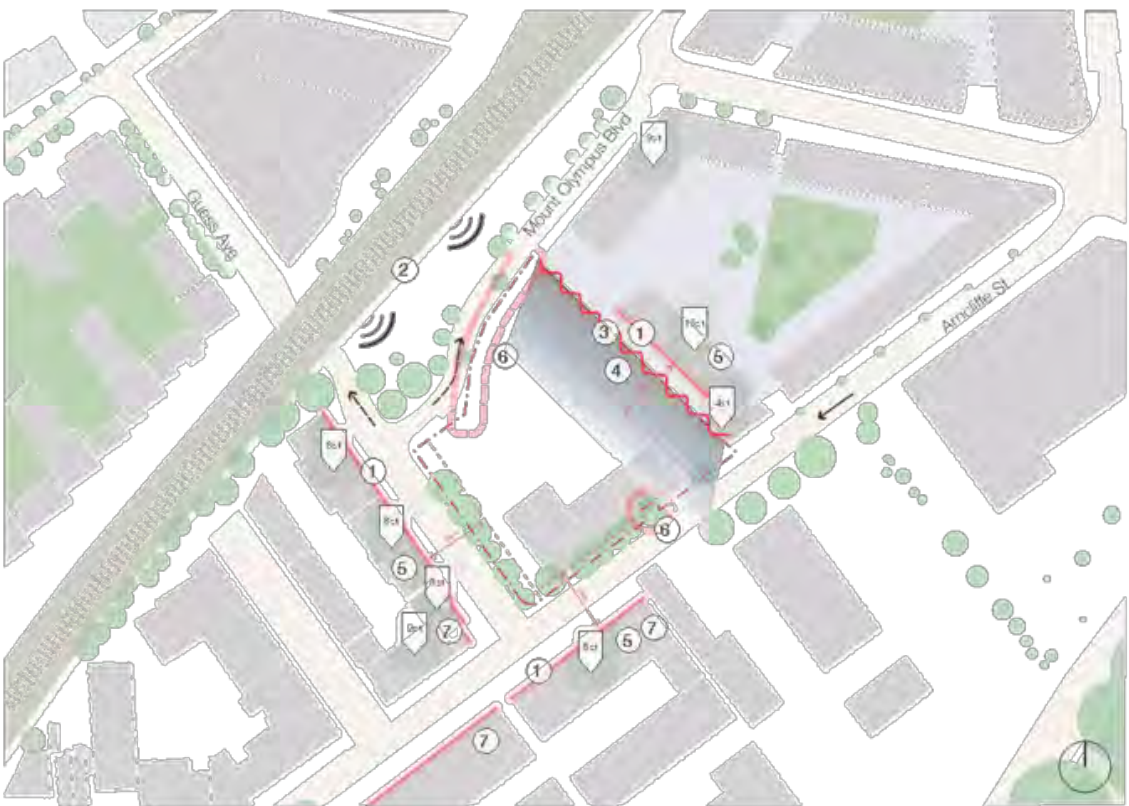


Figure 37: Constraints

- ① Provide adequate separation between surrounding residential interfaces and consider potential impact on views and solar access.
- ② Mitigate noise impacts from nearby rail corridor.
- ③ Minimise outlook to existing blank facade on adjacent building.
- ④ Consider overshadowing impact from existing development adjacent to the north-east.
- ⑤ Respond to existing heights of surrounding recent development.
- ⑥ Provide design solutions to maximise development potential on irregular-shaped site.
- ⑦ Minimise additional overshadowing to existing residential development to the south

- Key**
- Site Boundary
 - Sensitive Residential Interface
 - Blank Wall - Built to Boundary
 - Overshadowing
 - Irregular Shape
 - Noise from Rail Corridor
 - 24m Built Form Separation

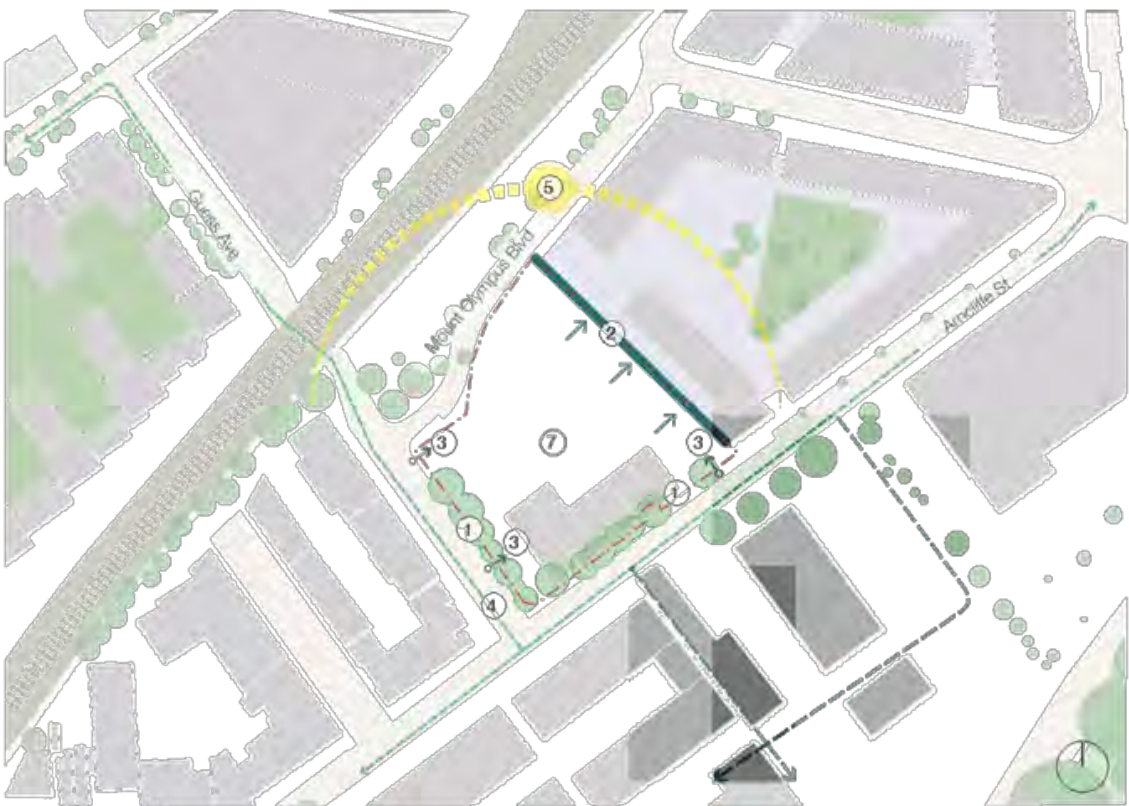


Figure 38: Opportunities

- ① Retain existing planting along Guess Avenue and Amcliffe Street
- ② Opportunity to build to boundary along blank wall, from which separation requirements are minimised.
- ③ Utilise existing vehicular access points.
- ④ Opportunity to engage with existing on-road cycle path route.
- ⑤ Potential to enhance site access and align with future DCP roads off Amcliffe Street.
- ⑥ Maximise solar access for future development and open space
- ⑦ Retain open space uses originally proposed for the site

- Key**
- Site Boundary
 - Existing trees
 - Existing vehicular site access
 - Future DCP Road
 - On-road Cycle Path
 - Solar Access

Site and Context Analysis

3.14 Potential Land Uses

The subject site area (7,765m²) has the capacity to deliver local open space alongside complementary land uses. Underpinned by research and advice from SGS and Hill PDA, a number of open space uses and complementary land uses were highlighted for potential inclusion. These form part the basis for open space and built form testing.

SGS have highlighted that "an open space of 4,000m² would increase the open space offering in the local area in a meaningful way as it would include more diverse open space uses." (Open Space Assessment: 2 & 4 Guess Avenue Wollri Creek, 2019)

0.15Ha Local Open Space
Minimum for high density areas
(where more efficient provision does not exist)

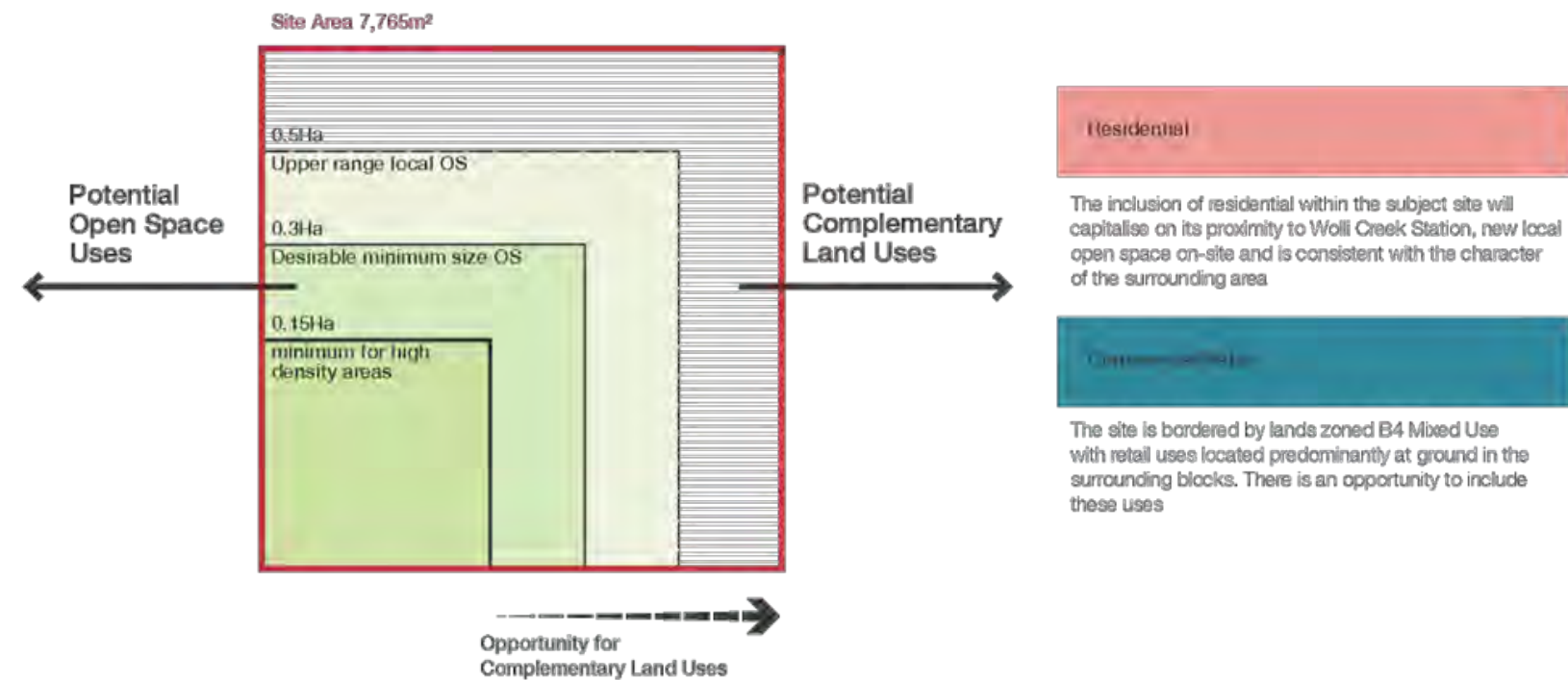
Potential uses which could be supported are:

- A small playground, and
- Lawn
- Infrastructure which would encourage people to stay within the park (e.g. seating, shade and a basic path network)

0.3-0.5Ha Local Open Space
Desirable minimum size or larger

Potential uses which could be supported in addition to those listed above are:

- New local play experiences such as nature play to complement existing traditional small playgrounds
- Community gardens
- Larger gathering lawns
- Effective pedestrian links and visual links across the site
- Small active recreation areas such as basketball half courts



Vision and Principles

4

Vision and Principles

4.1 Vision

The site, located at 284 Guess Avenue, Woll Creek is envisioned to be a vibrant, mixed-use development framing a large multi-use local open space. The proposal will provide additional housing, employment, retail and recreation opportunities, responding to a wider vision for growth and urban renewal already progressed through the surrounding area.

The rezoning and restructuring of the site will maximise open space provision, passive surveillance and pedestrian connectivity from Arncliffe Street to Mount Olympus Boulevard through to Woll Creek station. The preferred option will respond to the character of its context, within both an existing and future framework. Frame the park with built form along its southern edge will provide the opportunity for passive surveillance and activation without compromising solar access to the park. Opportunities for upper level setbacks, articulation and material variation will reduce the visual impact of built form adjacent to the park.

Located in close proximity to Woll Creek Train Station, the proposal will facilitate transit-oriented development, with an emphasis on public and active modes of transport.

This vision for the subject site has been interpreted as a set of design principles and parameters on the following pages.



Figure 39: Visualisation - Local Open space

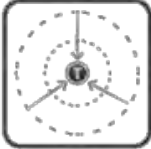
Vision and Principles

4.2 Design Principles

The vision for the site has been informed by a set of overarching design principles. These principles reflect the design objectives provided in GANSW's Better Placed policy document and outlined below. The correlation between the Better Placed objectives and the site principles are represented through the colour coding system.

Design Objectives - Better Placed, GANSW

1.	<i>Better fit</i> - contextual, local and of its place
2.	<i>Better performance</i> - sustainable, adaptable and durable
3.	<i>Better for community</i> - inclusive, connected and diverse
4.	<i>Better for people</i> - safe, comfortable and liveable
5.	<i>Better working</i> - functional, efficient and fit for purpose
6.	<i>Better value</i> - creating and adding value
7.	<i>Better look and feel</i> - engaging, inviting and attractive

	i. Facilitate transit-oriented development, utilising the site's proximity to Wolli Creek Station		ii. Integrate development with the existing movement network, promoting active and public modes of transport		iii. Provide a mix of uses, accounting for the diversity of users and needs of the local area
	iv. Deliver a usable, high quality public open space that responds to current trends or deficiencies in the existing open space network		v. Create a permeable development site that ensures a high level of accessibility through the site		vii. Engage with the streetscape through considered setbacks and streetwall heights, providing opportunities for active uses and passive surveillance at ground level
	viii. Respond to the height and scale of the surrounding built environment through fit or transition of built form		ix. Respond to the existing landform and environmental conditions		x. Minimise impact on surrounding context, maintaining solar access and views through adequate separation and orientation of built form
	xi. Demonstrate design excellence through a quality development of architectural merit, that ensures a high level of amenity and sustainability		xii. Respond to significant qualities of the existing and desired future character of the local area		xiii. Contribute to a sense of place, engaging with the needs, demographics and values of the local community

Vision and Principles

4.3 Design Precedents



Exile Apartments, Enskövle



The Gentry, Camperdown (Source: ASPOT Studios)



The Retreat, Sydney Olympic Park



Park Lane, Chippendale (Source: JPW)



Glebe Harbour Apartments, Glebe

Vision and Principles

4.4 Design Parameters



Figure 40: Build to boundary
Opportunity to build up to blank facade on boundary

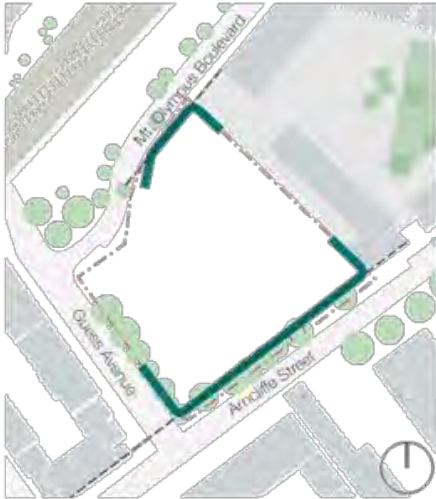


Figure 41: Setbacks
Align built form setbacks with adjacent buildings



Figure 42: Street Vial Height
Street wall heights should respond to surrounding buildings



Figure 43: Overall Height
Transition height to respond to surrounding context and consider OLS/PansOps limits



Figure 44: Overshadowing
Locate uses onsite in consideration of overshadowing from adjacent sites



Figure 45: Noise
Consider the impact of noise from rail, traffic and bus movement



Figure 46: Underground uses
Capitalise the opportunity to use existing excavation to house uses at lower levels



Figure 47: Through-site links
Integrate a through-site link to better connect residential uses to the north to open space to the south



Figure 48: Sensitive interfaces
Consider sensitive interfaces and views into the sites and minimise overshadowing



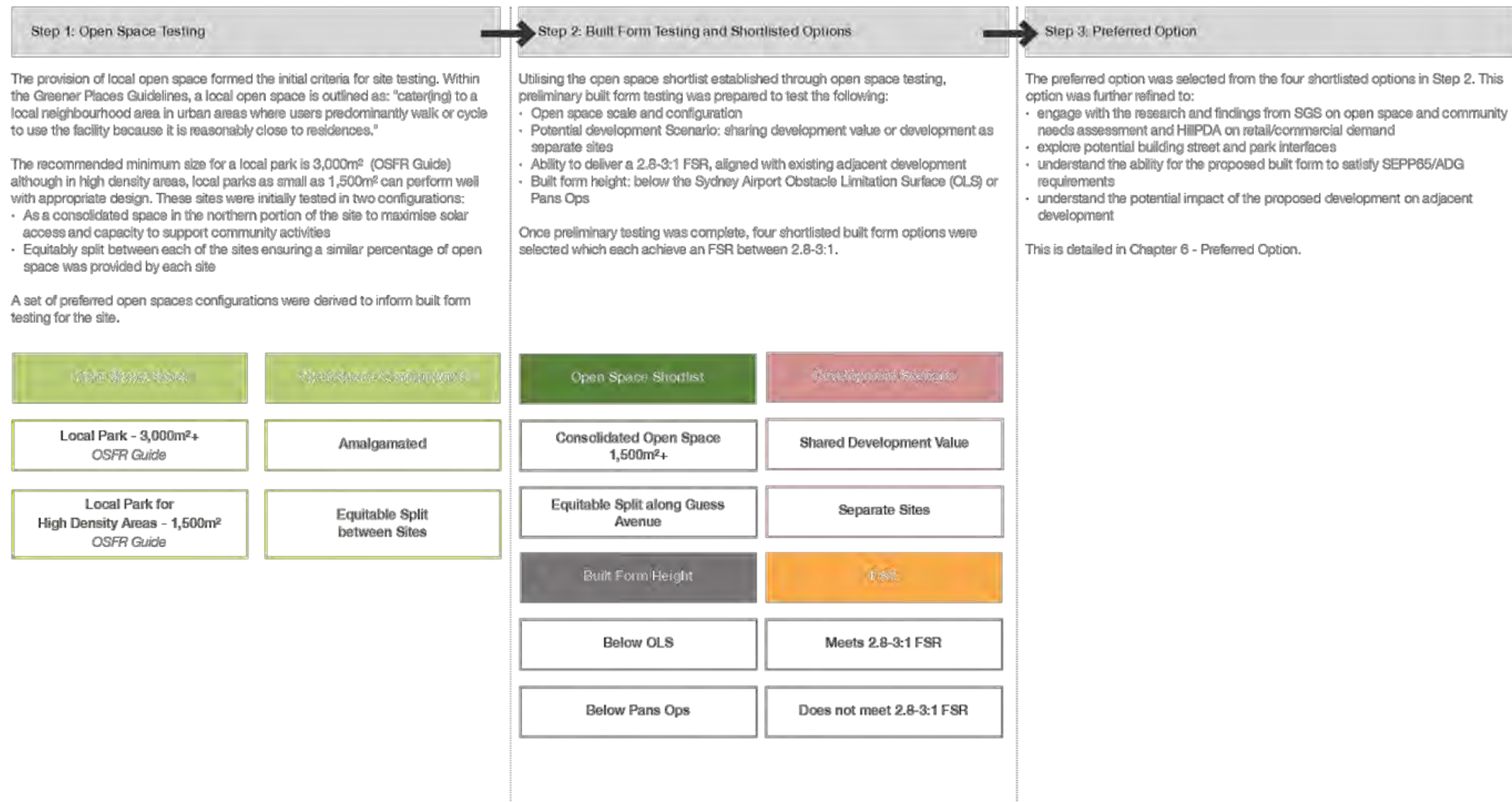
Figure 49: Flooding
Seek innovative design solutions to deal with a raised habitable floor level due to 100 year ARI flooding

Built Form and Open Space Testing

5

Built Form and Open Space Testing

5.1 Overview



Built Form and Open Space Testing

5.2 Open Space Testing - Amalgamated Site



The northern corner along Mount Olympus Boulevard is the most appropriate location of a single consolidated piece of open space on the site due to solar access and alignment with access routes to and from Wolli Creek Station.

This consolidation of open space along the amalgamation of the sites provides more flexibility in the arrangement of development on the site



- Site Boundary
- Street Setbacks
- Residential Tower Setbacks (8+ storeys)
- Proposed Open Space
- Potential zone for residential tower



The north-western edge along Mount Olympus Boulevard is the most appropriate location of a single consolidated piece of open space on the site due to solar access and alignment with access routes to and from Wolli Creek Station. The 3,000m² area makes up approximately 39% of the overall site area.

This consolidation of open space along the amalgamation of the sites provides more flexibility in the arrangement of development on the site.



- Site Boundary
- Street Setbacks
- Residential Tower Setbacks (8+ storeys)
- Proposed Open Space
- Potential zone for residential tower

Built Form and Open Space Testing

5.3 Open Space Options - Separate Sites



This option looks at an equitable split of the 1,500m² open space target across the two lots. It highlights the potential for a linear park along Guess Avenue and a smaller plaza space along Mount Olympus Boulevard. When building separation is applied in conjunction with these open spaces, the opportunity for residential uses of 9 storeys and higher become more restricted.

	Site Area	Approx. percentage/ area of each lot to achieve 1,500m² target	Proposed within Option	Percentage of lot
Percentage Target		20%	-	-
Lot 102	3,577m²	715m²	670	19%
Lot 101	4,188m²	838m²	875	20%
Total	7,765m²	1,553m²	1,545m²	-

SJB

Urban Design Report



This option looks at an equitable split of the 3,000m² open space target across the two lots. It highlights the potential for a linear park bordering both lots. The provision of the 3,000m² target would require the dedication of approximately 39% of the site to open space. When building separation is applied in conjunction with these open spaces, the opportunity for residential uses of 9 storeys and higher become more restricted.

	Site Area	Approx. percentage/ area of each lot to achieve 3,000m² target	Proposed within Option	Percentage of lot
Percentage Target		39%	-	-
Lot 102	3,577m²	1,395m²	1,410m²	39%
Lot 101	4,188m²	1,633m²	1,591m²	38%
Total	7,765m²	3,028m²	3,001m²	-

41

Built Form and Open Space Testing

5.4 Shortlisted Open Space Concepts



Figure 50: Open Space 1

Open Space Configuration 1

Consolidated open space along Mount Olympus Boulevard

This configuration locates open space in the northern corner of the site which receives good solar access and, will not be affected by overshadowing from development on the proposed site, whilst capitalising on pedestrian movement through to Woll Creek Station. The consolidation of open space within the site provides more opportunity for open space to accommodate a wider range of uses.



Figure 51: Open Space 2

Open Space Configuration 2

Equitable split of 1,500m² of open space across both sites with open space consolidated along Guess Avenue

As per open space configuration 1, the consolidation of open space provides the opportunity for the space to accommodate a wider range of uses. It is likely that open space in this configuration would be partially overshadowed by proposed development.

Built Form and Open Space Testing

5.5 Option 1A - Site amalgamation (1,500sqm Open Space, under OLS)



Figure 52: Site Plan

The option explores the opportunity for the provision of a consolidated 1,500m² of open space along Mount Olympus Boulevard with development in the southern portion of the site.

Key Features

- Assumed amalgamation of the two lots
- Consolidated open space
- Parking podium skinned with residential uses

Pros

- Solar access to open space due to northern location
- Built form located under the OLS (RL51.0)

Cons

- Potential overshadowing impact on existing residential to the south and potential to develop on existing industrial sites
- The OLS may need to be punctured during construction of the building
- Built form separations reliant on establishment of non-habitable frontages

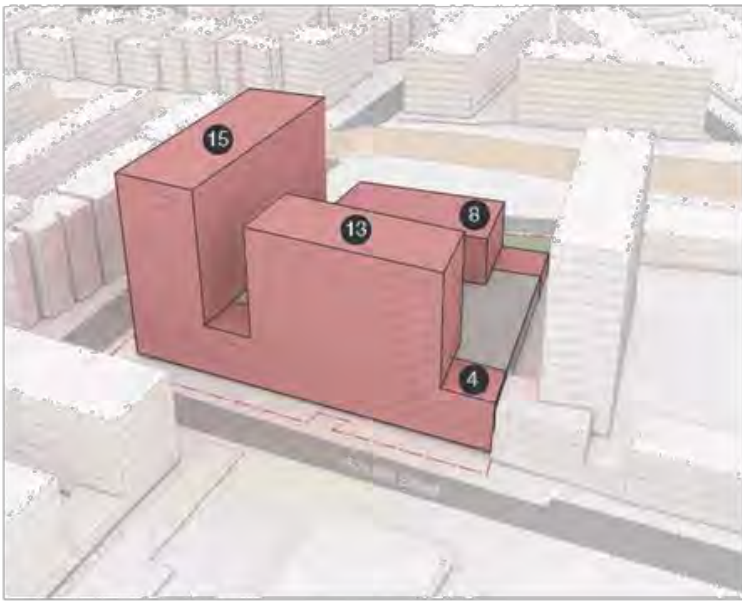


Figure 53: View from north-east

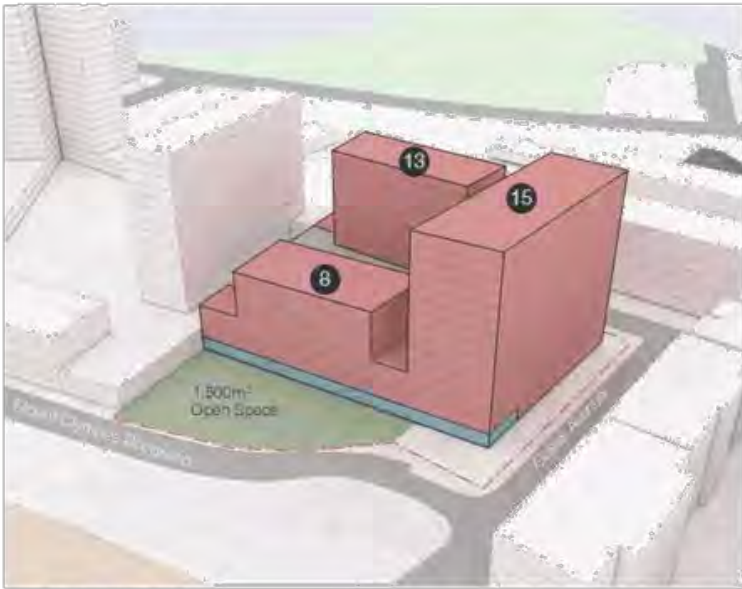


Figure 54: View north-west



Assumptions
Efficiencies
Residential GBA to GFA - 75%
Commercial GBA to GFA - 50%
Dwelling Size - 85m²
Area per parking space - 35m²
Apartment Mix - Studio (10%), 1 Bed (30%), 2 Bed (40%), 3 bed (20%)

Built Form and Open Space Testing

5.6 Option 1B - Site Amalgamation (2,000sqm open space, to Pans Ops)



Figure 56: Site Plan

The option explores the opportunity for the provision of approximately 2,000m² of open space along Mount Olympus Boulevard with development in the southern portion of the site. Locating open space in the northern portion of the site allows for better solar access, reduced overshadowing from existing and proposed development and opportunities for increased utilisation as Mount Olympus Boulevard is important for access to Wolli Creek Station.

Key Features

- Assumed amalgamation of the two lots
- Consolidated open space
- Parking podium skinned with residential uses

Pros

- Solar access to open space due to northern location
- Simple building form with height consolidated into a tower along Guess Avenue
- Large communal open space above podium

Cons

- Potential overshadowing impact on existing residential to the south and potential to develop on existing industrial sites
- Building exceeds OLS
- Built form separations reliant on establishment of non-habitable frontages

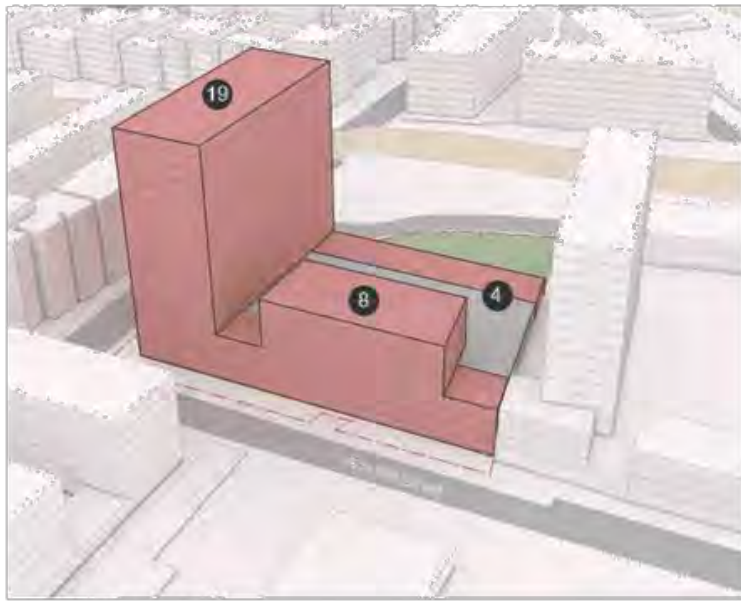


Figure 58: View from north-east

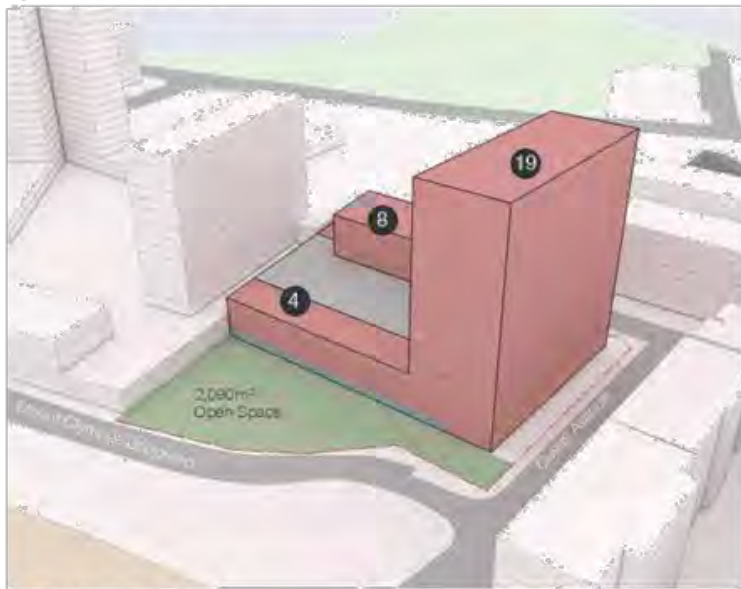


Figure 57: View north-west



Assumptions

Efficiencies

Residential GBA to GFA - 75%

Commercial GBA to GFA - 50%

Dwelling Size - 85m²

Area per parking space - 35m²

Apartment Mix - Studio (10%), 1 Bed (30%), 2 Bed (40%), 3 bed (20%)

Built Form and Open Space Testing

5.7 Option 2 - Northern Parcel Acquired for Open Space



Figure 58: Site Plan

The option explores the opportunity to dedicate the northern parcel to open space and consolidate development to the southern lot. Locating open space in the northern portion of the site allows for better solar access, reduced overshadowing from existing and proposed development and opportunities for increased utilisation as Mount Olympus Boulevard is important for access to Woll Creek Station.

Key Features

- Assumed acquisition of northern lot for open space
- Development on the southern lot below the OLS
- Provision of a portion of the southern lot (10%) as public open space which is considered to be reasonable for a site of this size

Pros

- Solar access to open space due to northern location
- Proposed development does not overshadow open space
- Larger scale open space which provides opportunities for more diverse uses
- Simplified delivery of open space through removal of need to amalgamate
- Built form located below the OLS (RL51.0)
- Potential through-site link

Cons

- The OLS may need to be punctured during construction of the building
- No podium car parking
- Potential overshadowing impact on existing residential to the south and potential to develop on existing industrial sites

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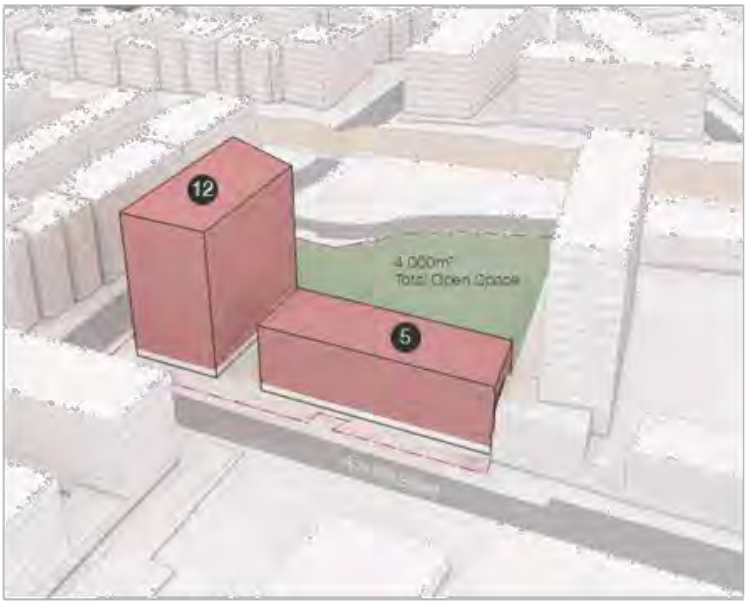


Figure 59: View from north-east

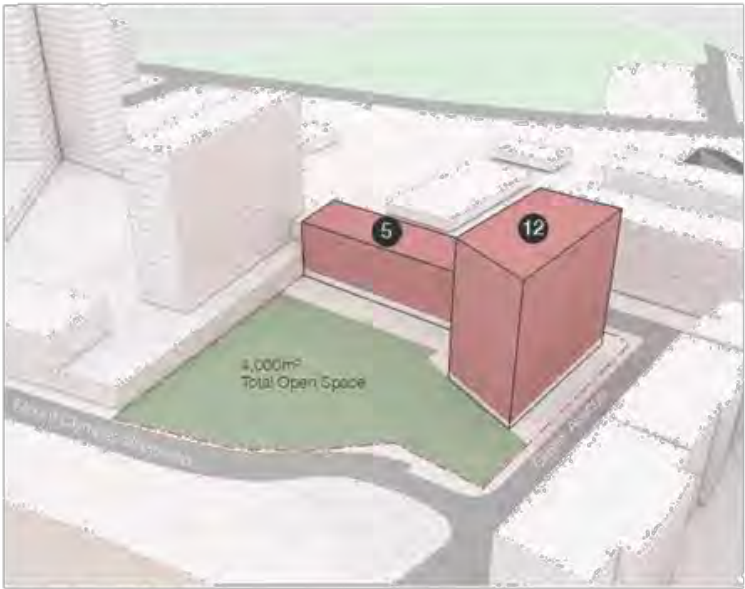
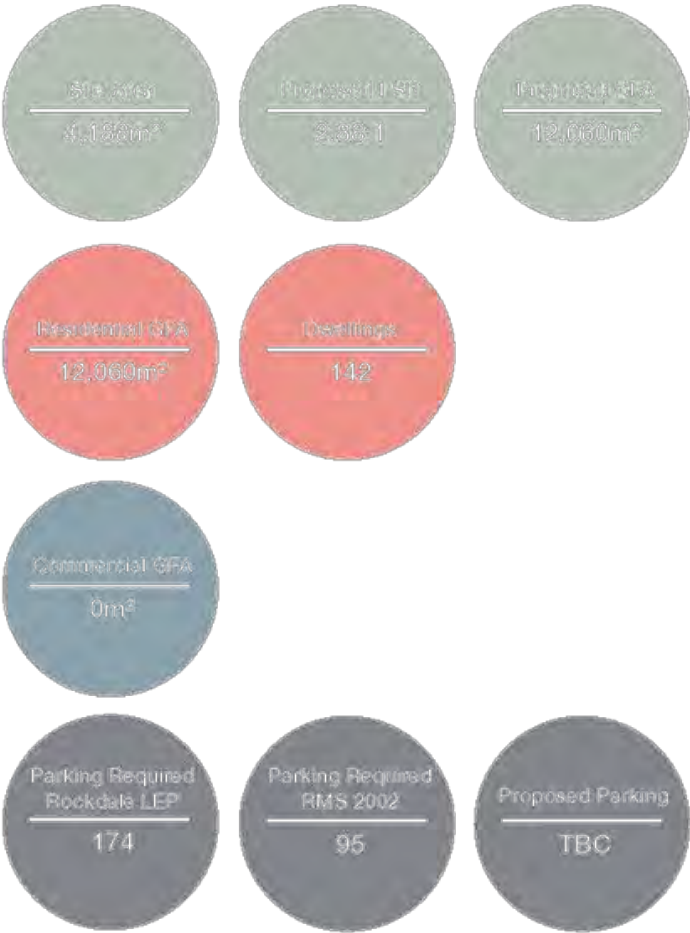


Figure 60: View north-west



Assumptions
Efficiencies
Residential GBA to GFA - 75%
Commercial GBA to GFA - 90%
Dwelling Size - 85m²
Area per parking space - 35m²
Apartment Mix - Studio (10%), 1 Bed (30%), 2 Bed (40%), 3 bed (20%)

Urban Design Report

Built Form and Open Space Testing

5.8 Option 3 - Equitable distribution of land uses



Figure 61: Site Plan

The option explores the opportunity for the provision of 1,500m² of open space alongside built form that achieves an FSR of 2.85-3:1, consistent with the immediate surrounds. Both the open space provision and development yield can be split between both sites.

Key Features

- Potential for retention of separate development parcels
- Equitably split open space provision
- Built form is compliant to height and FSR controls applied to adjacent sites

Pros

- Consistent with the height south and east of the site
- Four storey street wall extended across the Armcliffe Street frontage to align with the adjacent site
- Existing trees are set within a new open space along Guess Avenue
- Realises the potential 2.8-3:1 FSR consistent with adjacent sites
- Retention of larger deep soil zone around existing mature trees

Cons

- Excess parking/service area provision within the podium
- Some overshadowing of open space by proposed development
- Building exceeds OLS

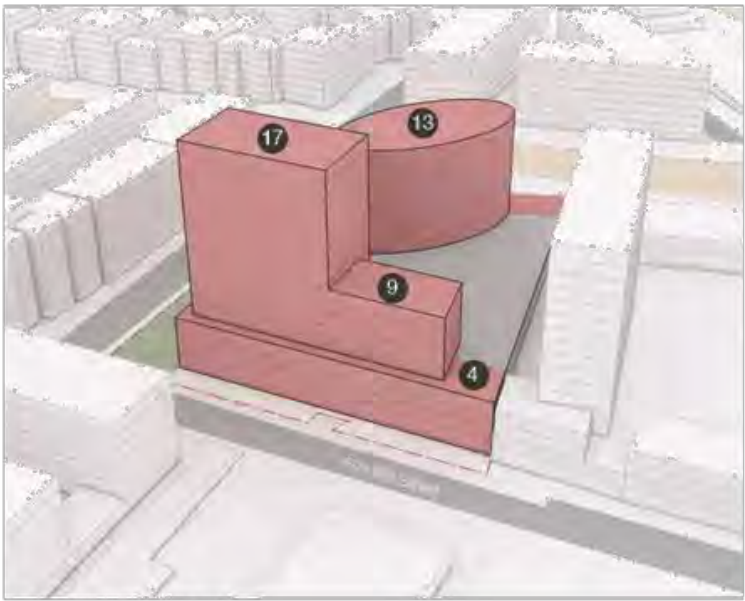


Figure 62: View from north-east

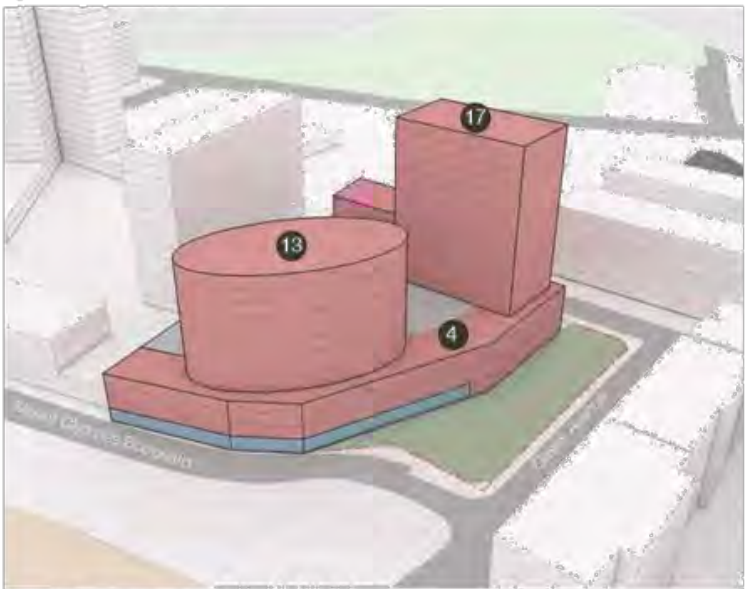


Figure 63: View north-west

4 Guess Avenue (Lot 102)



2 Guess Avenue (Lot 102)



Assumptions

Efficiencies

Residential GBA to GFA - 75%

Commercial GBA to GFA - 90%

Dwelling Size - 85m²

Area per parking space - 35m²

Apartment Mix - Studio (10%), 1 Bed (30%), 2 Bed (40%), 3 bed (20%)

Preferred Option

6

Preferred Option

6.1 Site Plan and Indicative Landscape Plan

Built form option 2 was selected as the preferred option and further refined to:

- engage with the research and findings from SGS on open space and community needs assessment and HillPDA on retail/commercial demand
- explore potential building street and park interfaces
- understand the ability for the proposed built form to satisfy SEPP65/ADG requirements
- understand the potential impact of the proposed development on adjacent development

The preferred option features a large-scale 4,000m² public open space in the north portion of the site and two buildings of 12 and 6 storeys in the south. A small retail/cafe tenancy is located on the northern edge of the 12-storey building utilising views over the park. The basement is assumed to sit within 2 Guess Avenue in order to provide the best opportunities for deep soil within the public open space.

The public open space is assumed to be made up of the 4 Guess Avenue (3,577m²) and the northern portion of 2 Guess Avenue (423m²).



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Preferred Option

6.2 Landscape Concept Plan

Public Open Space

In response to discussions with SGS and their analysis of surrounding open spaces and community facilities, a number of activities have been included within the public open space. These uses will be complemented by seating, picnic tables, tree planting and passive recreation spaces at the centre of the park.

- A basketball half-court has been included in the northern corner of the site for informal community use and activation of the blank facade. This court could be slightly sunken to facilitate stepped seating and utilise the site's existing levels
- Through-site links provide alternate connections from Arncliffe Street to Mount Olympus Boulevard. The connection between built form in the south should be a minimum of 7m in width
- The nature play area will be located adjacent to the retail/cafe tenancy to allow for overlooking and passive surveillance. Planting surrounding this area will provide some demarcation of this space from the rest of the park and serve as a barrier to adjacent roads
- The community vegetable garden has been located to encourage activation adjacent to the blank facade.
- A paved loop has been included to support the use of scooters and bicycles by children within the park

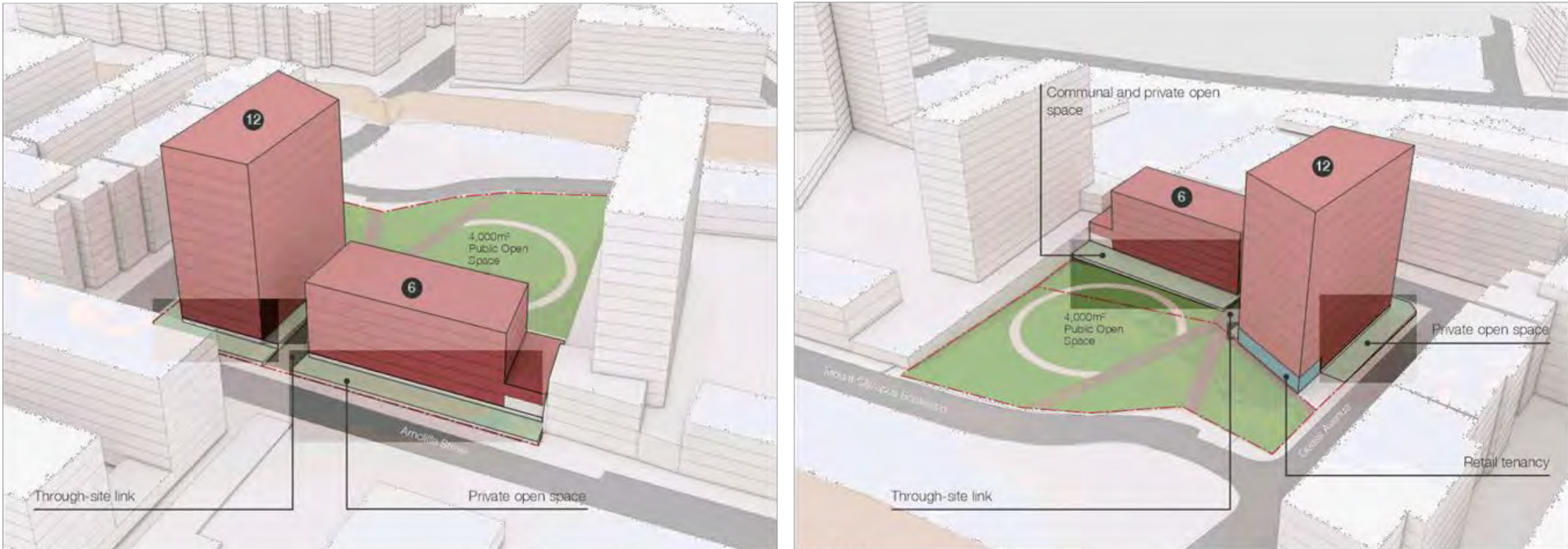
The levels identified in the flood assessment prepared by Northrop, are based on the existing site levels prior to remediation works. Further flood modelling will be required during detailed design stage to ensure any proposed filling of the park does not create additional flooding impact on the surrounds. The existing levels identified within the flood study could be accommodated through the design of the park including through stairs, terracing and grading of the landscape.



Illustrated Masterplan

Preferred Option

Massing View



Assumptions
Efficiencies
Residential GBA to GFA - 75%
Commercial GBA to GFA - 50%
Dwelling Size - 85%
Area per parking space - 35m²
Apartment Mix - Studio (10%), 1 Bed (30%), 2 Bed (40%), 3 bed (20%)

Preferred Option

6.3 Site Sections

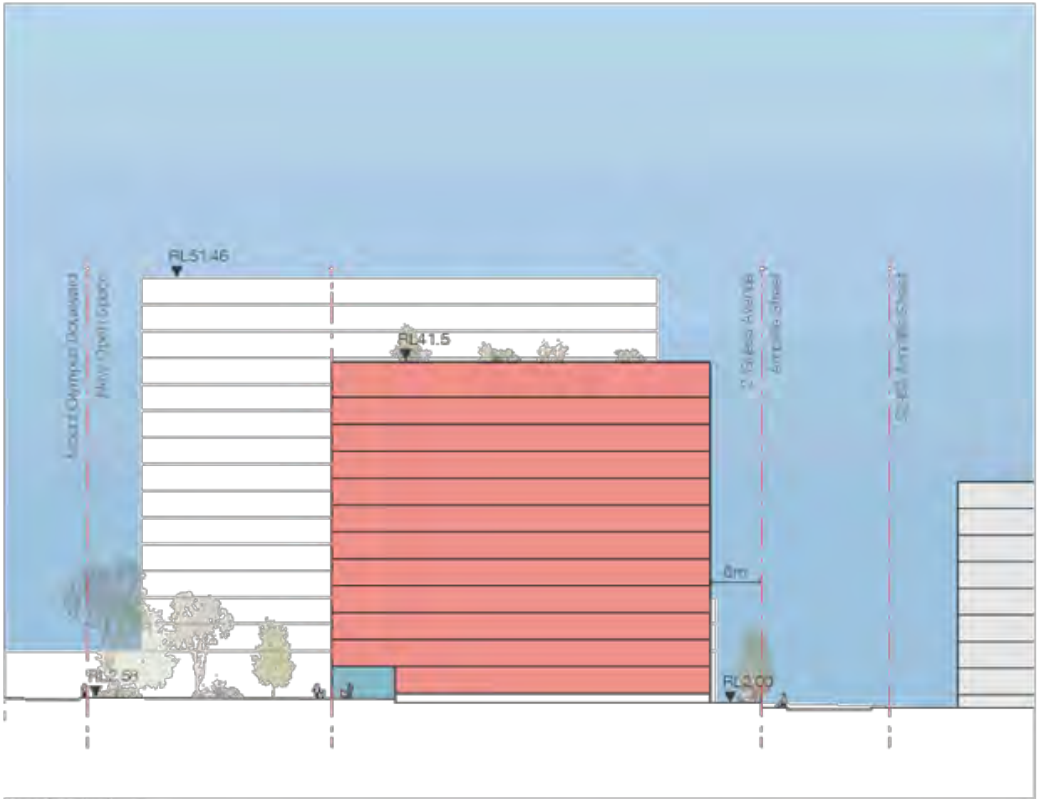


Figure 64: Section A



Figure 65: Section A Plan

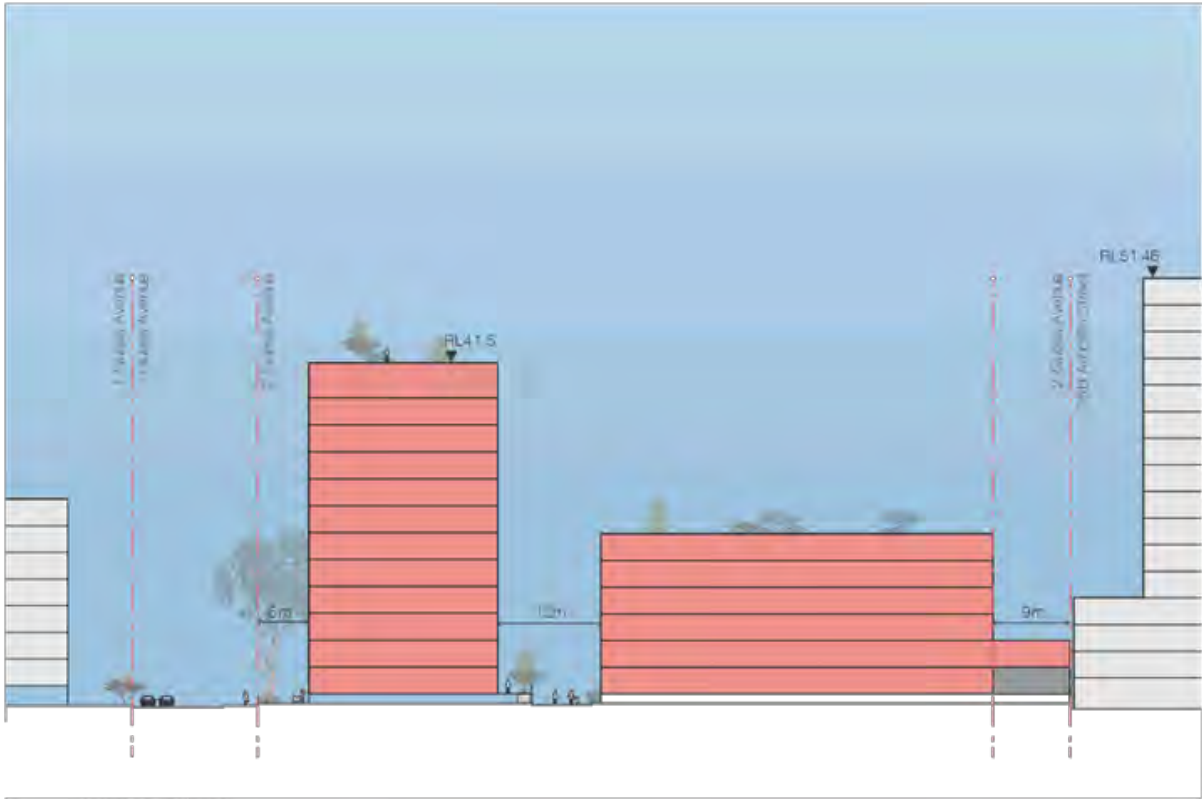


Figure 66: Section B



Figure 67: Section B Plan

Preferred Option

6.4 Landscape Sections

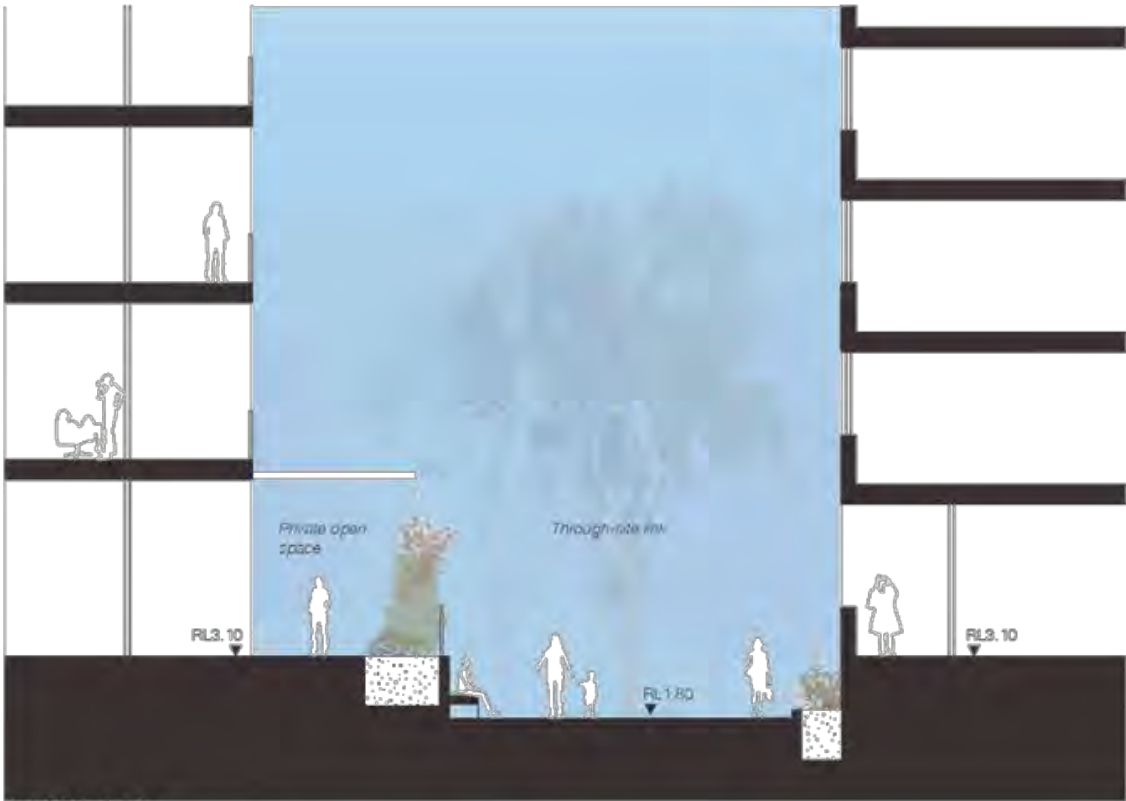


Figure 68: Section C

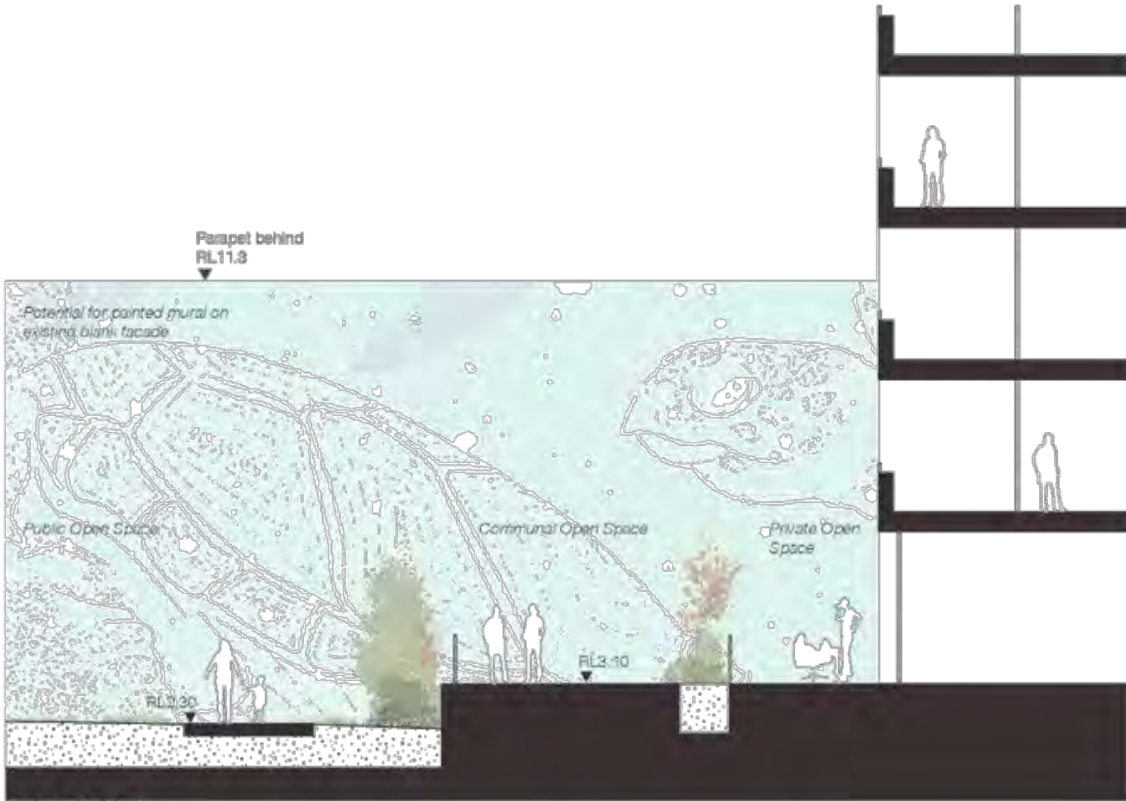


Figure 69: Section D



Preferred Option

6.5 Solar Insolation

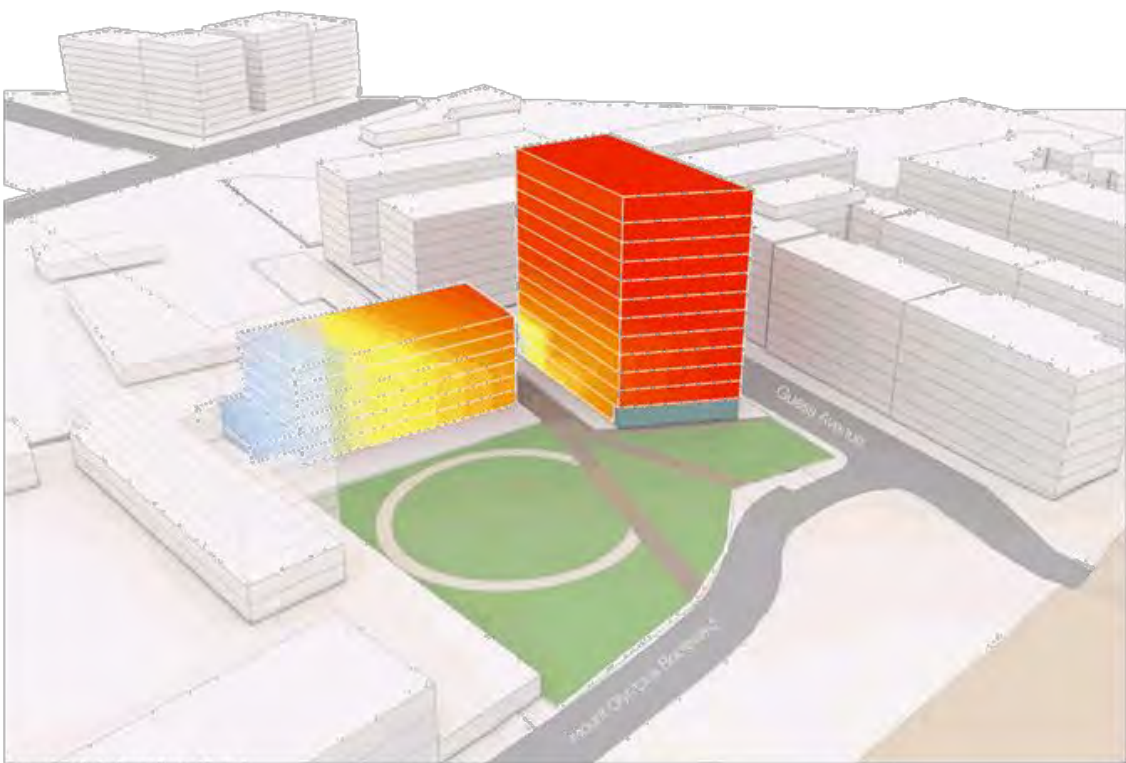
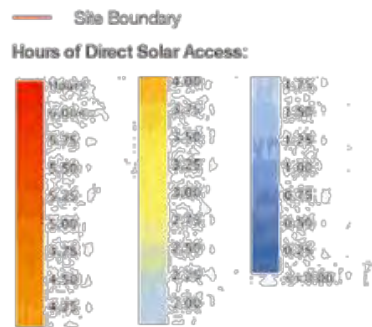


Figure 70: Solar Insolation - View 1

Key



The 12-storey building is able to obtain 2+ hours of direct solar access across its northern and north-western facades with limited impact from the proposed 6-storey development or adjacent sites.

The south-east corner of the site along Arnclyffe Street is impacted by overshadowing from 35B Arnclyffe Street. The 9 metre setback applied to the shared eastern boundary supports better opportunities for apartments to receive 2+ hours of direct solar access.

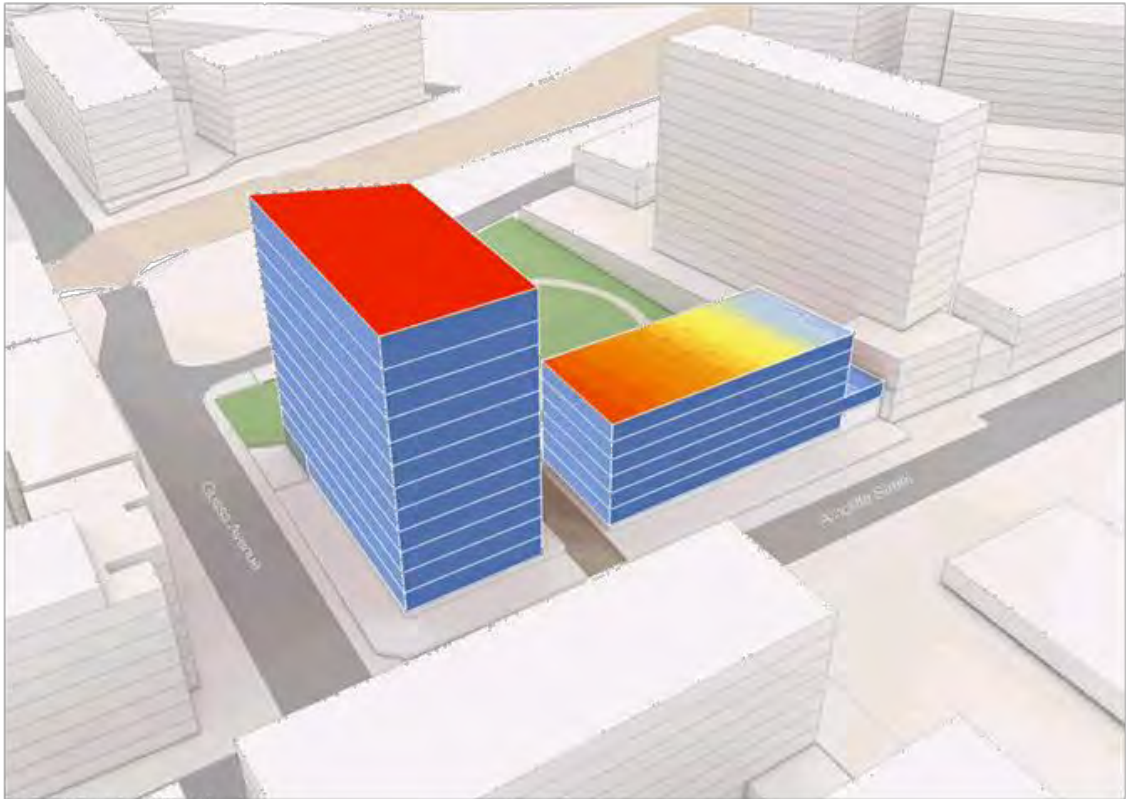


Figure 71: Solar Insolation - View 2

Preferred Option

6.6 Shadow Analysis

The proposed development in the southern portion of the site will create some additional overshadowing of buildings to its south along Guess Avenue and Arncliffe Street. This additional shadow is created by the proposed 12 storey building on the subject site's southern corner.

The proposed open space located in the north of the subject site will not be impacted by shadows from the proposed development, however is impacted by overshadowing from the existing towers and podium to the site's north-east.

Existing buildings along the southern edge of Arncliffe Street are partially affected by shadows from existing development to the north of the subject site from 9am-11am.

At 9am shadows produced by proposed buildings will sit within the existing shadows cast by 35B Arncliffe Street directly to the north-east.

Development along Guess Avenue is impacted by additional overshadowing by the proposed development from 10am-12noon. Apartments along this street should still be able to retain 2 hours of solar access from 12:30-2:30pm.

Development along Arncliffe Street is impacted by additional overshadowing from the proposed development from 10am-3pm. Refer to 6.7 Overshadowing Impact on Adjacent Buildings

Key

- Site Boundary
- Residential Uses
- Public Open Space
- Existing Shadows
- Proposed Additional Shadow



Figure 72: Proposed 9am Shadows



Figure 73: Proposed 10am Shadows



Figure 74: Proposed 11am Shadows

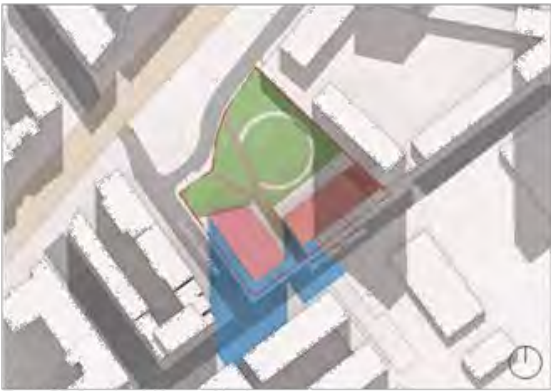


Figure 75: Proposed 12 noon Shadows



Figure 76: Proposed 1pm Shadows

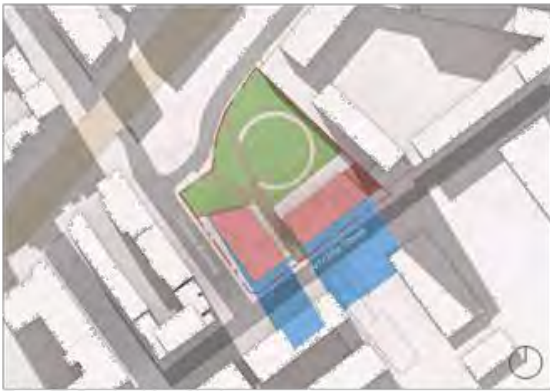


Figure 77: Proposed 2pm Shadows



Figure 78: Proposed 3pm Shadows

Preferred Option

6.7 Overshadowing Impact on Adjacent Buildings

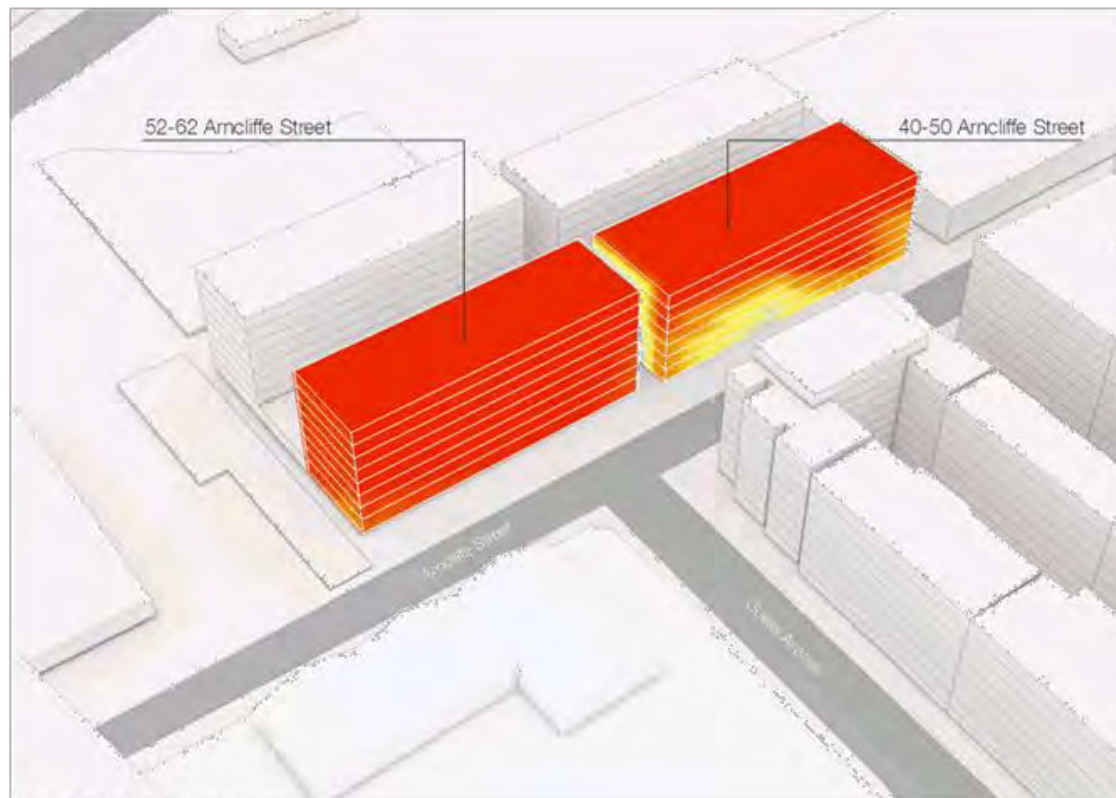
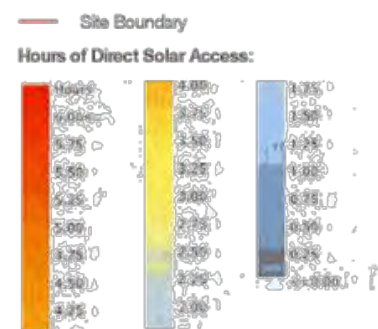


Figure 79: Existing Solar Insolation

Key



Existing residential buildings along the southern edge of Arncliffe Street currently receive 2+ hours of direct solar access during winter solstice (22 June). The proposed building will create additional overshadowing across both buildings with the most significant impact on the lower levels of 40-50 Arncliffe Street. The majority of apartments within 40-50 Arncliffe would retain 2+ hours of first solar access. More detailed studies will be required to determine the full impact of the proposed built form on 40-50 Arncliffe Street. There is no impact on the communal open space of 40-50 Arncliffe street, located on the roof of the development.

52-62 Arncliffe Street should be able to maintain a minimum of 2+ hours of direct solar access to a minimum of 70% of its dwellings.

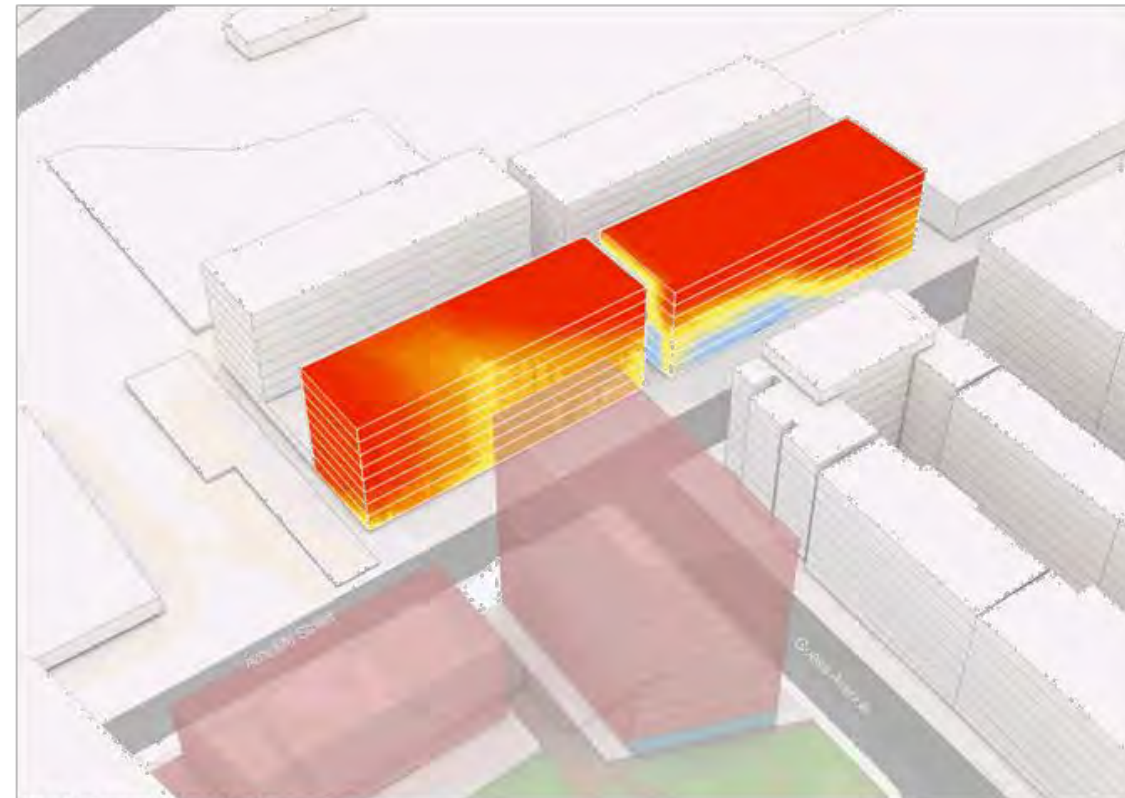


Figure 80: Proposed solar insolation

Preferred Option

6.8 Indicative Building Footprints

Solar access and cross-ventilation

The adjacent indicative floor plan demonstrates one potential arrangement of apartments within the proposed built form. This particular indicative floor plan achieves approximately 60% of apartments with naturally cross ventilated and 2+ hours of direct solar access between 9am-3pm during winter solstice. Across the development in total, 70% of apartments should be able to receive 2+ hours of direct solar access during winter solstice (22 June).

More detailed design studies would be required to determine ADG/SEPP65 compliance across the development as a whole.

Building separation

The proposed development incorporates compliant building separations. Upper level building setbacks can be applied to the 6-storey building to achieve these requirements.

The 9m setback from the eastern boundary responds to the need to provide building separation from the adjacent site which has a west-facing residential interface above its podium.

Communal open space and deep soil

Communal open space is proposed to be provided on the rooves of both buildings. Additional communal open space is provided also at ground for the 6 storey-development adjacent to the park. It is assumed that deep soil zones would be provided within the development's six metre street setback.

Key

- Site boundary
- Cross ventilation
- 2+ hours of direct solar access
- Private open space (on ground)
- Communal open space (on ground)
- Deep soil opportunity



Indicative Floor Plans Levels 2-6

Preferred Option

6.9 Visualisation



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Preferred Option

6.10 Visualisation



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Preferred Option

6.11 Visualisation



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Preferred Option

6.12 Conclusion and Recommendations

This urban design study highlights the potential for the rezoning of 2 Guess Avenue to deliver residential and commercial uses alongside a significant local open space at 4 Guess Avenue. The scale of the proposed space provides sufficient space to support a diversification of the open space offering in the area.

Proposed built form testing demonstrates the capacity for 2 Guess Avenue to be developed

- Consistent with the scale and character of Woll Creek
- Alongside the delivery additional pedestrian connectivity
- The potential retention of existing mature trees along Guess Avenue and Arncliffe Street
- Embedded opportunities for active and passive surveillance to support the use and safety of the new park

Recommendations

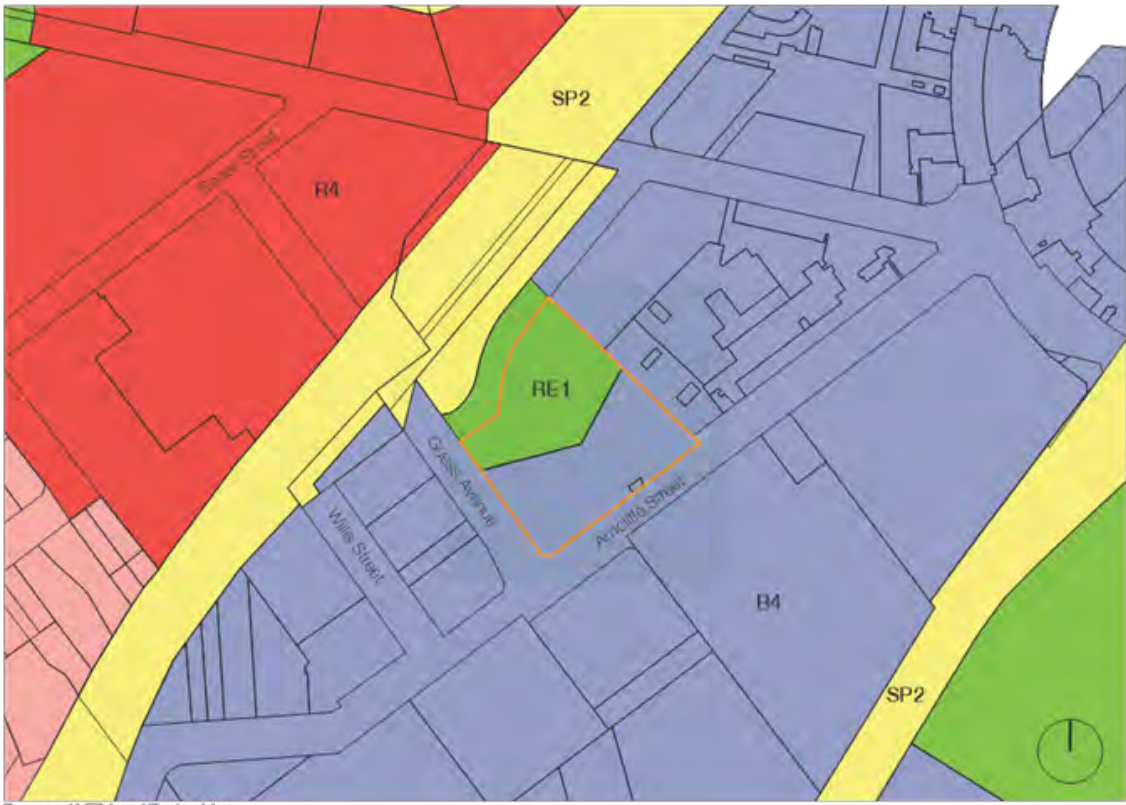
A number of recommendations have been outlined to support the delivery of the local open space and adjacent development:

- Retention of the 4 Guess Avenue (Lot 102 DP808944) as RE1 Public Recreation
- Amendment of LEP controls applied to 2 Guess Avenue (Lot 101, DP808944) to:
 - Land zoning - B4 Mixed Use
 - Height - 42m
 - FSR - 3:1
- Preparation of a site specific DCP to embed the following features in a future treatment of the site:
 - through-site link with qualitative and quantitative controls
 - 6m minimum setbacks from Arncliffe Street and Guess Avenue
 - Active frontage along the north-west edge of 2 Guess Avenue alongside the park coupled with a 0m minimum setback requirement
 - dedication of 423m² of 2 Guess Avenue to public open space adjacent to the northern boundary



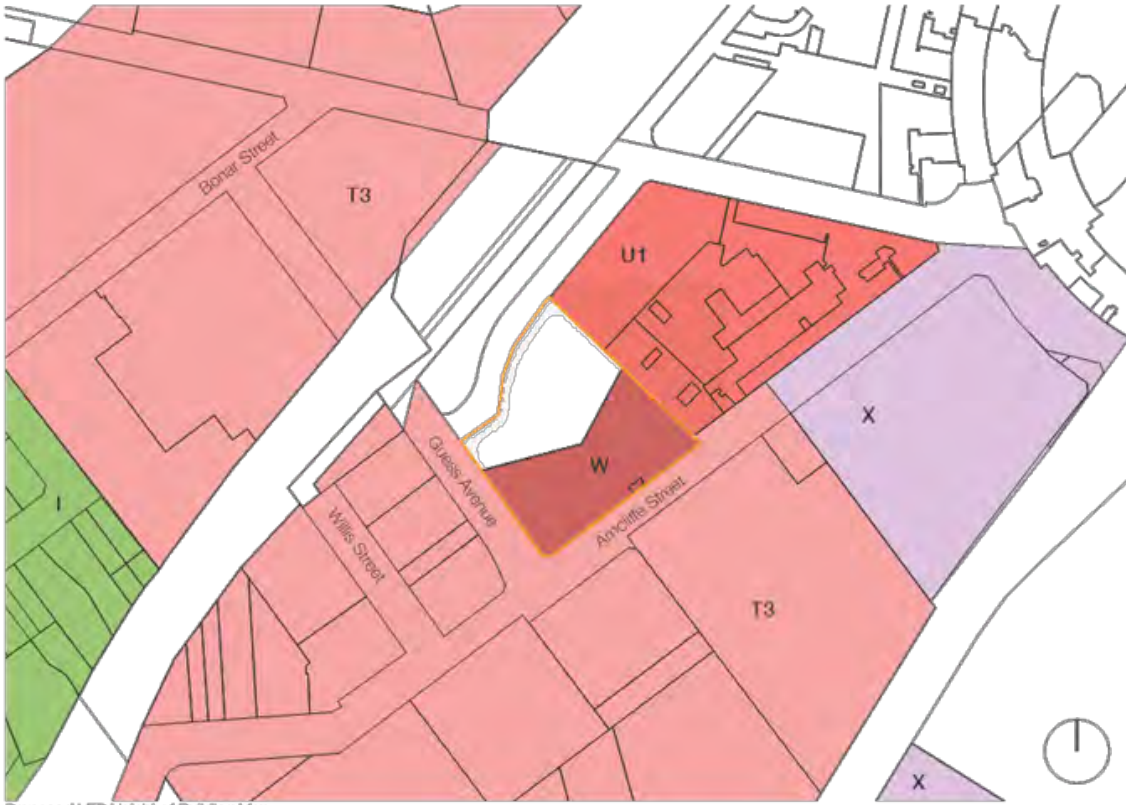
Preferred Option

6.13 Proposed Amended LEP Maps



Proposed LEP Land Zoning Map

- Key**
- Site Boundary
 - B4 Mixed Use
 - R4 High Density Residential
 - R2 Low Density Residential
 - RE1 Public Recreation
 - SP2 Infrastructure



Proposed LEP Height of Building Map

- Key**
- Site Boundary
 - X - 48m
 - W - 42m
 - U1 - 31m
 - T3 - 29m
 - I - 8.5

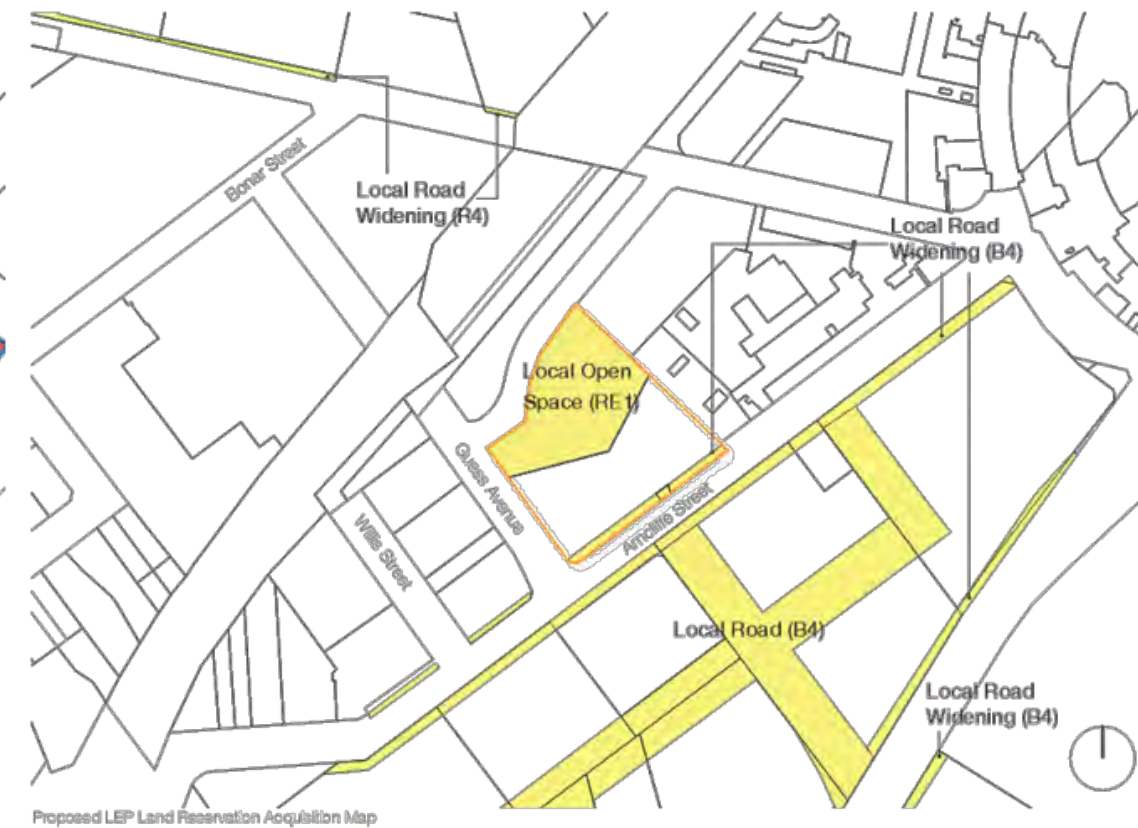
Preferred Option

6.14 Proposed Amended LEP Maps



Key

- Site Boundary
- V1 - 3:1 FSR
- U2 - 2.5:1 FSR
- T2 - 2.2:1 FSR
- D - 0.5:1
- Refer to Clause 4.4



Key

- Site Boundary
- Local Open Space (RE1)
- Local Road (B4)
- Local Road Widening (B4)
- Local Road Widening (R4)





OPEN SPACE ASSESSMENT: 2 & 4 GUESS AVE, WOLLI CREEK

VERSION 1
JULY 2019

Prepared for
City of Bayside

Independent
insight.



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EXECUTIVE SUMMARY

Introduction

2 and 4 Guess Avenue (the study site) is a 7,765 square metre site in Wolli Creek comprising two property parcels. In 2017, Bayside City Council resolved that it no longer required both sites for public purpose and is seeking to submit a planning proposal to amend the Rockdale LEP to rezone these sites from RE1 – Public Recreation to B4- Mixed use and to remove the public acquisition overlay that exists.

SGS was commissioned to consider the implications of rezoning these sites with regard to local open space provision and community facilities.

Site context

The study site is located in Wolli Creek, which has experienced rapid growth in residential housing in the last 10 years. Overwhelmingly, this has been in high density apartment developments. In order to meet the needs of the growing residential community, new open spaces have been delivered as part of developments, either as private open spaces contained within developments, or in public open spaces protected by positive covenants.

Council has also planned for new open spaces in the area, including the Lusty Street Reserve located immediately to the north west of the study site.

Existing open space network

There is a series of large district open spaces located to the north and west of the Guess Avenue Site, and these provide a range of opportunities for active and passive recreation. This includes Cahill Park, Waterworth Park, Tempe Recreation reserve and Robyn Webster Reserve. While these are located only short distances away, pedestrian access is constrained.

In the immediate vicinity of the study site is Discovery Park and Village Square. These were constructed as part of the Discovery Point development and are high quality open spaces that provide contrasting uses for local residents. A second Village Square located directly to the north of the study site is not considered part of the public open space network due to access constraints and its lack of visibility from the surrounding street network.

Other local open spaces in the area are typically small and provide a limited number of uses, such as a playground and a lawn.

Open space planning documents are out of date and preceed the merging of Botany Bay council and Rockdale Council and do not provide an accurate assessment of current open space provision levels. Council is currently preparing a new open space strategy which will provide greater guidance on open space planning.

Policy Context

Strategic planning documents such as the Greener Places Discussion paper prepared by the Government Architect of NSW emphasise the need to improve the provision, diversity and quality of open spaces.

The study site has been identified as a key opportunity in local policy documents to deliver much needed open space in Wolli Creek, a rapidly growing area undergoing urban renewal.

It is the preferred site identified in the Wolli Creek and Bonar Street Precinct Public Domain Plan (2011) for a New Town Park and is well located for improving the community's access to local open space.



Should the site be rezoned, the Rockdale Development Control Plan 2011 identifies minimum land areas that should be allocated for landscaped open space within development projects. For a residential development, a minimum of 15 per cent of the land area is required to be landscaped, and, 5 square metres of communal space should be provided per person.

Open Space Benchmarks

In high density areas, the Greener Places Manual recommends most houses should be located within 200 metres of open space, and that the minimum size for a local open spaces is 1,500 square metres where more efficient provision cannot be provided. Open spaces that are only 1,500 square metres provide a relatively limited range of open space opportunities.

Community open space needs

The priorities for local and neighbourhood parks are

- Meeting places
- Gathering places with picnic and barbeque facilities
- Low cost sporting and recreation opportunities: eg gym facilities
- Community gardens

Although there are lower numbers of children in the local area, the high density of the area means that provision of diverse play spaces is an important consideration

Open Space Assessment

An assessment of the local area to identify areas without access to open space within 200m highlights the important role of the Guess Avenue site in providing local open space to the community, particularly those living immediately to the south of the study site. Residents in this area do not have access to local open space within 200 metres.

In order to meet the standard in the Greater Sydney Regional Plan and the draft Greener Places Guidelines, where most houses in high density areas should have access to open space within 200 metres, the Guess Avenue site would be required to provide some open space.

The difficulty faced by residents in accessing parks on the eastern side of the Pacific highway further reinforces the need to ensure open space is provided at the Guess Avenue site.

Options for Open Space provision

1,500 square metres of open space

This is the minimum size possible and would allow for a more limited range of activities to occur. It could incorporate

- a small playground
- lawn
- infrastructure which would encourage people to stay in the park. (eg seating, shade and a basic path network)

4,000 square metres of open space

An open space of 4,000 square metres would increase the open space offering in the local area in a meaningful way as it could include more diverse open space uses. In addition to those possible at 1,500 square metres, other elements that could be incorporated include

- New local play experiences such as nature play to compliment existing traditional small playgrounds
- Community gardens
- Larger gathering lawns
- Effective pedestrian links and visual links across the site

- Small active recreation areas such as basketball half courts

Use of entire site for open space (7,765 square metres)

If the entire site is used for open space, it would substantially diversify the open space offering within the Wolli Creek precinct. In addition to those elements possible at 1,500 and 4,000 square metres, other elements that could be incorporated include

- large gathering places (with shelters and bbq facilities),
- informal playing fields,
- dog off leash areas, and
- exercise infrastructure

Community facilities

A series of case studies were undertaken to identify how community facilities and open spaces were provided in higher density developments. A number of these incorporated community or communal gardens, which were seen as a way to develop community cohesion, and to provide residents the opportunity to engage in gardening where private open space was limited.

Role in the broader open space network

Regardless of size, an open space on the site also offers an important opportunity for improving the connectivity of the open space network, which will in turn support greater walking and engagement in the public realm. Its role as a central open space that connects both small and large open spaces in the area is crucial.

Concluding remarks

An open space of 4,000 square metres on the Guess Avenue site would mean that there is sufficient area for a large local open space to be provided that significantly diversifies the open space offering in the area. This would represent partial retention of the site (one of the properties) for open space purposes, while the remainder can be developed for mixed use. The remainder area would also be required to provide approximately 10 per cent as public open space to achieve the 4,000 square metres of open space.

The site is well located within the broader open space network and offers opportunities to improve local connectivity of open space, and to reinforce the active transport network.

Beyond the site, it will be important to consider access to major regional reserves where access is constrained due to the absence of river crossings and barriers to crossing the Princes Highway as a pedestrian. The types of additional uses on a 7,765sqm are considered district open space uses, and there is adequate access to district open spaces in the wider area, however pedestrian accessibility should be improved.

1. INTRODUCTION

1.1 Project Context

2 and 4 Guess Avenue, Wolli Creek are currently zoned RE1- Public Recreation. In 2017, Bayside City Council resolved that it no longer required both sites for public purpose and is seeking to submit a planning proposal to amend the Rockdale LEP to rezone these sites from RE1 – Public Recreation to B4- Mixed use.

Both properties are identified for acquisition for the purposes of Public Recreation under the Rockdale LEP, and the site is also identified as a proposed new park within Rockdale Development Control Plan 2011 and the Wolli Creek and Bonar Street Public Domain Plan.

SGS was commissioned to consider the implications of rezoning these sites with regard to local open space provision.

To address this, the report is structured as followed:

- **Site context:** Mapping and discussion of the existing provision of open space within the local context
- **Policy Review:** A review of key policy documents relevant to the rezoning proposal
- **Community Profile:** An assessment of the current demographic profile and future demographic projections, and their open space and social infrastructure needs
- **Open space benchmarks:** A review of current approaches to the provision of open space, including benchmarks
- **Site assessment:** An assessment against guidelines prepared by the Government Architect of New South Wales, in particular, Greener Places to understand the role of the site in local access to open space
- **Options for open space:** An assessment of alternate options for open space delivery on the site
- **Concluding remarks:** a summary of the key findings in the report
- **Appendix:** A series of case studies where open space is integrated into high density housing projects

2. SITE CONTEXT

This section describes the site context and role in the municipal open space network.

2.1 Site description

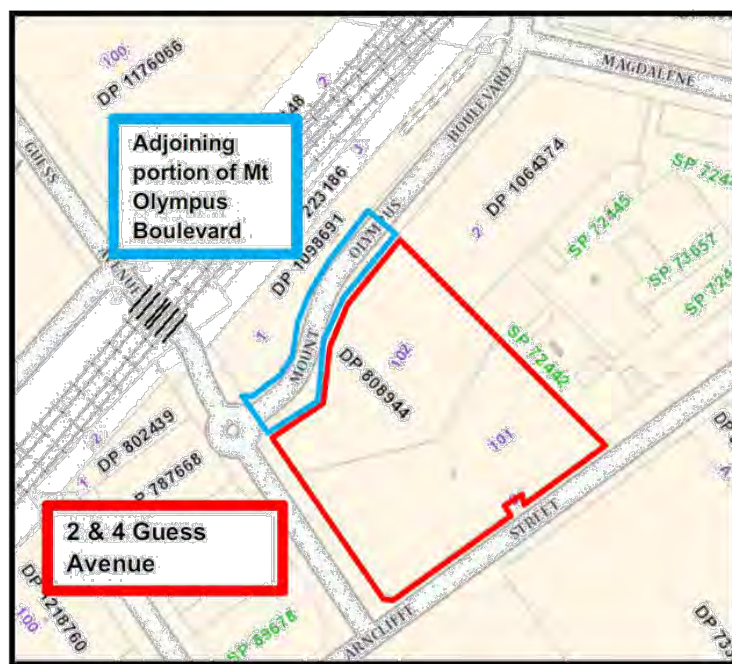
2 and 4 Guess Avenue is a 7,765 square metre site proposed for rezoning and removal of the public acquisition overlay in Wolli Creek. Open space near the site includes substantial reserves such as Cahill Park, as well as many gated private areas within developments. There are also pocket parks, ranging in size, distributed across the area.

The current use of the Guess Avenue is industrial, with remediation activities recently completed for No 4 Guess Avenue. No 2 Guess Avenue is still in use as 'National Truck Tyres'.

The study area for investigation is Wolli Creek and the surrounding suburbs of Arncliffe and Turrella.

Housing in the local area is uniformly contained in high density apartment developments. 96.7 per cent of dwellings in Wolli Creek are high density, compared with 40.8 per cent in Bayside¹.

FIGURE 1: LOCATION OF SITE



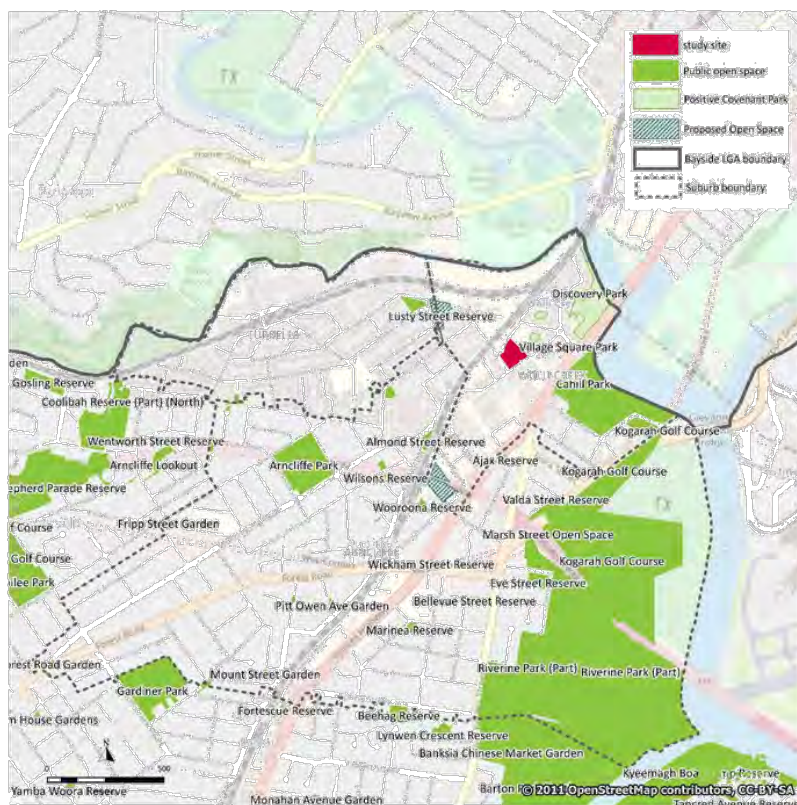
Source: www.maps.six.nsw.gov.au

¹ Id Forecasts <https://profile.id.com.au/baysidensw/dwellings?WebID=320>

2.2 Existing open space network

Figure 2 shows the existing open space network. It includes three open spaces that were recently developed in Wollie Creek and are protected by positive covenants (Discovery Park, Village Square and Village Square 2) as well as the proposed open space, Lusty Street Reserve.

FIGURE 2 EXISTING OPEN SPACE NETWORK (INCLUDING POSITIVE COVENANTS AND PROPOSED LUSTY STREET RESERVE)



Source: SGS Economics and Planning 2019

District open spaces

There is a series of large district open spaces located to the north and west of the Guess Avenue Site, and these provide a range of opportunities for active and passive recreation.

The district level Cahill Park is located on the east side of the Pacific Highway and is physically the closest district park. It includes a large oval, 4 tennis courts and extensive passive open space, however the Princes Highway is a barrier to pedestrian access.

Other district parks that are within 2 kilometres of the study site are listed in Table 1.

TABLE 1: DISTRICT OPEN SPACES WITHIN 2KM OF STUDY SITE AND LOCATED WITHIN BAYSIDE LGA

Name	Size	Use
Arncliffe Park	3.79	General Community Use, Sportsfield, Culturally Significant
Banksia Chinese Market Garden	4.22	Market Garden / Culturally Significant
Barton Park	21.68	Estuarine Mangrove Forest
Cahill Park	7.57	General Community Use/Sportsfield (Rugby and Tennis)
Coolibah Reserve	3.91	Passive Use, Aesthetic /Play space & equipment, Sports field (Soccer and Cricket)
Live Street Wetland	7.73	Ecologically significant wetland
Kogarah Golf Course	17.75	Golf Course
Kyeemagh Boat Ramp Reserve	4.88	General Community Use/Sportsfield (Hockey)
Riverine Park	33.78	Passive Use, Aesthetic /Play space & equipment, Bushland

Source: Bayside Council 2019

There are also major district parks located outside of the Bayside LGA and on the other side of Cooks River, including Waterworth Park, Tempe Recreation Reserve and Robyn Webster Reserve which provides more active open spaces as well as Kendrick Park which provides a high quality passive open space. Like Cahill Park, these are located only short distances away but they are also difficult to access with no pedestrian river crossings near by.

Local open spaces

Local open spaces that are within 400 metres of the study site are listed in Table 2.

TABLE 2: LOCAL OPEN SPACES WITHIN 400METRES OF STUDY SITE AND LOCATED WITHIN BAYSIDE LGA

Name	Size	Use
Ajax Reserve	0.09	Pocket Park, Street Garden
Lusty Street Reserve (Proposed)	0.66	Local Park
Empress Reserve (SRA)	0.09	Pocket Park, Street Garden
Village Square 2	0.12	Urban Plaza
Discovery Park	2.40	Passive Use, BBQ, Aesthetic /Play space & equipment, Heritage
Village Square Park	0.16	Urban Plaza (poor access)

Source: Bayside Council 2019

The Guess Avenue site is located within walking distance of **Discovery Park**. This was developed as part of Discovery Point, and is three hectares of high quality open space that connects Discovery Point housing with the river. While it is difficult to navigate to from the street network it provides an important large open space in the area. (Figure 3)

FIGURE 4 VILLAGE SQUARE PARK



Source: SGS Economics and Planning, 2019

Proposed open spaces

Lusty Street is located to west of Guess Avenue and a new local open space is proposed there. The proposed Lusty Avenue open space will provide another local open space in the immediate vicinity of the Guess Avenue site- future planning will need to ensure each of these proposed new local open spaces have complimentary functions to best meet the needs of local residents.

The **Bonar Street Community Park** is also proposed in the local area and is approximately 500 metres from the study site. It is intended to provide a local park for the surrounding residential area, and to provide new pedestrian connections.

There is also a new open space proposed close to **Arncliffe Station** as part of the Arncliffe Banksia Plan. It is located at the entrance to the M5 motorway and is approximately 600 metres from the study site.

Open spaces within developments

Small communal open spaces are also often located within housing developments in Wollri Creek. These are designed as part of perimeter blocks, with housing interfacing the street, and open space located within the interior of the development. These open spaces are for the use of residents only and there is no access by the general public. They typically contain the same elements- a small playground, lawn areas and some seating. Site visits indicated that they are rarely used by residents within the development and are largely undifferentiated.

Municipal open space provision

The high density of housing in Wollri Creek has put pressure on the local open space network and there are plans in place to provide new public open spaces at Lusty Street and Bonar Street.

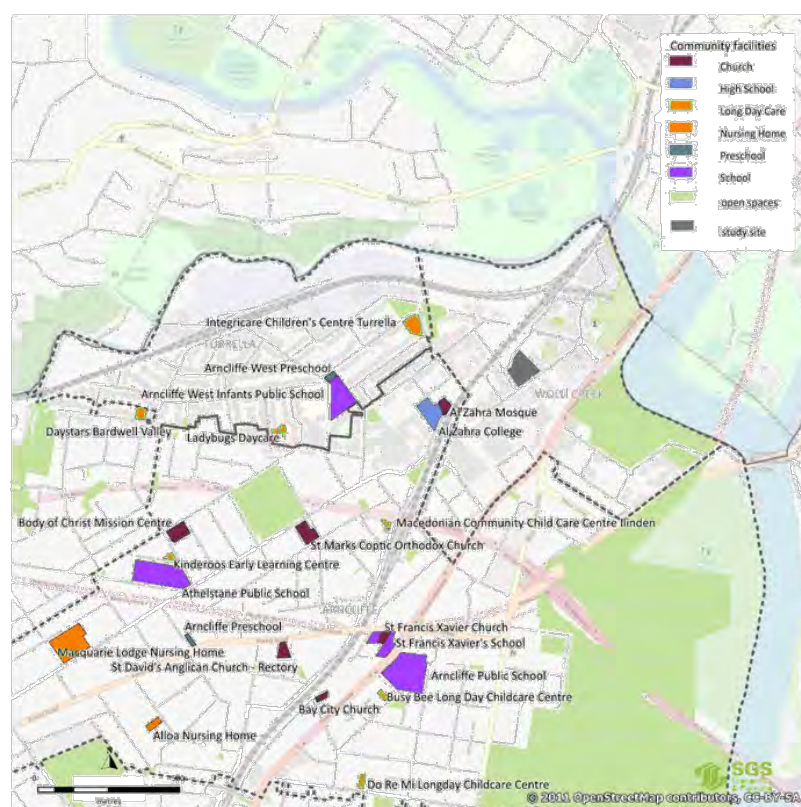
Bayside City Council is currently preparing their open space and community facilities strategy which will provide greater guidance on open space planning and provision in the future. It is difficult to quantify municipal open space provision at present, as previous planning documents are out of date, and do not reflect the merging of Rockdale and Botany Bay Councils.

2.3 Community Infrastructure Needs

Residents in Wollie Creek have less access to community infrastructure than the adjacent suburbs of Turrella and Arncliffe. There are a number of long day care centres, but no family day care centres. The nearest pre-school is the Arncliffe West Preschool, and the nearest long day care centre is Integricare Children's Centre in Turrella.

Increasing the offering of child care and pre-schools within Wollie Creek would improve access to community facilities. These typically have lower floorspace demands than the other types of community facilities shown on the map. They are therefore easier to integrate into a new development.

FIGURE 5 COMMUNITY INFRASTRUCTURE



Source: SGS Economics and Planning, 2019

3. POLICY REVIEW

This section describes state and local government policies that guide open space planning in Woll Creek

3.1 Metropolitan Plans

Greater Sydney Region Plan- A metropolis of three cities

The Greater Sydney Region Plan emphasises the important role of open space within Greater Sydney. Two of the core directions directly pertain to open space: 'A city in its landscape', and, 'A city of great places'. A key legacy of the plan will be the proposed Green Grid that covers Sydney in a network of open spaces and green transport corridors. The open space related strategies of most relevance to this site, include:

- Strategy 31.1: Maximise the use of existing open space and protect, enhance and expand public open space by
 - Providing opportunities to expand a network of diverse, accessible, high quality open spaces
 - Investigate opportunities to provide new open space so that all residential areas are within 400 metres of open space and higher density areas are within 200 metres of open space
 - Require large urban renewal initiatives to demonstrate how the quantity of, or access to high quality and diverse local open space is maintained or improved
 - Planning new neighbourhoods with a sufficient quantity and quality of new open space
 - Delivering shared and co-located sports and recreation facilities including shared school grounds and repurposed golf courses
 - Delivering or complementing the Greater Sydney Green Grid
 - Providing walking and cycling links for transport as well as leisure and recreational trips
- Strategy 32.1: Progressively refine the detailed design and delivery of Greater Sydney Green Grid Priority Corridors, Opportunities for connections that form the long term vision of the network, walking and cycling links.

Eastern City District Plan

The Eastern City District covers the Bayside, Burwood, City of Canada Bay, City of Sydney, Inner West, Randwick, Strathfield, Waverley and Woollahra local government areas, and is intended to give effect to the Metropolitan Plan. It will inform local strategic planning statements and local environmental plans, the assessment of planning proposals as well as community strategic plans and policies.

The Eastern City District Plan is centred on infrastructure, collaboration, liveability, productivity and sustainability, which is consistent with the Greater Sydney Region Plan.

3.2 Government Architect of NSW Policy papers

Greener Places Discussion Paper (draft 2017)

Greener Places is a draft Green Infrastructure policy produced by the Government Architect NSW to guide the planning, design and delivery of Green Infrastructure in urban areas across NSW.

It identifies a policy gap at the state government level for delivering green infrastructure, and intends to connect metropolitan, district and local plans

It sets out principles and measurable outcomes for open space provision intended to be adopted by industry and government agencies, as well as by communities who inhabit the places and spaces of NSW.

Greener Places Urban Tree Canopy Guide (draft 2017)

The Urban Tree Canopy Guide provides information on the importance of urban tree canopy and its capacity to improve urban climate, ecosystem and human health, and enhance health and wellbeing for communities across NSW.

It provides advice to local councils, State agencies, and other stakeholders. It also includes objectives, strategies, and targets for the NSW Government to preserve and enhance the urban tree canopy. It is currently being finalised

Greener Places open space for recreation guide (draft 2017)

The open space for recreation guide provides series of performance indicators for open space, including accessibility and connectivity, distribution, size and shape, quantity, quality and diversity.

It sets out a new approach to ensure some minimum mandatory outcomes for open space in urban development and to provide performance based guidelines. This guide is a key reference document for the current study.

The standards identify a series of proximity measures for different open space typologies. For example, all residents in higher density areas such as Wolli Creek should be within 200 metres of a smaller local open space, and within 5 to 10 kilometres of a regional open space. It also takes into consideration different uses. For example, local play opportunities for the very young should be accessible within 200m of 80% of houses and within 300m of 100% of houses. It provides clear direction on a series of performance indicators for each of the different open space uses, including access, connectivity, location, diversity, features, shade requirements and spatial qualities. These guidelines are discussed further in section 5.

Strategies for providing open space for recreation

- Improve the provision and diversity of open space for recreation
- Understand the demands on existing open space and plan for new open space in new and growing communities
- Improve the quality of open space for better parks and facilities
- Use open space to connect people to nature
- Link to network of green space
- Encourage physical activity by providing better parks and better amenity.
- Provide open space that is multi-functional and fit for purpose
- Design versatile, flexible spaces
- Consider lifecycle costs management and maintenance

3.3 Local Plans and Policies

Bayside West Precincts 2036 Plan

Applying to the neighbouring areas of Arncliffe, Banksia and Cooks Cove, Wolli Creek is not within the scope of the Bayside West Precincts 2036 Plan.

The Plan identifies *to improve existing and provide new areas of open space* as one of its 5 objectives for the precincts.

Identifying similar challenges as those faced by Wolli Creek the plan notes "Access to open space is limited by major roads, making walkability difficult and unsafe in places." The need to improve physical connections to new and existing open space areas is identified.

Similarly applicable is the identification of the opportunity for redevelopment areas within the precincts to provide public open space as large sites redevelop.

The Plan proposes a new 7,000 square metre park at Arncliffe Station, adjacent to the entrance to the M5 Motorway, as well as the upgrade of five other existing parks. The Plan also recognises the opportunities provided by private sites for delivering new open spaces. Two new parks are being investigated on land likely to be developed in the future: Eden Street Park and Allen Street Park.

Arncliffe and Banksia Green Plan

The Arncliffe and Banksia Green Plan identify three types of open space with Arncliffe and Banksia, pocket parks, local parks and neighbourhood parks. The classification of these types is based on size and utilizes access based standards.

Challenges identified in the plan which apply to Wolli Creek include:

- The current precinct boundaries do not include any major open spaces, only small green pockets mostly utilized as playgrounds or lawn. Proper recreational activities will be held in the large surroundings parks outside the Precinct.
- Underutilization of the existing open spaces mostly due to their marginal location and lack of amenity.
- Infrastructure barriers and lack of safe linkages to open space
- In areas undergoing major urban development there is a resulting urbanized character that lacks tree canopy and general amenity. Additional tree canopy within streetscapes need to be provided to mitigate increasing density and uplift. Local DCP should include expected percentage of tree canopy cover for future development. Targets set by Government Architect's Office: tree canopy in Urban Zone, target of 25%

With regard to open space provision the plan notes that the existing public open space provision serving the current Precinct population equates to 19.8 sqm per person. The Open Space Plan proposes a total of 2.12 hectares of new open spaces to be added to the 21.25 hectares existing open space, achieving 23.65 hectares of overall open space within the Precinct of Arncliffe and Banksia and within 200 metres walking distance from its boundary. Assuming a future population growth of 25,000 people, this new provision of open space will equate to 9.5 sqm of open space per person.

Bayside 2030 - Community Strategic Plan 2018-2030, Bayside City Council

Bayside 2030 has as a strategic direction "our places are accessible to all" including the outcomes statement "Open space is accessible and provides a range of active and passive recreation opportunities to match our growing community".

Rockdale Development Control Plan 2011 – Part 7.1 Wolli Creek Precinct

As the purpose of the plan is to inform assessment of future development applications open space provision is focussed on individual sites.

Specific site open space requirements are shown in the table below.

TABLE 3: OPEN SPACE REQUIREMENTS IN DEVELOPMENT PROJECTS

Development/building type	Minimum landscaped area (of the site)
Low and medium density residential	25%
Residential flat buildings	15%
Mixed use (with shoptop housing)	10%
Highway commercial	10%
Industrial	10%
Child care centres	20%

Source: Rockdale Development Control Plan 2011

At least 20% of the front setback of a residential development is to be provided as landscaped area. Landscaped areas should adjoin the landscaped area of neighbouring properties so as to provide a contiguous corridor of landscape and vegetation.

Where a development has 12 or more dwellings communal areas must be provided at a rate of 5m² for each dwelling. It is noted that communal open space may be accommodated on a podium or roof in a residential mixed use building provided it has adequate amenity and convenient access.

Several special precincts are identified, including Wolli Creek. The Objectives for Wolli Creek are:

- To ensure that the nature and distribution of public spaces, buildings and facilities enhances the public domain and links key features and activities within Wolli Creek
- To promote pedestrian and cycle links to encourage sustainable travel in the precinct.
- To enhance local pedestrian and cycle routes and link them with regional networks, residential areas, work, shopping and recreation activities and public transport nodes.
- To consider and take advantage of the SWSOOS and its location by incorporating it into an open space network.
- To retain, manage and upgrade environmentally significant areas, including Wolli Creek Wetlands and the Cooks River

The plan controls include: Provide a small plaza (min size 200sqm) on the corner of Arncliffe Street and Brodie Spark Drive at 94 Arncliffe Street.

Wolli Creek and Bonar Street Precinct Public Domain Plan, Rockdale City Council (2011)

While not identifying specific open space requirements the Public Domain Plan (PDP) for the Wolli Creek and Bonar Street Precinct seeks to guide and coordinate the design and construction of the improvements to the public domain of the precinct.

It recognises the need to provide clear and generous links between high use areas, and improve the relationship of streets to associated public spaces.

Proposed New Parks

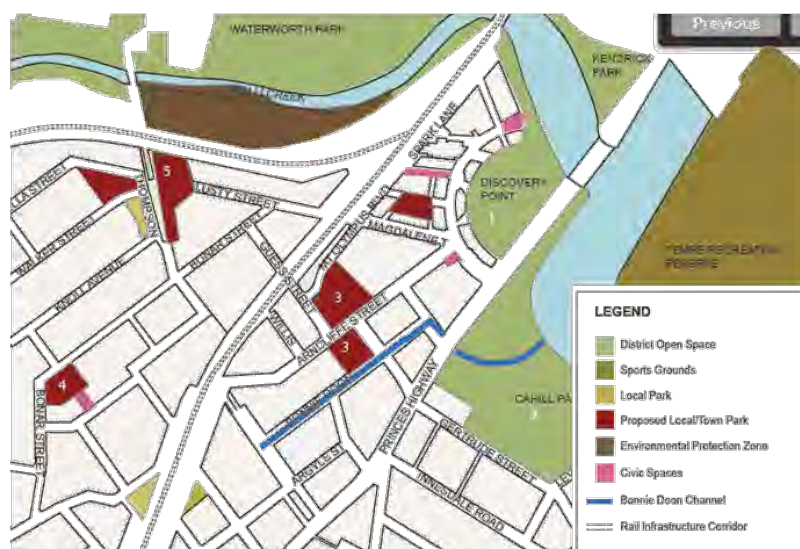
As shown in Figure 6 the PDP identifies the open space within the precinct as two existing parks, Cahill Park and Discovery Park along with three new parks, New Town Park, Bonar

Street Precinct Community Park and Thompson Reserve. The preferred location for New Town Park is on the study site at 2 and 4 Guess Avenue. The role and function of these parks are detailed below.

- Discovery Point Park (Park 1) forms a green open space as a curtilage to Tempe House. The park is privately owned but is accessible to the public.
- Cahill Park (Park 2) accommodates organised active recreation
- New Town Park (Park 3) would provide “green space as a relief from high density development” and incorporate water sensitive urban design to respond to the micro catchment of streets and the proximity of Bonnie Doon Channel”. It would act as a recreation/leisure opportunity for the commercial centre of Wolli Creek.
- Bonar Street Precinct Community Park (Park 4) would service the new residential precinct around Bonar Street, functioning as a gathering point, informal sports area, picnic spot and local playground.
- Thompson Reserve (Park 5) would link three disparate open spaces into a park, including the proposed Lusty Street Reserve. The reserve would provide recreational space for surrounding high density residential development allowing for informal recreation, a playground and picnic area.

Two sites are identified for New Town Park. Site one is the subject of this study, on the corner of Guess Street and Arncliffe Street. The second ‘alternative site’ is identified as the corner of Arncliffe and Gertrude Street. Both sites are shown as number 3 in Figure 6.

FIGURE 6 CURRENT AND PROPOSED PARKS AND OPEN SPACE



Source: 'Wolli Creek and Bonar Street Precinct Public Domain Plan, Rockdale City Council (2011)

The PDP listed the opportunities and constraints of the two sites.

New Town Park - Site Option One (Guess Avenue site):

- Located between Mount Olympus Boulevard, Guess Avenue and Arncliffe Street it has strong visibility from major connecting streets within the area.
- Existing *Lophostemon confertus* avenue along the western boundary.
- Significant level change along the northern park edge to be resolved within park design.

- Existing development along the north eastern boundary needs to be screened and integrated into the park design in order to resolve level change and negative frontage.
- Site provides a large area, which with resolution of levels and access can provide a range of level usable spaces to cater to a range of activities.
- Opportunity to incorporate WSUD strategy into the park design to demonstrate water filtration, collection and reuse.

New Town Park - Alternate Site:

- Located amongst series of new streets and developments linking across the Princes Highway to Cahill Park.
- Provides a key area of porous surface within the micro catchment of street surface flow, linking to the Bonnie Doon Channel - opportunity for WSUD project.
- Level site.
- Sits within active streets with mixed use ground level.

Ownership or current status of the sites are not discussed in the PDP.

The design principals for Site one of the New Town Park, located at the corner of Guess Street and Arncliffe Street are:

- Surrounding buildings shall take advantage of the outlook by addressing and opening up to public space to provide passive surveillance.
- A designated children's play area located towards the centre of the site provides a fenced and sheltered zone for children within the park.
- The park shall include amenities for park including seating and shelter. This space can also accommodate a meeting point along Arncliffe Street.
- Water sensitive urban design (WSUD) principles are to be implemented. Opportunities include a swale down the centre of the park to relate to the movement of water on the surrounding micro catchment of streets. The central swale is to be incorporated in the stormwater management system as a temporary detention basin to address flooding in the area
- Open space shall provide areas of refuge for passive use defined through planting
- Maintain sight lines to surrounding streets and pedestrian crossings through a comprehensive network of access paths and the implementation of CPTED principles
- A variety of spaces within the park shall be defined with level changes, raised seating walls, terraced grass areas and swales, and planted terraces along development boundary to mediate level changes to existing buildings. These level changes are to be designed to ensure that CPTED principles are implemented and disabled access to a minimum standard of 1428.1 design for access and mobility.

FIGURE 7 THE WOLLI CREEK AND BONAR STREET PRECINCT EXISTING AND PROPOSED PARKS



Source: Wolli Creek and Bonar Street Precinct Public Domain Plan, Rockdale City Council (2011)

3.4 Key findings

Strategic planning documents such as the Greener Places Discussion paper emphasise the need to improve the provision, diversity and quality of open spaces.

The site at 2-4 Guess Avenue has been identified as a key opportunity in policy documents to deliver much needed open space in Wolli Creek, a rapidly growing area with a recognised shortfall in open space provision.

It is the preferred site identified in the Wolli Creek and Bonar Street Precinct Public Domain Plan (2011) for a New Town Park and is well located to improve the community's access to local open space.

Should the site be rezoned, the Rockdale Development Control Plan 2011 identifies minimum land areas that should be allocated for landscaped open space within development projects. For a residential development, a minimum of 15 per cent of the land area is required to be landscaped, and, 5 square metres of communal space should be provided per person.

4. OPEN SPACE BENCHMARKS

This section describes a series of benchmarks identified in policy documents that are intended to guide open space delivery.

4.1 Benchmarks

The Draft Greener Places Guidelines prepared by DPE identify a series of performance indicators for open spaces based on their typology. In high density areas like Wollri Creek, a key performance indicator is that most dwellings should be within 200m of an open space, regardless of open space typology. High density areas require better access to open space than lower density areas, the assumption being that private open space is limited.

Regardless of housing density, district open spaces should be within 2 kilometres of most dwellings.

TABLE 4: INFERRED DEMANDS FOR RECREATION SPACE

Open Space	Distance from Most Houses
Regional open spaces: serve whole cities, metropolitan districts or one or more local government areas, or a regional centre and multiple towns and villages in non-metropolitan areas	5 – 10 kilometres
District open spaces: typically service catchments of less than one local government area, or several neighbourhoods but can service a catchment spanning across two LGAs.	2 kilometres
Local open spaces: caters to a local neighbourhood in urban areas	400 metres
Local open spaces in high density areas (population density greater than 60 or 100 dwellings per hectare)	200 metres
Distance of open spaces from schools	400 metres
Distance of open spaces from work places	400 metres

Source: Draft Greener Places Guidelines, DPE 2017

The recommended minimum size for local parks is 3,000 square metres, although in high density areas, local parks as small as 1,500 square metres can perform well with appropriate design.

The Greater Sydney Regional Plan also emphasises this benchmark. In lower density areas, most residents should be within 400 metres of an open space.

The Arncliffe and Banksia Green Plan also includes a hierarchy of open spaces with recommended catchments. These are

- Pocket parks: Parks smaller than 0.4 hectares (4,000 square metres): 300 metre walking distance catchment
- Local Parks: Parks between 0.4 and 1 hectare: 400 metre walking distance catchment
- Neighbourhood Parks: Parks between 1 and 5 hectares: 800 metre walking distance catchment.

4.2 Design Guidance

Minimum land areas for different uses in open space

The Greener Places: Open Space for Recreation Manual (draft 2017) identifies the minimum land area that is required for different open space uses within local parks. It also identifies the minimum host open space areas i.e. the minimum area of the whole park given the uses, which includes pathways and other landscaping. Table 5 summarises the minimum open space area required for different open space uses to be incorporated.

TABLE 5: MINIMUM LAND AREAS FOR DIFFERENT OPEN SPACE USES IN LOCAL PARKS

Open Space use	Minimum area	Minimum host site area
Local play for the very young(0-5 year olds):	50 sq m	1,500 sq m
Local children's play (5-12y olds):	100 sq m	1,500 sq m that is fenced
Local recreation area	500 sq m	1,500 sq m
Older childrens' activity space	1,000 sq m	5,000 sq m
Fitness and exercise space	Variable	5,000 sq m
Dog off leash area	400 sq m	5,000 sq m

Source: Draft Greener Places Guidelines, DPE 2017

Sites between 1,500 square metres and 5,000 square metres

For parks under 5,000 square metres, a limited number of open space uses can occur. These include local play grounds and local recreation areas. The primary elements that can be that can be included in open spaces within this size range are listed below:

- inclusive play space
- seats,
- water
- fencing if located near a roads or hazards
- At least 50% shade across the site and 80% over play areas
- Pram friendly and connected to active transport network
- High visibility and passive surveillance
- Play spaces suited to 0-5 year olds can be nature-based, structured or landscape play sculpture
- Play spaces suitable for 5-12 year olds include natural bush play, adventure play, structure play and water play.

Sites greater than 5,000 square metres

For sites greater than 5,000 square metres, a more diverse range of open space uses is possible. In addition to the uses listed above, the following open space uses may also be incorporated

- 40 x 60 m informal sports field
- Access to toilets
- Fitness and exercise stations
- Dog off leash areas

4.3 Key findings

In high density areas, the Greener Places Manual recommends most houses should be located within 200 metres of open space, and that the minimum size for a local open spaces is 1,500 square metres. Open spaces that are only 1,500 square metres provide a relatively limited range of open space opportunities.

There are more diverse recommended uses for sites between 1,500 and 5,000 square metres which allows for better quality open space opportunities: a wider range of play opportunities, more effective path networks, and the ability to program multiple uses within the same space.

Sites greater than 5,000 square metres open up possibilities for use that cannot occur on smaller open spaces, including small informal fields for active recreation and dog play areas.

At 7,765 square metres, there are various options for new open space to be provided on site, depending on the size, and, the configuration of the open space.

5. COMMUNITY PROFILE

This section describes the profile of the local community and the community and open space infrastructure they require

5.1 Census data analysis

A demographic analysis was undertaken which looked at the community profile of Wolli Creek compared to the City of Bayside and Metropolitan Sydney

1. Age profile
2. Cultural profile
3. Housing mix – dwelling type
4. Household types

Figure 8 shows the location of the study site in relation to Wolli Creek and the City of Bayside.

FIGURE 8 COMMUNITY PROFILE GEOGRAPHIES

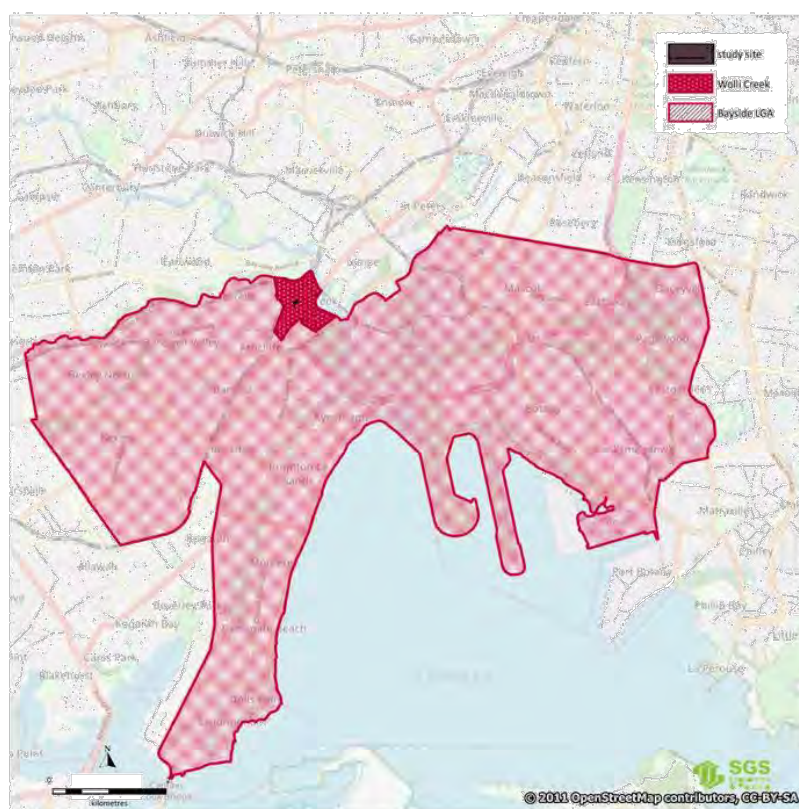


TABLE 6: AGE GROUPS

Geography	0-4 years	5-9 years	10-19	20-64	65+	Total
Wolli Creek	318	108	268	5,559	146	6,399
Bayside LGA	8,547	8,423	15,489	99,757	22,834	156,050
Greater Sydney	310,170	309,234	569,251	2,962,772	672,561	4,823,988
Wolli Creek	5%	2%	4%	87%	2%	100%
Bayside LGA	6%	5%	10%	64%	15%	100%
Greater Sydney	6%	6%	12%	61%	14%	100%

Source: ABS Census 2016

TABLE 7: UNEMPLOYMENT RATE

Geography	Employed (full and part time)	Unemployed (full and part time)	Unemployment rate
Wolli Creek	3,858	280	7%
Bayside LGA	75,788	4,859	6%
Greater Sydney	2,272,715	146,187	6%

Source: ABS Census 2016

TABLE 8: HOUSEHOLD COMPOSITION

Geography	Couple with no children	Couple with children	Lone person household	One parent family	Other family	Group household	Total
Wolli Creek	950	375	535	125	66	432	2,483
Bayside LGA	13,781	18,304	12,507	5,840	1,060	3,391	54,378
Greater Sydney	385,865	607,342	351,418	179,463	22,991	76,791	1,623,870
Wolli Creek	38%	15%	22%	5%	3%	17%	100%
Bayside LGA	24%	34%	23%	11%	2%	6%	100%
Greater Sydney	24%	37%	22%	11%	1%	5%	100%

Source: ABS Census 2016

TABLE 9: COUNTRY OF BIRTH

Rank	Wolli Creek	Persons	%	Bayside LGA	Persons	%	Greater Sydney	Persons	%
1	China (excludes SARs and Taiwan)	1,572	27%	Australia	73,318	51%	Australia	2,752,123	61%
2	Australia	1,386	24%	China (excludes SARs and Taiwan)	11,147	8%	China (excludes SARs and Taiwan)	224,682	5%
3	Mongolia	317	5%	Nepal	3,903	3%	England	151,617	3%
4	Brazil	272	5%	Greece	3,882	3%	India	130,579	3%
5	Indonesia	208	4%	Bangladesh	3,251	2%	New Zealand	86,522	2%
6	India	185	3%	Philippines	3,093	2%	Vietnam	81,041	2%
7	Thailand	139	2%	Indonesia	2,912	2%	Philippines	75,478	2%
8	Philippines	138	2%	Lebanon	2,896	2%	Lebanon	55,980	1%
9	Hong Kong (SAR of China)	106	2%	The former Yugoslav Republic of Macedonia	2,849	2%	Korea, Republic of (South)	49,511	1%
10	Malaysia	101	2%	India	2,589	2%	Hong Kong (SAR of China)	40,579	1%
	Other	1,366	24%	Other	35,332	24%	Other	877,570	19%
Total		5,790	100%		145,172	100%		4,525,682	100%

Source: ABS Census, 2016

TABLE 10: HOUSING TYPES

Geography	Separate house	Townhouse and unit	Apartment	Other	Total
Wolli Creek	41	11	2,823	0	2,875
Bayside LGA	23,786	8,587	28,728	602	61,703
Greater Sydney	1,021,147	259,601	553,441	13,539	1,847,728
Wolli Creek	1%	0%	98%	0%	100%
Bayside LGA	39%	14%	47%	1%	100%
Greater Sydney	55%	14%	30%	1%	100%

Source: ABS Census, 2016

Key demographic findings

The demographic profile of Wolli Creek shows

- Lower numbers of children
- High numbers of people living in apartments
- Culturally diverse community
- Higher than average unemployment

5.2 Community open space needs

The Draft Greener Places: Open Space for Recreation Manual links demographic characteristics with open space and recreation demands. These are summarised in Table 11.

TABLE 11: INFERRED DEMANDS FOR RECREATION SPACE

Demographic characteristics	Open space recreation demands
Children	Playground and play spaces
Young people and adults	Adventure play facilities, sporting fields, sports courts, bike tracks
Older adults	Walking and cycling tracks, sports courts
Diverse cultures	Places with picnic and barbeque facilities for gatherings of family and friends
Apartment dwellers	Park close to home, community gardens, gathering spaces
Small households	Meeting places
Below average employment or income	Range of free or low cost sporting and recreation opportunities
Below average vehicle ownership	Open space and recreation facilities located close to home or on public transport network

Source: Holroyd Open Space and Recreation Study (Parkland Planners, 2013) cited in Draft Greener Places manual page 23

5.3 Priorities for open space provision

Based on the local demographics and the inferred demand for recreation space based on demographics, the priorities for local and neighbourhood parks are

- Meeting places
- Gathering places with picnic and barbeque facilities
- Low cost sporting and recreation opportunities: eg gym facilities
- Community gardens

Although there are lower numbers of children in the local area, the high density of the area means that provision of diverse play spaces is an important consideration. Given a number of playgrounds in Wolli Creek are located within perimeter block developments (discussed in section 1) that provide the same types of facilities and are not accessible to residents out of the individual development means that a greater variety of play spaces need to be provided to children and young people in the area.

6. SITE ASSESSMENT

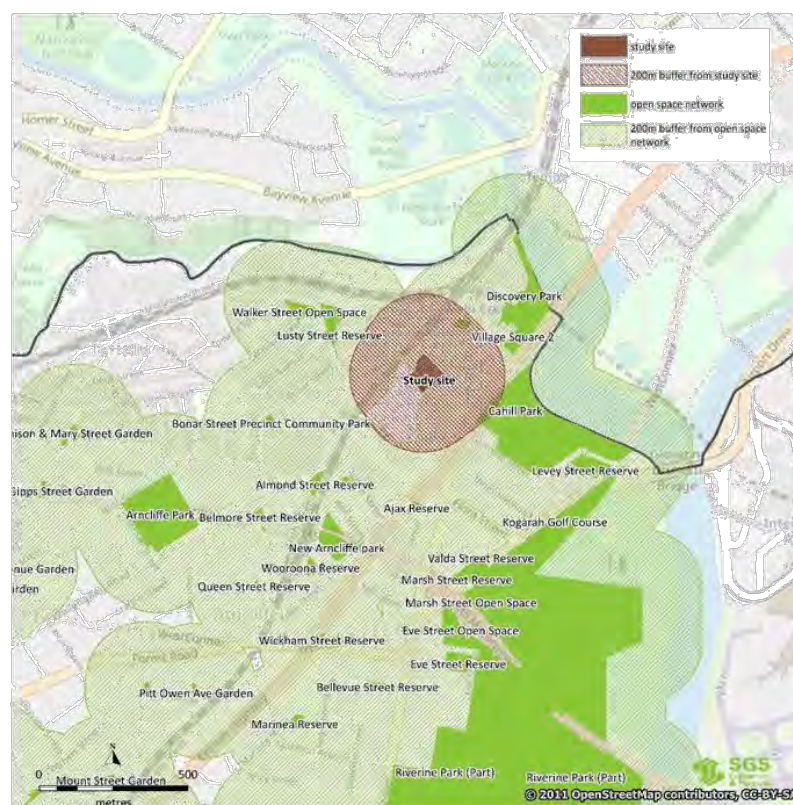
This section identifies areas that have access to open space within 200m. This is to understand whether the local community's access to open space is consistent with the Greener Places Guidelines.

6.1 Open space accessibility

Local open spaces

Figure 9 shows the location of open space in the area surrounding the Guess Avenue Site, and shows the local areas that are within 200m of open space².

FIGURE 9 EXISTING OPEN SPACE NETWORK (INCLUDING PROPOSED LUSTY STREET RESERVE AND ARNCLIFFE STATION OPEN SPACE)



Source: SGS Economics and Planning, 2019

² These are determined based on 'as the crow flies' distances, so the areas with access using the road and pedestrian network will be smaller.

It includes the proposed park 'Lusty Street Reserve' and two of the open spaces protected by positive covenants- the Village Square 2 Park (urban plaza) at Discovery Point and Discovery Park. It does not include Village Square Park located directly to the north of the site due to the previously identified barriers to access.

It also includes the Guess Avenue site (red) and shows the area that is within 200metres of it. Figure 9 highlights the important role of the Guess Avenue site in providing local open space to people living immediately to the south. This area currently does not have access to local open space within 200 metres, however, the provision of open space at Guess Avenue will ensure that they do.

Cahill Park is critical in enabling areas to the south and east of the Guess Avenue site meet the 200m access standard. However, this park is over the very busy Princes Highway, which represents a major physical barrier.

This further highlights the importance of the Guess Avenue site in meeting the open space needs of residents in its immediate vicinity.

District level parks

A number of district level parks exist within 2 kilometres of the Guess avenue site. These provide opportunities for active recreation, with large fields, tennis courts and extensive walking and cycling trails. While these are located in good proximity, there are constraints for pedestrian access.

6.2 Key findings

In order to meet the standard in the Greater Sydney Regional Plan and the draft Greener Places Guidelines, where most houses in high density areas should have access to open space within 200 metres, the Guess Avenue site would be required to provide open space opportunities.

The difficulty faced by residents in accessing parks on the eastern side of the Princes highway further reinforces the need to ensure open space is provided at the Guess Avenue site.

7. OPTIONS FOR OPEN SPACE

This section reflects on the findings of the preceding sections and discusses the three options for providing open space at the Guess Avenue site.

In a high density context like Wolli Creek, a high quality park can provide a relief from the urban environment and a place to gather where private space (both open and interior) is limited. Three options for providing open space are presented. The first is providing 1,500 square metres of open space incorporated into a mixed use development. The second is providing 4,000 square metres of open space (the approximate size of the parcel of land at 4 Guess Avenue, but includes part of 2 Guess Avenue). The third is dedicating the entire 7,765 square metres to a new open space and includes both 2 and 4 Guess Avenue.

In addition to the range of uses possible on different sized open space is a discussion on how community facilities could be integrated, and, how the site could be integrated with the surrounding open space network.

7.1 Options for open space provision

Use of only part of the site for open space (1,500 square metres public open space)

A 1,500 square metre park is the minimum size possible and would allow for a more limited range of activities to occur. This would be slightly more than the 15 per cent landscaped area specified as the minimum in the Rockdale Development control Plan 2011, which would require 1,165 square metres of landscaped area.

The inclusion of seats and shade trees could encourage people to stay in the park, while small playgrounds encourage families to use the park. Paths that link into the street network mean that the park is integrated with the broader public open space network. It would be more challenging to integrate the park's internal path network with the broader street network due to the limiting size. This means that through connections to the existing street network will need particular consideration.

Co-located with a community facility such as a childcare centre or community hall would foster greater use of the park.

Due to the limited number of opportunities afforded in a small local park, it would be particularly important to consider costly new connections across Wolli Creek to district level open space at Waterworth Park and the Cooks River corridor, or enhanced connections across the Princes Highway to Cahill Park and the Tempe Recreation Reserve.

Use of northern site for open space (approx. 4,000 square metres)

An open space of 4,000 square metres would increase the open space offering in the local area in a meaningful way as it could include more diverse open space uses. This area comprises all of 4 Guess Avenue and a portion of 2 Guess Avenue (approx 10% which is an appropriate level of provision of public open space for a site of this size).

Beyond the basic elements that are possible within a 1,500 square metre park, a 4,000 square metre park would open up the possibility to provide new play experiences, such as nature play. This would complement existing traditional playgrounds that exist in both private developments (that are only accessible to residents) and in nearby district parks.

Community gardens could also be incorporated in the design. Siting of the open space and the path network will be critical to ensure these linkages are effective. Importantly, an open space of 4,000 square metres would also allow greater scope for effective pedestrian links and visual links through the site.

Existing local open spaces that are within 200 metres of Guess Avenue are small scale and are constrained in their ability to provide diverse open space experiences. A 4,000 square metre park, if appropriately programmed, would increase the diversity of local public open spaces in the area. In order for this diversity of experience to occur, the 4,000 square metres of open space should not be fragmented across the Guess Avenue site, but be provided as a whole in one part of the site.

While it has limited scope for active recreation, small facilities such as outdoor gyms or half basketball courts could be integrated into a master plan. This means it would still be important to consider how to improve the connections to district level open spaces in Cahill Park and across the Cookes River to ensure residents have access to active recreation opportunities.

Use of entire site for open space

The Guess Avenue site is over 7,000 square metres, which if fully utilised for open space would allow for the broadest range of activities to occur.

At over 7,000 square metres, the site would diversify the open space offering within the Wolli Creek precinct. At present, there is limited diversity in open spaces with almost all pocket and neighbourhood parks providing just passive recreation opportunities.

In addition to the uses outlined for 4,000 square metre open spaces, facilities such as large gathering places (with shelters and bbq facilities), informal playing fields, dog off leash areas, and exercise infrastructure are possible in a site this size become feasible. These uses are associated with district level open spaces, and there is already adequate access to district open spaces in the area. However, pedestrian access to district open spaces need to be improved. These facilities would all work to improve the offering of active recreation opportunities within Wolli Creek.

7.2 Community facilities

A series of case studies were undertaken to identify how community facilities and open spaces were provided in higher density developments, both locally and internationally. These are summarised in the appendix.

It is difficult to draw specific comparisons to the Guess Avenue site, however a number of trends existed in the case studies.

A number of case studies incorporated community or communal gardens, which were seen as a way to develop community cohesion. One example included a large child care centre, and another incorporated a community hall.

Community gardens could be incorporated into the open space and work to foster a greater sense of local community and to provide residents with opportunities to connect with each other. Since there is limited private open space in the area, community/communal gardens also would give people an opportunity to tend to a garden.

7.3 Role of site in broader open space network

Regardless of size, an open space on the site also offers an important opportunity for improving the connectivity of the open space network, which will in turn support greater walking and engagement in the public realm. It's role as a central open space that connects both small and large open spaces in the area is crucial. It will provide access to the proposed Walker Street Reserve to the west, and there are opportunities for linkages to Cahill Park in the east across the Princes Highway, and north to Discovery Park along Arncliffe Street.

The open space network would also benefit from connections to broader regional parks, including a crossing to Kendrick Park across the Cooks river, which could be associated with the Princes Highway or the railway line. A crossing to Waterworth Park would also greatly improve accessibility to open space for the local community.

FIGURE 10 ROLE OF GUESS AVENUE SITE WITHIN BROADER OPEN SPACE NETWORK



Source: SGS Economics and Planning, 2019

8. CONCLUDING REMARKS

The draft Greener Places guidelines provide clear direction on uses that are possible in open spaces of various sizes, and greater size allows for greater range of recreation opportunities to be delivered on site.

An open space of 4,000 square metres on the Guess Avenue site would mean that there is sufficient area for a large local open space to be provided that significantly diversifies the open space offering in the area. This is greater than the minimum open space area in higher density areas identified by the Greener Places Guidelines of 1,500 square metres.

The site is well located within the broader open space network and offers opportunities to improve local connectivity of open space, and to reinforce the active transport network.

Beyond the site, it will be important to consider access to major regional reserves where access is constrained due to the absence of river crossings and barriers to crossing the Princes Highway as a pedestrian.

Numerous precedents exist where community infrastructure such as childcare or community gardens are co-located with open space within higher density developments. The low provision of childcare and pre-schools within Wolli Creek indicate that this is an opportunity for consideration.

APPENDIX: CASE STUDIES

This section describes a series of precedents for small public open spaces in high density developments including ones where community facilities are co-located with open space.

Baugruppen movement examples

<http://www.baugruppen.com.au/home.html>

The Baugruppen movement is a European housing model that encourages people to come together to develop higher density housing. Community members work together to design shared spaces including community gardens and shared outdoor living.

Wohnhaus Esmarchstraße



Baugruppe in Prenzlauerberg



3xgruen Baugruppen



Drill Hall Community Hub and Housing



Client/architect	MGS Architects for Housing Choices Australia (2011)
Location	City of Melbourne
Project value	\$25.7 million
	Air rights above a historic building
Community facilities	Service hub (services to the homeless) and meeting hall
Awards	Winner 2011 Australasian Housing Institute Professional Excellence Awards (Australian and Victorian Leading Housing Solution)

McIntyre Drive Social Housing

	
Client/architect	MGS Architects/Robert Bird Group and JBA Consulting Engineers for the Department of Human Services (2012)
Location	Altona
Project value	\$15 million
Size	70 units, 4 levels and extensive landscaped frontage.
Community facilities	Communal spaces, community gardens and private open space.
Awards	National AIA Awards 2013: Frederick Romberg Award for Residential Architecture - Multiple Housing Victorian AIA Awards 2013: Best Overend Award for Residential Architecture - Multiple Housing

Eva Lane Cove (Hyecorp Property Group)

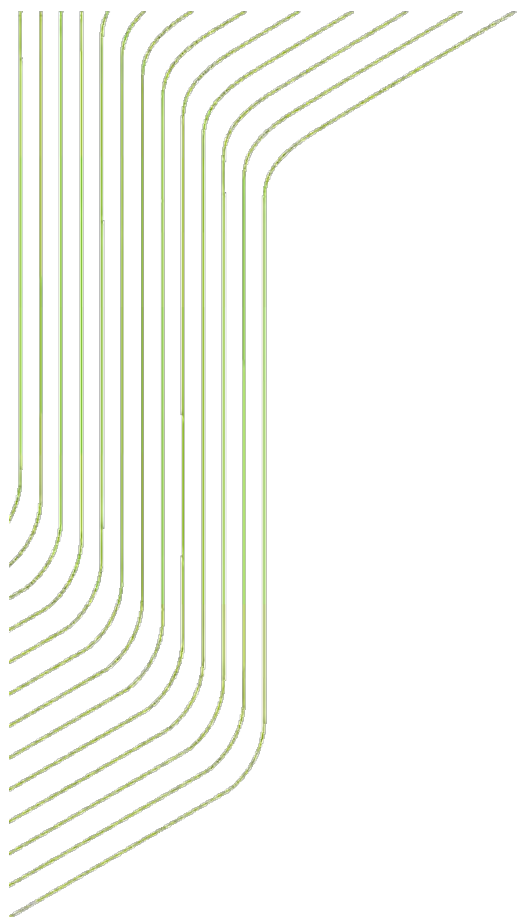
	
Client/architect	Hyecorp Property Group
Location	Waterview Drive, Lane Cove
Project value	
Size	104 units
Community facilities	Includes ground level child care facilities with capacity for up to sixty children.
Awards	Winner of the Urban Taskforce Medium Rise Apartments Development Excellence Award for 2016 Winner of the Urban Taskforce Best Affordable Housing Development Award for 2017

Clyde Mews, Thornbury

	
Client/architect	Sixdegrees
Location	Thornbury
Project value	-
Size	Medium density, 8 dwellings in total, 1,600 square metre site
Community facilities	Public and private open space, shared central space and communal garden.
Awards	2018 A&D Sustainability Award, Highly Commended Multi-Residential

Hawke and King Apartments, West Melbourne

 (Internal courtyard)	
Client/architect	Six degrees/ Brunswick group
Location	West Melbourne
Project value	-
Size	82 apartments, community hall/church and retail
Community facilities	Street level community hall/church and retail, shared spaces and community garden.
Awards	Yet to be completed.



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Floodplain and Stormwater Management Report

for

2-4 Guess Avenue, Wolli Creek

for FPD Pty Ltd

SY182980 / 29 July 2019 / Revision 3

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Activity Schedule

Date	Revision	Issue	Prepared By	Approved By
24.07.19	1	Draft Issued for Client Review	SAN, AC	SAN
26.07.19	2	Draft Incorporating Flooding	NM, GB	GB
29.07.19	3	Issued for Approval	SAN, AC, NM, GB	SAN, GB

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1. Introduction

Northrop Consulting Engineers have been engaged by File Planning (FDC) on behalf of Bayside City Council to prepare a Stormwater Management Strategy and Flood Assessment in support of a rezoning proposal for 2-4 Guess Avenue, Wollli Creek.

The subject site (the site) includes numbers 2 and 4 Guess Avenue (Lots 101 and 102 DP808944 respectively) which are currently zoned RE1 Public Recreation and are designated for acquisition by Council for public purpose. Council have resolved that they no longer require the site for public purpose and are seeking to submit a Planning Proposal to amend the Rockdale LEP to re-zone the site as B4 Mixed Use and remove the Land Acquisition order.

The investigations for this report focused on the following:

- Identify the location and size of existing stormwater services within the vicinity of the site.
- Identify stormwater connection points for the subject site.
- Identify specific stormwater requirements for development under the proposed zonings within Bayside Council.
- Undertake a flood impact assessment.
- Identify floodplain risk management options.

The purpose of this report is to demonstrate that it is feasible to implement Council's stormwater and floodplain management objectives. The options presented herein are not intended to limit the investigation of other suitable detailed design responses at Development Application stage.

1.1 Current Site Conditions

Subject Site

The site occupies an area of approximately 7765m² and is bounded by Arncliffe Street to the south east, Guess Avenue to the south west and Mount Olympus Boulevard to the north west. The site is retained along Arncliffe Street to a level approximately 800mm above the footpath level, and is mostly flush on the Guess Avenue boundary.

At the time of writing 2 Guess Avenue was occupied by a truck spare parts business, while 4 Guess Avenue had already been vacated, demolished, and excavated well below the existing street level on Mount Olympus Boulevard. Figures 1 below shows the site aerial image and surrounds.

The subject site is located within the Wollli Creek Development Area as presented in Figure 2, therefore the development must comply with the requirements presented in Section 2.6.2 "Special Precincts – Wollli Creek Redevelopment Area" of "Rockdale Technical Specification Stormwater Management, 2011".

Site Topography

The site falls from north to south from RL4.8m AHD to RL1.6m AHD, approximately 3.2m difference in elevation between the Mount Olympus Boulevard boundary and the Arncliffe Street boundary.



Figure 1: Site Aerial Image (Source: Nearmaps)

Existing Stormwater Infrastructure

There are several existing stormwater lines passing adjacent to the site, with existing pits on Mount Olympus Boulevard, Guess Avenue and Arncliffe Street. The site generally drains to Arncliffe Street where there are several existing connections to the street drainage network. The street drainage network drains south under Arncliffe St, through lot 57 via a 600mm pipe in an easement, before discharging into the Bonnie Doon Channel then the Cooks River. The pipe sizes and conditions must be further investigated during the detailed design stage for any proposed development.

Future Stormwater Infrastructure

According to the 'Stormwater Drainage Plan – sheet 2 for the Project "Wolli Creek road and drainage upgrades"' five existing kerb inlet pits on Arncliffe Street are proposed to be demolished. Two new pits are proposed, and the stormwater drainage will be directed to a 600Hx1200W box culvert to then discharge into Bonnie Doon Channel.

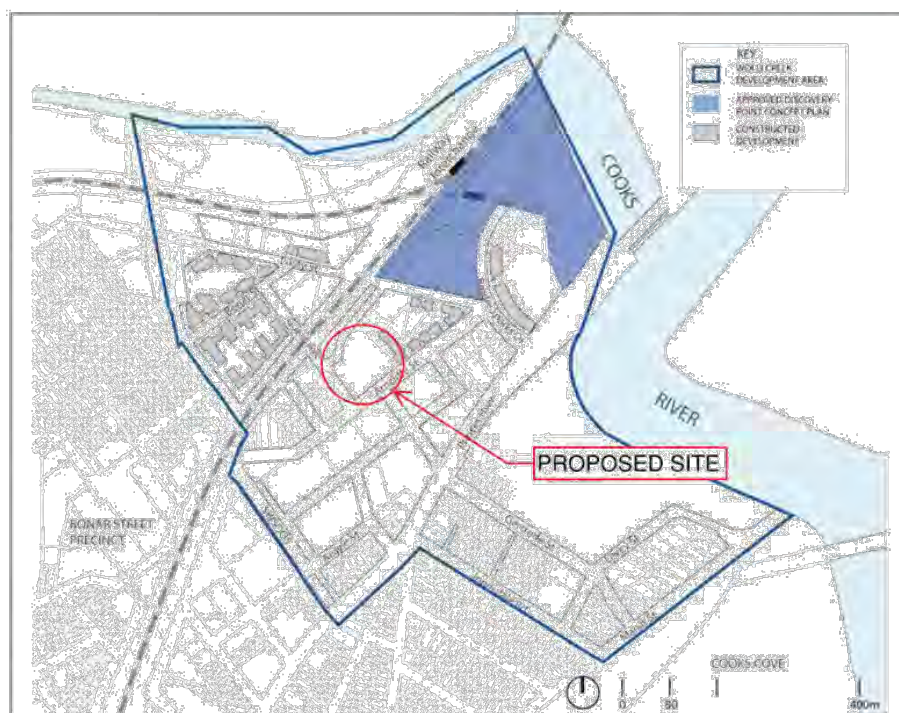


Figure 2: Wolli Creek Redevelopment Area. (Source: Rockdale DCP 2011)



1.2 Proposed Development

An indicative configuration of the proposed development, prepared by SJB Architects, dated 19 July 2019, is presented in Figure 3. The proposed development would consist of a large public open space, 2 residential buildings with retail tenancy at ground floor with outdoor seating.



Figure 3 - Proposed development. Source: Urban Design Study, SJB Architects, 2019.



2. Methodology

Our assessment has been undertaken through:

- Liaison with Bayside Council and review of their policies.
- Site visit undertaken on 12th Feb 2019.
- Review of supplied design documentation.
- Review and modification of the Bonnie Doon, Eve Street/ Cahill Park Pipe and Overland 2D Flood Study (WMAWater, 2017) TUFLOW model supplied by Bayside Council.
- Preparation of concept flood storage topography and stormwater management strategies.
- Reporting.

Consideration has been given to the following documents.

- Urban Design Report, 2 & 4 Guess Avenue, Wolli Creek (SJB Architects, 2019).
- Bonnie Doon, Eve Street/ Cahill Park Pipe and Overland 2D Flood Study (WMAwater, 2017).
- Rockdale Development Control Plan (Bayside Council, 2011).
- Rockdale Technical Specification – Stormwater Management (Bayside Council, 2011).
- Flood Advice Letter by Bayside Council and dated the 7th of November 2018.
- Australian Rainfall and Runoff 2019 (AR&R 2019).
- NSW Government Floodplain Development Manual (NSW Government, 2005).
- Water Management Act 2000 No. 92 (NSW Government, 2019).
- Directions for Planning Proposals issued under Section 9.1(2) of the EP&A Action (Section 4.3 Flood Prone Land) – previously referred to as Section 117 directions.



3. Proposed Stormwater Management Strategy

Northrop has performed desktop investigations with regards to Council's stormwater management requirements, and preliminary calculations of catchment flows and stormwater management device sizing. The requirements and a conceptual stormwater management strategy for the proposed development scenario, and the requirements for the development are presented below, and summarised in Appendix A.

3.1 Stormwater Quantity Management

Major/ Minor Drainage Systems

The major/minor approach to stormwater drainage is the recognised drainage concept for urban catchments within Bayside Council.

The minor drainage system is comprised of below ground pit and pipe network and is designed to control nuisance flooding and enable effective stormwater management for the site. Council's Engineering Design Specifications section 2.6.2 requires the minor drainage system to be designed for the 5%AEP storm. It will be possible to drain the podium and roof runoff from the site during this event, however as street drainage is flooded during the 5%AEP event (refer to Section 4), it may not be possible to drain surrounding on-grade areas through the piped system.

The major drainage system incorporates overland flow routes through proposed hardstand, car parking and landscaped areas. According to "Rockdale Technical Specification – Stormwater Management" (2011) Section 2.6.2; overland flow routes are [to be] designed to cater for flows between the 5%AEP and 1%AEP storms with a minimum of 200 mm freeboard between this level and any habitable areas. Overland flow paths should be designed such that there are no trapped low points around the proposed buildings, however it should be noted as above the site may be flooded in larger rainfall events, which may cause some inundation of overland flow paths.

Further catchment and pipe network modelling will be required for the site to suitably size the major/minor drainage network during the design phase of the project.

On-site Stormwater Detention

According to "Rockdale Technical Specification – Stormwater Management" (2011) Section 2.6.2 this site does not require On-site Retention or Detention. A Section 7.11 contribution is required to provide for drainage augmentation.

The post-development scenario proposes a larger landscaped area than the pre-development scenario, therefore decreasing peak flows.

Connection to Council's System

It is necessary to consider two scenarios for the proposed connection to Council's network: (a) before the construction of the drainage network proposed by AT&L; and (b) after the upgrades proposed by AT&L and presented in Appendix B of this report.

- Scenario A - There are several pits that could be possible connection points along Arncliffe Street, providing opportunity for multiple discharge locations.
- Scenario B - Considering the system proposed by AT&L, the site could be connected to the proposed pit A/6 (refer to drawing C071 in Appendix B) on the corner of Guess Avenue and Arncliffe Street, or to pit B/1 (refer to drawing C071 in Appendix B) on Arncliffe Street, however these pipes may require upgrades to cater for the flows coming from the site. The Stormwater Design proposed by AT&L should be reviewed to ensure the assumptions on



which it is based, (in particular the assumed percentage of impervious area for the subject site), are congruent with the new proposed use for the site.

In both scenarios, there are feasible options to provide a legal point of discharge.

3.2 Stormwater Quality Management

Pollution Reduction Targets

According to "Rockdale Technical Specification – Stormwater Management" (2011) Section 7.5.2, large redevelopments are required to achieve the following reduction in pollutants, presented in **Table 1**, compared to the same development if no stormwater treatment measures were implemented:

Table 1 - Pollutant reduction targets

Pollutant	Reduction Target
Gross Pollutants	90 %
Total Suspended Solids	80 %
Total Phosphorus	55 %
Total Nitrogen	40 %

This reduction in pollutant loads can be achieved via a variety of different treatment devices including, but not limited to:

- Pit filter baskets.
- Reuse tanks.
- Gross-pollutant traps.
- Proprietary media filtration devices.
- Or bioretention basins.

Proprietary devices are generally more expensive but can be located underground, saving space within the development.

Two options that meet the targets are

- Proprietary treatment devices, including approximately 10-14 filter cartridges and 5 pit filter baskets.
- A bioretention basin, approximately 120m², incorporated into the landscaping at the low point on the site.

These options are based on preliminary calculations only and are presented spatially in Appendix A. Treatment sizing will change according to the proposed development final architectural scheme and Council's resolution.

Carwashing Requirements

According to "Rockdale Technical Specification – Stormwater Management" (2011) Section 7.5.5, carwashing bays are required to reduce the impact of soapy water on receiving waters. For developments with more than 16 dwellings, a dedicated carwash bay is to be provided per each 60 dwellings. The car wash bay must either discharge to the sewer or be designed to treat and re-circulate the car wash water with a proprietary treatment system maintained by the owner or body corporate.



Dedicated car washing bays can be provided within the development, most likely in the basement and therefore discharging to the sewer network via a pump out system.

3.3 Stormwater Re-Use

The proposed development will be a mixed use development, consisting of commercial and residential components. The water conservation requirements for the residential precinct will be covered in a BASIX assessment and it may include a provision of a minimum volume for a rainwater tank to reduce the demand for potable water. This should be considered as part of the stormwater design for the site.

According to "Rockdale Technical Specification – Stormwater Management" (2011) Section 7.2, the minimum mandatory rainwater tank for commercial developments is 1.5m³ per 100 m² in addition to BASIX rainwater volume required.

It is feasible to incorporate this re-use volume within the proposed development arrangement.

3.4 Groundwater

The proposed development is located in a groundwater protection zone, as presented in **Figure 4**. As two levels of basement are being proposed, approval by the NSW State Government agency administering the Water Act 1912 and the Water Management Act 2000 may be required in addition to development consent.

According to "Rockdale Technical Specification – Stormwater Management" (2011) Section 7.7.1, permanent or semi-permanent pumping of groundwater is not permitted, therefore alternatives such as tanked structures may be required depending on the groundwater level. The feasibility of this should be further investigated by a Geotechnical Engineer.

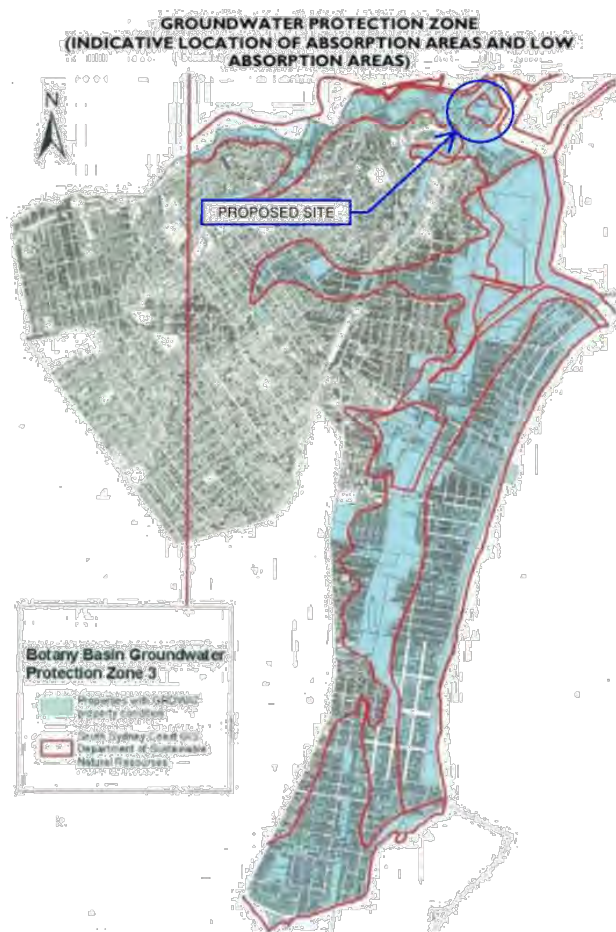


Figure 4: Groundwater protection zone (Source: Rockdale Technical Specification - Stormwater Management, 2011)



4. Flooding

The Bonnie Doon, Eve Street/ Cahill Park Pipe and Overland 2D Flood Study by WMAwater, 2017 was obtained from Council and used as a base for our investigation.

A critical storm duration of 60 minutes was determined in the WMA study, and all design events adopted a downstream tailwater level of 1.63m AHD which represents the peak 5% AEP flood level in the Cooks River.

Three scenarios were run as part of this assessment for both existing and developed cases including the:

- 5% AEP 60minute duration, tailwater level 1.63m AHD
- 1% AEP 60minute duration, tailwater level 1.63m AHD
- PMF 60minute duration, tailwater level 1.63m AHD

Some minor changes to the supplied model were made for the existing scenario to incorporate recent developments in the area, and these are described below.

4.1 Existing Case Model

The landuse in the vicinity of the subject site has significantly changed over the past few years, and the WMA model was therefore updated with the followings to reflect these recent re-developments.

- Additional four buildings were added to the north of the site. These are new developments that had not previously been included in the WMA model (see Figure 5).
- Two inflow boundaries were moved to the road reserves as these were overlapping with the buildings added above (see Figure 6).

The revised model was used as the existing scenario for this investigation.

4.2 Development Case Model

The developed case model was based on the revised existing case model and includes the building block-outs for the proposed development. In addition, the following amendments were made:

- The Manning's roughness value in the proposed public open space was changed from 0.022 to 0.040. This area was previously classified as commercial buildings in the WMA model and required to be updated to parks and grass areas to represent the public open space proposed (see Figure 7).
- The site elevation in the eastern boundary of the open public space were raised to a minimum of 3m AHD to provide low hazard evacuation route towards Mount Olympus Boulevard which is located above the PMF level.
- The levels in the western corner of the subject site were lowered to 2m AHD to divert flows entering from Mount Olympus Boulevard to Guess Avenue.

The proposed elevation changes were added as elevation shapes in the model and their extents are shown in *Figure 8*.



4.3 Comparison of the Revised Model and Original WMA Model

A comparison between the 1%AEP flood depth for the revised existing case model and the original WMA model is shown in **Figure 9**. Generally, the results are consistent and considered suitable for use in the assessment.

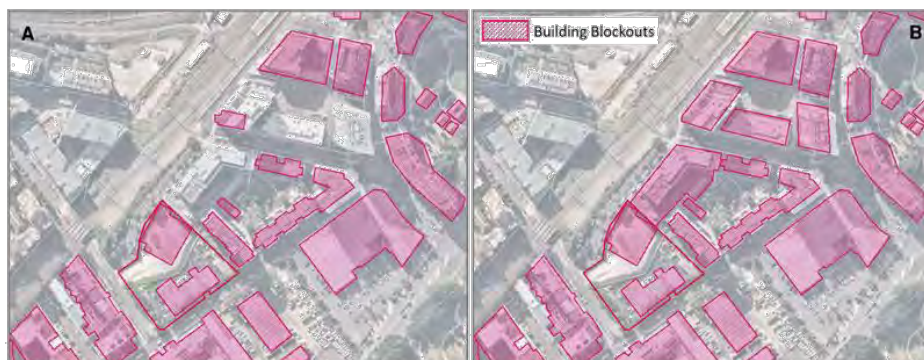


Figure 5 - Building blockouts used in (A) original WMA model and (B) revised existing case model



Figure 6 Inflow boundaries used in the models (A) Original WMA model and (B) Revised existing case model



Figure 7 Manning's roughness values used in the models (A) Original WMA model and (B) Revised existing case model

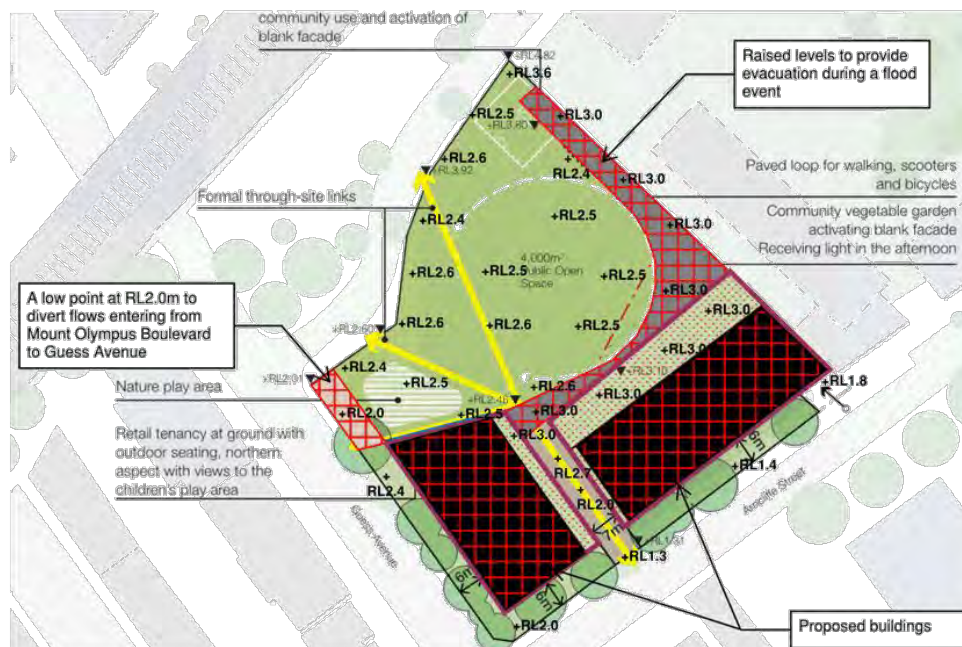


Figure 8 Proposed elevation changes

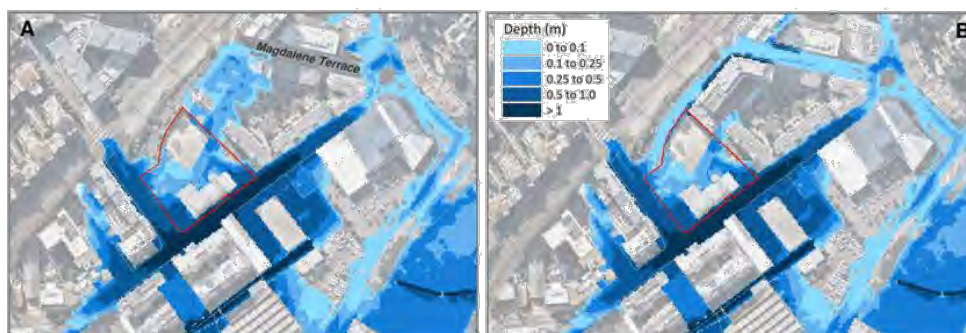


Figure 9 1% AEP flood depth comparison (A) Original WMA model and (B) Revised existing case model



The original WMA model in **Figure 9A** indicates that the property to the north of the site is likely to be inundated in the 1%AEP. The reason for this is because it had been included as a vacant lot in the original WMA model, with an inflow boundary also applied within the property.

However, this vacant land has recently been re-developed to a high-rise residential building and is no longer available for flood storage. Therefore, the new building was added in the revised model. The included new development and the changed inflow boundary reflect the increased flood levels on Magdalene Terrace shown in **Figure 9B**.

4.4 Flood Levels

The modelling shows that flows generally enter the site from the Mount Olympus Boulevard, spill around the proposed public open space up to a depth of 0.4m during 1% AEP event and then discharge towards Guess Avenue. Tailwater from the Cooks River affects the Arncliffe Street frontage.

The 1% AEP, 5% AEP and PMF depths, elevations and ARR 2019 Hazard categories are presented in Appendix C – Figures A0 to A8. The site flood elevations are presented in **Table 2** below.

Table 2 - Flood Elevations

Event	Council Flood Advice (m AHD)	Model Result (m AHD)
5% AEP	-	2.56
1% AEP	2.64	2.64
PMF	3.65	3.39

The PMF level discrepancy is likely due to the rearrangement of buildings and inflow boundaries between the original and revised models.

4.5 Flood Impact

A comparison of pre to post development 1% AEP levels is presented in Appendix C - Figure A4. With the development included in the model, there is an approximately 0.3m reduction in the flood levels along the western boundary of the park. This is due to the removal of the existing building in the western portion of the site as it allows more flows downstream through the proposed public open space.

During the 1% AEP event, the ARR 2019 hazard categories in the developed case shows that an H1 hazard is present over the majority of the site, with H3 hazard over the southern boundary next to Arncliffe Street. The extent of H3 hazard in this area is slightly lower than that of the existing case (shown in Figure A5 in Appendix C).

From the assessment, it was determined there was no significant impacts to adjoining properties as a result of the development.

4.6 Council Controls

The flood related development controls are outlined in the DCP and Council Flood Advice. These include:

- The flood planning level (FPL) is equal to the 1%AEP plus 500mm freeboard from the WMA model. This is approximately equivalent to the previous study 0.5%AEP plus 500mm freeboard, which was required in this area.



- The basement entrance shall be located 1m above ground level or at the FPL whichever is higher.
- Any portion of the building below the FPL shall be constructed of flood proof material.
- All services associated with the development shall be flood proofed.
- Filling of the land may impact flood storage and behaviour and a study to assess the risks should be undertaken.
- The structure should withstand the forces of floodwater, debris and buoyancy in a 1%AEP event.
- A flood risk management plan is to be submitted at DA stage to detail evacuation procedures and flood preparedness measures.

The feasibility of implementing these controls is examined further in the discussion below.

4.7 Discussion

Finished Floor Levels

It is recommended that the all floor levels to be above 3.14m AHD which is the "minimum habitable level" stated in the DCP and the Council's Flood Advice Letter.

Minimum habitable floor levels can be achieved on the subject site.

Basement Crest Level

The basement crest levels of the proposed development should facilitate protection up to the FPL. This may be through ramping up from the existing levels in Arncliffe Street, or incorporating a passive floating flood barrier to allow better level interface with the street.

It is feasible to incorporate basement protection to the flood planning level on-site.

Materials, Servicing and Structural Integrity

Due to the type of development proposed, it is considered the construction material are likely to be flood resistant (concrete, metal and blockwork). Furthermore, it is feasible to prepare a structural design to withstand flood and debris forces.

All critical utilities infrastructure (switchboards and communications rooms) are to be located above the flood planning level.

It is considered feasible to construct the development with flood proof material below the FPL, provide a design that withstands flood forces in the 1%AEP and locate utilities infrastructure above the FPL.

Filling of Land and Flood Impact

A flood impact assessment has been undertaken using the TUFLOW model provided by Council. There was no significant impact in the critical 1%AEP event.

The proposed development concept has no significant impacts on flood behaviour in the 1%AEP.



Emergency Response and Evacuation

As part of the development, we have modelled a continuous access to Mount Olympus Boulevard at 3m AHD and above. This allows for low hazard access suitable for pedestrians (H1 and H2) in all events including the PMF. Having a low hazard access acts to minimise the risk to life in all events.

In addition to the provided evacuation route, there is ample space for residents in the proposed development to seek refuge on-site.

Low hazard access can be incorporated in the proposed development. It is therefore considered feasible to formulate emergency response plans that promote flood awareness and minimise risk to life.

Section 9.1(2) Directions

The Section 9.1(2) Clause 4.3 Flood Prone Land directions for planning proposals made under the Environmental Planning and Assessment Act 1979 aim:

- to ensure that development of flood prone land is consistent with the NSW Government's Flood Prone and Policy and the principles of the Floodplain Development Manual 2005.
- to ensure that the provisions of an LEP on flood prone land is commensurate with flood hazard and includes consideration of the potential flood impacts both on and off the subject land.

This proposal generally complies with part (6) of this clause in so far as the site:

- a) is not a floodway.
- b) does not result in significant impacts off-site.
- c) results in development consistent with the surrounding area.
- d) will include flood mitigation measures constructed by the developer of that land.
- e) only permit works with consent.

The development proposal generally complies with the objectives of the directions.

Alternative Solutions

The solutions proposed in this assessment demonstrate the feasibility of complying with Council's floodplain development controls. This does not preclude different building arrangements or potential complying solutions from being investigated or approved on-site including:

- Flood storage tanks.
- Amended park topography.
- Vertical evacuation or refuge on-site in publicly accessible building areas.
- Suspended building elements to reduce displaced flood storage.

Investigation and assessment of these options could be explored during the development application stage.



5. Summary and Conclusion

In summary, the stormwater requirements for the proposed development are as follows;

- Water Quality measures would be required for the proposed zoning and development on this site. Water quality treatment could be achieved using propriety filter cartridge devices or through bioretention treatment located in the landscaped areas of the site.
- A rainwater tank is required and must comply with requirements from BASIX for residential apartments, and Council's requirement in addition if a Commercial component is proposed.
- On-site Detention and Retention is not required, and a Section 7.11 contribution is necessary to provide for drainage augmentation.
- There are several possible connection points in Arncliffe St. The legal point of discharge chosen should be coordinated with the future plans for drainage network upgrades in the area. Furthermore, the upgrades planned should ensure there is capacity to include the site drainage, now that a partly impervious development is proposed.

The flooding requirements for the site are as follows;

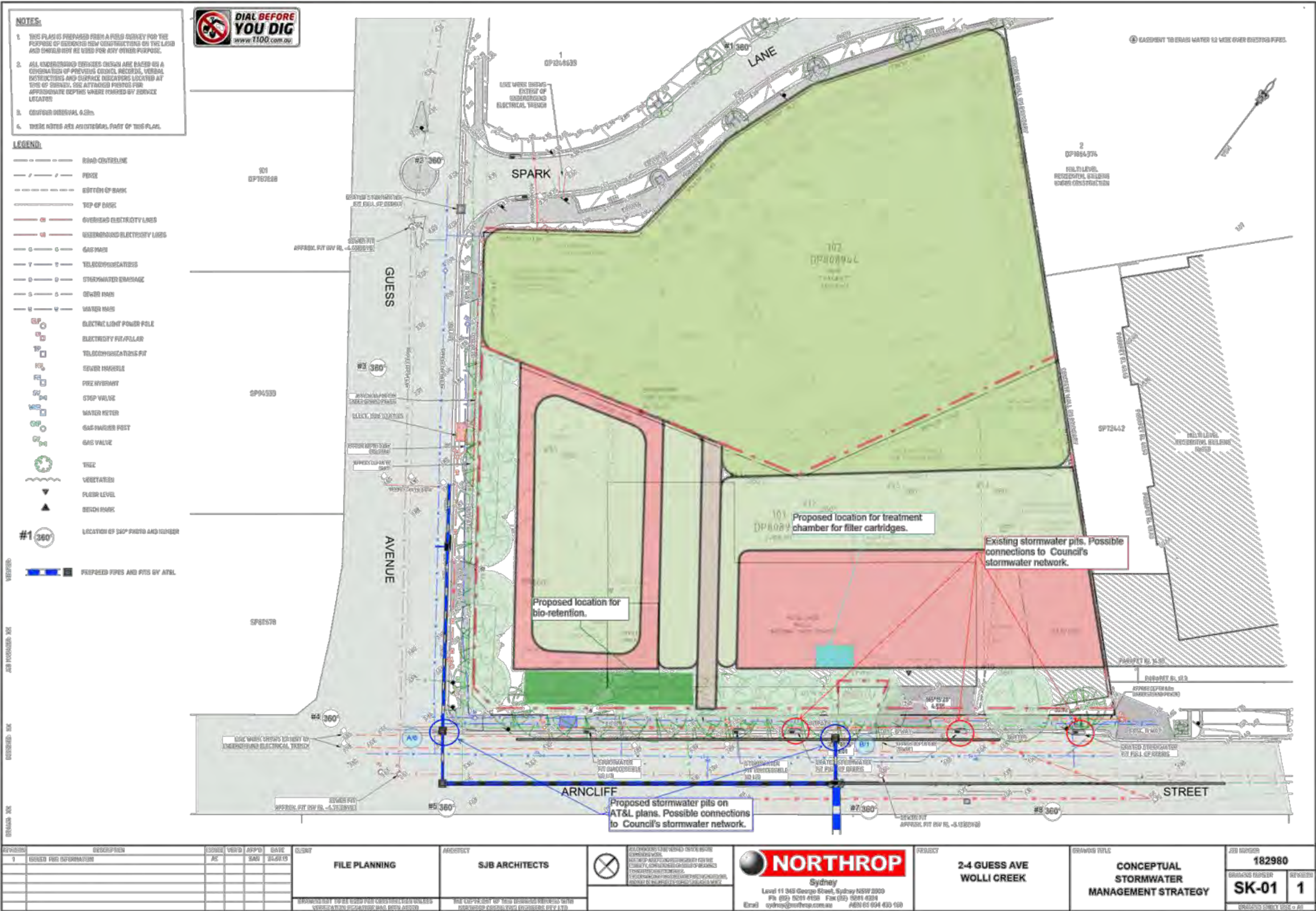
- Habitable floor levels and basement protection to the Flood Planning Level of the 1%AEP plus 500mm freeboard, or 3.14m AHD.
- Buildings to be designed to withstand flood forces, be constructed from flood proof materials and have services flood proofed to the Flood Planning Level.
- Low hazard evacuation to Mount Olympus Boulevard as a preference or refuge on-site to manage flood emergency response.
- Flood storage to facilitate negligible impacts on adjoining property.

It was determined that it is feasible to implement Council's stormwater management and floodplain related development controls on the site.



Appendix A

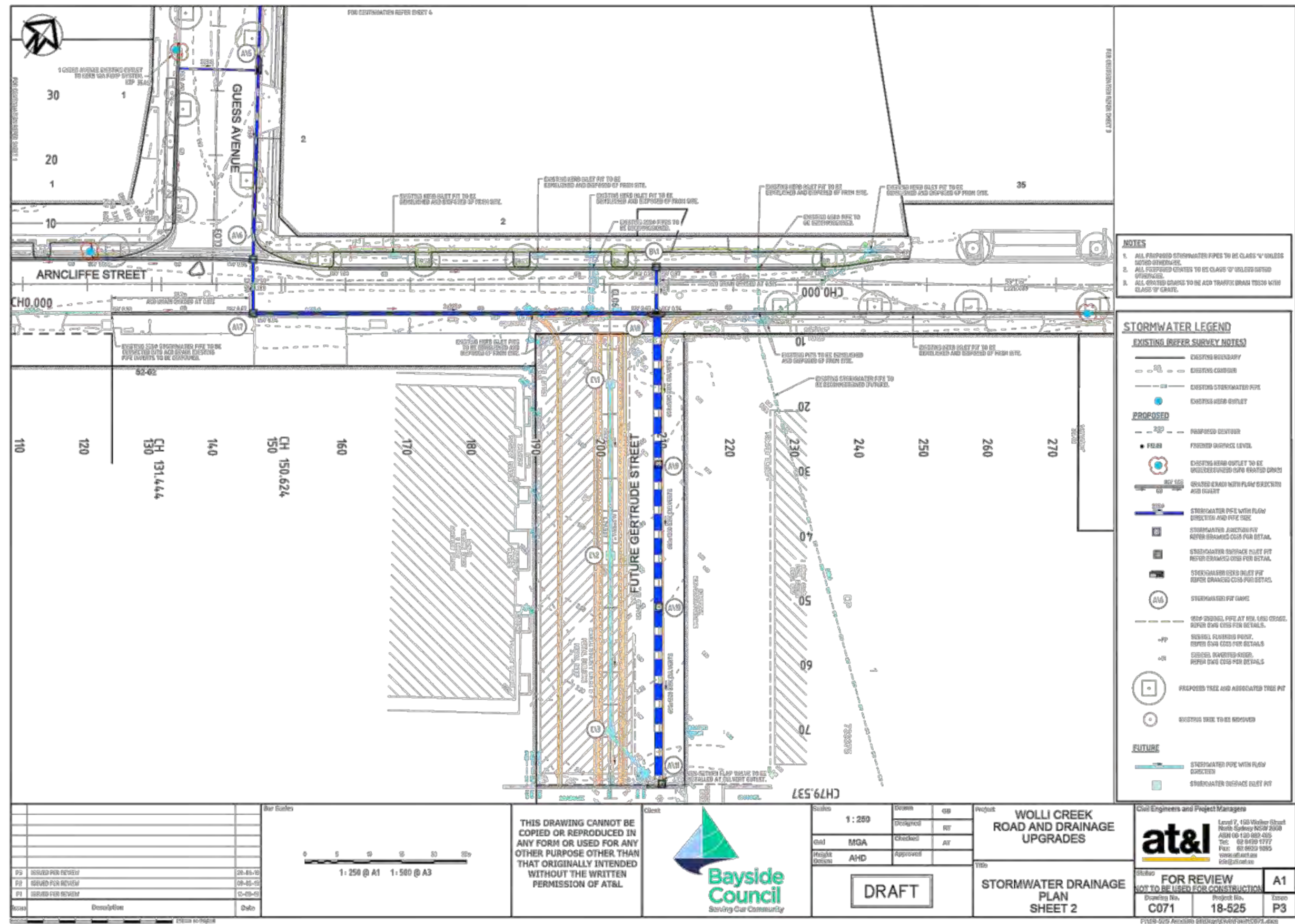
Concept Stormwater Management Layout

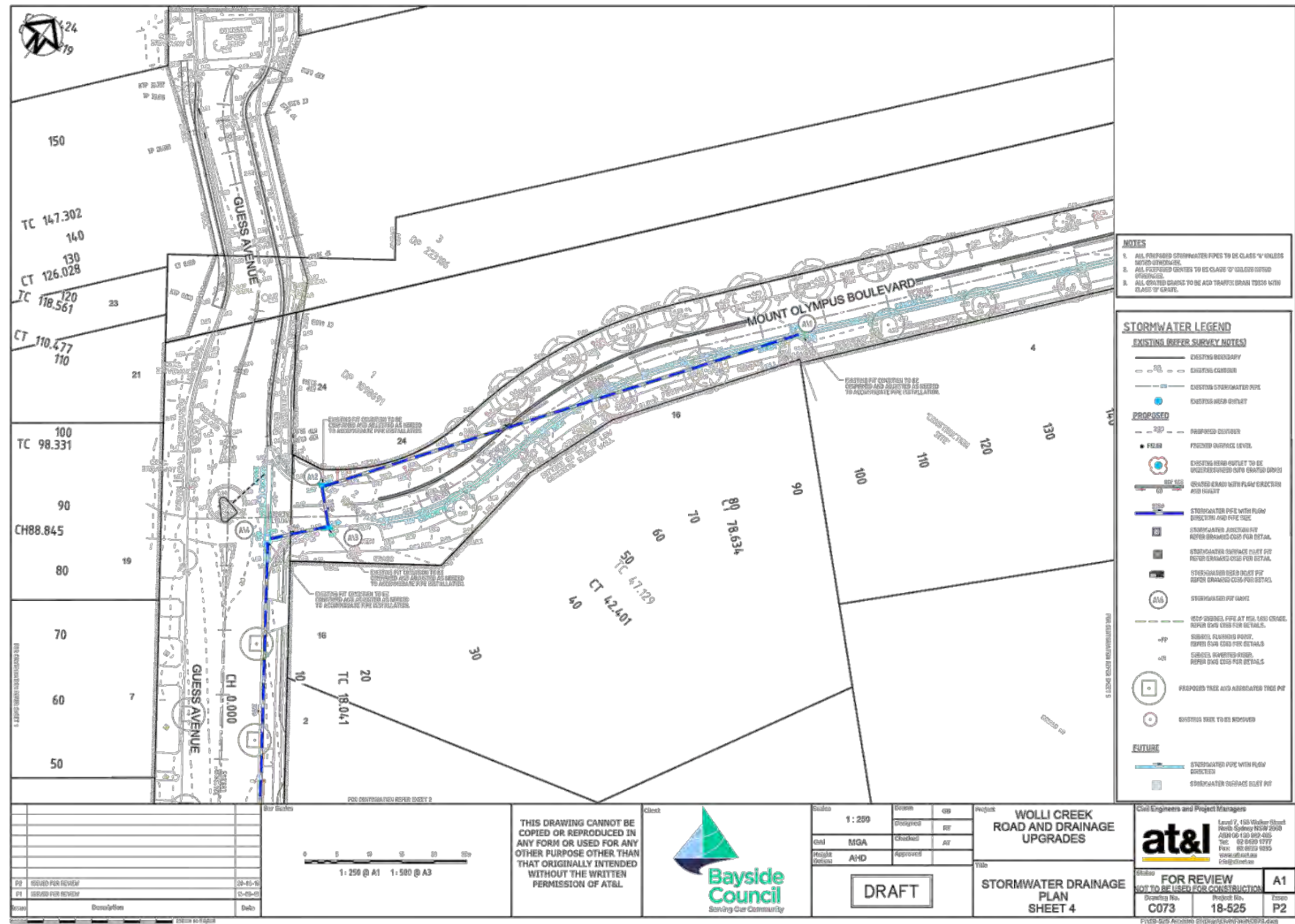




Appendix B

AT&L Stormwater Drainage Plan – Wollie Creek Road and Drainage Upgrades

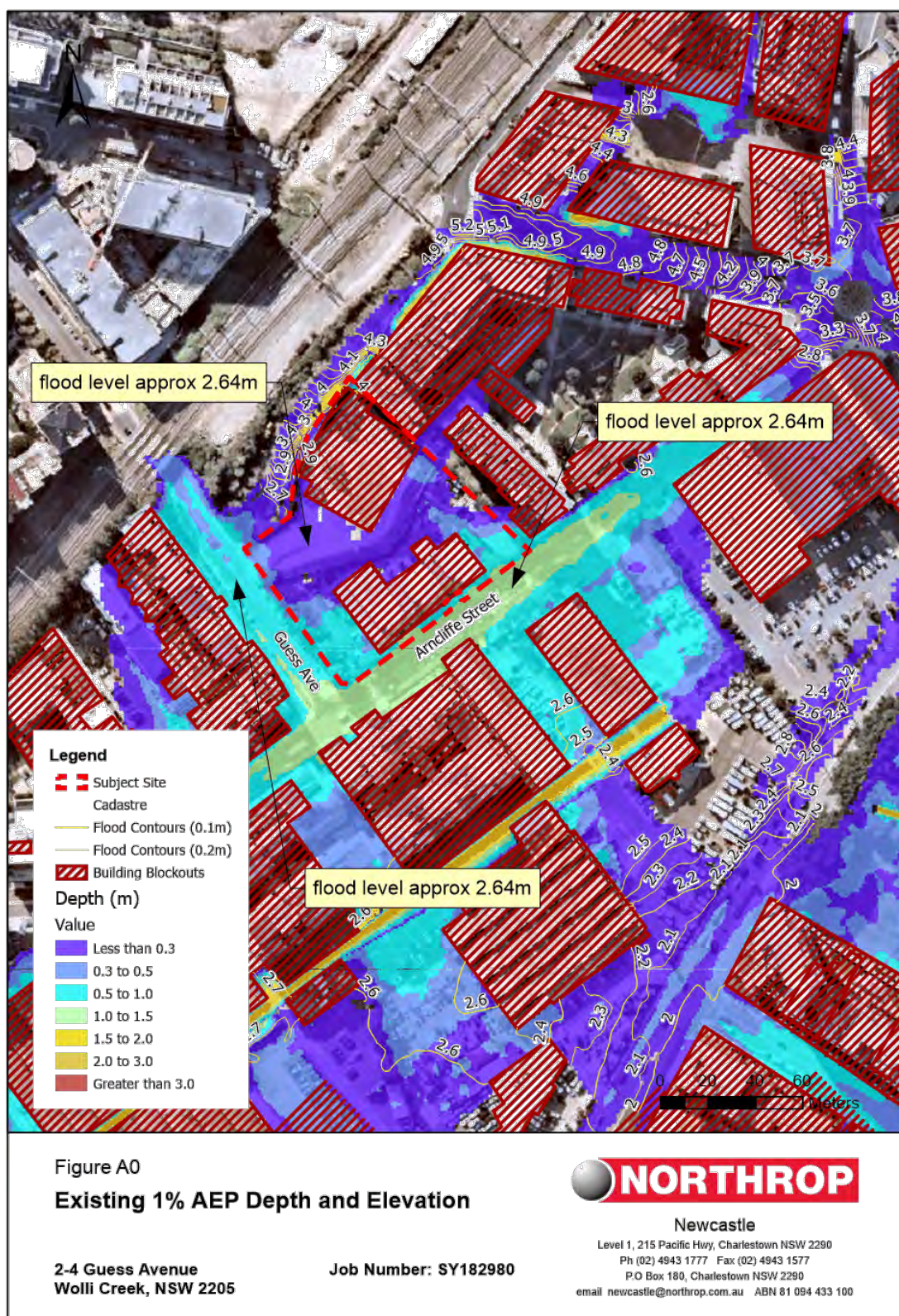






Appendix C

Flood Figures



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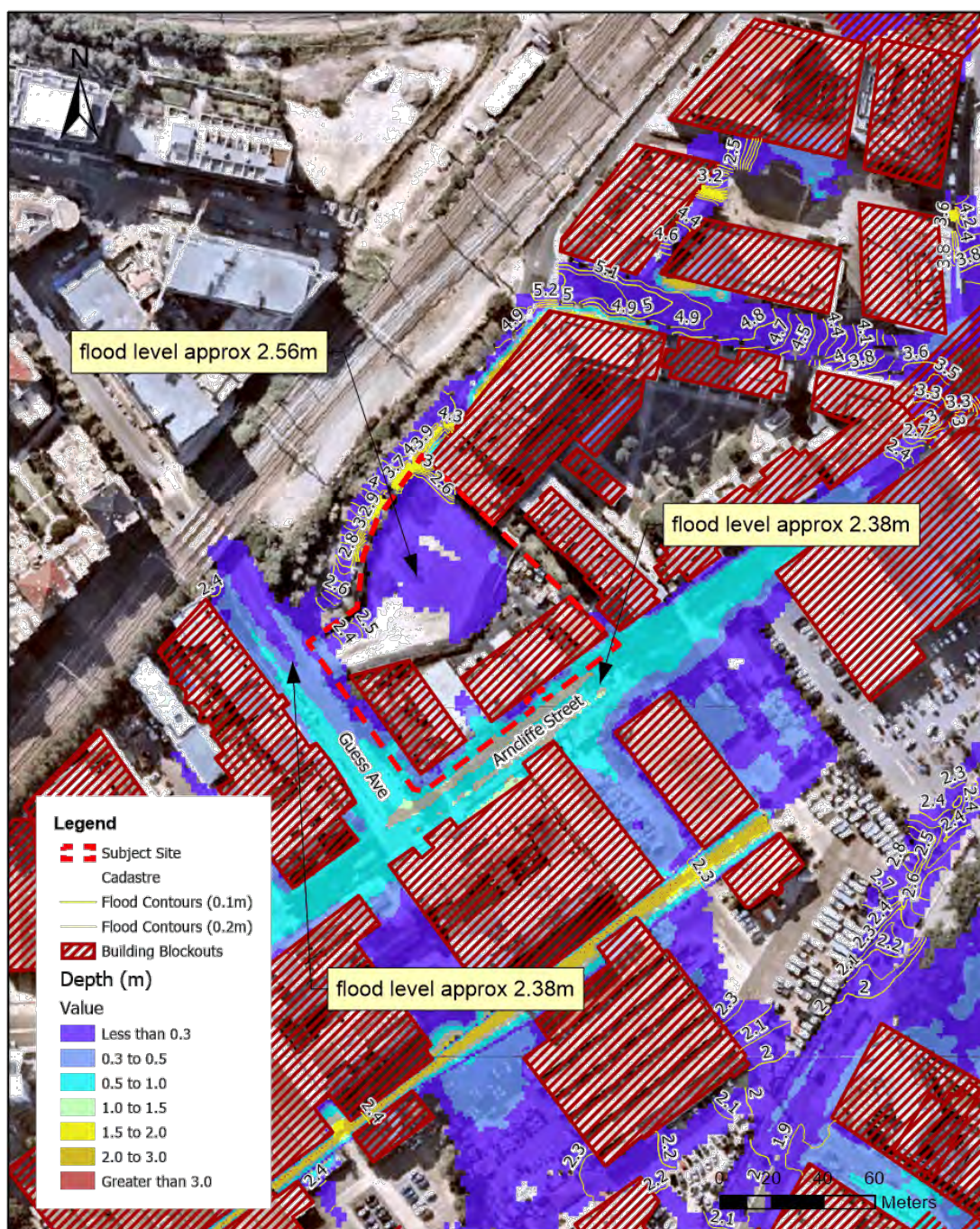


Figure A1
Developed 5% AEP Depth and Elevation

2-4 Guess Avenue
Wolli Creek, NSW 2205

Job Number: SY182980



Newcastle

Level 1, 215 Pacific Hwy, Charlestown NSW 2290
Ph (02) 4943 1777 Fax (02) 4943 1577
P.O. Box 180, Charlestown NSW 2290
email newcastle@northrop.com.au ABN 81 094 433 100

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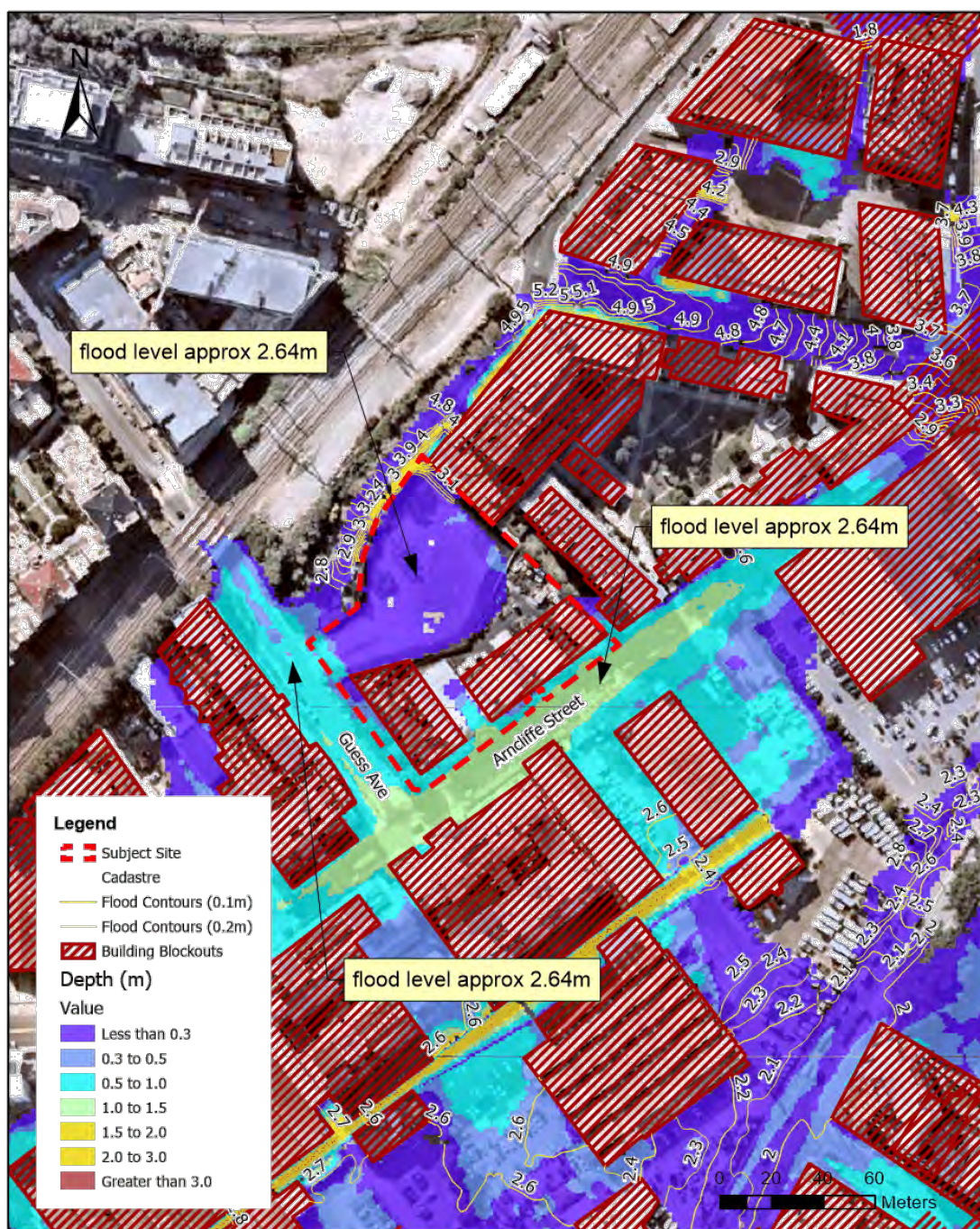


Figure A2
Developed 1% AEP Depth and Elevation

2-4 Guess Avenue
Wollli Creek, NSW 2205

Job Number: SY182980



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P.O. Box 180, Charlestown NSW 2290
email newcastle@northrop.com.au ABN 81 094 433 100

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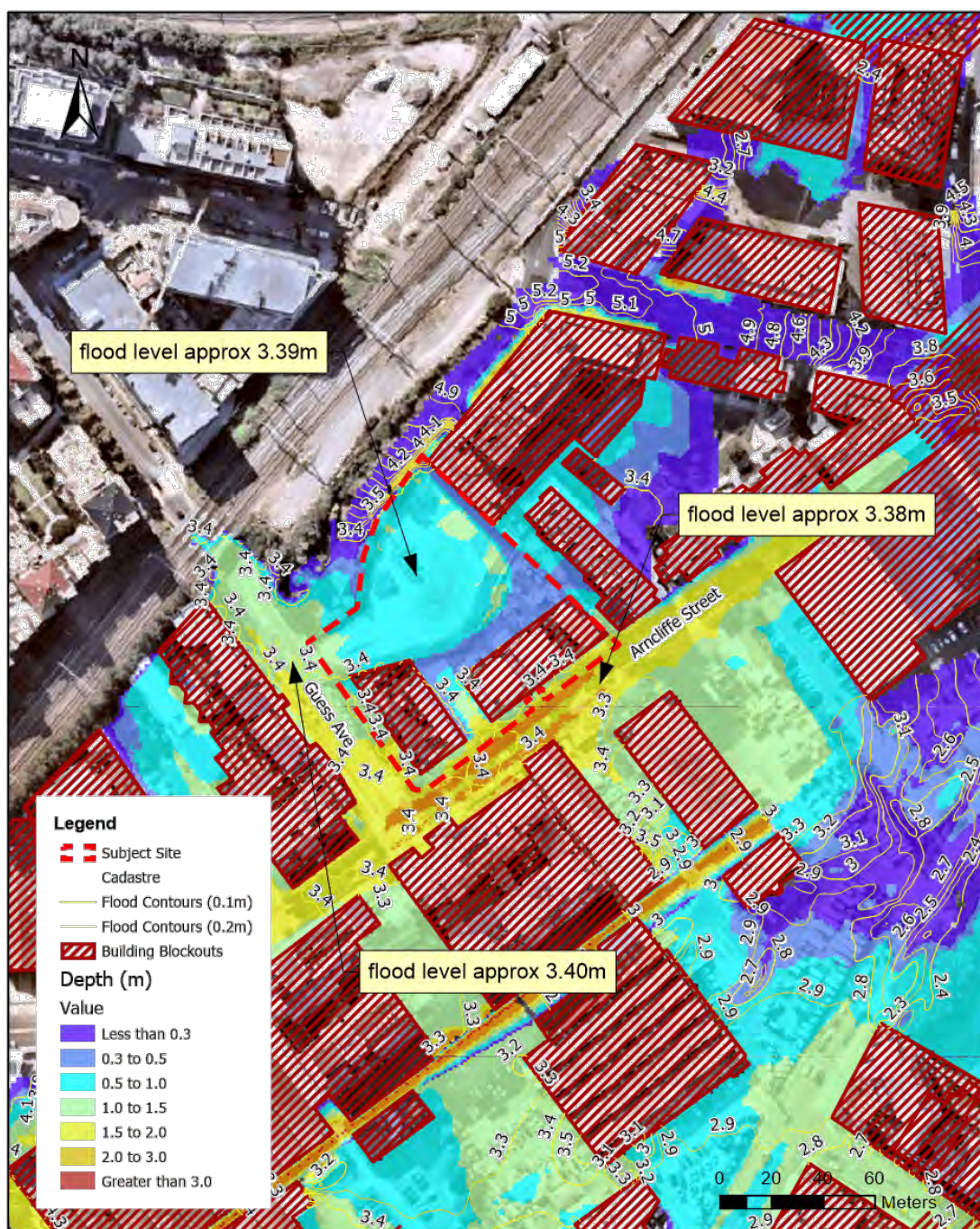


Figure A3
Developed PMF Depth and Elevation



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2-4 Guess Avenue
Wollie Creek, NSW 2205

Job Number: SY182980

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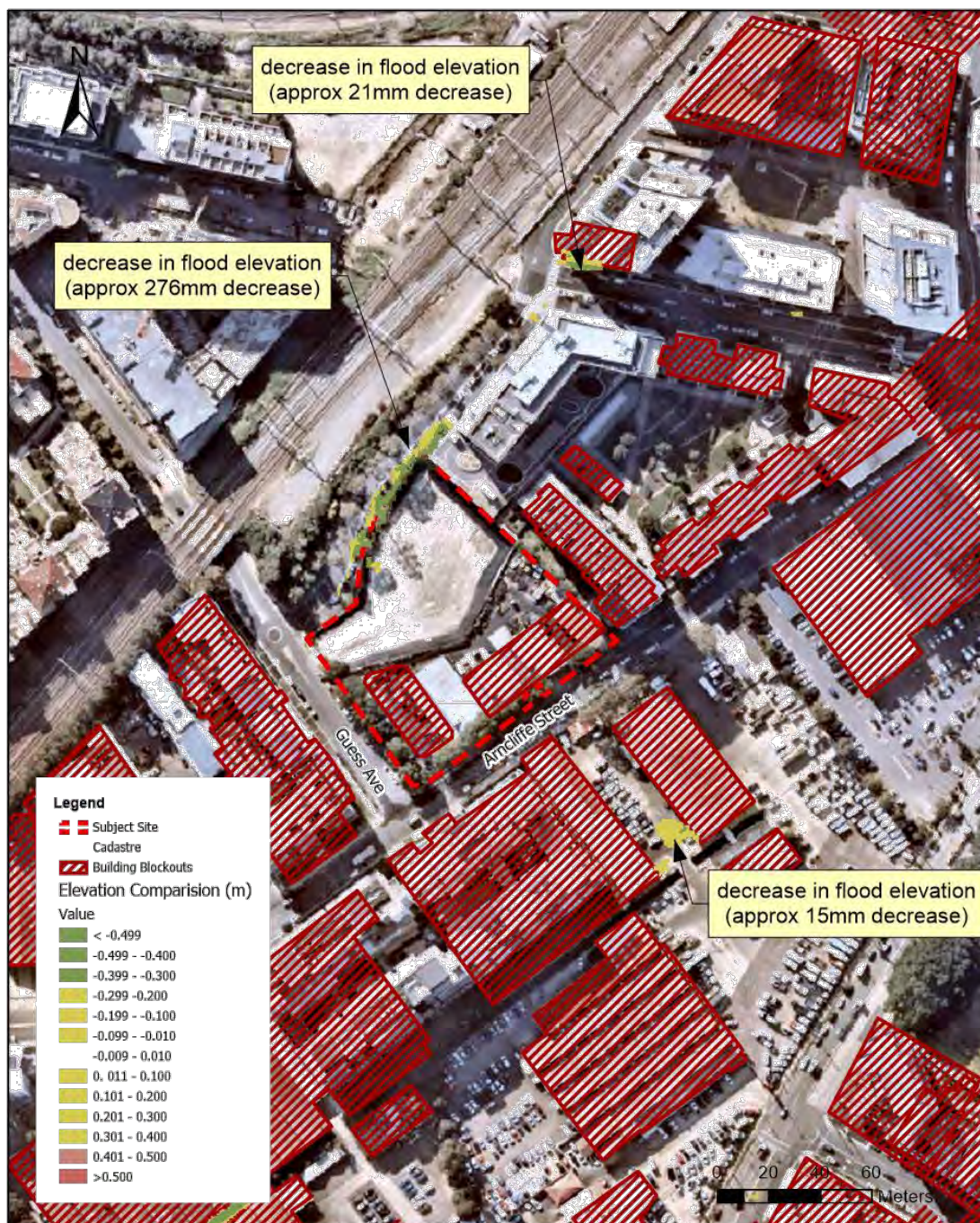


Figure A4

1% AEP Post-Pre Elevation Comparison

**2-4 Guess Avenue
Wolli Creek, NSW 2205**

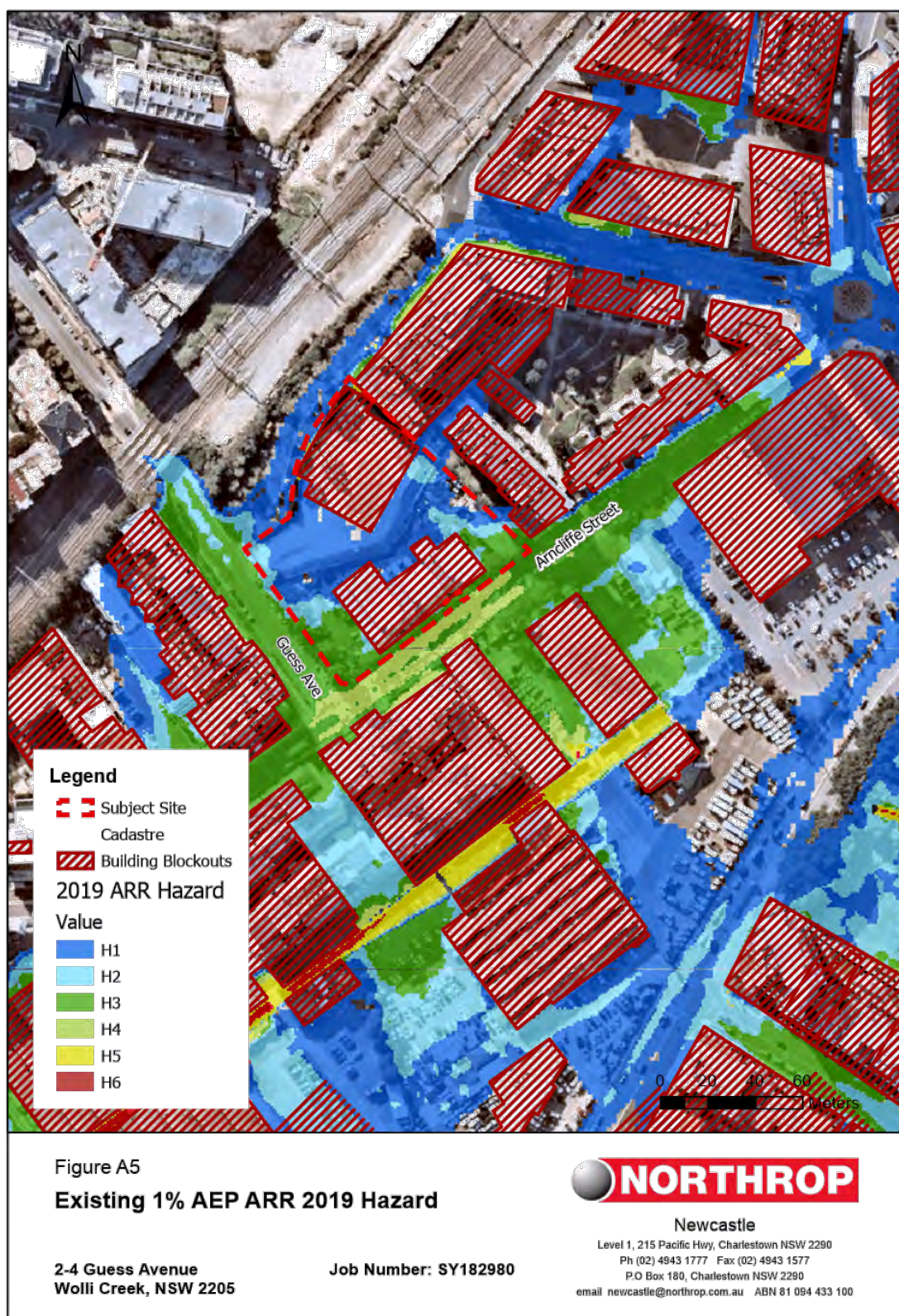
Job Number: SY182980



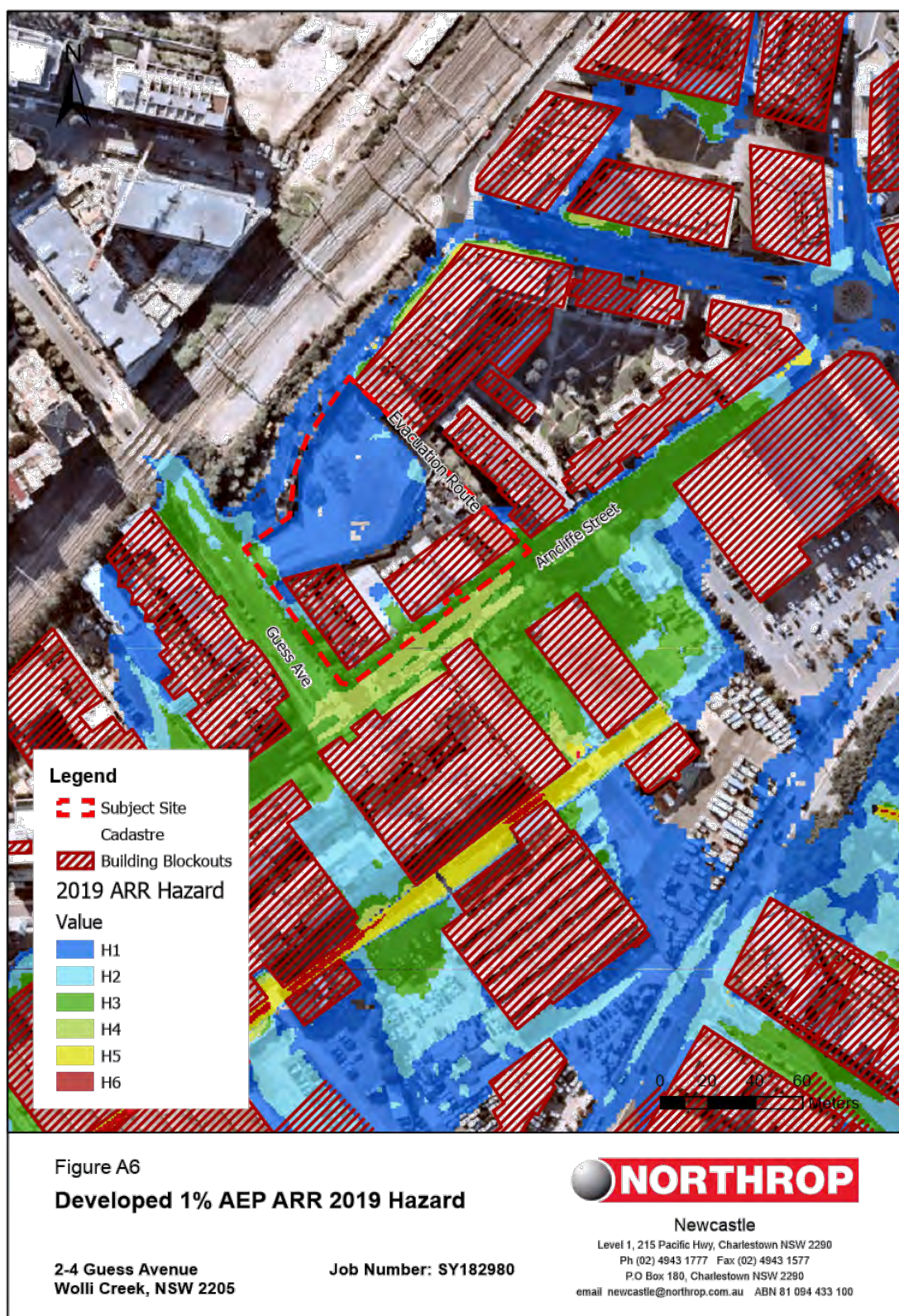
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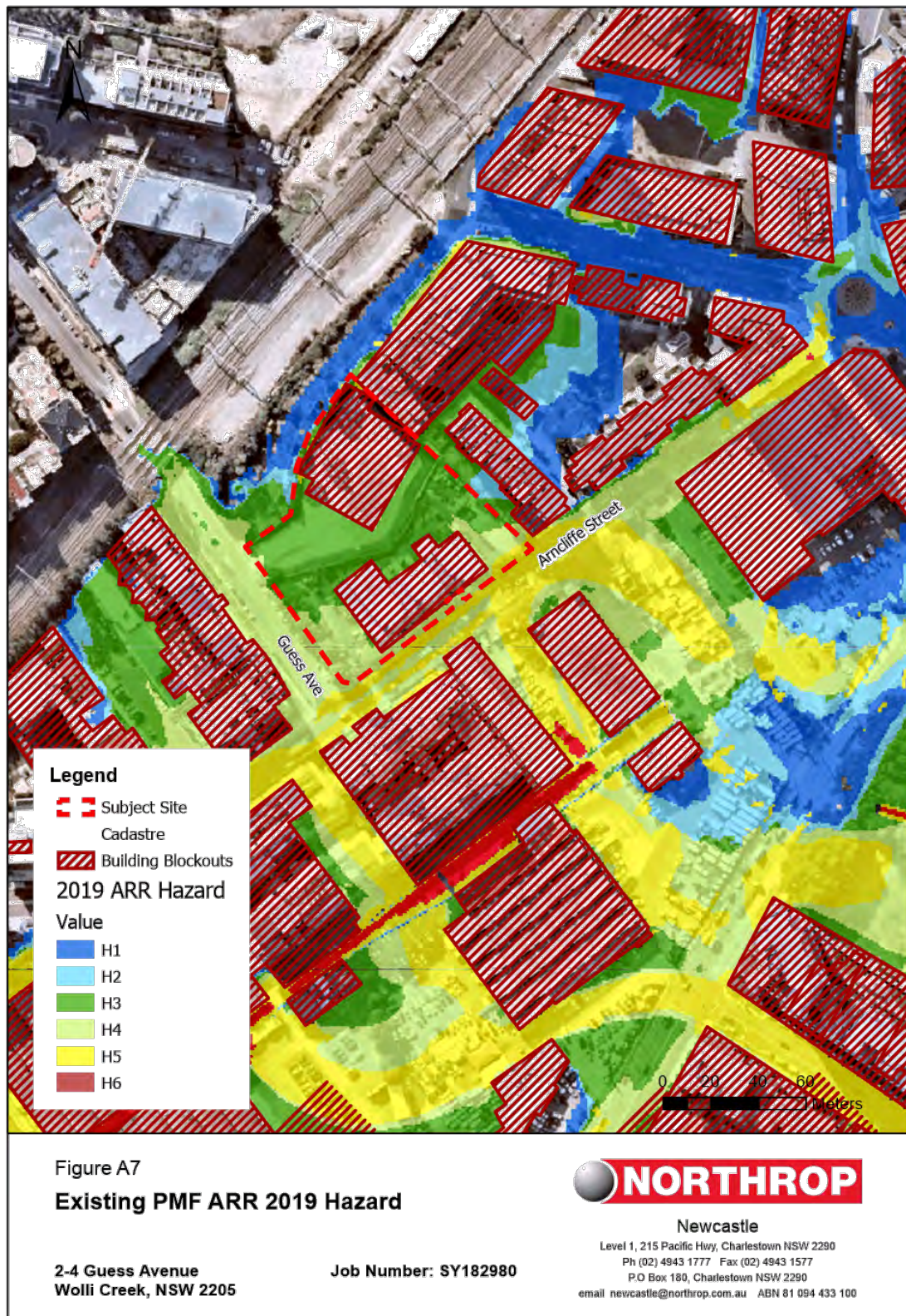
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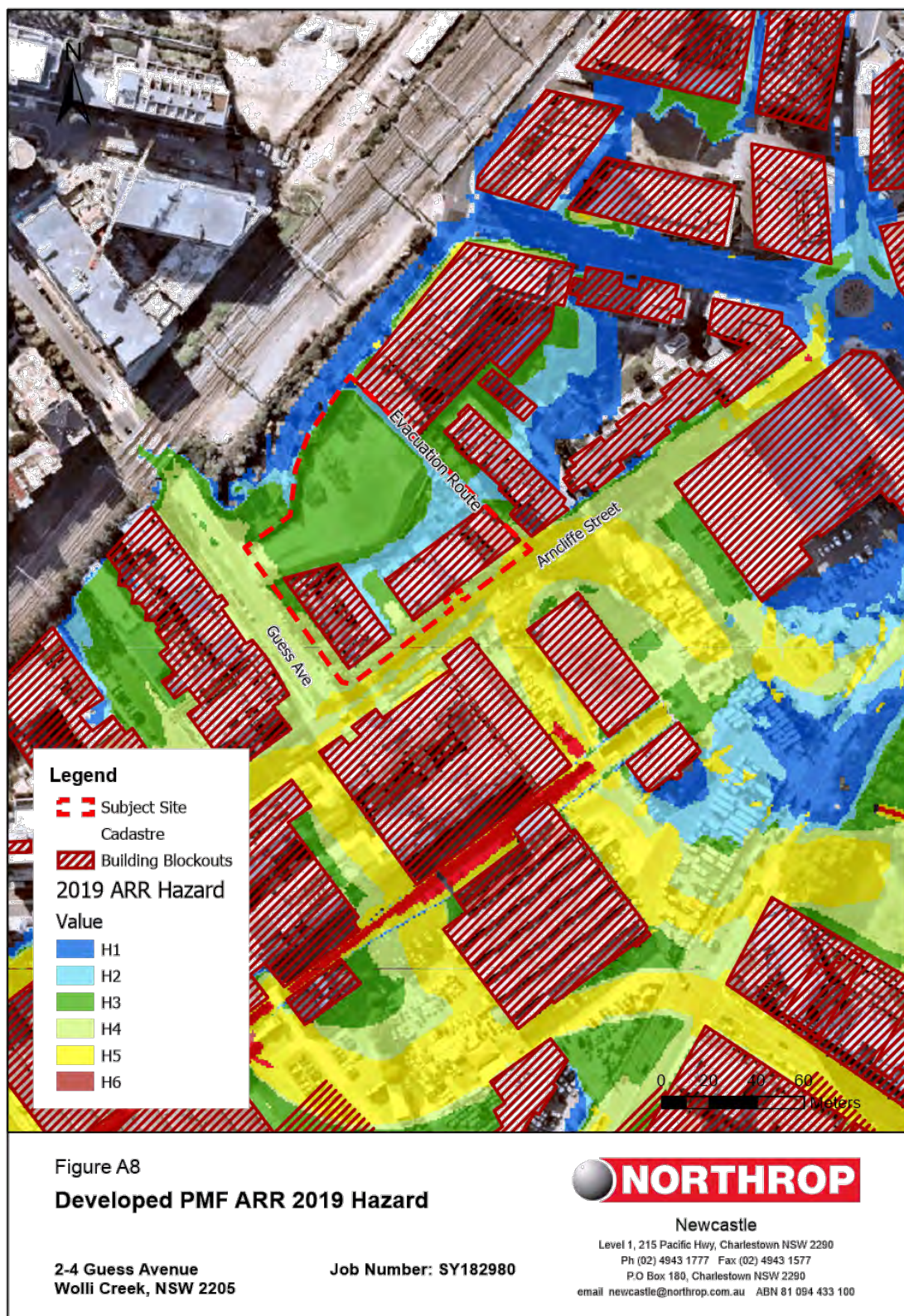
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Appendix D

Flood Advice

7 November 2018

Our Ref: F18/24
Contact: Pulak Saha



Mr Michael File
FPD Pty Ltd
PO Box H219 Australia Square
NSW 1215

Dear Mr File

Re: Flood Advice Letter for 2 & 4 Guess Avenue, Wolli Creek (Lot 101 DP 808944 and Lot 102 DP 808944)

When lodging a Development Application you must enclose a copy of this letter.

FLOOD NOTATION

Council has notated this property as being affected by the 1% Annual Exceedance Probability (AEP) flood. The 1% AEP flood means there is a 1% (i.e. a 1 in 100) chance of a flood of this height, or higher occurring in any one year.

This property lies in the Wolli Creek Development Area and Council's existing DCP determined that the 0.5% AEP flood is to be the design standard in this area.

WMAwater completed a flood study review in this catchment in 2017 and revised the 1% AEP flood level.

The revised 1% AEP flood level is similar to the previous 0.5% AEP flood level. In accordance with the findings of the current flood study and best available information, the 1% AEP flood level with a 500mm freeboard is considered applicable for this site as it will provide protection up to the level of the 0.5% flood level which was set as flood planning level in part 7.1 of Rockdale DCP 2011.

FLOOD STUDY

The Council Flood Study applicable to the property is:

Bonnie Doon, Eve Street, Cahill Park Pipe and Overland 2D Flood Study by WMA Water, 2017

FLOOD LEVELS

1% AEP Flood level:
2.64m AHD

Probable Maximum Flood (PMF) Level:
3.65m AHD

Eastgardens Customer Service Centre
Westfield Eastgardens
152 Bunnerong Road
Eastgardens NSW 2036, Australia
ABN 80 690 785 443 Branch 004

Rockdale Customer Service Centre
444-446 Princes Highway
Rockdale NSW 2216, Australia
ABN 80 690 785 443 Branch 003
DX 25308 Rockdale

Phone 1300 581 299
T (02) 9562 1666 F 9562 1777
E council@bayside.nsw.gov.au
W www.bayside.nsw.gov.au

Postal address: PO Box 21, Rockdale NSW 2216



Telephone Interpreter Services 131 450

Телефонный переводчик

خدمة الترجمة الهاتفية

電話傳譯服務

Служба за преводање по телефон

FLOOD RISK EXPOSURE	The Flood Risk Exposure of these sites has been assessed as Overland Flooding: Flood Fringe and Flood Storage: Low Hazard
FLOOD COMMENTARY	• Refer to figure 1 for flood extent map. • No accurate information is recorded regarding the impact of tsunamis in the Bayside Local Government area.
FLOOD PLANNING LEVEL (FPL)	The Flood Planning Level (FPL) is a height used to set floor levels for property development in flood prone areas. It is generally defined as the 1% AEP flood level plus an appropriate freeboard. For the design of new developments on these lands the minimum habitable floor level is: 3.14m AHD The minimum level, for storage shed floor, patio, pool coping, deck, carport and/or garage floor is: 1% AEP Flood level (no freeboard is required) • Basements and below ground garages are to be physically protected to the minimum habitable floor level. All electrical connections, air conditioning units and external power points are to be set above the minimum habitable floor level. As noted these floor levels are minimums, floor levels higher than these are allowable subject to normal planning rules. In order to relate these levels to your property you will need to obtain a survey to determine the ground level to AHD at the site.
OVERLAND FLOW	Any new development is not to increase the water level or hazard on adjoining properties. Opportunities should be investigated to design a development that is clear of the overland floodway and acts to reduce the impacts of these flows, possibly by removing inappropriate travel paths and/or reducing the hazard. Where a new development may impact on flood behaviour a civil/hydraulic engineer is to be engaged to assess the impacts of the overland flows before and after development using a hydraulic model. A TUFLOW/DRAINS model has been created by WMAwater for Bayside Council reflecting catchment conditions in 2017. The model will be made available to a nominated Consulting Engineer subject to entering a Model and Data Licence Agreement and payment of the required fee as listed in Council's fees and charges — Flood studies/ GIS drainage.
FLOW THROUGH FENCING	Flow through open form fencing (louvres or pool fencing) is required for all new fencing up to 1% AEP flood level to allow flood water flow through.
DEPTH OF WATER ON	Average depth of water at the invert of road gutter along Arncliffe Street property frontage is 1.1m and average depth of water at the invert of road

**ROAD
FRONTAGE**

gutter along Guess Avenue property frontage is 0.5m.

Opportunities are being investigated to improve the road drainage system to reduce flooding in the vicinity, however this drainage network will only mitigate the more regular smaller floods.

To avoid the area subject to flooding it is recommended driveway access for a new development be via Guess Avenue towards Mt Olympus Drive or from Mt Olympus Drive.

**FLOOD
RELATED
DEVELOPMENT
CONTROLS**

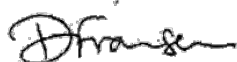
The following additional flood related development controls apply:

1. Any portion of the building or structure lower than the applicable flood planning level (FPL) shall be built from flood compatible materials to be specified by a Structural Engineer.
2. All services associated with the development shall be flood proofed to the habitable floor level.
3. Filling on this land may impact on flood storage and flood behaviour and may increase the hazard on adjoining properties. A qualified civil/hydraulic engineer is to be engaged to assess the impacts of these overland flows before and after development using Manning's Equation or a hydraulic model.
4. A suitably qualified engineer is to certify that the structure can withstand the forces of floodwater, debris and buoyancy in a 1% AEP flood event.
5. A Flood Risk Management Plan is required to be lodged with the DA which will detail whether evacuation procedures are required and if so how they will be initiated, warning signs and preservation of flood awareness as owners and/or occupants change through time. An example is attached.

Council considers that this is the best information currently available on flooding in the area, but Council cannot comment on the accuracy of the result.

Should you require any further information, please contact Council's Strategic Floodplain Engineer, Pulak Saha on 9562 1652.

Yours faithfully



Debbie Fransen
COORDINATOR ASSET STRATEGY

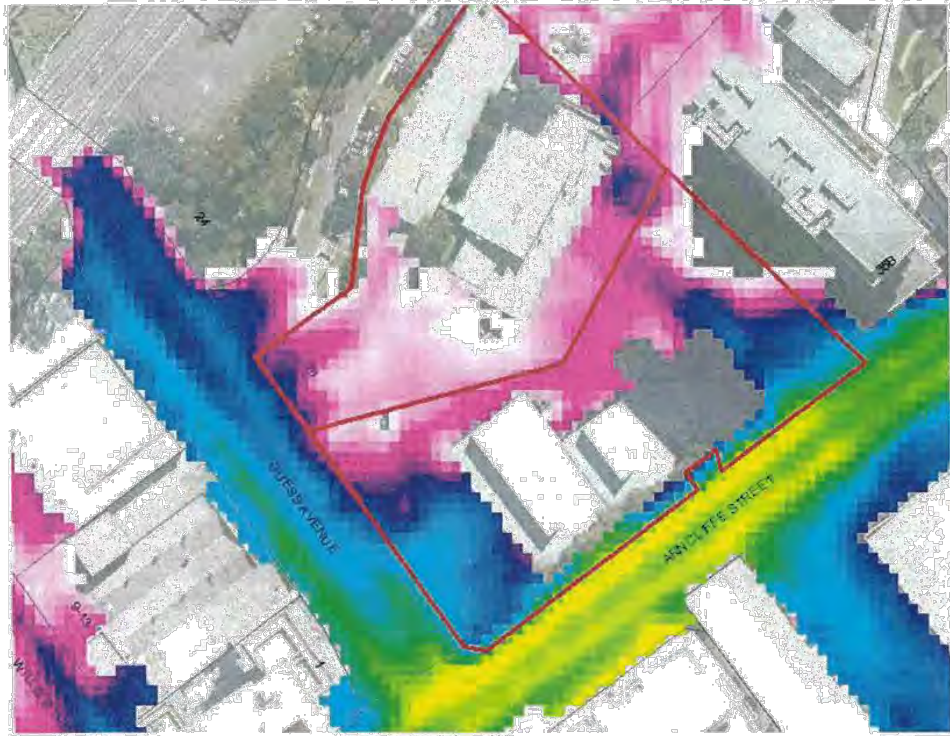


Figure 1: 1% AEP flood extent map (yellow indicates greater depth of flood water and pale pink indicates shallower depth)

FLOOD MANAGEMENT PLAN FOR XXXXXXXXXXXXXXX**Background**

Council has advised that this property is subject to flooding in a 1% AEP (1 in 100 year AEP) storm event. The Probable Maximum Flood (PMF) is the highest flood level that is ever likely to occur, however it is extremely rare.

Council has no information regarding Tsunami in Bayside Local Government.

Relevant levels are: *Complete as appropriate for your property*

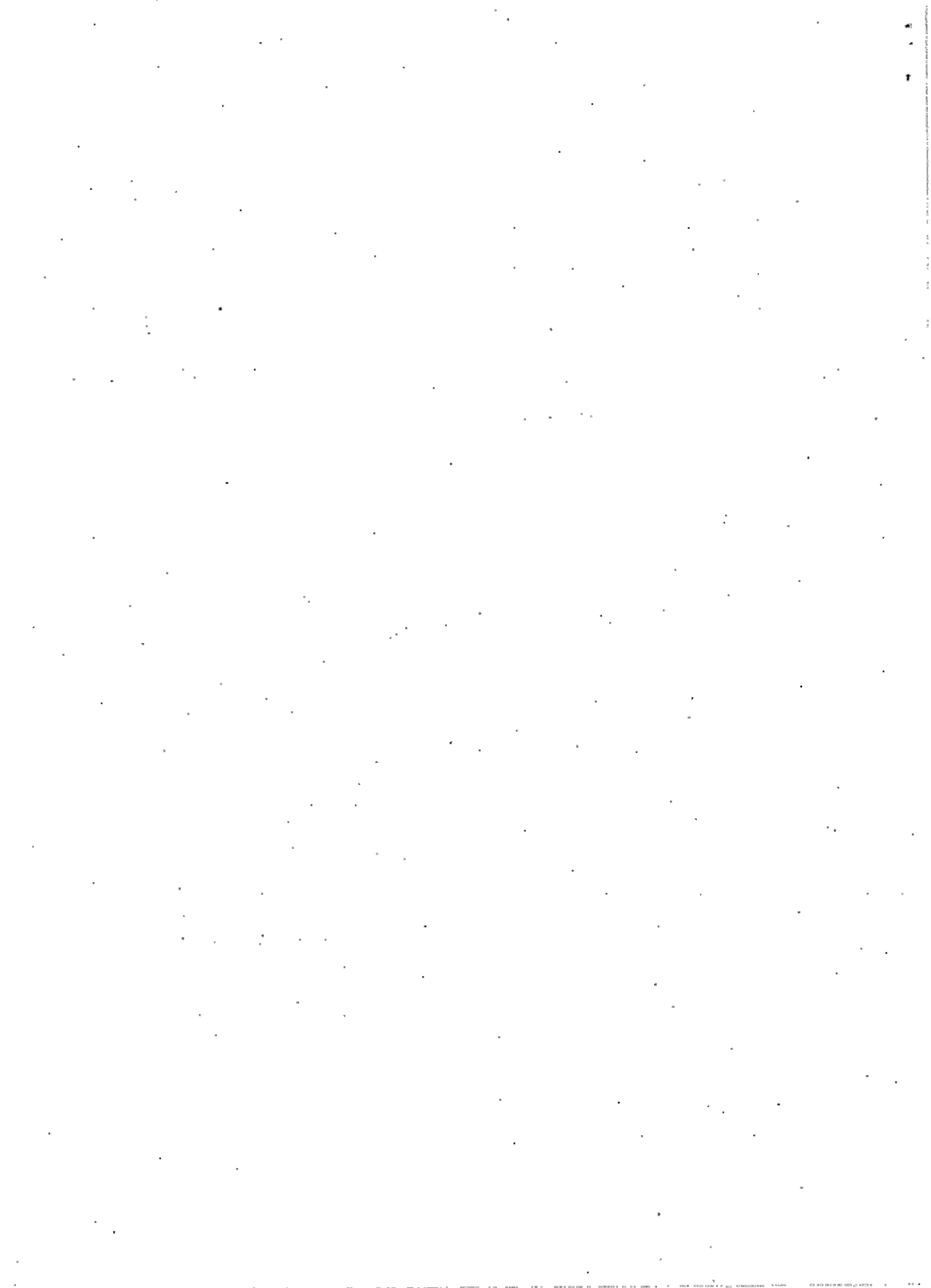
1% AEP Flood Level =	m Australian Height Datum (AHD)
Probable Maximum Flood =	m AHD
Garage Floor Level =	m AHD
Driveway Crest Level =	m AHD (below ground garages only)
Habitable Floor Level =	m AHD
Second Floor Level =	m AHD
Front Boundary Level =	m AHD
Lowest Ground Level =	m AHD at

The above levels give an indication of how the various floods will impact this property and what level of protection is provided. Habitable living areas are designed to be a minimum of 0.5 m above the 1% AEP Flood Level and staying within the home will provide protection for a wide range of floods.

Procedure

1. Floods in Bayside Local Government are considered as "flash floods" and no warning system is available. Storms leading to major flooding are typically 2 hours long, however shorter storms as little as a 30 minutes long can produce significant flooding. Once the storm passes floodwaters usually disappear rapidly.
2. During floods many local and major streets and roads will be cut by floodwaters.
Traveling through floodwaters on foot, or in a vehicle can be very dangerous as the water may be polluted, obstructions can be hidden under the floodwaters, or you could be swept away. Council recommends staying within the home as much as practical as this is the safest option. If you need to leave the home do so early in the flood event, before the flood level reaches *(the trigger location for your property)*
3. Develop your own family flood plan and be prepared if flooding should occur while the kids are coming home from school or when you are returning from work. Talk to the Council to determine the safer travel routes that are less likely to be cut by floodwaters.
4. For below ground garages do not attempt to save the car if floodwaters start to enter the garage, it is too dangerous as water levels will rise rapidly and you could be trapped.
5. As the flood level approaches the garage floor level (but only if safe to do so) relocate any items that may be damaged by water, or poisons, or wastes to as high a level as possible.
6. As the flood level approaches the habitable floor level:
 - i) gather medicines, special requirements for babies or the elderly, mobile phones, first aid kit, special papers and any valuables into one location,
 - ii) put on strong shoes, raise any items within the home that may be damaged by water (e.g. photo albums) to as high a level as possible, with electrical items on top. Turn off and disconnect any large electrical items such as a TV that cannot be raised.
 - iii) place wet towels across the bottom and lower sides of external doors to slow down the entry of water through the door.
7. In the very rare event that floodwaters may enter the home collect items from 6.i) above and move to an upper level if possible, or if in a single level dwelling provide a chair in the kitchen to enable access to the kitchen bench preferably adjacent to the window. Ensure window is not locked or key readily available. Do not evacuate the home unless instructed to do so by the SES or the Police. Remember floodwaters are much deeper and flow much faster outside.
8. In the case of a medical emergency ring 000 as normal, but explain about the flooding.

9. A laminated copy of this flood plan should be permanently attached (glued) on an inside cupboard door in the kitchen and laundry and to the inside of the electrical meter box.
10. This flood management plan should be reviewed every 5 years, particularly with the potential effects of Climate Change with sea level rise and increased rainfall intensities.



2-4 Guess Avenue Wolli Creek

Planning Proposal Traffic Impact Assessment



Bayside Council

26 July 2019

Gold Coast

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Document Issue History

Report File Name	Prepared	Reviewed	Issued	Date	Issued to
P3976.001R 2_4 Guess Avenue Wollie Creek PP TIA	S. Seeney	L. Johnston	L. Johnston	12/07/2019	Anna Johnston File Planning and Development anna.johnston@fileplanning.com
P3976.002R 2_4 Guess Avenue Wollie Creek PP TIA	S. Seeney	L. Johnston	L. Johnston	26/07/2019	Anna Johnston File Planning and Development anna.johnston@fileplanning.com

**2-4 Guess Avenue Wollie Creek: Planning Proposal Traffic Impact****Assessment**Project: **P3976**Version: **002**

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1. INTRODUCTION

1.1 Background

Bitzios Consulting has been commissioned by Bayside Council (Council) to prepare a traffic impact assessment (TIA) for the proposed rezoning of 2-4 Guess Avenue Wolli Creek. The subject site location is shown in Figure 1.1.



Source: Nearmap

Figure 1.1: Subject Site Location

1.2 Scope

The scope of this assessment consists of the following:

- Review key policy documents relevant to the proposal including the Greater Sydney Region Plan, Eastern City District Plan, the Bayside West Precincts 2036 Plan, and any relevant local strategies
- Review the existing and future planned local and regional traffic and transport context for all modes of transport
- Identify any proposed transport infrastructure upgrades in the wider areas.
- Identify how the site's trip generation and traffic impact on all modes of transport, will change as a result of the proposal
- Consider the capacity of the existing and planned transport network to accommodate growth proposed within the site

- Identify suitable car parking rates to apply to the site for all modes of transport including resident and employee vehicles, car share vehicles, and bicycles
- Identify any access requirements to the site, including for servicing vehicles, personal vehicles, pedestrians and cyclists.



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2. RELEVANT POLICIES AND GUIDELINES

2.1 Policies

A review of the key policy documents relevant to the proposal has been undertaken in relation to traffic and transport considerations for the Wolli Creek area. A summary of each document is as follows:

2.1.1 Greater Sydney Region Plan

The Greater Sydney Region Plan set a 40-year vision to inform district and local plans in relation to economic, social and environment matters. This provides the planning framework for the five districts which make up the region and has been prepared concurrently with Future Transport 2056 and State Infrastructure Strategy 2018 – 2038.

The key transport priorities set in this plan include having a city that is supported by infrastructure especially during times of growth. Based on housing and employment growth, the plan can assess the nature, level and timing of infrastructure that is required. Emphasis on growth and its correlation to infrastructure demands guides the direction and actions for the district and local plans.

2.1.2 Eastern City District Plan

The Eastern City District covers the Bayside, Burwood, City of Canada Bay, City of Sydney, Inner West, Randwick, Strathfield, Waverley and Woollahra local government areas and aims to manage economic, social and environment matters relating to growth in the area. This plan works in conjunction with the 40-year vision for the Greater Sydney Region Plan and provides planning priorities and actions at a district level.

The major transport investments are managed under this plan with the aim of creating a liveable area that is accessible, productive and sustainable. This plan endorses and guides the direction of local government plans and actions.

2.1.3 Bayside West Precincts 2036 Plan

The Bayside West Precincts 2036 Plan includes Arncliffe, Banksia and Cooks Cove which are located within the western part of the Bayside local government area. This plan set out the strategic land use and infrastructure planning to guide the future transformation of these precincts including changes to planning controls. Enabling amendments to the Rockdale Local Environmental Plan (LEP) 2011, rezoning of the Arncliffe and Banksia Precincts has been implemented.

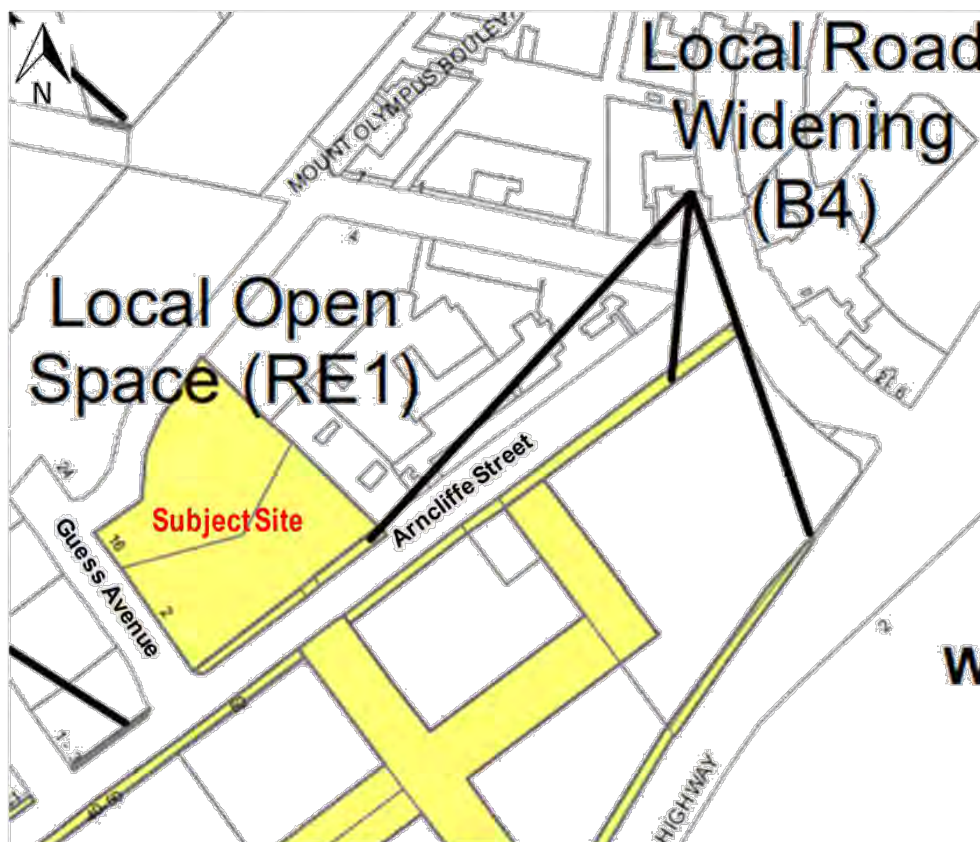
With the aim of intensifying commercial and residential development around the transport hubs of Arncliffe and Banksia, transit-oriented development will be achieved. As part of the plan, current projects include the upgrade to the Banksia and Arncliffe train stations. Additionally, increased capacity and services to the rail infrastructure will support the land use intensification of the area.

2.2 Previous Wolli Creek Area Studies

A search of previous transport studies undertaken in the Wolli Creek area has been undertaken in relation to the proposal. Concurrent to the preparation of the planning proposal, Council is also preparing an amended open space strategy for the Wolli Creek area, with aims of transforming the precinct from predominately industrial into a high-quality urban environment.

Additionally, the Rockdale LEP identifies that land reservations for the purposes of future road widening exist on either side of Arncliffe Street fronting the subject site. Figure 2.1 details the land reservations in proximity to the site.





Source: Rockdale LEP 2011

Figure 2.1: Land Reservation Acquisition Map

2.2.1 Wolli Creek One-Way Circuit

To improve traffic flow Council has proposed the implementation of a one-way system to reduce vehicles bypassing the Princes Highway and using Arnccliffe Street and Magdalene Terrace as a short-cut. Two (2) options were recommended and include converting sections of Arnccliffe Street, Guess Avenue and Mount Olympus Boulevard to one-way traffic or alternatively including Magdalene Terrace as well. The designs will also improve the ability for pedestrians and cyclist to use the Guess Avenue rail underpass when travelling between the Bonar Street Precinct and Wolli Creek.

The timing of the proposed upgrades is yet to be confirmed however Council have adopted Option 2 as of March 2019 where sections of Arnccliffe Street, Guess Avenue, Mount Olympus Boulevard and Magdalene Terrace will be one-way. Figure 2.2 details the concept design of the one-way circuit surrounding the subject site.

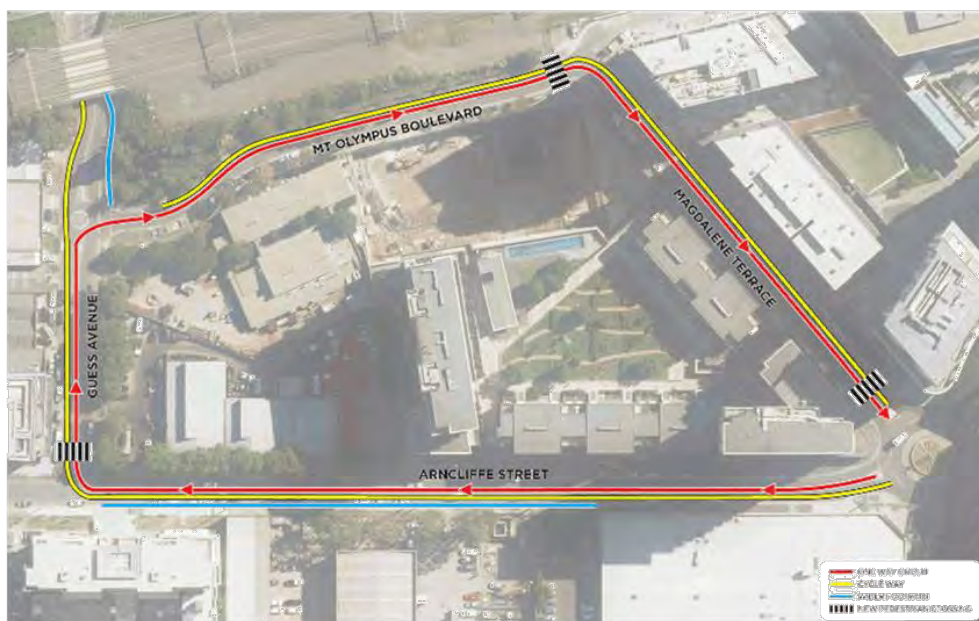


Figure 2.2: Option 2 – One-way Circuit

3. EXISTING CONDITIONS

Lot 101 (DP808944) is currently occupied by light industrial land use and has access from Arncliffe Street and Guess Avenue. Lot 102 (DP808944) is currently vacant with access provided from Guess Avenue.

There is on-street parking available along the site frontage on Guess Avenue as well as the southern sides of Arncliffe Street and Mt Olympus Boulevard. However, sign-posted no parking zones are located adjacent to these provisions on the northern side of Arncliffe Street, the western side of Guess Avenue and the northern side of Mt Olympus Boulevard.



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4. PROPOSED DEVELOPMENT

It is understood that Council reached a decision in December 2017 that it no longer requires the subject site for the purpose of public recreation. As such, Council is seeking to submit a Planning Proposal to amend the Rockdale LEP to rezone part of the subject site, from RE1 – Public Recreation to B4 – Mixed Use and to remove the site from the Land Reservation Acquisition Map.

During the preliminary planning stages there were four (4) development options outlined in the Urban Design Study: Preliminary Option Summary prepared by SJB Architects dated 18 July 2019. Based on the options analysis, Option 2 is being progressed and includes 144 residential units and a café consisting of 115m² GFA.



Source: SJB Architects

Figure 4.1: Option 2 – Northern Parcel Acquired for Open Space

5. PARKING ASSESSMENT

5.1 Car Parking Requirement

In accordance with the New South Wales Department of Planning and Environment Apartment Design Guideline (ADG) Section 3 the lesser of the car parking requirements set out by either the *RMS Guide to Traffic Generating Developments* (2002) or Rockdale City (Bayside) Council's *Development Control Plan (DCP) Part 4 – General Principles for Development* (2011) will be taken as the site is within 800m of a railway station.

While it is noted that previous developments adopted the metropolitan sub-regional centre rate from the RMS guide, the CBD rate is considered more appropriate for the proposed development, due to its proximity to public transport. The car parking requirements are detailed in Table 5.1.

Table 5.1: Car Parking Requirements

Land Use	Type	Quantity	Source	Car Parking Rate	Parking Required
Residential Units	1-bedroom unit	58	RMS	0.4 spaces per unit	23
	2-bedroom unit	58	RMS	0.7 spaces per unit	40
	3-bedroom unit	28	RMS	1.2 spaces per unit	35
	Visitor	144	RMS	1 space per 7 units	21
Café	Customer	115m ² GFA	DCP	1 space per 40m ² GFA	3
Total Resident Car Parks					98
Total Visitor / Customer Car Parks					24

The proposed development is required to provide 98 residential car parking spaces and 24 visitor / customer car parks. In accordance with Council's DCP, one (1) visitor car space is required to be equipped with car wash facilities.

In accordance with Council's DCP Section 4.6 Car Parking, Access and Movement, a 20% reduction can be applied to the café customer car parking spaces, as it is located within the Wolli Creek Town Centre. As such, it is considered appropriate to reduce the café car parking provision by one (1) space on the basis that the café land use is considered ancillary and to attract walk-up only trade (i.e. is expected to be accessed primarily by residents and their visitors).

5.1.1 Car Share

As a measure to address the objectives of Section 4.6 of Council's DCP, the provision of off-street and/or on-street car share parking spaces should be considered. Council's DCP encourages the implementation of design initiatives (e.g. dedicated communal or shared car spaces) which promote the up-take of sustainable transport. However, rates and controls for the provision of communal/shared car spaces are not provided within the DCP.

In-lieu of rates and controls within Council's DCP, the Comprehensive DCP (2013) *Part B – General Controls Section B7 Transport, Traffic, parking and access* of the neighbouring Randwick City Council was reviewed. While the Randwick DCP not specify car share rates, it does however specify controls which are to be complied with. Relevant controls which should be adopted include:



- Car share spaces are to be provided in residential and/or commercial development where public transport accessibility is high
- Locate the car share space/s in a convenient, accessible, secure area
- Ensure good visibility, 24-hour access and proximity to the street. If in a basement it must be near exit/entry areas and not difficult to find or be out of sight
- Identify (sign and road/pavement markings) the car share space for use only by car share vehicles in accordance with RMS standards
- The establishment and operation of a car share scheme must occur soon after completion or occupation of the development
- Parking spaces for car share schemes located on private property are to be retained as common property by the Owners Corporation of the site.

The provision of car share spaces to allow for a relaxation in resident car spaces should be considered as part of any future development application/s over the subject site. Determining an appropriate number of proposed car share spaces and the corresponding relaxation applied to resident car parking provisions should consider the following at such a time:

- Existing provisions of off-street and on-street car share spaces surrounding the subject site
- Current guidelines, strategies and policies (e.g. Council's DCP, RMS Guidelines for on-street fixed space car share parking).

5.2 Bicycle Parking Requirement

Council's DCP *Part 4 – General Principles for Development* (2011) was used to source the bicycle and motorcycle parking rates for the proposed development. The bicycle and motorcycle parking requirements are detailed in Table 5.2 and Table 5.3.

Table 5.2: Bicycle Parking Requirement and Provision

Land Use	Type	Quantity	Car Parking Rate	Parking Required
Residential Units	Residential	144 units	1 space per 10 dwellings	15
Café	Customer	115m ² GFA	1 space per 200m ² GFA	1
Total Resident Bicycle Parks				15
Total Visitor Bicycle Parks				1

Table 5.2 shows the development is required to provide 15 residential bicycle parks and one (1) customer bicycle spaces.

Table 5.3: Motorcycle Parking Requirement and Provision

Land Use	Type	Quantity	Car Parking Rate	Parking Required
Residential Units	Residential	144 units	1 space per 15 dwellings	10
Café	Customer	115m ² GFA	1 space per 20 car spaces	1
Total Resident Motorcycle Parks				10
Total Visitor Motorcycle Parks				1

Table 5.3 shows the development is required to provide 10 residential motorcycle parks and one (1) customer motorcycle space.



5.3 Parking Geometric Layout Assessment

The on-site car parking layout is required to comply with Council's DCP and Australian Standards AS2890.1. The assessment requirements are documented in Table 5.4.



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Table 5.4: Geometric Layout Assessment

Design Element	Required
Residential car parking space (User Class 1A)	2.4m wide by 5.4m long
Residential visitor car parking space (User Class 2)	2.5m wide by 5.4m long
Retail staff car parking space (User Class 1A)	2.4m wide by 5.4m long
Retail visitor car parking space (User Class 3A)	2.6m wide by 5.4m long
Persons with disability space	2.4m wide by 5.4m long
Adjacent shared area	2.4m wide by 5.4m long
Motorcycle space	1.2m wide by 2.5m long
Service vehicle bay (SRV)	3.5m wide by 6.4m long
Service vehicle bay (MRV)	3.5m wide by 8.8m long
Clearance adjacent to vertical obstructions	0.3m (i.e. walls, fences)
Column intrusions	As per Figure 5.2 of AS2890.1
Car parking aisle width	Minimum 5.8m (6.6m for User Class 3A)
Blind Aisle Extension	1m extension for the full width of the parking aisle
One-way basement ramp width	3.6m wide wall-to-wall (including 0.3m wide kerbing per side)
Two-way basement ramp width	6.1m wide wall-to-wall (including 0.3m wide kerbing per side)
Grades (driveway)	Maximum 1:20 for the first 6m into the site
Grades (car parking modules)	1:20 measured parallel to the angle of the space or maximum 1:16 measured in any other direction
Gradient (car ramps - private car park)	Max. 1:4 (with transitions)
Gradient (car ramps – private car park)	Maximum 1:4 with transitions
Gradient (car ramp transitions)	Maximum 1:8 (summit) and 1:6:7 (sag) at 2m length each
Gradient (MRV)	Max. 1:6.5 (roadway/ramp) and max. 1:16 in 7m of travel (rate of change of grade)
Height clearance (car parking)	Minimum 2.2 clearance to overhead structures and services
Height clearance (MRV)	Min. 4.5m clearance to overhead structure and services
Internal roadways (one-way)	Min. 3m wide plus 0.3m clearance per side bounded by a wall
Internal roadways (two-way)	Min. 5.5m wide plus 0.3m clearance per side bounded by a wall
Bicycle parking (horizontal)	0.5m wide by 1.8m long with an aisle width of 1.5m
Bicycle parking (vertical hanging)	0.5m wide (staggered handlebars) by 1.2m long with an aisle width of 1.5m. Min. vertical clearance 2.15m

Note: The specified height and grade for SRVs are only relevant to sections the SRV services.

All intersections within the on-site car parking layout should allow for a B99 design vehicle to pass a B85 design vehicle without conflicting with one another or any adjacent vertical obstructions greater than 100mm in height.



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6. ACCESS AND SERVICING ASSESSMENT

6.1 Servicing and Refuse Collection

The required servicing bays are shown in Table 6.1 in accordance with Rockdale City (Bayside) Council's Technical Specification for *Traffic, Parking and Access* (2011).

Table 6.1: Service Vehicle Requirement

Land Use	Servicing Bays Required			
	VAN	SRV	MRV	LRV
144 Residential Units (100-149)		2	1	N/A
115m ² GFA Café (0-199)	1			N/A
Total Required	1	2	1	N/A

It is anticipated that the development will only require a maximum one (1) servicing bay for each design vehicle. It is recommended that refuse collection occur on-site and where possible bulk bins are used. If achievable, the design should accommodate for a refuse collection vehicle (RCV) to enter and exit in a forward gear. As a minimum, it is recommended that provision (including operational height clearances) is made for an RCV to store wholly within the site while undertaking refuse collection.

6.2 Access Assessment

6.2.1 Vehicular Access

It is noted Council's DCP *Part 7.1 – General Principles for Development* (2011) *Figure 7.1.5* illustrates that vehicle access to/from the subject site via Guess Avenue and sections of Arncliffe Street is denied. Option 2 proposes a single vehicular access on Arncliffe Street, at a location which is supported by the DCP. However, it is recommended that the vehicular access is provided on the lower order road (i.e. Guess Avenue) to reduce vehicle conflicts when entering and exiting the site.

Furthermore, upon introduction of the one-way circuit, the vehicular access will be restricted to right-in / right-out movements only. Given the arrangement of the one-way circuit, the location of the vehicular access on Guess Avenue would allow for more direct access (i.e. less re-routing) than that of a vehicular access on Arncliffe Street.

The details of the proposed access are summarised in Table 6.2.

Table 6.2: Vehicular Access Assessment

Design Element	Details
Access Facility Category	Type 2 as per AS2890.1
Crossover Form	Shall be designed in accordance with IPWEA Standard Drawing RS-051 – Type B2 (6-9m at the property boundary with splays at 1.5m wide by 1.8m long) as per Council's Driveway Code.
Pedestrian Sight Line Triangles	A pedestrian sight line triangle shall be provided on the egress side of the driveway at 2m along the property boundary and 2.5m into the site as per Figure 3.3 in AS2890.1. The area within the triangle is clear of all vertical obstructions to visibility and should be notated on the development plans.

6.2.2 Sight Distance

As per AS2890.1 a minimum stopping sight distance of 45m for a frontage road speed of 50km/h is required.

In the case the vehicular access is provided on Guess Avenue, it is anticipated that vehicles entering the street from Arncliffe Street will be travelling a maximum 40km/h, as they are required to reduce speed upon performing turn manoeuvres. As such, AS2890.1 requires any vehicular access on Guess Avenue to be located a minimum 35m separation from Arncliffe Street.

6.2.3 Internal Vehicle Queuing Assessment

AS2890.1 requires on-site queuing to ensure vehicle queues do not extend beyond the property boundary. As per Table 3.3 in AS2890.1, the required internal queue length for the proposed development is 18m for the required 122 car parking spaces.



7. TRAFFIC ASSESSMENT

7.1 Trip Generation

The traffic generation rates for the following land uses have been sourced from Roads and Maritime Services (RMS) *Guide to Traffic Generating Developments (2002)*:

- café (assessed as a "restaurant").

It has been conservatively assumed that the restaurant PM peak rate can be adopted for the AM peak. The residential apartments traffic generation rate has been sourced from RMS's *Guide to Traffic Generating Developments Technical Direction (2013)* and assessed as 'high density residential flat dwellings'. Due to the site's proximity to public transport the Sydney averages have been adopted for the 'high density residential flat dwellings'. The resultant traffic generation is provided in Table 7.1.

Table 7.1: Peak Hour Development Trip Generation

Land Use	Quantity	AM Peak Trip Generation Rate	PM Peak Trip Generation Rate	AM Peak Trips (vph)	PM Peak Trips (vph)
Residential Units	258 bedrooms	0.09 trips per bedroom	0.07 trips per bedroom	23	18
Restaurant	115m ² GFA	5 trips per 100m ² GFA	5 trips per 100m ² GFA	6	6
Total Development Traffic				29	24

As per Table 7.1 the development is expected to generate in the order of 29 and 24 additional trips in the AM and PM peak periods respectively.

7.2 Trip Distribution

Typical IN:OUT splits for traffic directionality were applied for all land uses analysed (i.e. both existing and proposed). An IN:OUT split of 20%:80% in the AM peak, and 70%:30% in the PM peak has been applied for all residential components, which is consistent with a typical residential time-of-day trip profile. An IN:OUT split of 50%:50% in the AM peak and PM peak has been applied for the café, which is consistent with the short-stay nature of retail traffic. Table 7.2 summarises the development traffic directionality splits for the proposed development based on the net increase in peak hour trips determined in Table 7.1.

Table 7.2: Development Traffic Splits

Land Use	AM Trip Split		PM Trip Split		AM Trips (vph)		PM Trips (vph)	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Residential Units	20%	80%	70%	30%	5	19	13	6
Restaurant	50%	50%	50%	50%	3	3	3	3
Total Development Traffic					8	22	16	9

As per Table 7.2, the development is expected to generate 8 inbound and 22 outbound trips in the AM peak, and 16 inbound and 9 outbound trips in the PM peak.

7.3 Traffic Modelling

Significant traffic modelling has been undertaken within Wolli Creek to ascertain the performance of the road network in 2031 and determine the effectiveness of potential upgrade options to the local road network. A microsimulation model of Wolli Creek, Turrella and Arncliffe was undertaken in 2012 on behalf of Council using Paramics v6.9.0. The Paramics model included in detail the section of the local road network around the subject site. To determine the impacts of the development on the local road network, the 2031 future year Paramics Model was used to determine 'base' and 'with development' traffic conditions.

Bayside Council have recently undertaken community consultation for Option 2 of the proposed one-way circuit within Wolli Creek which involves converting sections of Arncliffe Street, Guess Avenue, Mount Olympus Drive and Magdalene Terrace to one-way traffic. This option was derived from the original Paramics modelling undertaken by Bitzios Consulting on behalf of Council in 2012. This model scenario was altered to ensure that the modelled road network reflected the Wolli Creek Option 2 One-Way Circuit Conceptual Road Works Drawing (Drawing No. SKC26).

Under the original Paramics model, the area bounded by Guess Avenue, Arncliffe Street and Magdalene Terrace was considered a single zone. For the purposes of this assessment, this Zone was divided into the constructed eastern area and the subject site (western area). Access driveways and zone connectors were modelled at existing and proposed crossover locations. Traffic was inputted into the 'with development' model through use of the abovementioned trip generation and trip distribution (Table 7.1 and Table 7.2).

The modelled impacts of the proposed development on the intersections of Princes Highway / Brodie Spark Drive, Magdalene Terrace / Arncliffe Street and Guess Avenue / Mount Olympus Boulevard in the year 2031 under the one way circuit scenario is provided in Figure 7.1 overleaf. The Paramics modelling indicates that the proposed development has a negligible impact on the performance of the road network.



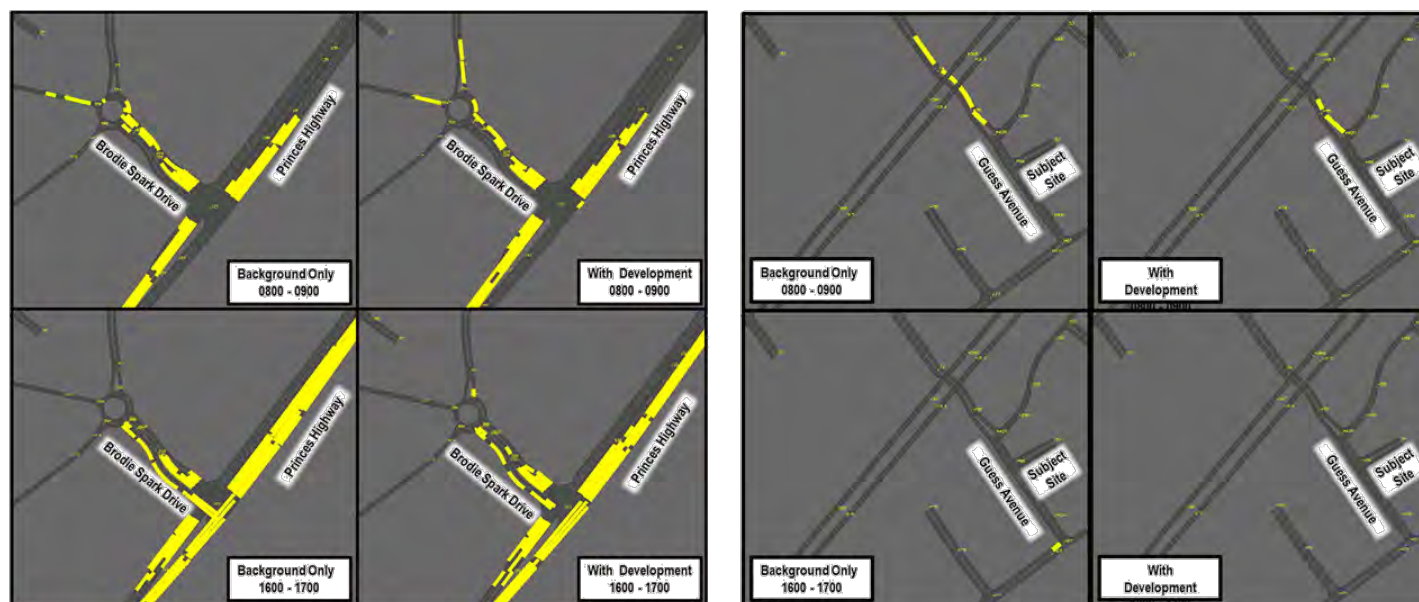


Figure 7.1: Paramics Modelling Results – Maximum Queue



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8. ALTERNATE TRANSPORT MODES

8.1 Public Transport

The Wolli Creek area is well serviced by public transport with trains and buses connecting the Sydney airport, Sydney city and surrounding suburbs. The proposed development is located between two (2) train stations including the Wolli Creek station to the north (approximately 350m walking distance) and the Arncliffe station to the south (approximately 1km walking distance).

The T4 train line runs adjacent to the proposed development and services the Wolli Creek station at a peak frequency of 3 minutes and the Arncliffe station every 10 minutes. The train connects Cronulla to Bondi Junction and is the key north – south line through the Wolli Creek area. The T8 train line services the Wolli Creek Station at a peak frequency of 6 minutes and connects Macarthur to the City via the Airport or Sydenham. This service is the key east – west line through the Wolli Creek Area.

Additionally, there are two (2) bus stops located on Princes Highway to the east of the proposed development within approximately 450m walking distance. Bus routes 422 (Kogarah to Central Pitt Street), N10 (Sutherland to City Town Hall) and N11 (Cronulla to City Town Hall) service these stops at a peak frequency of 30 minutes.

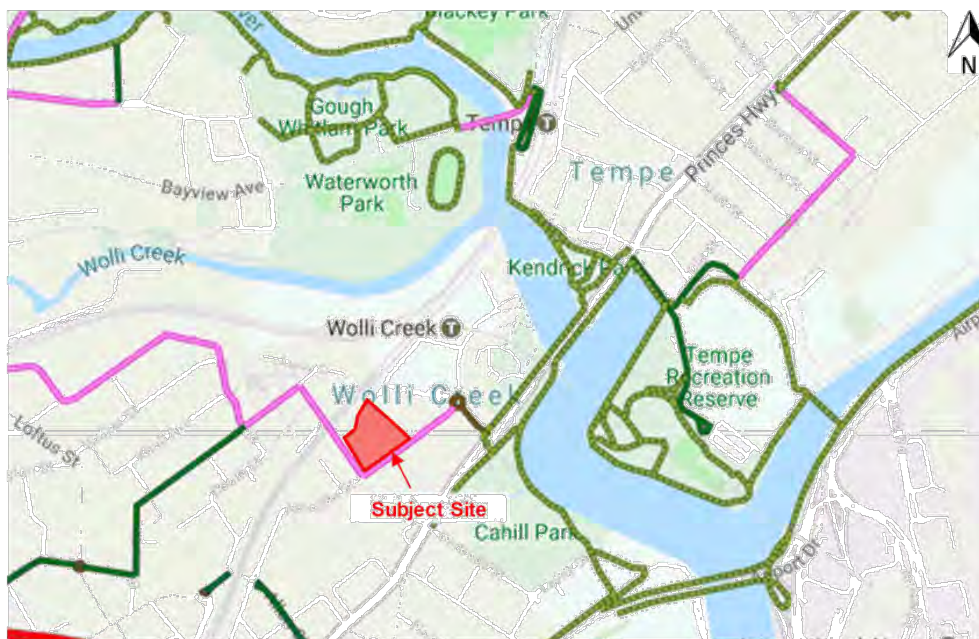
8.2 Active Transport

Existing pedestrian footpaths are present surrounding the site along Guess Avenue, Arncliffe Street, and Mount Olympus Boulevard. This provides connections to the greater Wolli Creek area including Brodie Spark Drive, Princes Highway and Forest Road. With the proposed development, other pedestrian desire lines have been identified where pedestrians would want to walk through the development to reach Arncliffe and continue on to Magdalene Terrace and surrounding streets. The existing pedestrian facilities and the potential desire lines are shown in Figure 8.1.



Figure 8.1: Existing Pedestrian Facilities and Potential Desire Lines

There are currently no dedicated cycle facilities present along the immediate road network surrounding the development however Guess Avenue and Arncliffe Street are identified as a cycle route by RMS. There is currently way-finding signage located at the Guess Avenue / Arncliffe Street intersection and connects to Bonar Street and Thompson Street to the east. This route is identified as having a moderately difficult on road environment for cyclists. Figure 8.2 details the cycle route in proximity to the subject site however it is noted that the cycle routes are currently under review by RMS and may not be accurate.



Source: SJB Architects

Figure 8.2: RMS Cycle Routes

With the future planned one-way circuit surrounding the subject site, an on-road cycle way will be implemented as part of the upgrade and will include Arncliffe Street, Guess Avenue, Mount Olympus Boulevard and Magdalene Terrace. This will provide greater accessibility to active transport users and the one-way arrangement will create a safer environment for cyclists and vehicles to interact.

9. CONCLUSION

The key findings of the traffic impact assessment for the proposed planning proposal located at 2–4 Guess Avenue, Wolli Creek are as follows:

- It is understood the proposed development is a planning proposal to amend the Rockdale LEP to rezone part of the subject site from Public Recreation to Mixed Use
- The proposed development consists of 144 residential units and a 115m² shop intended for a café
- The proposed development is required to provide 90 residential and 23 visitor car parking spaces
- The proposed development is required to provide 15 residential and 1 visitor bicycle parking spaces
- The proposed development is required to provide 10 residential and 1 visitor motorcycle parking spaces
- The proposed development should consider dedicated car share parking spaces in accordance with Randwick City Council's DCP (2013) *Part B – General Controls Section B7 Transport, Traffic, parking and access*
- The geometric car parking layout is required to comply with the requirements outlined in Council's DCP and the Australian Standards AS2890.1
- The proposed development is required to have a maximum one (1) servicing bay for an SRV, MRV and a van
- It is recommended that refuse collection occur on-site and where possible bulk bins are used. An RCV should store wholly within the site while undertaking refuse collection
- It is recommended that the proposed development provide vehicular access via Guess Avenue and with the introduction of the one-way circuit, the vehicular access will be restricted to right-in / right-out movements only
- The proposed development is required to have a minimum stopping sight distance of 45m for a frontage road speed of 50km/h
- Any vehicular access on Guess Avenue required to be a minimum 35m away from the Arncliffe Street / Guess Avenue intersection to achieve a minimum stopping sight distance
- The proposed development is required to have approximately 18m of queuing space for 122 car parking spaces
- The proposed development is expected to generate 29 trips in the AM peak hour and 24 trips in the PM peak hour
- The proposed development is well connected to public transport services including bus and train stations in close proximity
- The surrounding area has existing pedestrian footpaths that will connect to the subject site
- There are currently no dedicated on-road cycle facilities however with the implementation of the one-way circuit, on-road cycle lanes will be provided.

The site should be suitably designed to ensure that it can comply with Council's relevant codes and standards under the proposed re-zoning. Furthermore, the impact assessment identified no issues of significance that would preclude its approval.





Preliminary Height Assessment

Planning Proposal
2– 4 Guess Avenue,
Wolli Creek, NSW

Client

FPD Pty Ltd on behalf of Bayside Council

LB00276

Final Version 002
8 February 2019



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Version No.	Basis of Issue	Author	Date	Reviewers
001	Draft report for submission to Client	PWW	21 January 2019	CA
Final V1	Final Report	PWW	1 February 2019	
Final V2	Updated Final Report	PWW	8 February 2019	

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	Appendix B – Glossary of Terms and Abbreviations	

1 Introduction

FPD Pty Ltd on behalf of Bayside Council has tasked Landrum & Brown Worldwide (Australia) Pty Ltd to prepare a Preliminary Height Assessment (PHA) for a Planning Proposal to rezone a site at 2 - 4 Guess Avenue, Wolli Creek, NSW.

The assessment has considered the following points in the preparation of the PHA:

- Consideration of relevant Acts and Regulations applicable to developments in the vicinity of airports and air traffic routes. The major relevant documents include:
 - o The Airports Act 1996;
 - o Airports (Protection of Airspace) Regulations 1996; and
 - o CASR Part 139 Manual of Standards – Aerodromes.
- Analysis of Obstacle Limitation Surfaces (OLS);
- Analysis of Procedures for Air Navigation Services – Aircraft Operations (PANS OPS);
- Radar Terrain Clearance Charts (RTCC);
- Impacts on Navigation Aids, Communications and Airspace Surveillance facilities; and
- Aviation activity in the vicinity of the site, including VFR and helicopter operations.

1.1 The Site

The site is located approximately 2.8 km North West of Sydney Airport's Aerodrome Reference Point (ARP), 1.7 km west of the threshold for Runway 16R and 1.7 km North West of the threshold of Runway 07.

Whilst other airports in the Sydney area have PANS OPS surfaces overhead the site, they are at heights significantly above those of Sydney Airport and have not been considered in detail in this report as they will not be impacted by any planning proposal at Wolli Creek.

Figure 1 shows the site in relation to Sydney Airport.



Figure 1: Location in relation to Sydney Airport

2 Prescribed Airspace

2.1 Overview

Prescribed Airspace for an airport is the airspace above any facet of the Obstacle Limitation Surfaces (OLS), the Procedures for Air Navigation Services – Aircraft Operations (PANS OPS) surfaces for an airport, or the Radar Terrain Clearance Chart (RTCC) protection surfaces.

The OLS are conceptual surfaces associated with runways that are designed to protect aircraft operations from unrestricted obstacle growth.

The OLS comprises the following:

- outer horizontal surface (OHS);
- conical surface;
- inner horizontal surface (IHS);
- approach surface;
- inner approach surface;
- transitional surface;
- inner transitional surface;
- baulked landing surface; and
- take-off climb surface.

The PANS OPS surfaces exist beneath instrument approach and departure flight paths to and from a runway that provides a prescribed minimum obstacle clearance margin above the obstacles or terrain within the lateral limits of the flight path protection area. They provide an obstacle free flight path to enable safe and efficient aircraft operations in Instrument Meteorological Conditions (IMC).

The RTCC provides Air Traffic Control (ATC) with a minimum safe altitude above terrain and obstacles to which they can provide surveillance services to aircraft in the area around major airports.

Infringement by a building or crane into Prescribed Airspace requires the approval of the aerodrome operator, the Civil Aviation Safety Authority (CASA), and the Department of Infrastructure, Regional Development and Cities (DIRDC) where the airport is on federally leased land.

Infringement of PANS OPS or RTCC protection surfaces are not supported by the aviation authorities, except in exceptional circumstances and following a detailed Aeronautical Study accepted by the aviation authorities.

2.2 PANS OPS

All Sydney basin airports' PANS OPS surfaces were assessed for this site referencing the aeronautical information contained within the Aeronautical Information Publication Australia, Departure and Approach Procedures, Amendment 158 effective 29 February 2019.

The PANS OPS surfaces for all airports, other than Sydney Airport, are well above the maximum height of this site and are not detailed in this report.

A detailed assessment of Sydney Airport's PANS OPS surfaces has discovered two relevant PANS OPS surfaces above the site.

The lowest PANS OPS surface above the eastern corner of the site is 62.62 m AHD. It relates to the RNAV-Z (GNSS) RWY 16R approach surfaces.

The other PANS OPS surface, above the remainder of the site, relates to the RNAV-Z (GNSS) RWY 07 approach surfaces. This PANS OPS surface is at 95.55 m AHD.

Figure 2 depicts the layout considered in this report. Point A is the eastern corner referred to above.



Figure 2: Site Boundary Points (Google Earth Image)

Figure 3 depicts the site with the PANS OPS surface boundary of the RNAV-Z (GNSS) RWY 16R coloured in green. The area between the green line and point A has a PANS OPS height limit of 62.62 m AHD and the rest of the site to the west of the green line has a PANS OPS height limit of 95.55 m AHD.



Figure 3: Site boundary with RNAV RWY 16R PANS OPS Area (Google Earth Image)

Figure 4 depicts the site with the PANS OPS boundaries of the RNAV-Z (GNSS) RWY 07 coloured in green.



Figure 4: Site boundary with RNAV RWY 07 PANS OPS Area (Google Earth Image)

The location of the edge of the RNAV 16R area allows a maximum building height of 95.55 m AHD over the majority of the site, except for the eastern corner which must be limited to 62.62 m AHD.

Approval for infringements of the PANS OPS surfaces are not likely to be approved by the aviation authorities. The RNAV-Z (GNSS) RWY 16R and RNAV-Z (GNSS) RWY 07 approaches are new approaches which contain a Vertical Navigation capability. This provides a significant safety and efficiency benefit to aircraft landing at Sydney Airport. They were first published in 2017.

2.3 RTCC

The RTCC is well above the limiting PANS OPS surfaces at 152 m AHD.

2.4 OLS

The site is located laterally within the Inner Horizontal Surface (IHS) of the Sydney Airport OLS which is at a height of 51m AHD.

Figures 5 and 6 depict the location of the site in relation to Sydney OLS.

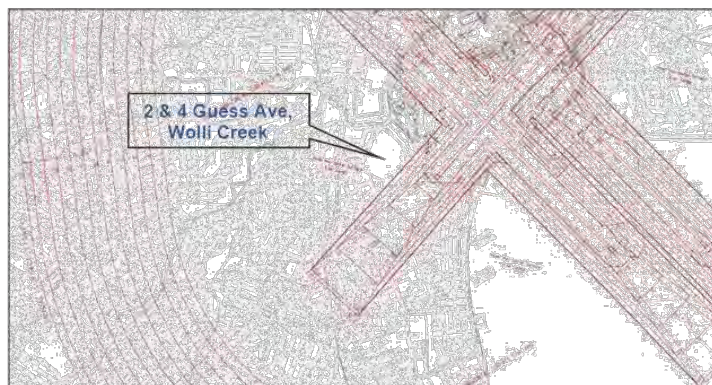


Figure 5: Site location within the Inner Horizontal Surface boundary (SACL Masterplan 2015)

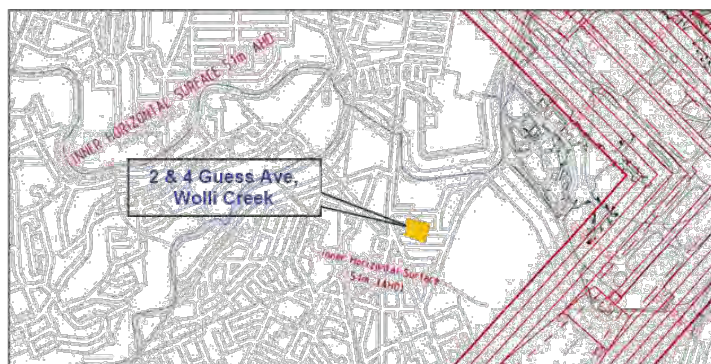


Figure 6: Site Location in relation to OLS – Close Up (SACL Masterplan 2015)

Buildings on the site will not impact on the Sydney Airport OLS if the building is lower than 51 m AHD and would not require approval from the aviation authorities.

Past assessments and applications have resulted in the approval of some infringements of this OLS. These have included suburbs such as Rockdale, Mascot, Kingsford, Pagewood, Roseberry, and Zetland with IHS infringements between 0.2 m and 53.9 m into the IHS.

A higher building on this site, up to the lowest PANS OPS surface may be able to be approved after presentation of a detailed Aeronautical Impact Assessment and Aeronautical Study. This study would include an assessment of construction cranes.

Approval cannot be taken for granted. It can only be granted upon a detailed assessment of a comprehensive aeronautical study by the relevant aviation authorities.

3 ATC Surveillance System Performance

This assessment identified two radars in relative proximity to the site: the Sydney Airport Terminal Area Radar (TAR), and the Cecil Park TAR.

Table 1 shows the height of the ATC Surveillance System clearance plane above the nearest point of the site to the TAR site.

Surveillance System	Distance from Site (m)	Antenna Elevation (m AHD)	Clearance Plane Elevation at site (Distance x Tan 0.5° + Antenna elevation) (m AHD)
Sydney Airport TAR	3360	38.2	67.5
Cecil Park TAR	29600	200.5	458.8

Table 1: Heights of Clearance Planes above the site

The clearance planes are above the lowest PANS OPS surface. If the building height is below the PANS OPS surface then the ATC Surveillance System Clearance planes will not be infringed.

Buildings or terrain that infringe the clearance planes can cause surveillance system shadows in which ATC can provide a critical service. Infringements of the Sydney TAR clearance planes by buildings are common in the Sydney area. This is recognised by Airservices Australia and has been mitigated by the installation of the Cecil Park radar approximately 25 km from Sydney CBD, and more recently ADS-B receivers situated

strategically around Australia, to ensure that ATC receives adequate surveillance coverage for the airspace around the Sydney Basin airports.

Cranes are considered not to impact the performance of ATC surveillance equipment.

Airservices Australia will assess any likely impact that the any future development on the site may have on the Sydney Airport TAR, or other surveillance systems such as ADS-B.

4 Navigation Aid Performance

There are a number of navigation aids installed at Sydney Airport, including ILS, GBAS and DME.

The Building Restricted Areas (BRA) describes a sensitive zone that exists to a radius of 3000 m from the navigation aid antenna sites.

The building development limitations within the BRA is specified in the Airservices Australia document Navigation Aid Building Restricted Areas and Siting Guidance AEI-7.1613 Issue 2.

Table 2 lists the navigation aids and the assessment result in accordance with the BRA documents.

Navigation Aid	Distance from site (m)	Result
SY DME	3200	Beyond maximum BRA radius
SY GBAS	4331	Beyond maximum BRA radius.
RWY 25 ILS LOC	1535	Pointing in the other direction. No infringement.
RWY 07 ILS LOC	3729	Beyond maximum BRA radius.

Table 2: Navigation Aid Clearance Plane Impacts

The site is located outside of all BRA for all navigation aids in the Sydney area.

5 Roof Top Exhaust Plumes

Exhaust plumes in excess of 4.3 m/s can create sufficient turbulence to upset the stability of aircraft during take-off and landing operations.

Roof top exhaust plumes with a vertical velocity in excess of 4.3 m/s that infringe Prescribed Airspace must be referred to CASA for their assessment of risk to aircraft operations.

6 Obstacle Lighting

CASA may require the installation of permanent obstacle lighting if a building or structure infringes Prescribed Airspace.

7 VFR and Helicopter Operations

Due to the proximity of the site to Sydney Airport, VFR flight paths and helicopter flights would be controlled by ATC and are unlikely to operate in the area surrounding the site. As VFR aircraft operate in a visual environment and can see and avoid obstacles and terrain, it is unlikely that such flights would be affected by the any future development of the site.

8 Cranes

Should any future development of the site be of a height that is close to any Prescribed Airspace, construction cranes, above this height will normally require a separate assessment and a separate approval from the aviation authorities, once height requirements and duration of operations are known.

Infringements by cranes, up to a maximum of 3 months duration can be approved by DIRDC but it is not guaranteed or routine. A carefully considered construction plan, including the use of cranes will provide a strong basis for any approval.

9 Conclusion

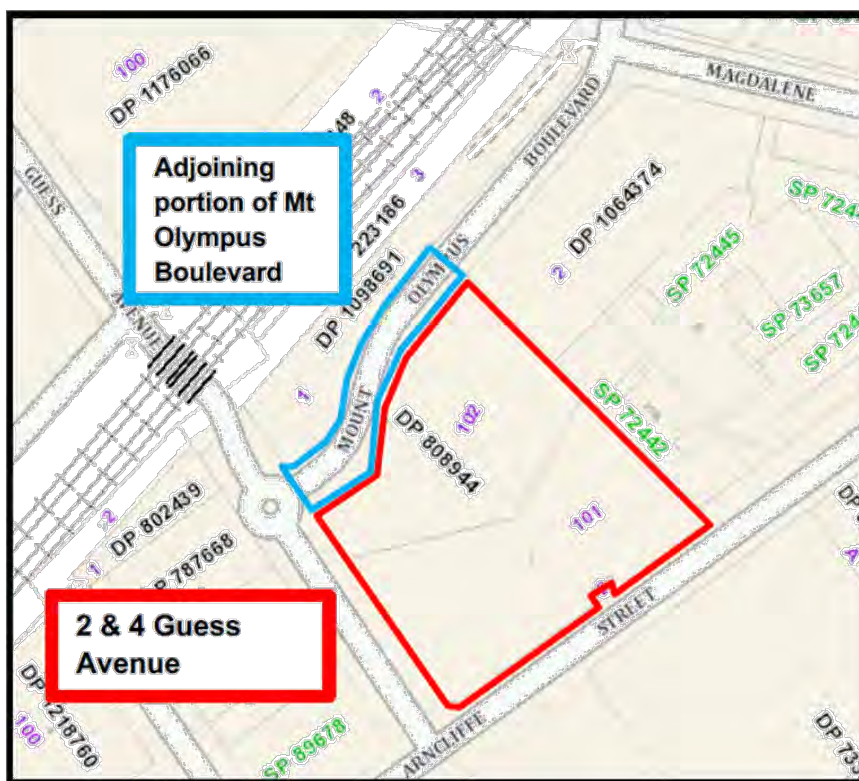
The proposed site at 2— 4 Guess Avenue, Wollie Creek has the following Prescribed Airspace limitations:

- The Inner Horizontal Surface of the OLS for Sydney Airport - **51m AHD**;
- The Sydney Airport PANS OPS surface related to the RNAV-Z(GNSS) RWY 16R – **66.62 m AHD**;
- The Sydney Airport PANS OPS surface related to the RNAV-Z (GNSS) RWY 07 – **95.55 m AHD**;
- Is beyond the lateral limits of all BRA for navigation aids at Sydney Airport;
- The Sydney TAR clearance planes of **67.5 m AHD** , but the effect of a higher building will be mitigated by the Cecil Park TAR and ADS-B receivers in the area; and
- The RTCC protection surface - **152 m AHD**.

It will be necessary to gain approval for any infringement of the Sydney OLS and/or PANS OPS surfaces via an application to Sydney Airport Corporation Limited supported by a comprehensive Aeronautical Impact Assessment.

Appendix A

Site Layout Diagram



Site Description
Source: Bayside Council

Appendix B

Assessment Methodology

In preparing aeronautical impact assessments associated with airport safeguarding and protection, it is necessary to observe the requirements of the relevant aviation authorities including:

- The Department of Infrastructure, Regional Development and Cities (DIRDC);
- The Civil Aviation Safety Authority of Australia (CASA);
- Airservices Australia (ASA);
- Airport Operators; and
- Department of Defence where appropriate.

The *Airports Act 1996* and *Airports (Protection of Airspace) Regulations 1996* prescribes the volumes of airspace surrounding Federally Leased Airports that protect aircraft operations into those airports, in order to ensure the safety and regularity of airline and other flight operations.

Sydney and Bankstown Airports' Prescribed Airspace comprises:

- Obstacle Limitation Surfaces (OLS) that restrict obstacle growth in the vicinity of takeoff and landing paths;
- PANS OPS surfaces that provide a buffer between flight paths and terrain or obstacles; and
- Radar Terrain Clearance Chart protection surfaces that provide ATC with a safe altitude to assign to aircraft during radar vectoring activities.

Relevant Acts and Regulations applicable to developments near airports and air traffic routes were referenced during this assessment.

The major relevant documents include:

- The Airports Act 1996, Airports (Protection of Airspace) Regulations 1996;
- Civil Aviation Safety Regulation (CASR) Part 139 Manual of Standards – Aerodromes;
- Aeronautical Information Publication (AIP);
- Airservices Australia's Airways Engineering Instruction – Navigation Aid Building Restricted Areas and Siting Guidance (BRA);
- International Civil Aviation Organisation (ICAO) DOC 8168 Procedures for Air Navigation – Aircraft Operations (PANS OPS).

A Glossary of Aeronautical Terms and Abbreviations is shown at Appendix C.

Appendix C

Glossary of Aeronautical Terms and Abbreviations

To facilitate the understanding of aviation terminology used in this report, the following is a glossary of terms and acronyms that are commonly used in aeronautical impact assessments and similar aeronautical studies.

AC (Advisory Circulars) are issued by CASA and are intended to provide recommendations and guidance to illustrate a means, but not necessarily the only means, of complying with the *Regulations*.

Aeronautical study is a tool used to review aerodrome and airspace processes and procedures to ensure that safety criteria are appropriate.

AIPs (Aeronautical Information Publications) are publications promulgated to provide operators with aeronautical information of a lasting character essential to air navigation. They contain details of regulations, procedures and other information pertinent to flying and operation of aircraft. In Australia, AIP is issued by Airservices Australia on behalf of CASA.

Air routes exist between navigation aid equipped aerodromes or waypoints to facilitate the regular and safe flow of aircraft operating under IFR.

Airservices Australia is the Australian government-owned corporation providing safe and environmentally sound air traffic management and related airside services to the aviation industry.

Altitude is the vertical distance of a level, a point or an object, considered as a point, measured from mean sea level.

ATC (Air Traffic Control) service is a service provided for the purpose of:

- a. preventing collisions:
 1. between aircraft; and
 2. on the manoeuvring area between aircraft and obstructions; and
- b. expediting and maintaining an orderly flow of air traffic.

CASA (Civil Aviation Safety Authority) is the Australian government authority responsible under the *Civil Aviation Act 1988* for developing and promulgating appropriate, clear and concise aviation safety standards. As Australia is a signatory to the ICAO *Chicago Convention*, CASA adopts the standards and recommended practices established by ICAO, except where a difference has been notified.

CASR (Civil Aviation Safety Regulations) are promulgated by CASA and establish the regulatory framework (*Regulations*) within which all service providers must operate.

Civil Aviation Act 1988 (the Act) establishes the CASA with functions relating to civil aviation, in particular the safety of civil aviation and for related purposes.

ICAO (International Civil Aviation Organization) is an agency of the United Nations which codifies the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth. The ICAO Council adopts standards and recommended practices concerning air navigation, its infrastructure, flight inspection, prevention of unlawful interference, and facilitation of border-crossing procedures for international civil aviation. In addition, the ICAO defines the protocols for air accident investigation followed by transport safety authorities in countries signatory to the Convention on International Civil Aviation, commonly known as the *Chicago Convention*. Australia is a signatory to the *Chicago Convention*.

IFR (Instrument Flight Rules) are rules applicable to the conduct of flight under IMC. IFR are established to govern flight under conditions in which flight by outside visual reference is not safe. IFR flight depends upon flying by reference to instruments in the flight deck, and navigation is accomplished by reference to electronic signals. It is also referred to as, "a term used by pilots and controllers to indicate the type of flight plan an aircraft is flying," such as an IFR or VFR flight plan. Pilots must hold IFR qualifications and aircraft must be suitably equipped with appropriate instruments and navigation aids to enable flight in IMC.

IMC (Instrument Meteorological Conditions) are meteorological conditions expressed in terms of visibility, distance from cloud and ceiling, less than the minimum specified for visual meteorological conditions.

LSALT (Lowest Safe Altitudes) are published for each low level air route segment. Their purpose is to allow pilots of aircraft that suffer a system failure to descend to the LSALT to ensure terrain or obstacle clearance in

IMC where the pilot cannot see the terrain or obstacles due to cloud or poor visibility conditions. It is an altitude that is at least 1,000 feet above any obstacle or terrain within a defined safety buffer region around a particular route that a pilot might fly.

MOS (Manual of Standards) comprises specifications (Standards) prescribed by CASA, of uniform application, determined to be necessary for the safety of air navigation.

NOTAMs (Notices to Airmen) are notices issued by the NOTAM office containing information or instruction concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to persons concerned with flight operations.

Obstacles. All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that are located on an area intended for the surface movement of aircraft or that extend above a defined surface intended to protect aircraft in flight.

OLS (Obstacle Limitation Surfaces) are a series of planes associated with each runway at an aerodrome that defines the desirable limits to which objects may project into the airspace around the aerodrome so that aircraft operations may be conducted safely.

PANS OPS (Procedures for Air Navigation Services - Aircraft Operations) is an Air Traffic Control term designating rules for designing instrument approach and departure procedures. Such procedures are used to allow aircraft to land and take off under Instrument Meteorological Conditions (IMC) or Instrument Flight Rules (IFR). ICAO document 8168-OPS/611 (volumes 1 and 2) outlines the principles for airspace protection and procedure design which all ICAO signatory states must adhere to. The regulatory material surrounding PANS OPS may vary from country to country.

PANS OPS Surfaces. Similar to an Obstacle Limitation Surface, the PANS OPS protection surfaces are imaginary surfaces in space which guarantee the aircraft a certain minimum obstacle clearance. These surfaces may be used as a tool for local governments in assessing building development. Where buildings may (under certain circumstances) be permitted to infringe the OLS, they cannot be permitted to infringe any PANS OPS surface, because the purpose of these surfaces is to guarantee pilots operating under IMC an obstacle free descent path for a given approach.

Prescribed airspace is an airspace specified in, or ascertained in accordance with, the Regulations, where it is in the interests of the safety, efficiency or regularity of existing or future air transport operations into or out of an airport for the airspace to be protected. The prescribed airspace for an airport is the airspace above any part of either an OLS or a PANS OPS surface for the airport and airspace declared in a declaration relating to the airport.

Radar Terrain Clearance Chart (RTCC) is a chart that provides air traffic controllers with the lowest usable altitude that they can vector an aircraft using prescribed surveillance procedures within controlled airspace. There is a protection surface below this usable altitude which is shown in airport master plans.

Regulations (Civil Aviation Safety Regulations)

VFR (Visual Flight Rules) are rules applicable to the conduct of flight under VMC. VFR allow a pilot to operate an aircraft in weather conditions generally clear enough to allow the pilot to maintain visual contact with the terrain and to see where the aircraft is going. Specifically, the weather must be better than basic VFR weather minima. If the weather is worse than VFR minima, pilots are required to use instrument flight rules. Pilots must be specifically qualified and aircraft specifically equipped to enable flight in IMC.

VMC (Visual Meteorological Conditions) are meteorological conditions expressed in terms of visibility, distance from cloud and ceiling, equal or better than specified minima.

Abbreviations

Abbreviations used in this report, and the meanings assigned to them for the purposes of this report are detailed in the following table.

Abbreviation	Meaning
AC	Advisory Circular (document support CAR 1998)
ACFT	Aircraft
AD	Aerodrome
ADS-B	Automatic Dependent Surveillance - Broadcast
AHD	Australian Height Datum
AIP	Aeronautical Information Publication
Airports Act	Airports Act 1996, as amended
AIS	Aeronautical Information Service
ALT	Altitude
AMSL	Above Mean Sea Level
APARs	Airports (Protection of Airspace) Regulations, 1996 as amended
ARP	Aerodrome Reference Point
AsA	Airservices Australia
ATC	Air Traffic Control(ler)
ATM	Air Traffic Management
BARO-VNAV	Barometric Vertical Navigation
BRA	Building Restricted Area
CAO	Civil Aviation Order
CAR	Civil Aviation Regulation
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulation
Cat	Category
DAP	Departure and Approach Procedures (charts published by AsA)
DER	Departure End of (the) Runway
DME	Distance Measuring Equipment
Doc nn	ICAO Document Number nn
DIT	Department of Infrastructure and Transport. (Formerly Dept. of Infrastructure, Transport, Regional Development and Local Government and Department of Transport and Regional Services (DoTARS))
DOTARS	See DIT above
ELEV	Elevation (above mean sea level)
ENE	East North East
ERSA	Enroute Supplement Australia
FAF	Final Approach Fix

Abbreviation	Meaning
FAP	Final Approach Point
FAS	Final Approach Surface of a BARO-VNAV approach
ft	feet
GBAS	Ground Based Augmentation System (satellite precision landing system)
GNSS	Global Navigation Satellite System
GP	Glide Path
IAS	Indicated Airspeed
ICAO	International Civil Aviation Organisation
IHS	Inner Horizontal Surface, an Obstacle Limitation Surface
ILS	Instrument Landing System
ISA	International Standard Atmosphere
km	kilometres
kt	Knot (one nautical mile per hour)
LAT	Latitude
LLZ	Localizer
LONG	Longitude
LNAV	Lateral Navigation criteria
m	metres
MAPt	Missed Approach Point
MDA	Minimum Descent Altitude
MGA94	Map Grid Australia 1994
MOC	Minimum Obstacle Clearance
MOS	Manual of Standards, published by CASA
MSA	Minimum Sector Altitude
MVA	Minimum Vector Altitude
NASAG	National Airports Safeguarding Advisory Group
NDB	Non Directional Beacon
NE	North East
NM	Nautical Mile (= 1.852 km)
nnDME	Distance from the DME (in nautical miles)
NNE	North North East
NOTAM	NOtice to AirMen
OAS	Obstacle Assessment Surface
OCA	Obstacle Clearance Altitude
OCH	Obstacle Clearance Height
OHS	Outer Horizontal Surface
OFZ	Obstacle Free Zone

Abbreviation	Meaning
OIS	Obstacle Identification Surface
OLS	Obstacle Limitation Surface
PANS OPS	Procedures for Air Navigation Services – Aircraft Operations, ICAO Doc 8168
PBN	Performance Based Navigation
PRM	Precision Runway Monitor
QNH	An altimeter setting relative to height above mean sea level
REF	Reference
RL	Relative Level
RNAV	aRea NAVigation
RNP	Required Navigation Performance
RPA	Rules and Practices for Aerodromes. Replaced by the MOS Part 139 — Aerodromes
RPT	Regular Public Transport
RTCC	Radar Terrain Clearance Chart
RWY	Runway
SFC	Surface
SID	Standard Instrument Departure
SOC	Start Of Climb
STAR	STandard ARrival
SGHAT	Solar Glare Hazard Analysis Tool
TAR	Terminal Approach Radar
TAS	True Air Speed
THR	Threshold (Runway)
TNA	Turn Altitude
TODA	Take-Off Distance Available
VNAV	Vertical Navigation criteria
V _n	aircraft critical Velocity reference
VOR	Very high frequency Omni directional Range
WAC	World Aeronautical Chart

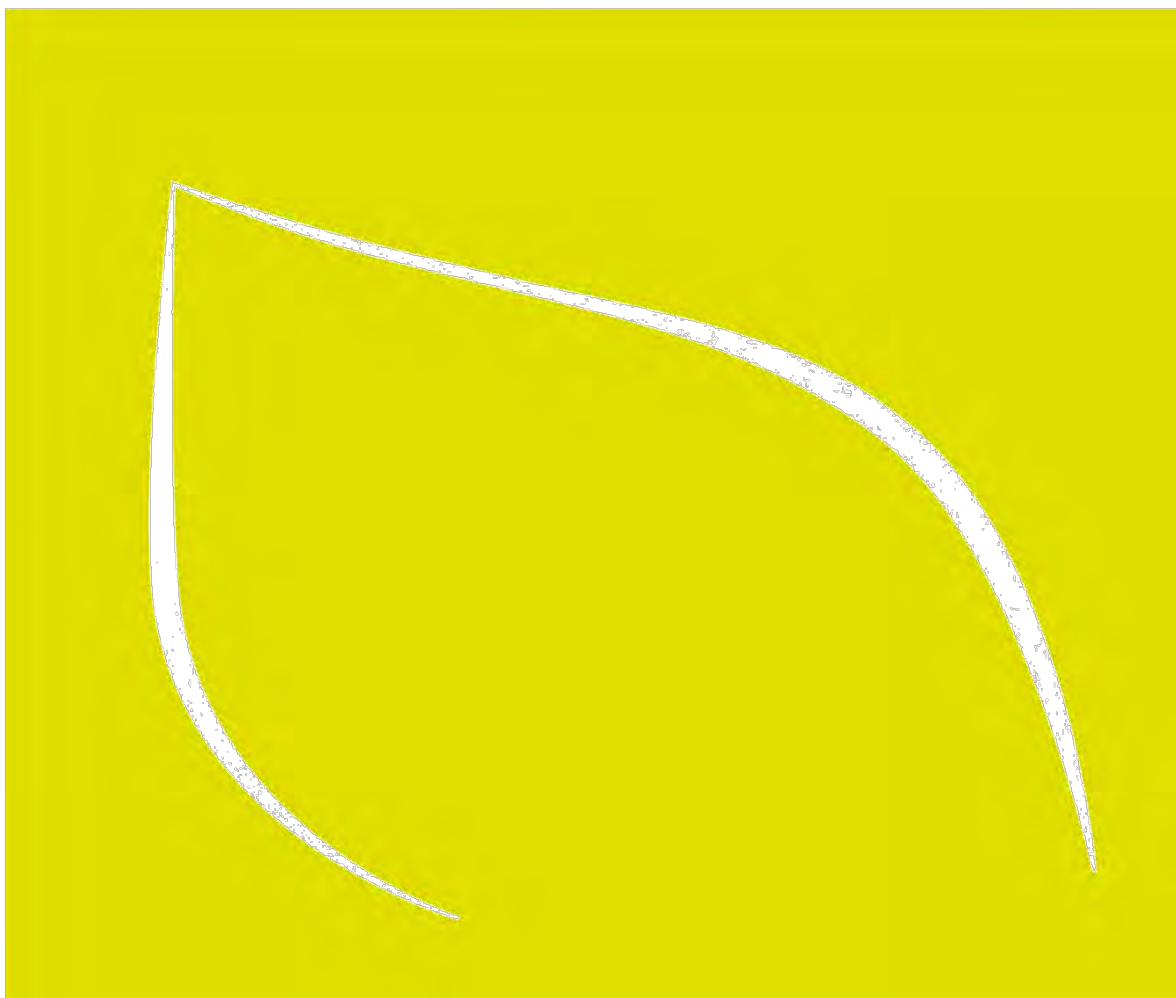


Preliminary Site Investigation

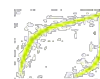
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5 April 2019



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5 April 2019

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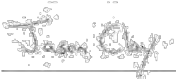
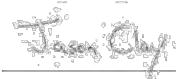
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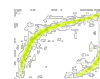
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Executive Summary



Executive Summary

Senversa Pty Ltd (Senversa) was engaged by Bayside Council (Council) to undertake a Preliminary Site Investigation (PSI) at the site, which comprises Lot 101 and Lot 102 in Deposited Plan 808944.

The site is currently zoned as 'RE1 Public Recreation' (Lot 101 and Lot 102) under Rockdale Local Environmental Plan 2011, however, Council is seeking to rezone the entire site to 'B4 Mixed Use' and remove the site from the Land Reservation Acquisition Map. As such, Council requires a PSI to assess the potential risk associated with contamination resulting from current and historical land use practices and any potential constraints to the proposed rezoning.

Objectives and Scope of Investigation

The primary objective of this PSI was to develop an understanding of the potential for contamination to be present at the site, as a result of current and historical land uses, that may pose a risk to human health or ecological receptors.

To meet the above objective, Senversa reviewed the NSW Environment Protection Authority (NSW EPA) contaminated land register, historical aerial photographs, groundwater-bore information; relevant government databases, published soil, geology and topographic maps, previous investigations and completed a site inspection.

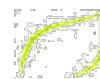
Results of the PSI

The results of the PSI indicated the following:

- The site is bounded by Arncliffe Street to the south-east, Guess Avenue to the south-west, Mount Olympus Boulevard to the north-west and high-rise residential dwelling to the north-east.
- The southern portion of the site (Lot 101) is accessed from Guess Avenue and comprises a truck repair and spare parts yard. The northern portion of the site (Lot 102) is vacant land, with access restricted due to the remediation works occurring during the site inspection. Previously, Lot 102 was also accessed from Guess Avenue. The site is fenced along all external boundaries, with a fence also separating the two lots.
- The site is underlain by fill materials with depths ranging between 0.6 m below ground level (bgl) to 2.0 m bgl. Fill materials are comprised of sands, sandy clays, sandy gravels and gravelly sands with anthropogenic material including asphalt, ash, road base, sandstone, clinker, aggregate, glass, brick, slag charcoal and ash. Natural material underlain is comprised of alluvial sand, silty sand and sand clay. It is noted that the majority of fill material on Lot 102 has been excavated and removed, with the residual natural sand remaining.
- The Atlas of Australian ASS and Salinity classifies the site and its surrounding as high probability (> 70% chance of occurrence) of potential acid sulfate soils (PASS) and / or monosulfidic black ooze (MBO), generally below 1 m of the surface.
- Groundwater is likely to be present within fill materials and shallow alluvial sediments (mostly sands, sandy clays and clays) from a depth of approximately 2.0 m bgl. Deeper aquifers are likely to be present within underlying fractured bedrock.
- Historical records indicated the site was utilised as market gardens, tramway yard / depot, storage depot, which may have included the storage, handling, and use of petroleum products, chemicals and potential hazardous substances.
- Nippon Truck Spares Pty Ltd currently owns Lot 101 and operates a truck parts repair and storage depot. The company repairs and reconditions old / dismantled trucks parts. The infrastructure on Lot 101 includes external engine-degreasing and cleaning areas, a waste-oil underground storage tank, drums and truck parts depot, an caustic-bath cleaning unit, a painting cabinet, an aboveground storage tank and internal storage areas. These activities have been undertaken since the 1990s.
- The northern portion of the site (Lot 102) is currently vacant and has undergone remediation, which was confirmed through signage on the site's fence.

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Executive Summary

**Conclusions and Recommendations**

Based on the results of the PSI, Senversa developed a conceptual site model (CSM) detailing potentially complete source-pathway-receptor linkages resulting from:

- historical and current operations;
- potentially impacted fill materials from unknown origin; and
- potential for acid sulfate soils (ASS) or PASS.

Based on the above and information reviewed as part of this PSI, Senversa considers that a detailed site investigation (DSI) is required to assess the contamination status of the site, specifically associated with Lot 101, and whether there is a potential risk to current and/or future human health of ecological receptors.

While the specific requirements of the DSI would be detailed within a sampling and analysis quality plan (SAQP), Senversa considers that the DSI should be undertaken on a targeted basis in consideration of the identified contaminants of potential concern (CoPCs) and include an assessment of soil and groundwater to characterise potential point sources of contamination based on historic and current site uses.

The results of the DSI would better inform whether remediation and/or management that may be required for the southern portion of the site (Lot 101). However, considering the type of redevelopment occurring in the surrounding area (high-density residential) and the recent successful remediation completed on the northern portion of the site (Lot 102), the entire site (Lot 101 and Lot 102) can likely be remediated, if required, and made suitable for land uses under B4 Mixed Use zoning.

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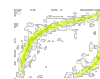
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Figure 1: Site Location Plan

Figure 2: Site Layout and Previous Sampling Locations

Appendix A: Land Insight & Resources Enviro-Screen Report and Maps Searches**Appendix B: Dangerous Goods Searches****Appendix C: Planning Certificates****Appendix D: Site Photographs**

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List of Acronyms



List of Acronyms

Acronym	Definition
ACM	Asbestos Containing Material
AEP	Annual Exceedance Probability
AHD	Australian Height Datum
AMG	Australian Map Grid
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure
ASS	Acid Sulphate Soils
AST	Above Ground Storage Tank
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
CHC	Chlorinated Hydrocarbons
CLM	<i>Contaminated Land Management Act 1997</i>
CoPC	Contaminant of Potential Concern
CSM	Conceptual Site Model
DCE	Dichloroethene
DCP	Development Control Plan
DP	Deposited Plan
DPI	Department of Primary Industries
DQO	Data Quality Objectives
DSI	Detailed Site Investigation
EPL	Environment Protection Licence
ESA	Environmental Site Assessment
GIL	Groundwater Investigation Level
m	Metre
m AHD	Metres Above Australian Height Datum
m bgl	Metres Below Ground Level
MBO	Monosulfidic Black Ooze
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NSW EPA	New South Wales Environment Protection Authority
OCP	Organochlorine Pesticides
OPP	Organophosphorus Pesticides

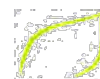
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List of Acronyms



Acronym	Definition
PAH	Polycyclic Aromatic Hydrocarbons
PASS	Potential Acid Sulfate Soil
PCB	Polychlorinated Biphenyls
PFAS	Per and Polyfluoroalkyl Substances
POEO	<i>Protection of the Environment Operations Act 1997</i>
PSI	Preliminary Site Investigation
RAP	Remedial Action Plan
SAQP	Sampling and Analysis Quality Plan
SVOC	Semi Volatile Organic Compound
TCE	Trichloroethylene, Trichloroethene
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons
VC	Vinyl Chloride
VOC	Volatile Organic Compound

Introduction and Objectives



1.0 Introduction and Objectives

1.1 Introduction

Senversa Pty Ltd (Senversa) was engaged by Bayside Council (Council) to undertake a Preliminary Site Investigation (PSI) at two properties located at 2 – 4 Guess Avenue, Wolli Creek, NSW (the site). The site is identified as Lot 101 and Lot 102 in Deposited Plan (DP) 808944 and covers an area of approximately 0.8 hectares (ha). The site location and its current layout is shown on **Figure 1**.

The site is currently zoned as 'RE1 Public Recreation' (Lot 101 and Lot 102) under Rockdale Local Environmental Plan 2011; however, Council is seeking to rezone the entire site to 'B4 Mixed Use' and remove the site from the Land Reservation Acquisition Map. As such, Council requires a PSI to be undertaken to assess the potential liability associated with contamination resulting from current and historical land use practices and any potential limitations to the proposed rezoning.

1.2 Objective

The primary objective of this PSI was to develop an understanding of the potential for contamination to be present at the site, as a result of current and historical land uses, that may pose a risk to human health or ecological receptors.

The objectives of this PSI are therefore to assess:

- The potential for contamination to be present on or beneath the site as a consequence of current or historical activities on and surrounding the site.
- The potential for the contamination to pose a risk to human health or ecological receptors (both on-site and off-site).
- The potential for the contamination to impact upon the suitability of the site for the proposed rezoning.

1.3 Scope of Work

To meet the project objectives, Senversa completed the following scope of works:

- Review of background information relating to the site, including:
 - The NSW Environment Protection Authority (EPA) Contaminated Land Register.
 - Historical aerial photographs.
 - Groundwater bore information.
 - Relevant government databases.
 - Published soil, geology and topographic maps.
- A site inspection to understand the current site land-use.
- Data evaluation and reporting.

The work was conducted with reference to relevant parts of the following guidelines:

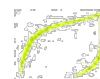
- National Environment Protection Council (1999). *National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM (1999)) (as amended May 2013)* - herein referred to as the ASC NEPM (2013).
- NSW EPA (2017). *Contaminated Sites: Guidelines for the NSW Site Auditor Scheme* (3rd edition).
- NSW Office of Environment and Heritage (2011). *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites*.

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Site Identification



2.0 Site Identification

The site identification information is presented in **Table 1** below:

Table 1: Site Identification Details

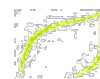
Item	Description
Site Address	2 – 4 Guess Avenue, Woll Creek, NSW
Legal Description	- Lot 101 in DP 808944. - Lot 102 in DP 808944.
Local Government Area	Bayside Council
Current Zoning	- Lot 101 DP808944: RE1 Public Recreation. - Lot 102 DP808944: RE1 Public Recreation.
Proposed Future Zoning	- Lot 101 DP808944: B4 Mixed Use. - Lot 102 DP808944: B4 Mixed Use.
Geographical Coordinates (AMG)	33° 55' 51" S 151° 09' 07" E (centre of site)
Site Elevation (m AHD)	Approximately 2 – 6 m Australian Height Datum (AHD)
Site Location	Figure 1
Site Layout	Figure 2

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Site Background Review



3.0 Site Background Review

3.1 Site Setting

The following sections summarise the information obtained during the site background and history review. A copy of database search results is provided in **Appendix A**.

Table 2: Site Summary

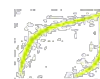
Item	Detail
Site Location	2 – 4 Guess Avenue, Wollri Creek, NSW.
Site Area	Approximately 0.8 ha
Current Zoning	- Lot 101 DP808944: RE1 Public Recreation. - Lot 102 DP808944: RE1 Public Recreation.
Current Land Use	- Lot 101 DP808944: truck repair and spare parts yard. - Lot 102 DP808944: vacant land.
Surrounding Land use	The land uses surrounding the site were: North – Mount Olympus Boulevard, railway and Wollri Creek. South – Arncliffe Street, high-density residential dwellings, commercial / industrial properties then Princess Highway. East – high-density residential dwellings, commercial properties, Cahill Park and Cooks River. West – Guess Avenue, high-density residential dwellings, railway and low to medium-density residential dwellings.
Topography	- The elevation of the site ranges from approximately 2 - 6 m AHD sloping from the north-west to the south-east direction. However, due to recent remedial excavation works on Lot 102, at the time of the site inspection the elevation of northern portion (Lot 102) of the site was approximately 2-3 m lower than the southern portion (Lot 101). - The site was generally flat, although the surface of the northern portion of the site was approximately 2-3 m lower, as described above. - The surrounding area was generally flat with a slight slope to the south-east.
Hydrology	- During site inspection works, no surface water was observed within the site. The closest surface water bodies to the site are Wollri Creek, located approximately 280 m north of the site, and Cooks River, located approximately 300 m east of the site. A minor urban stormwater drainage channel was located approximately 80 m to the south-east that drains into Cooks River. - Surface runoff, within the sealed portion of the site (Lot 101), is expected to flow towards stormwater drains located within the site and its boundary towards stormwater infrastructure located within the surroundings roadways and eventually flowing into Cooks River. - Rainfall within Lot 102, which has undergone recent remedial excavation works, would currently infiltrate into surface soils.

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Site Background Review



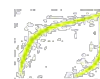
Item	Detail
Geology, Soils and Naturally Occurring Asbestos	- A review of Geological Survey of NSW 1:100 000 geological map indicates the site to be underlain by Holocene Quaternary sediments formed within estuarine environment (Cooks River floodplain). Sediments are described as silty to peaty quartz sand, silt, and clay with ferruginous and humic cementation in places and common shell layers. These sediments are underlain by Hawkesbury Sandstone. - Soil mapping provided by NSW OEH, described the soil within the site as deep (>250 cm) yellow podzolic soils and yellow solodic soils on older alluvial terraces and deep (>250 cm) solodic soils and yellow solonetz on the floodplain. - Previous investigations were undertaken on-site (a summary is provided within Section 3.3) by Coffey (2004) on Lot 101 and by Greencap (2016) on Lot 102. According to Coffey, soil within Lot 101 was found to contain fill materials comprised of sand, sandy clay and sandy gravel with some anthropogenic inclusions (aggregate, sandstone, glass, brick, slag charcoal and ash) with depths ranging between approximately 0.95 m below ground level (bgl) to 1.5 m bgl. Fill material was underlain by alluvial sand, silty sand and sand clay to the maximum depth of the investigation (4 m bgl). - According to Greencap (2016), fill material was presented across Lot 102 with depths ranging between 0.6 m bgl to 2.1 m bgl and it was comprised of a gravelly sand with anthropogenic material including asphalt, ash, road base, sandstone and clinker. Natural materials underlying the fill comprised: yellow, brown or grey medium grained sand or clayey sand overlying a layer of clay or sandy clay. - The site is not located within an area reported to have naturally occurring asbestos.
Acid Sulfate Soils (ASS)	- A review of the Acid Sulfate Soil (ASS) Risk Maps (NSW OEH, 2012) suggests that the site is located within class 3 ASS, presenting an environmental risk where works are undertaken more than 1 m below natural ground surface and / or where the watertable is likely to be lowered more than 1 m below natural ground surface. - The Atlas of Australian ASS and Salinity classifies the site and its surrounding as high probability (> 70% chance of occurrence) of potential acid sulfate soil (PASS) and / or monosulfidic black ozone (MBO), generally below 1 m of the surface. - Previous investigations have not tested soil materials for ASS or PASS. - Senversa notes that where works are undertaken within the site's subsurface ASS may present an environmental risk.
Hydrogeology	- A search of the NSW Department of Primary Industries (DPI) database of registered groundwater bores within a 1 km radius of the site indicated approximately 22 registered groundwater monitoring bores. Standing water levels within groundwater bores were measured at approximately 1.24 – 2.10 m bgl, with the bore depths ranging from 2.1 m bgl to 6.0 m bgl. There were no registered bores located within the site. - Based on drillers logs for the surrounding monitoring bores, Senversa considers that shallow groundwater may be present within fill materials and shallow alluvial sediments (mostly sands, sandy clays and clays) from a depth of approximately 2.0 m bgl (for Lot 101). Deeper aquifers are likely to be present within underlying fractured bedrock.

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Site Background Review



3.2 Site History

3.2.1 Aerial Photography

Historical aerial photographs (**Appendix A**) were reviewed as part of the assessment of the site history, with a summary presented in **Table 3**.

Table 3: Summary of Historical Aerial Photographs

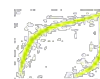
Photograph Details	Description
1930 – Black and White	Site – the site appears to be comprised of vacant land and due to the low quality of the aerials no more details can be provided. Surrounds – a railway line can be observed along the north-west and north-east boundaries of the site. Some low-density residential dwellings are present to the south-west and south-east of the site. Agricultural land can be observed to the south of the site and an artificial water channel was also present. The Princes Highway is present to the south. Some wetlands can be observed east and north of the site. Cahill Park and its artificial water channel were south-east of the site.
1943 – Black and White	Site – the site has been developed and some buildings can be observed within the central and eastern portions of the site. A portion of land to the east of the site appears to be part of the same property, where a yard / tram depot can be observed. The northern portion of the site seems to consist of market gardens. Surrounds – a yard / tramway depot area and some small buildings can be observed along the eastern boundary of the site and along the railway line. An artificial water channel can be observed to the south-east and east of the site.
1951 – Black and White	Site – no significant changes from 1943 aerial photography. Surrounds – no significant changes from 1943 aerial photography with the exception of a few more commercial / industrial developments to the west, east and north-east of the site.
1961 – Black and White	Site – the buildings at the site have been demolished and possible stockpiles can be observed throughout the site. The site appears to be completely unsealed. Surrounds – the existing tramway depot to the north of the site has been redeveloped and a number of commercial / industrial properties can be observed. The agricultural area to the south of the site has been developed into commercial / industrial properties. Some vacant land can be observed within the area.
1963 – Black and White	Site – the site was comprised of vacant land. Surrounds – a development to the north / north-east of the site (previously a tramway depot) can be observed. Anecdotal evidence suggests that a tar distillery was present within this area along the railway line.
1970 – Black and White	Site – three connected commercial / industrial buildings have been constructed along Arncliffe Street (Lot 101), generally consistent with the current site layout. Parked trucks can be observed in the central west portion of the site, but the site appears to remain largely unsealed. Surrounds – the majority of the site surroundings have been redeveloped to contain commercial / industrial properties. To the north of the site, the commercial / industrial property which may have been the tar distillery can be observed with more details as a stack, silos, the conveyor belt and raw material storage areas are visible.
1975 – Black and White	Site – a large commercial / industrial building has been constructed in the northern portion of the site (Lot 102) and a small building in the eastern corner is now present. Surrounds – no significant changes observed from 1970 aerial photography.
1982 – Colour	Site – an extension to the east building has been added and the site appears to have been sealed. Surrounds – no significant changes observed from 1975 aerial photography.
1986 – Colour	Site – no significant changes observed from 1982 aerial photography, materials are stored throughout the site. Surrounds – some buildings have been demolished, seemingly in preparation for future construction of newer commercial / industrial buildings. The remainder of the surrounding area was generally consistent with the 1982 aerial photography.

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Site Background Review



Photograph Details	Description
1994 – Colour	Site – the site was divided in two different properties, with a wall constructed along the lot boundary. The amount of material storage has increased in Lot 101 and a small building has been constructed attached to main buildings. Surrounds – no significant changes observed from 1986 aerial photography.
2002 – Colour	Site – no significant changes observed from 1994 aerial photography. Surrounds – some commercial / industrial properties have been demolished to the west of the site, across the railway line. The large property, to the north of Discovery Point Place has been redeveloped as Wolli Creek Train Station.
2004 – Colour	Site – no significant changes observed from 2002 aerial photography. Surrounds – several properties surrounding the site have been redeveloped to contain high-density residential dwellings.
2010 – Colour	Site – no significant changes observed from 2004 aerial photography. Surrounds – no significant changes observed from 2004 aerial photography, except for the construction of Mount Olympus Boulevard along the north-west boundary of the site.
2014 – Colour	Site – no significant changes observed from 2010 aerial photography. Surrounds – a supermarket has been constructed to the east of the site. High-density residential dwellings were under construction.
2016 – Colour	Site – no significant changes observed from 2014 aerial photography. Surrounds – no significant changes observed from 2014 aerial photography, except for the development of several high-density residential dwellings in the area.
2018 – Colour	Site – the buildings and concrete surface in northern portion of the site (Lot 102) have been demolished and earth works were conducted. Surrounds – no significant changes observed from 2016 aerial photography, except for further development of high-density residential dwellings.

3.2.2 Historical Business Records

A search of historical business records for the site and surrounding area (200 m radius) was undertaken from the 1930s to the 1990s. The results of the search are summarised below, and a complete copy of historical business records is provided in **Appendix A**.

Table 4: Summary of Key Historical Businesses

Year of Records	Listed business types
1930s trade directory	No available records.
1940s trade directory	Nursery.
1950s trade directory	- Nursery. - Electrical appliances & equipment manufacturing. - Clothing manufacturing.

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Year of Records	Listed business types
1960s trade directory	• Chemical manufacturing. • Sheet metal workers. • Metal spinners. • Foundries. • Laminated panels. • Motor panel beaters. • Motor wreckers.
1970s trade directory	• Asbestos manufacturing and / or suppliers. • Engineers general, manufacturing and / or mechanical. • Founders ferrous and non-ferrous. • Steel fabricators. • Motor cycle accessories manufacturing and accessories. • Electroplaters manufacturing. • Chemists industrial and manufacturing. • Foundries iron and steel.
1980's trade directory	• Motor body builders and repairers. • Panel beaters and / or painters. • Motor accessories manufacturing and / or wholesalers. • Windows metal manufacturing and wholesalers. • Steel fabrication and / or manufacturing. • Motor engineers and repairers. • Motor replacement parts.
1990's trade directory	• Panel beaters and / or painters. • Lifts, maintenance and repairs. • Motor wreckers. • Fuel injection and equipment and / or service. • Motor engineers / repairers.

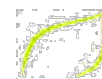
A search of the NSW EPA contaminated land database undertaken for a 1 km buffer area of the site is provided in **Appendix A** and summarised in **Table 5**.

Site	EPA Site Management Class	Distance from Site
Former Ausgrid Substation	Regulation under the <i>Contaminated Land Management Act 1997</i> (CLM Act) not required	276 m to the south-east
7-Eleven Arncliffe	Regulation under the CLM Act not required	290 m to the south-east
Wolli Creek Aqueduct	Regulation under the CLM Act not required	363 m to the north-east
Tulloch Australia Pty Ltd	Contamination currently regulated under the CLM Act	454 m to the south-west
RTA Land	Contamination currently regulated under the CLM Act	762 m to the north-west
Mackey Park	Regulation under the CLM Act not required	798 m to the north-west

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Site	EPA Site Management Class	Distance from Site
Alexandra Canal Sediments	Contamination currently regulated under the CLM Act	826 m to the south-east
Cooks River Aqueduct	Contamination currently regulated under the CLM Act	847 m to the north-west
Caltex Service Station	Contamination currently regulated under the CLM Act	867 m to the north-west
Former Temp Tip	Contamination currently regulated under the CLM Act	898 m to the north-east
Tempe Depot	Regulation under the CLM Act not required	925 m to the north-west

3.2.4 NSW EPA Contaminated Land Records of Notice

A search of the NSW EPA Contaminated Land Records of Notice database undertaken for a 1 km buffer area of the site is provided in **Appendix A** and summarised below.

Table 6: Summary of NSW EPA Contaminated Land Records

Site	Notices	Distance from Site
Tulloch Australia Pty Ltd	3 current notices	453 m to the south-west
RTA Land	2 current notices	761 to the north-west
Alexandra Canal Sediments	2 current notices	825 m to the south-east
Cooks River Aqueduct	1 former notice	846 m to the north-west
Caltex Service Station	2 current notices	868 m to the north-west
Former Temp Tip	2 current and 6 former notices	897 m to the north-east

3.2.5 NSW EPA Licenced Activities Search

A search of the NSW EPA record of licenced activities under the *Protection of the Environment Operations Act 1997* was undertaken for a 1 km buffer area of the site for both current and de-licenced activities (**Appendix A**). There were no current records of licensed activities identified for the site or in the surroundings areas. However, two de-licenced activities were identified as detailed in **Table 6**.

Table 7: Delicensed Properties

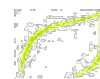
EPL # ¹	Organisation	Address	Activity	Distance from Site
6601	Morris, McMahon & Co Pty Ltd	34 Amcliffe Street, Amcliffe	Hazardous Industrial or Group A Waste Generation or Storage	101 m to the south-west
11304	A.C.N. 001 022 411 Pty Ltd (Tulloch)	61 Turrella Street, Turrella	Waste storage, hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	383 m to the north-west

Table Notes:
1 – EPL = environment protection licence.

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Site Background Review

3.2.6 Dangerous Goods Search

A search of the SafeWork NSW Storage of Hazardous Chemicals database was undertaken for Lot 101 (D19/070281) and did not locate any records. A copy of the search is provided within **Appendix B**.

According to Coffey (2004) a WorkCover search (35/022349) indicated one record for the site, dated May 1979, when Lot 101 and Lot 102 were part of the same parcel of land. The licence was held for the storage of 250 L aggregate of flammable liquids and Class 1 dangerous goods or equivalent.

Greencap (2016) did a SafeWork NSW search, which also indicated a record for the storage of up to 250 L aggregate. According to this record, chemicals were stored in an indoor cabinet situated in a laboratory in the north-eastern section of the southern main building located within Lot 102.

3.2.7 NSW EPA Per and Polyfluoroalkyl Substance (PFAS) Investigation Program

A search of the NSW EPA PFAS Investigation Program database undertaken for a 2 km buffer area of the site identified that the Botany Bay area, including the Botany Industrial Park and Sydney Airport (located approximately 906 m to the east) as a potential source of PFAS contamination.

3.2.8 Waste Management Database

A search of the Waste Management Facilities database undertaken for a 1 km buffer area of the site indicated that no waste management facilities are present, however, historical legacy landfills are located 302 m to the north (Waterworth Park Old Garbage Tip) and 898 m to the north-east of the site (Tempe Tip).

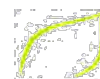
3.2.9 Certificate of Title

A search of NSW land titles records was undertaken to determine historical ownership of the site. A summary of records is presented in **Table 6**.

Table 8: Summary of Historical Land Titles

Year	Site Owner
Lot 101 DP 808944	
1991 – to date	Zinnia Holdings Pty. Limited Current Nippon Truck Spares Pty Ltd
1966 – 1991	The Water Conservation and Irrigation Commission Currently Water Resources Commission
1913 – 1966	The Chief Commissioner for Railways and Tramways Currently the Commissioner for Government Transport
Lot 102 DP 808944	
2018 – to date	Property NSW
1966 – 2018	The Water Conservation and Irrigation Commission Currently Water Resources Commission
1913 – 1966	The Chief Commissioner for Railways and Tramways Currently the Commissioner for Government Transport

Site Background Review



3.2.10 Bayside Council Planning Certificate

According to the Bayside Council Planning Certificate under Section 10.7 (2) & (5) (*Environmental Planning & Assessment Act 1979*) the site is affected by policies that restrict the development of the land due to the likelihood of flood occurrence. The plan states that the site may be affected by the 1% Annual Exceedance Probability (AEP) flood and due to that reason, the development of the land or part of the land for such a purpose may be subject to flood related development controls.

The Rockdale Development Control Plan – DCP (2011) includes a policy on contaminated land which may restrict the development of the land, when zoning or land use changes are proposed.

No matters pertaining to the CLM Act 1997 were included on the Planning Certificate.

It is noted that the current approved zoning of Lot 101, as listed in the Council Section 10.7 Planning Certificate (**Appendix C**), is for both RE1 Public Recreation and B4 Mixed Use. However, this is considered an error and has been confirmed by Council. The current approved zoning for Lot 101 is RE1 Public Recreation, consistent with the current zoning for Lot 102.

A copy of the Planning Certificates for the site are included in **Appendix C**.

3.3 Previous Investigations

In undertaking this PSI, Senversa undertook a review of the following previous reports:

Lot 101 DP808944

- Coffey Geosciences Pty Ltd (Coffey) 2004, Environmental Site Assessment, 2 Guess Avenue, Arncliffe, NSW, 29 October 2004. (Coffey, 2004).

Lot 102 DP808944

- Greencap (2016), *Detailed Site Investigation, Government Property New South Wales, 16 Guess Avenue, Wolli Creek NSW*, September 2016. (Greencap, 2016).
- JBS&G (2018), *Remedial Action Plan, 4-16 Guess Avenue Wolli Creek, NSW*, 30 August 2018. (JBS&G, 2018).
- JBS&G (2019), *Validation Report, 4-16 Guess Avenue Wolli Creek, NSW*, 25 February 2019. (JBS&G, 2019).

3.3.1 Coffey (2004)

Coffey conducted an environmental site assessment (ESA) to identify the presence of potential contaminants on Lot 101. The scope of works included a review of site history, a site inspection, intrusive works, laboratory analysis of soil and groundwater, data assessment and reporting.

At the time of Coffey's site inspection, the site was mostly concreted sealed and used as an engine reconditioning, recycling and repair facility. The facility was comprised of a warehouse building, an acid bath cleaning area, engine degreasing and cleaning areas, a waste oil recirculation system and a workshop. Engine parts, spare tyres, plastic containers and metal drums containing dangerous goods (oil, petroleum and solvents) were found outside of the building.

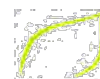
A WorkCover NSW search was conducted and indicated one licence granted for the storage of up to 250 L of flammable liquids and Class 1 dangerous goods or their equivalent. According to the plan provided by WorkCover NSW, the storage area of flammable liquids was located within Lot 102 of DP808944, which used to be part of the same parcel of land as Lot 101 of DP808944. There were no records of underground storage tanks (UST) documented, but a waste oil UST was observed during the site inspection.

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Site Background Review



Intrusive works included the advancement of 7 boreholes up to 3 m bgl and the installation and sampling of 4 monitoring wells. Based on the results of the investigation, Coffey concluded the following:

- Soil contamination was generally confined to fill materials (depth ranged from 0.95 mbgl to 1.5 m bgl) with the more heavily impacted fill material observed to contain ash, charcoal and slag. The fill material was underlain by alluvial sand, silty sand and sandy clay.
- The soil investigation results identified concentrations of heavy metals, benzo(a)pyrene and polycyclic aromatic hydrocarbons (PAH) above the adopted health and environmental assessment criteria. Soil samples were not analysed for PASS or ASS.
- Coffey recommended that remediation of PAH contamination within fill and underlying natural material would be required for the site to be suitable for either open space or mixed zone use. The volume of fill material that required remediation was estimated to be 4,800 m³.
- Groundwater was found to be shallow, ranging between 1.84 m bgl to 2.03 m bgl, with concentrations of heavy metals identified above the adopted environmental assessment criteria.
- PAHs were not detected within groundwater samples; however, the laboratory detection limits were above the adopted criteria for some PAH compounds.
- Trichloroethene (TCE) was detected in one groundwater sample (MW3) at a concentration of 21 µg/L.
- Further assessment of the lateral extent of TCE in groundwater and additional sampling of groundwater for PAHs was recommended by Coffey.
- Coffey also suggested that the waste oil UST should be removed and any associated contamination remediated.

3.3.2 Greencap (2016)

Greencap was engaged by Property NSW to undertake a detailed site investigation (DSI) for Lot 102. The scope of the investigation involved a desktop review including the review of previous investigations undertaken, a site inspection, intrusive works including the drilling of soil bores and sampling of pre-existing monitoring wells, laboratory analysis of soil and groundwater, data assessment and reporting.

A dangerous goods search by SafeWork NSW was conducted (35/037661), which found a record from 1979 for the storage of 250 L aggregate for acetone, benzene, toluene, methyl ethyl ketone, methyl isobutyl ketone, mineral turpentine, kerosene, methylated spirits and ethanol. A copy of the dangerous good search conducted by Greencap is presented in **Appendix B**.

The historical review completed by Greencap revealed that the tramway depot had a tar distillery for production of solvents, oils and disinfectants, which was likely to be located to the north to north-east of Lot 102. It is understood that Sinclair Knight Merz undertook an investigation, remediation and validation of soil and groundwater contaminated by total petroleum hydrocarbons (TPH), PAH, TCE, dichloroethene (DCE), and vinyl chloride (VC) at the tar distillery.

At the time of the Greencap, Lot 102 was being used by Sydney Water as a storage and works depot and the majority of the surface was concrete sealed. The intrusive investigation included the advancement of 11 soil bores up to 3 m bgl and the sampling of three previous installed monitoring wells. The adopted investigation criteria considered two land uses for the site (recreation open space and residential and commercial use with minimal access to soil).

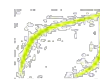
Based on the results of the investigation, Greencap concluded the following:

- The primary source of contamination was historic filling containing elevated concentrations of PAHs, TRH, lead and copper that was brought on-site between 1961 and 1970. The fill material thickness was found to range from 0.6 m bgl to 2.1 m bgl and was comprised of a gravelly clay with anthropogenic material, including asphalt, ash, road base and clinker.
- PAHs and TRH concentrations exceeded the adopted investigation criteria for both public open space and mixed use land use.
- Groundwater flow direction was inferred to the east in the direction of Cooks River. The groundwater was found to be impacted by copper, nickel and zinc at concentrations exceeding the adopted Groundwater Investigation Levels (GILs).

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Site Background Review



- Greencap recommended that due to elevated PAH concentrations in the fill material, remediation was suggested to make the lot suitable for the proposed future open space or mixed use land use.
- A human-health risk assessment was also recommended to qualitatively characterise the contamination present on-site to develop site-specific remediation criteria.

3.3.3 JBS&G (2018)

JBS&G was engaged by Property NSW to develop a Remedial Action Plan (RAP) for the identified soil contamination at Lot 102. The objectives of the RAP were to:

- Define the extent of remediation required based on the proposed land use (high-density residential).
- Identify the remedial strategies to be adopted.
- Document the procedures and standards to be followed in order to remove the risks posed by contaminated soils to make the site suitable for the proposed land use.

The preferred strategy for remediation of contaminated material was defined by JBS&G to be excavation and off-site removal to a licensed waste facility.

The RAP also defined an unexpected finds protocol in case any residual hazards from unexpected sources and / or unexpected locations were encountered during remediation works.

3.3.4 JBS&G (2019)

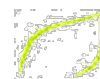
JBS&G was engaged by Property NSW, to provide validation of the remediation works at Lot 102.

Prior to the commencement of remediation works, a Data Gap Investigation (DGI) was undertaken by JBS&G to complement previous investigation data (Greencap 2016). Waste classification samples were collected and analysed and a waste classification letter classified the fill material proposed to be exported from site, as General Solid Waste (non-putrescible).

The remediation works were completed by Environmental Services Group (ESG) between 13 November 2018 to 20 February 2019. All material with identified contamination and aesthetic issues were excavated and disposed offsite at an appropriately licensed landfill. Minor quantities of fill material remain within batters around the boundary of Lot 102.

JBS&G concluded that Lot 102 has been successfully remediated to the extent practicable and validated as suitable for future high-density residential land use subject to management of residual contamination in fill material within the boundary batters.

Site Inspection



4.0 Site Inspection

A site inspection was undertaken by Senversa on 7 February 2019 to assess the nature of the current land uses. Photographs taken during the inspection are included in **Appendix D**.

The southern portion of the site (Lot 101) was accessed from Guess Avenue and comprised a truck repair and spare parts yard. The northern portion of the site (Lot 102) was vacant, with access restricted due to the remediation works occurring at the time of the site inspection. Lot 102 had previously been accessed from Guess Avenue. The site is fenced along all external boundaries, with a fence also separating the two lots.

A summary of the observations during the site inspection is provided below.

Lot 101 DP808944

- Nippon Truck Spares Pty Ltd currently owns the lot and operates a truck parts repair and storage depot. The company repairs and reconditions old / dismantled trucks parts. These activities have been undertaken since the 1990's.
- The lot was largely sealed by concrete with some minor unpaved landscape areas along south-eastern and south-western boundaries.
- Anecdotal evidence and review of historical aerial photographs indicates that the initial concrete slab was laid on-site in the early 1970s and ranges in thickness between 0.1 m in the eastern portion to 0.4 m along the central lot boundary. A number of cracks and hydrocarbon stains were observed on the slab across the lot.
- Two main buildings of corrugated steel construction are present in the eastern portion of the lot. The uncovered sealed areas were used for storage of dismantled truck engine parts, tyres, wood pallets, scrapped metal and drums, which were used for chemical storage. No potential asbestos containing material (PACM) was observed during the site inspection.
- Engine-degreasing and cleaning areas were present adjacent to the main buildings. Both areas have a drainage system for its waste water, which is pumped to an oil / water separator. The waste water is pumped from the separator to a stormwater pit and the waste oil is placed within a waste oil UST. A drum located adjacent to the degreasing and cleaning areas was labelled as "used oil".
- At the time of the site inspection, the UST dipping point and its immediate surrounds showed signs of hydrocarbons staining.
- A caustic bath cleaning unit was observed adjacent to the workshop area in the lot's northeast corner. The unit has an agitator attached.
- A painting cabinet was observed inside of the main building, where storage racks of truck engines and other parts were also observed. The cabinet had corrugated filters and an exhaust system.
- An above ground storage tank (AST) was observed within the storage racks area. The tank was non-bunded and held approximately 1,500 L of diesel.
- Four monitoring wells previously installed by Coffey (2004) were not located during the site inspection, potentially being covered by equipment and storage racks.

Lot 102 DP808944

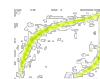
- The lot was undergoing remediation works at the time of the site inspection, as confirmed by signage on the site's fence.
- The site was unsealed with soil exposed and a residual ground surface level approximately 2 m below that of the adjacent properties and road surfaces at that time.

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Conceptual Site Model



5.0 Conceptual Site Model

5.1 Introduction

"A conceptual site model (CSM) is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The development of a CSM is an essential part of all site assessments and provides the framework for identifying how the site became contaminated and how potential receptors may be exposed to contamination either in the present or the future." ASC NEPM (2013).

5.2 Sources of Contamination

Based on the site history and background data reviewed and Senversa's professional experience, the Contaminants of Potential Concern (CoPC) associated with current and historical land uses undertaken at the site and in the surrounding area are summarised in **Table 8**.

Table 9: Contaminants of Potential Concern

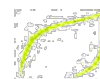
Potential Source	Contaminants of Potential Concern	Comment
On-Site		
Potential Source 1 – historical site uses / operations	Solvents, semi volatile and volatile organic compounds (VOCs / SVOCs), organochlorine and organophosphorus pesticides (OCP/OPPs); TPH; benzene, toluene, ethylbenzene and xylenes (BTEX); chlorinated hydrocarbons (CHCs) (e.g. TCE); heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs, phenols and asbestos.	Historical land uses as market gardens, tramway depot, workshops and truck part reconditioning and storage.
Potential Source 2 – fill materials of unknown origin	Asbestos, TPH, BTEX, polychlorinated biphenyls (PCB), heavy metals, VOCs, SVOCs and OCP/OPPs.	Potential imported fill materials used during construction of the site.
Potential Source 3 – current site use (truck repair and spare part yard)	CHC solvents (e.g. TCE), TPH, PAHs, BTEX, phenol, heavy metals, alkalis (sodium and calcium hydroxide), acids (sulfuric, phosphoric) and asbestos.	Historical land use as a truck repair with storage of dangerous goods and potential leaks within waste oil system / UST and acid bath.
Potential Source 4 – ASS or PASS	Acidity.	The site contains high probability (> 70% chance of occurrence) of ASS or PASS.
Off-Site		
Potential Source 5 – historical surrounding commercial / industrial land uses	PFAS, TPH, BTEX, PAHs, PCBs, heavy metals, VOCs, SVOCs, OCP/OPPs and asbestos.	The surrounding area has historically been utilised for a range of commercial / industrial land uses including market gardens, tramway depot, rail terminals, tar distillery, foundries, asbestos manufacturing and other mixed industries.

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Conceptual Site Model



5.3 Potential Pathways

The primary potential exposure pathways of concern at the site are:

- Inhalation of vapour (from soil and/or groundwater).
- Dermal contact and/or incidental ingestion with contaminated soils.
- Transport of contamination through surface water flows.
- Transport of contamination to underlying groundwater aquifers.

5.4 Potential Receptors

Key receptors have been identified as:

- Current and future site users (commercial and residential).
- Workers carrying out intrusive construction work or maintenance works.
- Groundwater beneath the site.
- Adjacent sensitive receptors (e.g. Wolli Creek and Cooks River).

5.5 Qualitative Evaluation of Environmental Risk

As outlined within the CSM presented above, Senversa considers there to be potentially complete source-pathway-receptor pollutant linkages at the site resulting from:

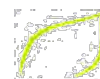
- historical operations including market gardens, tramway yard / depot and storage depot, which may have included the storage, handling, and use of petroleum products, chemicals and potential hazardous substances.
- potentially impacted fill materials from unknown origin.
- current site use as truck repair and spare part yard.
- potential for ASS or PASS.

Based on information reviewed as part of this PSI, Senversa considers that additional investigation is required to assess the contamination status of the site, principally associated with Lot 101.

Prior to undertaking further works, a Sampling and Analysis Quality Plan (SAQP) detailing the required Data Quality Objectives (DQO) for further investigation should be developed.

While the specific requirements of the DSI would be detailed within the SAQP, Senversa considers that the DSI should be undertaken on a targeted basis in consideration of the identified CoPCs and include an assessment of soil and groundwater to characterise potential point sources of contamination.

Conclusions and Recommendations



6.0 Conclusions and Recommendations

Senversa was engaged by Council to undertake a PSI at the site, which comprises Lot 101 and Lot 102 in DP 808944 (**Figure 1**).

The site is currently zoned as 'RE1 Public Recreation' (Lot 101 and Lot 102) under Rockdale Local Environmental Plan 2011; however, Council is seeking to rezone the entire site to 'B4 Mixed Use' and remove the site from the Land Reservation Acquisition Map. As such, the Council requires a PSI to assess the potential risk associated with contamination resulting from current and historical land use practices and any potential constraints to the proposed rezoning.

Objectives and Scope of Investigation

The primary objective of this PSI was to develop an understanding of the potential for contamination to be present at the site, as a result of current and historical land uses, that may pose a risk to human health or ecological receptors.

To meet the above objective, Senversa reviewed the NSW EPA contaminated land register, historical aerial photographs, groundwater-bore information; relevant government databases, published soil, geology and topographic maps, previous investigations and conducted a site inspection.

Results of PSI

The results of the PSI indicated the following:

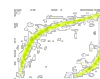
- The site is bounded by Arncliffe Street to the south-east, Guess Avenue to the south-west, Mount Olympus Boulevard to the north-west and high-rise residential dwellings to the north-east.
- The southern portion of the site (Lot 101) is accessed from Guess Avenue and comprises a truck repair and spare parts yard. The northern portion of the site (Lot 102) is vacant land, with access restricted due to the remediation works occurring during the site inspection. Previously, Lot 102 was also accessed from Guess Avenue. The site is fenced along all external boundaries, with a fence also separating the two lots.
- The site is underlain by fill materials with depths ranging between 0.6 m to 2.0 m bgl. Fill materials are comprised of sands, sandy clays, sandy gravels and gravelly sands with anthropogenic material including asphalt, ash, road base, sandstone, clinker, aggregate, glass, brick, slag charcoal and ash. Natural material underlain is comprised of alluvial sand, silty sand and sand clay. It is noted that the majority of fill material on Lot 102 has been excavated and removed, with the residual natural sand remaining.
- The Atlas of Australian ASS and Salinity classifies the site and its surrounding as high probability (> 70% chance of occurrence) of PASS and / or MBO, generally below 1 m of the surface.
- Groundwater is likely to be present within fill materials and shallow alluvial sediments (mostly sands, sandy clays and clays) from a depth of approximately 2.0 m bgl. Deeper aquifers are likely to be present within underlying fractured bedrock.
- Historical records indicated the site was utilised as market gardens, tramway yard / depot, storage depot, which may have included the storage, handling, and use of petroleum products, chemicals and potential hazardous substances.
- Nippon Truck Spares Pty Ltd currently owns Lot 101 and operates a truck parts repair and storage depot. The company repairs and reconditions old / dismantled trucks parts. These activities have been being undertaken since the 1990s.
- The southern portion of the site (Lot 101) comprises external engine degreasing and cleaning areas, a waste oil UST, drums and truck parts depot, a caustic bath cleaning unit, a painting cabinet, a diesel AST and internal storage areas.
- The northern portion of the site (Lot 102) is currently vacant and was undergoing remediation at the time of the site inspection, as confirmed by signage on the site's fence.

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Conclusions and Recommendations

**Conclusions and Recommendations**

Based on the results of the PSI, Senversa developed a CSM detailing potentially complete source-pathway-receptor linkages resulting from:

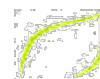
- historical and current operations;
- potentially impacted fill materials from unknown origin; and
- potential for ASS or PASS.

Based on the above and information reviewed as part of this PSI, Senversa considers that additional investigation is required to assess the contamination status of the site, principally associated with Lot 101, and whether there is a potential risk to current and/or future human health or ecological receptors.

While the specific requirements of the DSI would be detailed within an SAQP, Senversa considers that the DSI should be undertaken on a targeted basis in consideration of the identified CoPCs and include an assessment of soil and groundwater to characterise potential point sources of contamination based on historic and current site uses.

The results of the DSI would better inform whether remediation and/or management that may be required for the southern portion of the site (Lot 101). However, considering the type of redevelopment occurring in the surrounding area (high-density residential) and the recent successful remediation completed on the northern portion of the site (Lot 102), the entire site (Lot 101 and Lot 102) can likely be remediated, if required, and made suitable for land uses under B4 Mixed Use zoning.

Principles and Limitations of Investigation



7.0 Principles and Limitations of Investigation

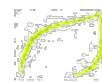
Area	Principle and Limitation
Elimination of Uncertainty	Some uncertainty is inherent in all site investigations. Furthermore, any sample, either surface or subsurface, taken for chemical testing may or may not be representative of a larger population or area. Professional judgment and interpretation are inherent in the process, and even when exercised in accordance with objective scientific principles, uncertainty is inevitable. Additional assessment beyond that which was reasonably undertaken may reduce the uncertainty.
Failure to Detect	Even when site investigation work is executed competently and in accordance with the appropriate Australian guidance, such as the National Environment Protection (Assessment of Site Contamination) Amendment Measure ('the NEPM'), it must be recognised that certain conditions present especially difficult target analyte detection problems. Such conditions may include, but are not limited to, complex geological settings, unusual or generally poorly understood behaviour and fate characteristics of certain substances, complex, discontinuous, random, or heterogeneous distributions of existing target analytes, physical impediments to investigation imposed by the location of services, structures and other man-made objects, and the inherent limitations of assessment technologies.
Limitations of Information	The effectiveness of any site investigation may be compromised by limitations or defects in the information used to define the objectives and scope of the investigation, including inability to obtain information concerning historic site uses or prior site assessment activities despite the efforts of the user and assessor to obtain such information.
Chemical Analysis Error	Chemical testing methods have inherent uncertainties and limitations. Senversa routinely seeks to require the laboratory to report any potential or actual problems experienced, or non-routine events which may have occurred during the testing, so that such problems can be considered in evaluating the data.
Level of Assessment	The investigation herein should not be considered to be an exhaustive assessment of environmental conditions on a property. There is a point at which the effort required to obtain information is outweighed by the time required to obtain that information, and, in the context of private transactions and contractual responsibilities, may become a material detriment to the orderly conduct of business. If the presence of target analytes is confirmed on a property, the extent of further assessment is a function of the degree of confidence required and the degree of uncertainty acceptable in relation to the objectives of the assessment.
Comparison with Subsequent Inquiry	The justification and adequacy of the findings of this investigation in light of the findings of a subsequent inquiry should be evaluated based on the reasonableness of judgments made at the time and under the circumstances in which they were made.
Data Useability	Investigation data generally only represent the site conditions at the time the data were generated. Therefore, the usability of data collected as part of this investigation may have a finite lifetime depending on the application and use being made of the data. In all respects, a future reader of this report should evaluate whether previously generated data are appropriate for any subsequent use beyond the original purpose for which they were collected, or are otherwise subject to lifetime limits imposed by other laws, regulations or regulatory policies.
Nature of Advice	The investigation works herein are intended to develop and present sound, scientifically valid data concerning actual site conditions. Senversa does not seek or purport to provide legal or business advice.

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Figures



Figures

Figure 1: Site Location Plan

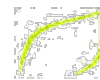
Figure 2: Site Layout and Previous Sampling Locations

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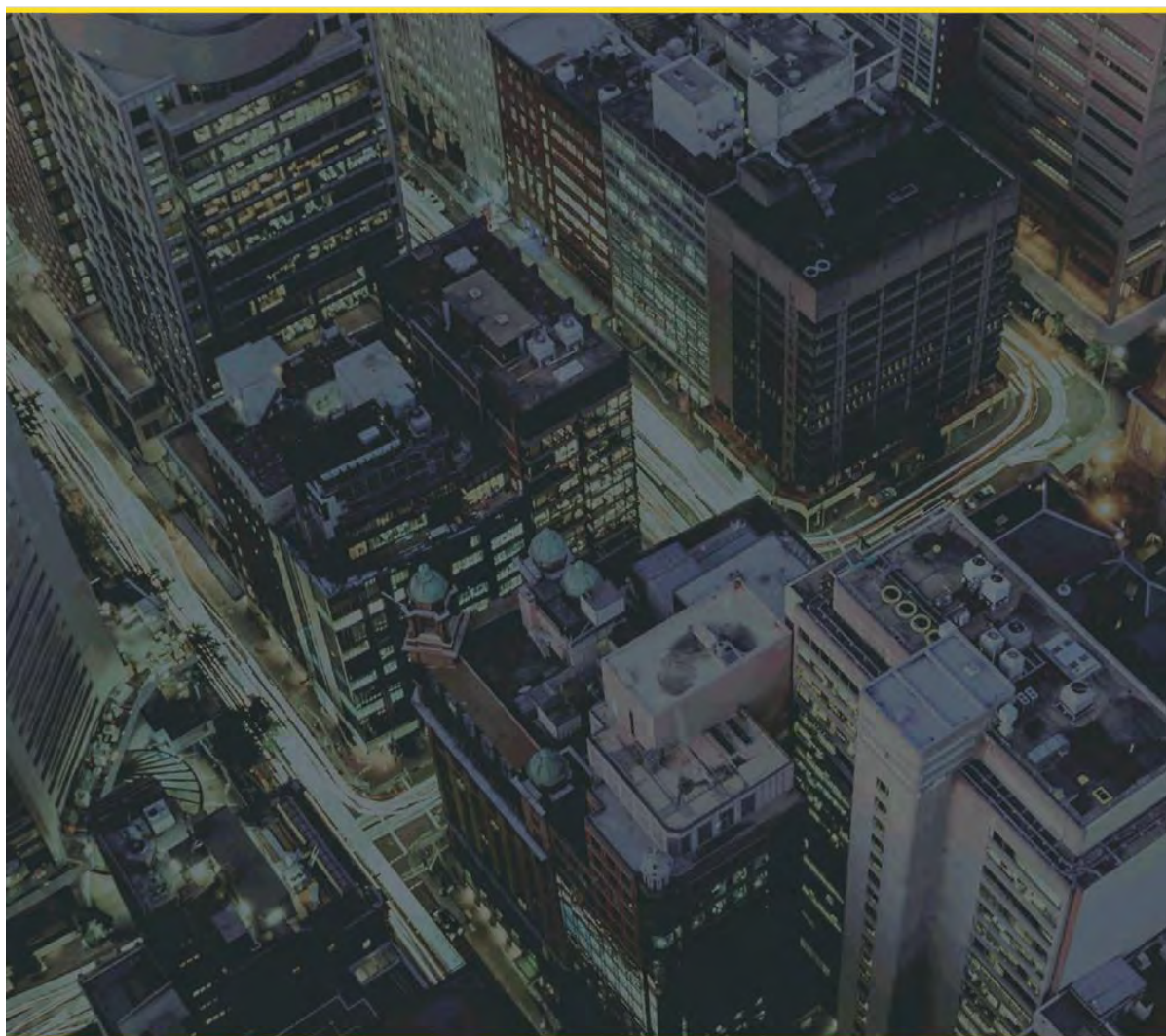
Appendix A: Land Insight & Resources Enviro-Screen Report and Maps Searches



Appendix A: Land Insight & Resources Enviro-Screen Report and Maps Searches

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Fast, Accurate and Comprehensive Environmental and Development Risk Information



ENVIRO-SCREEN

Property Details

Lot 101 & 102 DP808944

2 & 4 Guess Avenue, Woll Creek NSW

Search Date: 4 February 2019

Understanding your Report

Your Report has been produced by Land Insight and Resources (LI Resources).

Your Report is based on information available from public databases and sources at the date of reporting. The information gathered relates to land that is within a **200 to 2000 m radius** (buffer zone) from the boundaries of the Property. A smaller or larger radius may be applied for certain records (as listed under records and as shown in report maps).

While every effort is made to ensure the details in your Report are correct, LI Resources cannot guarantee the accuracy or completeness of the information or data provided.

The report provided by LI Resources includes data listed on page 3 (table of contents). All sources of data and definitions are provided on the report maps and as listed in the Product Guide (Attached). For a full list of references, metadata, publications or additional information not provided in this report, please contact LI Resources at info@liresources.com.au.

The report does not include; title searches; dangerous good searches or; property certificates (unless requested); or information derived from a physical inspection, such as hazardous building materials, areas of infilling or dumping/spilling of potentially contaminated materials. It is important to note that these documents and an inspection can contain information relevant to contamination that may not be identified by this Report.

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Section 1 - Property Setting

1.1 SITE LOCATION MAP AND SENSITIVE RECEPTORS

Map 1 (500m Buffer)

Sensitive receptor	Category	Distance (m)*	Direction
Cahill Park	Park	240.08	south-east
Mosque	Place of Worship	248.87	south-west
Al Zahra College	Combined Primary-Secondary School	286.75	south-west
Sports Field	Sports Field	360.2	south-east
Turrella Childrens Centre	Child Care Centre	366.94	north-west
Ajax Reserve	Park	376.87	south
Empress Reserve	Park	393.27	south-west
Park	Park	439.8	north-west
Almond Reserve	Park	450.74	south-west
Tennis Courts	Sports Court	451.67	south-east
Waterworth Park	Park	480.11	north
Picnic Area	Picnic Area	491.65	south-east

*Distance from the sensitive receptor point feature to the site boundary centroid.

1.2 PLANNING CONTROLS

Map 2 (onsite)

Zoning	RE1 B4	Public Recreation Mixed Use
Environmental Planning Instruments	Not identified	

1.3 SOIL LANDSCAPE

Map 3a (onsite)

Soil Landscape	ALbg	BIRROG	Soil Group	ALLUVIAL
Description	Landscape - level to gently undulating alluvial floodplain draining Wianamatta Group shales. Local relief to 5 m, slopes <3%. Broad valley flats. Extensively cleared tall open-forest and woodland. Soils - deep (>250 cm) Yellow Podzolic Soils (Dy2.42, Dy3.12) and Yellow Solodic Soils (Dy3.42) on older alluvial terraces; deep (>250 cm) Solodic Soils (Dy3.42) and Yellow Solonetz (Dy3.43) on current floodplain. Limitations - localised flooding, high soil erosion hazard, saline subsoil, seasonal waterlogging, very low soil fertility.			

1.4 ACID SULFATE SOIL (OEH 2011)**Map 3a (onsite)**

	On the Property?	Within Record Search Buffer?
Acid Sulfate Soil Risk Maps (ASS) (Table 1.5.1)	Class 3	Class 1 / Class 2 / Class 3 / Class 5

1.5 ATLAS OF AUSTRALIAN ACID SULFATE SOIL AND SALINITY**Map 3b (onsite)**

ASRIS Atlas of Australian Sulfate Soils (Table 1.5.2)	Al(p-)	ASS in sandplains and dunes	Probability of Occurrence	High Probability of occurrence
Hydrologic Soil Group (Table 1.5.3)	D - Very slow rate		Salinity Hazard	Not identified

Table 1.5.1. Classification scheme in the ASS Planning Maps

Class of Land as shown on ASS Planning Maps	
1	Any works
2	Works below natural ground surface Works by which the watertable is likely to be lowered
3	Works beyond 1m below natural ground surface Works by which the watertable is likely to be lowered beyond 1m below natural ground surface
4	Works beyond 2m below natural ground surface Works by which the watertable is likely to be lowered beyond 2m below natural ground surface
5	Works within 500m of adjacent Class 1, 2, 3, or 4 land which are likely to lower the watertable below 1m AHD on adjacent Class 1, 2, 3 or 4 land.

For each class of land, the maps identify the type of works likely to present an environmental risk if undertaken in the particular class of land. If these types of works are proposed, further investigation is required to determine if ASS are actually present and whether they are present in such concentrations as to pose a risk to the environment.

Table 1.5.2. Australian Atlas of Acid Sulfate Soils¹ (ASS) map (CSIRO/NatCASS)

Code	Distinguishing soil/sediment properties, vegetation, landforms, or other characteristics
Probability of Occurrence of ASS ¹	
A	High Probability of occurrence - (>70% chance of occurrence in mapping unit)
B	Low Probability of occurrence - (6-70% chance of occurrence in mapping unit)
C	Extremely low probability of occurrence - (1-5% chance of occurrence in mapping unit)
D	No probability of occurrence - (<1% chance of occurrence in mapping unit)
x	Disturbed ASS ¹ terrain - (ASS ¹ material present below urban development)
u	Unclassified - (Insufficient information to classify map unit)
Zones	

Code	Distinguishing soil/sediment properties, vegetation, landforms, or other characteristics
Probability of Occurrence of ASS¹	
a	Potential acid sulfate soil material and/or Monosulfidic Black Ooze (MBO).
b, c	Potential acid sulfate soil generally within upper 1 m.
c, d, e	ASS ¹ generally within upper 1 m.
f	ASS ¹ generally below 1 m from the surface.
g	ASS ¹ , generally below 3 m from the surface.
h	ASS ¹ generally within 1 m of the surface.
i, j	ASS ¹ generally below 1 m of the surface.
k	ASS ¹ material and/or Monosulfidic Black Ooze (MBO).
l, m, n, o, p, q	ASS ¹ generally within upper 1 m in wet / riparian areas.
Subscripts to codes	
(a)	Actual acid sulfate soil (AASS) = sulfuric material.
(p)	Potential acid sulfate soil (PASS) = sulfidic material.
(q)	Monosulfidic Black Ooze (MBO) is organic ooze enriched by iron monosulfides.
Confidence levels	
(1)	All necessary analytical and morphological data are available
(2)	Analytical data are incomplete but are sufficient to classify the soil with a reasonable degree of confidence
(3)	No necessary analytical data are available, but confidence is fair, based on a knowledge of similar soils in similar environments
(4)	No necessary analytical data are available, and classifier has little knowledge or experience with ASS, hence classification is provisional

¹Acid Sulfate Soils (ASS) are all those soils in which sulfuric acid may be produced, is being produced, or has been produced in amounts that have a lasting effect on main soil characteristics (Pons 1973). Acid sulfate soil (ASS) may include PASS or AASS + PASS. Potential acid sulfate soil (PASS) = sulfidic material. Actual acid sulfate soil (AASS) = sulfuric material.

Table 1.5.3. Hydrologic Soil Group

Code	Soil Group Characteristics
A	Soils having high infiltration rates, even when thoroughly wetted and consisting chiefly of deep, well to excessively-drained sands or gravels. These soils have a high rate of water transmission.
B	Soils having moderate infiltration rates when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.
C	Soils having slow infiltration rates when thoroughly wetted and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture. These soils have a slow rate of water transmission.
D	Soils having very slow infiltration rates when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

1.6 GEOLOGY AND TOPOGRAPHY

Map 4 (onsite)

Geology

Map Sheet	Symbol	Formation	Group	Era	Period	Description
Sydney 1:100,000 Geological Map	Qha	-	-	Cainozoic	Quaternary	Silty to peaty quartz sand, silt, and clay. Ferruginous and humic cementation in places. Common shell layers

Topography

Topography	4-6m AHD
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1.7 HYDROGEOLOGY AND GROUNDWATER BORES

Map 5a (500m - 2000m Buffer)

	On the Property?	Within Record Search Buffer?
Aquifer Type	Porous, extensive highly productive aquifers	Porous, extensive highly productive aquifers
Drinking Water Catchments	<i>Not identified</i>	<i>Not identified</i>
Protected Riparian Corridor	<i>Not identified</i>	<i>Not identified</i>
UPSS Environmentally sensitive zone	Southern NSW area UPSS	Southern NSW area UPSS
Wetlands	<i>Not identified</i>	Estuarine Wetland (Cooks River)
Groundwater Bores	<i>Not identified</i>	Yes, see 1.7.1 and 1.7.2

Table 1.7.1. Groundwater Bore Details

Groundwater Bore ID	Authorised Purpose	Completion Date	Drilled Depth (m)	Final Depth (m)	SWL ¹ (m)	Salinity ¹	Yield ¹ (L/s)	Distance (m)	Direction
GW111346	Monitoring	29-09-10	4.50	4.00	1.25	-	-	122.84	north
GW111344	Monitoring	29-09-10	4.00	4.00	1.55	-	-	150.80	north
GW111345	Monitoring	29-09-10	4.00	4.00	1.24	-	-	157.63	north
GW115014	Monitoring	16-12-10	4.00	4.00	-	-	-	263.59	north-west

Groundwater Bore ID	Authorised Purpose	Completion Date	Drilled Depth (m)	Final Depth (m)	SWL ¹ (m)	Salinity ¹	Yield ¹ (L/s)	Distance (m)	Direction
GW115018	Monitoring	06-06-11	4.00	4.00	-	-	-	316.75	north-west
GW115012	Monitoring	16-12-10	4.00	4.00	-	-	-	324.96	north-west
GW115013	Monitoring	17-12-10	4.00	4.00	-	-	-	324.96	north-west
GW115020	Monitoring	06-06-11	4.00	4.00	-	-	-	335.59	north-west
GW115017	Monitoring	03-06-11	4.00	4.00	-	-	-	346.71	north-west
GW115019	Monitoring	06-06-11	4.00	4.00	-	-	-	357.40	north-west
GW115016	Monitoring	03-06-11	4.00	4.00	-	-	-	362.47	north-west
GW115015	Monitoring	03-06-11	4.00	4.00	-	-	-	365.62	north-west
GW105580	Monitoring	17-11-03	3.50	3.50	1.40	-	-	387.68	north-west
GW107753	Monitoring	04-10-05	6.00	5.00	1.30	-	-	408.92	north-west
GW105581	Monitoring	17-11-03	3.75	3.50	1.40	-	-	410.12	north-west
GW107754	Monitoring	04-10-85	4.80	4.80	1.80	-	-	412.01	north-west
GW107755	Monitoring	05-10-05	4.80	4.80	1.80	-	-	430.45	north-west
GW024109	Water supply	01-03-66	2.10	2.10	2.10	-	0.13	433.97	south-east
GW105583	Monitoring	17-11-03	4.00	4.00	1.60	-	-	437.39	north-west
GW107756	Monitoring	04-10-05	5.00	5.00	1.90	-	-	437.50	north-west
GW105582	Monitoring	17-11-03	3.50	3.50	1.50	-	-	438.55	north-west
GW109966	Household	17-03-09	3.00	3.00	-	-	-	471.25	south-east

¹The most recent data available from NSW Department of Industry – Lands & Water Division.

Table 1.7.2. Groundwater Bore Driller Lithology Details

Groundwater Bore ID	From Depth (m)	To Depth (m)	Lithology	Description	Distance (m)	Direction
GW111346	0	0.1	ASH	Asphalt: poor condition, cracks	122.84	north
	0.1	1.2	FILL	Fill, sandy gravel, dry, loose	122.84	north

	1.2	1.6	LOAM	Loam sandy, fine grained, brown, moist	122.84	north
	1.6	4.5	SAND	Sand, with clay, fine grained, brown, wet	122.84	north
GW111344	0	0.1	ASH	Asphalt: poor condition, cracks	150.80	north
	0.1	1	FILL	Fill, road base, some gravel	150.80	north
	1	1.5	SAND	Sand, loamy, brown, fine grained	150.80	north
	1.5	3.5	SAND	Sand, fine grained, moist, very loose	150.80	north
	3.5	4	CLAY	Clay, high capacity, grey, minor sand	150.80	north
GW111345	0	0.1	ASH	Asphalt: poor condition	157.63	north
	0.1	1.2	FILL	Fill, sandy gravel, grey, clay, sandy	157.63	north
	1.2	1.5	LOAM	Loam, sandy, fine grained, brown, no odour	157.63	north
	1.5	4	SAND	Sand, fine to medium grained, wet, loose	157.63	north
GW115014	0.00	0.30	Fill	CONCRETE CORE	263.59	north-west
	0.30	1.50	Clay	CLAY DRY, GRAVELS, CONCRETE AND BRICKS	263.59	north-west
	1.50	1.80	Sand	GRAVELLY SAND BROWN	263.59	north-west
	1.80	2.50	Sand	SAND GREY MED. GRAINED WET, CLAY	263.59	north-west
	2.50	3.00	Sandy Clay	SANDY CLAY GREY, WET	263.59	north-west
	3.00	4.00	Clay	CLAY GREY WET PLASTIC	316.75	north-west
GW115018	0.00	0.10	Fill	FILL, SANDY GRAVEL	316.75	north-west
	0.10	0.20	Fill	CONCRETE CRUSHED, BROKEN	316.75	north-west
	0.20	1.10	Fill	FILL, SANDY GRAVEL, SANDSTONE	316.75	north-west
	1.10	1.30	Sandstone	SANDSTONE CRUSHED YELLOW LIGHT GREY	316.75	north-west
	1.30	1.50	Sand	GRAVELLY SAND BROWN	316.75	north-west
	1.50	1.80	Gravel	GRAVEL, ROADBASE, MINOR SAND	316.75	north-west
	1.80	2.20	Sand Grains (Lithic)	SAND BROWN SOME GRAVEL	316.75	north-west
	2.20	3.00	Clayey Sand	CLAYEY SAND DARK BROWN	316.75	north-west
	3.00	3.70	Sand	SAND GREY WET LOOSE	316.75	north-west
	3.70	4.00	Clay	CLAY NATURAL, RED/YELLOW	316.75	north-west
GW115012	0.00	0.70	Fill	FILL, SILTY SANDY CLAY, DRY, BROWN/BLACK	324.96	north-west
	0.70	2.00	Clay	CLAY DRY, BROWN/GREY	324.96	north-west
	2.00	3.80	Sand	SAND, WET, MED. GRAINED, MINOR CLAY	324.96	north-west
	3.80	4.00	Clay	CLAY RED, WET, NON PLASTIC	324.96	north-west

GW115013	0.00	0.30	Fill	CONCRETE CORE	324.96	north-west
	0.30	1.40	Fill	FILL,SAND,SANDSTONE AND CLAY	324.96	north-west
	1.40	1.70	Fill	FILL,CLAY, BROWN	324.96	north-west
	1.70	2.30	Sand	SAND GREY MEDIUM MOIST	324.96	north-west
	2.30	3.30	Sandy Clay	SANDY CLAY MEDIUM COARSE	324.96	north-west
	3.30	4.00	Clay	CLAY SANDY SLIGHTLY WEATHERED YELLOW BROWN	324.96	north-west
GW115020	0.00	0.20	Sand	BROWN SAND , GRAVEL LOOSE	335.59	north-west
	0.20	0.60	Sandstone	SANDSTONE CRUSHED. BROWN SAND	335.59	north-west
	0.60	0.80	Gravel	GRAVEL /ROADBASE BLUE METAL,GREY,LOOSE	335.59	north-west
	0.80	1.50	Sand	BROWN GRAVELLY SAND	335.59	north-west
	1.50	1.70	Fill	CRUSHED BROKEN CONCRETE	335.59	north-west
	1.70	2.30	Sand	BROWN SAND SOME GRAVEL, WET	335.59	north-west
	2.30	2.60	Fill	FILL DARK BROWN,LOOSE	335.59	north-west
	2.60	2.70	Clay	CLAY DARK BROWN	335.59	north-west
	2.70	2.80	Sand	SAND GREY WET LOOSE	335.59	north-west
	2.80	4.00	Clayey Sand	CLAYEY SAND , LOOSE WET	335.59	north-west
GW115017	0.00	0.40	Fill	FILL, TOPSOIL BROWN SAND,SOME GRAVEL	346.71	north-west
	0.40	0.60	Sand	SAND YELLOW,MOIST BROKEN BRICK/GRAVEL	346.71	north-west
	0.60	0.80	Fill	FILL BROWN SAND SOME GRAVEL	346.71	north-west
	0.80	1.00	Fill	FILL SAND GRAVEL,COARSE	346.71	north-west
	1.00	1.40	Fill	FILL CORE LOSS.RECOVERED SAMPLE SAND BROWN WET	346.71	north-west
	1.40	2.00	Sand	SAND COARSE GREY YELLOW WET	346.71	north-west
	2.00	2.40	Clay	CLAY GREY WET VERY PLASTIC	346.71	north-west
	2.40	2.70	Sand	SAND GREY COARSE	346.71	north-west
	2.70	3.50	Clay	CLAY YELLOW GREY WET,DENSE	346.71	north-west
	3.50	4.00	Sand	SAND GREY COARSE,WET NOT PLASTIC	346.71	north-west
GW115019	0.00	0.40	Fill	FILL BROWN SAND,BRICK FRAG. GRAVE;	357.40	north-west
	0.40	0.50	Sand	SAND YELLOW BROWN	357.40	north-west
	0.50	0.70	Gravel	GRAVEL, ROADBASE BLUE METAL	357.40	north-west
	0.70	1.00	Sand	BROWN SAND , SOME GRAVEL RED	357.40	north-west

	1.00	1.20	Fill	FILL BROKEN BRICK	357.40	north-west
	1.20	1.50	Sand	SAND BROWN YELLOW	357.40	north-west
	1.50	1.70	Clay	CLAY SOME GRAVEL	357.40	north-west
	1.70	2.00	Rock	BROKEN ROCK FRAGMENTS	357.40	north-west
	2.00	2.30	Sand	SAND,SOME GRAVEL,CRUSHED	357.40	north-west
	2.30	2.50	Sand	SAND LOOSE	357.40	north-west
	2.50	3.00	Clayey Sand	CLAYEY SAND NATURAL	357.40	north-west
	3.00	4.00	Sand	SAND YELLOW BROWN GREY	357.40	north-west
GW115016	0.00	0.20	Fill	CONCRETE SLAB	362.47	north-west
	0.20	0.60	Sand	GRAVELLY SAND BROWN. MINOR CLAY	362.47	north-west
	0.60	1.50	Gravel	GRAVEL/COBBLE.BROKEN CONCRETE	362.47	north-west
	1.50	2.00	Sand	SAND GREY BROWN WET	362.47	north-west
	2.00	2.60	Sandy Clay	SANDY CLAY BROWN/GREY WET	362.47	north-west
	2.60	2.80	Sand	SAND LIGHT GREY	362.47	north-west
	2.80	3.30	Clay	CLAY YELLOW ORANGE	362.47	north-west
	3.30	4.00	Clay	CLAY DENSE.RED/BROWN	362.47	north-west
GW115015	0.00	0.10	0.10	CONCRETE SLAB	365.62	north-west
	0.10	0.40	0.30	FILL, DARK BROWN SAND,SOME CLAY/GRAVEL	365.62	north-west
	0.40	0.70	0.30	SAND / CLAY / GRAVEL	365.62	north-west
	0.70	1.00	0.30	SAND DARK BROWN,SOME GRAVEL	365.62	north-west
	1.00	1.30	0.30	CLAY YELLOW RED BROWN	365.62	north-west
	1.30	1.50	0.20	BROWN SANDY CLAY MATERIAL	365.62	north-west
	1.50	2.00	0.50	SAND GREY WET.LOOSE	365.62	north-west
	2.00	2.80	0.80	SAND, GREY MINOR CLAY,WET,LOOSE	365.62	north-west
	2.80	3.50	0.70	CLAY MOTTLED RED	365.62	north-west
	3.50	3.60	0.10	SANDY CLAY,GREY	365.62	north-west
	3.60	4.00	0.40	CLAY GREY , DENSE. PLASTIC	365.62	north-west
GW105580	0	1.2	FILL	Fill:gravelly sandy clay	387.68	north-west
	1.2	2	20	Sandy clay	387.68	north-west
	2	3	20	Sandy clay	387.68	north-west
	3	3.5	20	Sandy clay	387.68	north-west
GW107753	0	1.3	FILL	Fill,sand ash,gravel and clay	408.92	north-west
	1.3	3.5	21	Sandy clay grey &sand lenses	408.92	north-west

	3.5	3.8	CLAY	Clay brown	408.92	north-west
	3.8	4.9	20	Sandy clay, grey, & lenses	408.92	north-west
	4.9	6	SAND	Sand, light, grey, m/grain	408.92	north-west
GW105581	0	0.45	FILL	Fill: gravelly sandy clay	410.12	north-west
	0.45	0.8	FILL	Fill: clayey sand	410.12	north-west
	0.8	1.5	20	Sandy clay	410.12	north-west
	1.5	2.75	20	Sandy clay	410.12	north-west
	2.75	3.75	CLAY	Sandy clay	410.12	north-west
GW107754	0	1.8	FILL	Fill, sand and rock frag.	412.01	north-west
	1.8	2.6	FILL	Fill, sand, some silt	412.01	north-west
	2.6	3.2	20	Sandy clay, grey, med. grained	412.01	north-west
	3.2	4	20	Sandy clay, yellow brown	412.01	north-west
	4	4.8	CLAY	Clay, red, brown & grey	412.01	north-west
GW107755	0	1.8	FILL	Fill, sand, gravel, clay & bricks	430.45	north-west
	1.8	2.1	CLAY	Clay dark grey/sand	430.45	north-west
	2.1	3.3	CLAY	Clay brown, some fine sand	430.45	north-west
	3.3	4.8	CLAY	Clay grey and red	430.45	north-west
GW024109	0	2.13	SAND	Sand water supply	433.97	south-east
GW105583	0	1	FILL	Fill: gravelly sandy clay	437.39	north-west
	1	1.8	20	Sandy clay	437.39	north-west
	1.8	2.5	20	Sandy clay	437.39	north-west
	2.5	4	CLAY	Clay	437.39	north-west
GW107756	0	1.4	FILL	Fill, gravel, sand, coal silt	437.50	north-west
	1.4	3.2	20	Sandy clay, grey and red	437.50	north-west
	3.2	5	CLAY	Clay red, brown, some grey	437.50	north-west
GW105582	0	0.9	FILL	Fill: sandy clay	438.55	north-west
	0.9	1.25	20	Sandy clay	438.55	north-west
	1.25	3.5	20	Sandy clay	438.55	north-west
GW109966	0	3	CLAY	Clay	471.25	south-east

1.8 HYDROGEOLOGY AND OTHER BOREHOLES

Map 5b (2000m Buffer)

	On the Property?	Within Record Search Buffer?
Groundwater Vulnerability	Not identified	Not identified
Groundwater Exclusion Zones (Botany GMZ ¹)	Not identified	Botany Groundwater Management Zone 2
Groundwater Dependent Ecosystems	Not identified	Ecosystems that rely on Subsurface presence of groundwater
Hydrogeologic Unit	Surficial Sediment Aquifer (porous media - unconsolidated)	Surficial Sediment Aquifer (porous media - unconsolidated) Late Permian/Triassic sediments (porous media - consolidated)
Other known borehole investigations	Not identified	Yes, see 1.8.1

1 – Botany Groundwater Management Zones (BGMZ): Zone 1 – the use of groundwater remains banned; Zones 2 to 4 – domestic groundwater use is banned, especially for drinking water, watering gardens, washing windows and cars, bathing, or to fill swimming pools

Table 1.8.1. Other known borehole investigations (Coal Seam Gas (CSG), Petroleum Wells and Other Boreholes)

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
R180_27_NSR18	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	12.65	171.35	north
BH037	Borehole	Westconnex_Stage_2_M5	RMS	9/11/2014	65.11	171.71	east
R180_27_NSR176	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	24.90	172.21	north
R180_27_NSR175	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	32.48	184.58	north
BH036	Borehole	Westconnex_Stage_2_M5	RMS	23/10/2014	70.08	200.43	east
BH074	Borehole	Westconnex_Stage_2_M5	RMS	18/11/2014	66.12	207.76	south
R180_27_NSR174	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	39.60	222.79	north
BH035	Borehole	Westconnex_Stage_2_M5	RMS	26/11/2014	65.88	249.74	south
BH032	Borehole	Westconnex_Stage_2_M5	RMS	20/10/2014	85.33	290.41	south-west
BH076	Borehole	Westconnex_Stage_2_M5	RMS	27/01/2015	65.10	307.00	south-west
R180_27_NSR173	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	14.32	319.21	north-east
BH031	Borehole	Westconnex_Stage_2_M5	RMS	14/11/2014	75.35	319.64	south
BH031	Borehole	South Link		14/11/2014	75.35	319.64	south

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
BH167	Borehole	Westconnex_Stage_2_M5	RMS	14/01/2015	55.00	327.29	south-east
BH038	Borehole	Westconnex_Stage_2_M5	RMS	17/12/2014	77.80	327.65	east
R180_27_NSR17	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	13.00	335.09	north-east
BH-C3	Borehole	Factual Geotechnical Investigation Report: Replacement of 132kV Cable Route 91L and 91M Sites A,B,C,D	Energy Australia	13/05/2009	15.00	347.12	north-west
BH039	Borehole	Westconnex_Stage_2_M5	RMS	14/01/2015	70.25	368.79	north-east
BH030	Borehole	Westconnex_Stage_2_M5	RMS	13/10/2014	85.24	381.00	south-west
BH-C2	Borehole	Factual Geotechnical Investigation Report: Replacement of 132kV Cable Route 91L and 91M Sites A,B,C,D	Energy Australia	24/06/2009	20.30	400.24	north-west
BH075	Borehole	Westconnex_Stage_2_M5	RMS	13/10/2014	70.07	401.55	south-west
BH-C4	Borehole	Factual Geotechnical Investigation Report: Replacement of 132kV Cable Route 91L and 91M Sites A,B,C,D	Energy Australia	28/09/2009	15.20	404.09	north-west
R180_27_NSRE-W7	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	14.88	409.33	north-east
BH-C1	Borehole	Factual Geotechnical Investigation Report: Replacement of 132kV Cable Route 91L and 91M Sites A,B,C,D	Energy Australia	1/05/2009	15.00	413.07	north-west
BH165	Borehole	Westconnex_Stage_2_M5	RMS	20/01/2015	87.00	415.00	south-east
BH165	Borehole	South Link		20/01/2015	87.00	415.00	south-east
R180_27_NSR16	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	22.05	445.94	north-east
R180_27_NSR107	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	20.30	465.34	north-east
R180_27_NSR172	Borehole	NWRL_R180_Airport Link	Transfield CRT	19/05/1993	20.14	477.35	north-

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
		Project					east
BH027	Borehole	Westconnex_Stage_2_M5	RMS	6/11/2014	80.27	490.40	south-west
R180_27_ARL7	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	25.25	490.62	east
R180_27_NSR106	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	22.00	492.11	north-east
R180_27_NSR171	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	19.30	498.89	north-east
BH168	Borehole	Westconnex_Stage_2_M5	RMS	30/01/2015	65.00	503.19	south-east
R180_27_NSR105	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	23.40	506.15	north-east
R180_62_227	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	1.40	516.73	south
R180_62_238	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	38.77	522.23	south-west
R180_62_224	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	10.00	528.39	south
R180_27_NSR170	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	23.10	535.70	north-east
R180_62_226	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	2.20	545.87	south
R180_61_221	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/12/1998	50.00	548.50	south-west
R180_62_239	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	43.64	550.93	south-west
R180_62_225	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	8.75	556.37	south
R180_62_253	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	16.71	558.60	south-west
R180_55_209	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	17/09/1998	23.44	559.54	south
BH040	Borehole	Westconnex_Stage_2_M5	RMS	17/12/2014	75.00	560.85	north-east
R180_61_220	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/12/1998	41.50	561.05	south-west
R180_27_NSR98	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	23.95	564.54	north-east

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
R180_60_223	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	14/11/1998	17.02	567.62	south-west
R180_62_232	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	7.15	569.48	south
PBH001	Borehole	South Link	x	x	70.00	572.11	south
R180_55_207	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	17/09/1998	23.66	577.12	south
BH041	Borehole	Westconnex_Stage_2_M5	RMS	9/12/2014	1.10	583.48	north-east
R180_62_233	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	8.70	584.19	south
R180_62_252	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	16.05	584.86	south-west
R180_55_208	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	16/09/1998	23.67	586.78	south
R180_55_1(D)	Borehole	NWRL_R180_M5 East	RTA	23/09/1997	15.00	595.98	south
R180_27_NSR104	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	13.80	606.49	east
R180_60_222	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	14/11/1998	33.45	610.13	south-west
R180_55_206	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	16/09/1998	14.30	611.75	south
BH042	Borehole	Westconnex_Stage_2_M5	RMS	16/12/2014	70.68	613.37	north-east
R180_55_205	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	18/09/1998	9.20	631.97	south
R180_27_NSR15	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	30.00	642.31	east
R180_55_DPB7	Borehole	NWRL_R180_M5 East Motorway Eastern Section	RTA	9/01/1997	17.50	661.71	south-east
R180_55_HA7	Borehole	NWRL_R180 Contamination Assessment	RTA	4/08/1998	0.85	661.71	south-east
BH026	Borehole	Westconnex_Stage_2_M5	RMS	31/10/2014	90.04	673.08	south-west
R180_27_NSR53	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	21.75	696.68	east
BH043	Borehole	Westconnex_Stage_2_M5	RMS	13/01/2015	78.00	699.94	north-east

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
R180_55_123	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	10/02/1999	26.72	711.94	south-east
R180_55_8	Borehole	NWRL_R180_M5 Motorway	Connell Wagner	22/09/1995	30.00	734.84	south
BH161	Borehole	Westconnex_Stage_2_M5	RMS	30/01/2015	79.70	797.60	south
BH161	Borehole	South Link		30/01/2015	79.70	797.60	south
R180_27_NSR54	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	32.50	801.64	east
BH025	Borehole	Westconnex_Stage_2_M5	RMS	4/12/2014	85.00	816.82	south-west
BH-D4	Borehole	Factual Geotechnical Investigation Report: Replacement of 132kV Cable Route 91L and 91M Sites A,B,C,D	Energy Australia	14/05/2009	12.00	818.03	north-west
R180_55_101	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	28/01/1999	26.69	822.61	south-east
R180_62_260	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	20.65	823.63	south-west
BH044	Borehole	Westconnex_Stage_2_M5	RMS	23/10/2014	80.00	830.54	north-east
BH-D5	Borehole	Factual Geotechnical Investigation Report: Replacement of 132kV Cable Route 91L and 91M Sites A,B,C,D	Energy Australia	30/09/2009	9.30	835.43	north-west
BH152a	Borehole	Westconnex_Stage_2_M5	RMS	9/03/2015	23.50	841.14	north-east
BH152	Borehole	Westconnex_Stage_2_M5	RMS	17/03/2015	59.90	842.04	north-east
PBH002	Borehole	South Link			70.00	842.26	south-west
R180_27_ARL6	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	37.20	844.52	east
BH-D3	Borehole	Factual Geotechnical Investigation Report: Replacement of 132kV Cable Route 91L and 91M Sites A,B,C,D	Energy Australia	15/05/2009	12.00	851.54	north-west
R180_62_258	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	8.90	855.33	south-west

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
R180_62_259	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	21.00	887.62	south-west
BH070	Borehole	Westconnex_Stage_2_M5	RMS	7/11/2014	65.00	892.97	south-west
BH070	Borehole	South Link		7/11/2014	65.00	892.97	south-west
R180_62_257	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	21.30	896.41	south-west
R180_62_256	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	20.00	907.10	south-west
BH-D2	Borehole	Factual Geotechnical Investigation Report: Replacement of 132kV Cable Route 91L and 91M Sites A,B,C,D	Energy Australia	18/05/2009	7.00	925.26	north
R180_62_254	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	11.95	934.30	south-west
BH069	Borehole	Westconnex_Stage_2_M5	RMS	20/11/2014	56.53	948.34	south-west
BH069	Borehole	South Link		20/11/2014	56.53	948.34	south-west
R180_62_255	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	6.37	948.79	south-west
R180_59_250	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/08/1999	33.50	953.94	north-west
R180_59_249	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/08/1999	6.00	956.33	north-west
BH-D1	Borehole	Factual Geotechnical Investigation Report: Replacement of 132kV Cable Route 91L and 91M Sites A,B,C,D	Energy Australia	18/05/2009	7.00	959.70	north-west
R180_33_GW1	Borehole	NWRL_R180_Gas Monitoring Well Installation	Tenix Projects	18/04/2005	2.50	963.75	north-east
R180_55_HA6	Borehole	NWRL_R180_Contamination Assessment	RTA	4/08/1998	0.70	973.37	south-east
R180_34_BH3	Borehole	NWRL_R180_Tempe Tip	Marrickville Municipal Council	9/03/1991	12.80	991.87	north-east
R180_56_CPTC6	Borehole	NWRL_R180_M5 East Motorway	RTA	10/01/1997	12.00	993.51	south-east

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
BH028	Borehole	Westconnex_Stage_2_M5	RMS	11/11/2014	45.05	1002.89	south
BH067	Borehole	Westconnex_Stage_2_M5	RMS	19/11/2014	50.32	1022.36	south-west
BH067	Borehole	South Link		19/11/2014	50.32	1022.36	south-west
R180_15_2322	Borehole	NWRL_R180_SITGAP	Federal Airports Corporation	13/01/1998	26.00	1023.37	south-east
R180_27_NSR55	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	29.75	1025.39	south-east
R180_15_2318	Borehole	NWRL_R180_SITGAP	Federal Airports Corporation	13/01/1998	25.00	1029.81	south-east
R180_37_10	Borehole	NWRL_R180_Tempe Tip - Geotechnical and Contamination Assessment	Waste Services	24/09/1998	4.50	1031.45	north-east
R180_59_244	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/08/1999	6.00	1031.92	north-west
R180_15_2321	Borehole	NWRL_R180_SITGAP	Federal Airports Corporation	13/01/1998	26.20	1034.78	south-east
R180_59_248	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/08/1999	50.00	1037.06	north-west
R180_62_228	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	36.25	1039.35	north-west
R180_29_RW1-C	Borehole	NWRL_R180_M5 East Cycle Way	RTA	11/08/1999	13.85	1041.48	east
R180_33_GW8	Borehole	NWRL_R180_Gas Monitoring Well Installation	Tenix Projects	18/04/2005	5.00	1041.78	north-east
R180_59_246	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/08/1999	6.00	1045.22	north-west
R180_15_2320	Borehole	NWRL_R180_SITGAP	Federal Airports Corporation	13/01/1998	26.10	1045.85	south-east
R180_59_247	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/08/1999	17.40	1047.46	north-west
R180_29_RW1-D	Borehole	NWRL_R180_M5 East Cycle Way	RTA	11/08/1999	7.80	1048.08	east
R180_15_2319	Borehole	NWRL_R180_SITGAP	Federal Airports Corporation	13/01/1998	22.80	1048.41	south-east

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
R180_54_210	Borehole	NWRL_R180_M5 East	RTA	20/09/1998	20.43	1049.64	north-west
R180_59_241	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/08/1999	40.00	1050.17	north-west
R180_29_RW1-E	Borehole	NWRL_R180_M5 East Cycle Way	RTA	11/08/1999	15.90	1055.12	east
R180_15_2317	Borehole	NWRL_R180_SITGAP	Federal Airports Corporation	13/01/1998	24.15	1056.47	south-east
R180_33_GW9	Borehole	NWRL_R180_Gas Monitoring Well Installation	Tenix Projects	18/04/2005	3.00	1060.54	north-east
R180_29_RW1-F	Borehole	NWRL_R180_M5 East Cycle Way	RTA	11/08/1999	13.70	1062.33	east
R180_62_231	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	40.62	1066.80	north-west
R180_34_TL2	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	15.45	1067.62	north-east
R180_62_229	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	31.00	1069.17	north-west
BH071	Borehole	Westconnex_Stage_2_M5	RMS	29/10/2014	75.00	1069.61	south
R180_29_RW1-G	Borehole	NWRL_R180_M5 East Cycle Way	RTA	11/08/1999	14.53	1071.89	east
R180_27_NSR14	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	26.04	1073.43	south-east
R180_59_245	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/08/1999	6.00	1077.99	north-west
R180_29_RW1-H	Borehole	NWRL_R180_M5 East Cycle Way	RTA	11/08/1999	14.97	1080.68	east
R180_15_2316	Borehole	NWRL_R180_SITGAP	Federal Airports Corporation	13/01/1998	23.30	1081.62	south-east
BH097	Borehole	Westconnex_Stage_2_M5	RMS	17/10/2014	85.00	1081.72	south-west
BH029	Borehole	Westconnex_Stage_2_M5	RMS	17/10/2014	44.95	1083.15	south-east
R180_15_2315	Borehole	NWRL_R180_SITGAP	Federal Airports Corporation	13/01/1998	23.45	1089.47	south-east
R180_59_251	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/08/1999	29.10	1089.80	north-west

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
R180_62_230	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	4/02/1999	22.80	1091.98	north-west
R180_15_2314	Borehole	NWRL_R180_SITGAP	Federal Airports Corporation	13/01/1998	23.10	1093.87	south-east
R180_15_2311	Borehole	NWRL_R180_SITGAP	Federal Airports Corporation	13/01/1998	23.75	1094.28	east
R180_15_2312	Borehole	NWRL_R180_SITGAP	Federal Airports Corporation	13/01/1998	20.90	1095.09	east
R180_15_2313	Borehole	NWRL_R180_SITGAP	Federal Airports Corporation	13/01/1998	22.20	1097.38	south-east
PBH003	Borehole	South Link		11/08/2016	20.00	1108.35	south-west
BH159	Borehole	Westconnex_Stage_2_M5	RMS	21/01/2015	74.92	1111.82	south-east
R180_59_242	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/08/1999	30.00	1118.37	north-west
R180_56_102	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	15/01/1999	23.95	1121.35	south-east
R180_59_243	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/08/1999	11.00	1131.59	north-west
BH066	Borehole	Westconnex_Stage_2_M5	RMS	28/11/2014	35.93	1131.69	south
R180_47_TT103	Borehole	NWRL_R180_M5_F5 Fairford Rd to Euston Rd St Peters	Department of Main Roads	22/10/1986	14.20	1140.18	north-east
BH065	Borehole	Westconnex_Stage_2_M5	RMS	29/10/2014	40.00	1146.08	south
R180_61_219	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/12/1998	61.60	1151.09	south-west
R180_37_9	Borehole	NWRL_R180_Tempe Tip - Geotechnical and Contamination Assessment	Waste Services	24/09/1998	5.50	1159.53	north-east
R180_34_TL7	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	17.80	1166.68	north-east
R180_33_GW10	Borehole	NWRL_R180_Gas Monitoring Well Installation	Tenix Projects	18/04/2005	4.00	1176.05	north-east
R180_56_CPT C5	Borehole	NWRL_R180_M5 East Motorway	RTA	10/01/1997	20.00	1208.15	south-east

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
BH096	Borehole	Westconnex_Stage_2_M5	RMS	12/12/2014	85.80	1212.15	south-west
R180_33_GW11	Borehole	NWRL_R180_Gas Monitoring Well Installation	Tenix Projects	18/04/2005	4.00	1215.15	north-east
R180_34_TL14	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	26.65	1225.21	north-east
BH068	Borehole	Westconnex_Stage_2_M5	RMS	23/10/2014	50.90	1225.87	south-east
BH064	Borehole	Westconnex_Stage_2_M5	RMS	13/11/2014	35.93	1239.38	south
R180_27_NSR28	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	25.35	1239.53	south-east
R180_56_29	Borehole	NWRL_R180_Acid Sulfate Soils Investigation	RTA	18/06/1997	10.30	1255.02	south-east
R180_37_8	Borehole	NWRL_R180_Tempe Tip - Geotechnical and Contamination Assessment	Waste Services	24/09/1998	5.50	1258.83	north-east
R180_33_GW12	Borehole	NWRL_R180_Gas Monitoring Well Installation	Tenix Projects	18/04/2005	3.00	1277.16	north-east
R180_34_TL3	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	7.90	1296.91	north-east
BH063	Borehole	Westconnex_Stage_2_M5	RMS	24/10/2014	44.81	1303.01	south
BH063a	Borehole	Westconnex_Stage_2_M5	RMS	24/10/2014	9.00	1303.01	south
BH101	Borehole	Westconnex_Stage_2_M5	RMS	8/12/2014	70.30	1309.17	north-east
R180_56_130	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	14/02/1999	14.95	1311.15	south-east
R180_56_131	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	17/02/1999	11.50	1312.44	south-east
R180_56_132	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	18/02/1999	14.60	1312.60	south-east
R180_56_133	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	17/02/1999	11.60	1313.48	south-east
BH062	Borehole	Westconnex_Stage_2_M5	RMS	16/10/2014	25.10	1313.53	south-east
BH062a	Borehole	Westconnex_Stage_2_M5	RMS	20/10/2014	38.75	1313.53	south-east
R180_27_NSR22	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	35.55	1315.77	south-east

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
R180_33_GW13	Borehole	NWRL_R180_Gas Monitoring Well Installation	Tenix Projects	18/04/2005	4.00	1319.35	north-east
R180_37_2	Borehole	NWRL_R180_Tempe Tip - Geotechnical and Contamination Assessment	Waste Services	24/09/1998	5.00	1319.78	north-east
R180_56_103	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	22/12/1998	29.25	1330.00	south-east
R180_56_135	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	19/02/1999	20.40	1333.57	south-east
R180_33_GW14	Borehole	NWRL_R180_Gas Monitoring Well Installation	Tenix Projects	18/04/2005	2.50	1336.36	north-east
R180_62_261	Borehole	NWRL_R180_M5_M5 East	BHBB JV / HYDER	29/11/1999	77.59	1337.09	south-west
R180_56_134	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	19/02/1999	16.45	1337.50	south-east
R180_56_128	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	15/02/1999	22.60	1342.09	south-east
R180_56_129	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	16/02/1999	14.60	1342.80	south-east
R180_27_NSR34	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	34.35	1346.08	south-east
R180_56_127	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	15/02/1999	12.20	1346.79	south-east
R180_56_30	Borehole	NWRL_R180_Acid Sulfate Soils Investigation	RTA	18/06/1997	11.70	1356.16	south-east
R180_34_TL11	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	11.50	1357.14	north-east
BH146	Borehole	Westconnex_Stage_2_M5	RMS	3/02/2015	50.00	1364.53	south-west
R180_34_TL8	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	19.67	1368.83	north-east
R180_47_TT102	Borehole	NWRL_R180_M5_F5 Fairford Rd to Euston Rd St Peters	Department of Main Roads	22/10/1986	13.00	1380.18	north-east
R180_56_DPB5	Borehole	NWRL_R180_M5 East Motorway	RTA	13/01/1997	19.90	1389.25	south-east
R180_56_RT3(D)	Borehole	NWRL_R180_M5 East	RTA	19/09/1997	20.00	1389.55	south-east
R180_61_218	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/12/1998	74.65	1390.66	south-west

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
R180_34_TL15	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	19.70	1396.05	north-east
R180_37_7	Borehole	NWRL_R180_Tempe Tip - Geotechnical and Contamination Assessment	Waste Services	24/09/1998	5.50	1408.55	north-east
R180_56_104	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	5/01/1999	36.63	1409.99	south-east
R180_56_105	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	1/09/1999	17.45	1417.44	south-east
PBH004	Borehole	South Link			27.00	1418.61	south-west
R180_56_31	Borehole	NWRL_R180_Acid Sulfate Soils Investigation	RTA	17/06/1997	10.60	1431.39	south-east
R180_27_NSR36	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	34.15	1433.16	south-east
R180_56_119	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	11/02/1999	8.15	1445.85	south-east
R180_56_106	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	10/12/1998	30.30	1457.84	south-east
R180_34_TL17	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	6.42	1471.87	north-east
BH061	Borehole	Westconnex_Stage_2_M5	RMS	13/10/2014	30.10	1478.97	south
BH061	Borehole	South Link		13/10/2014	30.10	1478.97	south
BH061a	Borehole	Westconnex_Stage_2_M5	RMS	13/10/2014	11.00	1478.97	south
BH061b	Borehole	Westconnex_Stage_2_M5	RMS	13/10/2014	11.00	1478.97	south
BH144	Borehole	Westconnex_Stage_2_M5	RMS	23/01/2015	115.90	1483.64	south-west
R180_56_107	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	16/12/1998	30.60	1491.14	south-east
R180_56_120	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	6/02/1999	10.10	1493.79	south-east
R180_27_NSR21	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	32.72	1496.72	south-east
BH153	Borehole	Westconnex_Stage_2_M5	RMS	6/02/2015	63.06	1503.16	north-east
R180_33_GW15	Borehole	NWRL_R180_Gas Monitoring Well Installation	Tenix Projects	18/04/2005	4.00	1503.68	north-east
R180_56_121	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	9/02/1999	13.70	1511.21	south-east

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
R180_34_TL21	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	16.50	1516.29	north-east
R180_45_BH5	Borehole	NWRL_R180_Eastern Branch Sewer	Waterboard Sydney	10/10/1994	3.05	1530.30	north
R180_56_108	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	4/01/1999	31.80	1532.32	south-east
R180_45_BH6	Borehole	NWRL_R180_Eastern Branch Sewer	Waterboard Sydney	21/12/1995	7.18	1536.52	north
R180_34_TL16	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	17.10	1546.52	north-east
BH094	Borehole	Westconnex_Stage_2_M5	RMS	11/12/2014	75.43	1548.63	south-west
R180_37_6	Borehole	NWRL_R180_Tempe Tip - Geotechnical and Contamination Assessment	Waste Services	24/09/1998	5.50	1554.31	north-east
R180_47_TT101	Borehole	NWRL_R180_M5_F5 Fairford Rd to Euston Rd St Peters	Department of Main Roads	22/10/1986	14.50	1556.83	north-east
R180_56_109	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	19/12/1998	25.10	1559.80	south-east
R180_34_TL10	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	14.84	1561.15	north-east
R180_34_TL9	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	19.51	1566.67	north-east
R180_37_1	Borehole	NWRL_R180_Tempe Tip - Geotechnical and Contamination Assessment	Waste Services	24/09/1998	18.00	1569.18	north-east
R180_56_RT4(D)	Borehole	NWRL_R180_M5 East	RTA	16/09/1997	19.20	1574.09	south-east
R180_56_32	Borehole	NWRL_R180_Acid Sulfate Soils Investigation	RTA	17/06/1997	14.70	1579.51	south-east
R180_56_DPB4	Borehole	NWRL_R180_M5 East Motorway	RTA	21/01/1997	21.80	1586.21	south-east
R180_34_TL4	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	10.37	1598.65	north-east
R180_45_BH7	Borehole	NWRL_R180_Eastern Branch Sewer	Waterboard Sydney	10/10/1994	7.00	1603.50	north
R180_56_110	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	17/12/1998	25.92	1603.55	south-east
BH215	Borehole	Westconnex_Stage_2_M5	RMS	17/02/2015	66.00	1622.86	south

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
BH1	Borehole	Marrickville Station Easy Access Upgrade - Geotechnical Site Investigation	TINSW	28/07/2013	12.00	1624.27	north-east
BH1	Borehole	Marrickville Station HV Enabling Works	Sydney Trains	28/07/2013	12.00	1624.28	north-east
R180_33_GW2	Borehole	NWRL_R180_Gas Monitoring Well Installation	Tenix Projects	18/04/2005	5.00	1625.75	north-east
BH2	Borehole	Marrickville Station HV Enabling Works	Sydney Trains	27/07/2013	6.45	1627.91	north-east
BH2	Borehole	Marrickville Station Easy Access Upgrade - Geotechnical Site Investigation	TINSW	27/07/2013	6.45	1627.93	north-east
R180_56_111	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	12/08/1998	25.60	1633.80	south-east
BH216	Borehole	Westconnex_Stage_2_M5	RMS	13/02/2015	69.00	1637.65	south-west
BH216	Borehole	South Link		13/02/2015	69.00	1637.65	south-west
R180_56_124	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	16/02/1999	23.44	1639.62	south-east
R180_33_GW3	Borehole	NWRL_R180_Gas Monitoring Well Installation	Tenix Projects	18/04/2005	5.00	1640.33	north-east
R180_47_TT104	Borehole	NWRL_R180_M5_F5 Fairford Rd to Euston Rd St Peters	Department of Main Roads	22/10/1986	15.00	1648.07	north-east
R180_34_TL12	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	13.70	1659.97	north-east
BH4	Borehole	Marrickville Station Easy Access Upgrade - Geotechnical Site Investigation	TINSW	28/07/2013	6.45	1666.73	north-east
BH4	Borehole	Marrickville Station HV Enabling Works	Sydney Trains	28/07/2013	6.45	1666.74	north-east
BH9	Borehole	Marrickville Station HV Enabling Works	Sydney Trains	27/07/2013	8.50	1666.77	north
BH9	Borehole	Marrickville Station Easy Access Upgrade - Geotechnical Site Investigation	TINSW	27/07/2013	6.50	1666.79	north

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
BH5	Borehole	Marrickville Station Easy Access Upgrade - Geotechnical Site Investigation	TfNSW	28/07/2013	2.50	1669.62	north-east
BH5	Borehole	Marrickville Station HV Enabling Works	Sydney Trains	28/07/2013	2.50	1669.65	north-east
R180_27_NSR58	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	35.45	1682.36	south-east
BH6	Borehole	Marrickville Station HV Enabling Works	Sydney Trains	28/07/2013	1.00	1688.03	north-east
BH6	Borehole	Marrickville Station Easy Access Upgrade - Geotechnical Site Investigation	TfNSW	28/07/2013	1.00	1688.05	north-east
R180_56_112	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	12/10/1998	27.13	1689.03	south-east
R180_56_125	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	17/02/1999	24.80	1699.98	south-east
BH103	Borehole	Westconnex_Stage_2_M5	RMS	28/11/2014	60.30	1700.23	north-east
R180_61_217	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/12/1998	53.06	1709.02	south-west
R180_37_5	Borehole	NWRL_R180_Tempe Tip - Geotechnical and Contamination Assessment	Waste Services	24/09/1998	5.50	1710.77	north-east
R180_56_CPT C4	Borehole	NWRL_R180_M5 East Motorway	RTA	10/01/1997	20.70	1714.32	south-east
R180_34_1(Coffey1991)	Borehole	NWRL_R180_Tempe Tip Monitoring Well	Federal Airport Corporation	18/07/1991	10.00	1726.33	north-east
R180_34_BH1	Borehole	NWRL_R180_Tempe Tip	Marrickville Municipal Council	3/11/1995	8.45	1726.33	north-east
R180_34_2(Coffey1991)	Borehole	NWRL_R180_Tempe Tip Monitoring Well	Federal Airport Corporation	18/07/1991	5.00	1744.04	north-east
R180_34_BH2	Borehole	NWRL_R180_Tempe Tip	Marrickville Municipal Council	3/11/1995	6.45	1744.04	north-east
R180_56_113	Borehole	NWRL_R180_M5 East	BHBB-JV/Hyder	8/12/1998	28.94	1746.74	south-east
BH093	Borehole	Westconnex_Stage_2_M5	RMS	3/12/2014	80.90	1751.14	south-west

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
R180_33_GW4	Borehole	NWRL_R180_Gas Monitoring Well Installation	Tenix Projects	18/04/2005	3.00	1752.78	north-east
R180_34_TL13	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	16.50	1758.45	north-east
R180_56_33	Borehole	NWRL_R180_Acid Sulfate Soils Investigation	RTA	12/06/1997	14.95	1760.72	south-east
R180_45_BH1	Borehole	NWRL_R180_Eastern Branch Sewer	Waterboard Sydney	10/10/1994	1.90	1770.47	north
R180_33_GW5	Borehole	NWRL_R180_Gas Monitoring Well Installation	Tenix Projects	18/04/2005	5.00	1772.24	north-east
R180_56_DPB3	Borehole	NWRL_R180_M5 East Motorway	RTA	23/01/1997	31.30	1781.55	south-east
BH8	Borehole	Marrickville Station Easy Access Upgrade - Geotechnical Site Investigation	TfNSW	28/07/2013	1.80	1785.30	north
BH8	Borehole	Marrickville Station HV Enabling Works	Sydney Trains	28/07/2013	1.80	1785.30	north
BH7	Borehole	Marrickville Station HV Enabling Works	Sydney Trains	27/07/2013	2.20	1786.30	north-west
BH7	Borehole	Marrickville Station Easy Access Upgrade - Geotechnical Site Investigation	TfNSW	27/07/2013	2.20	1786.35	north-west
R180_34_TL5	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	12.12	1803.37	north-east
R180_34_TL6	Borehole	NWRL_R180_Tempe Lands Remediation Development	Marrickville Council	17/03/2003	12.35	1846.41	north-east
R180_61_216	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/12/1998	55.94	1850.13	south-west
R180_58_234	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	20/05/1999	18.20	1850.83	south-west
BH154	Borehole	Westconnex_Stage_2_M5	RMS	27/01/2015	60.00	1853.32	north-east
R180_37_4	Borehole	NWRL_R180_Tempe Tip - Geotechnical and Contamination Assessment	Waste Services	24/09/1998	7.00	1861.76	north-east
R180_33_GW6	Borehole	NWRL_R180_Gas Monitoring Well Installation	Tenix Projects	18/04/2005	5.00	1864.27	north-east
R180_58_235	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	20/05/1999	9.30	1903.61	south-west

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
R180_33_GW7	Borehole	NWRL_R180_Gas Monitoring Well Installation	Tenix Projects	18/04/2005	5.00	1943.59	north-east
R180_27_NSR29	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	36.15	1944.10	south-east
BH105	Borehole	Westconnex_Stage_2_M5	RMS	10/10/2014	59.90	1969.16	north-east
R180_27_NSR59	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	35.05	1998.63	south-east
R180_61_215	Borehole	NWRL_R180_M5_M5 East	BHBB-JV/Hyder	10/12/1998	6.00	2018.83	south-west
R180_27_NSR61	Borehole	NWRL_R180_Airport Link Project	Transfield CRT	19/05/1993	30.00	2106.79	south-east

Section 2 Environmental Records Summary – Contamination and Potentially Contaminating Activities

2.1 PFAS INVESTIGATION PROGRAM

Map 5b (2000m Buffer)

Site	Description	Distance (m)	Direction
Botany Bay area and Botany Industrial Park, Sydney Airport	Fishing restrictions were introduced at the end of 2017 for Botany Bay and the Georges River- Elevated PFAS in the area from a number of sources, including Sydney Airport. None of the contamination readings from Botany Bay have been released. Air Service	906.22	east

2.2 CONTAMINATED LAND RECORD OF NOTICES ISSUED UNDER THE CLM ACT 1997

Map 6 (1000m Buffer)

Site Name ²	Site ID	Address ¹	Notices	Distance (m)	Direction
Tulloch Australia Pty Limited	3251	61 Turrella STREET, TURRELLA	3 current	453.32	South-west
RTA Land	3307	3 Jackson PLACE EARLWOOD NSW	2 current	761.37	North-west
Alexandra Canal Sediments	3151	Off Huntley STREET, ALEXANDRIA	2 current	825.35	South-east
Cooks River Aqueduct	3149	Thornley STREET MARRICKVILLE NSW	1 former	846.42	North-west
Caltex Service Station	3432	775 Princes HIGHWAY, TEMPE	2 current	868.48	North-west
Former Tempe Tip	3157	South STREET TEMPE NSW	2 current and 6 former	897.47	North-east

1. Some addresses do not contain specific street numbers. Records identified as being in the surrounding area have been added for information.

2. Former NSW EPA sites. These sites have been removed from the Record of Notices and/or the Sites Notified lists and are kept here for information purposes only.

2.3 SITES NOTIFIED AS CONTAMINATED TO THE NSW EPA

Map 6 (1000m Buffer)

Site Name ²	Address ¹	Activity that caused Contamination	EPA Site Management Class ³	Distance (m)	Direction
Former Ausgrid Substation 10061	13 Gertrude STREET WOLLI CREEK	Other Industry	Regulation under CLM Act not required	275.65	South-east
7-Eleven Arncliffe	28 Princes HIGHWAY ARNCLIFFE	Service Station	Regulation under CLM Act not required	289.45	South-east
Wolli Creek Aqueduct	Unwin STREET EARLWOOD	Unclassified	Regulation under CLM Act not required	362.88	North-east
Tulloch Australia Pty Limited	61 Turrella STREET, TURRELLA	Chemical Industry	Contamination currently regulated under CLM Act	453.32	South-west

Site Name ²	Address ¹	Activity that caused Contamination	EPA Site Management Class ³	Distance (m)	Direction
RTA Land	3 Jackson PLACE EARLWOOD NSW	Unclassified	Contamination currently regulated under CLM Act	761.37	North-west
Mackey Park	Cnr Richardsons Crescent and Carrington ROAD MARRICKVILLE	Landfill	Regulation under CLM Act not required	797.48	North-west
Alexandra Canal Sediments	Off Huntley STREET, ALEXANDRIA	Unclassified	Contamination currently regulated under CLM Act	825.35	South-east
Cooks River Aqueduct	Thornley STREET MARRICKVILLE NSW	Unclassified	Contamination formerly regulated under the CLM Act	846.42	North-west
Caltex Service Station	775 Princes HIGHWAY, TEMPE	Service Station	Contamination currently regulated under CLM Act	868.48	North-west
Former Tempe Tip	South STREET TEMPE NSW	Landfill	Contamination currently regulated under CLM Act	897.47	North-east
Tempe Depot	1a Gannon STREET	Other Petroleum	Regulation under CLM Act not required	924.56	North-west

1. Some addresses do not contain specific street numbers. Records identified as being in the surrounding area have been added for information.

2. Former NSW EPA sites. These sites have been removed from the Record of Notices and/or the Sites Notified lists and are kept here for information purposes only.

3. The EPA maintains a record of sites that have been notified to the EPA by owners or occupiers as contaminated land. The sites notified to the EPA and recorded on the register are at various stages of the assessment and/or remediation process. Table 5 outlines the possible management status that can be attributed to a registered contaminated site.

Table 2.3.1. EPA Site Management Class Explanation

EPA Site Management Class	
Under Assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or Protection of the Environment Operations Act 1997. Alternatively, the EPA may require information via a notice issued under s77 of the Contaminated Land Management Act 1997 or issue a Preliminary Investigation Order.
Regulation under the CLM Act not required	The EPA has completed an assessment of the contamination and decided that regulation under the Contaminated Land Management Act 1997 is not required.
Regulation being finalised	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997. A regulatory approach is being finalised.
Contamination currently regulated under the CLM Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record.
Contamination currently regulated under the POEO Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. Management of the contamination is regulated under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA's regulatory actions under the POEO Act are available on the POEO public register.
Contamination being managed via the planning process (EP&A Act)	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the Environmental Planning and Assessment Act 1979 (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment.

EPA Site Management Class	
Contamination formerly regulated under the CLM Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). The contamination was addressed under the CLM Act.
Contamination formerly regulated under the POEO Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A Act).
Contamination was addressed via the planning process (EP&A Act)	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A Act).
Ongoing maintenance required to manage residual contamination (CLM Act)	The EPA has determined that ongoing maintenance, under the Contaminated Land Management Act 1997 (CLM Act), is required to manage the residual contamination. Regulatory notices under the CLM Act are available on the EPA's Contaminated Land Public Record.

2.4 OTHER REGULATORY CONTAMINATION ISSUES

Map 6 (1000m Buffer)

James Hardie Asbestos Waste Contamination Legacy

Site	Location	Type	Distance (m)	Direction
Not identified	-	-	-	-

Former Uranium Processing Site at Hunters Hill (NSW)

Site	Location	Distance (m)	Direction
Not identified	-	-	-

Former Gasworks Sites

Site	Location	Distance (m)	Direction
Not identified	-	-	-

Military Facilities

Site name	Defence code	Area (ha)	Distance (m)	Direction
(former) Arncliffe; Gres training depot (1998/99, 1998/99, 1998/1999)	AAER2-3	1	509.77	South-west

2.5 POTENTIALLY CONTAMINATING ACTIVITIES**Map 7a (500m Buffer)****Aviation Fuel Depots/Terminals**

Site name	Description	Status	Distance (m)	Direction
Not identified	-	-	-	-

Aviation Rescue Fire Fighting Facilities (ARFF)

Site name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-

Derelict Mines and Quarries

Deposit Name	Method	Description	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Dry Cleaners

Site name	Location	Status	Distance (m)	Direction
Wolli Creek Laundry & Dry Cleaning	1/6 Discovery Point Place, Sydney NSW 2205	operational	200.28	North-east

Historical (Legacy) Landfills

Site	Description	Distance (m)	Direction
Waterworth park old garbage tip	In 1955 the park was used as a garbage tip with dumping of refuse extending to the Cooks's River and Wolli Creek shorelines (Wilson, G; 2015; Uncovering the hidden history of the Wolli Creek Area)	302.02	north
Tempe Tip *exact extent unknown	Tempe Lands was the site of a shale quarry in the 1920s and then a rubbish tip until the mid 1970s (Inner West Council, 2019). The EPA detected contaminated leachate, asbestos and ammonia polluting soil, groundwater and the adjacent Alexandria Canal.	897.47	North-east

Note: This is not an exhaustive list of all legacy landfills in NSW

Liquid Fuel Depots/Terminals

Site name	Owner	Location	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Power Stations

Site name	Owner	Primary Fuel Type	Status	Distance (m)	Direction
Not Identified	-	-	-	-	-

Service Stations

Site name	Owner	Location	Status	Distance (m)	Direction
7-Eleven Arncliffe	7-Eleven Pty Ltd	28 Princes Highway Arncliffe	Operational	305.28	south
Speedway Petroleum	Speedway Petroleum	32 Princes Highway Arncliffe	Operational	335.59	south

Substation / Switching Stations

Site name	Owner	Location	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Telephone Exchanges

Site name	Location	Status	Distance (m)	Direction
Not identified	-	-	-	-

Waste Management Facilities

Site name	Owner	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Wastewater Treatment Facilities

Site name	Operator	Class	Status	Distance (m)	Direction
Not Identified	-	-	-	-	-

Unexploded Ordnance (UXO) Sites - Department of Defence (DoD)

Site name	Site ID	Category	Description	Distance (m)	Direction
Not identified	-	-	-	-	-

2.6 OTHER POTENTIALLY CONTAMINATING ACTIVITIES

Map 7b (200m Buffer)

Potentially Contaminated Sites

Site name	Category	Location	Status*	Distance (m)	Direction
Castrol Service Centre	Car Repair Shop	29 Arncliffe St, Wollri Creek NSW 2205	current	0.00	Onsite
National Truck Spares	Repair Facility	2 Guess Ave, Arncliffe NSW 2205	current	0.00	Onsite
Commercial Vehicle Repair & Servicing	Repair Facility	Guess Ave Wollri Creek, New South Wales	Former	96.94	North-West
Suttons Arncliffe	Automotive Dealer	93 Princes Hwy, Arncliffe NSW 2205	current	104.25	South-East
Prakash Automotive Services	Repair Facility	Guess Ave Wollri Creek, New South Wales	Former	114.75	North-West
Suttons Arncliffe	Automotive Dealer	93 Princes Hwy, Arncliffe NSW 2205	current	131.11	South-East
Morris McMahon & Co. Pty Ltd	Manufacturer	34 Arncliffe St, Wollri Creek NSW 2205	current	167.23	South-West
Suttons Motors Arncliffe	Automotive Dealer	93 Princes Hwy, Arncliffe NSW 2205	current	187.3	South-East

*Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.

Parramatta River Catchment Land Use Areas – Zoning Changes

Land Use 1943	Land Use 2005	Distance (m)	Direction
Not identified	-	-	-

Parramatta River Catchment Land Use Areas – Reclamation Areas

	On the Property?	Within Record Search Buffer?
Reclamation Area	Not identified	Not identified

*Many areas of Parramatta river have been reclaimed, often being used as rubbish dumps.

2.7 NPI INDUSTRIAL FACILITIES

Map 8 (500m Buffer)

Facility name	Address	Primary ANZSIC Class	Date Range	Distance (m)	Direction
Not identified	-	-	-	-	-

2.8 LICENSING UNDER THE POEO ACT 1997**Map 8 (500m Buffer)****Licences**

Licence holder	EPL Number	Location Name	Premise Address	Fee Based Activity	Distance (m)	Direction
Not identified		-	-	-	-	-

Delicensed Premises still Regulated by EPA, Licences Surrendered, Clean Up and Penalty Notices

Licence holder	Nº	Name	Premise Address	Fee Based Activity	Status	Distance (m)	Direction
MORRIS, MCMAHON & CO PTY LTD	6601	MORRIS MCMAHON & CO PTY LTD	34 ARNCLIFFE STREET, ARNCLIFFE NSW 2205	Hazardous, Industrial or Group A Waste Generation or Storage	Delicensed	100.96	South-west
A.C.N. 001 022 411 PTY LTD	11304	11304	61 TURRELLA STREET, TURELLA NSW 2205	Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	Surrendered	382.58	North-west

2.9 PUBLIC REGISTER OF PROPERTIES AFFECTED BY LOOSE-FILL ASBESTOS INSULATION**Map 8 (onsite)**

Address	Match Found
Not identified	-

HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA**1932 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA****(200m Buffer)**

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Not identified	-	-	-	-	-

* If no distance is provided, address no longer exists.

1940 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA**(200m Buffer)**

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Nurserymen	Bostock F	15 Arncliffe Street, Arncliffe	Address	83m	South West

* If no distance is provided, address no longer exists.

1950 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA**(200m Buffer)**

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Carriers-Light	Stokes N G	1 Willis, Arncliffe	Address	23m	South West
Clothing - Mfrs. &/or W'salers	Zeema Productions	15 Arncliffe Street, Arncliffe	Address	83m	South West
Electrical Appliances & Equipment Mfrs.	Walmac Electrical Products	21 Arncliffe Street, Arncliffe	Address	83m	South West
Nurserymen	Thompson L R	11 Arncliffe Street, Arncliffe	Address	126m	South West
Electrical Appliances & Equipment Mfrs.	Walmac Electrical Products Pty Ltd (Works)	23 Arncliffe Street, Arncliffe	Street		

* If no distance is provided, address no longer exists.

1965 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA**(200m Buffer)**

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Concrete Products	Priestly R D	72 Arncliffe, Arncliffe	Address	15m	East
Carriers—Heavy	Super Transport Service (NSW) Pty Ltd	64-70 Arncliffe, Arncliffe	Address	20m	South
Chemical Mfrs. &/or Druggists—W'sale	WYNDALE LACTOSE (BRITISH UNITED DAIRIES PTY LTD)	64-70 Arncliffe, Arncliffe	Address	20m	South
Milk Products	TOORALAC MILK POWDERS	64-70 Arncliffe, Arncliffe	Address	20m	South

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Carriers—Light	Super Transport Service (NSW) Pty Ltd	64 Arncliffe, Arncliffe	Address	20m	South
Paper Bags	PROTECTIVE PACKAGINGS PTY LTD	52-62 Arncliffe, Arncliffe	Address	20m	South
Paper Mfrs	Gummed Products Ltd	52 Arncliffe, Arncliffe	Address	20m	South
Brushes & Brooms	Universal Broom Co	11 GuessAv, Arncliffe	Address	20m	South West
Slot Machines	AMERICAN AMUSEMENT PTY LTD	9 GuessAv, Arncliffe	Address	20m	South West
Enamellers	BELLAMY J & G PTY LTD	3 GuessAv, Arncliffe	Address	20m	South West
Sheet Metal Workers	Bellamy J&G Pty Ltd	3 GuessAv, Arncliffe	Address	20m	South West
Metal Spinners	Bates M J	13 Willis, Arncliffe	Address	20m	West
Soft Drink Mfrs	Capitol Continental Products	19 Willis, Arncliffe	Address	20m	West
Foundries	BRAMWELL & VINCENT PTY LTD	40 Arncliffe, Arncliffe	Address	35m	South
Foundries—Brass	BRAMWELL & VINCENT PTY LTD	40 Arncliffe, Arncliffe	Address	35m	South
Foundries—Iron & Steel	BRAMWELL & VINCENT PTY LTD	40 Arncliffe, Arncliffe	Address	35m	South
Engineers—Consulting	Weiss Frank Projects Pty Ltd	21 Arncliffe, Arncliffe	Address	83m	South West
Instruments	Weiss Frank Projects Pty Ltd	21 Arncliffe, Arncliffe	Address	83m	South West
Timber Merchants	Clifford Timber Co Pty Ltd	1 Lusty, Arncliffe	Address	109m	North
Furniture—Mfrs. &/or W'salers	LECHNER M C FURNITURE PTY LTD	5-13 LustySt, Arncliffe	Address	109m	North
Air Conditioning Equipment	AIR DISTRIBUTION PRODUCTS PTY LTD	9 ArncliffeSt, Arncliffe	Address	126m	South West
Engineers—General	Alco Engineering Pty Ltd	11a Arncliffe, Arncliffe	Address	126m	South West
Die & Press Tool Makers	KENCO ENGINEERING PTY LTD	30-32 ArncliffeSt, Arncliffe	Address	154m	South West
Hard Facing	A.I Metallising Co Pty Ltd	30 Arncliffe, Arncliffe	Address	154m	South West

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Metal Sprayers	A METALLISING CO PTY LTD	30 ArncliffeSt, Arncliffe	Address	154m	South West
Toolmakers	Kenco Engineering Pty Ltd	30 Arncliffe, Arncliffe	Address	154m	South West
Upholsterers	York W G	3 Arncliffe, Arncliffe	Address	160m	West
Hairdressers' Supplies	BETTERGRIP BOBBY PINS	15-19 Lusty, Arncliffe	Address	166m	North West
Wire Ropes	CONSOLIDATED WIRE PTY LTD	15-19 LustySt, Arncliffe	Address	166m	North West
Motor Accessories—Retail	Manfred Accessories	1 Arncliffe, Arncliffe	Address	172m	West
Engineers—Manufacturing	Sharp H A Pty Ltd	GuessAv, Arncliffe	Street		
Advertising—Displays	Broadwoods Pty Ltd	BoothSt, Arncliffe	Street		
Boats & Launches—Builders &/or For Sale	VOLKSBOAT CO OF AUST	ArncliffeSt, Arncliffe	Street		
Cabinet Makers	Brymer Industries Pty Ltd	ArncliffeSt, Arncliffe	Street		
Concrete	ARNCLIFFE READY MIXED CONCRETE PTY LTD (Plant)	ArncliffeSt, Arncliffe	Street		
Laminated Panels	Brymer R	ArncliffeSt, Arncliffe	Street		
Market Gardeners	Lee Sun	ArncliffeSt, Arncliffe	Street		
Motor Panel Beaters	DANCO AUTO REPAIRS	ArncliffeSt, Arncliffe	Street		
Motor Wreckers	FORDHAM SPARES PTY LTD	ArncliffeSt, Arncliffe	Street		
Paper Merchants	WASSALL W H & SON PTY LTD	ArncliffeSt, Arncliffe	Street		
Paper Mill Agents	Wassail W H&Son Pty Ltd	ArncliffeSt, Arncliffe	Street		
Plastics	Australian Fibre Plastic Industries Pty Ltd	ArncliffeSt, Arncliffe	Street		
Welders—Electric	VALRON WELDING ENGINEERING PTY LTD	ArncliffeSt, Arncliffe	Street		
Welders—Oxy-Acetylene	Valron Welding Engineering Pty Ltd	ArncliffeSt, Arncliffe	Street		

* If no distance is provided, address no longer exists.

1970 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA**(200m Buffer)**

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
ENAMELLERS	Bellamy, J. & G. Pty. Ltd.,	3 Guess Ave., Arncliffe	Address	20m	South West
SHEET METAL WORKERS	Bellamy, J. & G. Pty. Ltd.,	3 Guess Ave., Arncliffe	Address	20m	South West
SPRAYERS—INDUSTRIAL	Bellamy, J. & G. Pty. Ltd.,	3 Guess Ave., Arncliffe	Address	20m	South West
AUTOMATIC SLOT MACHINE DIST. &/OR SUPPLIES	American Amusements Pty. Ltd.,	9 Guess Ave., Arncliffe	Address	20m	South West
BROOM & BRUSH MFRS.' SUPP.	Universal Broom Co.,	11 Guess Ave., Arncliffe	Address	20m	South West
BROOM & BRUSH—SWEEPING—MANUFACTURERS	Universal Broom Co.,	11 Guess Ave., Arncliffe	Address	20m	South West
BROOM & BRUSH—SWEEPING—WHOLESALE	Universal Broom Co.,	11 Guess Ave., Arncliffe	Address	20m	South West
BRUSHWARE MFRS.—DOMESTIC	Universal Broom Co.,	11 Guess Ave., Arncliffe	Address	20m	South West
MOP MFRS./W'SALERS	Universal Broom Co.,	11 Guess Ave., Arncliffe	Address	20m	South West
ENGINEERS—GENERAL &/OR MFRG. &/OR MECHANICAL	Sharp, H. A. Pty. Ltd.,	15 Guess Ave., Arncliffe	Address	20m	West
TRUCKS & TROLLEYS—INDUSTRIAL —IMPORTS. &/OR MFRS.	Sharp, H. A. Pty. Ltd.,	15 Guess Ave., Arncliffe	Address	20m	West
WOODWORKING MACHINERY MFRS.	Sharp, H. A. Pty. Ltd.,	15 Guess Ave., Arncliffe	Address	20m	West
BOILERMAKERS	Rageem Fastener Co.,	13 Willis St., Arncliffe, 2205	Address	20m	West
FOOD PROCESSORS/PACKERS	Capitol Continental Products,	19 Willis St., Arncliffe	Address	20m	West
GUMMED PAPER MANUFACTURERS &/OR DISTRIBUTORS	Gummed Products Ltd.,	52 Arncliffe St., Arncliffe	Address	20m	South
LAMINATED MATERIALS/PRODUCT	Gummed Products Ltd.,	52 Arncliffe St., Arncliffe	Address	20m	South

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
S MANUFACTURERS					
PAPER CONVERTERS	Gummed Products Ltd.,	52 Arncliffe St., Arncliffe	Address	20m	South
PLASTIC LAMINATED PRODUCTS MANUFACTURERS	Gummed Products Ltd.,	52 Arncliffe St., Arncliffe	Address	20m	South
WAXED PAPER MFRS.	Gummed Products Ltd.,	52 Arncliffe St., Arncliffe	Address	20m	South
CARRIERS & CARTAGE CONTRACTORS — MASTER	Super Transport Service Pty. Ltd.,	64 Arncliffe St., Arncliffe	Address	20m	South
CARRIERS & CARTAGE CONTRACTORS	Super Transport Service Pty. Ltd.,	64 Arncliffe St., Arncliffe	Address	20m	South
CRANES—MOBILE—PROPRIETORS &/OR HIRERS	Super Transport Service Pty. Ltd.,	64 Arncliffe St., Arncliffe	Address	20m	South
CUSTOMS AGENTS	Super Transport Service Pty. Ltd.,	64 Arncliffe St., Arncliffe	Address	20m	South
FORK LIFT TRUCK HIRING SERVICES	Super Transport Service Pty. Ltd.,	64 Arncliffe St., Arncliffe	Address	20m	South
HAULAGE CONTRACTORS	Super Transport Service Pty. Ltd.,	64 Arncliffe St., Arncliffe	Address	20m	South
ROAD TRANSPORT SERVICES—INTERSTATE	Super Transport Service Pty. Ltd.,	64 Arncliffe St., Arncliffe	Address	20m	South
ROAD TRANSPORT SERVICES—N.S.W.	Super Transport Service Pty. Ltd.,	64 Arncliffe St., Arncliffe	Address	20m	South
SHIP OWNERS	Super Transport Service Pty. Ltd.,	64 Arncliffe St., Arncliffe	Address	20m	South
FAN & BLOWER MANUFACTURERS &/OR DISTRIBUTORS	Conditionaire Engineering Pty. Ltd.,	3-5 Willis St., Arncliffe, 2205	Address	23m	South West
DUST COLLECTION EQUIPMENT MANUFACTURERS	Conditionaire Aust Pty. Ltd.,	3 Willis St., Arncliffe	Address	23m	South West
ENGINEERS—AIR CONDITIONING	Conditionaire Aust. Pty. Ltd.,	3 Willis St., Arncliffe	Address	23m	South West
SCIENTIFIC APPARATUS MFRS. &/OR DISTRIBUTORS	Conditionaire Aust. Pty. Ltd.,	3 Willis St., Arncliffe	Address	23m	South West
VENTILATING EQUIPMENT MFRS.	Conditionaire Aust. Pty. Ltd.,	3 Willis St., Arncliffe	Address	23m	South

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
&/OR DISTRIBUTORS					West
FOUNDERS—FERROUS	Bramwell & Vincent Pty. Ltd.,	40 Arncliffe St., Arncliffe	Address	35m	South
MACHINE TOOL MFRS./IMPORTERS/DISTRIBUTORS	Chapman, P. W. Engineering Pty. Ltd.,	78 Arncliffe St., Arncliffe, 2205	Address	47m	East
AGRICULTURAL MACHINERY—MFRS. &/OR DIST.	Chapman, P. W. Engineering Pty. Ltd.,	84 Arncliffe St., Arncliffe	Address	47m	East
DISH-WASHING MACHINE MANUFACTURERS	Chapman, P. W. Engineering Pty. Ltd.,	84 Arncliffe St., Arncliffe	Address	47m	East
ENGINEERS—FABRICATING	Chapman, P. W. Engineering Pty. Ltd.,	84 Arncliffe St., Arncliffe	Address	47m	East
ENGINEERS—GENERAL &/OR MFRG. &/OR MECHANICAL	Chapman, P. W. Engineering Pty. Ltd.,	84 Arncliffe St., Arncliffe	Address	47m	East
ENGINEERS—GENERAL &/OR MFRG. &/OR MECHANICAL	Wake Manufacturing Pty. Ltd.,	84 Arncliffe St., Arncliffe	Address	47m	East
ENGINEERS—MARINE	Chapman, P. W. Engineering Pty. Ltd.,	84 Arncliffe St., Arncliffe	Address	47m	East
GEAR CUTTERS/MFRS.	Chapman, P. W. Engineering Pty. Ltd.,	84 Arncliffe St., Arncliffe	Address	47m	East
SHEET METAL WORKERS	Chapman, P. W. Engineering Pty. Ltd.,	84 Arncliffe St., Arncliffe	Address	47m	East
FOUNDERS—NON-FERROUS	Glassons Foundry Pty. Ltd.,	96 Arncliffe St., Arncliffe, 2205	Address	47m	East
METAL PRESSERS/STAMPERS	Stevens, W. C. Pty. Ltd.,	17-19 Arncliffe St., Arncliffe, 2205	Address	83m	South West
MOTOR RADIATOR MFRS.	Stevens, W. C. Pty. Ltd.,	17-19 Arncliffe St., Arncliffe, 2205	Address	83m	South West
MOTOR SILENCER MFRS.	Stevens, W. C. Pty. Ltd.,	17-19 Arncliffe St., Arncliffe, 2205	Address	83m	South West
TUBE BENDERS	Stevens, W. C. Pty. Ltd.,	17-19 Arncliffe St., Arncliffe, 2205	Address	83m	South West
ENGINEERS—CONSULTING	Weiss, Frank Projects Pty. Ltd.,	21 Arncliffe St., Arncliffe, 2205	Address	83m	South West
INSTRUMENTS—INDUSTRIAL—MFRS. &/OR DISTRIBUTORS	Weiss, Frank Projects Pty. Ltd.,	21 Arncliffe St., Arncliffe, 2205	Address	83m	South West

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
CLEANSER & CLEANING PREPARATION MFRS. &/OR DIST.	Tulloch, C. (Aust.) Pty. Ltd.,	2 Willis St., Arncliffe	Address	83m	West
ASBESTOS LAGGING MFRS.	Beldam Asbestos Co. Ltd.,	10 Willis St., Arncliffe	Address	83m	West
ASBESTOS MFRS. &/OR SUPPLIERS	Victor Engineering Supply Co. Pty. Ltd.,	10 Willis St., Arncliffe	Address	83m	West
BELTING IMPS. &/OR DIST.	Victor Engineering Supply Co. Pty. Ltd.,	10 Willis St., Arncliffe	Address	83m	West
ENGINE PACKING MFRS.	Victor Engineering Supply Co. Pty. Ltd.,	10 Willis St., Arncliffe	Address	83m	West
ENGINE PACKING SUPPLIES	Beldam Asbestos Co. Ltd.,	10 Willis St., Arncliffe	Address	83m	West
ENGINE PACKING SUPPLIES	Victor Engineering Supply Co. Pty. Ltd.,	10 Willis St., Arncliffe	Address	83m	West
GASKET MANUFACTURERS	Victor Engineering Supply Co. Pty. Ltd.,	10 Willis St., Arncliffe	Address	83m	West
RUBBER GOODS MANUFACTURERS &/OR DISTRIBUTORS	Victor Engineering Supply Co. Pty. Ltd.,	10 Willis St., Arncliffe	Address	83m	West
FURNITURE—BEDROOM—MFRS. &/OR WHOLESALERS	Lechner, M. C. Furniture Pty. Ltd.,	1-13 Lusty St., Arncliffe, 2205	Address	109m	North
FURNITURE—DIVAN, BEDROOM-SPECIALISTS, MFRS. & WSALERS	LECHNER M C FURNITURE PTY LTD	1-13 Lusty St., Arncliffe, 2205	Address	109m	North
FURNITURE—GENERAL—MFRS. &/OR WHOLESALERS	Lechner, M. C. Furniture Pty. Ltd.,	5 Lusty St., Arncliffe	Address	109m	North
MATERIAL HANDLING EQUIPMENT IMPORTS. &/OR DIST.	Alco Sales Pty. Ltd.,	11A Arncliffe St., Arncliffe, 2205	Address	126m	South West
PUMP DEALERS—SECOND-HAND	Alco Engineering Pty. Ltd.,	11A Arncliffe St., Arncliffe, 2205	Address	126m	South West
PUMP MANUFACTURERS &/OR DISTRIBUTORS	Alco Engineering Pty. Ltd.,	11A Arncliffe St., Arncliffe	Address	126m	South West
PUMP MANUFACTURERS &/OR DISTRIBUTORS	Alco Sales Pty. Ltd.,	11A Arncliffe St., Arncliffe, 2205	Address	126m	South West

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
RADIO &/OR TELEVISION SALES & SERVICEMEN	G. H. Electrics,	11A Arncliffe St., Arncliffe	Address	126m	South West
TRUCKS & TROLLEYS—INDUSTRIAL—IMPORTS. &/OR MFRS.	Alco Sales Pty. Ltd.,	11A Arncliffe St., Arncliffe, 2205	Address	126m	South West
DIE & PRESS TOOL MAKERS	Kenco Engineering Pty. Ltd.,	30 Arncliffe St., Arncliffe	Address	154m	South West
DROP FORGERS	Kenco Engineering Pty. Ltd.,	30 Arncliffe St., Arncliffe	Address	154m	South West
ENGINEERS—FABRICATING	Power Welding Pty. Ltd.,	30 Arncliffe St., Arncliffe, 2205	Address	154m	South West
ENGINEERS—GENERAL &/OR MFRG. &/OR MECHANICAL	Kenco Engineering Pty. Ltd.,	30 Arncliffe St., Arncliffe	Address	154m	South West
ENGRAVERS/DIE SINKERS	Kenco Engineering Pty. Ltd.,	30 Arncliffe St., Arncliffe	Address	154m	South West
HEAT EXCHANGER MANUFACTURERS &/OR DISTRIBUTORS	Power Welding Pty. Ltd.,	30 Arncliffe St., Arncliffe, 2205	Address	154m	South West
HEAT TREATMENT SPEC.	Kenco Engineering Pty. Ltd.,	30 Arncliffe St., Arncliffe	Address	154m	South West
PLASTIC DIE/MOULD MFRS.	Kenco Engineering Pty. Ltd.,	30 Arncliffe St., Arncliffe	Address	154m	South West
PRESSURE VESSEL MFRS.	Power Welding Pty. Ltd.,	30 Arncliffe St., Arncliffe, 2205	Address	154m	South West
PROFILE CUTTING SPECIALISTS	Power Welding Pty. Ltd.,	30 Arncliffe St., Arncliffe, 2205	Address	154m	South West
RUBBER MOULDING DIE MFRS.	Kenco Engineering Pty. Ltd.,	30 Arncliffe St., Arncliffe	Address	154m	South West
STEEL FABRICATORS	Kenco Engineering Pty. Ltd.,	30 Arncliffe St., Arncliffe	Address	154m	South West
TANK & TANK STAND MFRS. & SUPPLIERS	Power Welding Pty. Ltd.,	30 Arncliffe St., Arncliffe, 2205	Address	154m	South West
TOOL MAKERS	Kenco Engineering Pty. Ltd.,	30 Arncliffe St., Arncliffe	Address	154m	South West
TOOL MANUFACTURERS	Kenco Engineering Pty. Ltd.,	30 Arncliffe St., Arncliffe	Address	154m	South West
WELDERS—ELECTRIC &/OR OXY	Kenco Engineering Pty. Ltd.,	30 Arncliffe St., Arncliffe	Address	154m	South West

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
ENGINEERS—RECLAMATION	A.I. Metallising Co. Pty. Ltd.,	32 Arncliffe St., Arncliffe	Address	154m	South West
METAL SPRAYERS	A. I. Metallising Co. Pty. Ltd.,	32 Arncliffe St., Arncliffe	Address	154m	South West
DYERS/BLEACHERS—TRADE	N.S.W. Dyeing Co. Pty. Ltd.,	90 Bonar St., Arncliffe	Address	163m	North West
TEXTILE DYERS	N.S.W. Dyeing Co. Pty. Ltd.	90 Bonar St., Arncliffe	Address	163m	North West
BOWDEN CONTROL MFRS.	Consolidated Wire Pty. Ltd.,	15 Lusty St., Arncliffe	Address	166m	North West
CABLE, FLEX & WIRE MFRS.	Consolidated Wire Pty. Ltd.,	15 Lusty St., Arncliffe	Address	166m	North West
CABLE & WIRE CASING MFRS.	Consolidated Wire Pty. Ltd.,	15 Lusty St., Arncliffe	Address	166m	North West
CYCLE ACCESSORIES—MFRS. &/OR WHOLESALERS	Consolidated Wire Pty. Ltd.	15 Lusty St., Arncliffe	Address	166m	North West
ENGINEERS-REMOTE CONTROL	Consolidated Wire Pty. Ltd.,	15 Lusty St., Arncliffe	Address	166m	North West
MOTOR BRAKE CABLE/CABLE PARTS MFRS.	Consolidated Wire Pty. Ltd.,	15 Lusty St., Arncliffe	Address	166m	North West
MOTOR CYCLE ACCESS. MFRS. &/OR DIST.	Consolidated Wire Pty. Ltd.,	15 Lusty St., Arncliffe	Address	166m	North West
WIRE CONTROL CABLE MFRS.	Consolidated Wire Pty. Ltd.,	15 Lusty St., Arncliffe	Address	166m	North West
WIRE ROPE MFRS. &/OR SPLICERS	Consolidated Wire Pty. Ltd.,	15 Lusty St., Arncliffe	Address	166m	North West
WIRE ROPE MERCHANTS	Consolidated Wire Pty. Ltd.,	15 Lusty St., Arncliffe	Address	166m	North West
ELECTROPLATERS—MFRG.	Sharp, H. A. Pty. Ltd.,	Guess Ave., Arncliffe	Street		
ENGINEERS—FABRICATING	Valron Welding Engineering Pty. Ltd.,	Arncliffe St., Arncliffe	Street		
ENGINEERS—FURNACE/COMBUSTION	W.&K. Engineering Co.,	Arncliffe St., Arncliffe	Street		
FIBREGLASS MATERIALS—MATS, WOOLS, CHOPPED	De Winter Fibreglass,	Arncliffe St., Arncliffe	Street		

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
STRAND MATS, ROVINGS, CLOTHS, ETC.—MFRS. &/OR IMPORTERS					
FIBREGLASS PRODUCTS MFRS. (MOULDING, FABRICATING, EXTRUSIONS, CONVERTING, Etc.)	All Tasks Industries Pty. Ltd.,	Arncliffe St., Arncliffe	Street		
FURNITURE—KITCHEN UNITS & CABINETS—MANUFACTURERS &/OR WHOLESALERS	Brymer Industries Pty. Ltd.,	Arncliffe St., Arncliffe	Street		
INCINERATOR BUILDERS/MFRS./WSALERS	Winter, R. & F. Industries Pty. Ltd.,	Arncliffe St., Arncliffe	Street		
MOTOR TRIMMERS	McNamara, E. R. Pty. Ltd.,	Arncliffe St., Arncliffe	Street		
MOTOR WRECKERS	Fordham Spares Pty. Ltd.,	Arncliffe St., Arncliffe	Street		
PAPER MERCHANTS	Wassail, W. H. & Son Pty. Ltd.,	Arncliffe St., Arncliffe	Street		
STEEL FABRICATORS	Valron Welding Engineering Pty. Ltd.,	Arncliffe St., Arncliffe	Street		
WELDERS—ELECTRIC &/OR OXY	Valron Welding Engineering Pty. Ltd.,	Arncliffe St., Arncliffe	Street		
WELDERS—ELECTRIC &/OR OXY	Winter, R. & F. Industries Pty. Ltd.,	Arncliffe St., Arncliffe	Street		
WROUGHT IRON WORKERS	Winter, R. & F. Industries Pty. Ltd.,	Arncliffe St., Arncliffe	Street		
BATH & SINK HEATERS—GAS—MFRS. &/OR DIST.	Potterton Industries Pty. Ltd.,	Bonar St., Arncliffe	Street		
DRYING ROOMS & SYSTEMS— MFRS. &/OR INSTALLERS	Industrial Furnaces Pty. Ltd.,	Bonar St., Arncliffe	Street		
ELECTRIC MEDICAL EQUIPMENT MFRS. &/OR DIST.	G.M.F. Electric Motors Pty. Ltd.,	Bonar St., Arncliffe	Street		
ELECTRIC MOTORS—DEALERS &/OR WHOLESALERS	G.M.F. Electric Motors Pty. Ltd.,	Bonar St., Arncliffe	Street		

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
ENGINEERS—ELECTRICAL	G.M.F. Electric Motors Pty. Ltd.,	Bonar St., Arncliffe	Street		
ENGINEERS—HOT WATER, HEATING/ VENTILATING	Potterton Industries Pty. Ltd.,	Bonar St., Arncliffe	Street		
FOUNDERS—NON-FERROUS	Potterton Industries Pty. Ltd.,	Bonar St., Arncliffe	Street		
GRINDING/PULVERISING MACHINERY MANUFACTURERS	G.M.F. Electric Motors Pty. Ltd.,	Bonar St., Arncliffe	Street		
HOT WATER SYSTEMS—FUEL & LIQUID—MFRS. &/OR DIST.	Potterton Industries Pty. Ltd.,	Bonar St., Arncliffe	Street		
HOT WATER SYSTEMS—GAS—MFRS. &/OR DISTRIBUTORS	Potterton Industries Pty. Ltd.,	Bonar St., Arncliffe	Street		
POLISHING EQUIPMENT MFRS.	G.M.F. Electric Motors Pty. Ltd.,	Bonar St., Arncliffe	Street		
RANGES—ELECTRIC—IMPORTERS &/OR DISTRIBUTORS	Potterton Industries Pty. Ltd.,	Bonar St., Arncliffe	Street		
RANGES—GAS—IMPORTERS &/OR DISTRIBUTORS	Potterton Industries Pty. Ltd.,	Bonar St., Arncliffe	Street		
RANGES—GAS—MFRS.	Potterton Industries Pty. Ltd.,	Bonar St., Arncliffe	Street		
RANGES—SLOW COMBUSTION-MANUFACTURERS	Potterton Industries Pty. Ltd.,	Bonar St., Arncliffe	Street		
ROOM HEATERS—FUEL—MFRS. &/OR DISTRIBUTORS	Potterton Industries Pty. Ltd.,	Bonar St., Arncliffe	Street		
ROOM HEATERS—GAS—MFRS. &/OR DISTRIBUTORS	Potterton Industries Pty. Ltd.,	Bonar St., Arncliffe	Street		
BATHROOM EQUIPMENT MFRS. &/OR DIST.	Walmac Electrical Products Pty. Ltd.,	Lusty St., Arncliffe	Street		
BUILDERS' SUPPLIERS	Walmac Electrical Products Pty. Ltd.,	Lot A, Lusty St., Arncliffe, 2205	Street		

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
ELECTRICAL SUPPLIES/APPLIANCES MANUFACTURERS	Walmac Electrical Products Pty. Ltd.,	Lusty St., Arncliffe	Street		
ELECTRICAL SUPPLIES/APPLIANCES — WHOLESALE	Walmac Electrical Products Pty. Ltd.,	Lusty St., Arncliffe	Street		
ROOM HEATERS—ELECTRIC— MFRS. &/OR DIST.	Walmac Electrical Products Pty. Ltd.,	Lusty St., Arncliffe	Street		
ALUMINIUM DISTRIBUTORS	Purex (Aust.) Pty. Ltd.,	76 Bonar St., Arncliffe	Street		
BLEACH & DISINFECTANT MFRS.	PUREX (AUSTRALIA) PTY LTD	76 BONAR ST., ARNCLIFFE, 2205	Street		
CHEMISTS—INDUSTRIAL	Purex (Australia) Pty. Ltd.,	76 Bonar St., Arncliffe, 2205	Street		
CHEMISTS—MANUFACTURING &/OR WHOLESALE	Purex (Aust.) Pty. Ltd.,	76 Bonar St., Arncliffe	Street		
CLEANSER & CLEANING PREPARATION MFRS. &/OR DIST.	Purex (Australia) Pty. Ltd.,	76 Bonar St., Arncliffe	Street		
DETERGENTS, DISINFECTANTS, CLEANING AIDS MFRS. &/OR DISTRIBUTORS	Purex (Australia) Pty. Ltd,	76 Bonar St, Arncliffe	Street		
DISINFECTANT MFRS. &/OR DIST.	Purex (Australia) Pty. Ltd.,	76 Bonar St., Arncliffe	Street		
SWIMMING POOL CHEMICALS &/OR EQUIPMENT MFRS./DIST.	PUREX (AUSTRALIA) PTY LTD	76 Bonar St., P.O Box 88, Arncliffe, 2205	Street		

* If no distance is provided, address no longer exists.

1974 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA

(200m Buffer)

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Sheet Metal Workers	Bellamy J&G Pty Ltd	3 Guess Avenue, Arncliffe	Address	20m	South West
Carriers Heavy	Super Transport Service Pty Ltd	64 Arncliffe, Arncliffe	Address	20m	South

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Radio Parts Mfrs &/or W'salers	Aerostat (Aust) Pty Ltd	7 Willis Street, Arncliffe	Address	20m	West
Foundries - Iron & Steel	Bramwell & Vincent Pty Ltd	40 Arncliffe Street, Arncliffe	Address	35m	South
Steel Fabricators &/or Mfrs	Chapman (PW) Engineering Pty Ltd	78 Arncliffe Street, Arncliffe	Address	47m	East
Foundries	Glassons Foundry Pty Ltd	96 Arncliffe Street, Arncliffe	Address	47m	East
Foundries - Non-Ferrous Metals	Glassons Foundry Pty Ltd	96 Arncliffe Street, Arncliffe	Address	47m	East
Carpets & Linoleums - Mfrs &/or W'salers	New Zealand Flooring Products Co Ltd	4 Willis Street, Arncliffe	Address	83m	West
Gaskets & Packings	Garlock	10 Willis Street, Arncliffe	Address	83m	West
Motor Engineers & Repairers	Burton Stu Motors	11 Arncliffe Street, Arncliffe	Address	126m	South West
Metal Sprayers	A1 Metallising Co Pty Ltd	9 Arncliffe Street, Arncliffe	Address	126m	South West
Rubber Products - Mfrs. &/or W'salers	Da/Pro (Aust) Pty Ltd	30 Arncliffe Street, Arncliffe	Address	154m	South West
Brake &/or Clutch Lining Mfrs. &/or W'salers	Joseph Bros Pty Ltd	1 Arncliffe Street, Arncliffe	Address	172m	West
Motor Cars - Used	Moore Motors Pty Ltd	4 Princes Highway, Arncliffe	Address	188m	South East
Motor Cars - Used	Short ET	4 Princes Highway, Arncliffe	Address	188m	South East
Fibreglass Mfrs &/or W'salers	de Winter Fibreglass	Arncliffe Street, Arncliffe	Street		
Carriers Light	Caelli Parcel Service Pty Ltd	Arncliffe Street, Arncliffe	Street		
Motor Wreckers	Fordham Spares Pty Ltd	Arncliffe Street, Arncliffe	Street		
Electric Motors & Generators	G.M.F Electric Motors Pty Ltd	Bonar Street, Arncliffe	Street		
Sheet Metal Workers	Kirrawee Sheetmetal Pty Ltd	2 Lusty Street, Arncliffe	Street		

* If no distance is provided, address no longer exists.

1980 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA**(200m Buffer)**

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Enamelling - Baked &/or Porcelain	Bellamy Enamel Finishers	3 Guess Avenue, Arncliffe	Address	20m	South West
Spraying - Enamel, Lacquer & Paint	Bellamy Enamel Finishes	3 Guess Avenue, Arncliffe	Address	20m	South West
Engineers - Manufacturing	Sharp H A Pty Ltd	15 Guess Avenue, Arncliffe	Address	20m	West
Motor Body Builders & Repairers	Parkview Smash Repairs	21 Guess Avenue, Arncliffe	Address	20m	West
Panel Beaters &/or Painters	Parkview Smash Repairs	21 Guess Avenue, Arncliffe	Address	20m	West
Dental Supplies &/or Equipment	Forrest Dental Supplies	7 Willis St., Arncliffe	Address	20m	West
Dental Supplies &/or Equipment	Willows	7 Willis St., Arncliffe	Address	20m	West
Medical Supplies	Forrest Medical & Hospital Supplies	7 Willis St., Arncliffe	Address	20m	West
Medical Supplies	Willows	7 Willis St., Arncliffe	Address	20m	West
Engineers - General	Eastern Elevators Pty Ltd	9 Willis St., Arncliffe	Address	20m	West
Lifts	Eastern Elevators Pty Ltd	9 Willis St., Arncliffe	Address	20m	West
Lifts - Maintenance & Repairs	Eastern Elevators Pty Ltd	9 Willis St., Arncliffe	Address	20m	West
Aircraft Equipment &/or Service	Aviation Engineering Supplies	13 Willis St., Arncliffe	Address	20m	West
Aircraft Equipment &/or Service	Cooper Airmotive Australia	13 Willis St., Arncliffe	Address	20m	West
Boat Equipment	Qualicraft Manufacturing Industries Pty Ltd	52 Arncliffe St., Arncliffe	Address	20m	South
Caravans &/or Equipment	Starlite Windows Pty Ltd	52 Arncliffe St., Arncliffe	Address	20m	South
Glass Merchants &/or Glaziers	Qualicraft Manufacturing Industries Pty Ltd	52 Arncliffe St., Arncliffe	Address	20m	South
Glass - Safety	Qualicraft Manufacturing Industries Pty Ltd	52 Arncliffe St., Arncliffe	Address	20m	South
Insect Screens &/or Requisites	Meyers Taylor Sales Pty Ltd	52 Arncliffe St., Arncliffe	Address	20m	South

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Motor Accessories - Mfrs &/or W'salers	Qualicraft Manufacturing Industries Pty Ltd	52 Arncliffe St., Arncliffe	Address	20m	South
Motor Body Builders' Supplies	Qualicraft Manufacturing Industries Pty Ltd	52 Arncliffe St., Arncliffe	Address	20m	South
Plastics - Moulders	Meyers Taylor Sales Pty Ltd	52 Arncliffe St., Arncliffe	Address	20m	South
Windows - Metal - Mfrs &/or W'salers	Qualicraft Manufacturing Industries Pty Ltd	52 Arncliffe St., Arncliffe	Address	20m	South
Transport Services	Super Transport Services (Mayne Nickless Ltd)	64 Arncliffe St., Arncliffe	Address	20m	South
Transport Services	Super Transport Service	35 Arncliffe St., Arncliffe	Address	22m	North East
Toolmakers	Kenco Engineering Pty Ltd	3 Willis St., Arncliffe	Address	23m	South West
Foundries - Iron & Steel	Bramwell & Vincent Pty Ltd	40 Arncliffe St., Arncliffe	Address	35m	South
Soap Mfrs &/or W'salers	E B D Distributors	78 Arncliffe St., Arncliffe	Address	47m	East
Soap Mfrs &/or W'salers	Tulloch & Kapeco Distributors Pty Ltd	78 Arncliffe St., Arncliffe	Address	47m	East
Steel Fabrication &/or Mfrs	Chapman (P W) Engineering Pty Ltd	78 Arncliffe St., Arncliffe	Address	47m	East
Panel Beaters &/or Painters	Centrepont Smash Repairs Pty Ltd	80 Arncliffe St., Arncliffe	Address	47m	East
Art Metal Work	S R J Pty Ltd	94 Arncliffe St., Arncliffe	Address	47m	East
Balustrading	Glassons Foundry Pty Ltd	96 Arncliffe St., Arncliffe	Address	47m	East
Foundries - Non-Ferrous Metals	Glassons Foundry Pty Ltd	96 Arncliffe St., Arncliffe	Address	47m	East
Clothing - Shirt, Collar & Pyjama Mfrs &/or W'salers	Continental Shirt Manufacturing Co Pty Ltd	30 Guess Avenue, Arncliffe	Address	70m	North West
Carpets, linoleums & Vinyls - Mfrs &/or W'salers	New Zealand Flooring Products Co Ltd	4 Willis St., Arncliffe	Address	83m	West
Expansion Joints	Victor Engineering Pty Ltd	10 Willis St., Arncliffe	Address	83m	West
Gaskets & Packings	Garlock	10 Willis St., Arncliffe	Address	83m	West
Seals - Oil &/or Mechanical	Durametallic Corporation	10 Willis St., Arncliffe	Address	83m	West

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Builders & Contractors	Ellis C H & C R Pty Ltd	19 Arncliffe St., Arncliffe	Address	83m	South West
Excavating &/or Earth Moving Contractors	Ellis C H & C R Pty Ltd	19 Arncliffe St., Arncliffe	Address	83m	South West
Signwriters	Campbell Displays Pty Ltd	15 Arncliffe St., Arncliffe	Address	83m	South West
Instruments - General	Weiss Frank Projects Pty Ltd	21 Arncliffe St., Arncliffe	Address	83m	South West
Air Conditioning - Commercial & Industrial	Repco Bohn (Div of. Repco Ltd)	34 Arncliffe St., Arncliffe	Address	98m	South
Air Conditioning Equipment Parts - Mfrs &/or W'salers	Repco Bohn	34 Arncliffe St., Arncliffe	Address	98m	South
Refrigeration Equipment - Mfrs &/or W'salers	Repco Bunn	34 Arncliffe St., Arncliffe	Address	98m	South
Furniture Mfrs. &/or W'salers	Lechner M C Furniture Pty Ltd	1 Lusty St., Arncliffe	Address	109m	North
Aluminium Fabricators	O'Brien Glass Industries Ltd.	7 Arncliffe St., Arncliffe	Address	126m	West
Burglar Alarm Systems	O'Brien Glass Industries Ltd	7 Arncliffe St., Arncliffe	Address	126m	West
Doors & Door Fittings	O'Brien Glass Industries Ltd	7 Arncliffe St., Arncliffe	Address	126m	West
Glass Merchants &/or Glaziers	O'Brien Glass Industries Ltd	7 Arncliffe St., Arncliffe	Address	126m	West
Glass Merchants &/or Glaziers	Sydney Glass Co	7 Arncliffe St., Arncliffe	Address	126m	West
Mirrors	O'Brien Mirror Service	7 Arncliffe St., Arncliffe	Address	126m	West
Noise Control Equipment	O'Brien Glass Industries Ltd	7 Arncliffe St., Arncliffe	Address	126m	West
Shop & Office Fittings	O'Brien Glass Industries Ltd	7 Arncliffe St., Arncliffe	Address	126m	West
Show Cases & Glass Counters	O'Brien Glass Industries Ltd	7 Arncliffe St., Arncliffe	Address	126m	West
Hard Facing	A I Metallising Services Ltd	9 Arncliffe St., Arncliffe	Address	126m	South West
Metal Sprayers	A.1 Metallising Services	9 Arncliffe St., Arncliffe	Address	126m	South West
Motor Engineers & Repairers	Burton Stu Motors	11 Arncliffe St., Arncliffe	Address	126m	South West

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Motor Engineers & Repairers	Wayne & Tony Automotive	11a Arncliffe St., Arncliffe	Address	126m	South West
Rubber Products - Mfrs &/or W'salers	Da/Pro (Aust) Pty Ltd	30 Arncliffe St., Arncliffe	Address	154m	South West
Curtains - Mfrs &/or W'salers	Continuous Curtains of Australia Pty Ltd	88 Bonar St., Arncliffe	Address	163m	North West
Fabrics - Knitted	B & S Industries Pty Ltd	88 Bonar St., Arncliffe	Address	163m	North West
Knitwear Mfrs. &/or W'salers	B Bart Fabrics Pty Ltd	88 Bonar St., Arncliffe	Address	163m	North West
Linen Mfrs &/or W'salers	B & S Products Pty Ltd	88 Bonar St., Arncliffe	Address	163m	North West
Plastics - Products - Mfrs &/or W'salers	B & S Industries Pty Ltd	88 Bonar St., Arncliffe	Address	163m	North West
Printers - Textile	Sydney Dyers & Bleachers Pty Ltd	88 Bonar St., Arncliffe	Address	163m	North West
Textile Mills	B & S Industries Pty Ltd	88 Bonar St., Arncliffe	Address	163m	North West
Boat Equipment	Con Wire Cables	15 Lusty St., Arncliffe	Address	166m	North West
Brake &/or Clutch Equipment Mfrs &/or W'salers	Consolidated Wire Pty Ltd	15 Lusty St., Arncliffe	Address	166m	North West
Cables - Mechanical	Consolidated Wire Pty Ltd	15 Lusty St., Arncliffe	Address	166m	North West
Wire Ropes & Fittings	Con Wire Cables	15 Lusty St., Arncliffe	Address	166m	North West
Brake &/or Clutch Service	Joseph Bros Pty Ltd	1 Arncliffe St., Arncliffe	Address	172m	West
Motor Replacement Parts	Joseph Bros Pty Ltd	1 Arncliffe St., Arncliffe	Address	172m	West
Cabinet Makers	Brymer Furniture Pty Ltd	Arncliffe St., Arncliffe	Street		
Concrete - Ready-Mixed	Ready Mixed Concrete Industries Ltd	Arncliffe St., Arncliffe	Street		
Motor Replacement Parts	Fordham Spares	Arncliffe St., Arncliffe	Street		
Motor Wreckers	Fordham Spares	Arncliffe St., Arncliffe	Street		
Vegetable Growers	Lee Sun	Arncliffe St., Arncliffe	Street		

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Electric Motors & Generators	G M F Motors (Electrical Equipment Ltd)	Bonar St., Arncliffe	Street		
Engineers' Supplies	G.M.F. Motors (D U Electrical Equipment Ltd)	Bonar St., Arncliffe	Street		
Bolts & Nuts	Eclipse Engineering Sales Pty Ltd	2 Lusty St., Arncliffe	Street		
Fasteners - Industrial	Eclipse Engineering Sales Pty Ltd	2 Lusty St., Arncliffe	Street		
Steel Wool Mfrs &/or Wsalers	Jex Steelwool (Purex Australia Pty Ltd)	76 Bonar St., Arncliffe	Street		
Swimming Pool Equipment & Chemicals	Purex Aust Pty Ltd	76 Bonar St., Arncliffe	Street		
Water Softeners & Treatment	Purex Aust Pty Ltd	76 Bonar St., Arncliffe	Street		
Enamelling - Baked &/or Porcelain	Bellamy Enamel Finishers	3 Guess Avenue, Arncliffe	Street		

* If no distance is provided, address no longer exists.

1990 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA

(200m Buffer)

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Panel Beaters &/or Painters	Parkview Smash Repairs	21 Guess Avenue, Arncliffe	Address	20m	West
Paints - Mfrs &/or Wsalers	Harlequin Premium Paints	52 Arncliffe, Arncliffe	Address	20m	South
Lifts	Eastern Elevators Pty Ltd	9 Willis St., Arncliffe	Address	20m	West
Lifts - Maintenance & Repairs	Eastern Elevators Pty Ltd	9 Willis St., Arncliffe	Address	20m	West
Motor Wreckers	Nippon Truck Wreckers	78 Arncliffe Street, Arncliffe	Address	47m	East
Panel Beaters &/or Painters	Banksia Smash Repairs & Towing Services	80 Arncliffe, Arncliffe	Address	47m	East
Soap Mfrs &/or Wsalers	Tulloch & Kapeco Distributors Pty Ltd	84 Arncliffe Street, Arncliffe	Address	47m	East
Balustrading	Glassons Foundry Pty Ltd	88 Arncliffe Street, Arncliffe	Address	47m	East
Motor Wreckers	Arncliffe Spares	98 Arncliffe Street, Arncliffe	Address	47m	East
Gaskets & Packings	Garlock Pty Ltd	10 Willis St., Arncliffe	Address	83m	West

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Instruments - General	Weiss Frank Projects Pty Ltd	21 Arncliffe St., Arncliffe	Address	83m	South West
Can Mfrs	Morris McMahon & Co Pty Ltd	34 Arncliffe Street, Arncliffe	Address	98m	South
Can Mfrs	National Can (NSW) Pty Ltd	34 Arncliffe Street, Arncliffe	Address	98m	South
Metal Sprayers	A-1 Metallising Services (Reclamation Engineers & Consultants Arc & Gas Spraying of all metals Tungsten carbide, Stellite & ceramics, Hardfacing & Cladding by auto-welding, Large Capacity, Internal & External Grinding)	9 Arncliffe Street, Arncliffe	Address	126m	South West
Plastics - Products - Mfrs &/or W'salers	Ace Bottle Printing Pty Ltd	7 Arncliffe, Arncliffe	Address	126m	West
Printers - Glass	Ace Bottle Printing Pty Ltd	7 Arncliffe, Arncliffe	Address	126m	West
Screen Printers	Ace Bottle Printing Pty Ltd	7 Arncliffe Street, Arncliffe	Address	126m	West
Engineers - Manufacturing	Sharp H A Pty Ltd	7 Arncliffe Street, Arncliffe	Address	126m	West
Fuel Injection Equipment &/or Service	S.R. Performance Automotives	11a Arncliffe, Arncliffe	Address	126m	South West
Motor Engineers & Repairers	S.R. Performance Automotives	11a Arncliffe Street, Arncliffe	Address	126m	South West
Curtains - Mfrs &/or W'salers	Continuous Curtains of Aust Pty Ltd	88 Bonar St., Arncliffe	Address	163m	North West
Knitwear Mfrs. &/or W'salers	B Bart Fabrics Pty Ltd	88 Bonar St., Arncliffe	Address	163m	North West
Boat & Yacht Equipment	Con Wire Cables	15 Lusty St., Arncliffe	Address	166m	North West
Cables - Mechanical	Consolidated Wire Pty Ltd	15 Lusty St., Arncliffe	Address	166m	North West
Wire &/or Synthesis Ropes & Fittings	Con Wire Cables	15 Lusty St., Arncliffe	Address	166m	North West
Carriers - Heavy	Downey Paul J Transport	1 Arncliffe, Arncliffe	Address	172m	West
Transport Services	Downey Paul J Transport	1 Arncliffe Street, Arncliffe	Address	172m	West
Transport & Forwarding Agents	Mission Forwarding	1 Arncliffe, Arncliffe	Address	172m	West

Activity	Name	Address	Positional accuracy	Distance (m) *	Direction
Transport Services	Downey Paul J Transport	1 Arncliffe Street, Arncliffe	Address	172m	West
Panel Beaters &/or Painters	Cousins Smash Repairs	4 Princes Highway, Arncliffe	Address	188m	South East
Concrete - Ready-Mixed	Boral Concrete	Arncliffe Street, Arncliffe	Street		
Motor Wreckers	Fordham Spares	Arncliffe Street, Arncliffe	Street		
Motor Replacement Parts	Fordham Spares	Arncliffe St., Arncliffe	Street		
Bolts & Nuts	Eclipse Engineering Sales Pty Ltd	2 Lusty St., Arncliffe	Street		
Fasteners - Industrial	Eclipse Engineering Sales Pty Ltd	2 Lusty St., Arncliffe	Street		

* If no distance is provided, address no longer exists.

Land Insight and resources use a number of different address georeferencing methods and characterised them according to the following criteria: completeness (match rates) and positional accuracy. When address do not contain specific street numbers or a match is not found, records identified as being in the surrounding areas are included for reference.

Historical dataset positional accuracy and georeferencing results explanation

Positional accuracy	Georeferenced	Description
Address	Located to the address level	When street address and names fully matched.
Street	Located to the street centroid	When street names match but no exact address was found. Location is approximate.
Place	Located to the structure, building or complex	When building, residential complex or structure name match but no exact address was found. Location is approximate.
Suburb	Located to the suburb area	When suburb name match but no exact address was found. Location is approximate.
Not georeferenced	Not found	When it was not georeferenced, and address could not be found.

Section 3 Other Environmental Constraints

3.1 FEDERAL, STATE AND LOCAL HERITAGE

Map 9 (200m Buffer)

Local Environment Plan (LEP) Heritage

Site Name	Site ID	Significance	Type	Distance (m)*	Direction
Not identified	-	-	-	-	-

National Heritage List (NHL)

Site Name	Site ID	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Register of the National Estate (RNE)

Site Name	Site ID	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Non-Aboriginal heritage item (Local)

Site Name	Site ID	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Non-Aboriginal heritage item (SHR)*

Site Name	Site ID	Listing n°	Plan n°	Distance (m)	Direction
Tempe House & St Magdalenes Chapel	5045451	00725	1778	185.94	North-east

*State Heritage Register

Commonwealth Heritage List (CHL)

Site Name	Site ID	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

World Heritage Area (WHA)

Site Name	Site ID	IUCN	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

3.2 NATURAL HAZARDS & COASTAL MANAGEMENT**Map 10 (500m Buffer)****Bush Fire Prone Land (BPL)**

Category	On the Property?	Within Record Search Buffer?
Not identified	-	-

Fire History (Wildfires and Prescribed Burns)

Category	On the Property?	Within Record Search Buffer?
Not identified	-	-

Flood Hazard Area

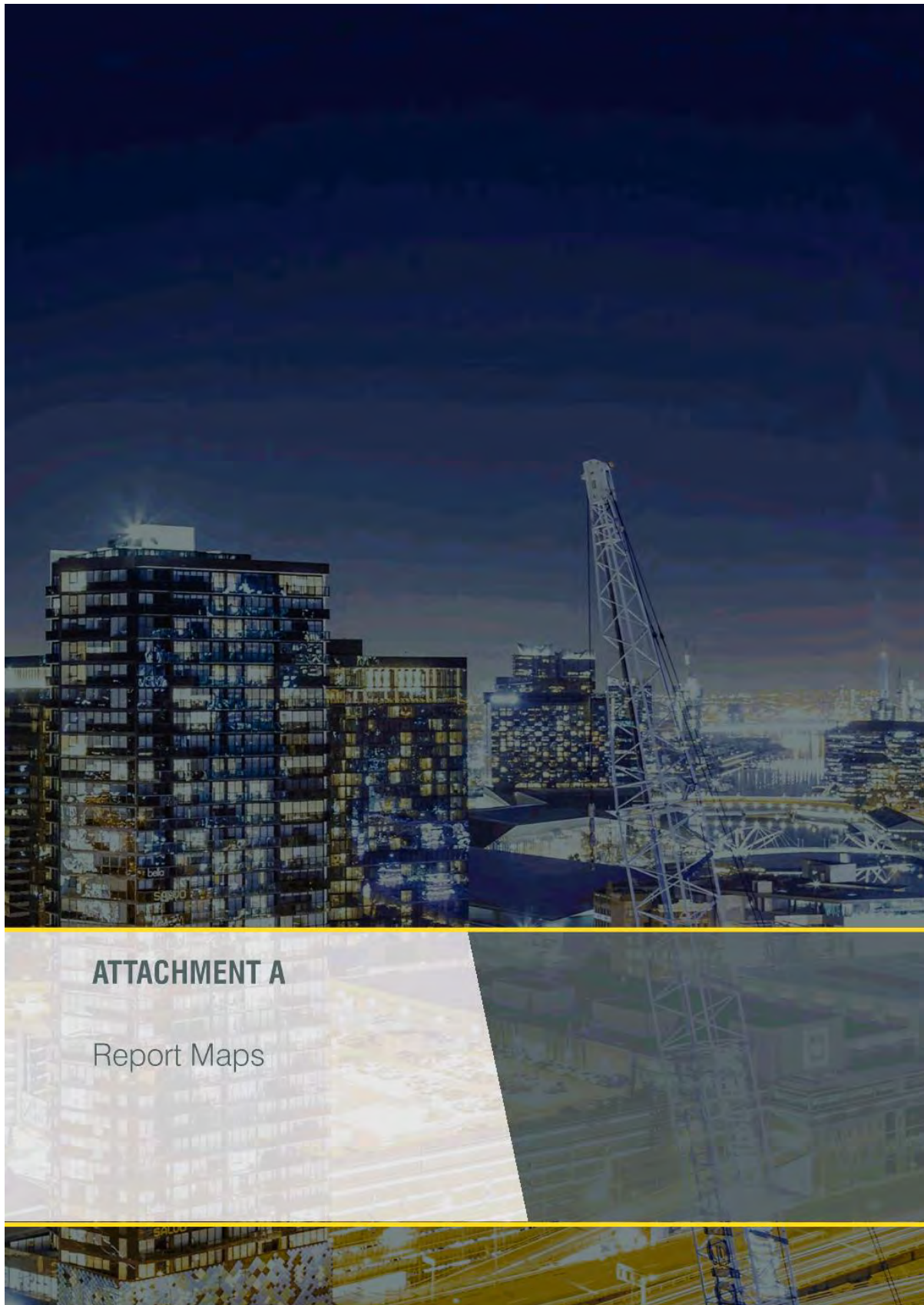
Name	On the Property?	Within Record Search Buffer?
Flood Prone Land	Yes	Yes

3.3 STATE ENVIRONMENTAL PLANNING POLICY (COASTAL MANAGEMENT)**Map 10 (500m Buffer)**

Type	On the Property?	Within Record Search Buffer?
Coastal Wetlands Proximity Area	Not identified	Yes
Coastal Wetlands	Not identified	Yes
Coastal Environment Area Map	Not identified	Yes
Coastal Use Area Map	Not identified	Yes



A 4307/4 Daydream Street, Warriewood NSW 2102
T 02 9979 1720
E info@liresources.com.au
W www.liresources.com.au



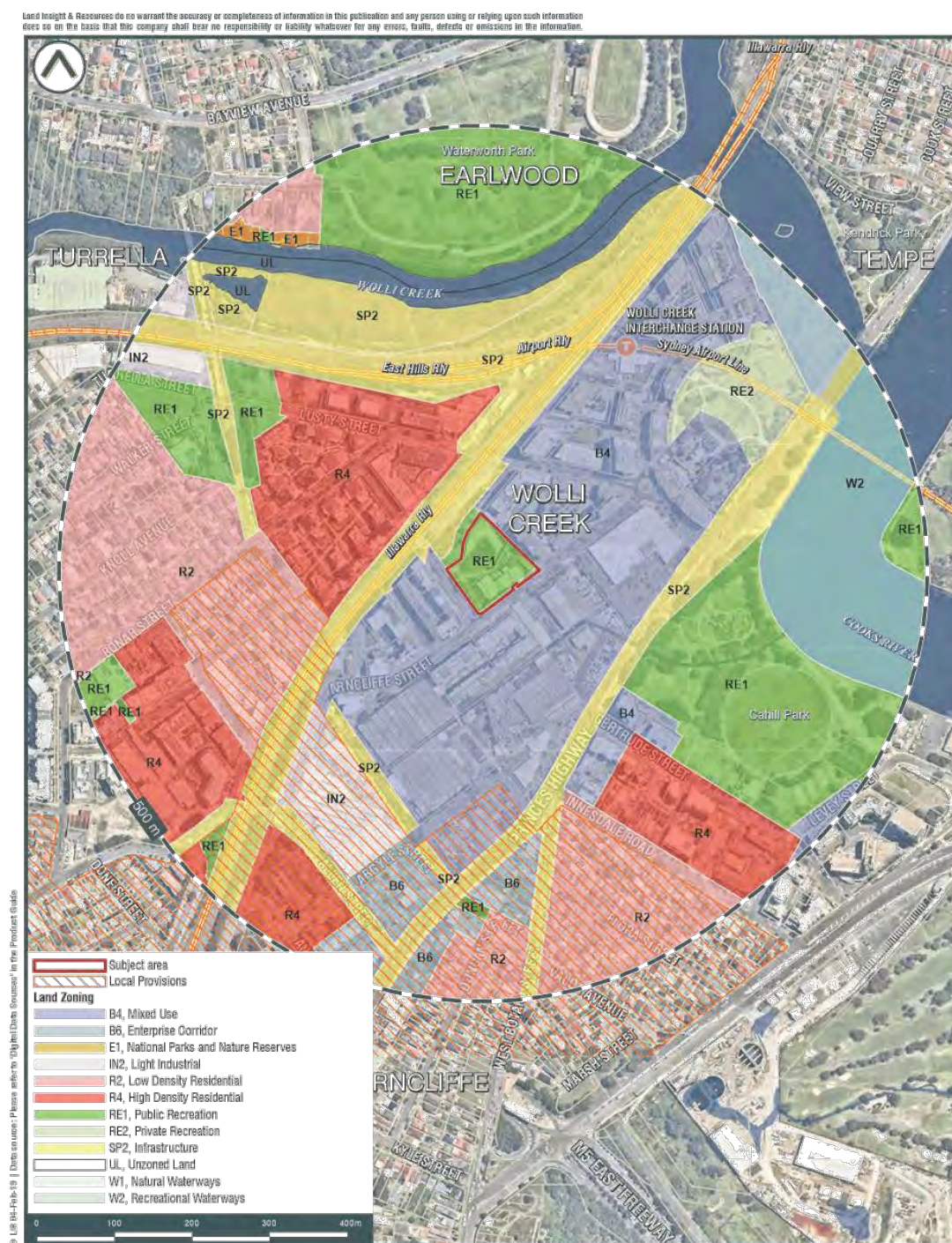


SUBJECT AREA AND SENSITIVE RECEPTORS



MAP 1



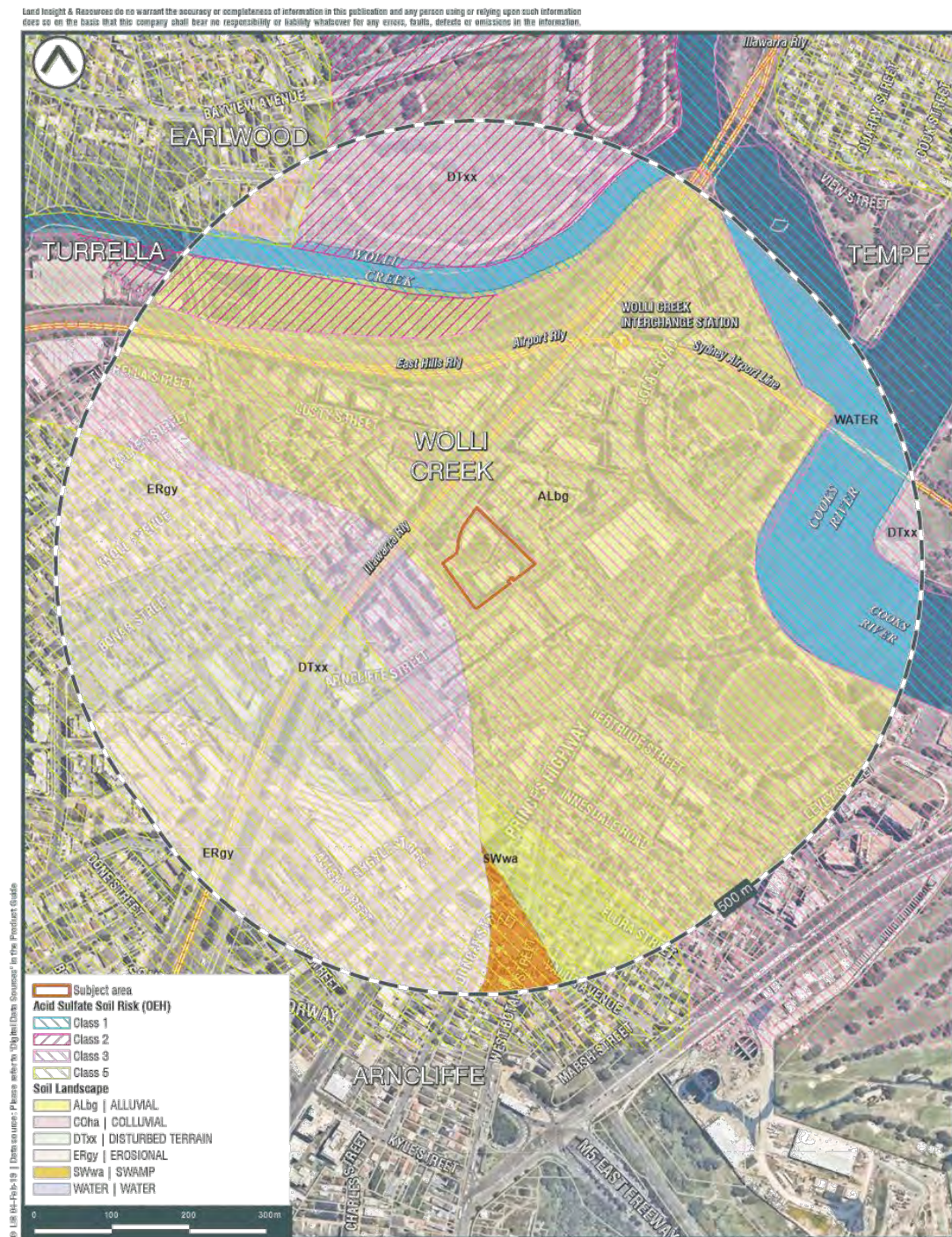


PLANNING CONTROLS



MAP 2



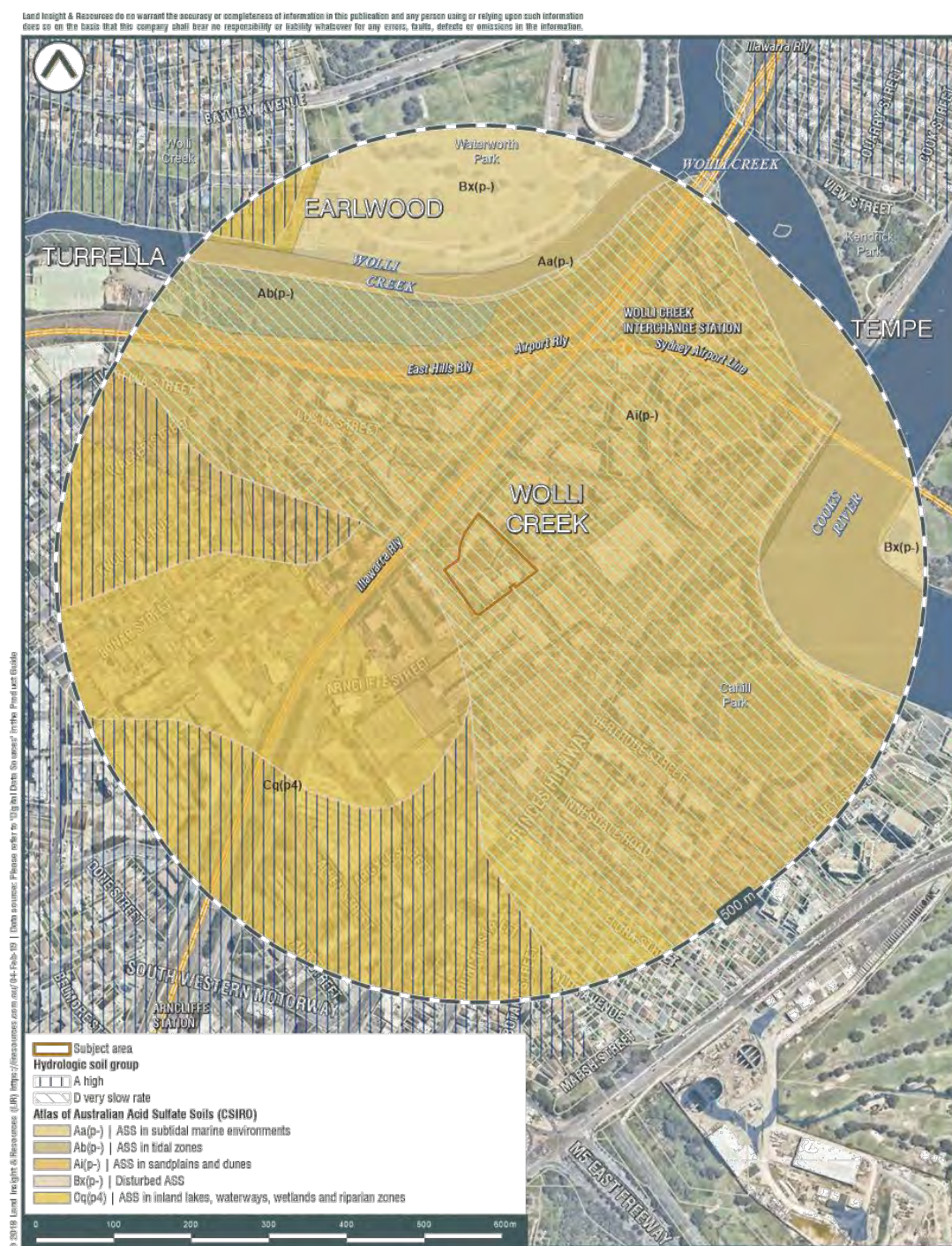


SOIL LANDSCAPES AND ACID SULFATE SOIL RISK



MAP 3a



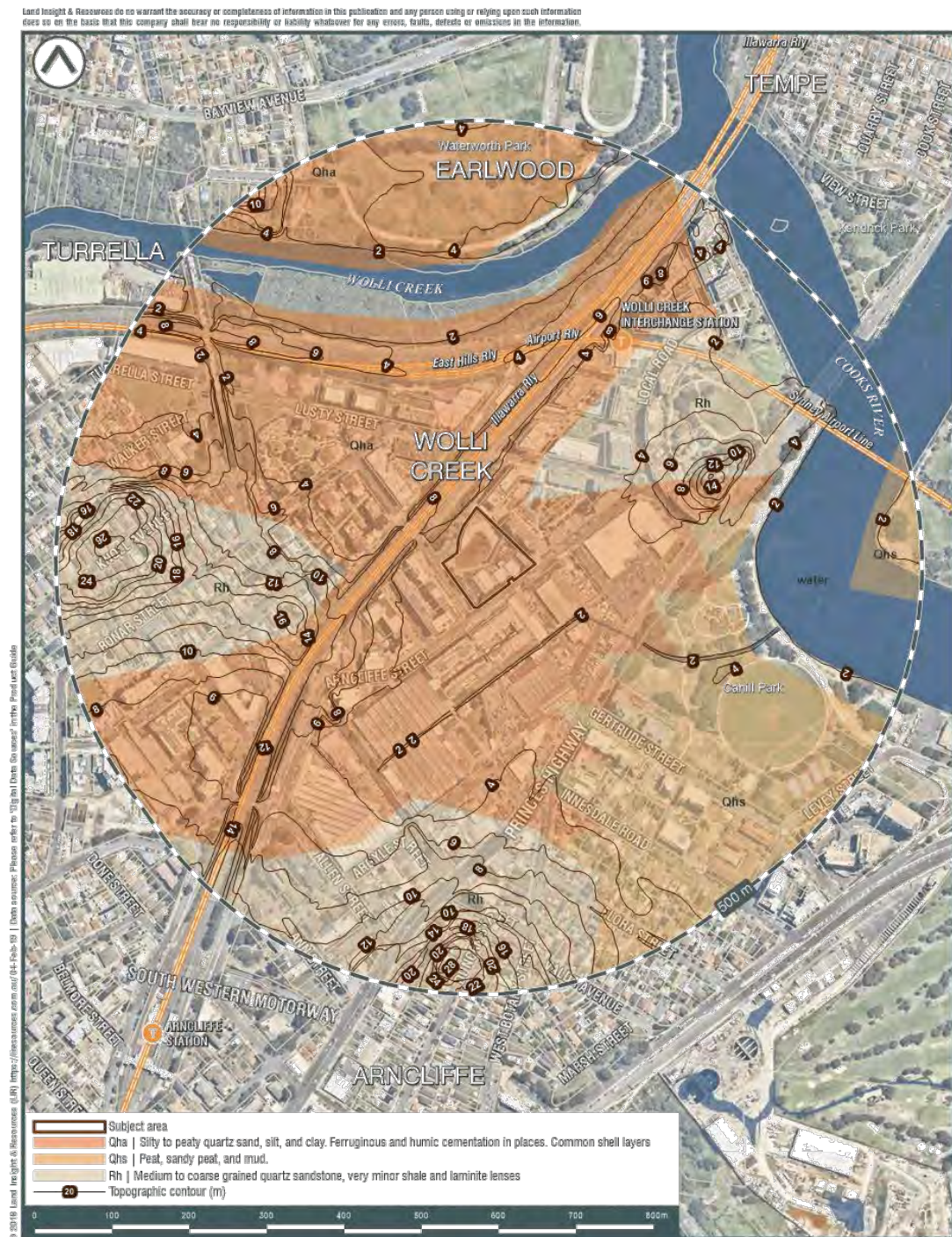


ATLAS OF AUSTRALIAN ACID SULFATE SOILS AND SALINITY



MAP 3b



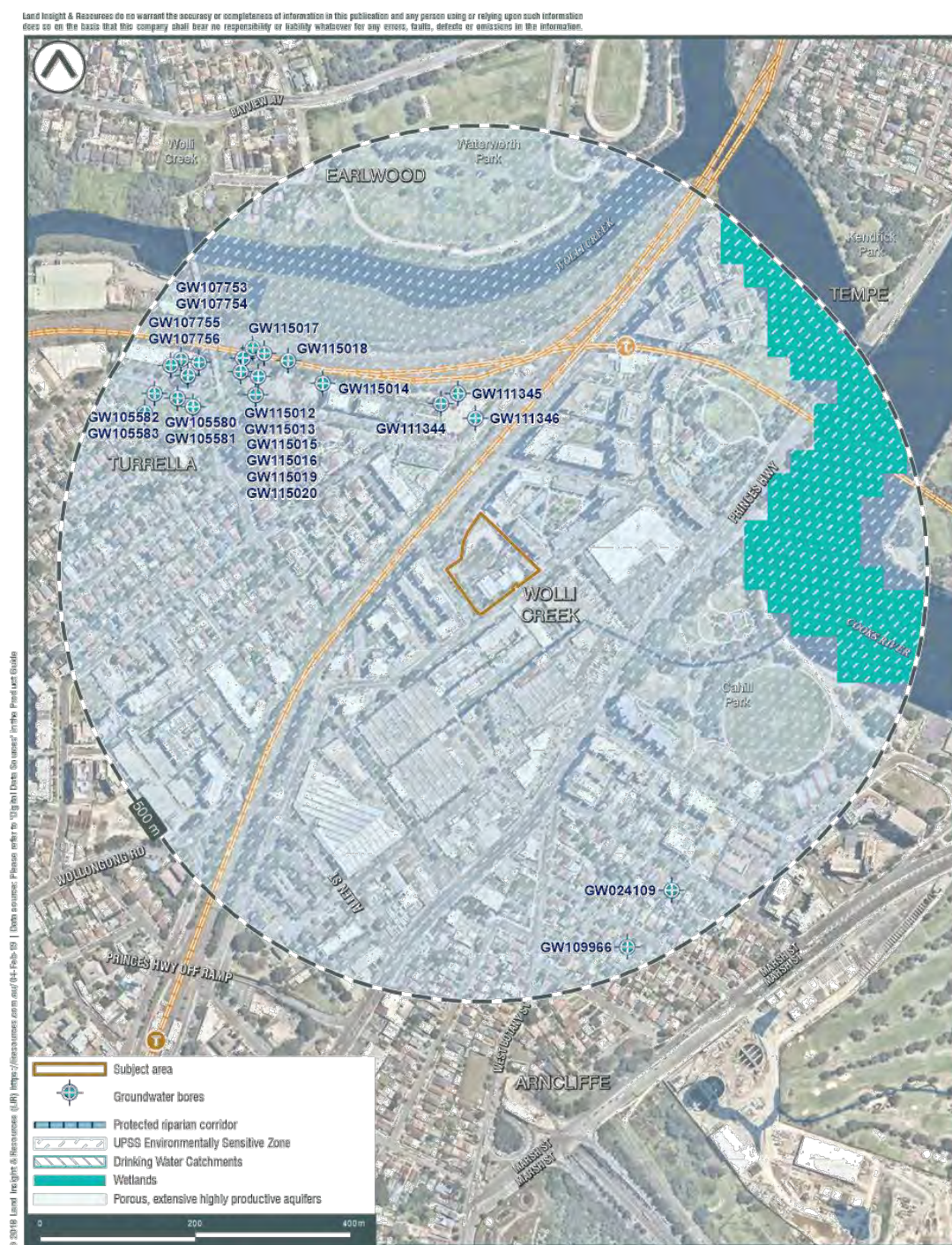


GEOLOGY AND TOPOGRAPHY



MAP 4



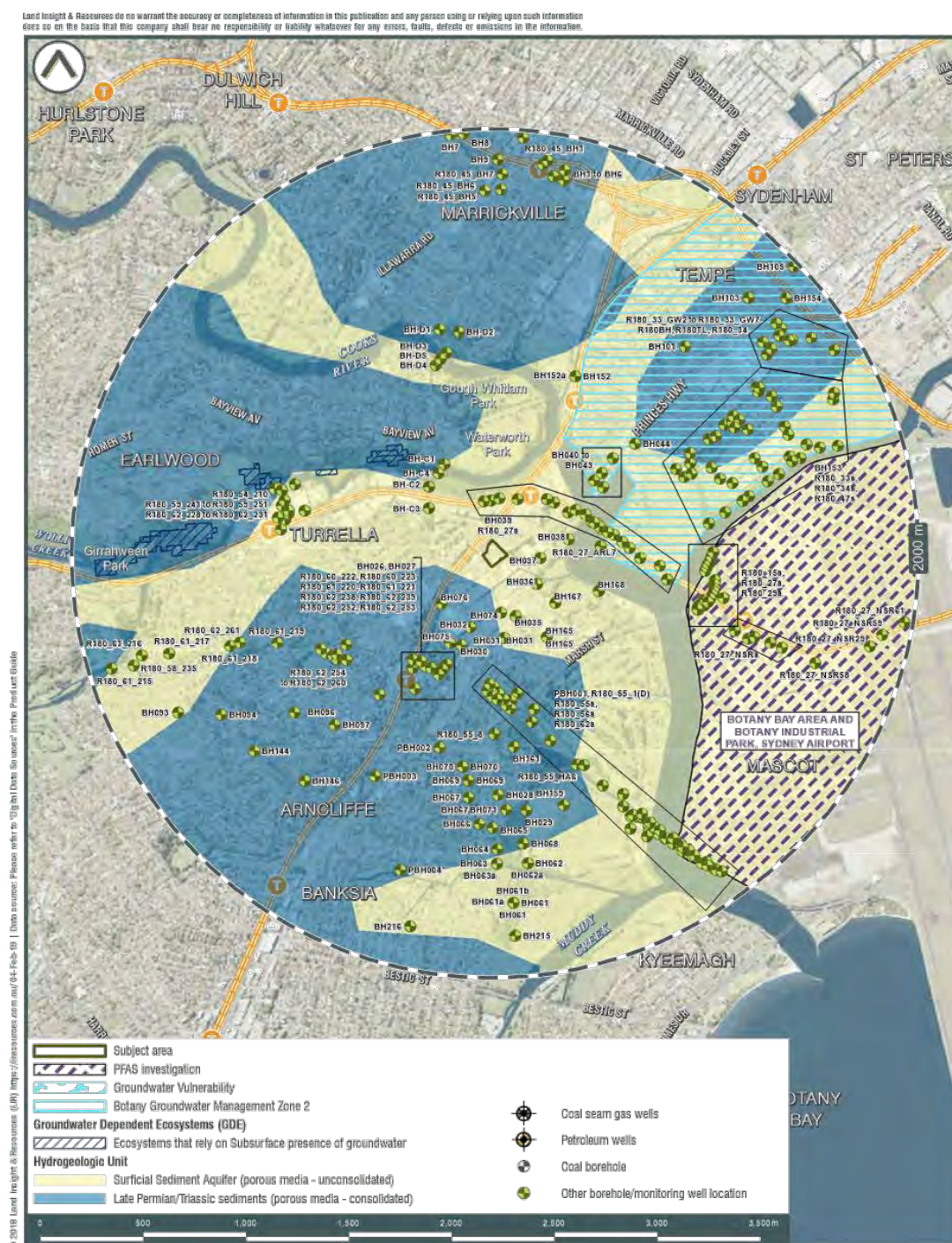


HYDROGEOLOGY AND GROUNDWATER BORES



MAP 5a



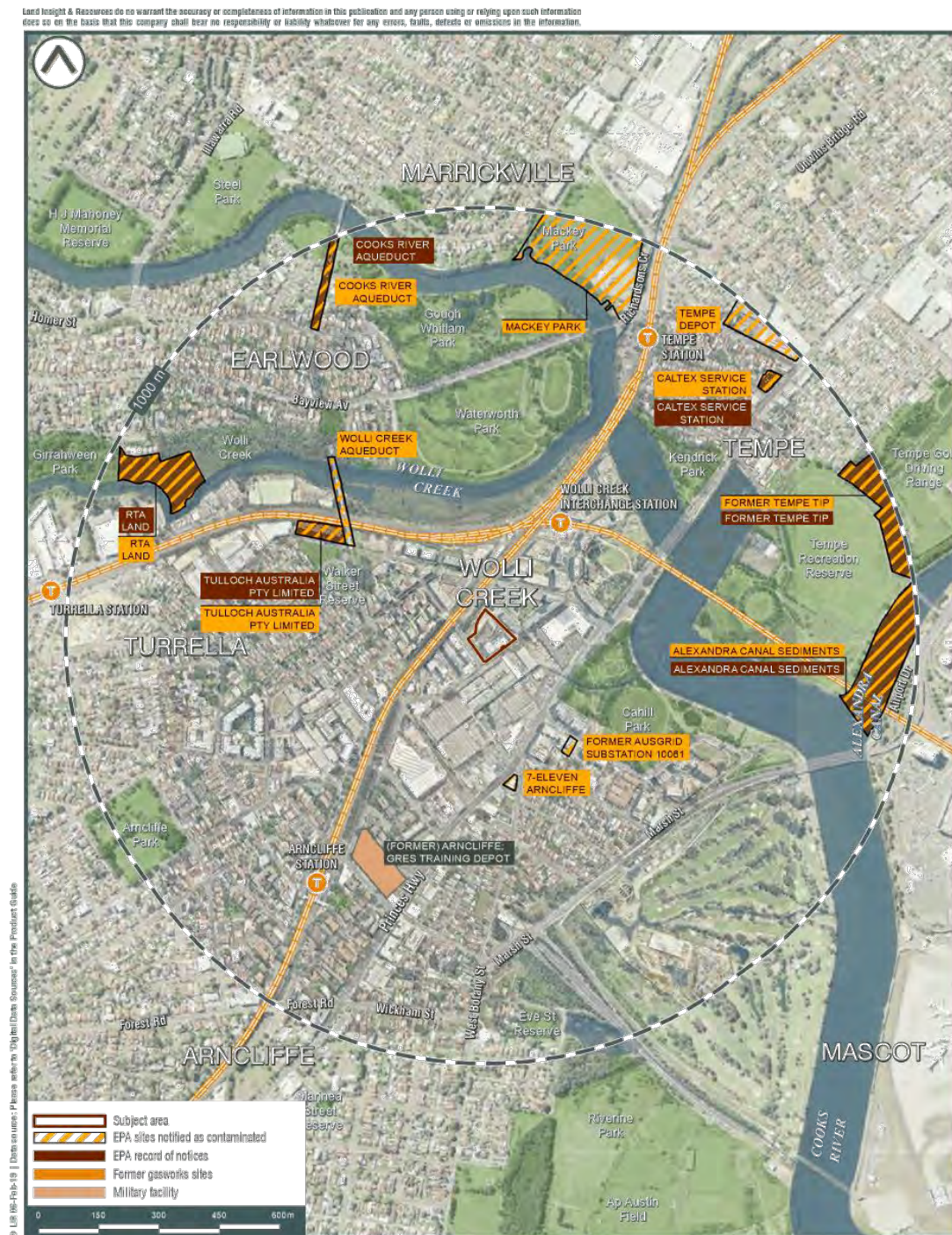


HYDROGEOLOGY AND OTHER BOREHOLES



MAP 5b





EPA RECORDS AND OTHER REGULATORY CONTAMINATION ISSUES



MAP 6







OTHER POTENTIALLY CONTAMINATING ACTIVITIES



MAP 7





LICENSING UNDER THE POEO ACT 1997 AND NPI FACILITIES



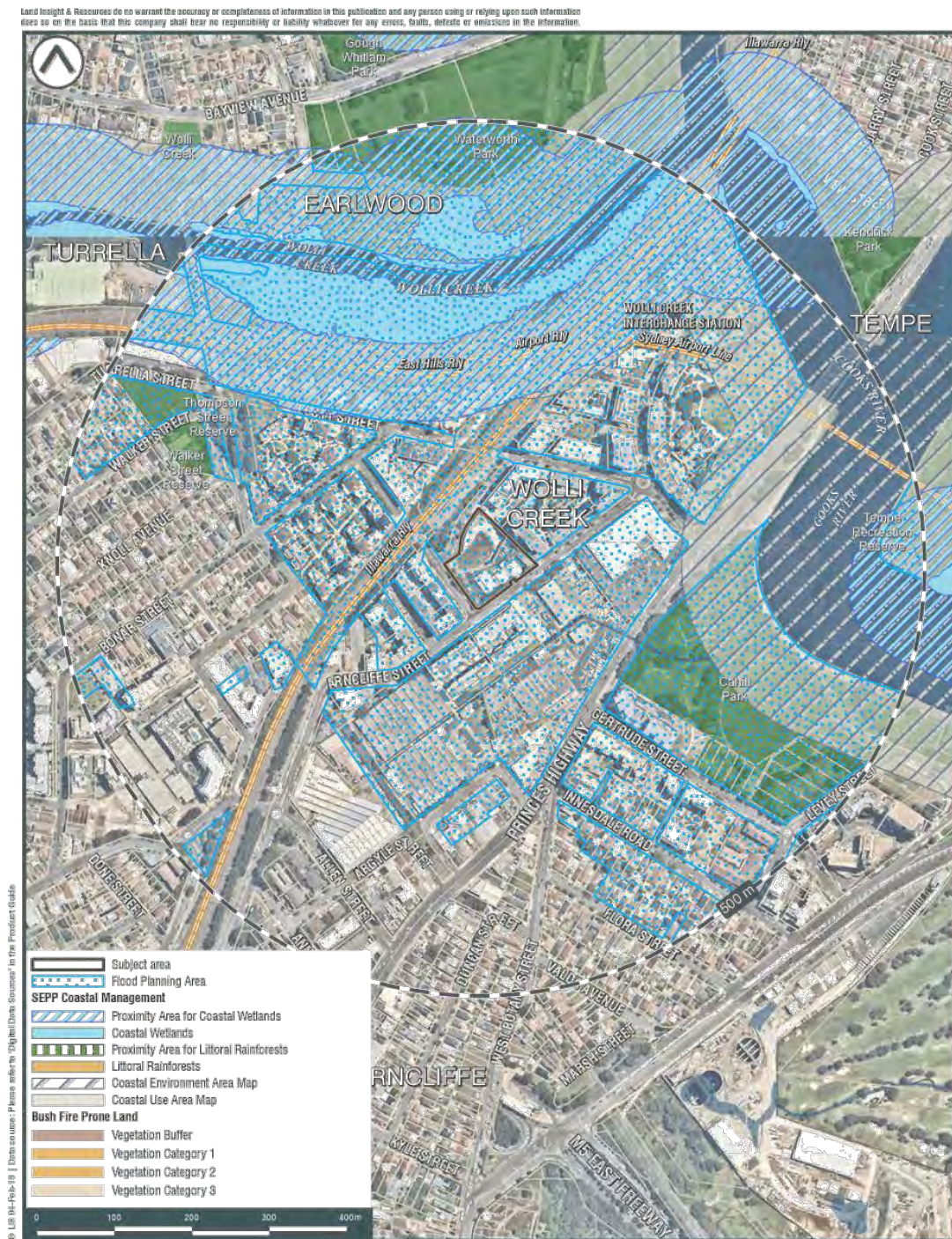
MAP 8





MAP 9



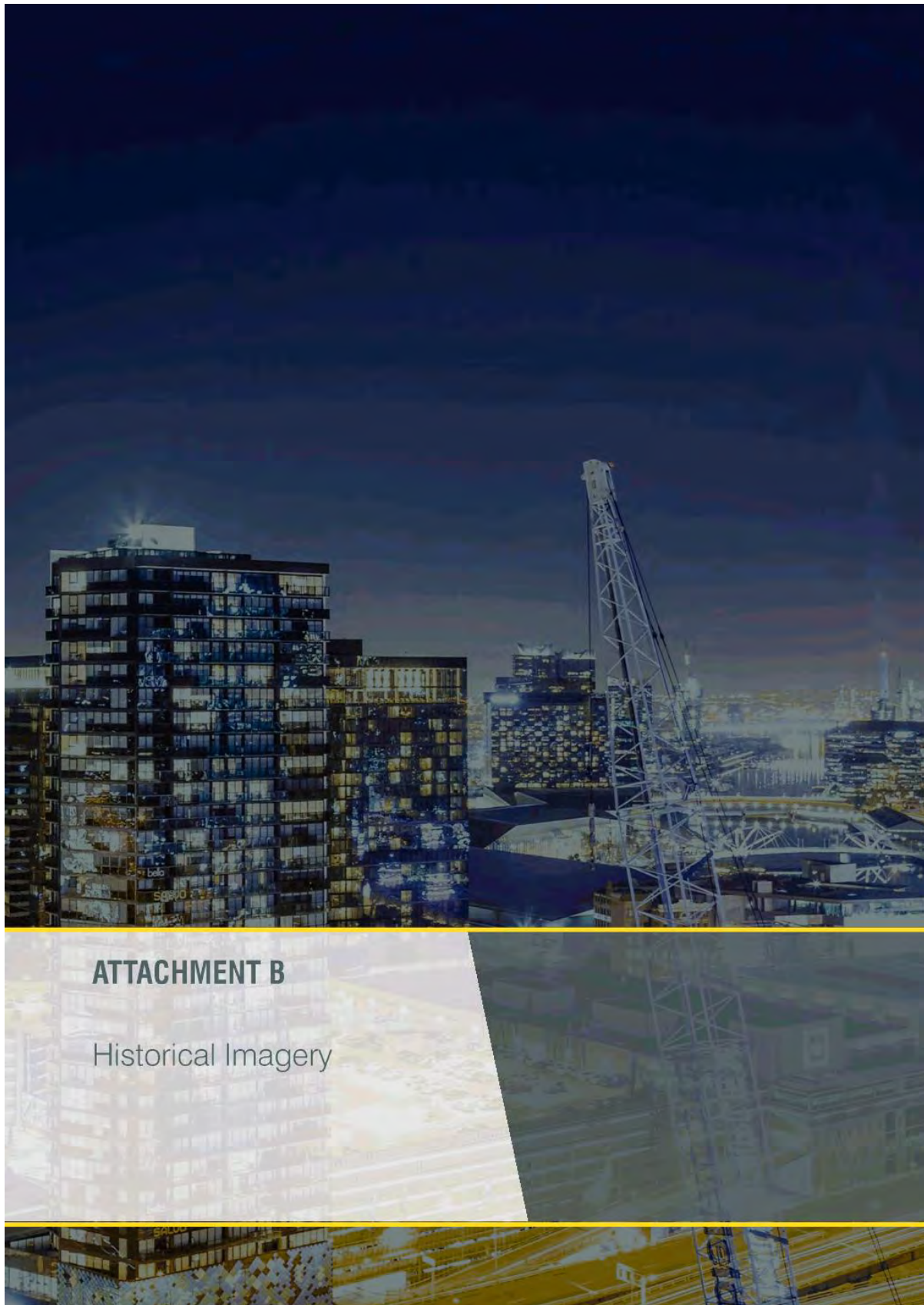


NATURAL HAZARD AND COASTAL MANAGEMENT



MAP 10





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HISTORIC AERIAL PHOTOGRAPH - 1930



MAP 11



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HISTORIC AERIAL PHOTOGRAPH - 1943



MAP 12



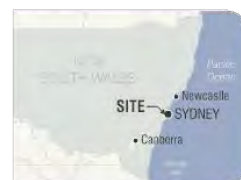
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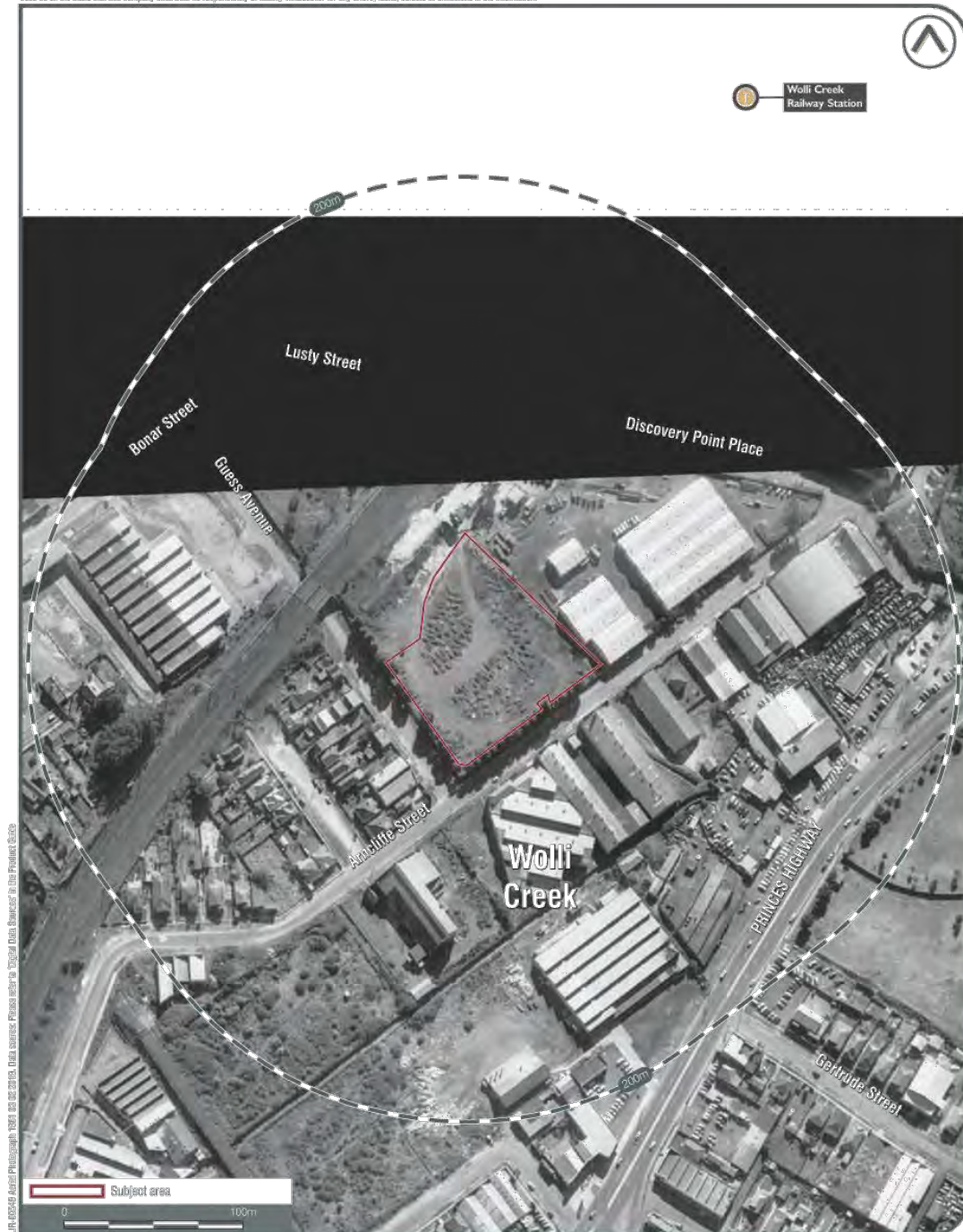
HISTORIC AERIAL PHOTOGRAPH - 1951



MAP 13



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HISTORIC AERIAL PHOTOGRAPH - 1961



MAP 14



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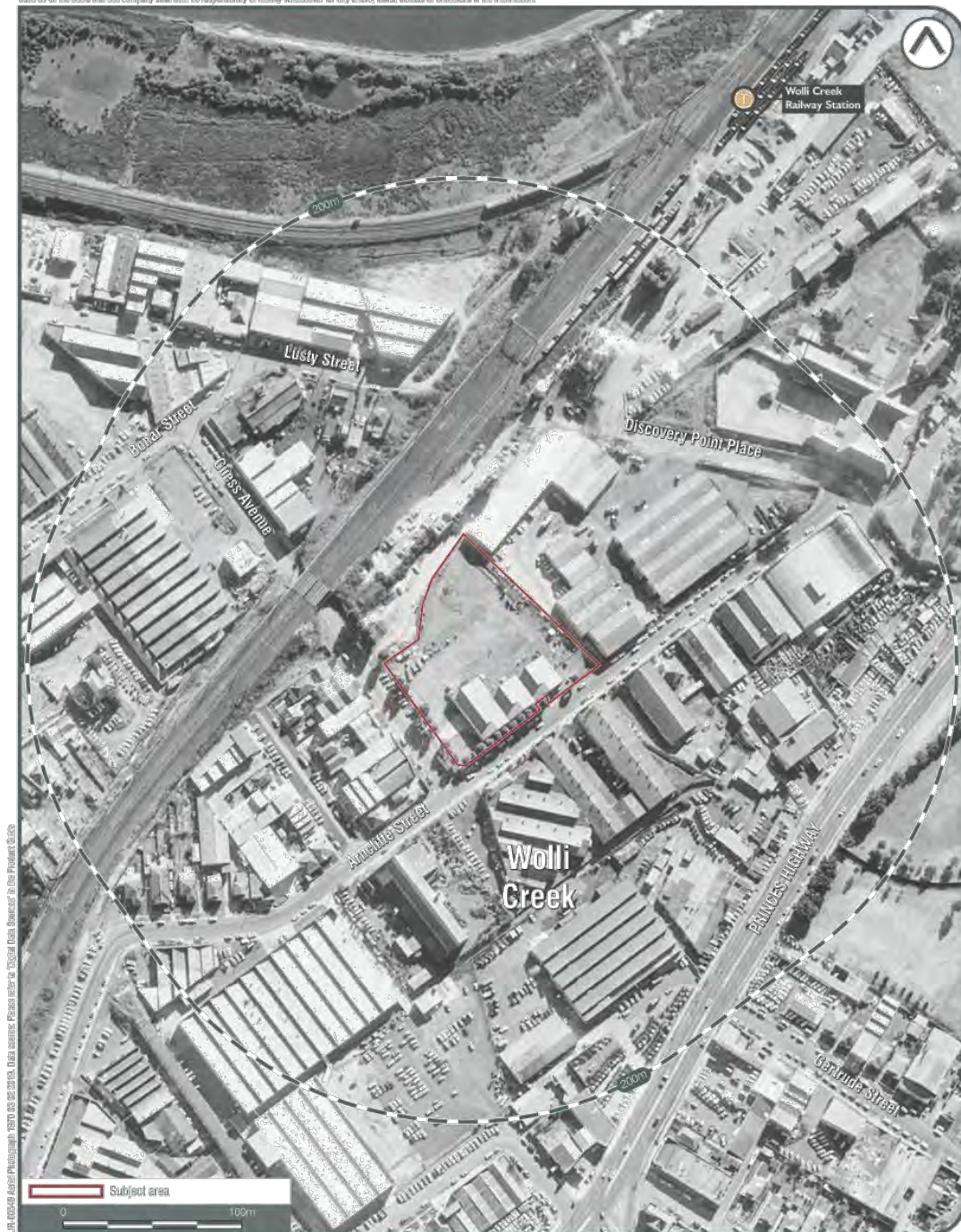
HISTORIC AERIAL PHOTOGRAPH - 1963



MAP 15



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HISTORIC AERIAL PHOTOGRAPH - 1970



MAP 16



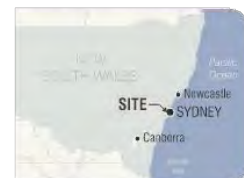
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HISTORIC AERIAL PHOTOGRAPH - 1975



MAP 17



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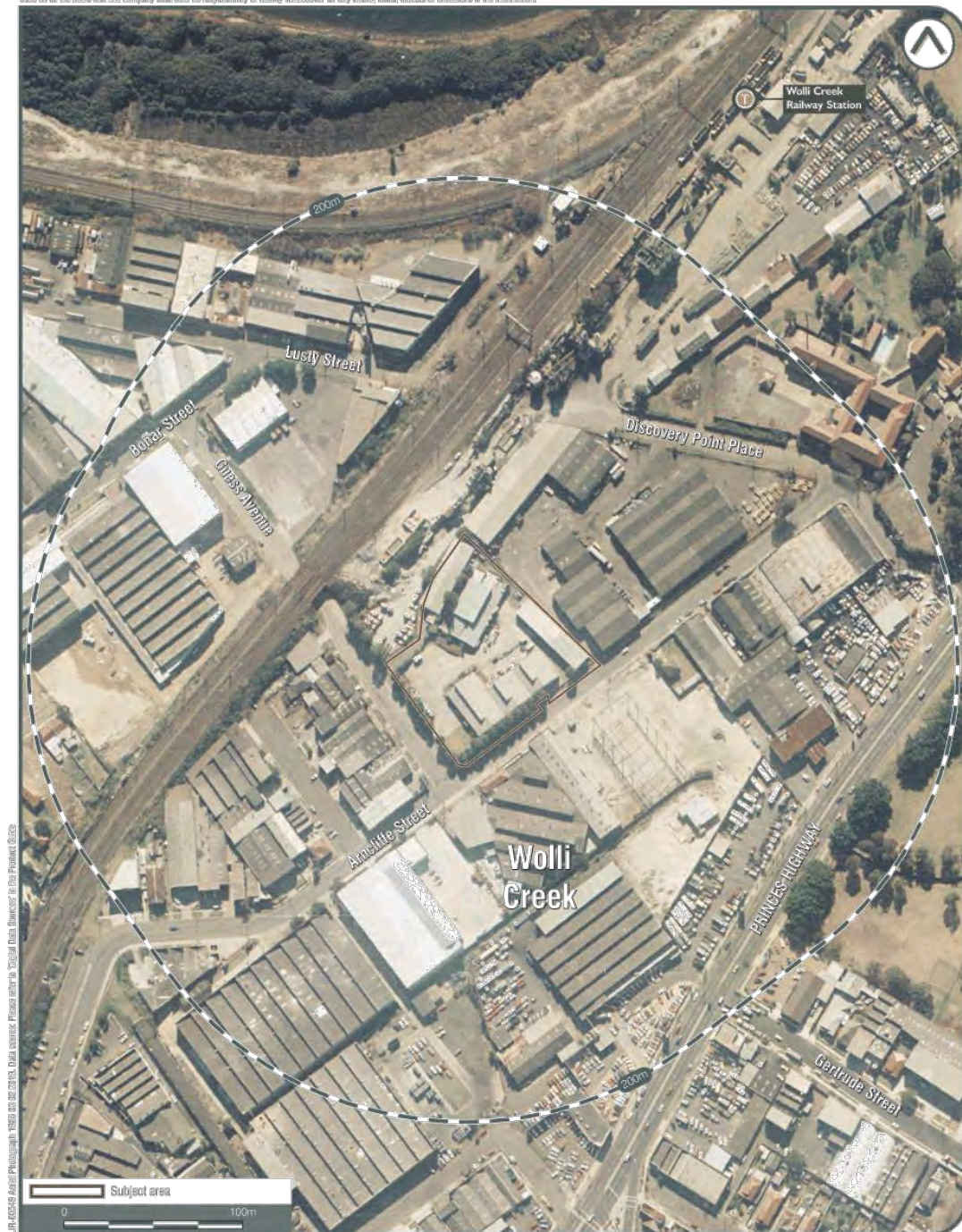
HISTORIC AERIAL PHOTOGRAPH - 1982



MAP 18



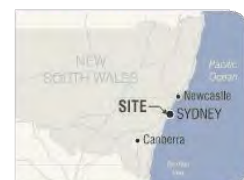
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HISTORIC AERIAL PHOTOGRAPH - 1986



MAP 19



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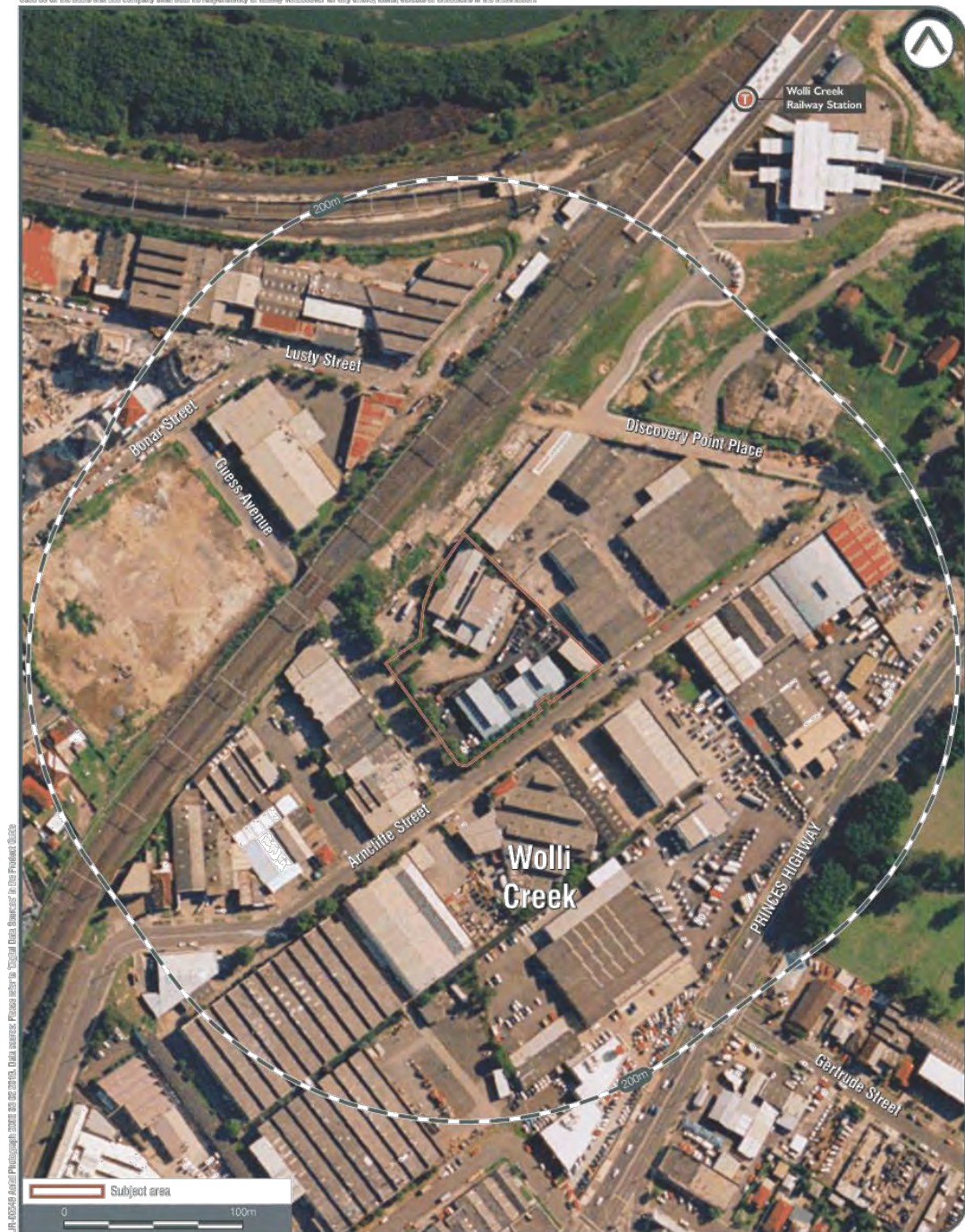
HISTORIC AERIAL PHOTOGRAPH - 1994



MAP 20



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HISTORIC AERIAL PHOTOGRAPH - 2002



MAP 21



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HISTORIC AERIAL PHOTOGRAPH - 2004



MAP 22



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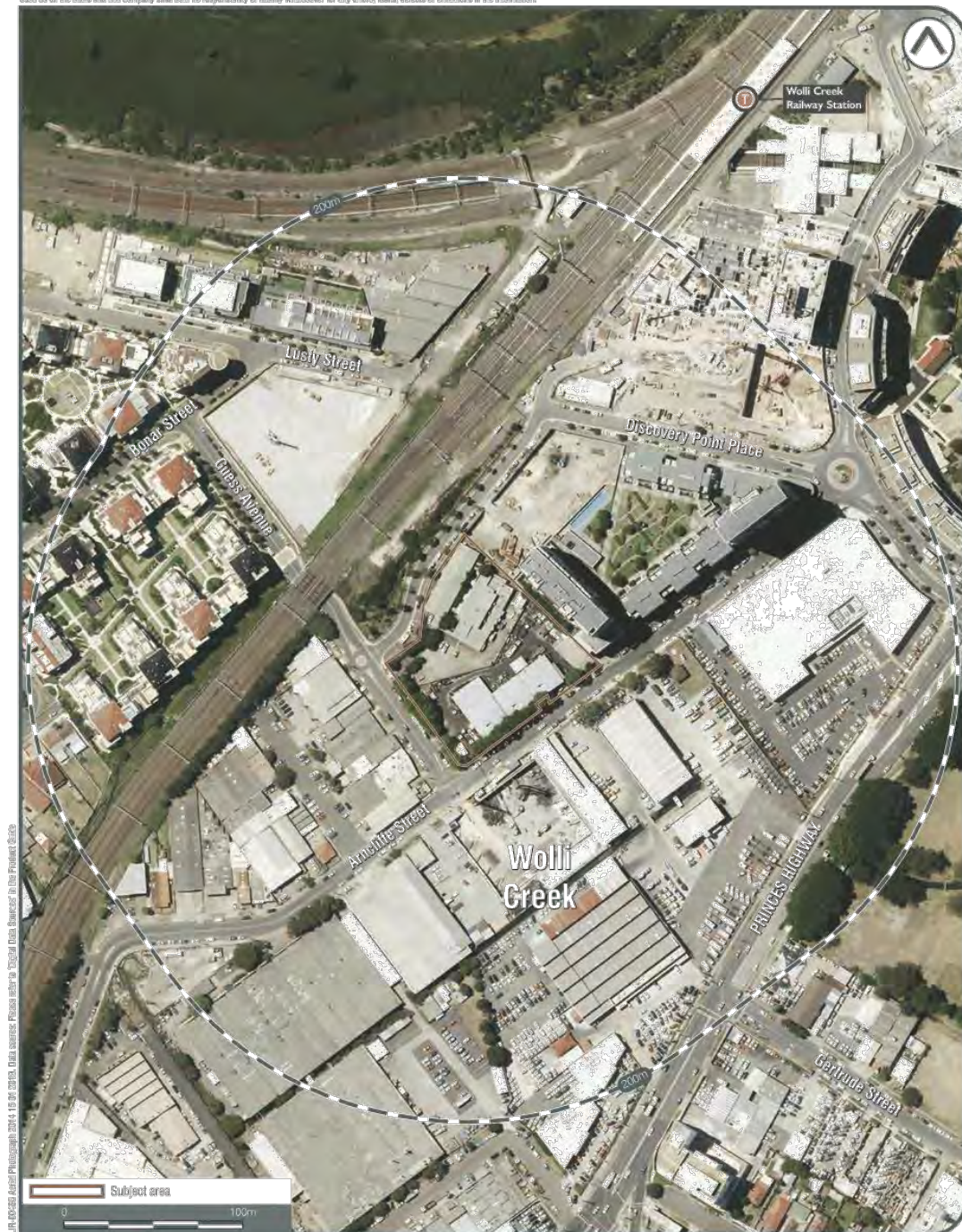
HISTORIC AERIAL PHOTOGRAPH - 2010



MAP 23



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HISTORIC AERIAL PHOTOGRAPH - 2014



MAP 24



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HISTORIC AERIAL PHOTOGRAPH - 2016



MAP 25



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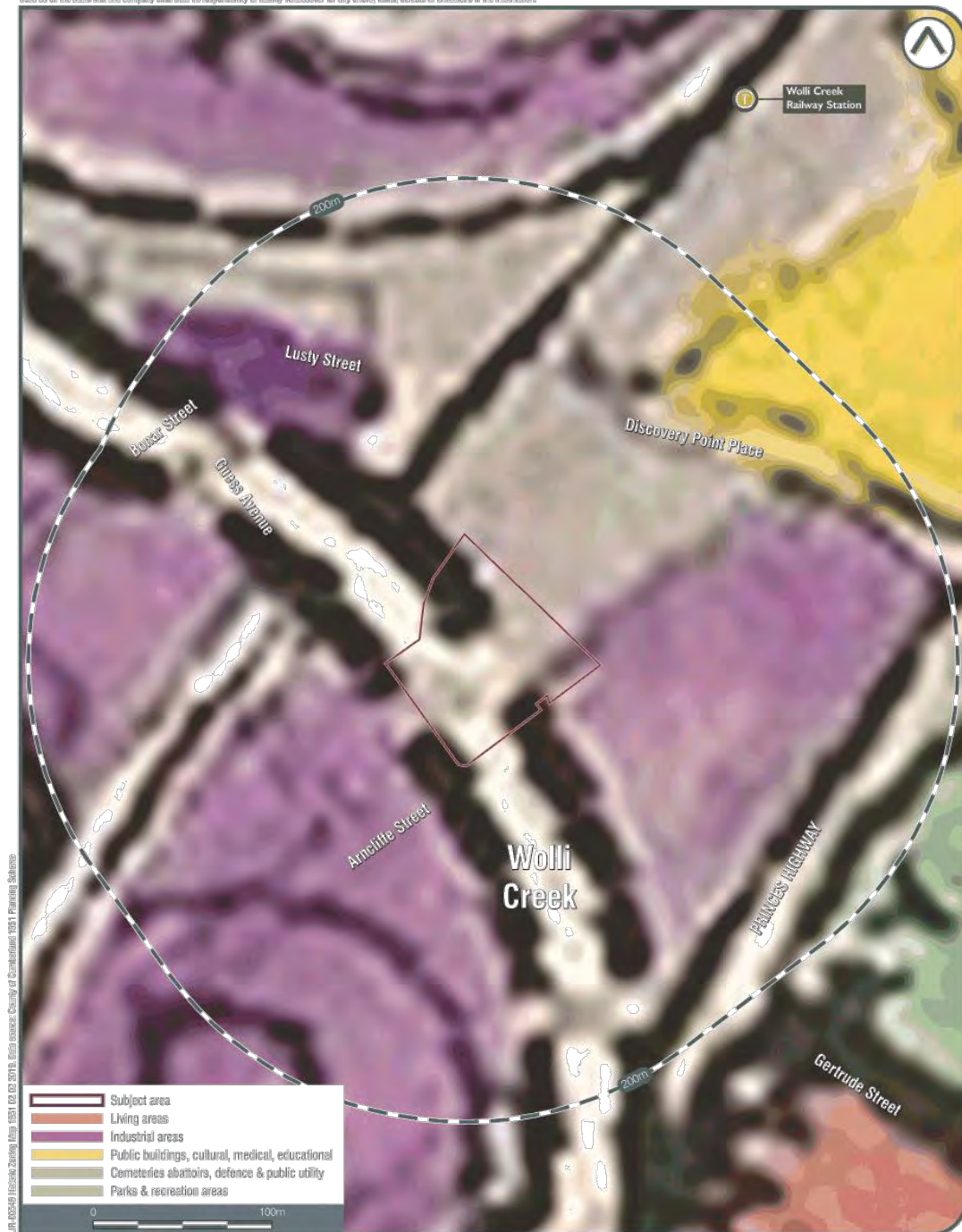
HISTORIC AERIAL PHOTOGRAPH - 2018



MAP 25



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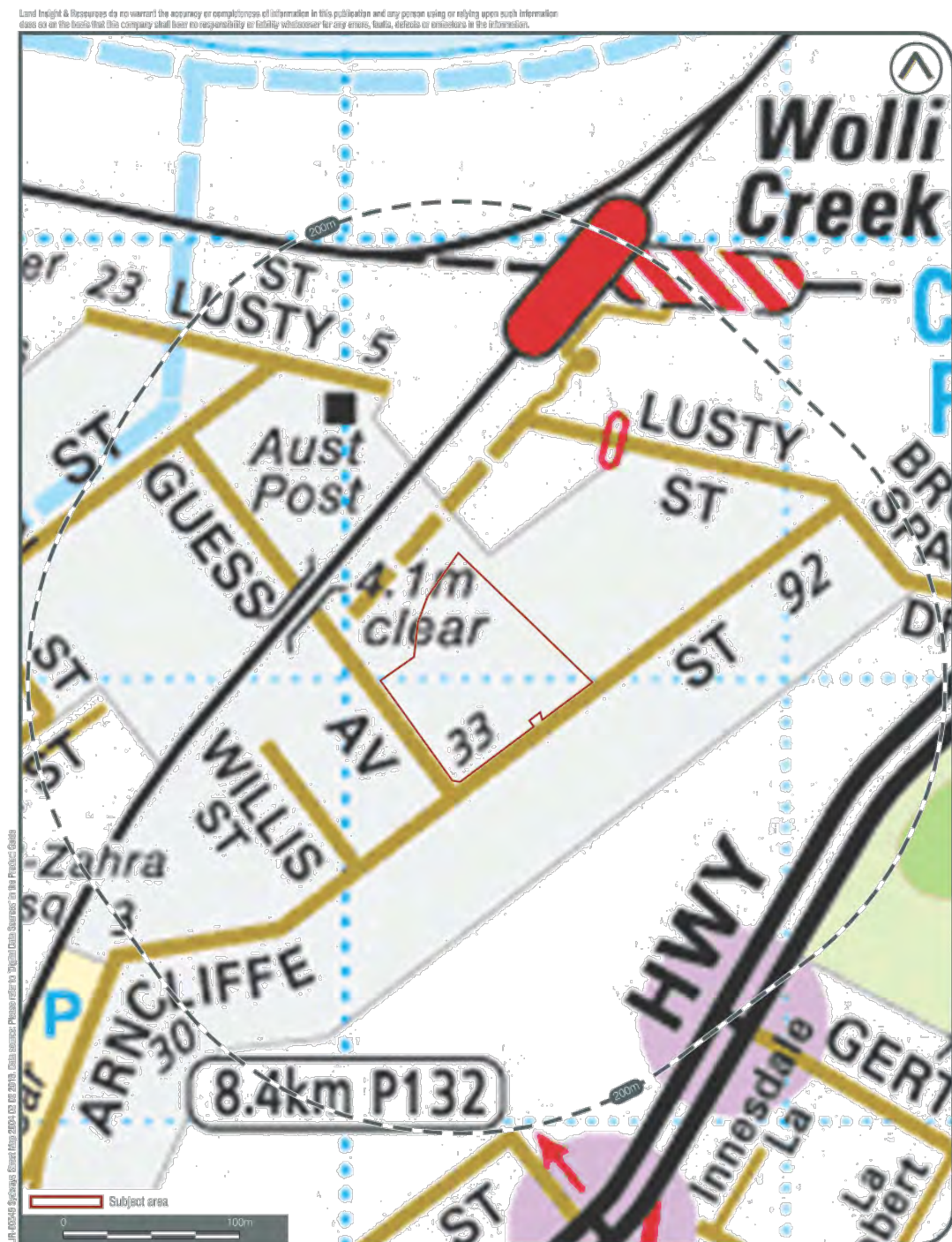


HISTORIC ZONING MAP - 1951



MAP 27

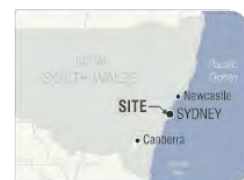




SYDWAYS STREET MAP - 2004



MAP 28



Fast, Accurate and Comprehensive Environmental and Development Risk Information



PRODUCT GUIDE



About this Report

Your Report has been produced by Land Insight and Resources (LI Resources).

The data used in this report was sourced from:

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Zoning, Planning Controls and topography © State of New South Wales, Planning and Environment Information Management Unit licenced under Creative Commons CC-BY (<https://creativecommons.org/licenses/by/4.0/deed.en>)

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UPSS - © State of NSW Environment Protection Authority

Contaminated Land Record of Notices, Sites Notified as Contaminated to the NSW EPA, Former Gasworks and PFAS investigation program - © State of NSW Environment Protection Authority

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Bushfire Prone Land - NSW Rural Fire Service © 2018

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Cattle Dip Site Locator Northern Rivers Region - © State of New South Wales through NSW Department of Industry

Legacy Landfills – LI Resources proprietary dataset. Dataset contains the Sydney northern beaches area

Parramatta River Catchment Land Use Areas - Compiled by LIR, derived from Parramatta River Estuary Processes Study (2010)

Naturally Occurring Asbestos - © State of New South Wales and Department of Planning and Environment licenced under Creative Commons CC-BY (<https://creativecommons.org/licenses/by/4.0/deed.en>)

Historic Aerial Photography - © State of New South Wales, Department of Finance, Services & Innovation licenced under Creative Commons CC-BY (<https://creativecommons.org/licenses/by/4.0/deed.en>)

Historical Commercial & Trade Directory Data –

Sydney

1932-1933 John Sands Sydney Trades Directory – Copyright Expired

1940 & 1950 Commonwealth of Australia Telephone Directory Sydney – Copyright Expired

1960-1961 Telecom Australia Pink Pages Sydney – Permission for use Sensis 2017

1970-1971 United Business Directories Sydney – Licenced under Hardie Grant 2017.

1974-1975 NSW Post Office Yellow Pages Sydney Buying Guide and Commercial/Industrial Directories – Permission for use Sensis 2017

1980-1981 & 1990-1991 Telecom Australia Yellow Pages Sydney – Permission for use Sensis 2017

Regional NSW

1981 & 1991 Telecom Australia Yellow Pages Country NSW Directories – Permission for use Sensis 2017

While every effort is made to ensure the details in your Report are correct, LI Resources cannot guarantee the accuracy or completeness of the information or data provided or obtained from the data sources.

For more detailed information regarding data source and update frequency, please contact LI Resources at info@liresources.com.au

Glossary

AVIATION RESCUE FIRE FIGHTING FACILITIES (ARFF); LIQUID FUEL & AVIATION FUEL DEPOTS/TERMINALS; POWER STATIONS; TELEPHONE EXCHANGES & WASTEWATER TREATMENT FACILITIES

These facilities may be associated with the use, storage, treatment and disposal of a range of chemicals and products such as PFAS (Per- and poly-fluoroalkyl substances), solvents, petroleum products, asbestos, PCBs (polychlorinated biphenyls) and others.

BUSHFIRE PRONE LAND

This data may assist environmental consultants, developers and others understand whether any bushfire risk is present in the area that may require specific management and/or restrict site investigations and development works.

COAL SEAM GAS, PETROLEUM WELLS AND BOREHOLES

This data may assist environmental consultants during investigations as to previous resource exploration with an area, resources present (i.e. coal, gas and petroleum), lithological data and potential for environmental contamination.

DEPARTMENT OF DEFENCE UNEXPLODED ORDNANCE (UXO) SITES

UXO is any sort of military ammunition or explosive ordnance which has failed to function as intended. It includes a range of ammunition used by the Navy, Army and Air Force; and many other types of ammunition and explosives including training munitions. UXO contamination has arisen mainly as a result of military training activities, since European settlement. In the past large numbers of ranges and training areas were approved for use in many areas of Australia. As a result, there are now a number of sites around Australia which are affected by UXO. For more information see www.defence.gov.au/UXO

DERELICT MINES AND QUARRIES

Outstanding legacy issues surrounding derelict mines and quarries have the potential to cause safety and environmental impacts and may also be an indicator of the presence of unregulated landfill.

DRY CLEANERS (CURRENT)

Dry cleaners often use or have used hazardous and flammable chemicals in their operations. Incorrect storage and disposal of these chemicals may result in fire/explosion risks or contamination of soil and groundwater or result in human health risks.

GROUNDWATER EXCLUSION ZONES

Groundwater exclusion zones are present in certain areas where aquifers are known to be contaminated or where past activities may have affected groundwater quality. Restrictions on the use of groundwater in those areas are in place and differ between the various management/exclusion zones.

HERITAGE – FEDERAL, STATE AND LOCAL

This data may assist environmental consultants, developers and others understand whether any heritage items are present on the site that may require specific management and/or restrict site investigations and development works.

HISTORICAL COMMERCIAL & TRADE DIRECTORY DATABASE (1932, 1940, 1950, 1960, 1970; 1974, 1980 and 1990)

An LI Resources proprietary database of historical potentially contaminating activities previously listed as having been undertaken on the property or surrounding area. Activities have been catalogued based on 'low to high risk activities' either known to cause potential contamination risk (based on Managing Land Contamination Planning Guidelines, SEPP 55 remediation of land, 1998) or to assist in guidance for sampling and remediation programs by environmental consultants.

HISTORICAL (LEGACY) LANDFILLS

An LI Resources proprietary dataset containing the location of former legacy landfills. Legacy landfills are widely present across the country, with many locations unknown. Most of these landfills were created prior to current environmental guidelines (i.e. remain unlined and uncapped) resulting in the potential for leaching of hazardous substances into waterways, production of odours, migration of landfill gas and stability issues.

HYDROGEOLOGY

This data includes information for environmental consultants on aquifer properties, the presence of wetlands and groundwater monitoring bores. This information can assist in the understanding of contaminant pathways and receptors.

Groundwater monitoring bores are primarily needed to assess changes to water table levels, groundwater quality and to assess groundwater flow direction. Impacts on groundwater result from contaminated water movement, leaching of surface pollutants caused by rainfall or irrigation water percolation, leakage of stored matter or the disposal of wastes. The presence of a monitoring bore may indicate that a site has been or is being investigated.

LICENSING UNDER THE POEO ACT 1997

The POEO public register includes a range of specified information on environment protection licences issued under the POEO Act to regulate air, noise, water and waste pollution and impacts. The licences and notices provide information on the type of industrial activities undertaken in an area and if any clean-up and preventative action notices have been issued under that licence.

MILITARY FACILITIES

Military practices at certain facilities may cause potential contamination through the use of chemicals ranging from cleaning solvents and paints to ammunition, explosives and firefighting foam. These chemicals can cause human and ecological health risks.

NATURALLY OCCURRING ASBESTOS

Asbestos is found as a naturally occurring mineral in many areas of regional NSW and may occur in veins within rock formations. Naturally occurring asbestos is generally found when building roads, working on construction sites and undertaking excavation activities. This data provides information on the areas identified with a low to high probability of naturally occurring.

NPI INDUSTRIAL FACILITIES

Industrial facilities that trigger a defined threshold(s) for the emission of pollutants identified in the National Pollution Inventory (NPI), must estimate and report their emissions. The pollutants identified under the NPI are those that are known to have possible effects on human health and the environment.

NSW EPA CONTAMINATED LAND RECORD OF NOTICES ISSUED UNDER THE CLM Act 1997

The EPA is required by law to maintain a record of notices relating to contaminated land, including notices declaring land to be 'Significantly Contaminated Land' under the Contaminated Land Management Act 1997. The EPA record of notices provides information on all sites that have been declared significantly contaminated.

NSW EPA FORMER GASWORKS SITES

Former gasworks often leave a legacy of soil and groundwater contamination. The major contaminants in these instances include tars, oils, hydrocarbon sludges, spent oxide wastes, ash and ammoniacal recovery wastes. Some of these contaminants are carcinogenic to humans and toxic to aquatic ecosystems and therefore may pose a risk to human health and the environment.

NSW EPA FORMER URANIUM PROCESSING SITE AT HUNTERS HILL

In 2008 a Parliamentary Inquiry held into the former uranium processing site at Hunters Hill, Sydney, found radiation levels were too low to require site remediation. During the investigation it became evident that there were two separate causes of gamma radiation in the vicinity of Nelson Parade (7-9 Nelson Parade – former uranium processing plant and Kelly's Bush – former tin smelter). The investigations found that levels of radiation on properties surrounding 7-9 Nelson Parade, at Kelly's Bush and in nearby areas of Hunters Hill were below relevant national and international guidelines for the protection of health and therefore remediation was not warranted. Further information can be found at www.epa.nsw.gov.au

NSW EPA JAMES HARDIE ASBESTOS WASTE CONTAMINATION LEGACY

During the 1960s and 70s, bulk asbestos waste associated with manufacturing and waste disposal by the former James Hardie Industries was delivered as fill to areas targeted because of their low-lying geography. Between December 2007 and February 2008, the Department of Environment Climate Change and Water conducted site inspections of those disposal sites. None of the inspected sites were found to be a significant risk to human health or the environment, provided the sites remained sealed or undisturbed. Further information can be found at www.epa.nsw.gov.au

NSW EPA SITES NOTIFIED AS CONTAMINATED TO THE NSW EPA

The EPA maintains a record of all sites notified to it by owners or occupiers of sites believed to be significantly contaminated.

NSW EPA PFAS INVESTIGATION PROGRAM

The NSW EPA is investigating particular sites to better understand the extent of PFAS use and contamination in NSW. PFAS are a group of chemicals that include perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA).

They have many specialty applications and are widely used in a range of products in Australia and internationally. PFAS are an emerging contaminant, which means that their ecological and/or human health effects are unclear. Further information can be found at www.epa.nsw.gov.au

OTHER POTENTIALLY CONTAMINATED SITES

An LI Resources proprietary database of recent potentially contaminating activities previously listed as having been undertaken on the property or surrounding area. Activities have been catalogued based on 'moderate to high risk activities' either known to cause potential contamination risk or to assist in guidance for sampling and remediation programs by environmental consultants. Please note this database is not exhaustive and may not list all activities in the area.

PARRAMATTA RIVER CATCHMENT LAND USE AREAS

An LI Resources proprietary dataset containing land use changes around the Parramatta River catchment area. Details include land reclamation areas, loss of foreshore and major land use changes (i.e. industrial to residential land). These changes may indicate presence of unregulated landfill and potential contamination associated with former industrial land use.

PUBLIC REGISTER OF PROPERTIES AFFECTED BY LOOSE-FILL ASBESTOS INSULATION

The NSW Government is required to maintain a register of residential properties that contain loose-fill asbestos insulation. This assists members of the wider community to be informed about any risks associated with a specific property and to take any appropriate safety measures. For more information see www.fairtrading.nsw.gov.au

SENSITIVE RECEPTORS

This data may assist environmental consultants during investigations as to the location and proximity of any sensitive receptors in the area, such as aged care, child care, community and religious facilities; sports grounds; national and state parks etc.

STATE ENVIRONMENTAL PLANNING POLICY 14, 26 AND 71**SEPP 14 (COASTAL WETLANDS), 26 (LITTORAL RAINFORESTS) AND 71 (COASTAL PROTECTION)**

The proximity of SEPP 14, 26 and 71 protection zones may limit certain development and remediation works.

SOIL LANDSCAPE AND GEOLOGY

This data may assist environmental consultants during investigations as to the physical site properties that could govern potential contaminant retention or migration.

SERVICE STATIONS (CURRENT)

Service stations may contain leaking tanks which can result in petroleum products migrating into, and contaminating, the soil or groundwater or other pathways to human and biological contact.

UNDERGROUND PETROLEUM STORAGE SYSTEMS (UPSS) ENVIRONMENTALLY SENSITIVE ZONES

UPSS environmentally sensitive zones represent a conservative assessment of areas likely to be vulnerable to contamination from leaking UPSS. This information can assist environmental consultants on the risk a UPSS site poses to a recognised environmentally sensitive receptor.

WASTE MANAGEMENT FACILITIES

A waste facility is a premises used for the storage, treatment, processing, sorting or disposal of waste. These include landfills, waste transfer stations and waste reprocessing facilities. Waste facilities emit regulated substances to air and water, such as methane gas, and can produce odours, dust and noise.

Terms and Conditions

Terms and Conditions

1. Land Insight and Resources (LI Resources) will perform the Services in accordance with these terms and conditions
2. By submitting the Application Form, the User acknowledges that it has read and understood these terms and conditions and agrees to be bound by them.
3. LI Resources reserves the right to change these terms and conditions. Any change shall be effective upon notice, which may be given by LI Resources posting such change on the Website, or by direct communication with the User.

Services

4. LI Resources agrees to undertake the Services using due skill, care and diligence.
5. The User assumes the sole risk of making use of, and/or relying on, the Report and the Services. LI Resources makes no representations about the suitability, completeness, timeliness, reliability, legality, or accuracy of the Services.
6. Unless LI Resources agrees expressly otherwise:
 - (A) The Services are solely for the use and benefit of the User; and
 - (B) LI Resources does not accept any liability, whether directly or indirectly, for any liability or loss suffered or incurred by any third party placing any reliance on the performance of the Services or any Documents or material arising from or in connection with the Services.
7. The User warrants to LI Resources that it will not use the Services for any purpose that is unlawful or is otherwise inconsistent with these terms and conditions.
8. The User will not alter in any way or provide a copy of the Report or any Document prepared by LI Resources to any other person without LI Resources's prior written consent.

Payment Terms

9. The Fee will be payable at the time of submitting the Application Form unless invoicing payment terms have been negotiated prior to purchase with LI Resources.
10. The User and LI Resources may agree in writing to vary the Services. The fee for each variation shall be agreed between LI Resources and the User.
11. The User agrees to pay LI Resources the Fee, including the fee for any variation requested in accordance with clause 12.
12. If the User's rights are terminated and the User has made an advance payment, LI Resources will refund the User a reasonable proportion of the balance as determined by LI Resources in relation to the value of Services already provided.
13. GST at the prevailing rate is payable in addition to the Fee. The User agrees to pay any other applicable taxes, duties or government imposed fees related to the User's use of the Services.

Intellectual Property

14. LI Resources owns all intellectual property in the Report and arising from or in connection with the Services.
15. LI Resources grants the User a royalty free licence to use LI Resources's intellectual property for that User's personal assessment of its Property(s) only.

Privacy Policy

16. Upon submitting the Application Form the User consents to LI Resources's use of the personal data provided by the User for the purposes of providing the Services.
17. The Reliance on the Report, the use of the Services and the use of LI Resources's Website is at the User's own risk. The User accepts that LI Resources does not guarantee the confidentiality of any communication or information transmitted through the use of the Website.
18. LI Resources will not provide to any third party any personal data provided by a User without the User's permission.
19. The User acknowledges that any feedback provided to LI Resources over the Website is not confidential and that LI Resources has the right to publish, reproduce, disseminate, transmit, distribute and copy (in whole or in part) any such feedback without the approval of the User.
20. LI Resources assumes no responsibility or liability for any content, communications or feedback submitted by a User over the Website. If a User has submitted objectionable content, communications or Feedback, LI Resources may, in its sole discretion, terminate that User's account, take legal action, or notify the appropriate authorities or parties, without prior notice.

Third Party Services

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22. The report contains content provided to LI Resources by other parties (Third Party Content). LI Resources is not responsible for, does not endorse and makes no representations either expressly or impliedly concerning the accuracy or completeness of any Third Party Content. You rely on the Third Party Content completely at your own risk.

Limit and Extent of Liability

23. LI Resources's liability is limited to the amount of the Fee. Liability arising in the provision of the Services is reduced to the extent that it arises out of or in connection with any negligent act or omission by the User.
24. Neither party is liable to the other for loss of actual or anticipated revenue or profits, increased capital or financing costs, increased operational or borrowing costs, pure economic loss, exemplary or punitive damages or indirect or consequential damages or loss.
25. In no event shall LI Resources or any directors, officers, employees or agents be liable for any indirect, punitive, incidental, special, or consequential damages arising out of or in any way connected with the use of the Website, any delay or inability to use the Website, any information available on the Website, or otherwise arising out of the utilisation of the Website, whether based in contract, tort, strict liability, or otherwise, even if LI Resources has been advised of the possibility of such damages. The negation of damages set forth herein is a fundamental element of the basis of the bargain between LI Resources and the User. The Services would not be provided without such limitations.

Property Verification

26. The User accepts that the Services provided do not take into account any information relating to the actual state or condition of the Property.
27. The User acknowledges that the Services are not to be interpreted as commenting on the physical characteristics or condition of the Property, any particular purpose or use of that Property or the saleability or value of the Property.

Termination and Modification

28. LI Resources reserves the right in its sole discretion to terminate, block or restrict the User's use of the Services or any portion thereof, for any reason, and without notice. In addition, LI Resources reserves the right in its sole discretion to terminate or modify any part of the Website without notice, for any reason.

Anti-Hacking

29. The User agrees not to directly or indirectly, attempt to or disrupt, impair, interfere with, alter or modify the Website or any of its content.
30. The User agrees not to allow, aid or abet third parties to directly or indirectly, attempt to or disrupt, impair, interfere with, alter or modify the Website or any of its content, or obtain access to any information regarding any User or any other Report issued to a User.

Complaints

31. Any complaints in relation to the Services should, in the first instance, be in writing and addressed to LI Resources Customer Service at: info@liresources.com.au. LI Resources will respond to any such complaints in writing as soon as practicably possible.

General Matters

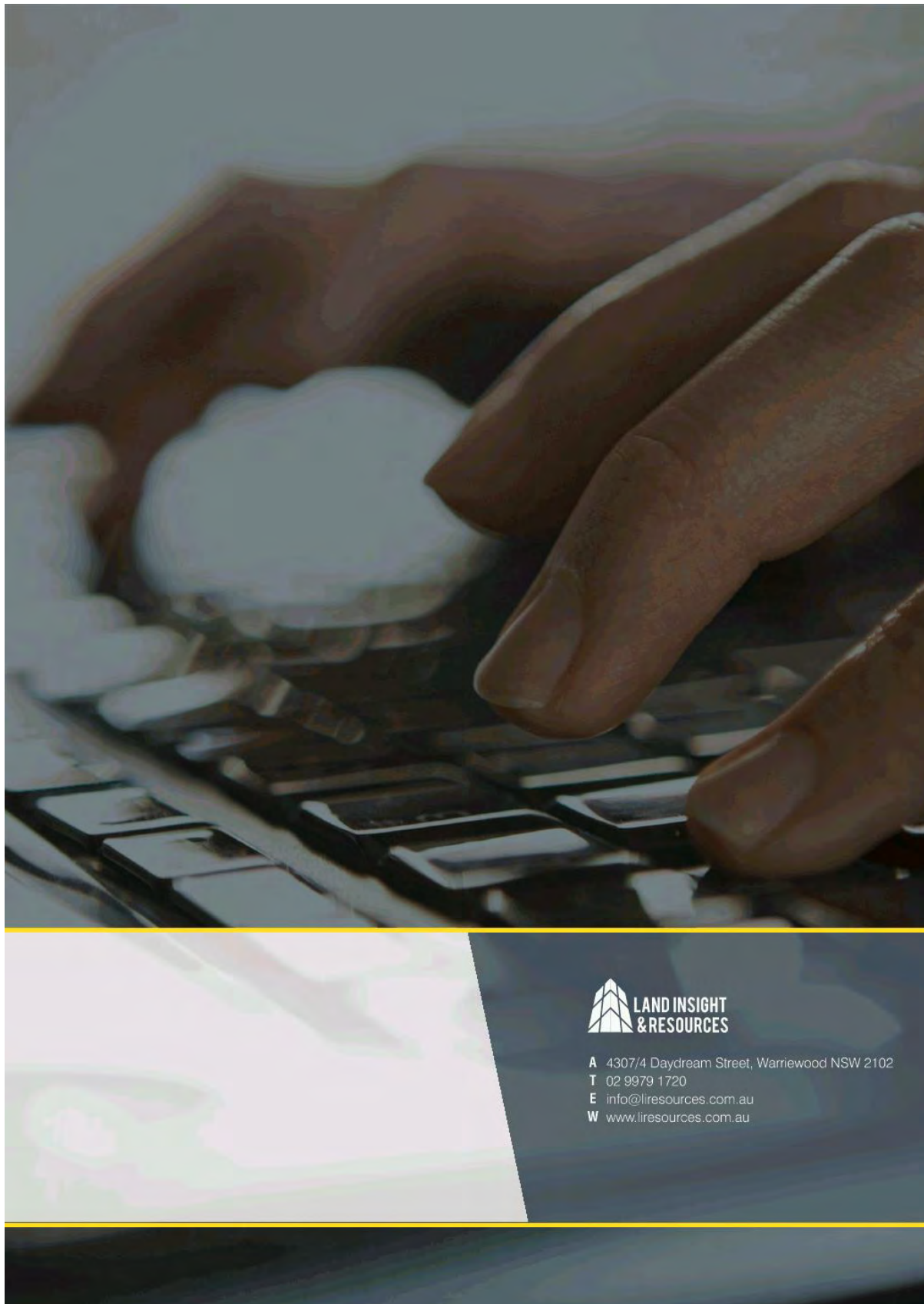
32. These terms and conditions are governed by and will be construed and enforced in accordance with the laws of the State of New South Wales, Australia. If any dispute, controversy or claim arises out of or relating to these terms and conditions, whether sounding in contract, tort or otherwise, it shall be resolved by use of an alternative dispute resolution procedure acceptable to both parties with the assistance of a mediator. If the dispute has not been resolved to the satisfaction of either party within 60 days of initiation of the procedure or if either party fails or refuses to participate in or withdraws from participating in the procedure, then either party may refer the dispute to the court.
33. These terms and conditions apply to all Services provided by LI Resources.
34. If there is any inconsistency between these terms and conditions and any other document or agreement between the parties, these terms and conditions will prevail.
35. These terms and conditions represent the entire agreement between the parties.
36. The User authorises LI Resources to destroy Documents which LI Resources has prepared or holds in connection with the Services 7 years after the last date on which the Services were provided.
37. If any of the terms of the Application Form or the terms and conditions are invalid, unenforceable or void, the relevant term must be read down to the maximum extent possible or severed from the rest of the Application Form or these terms and conditions.

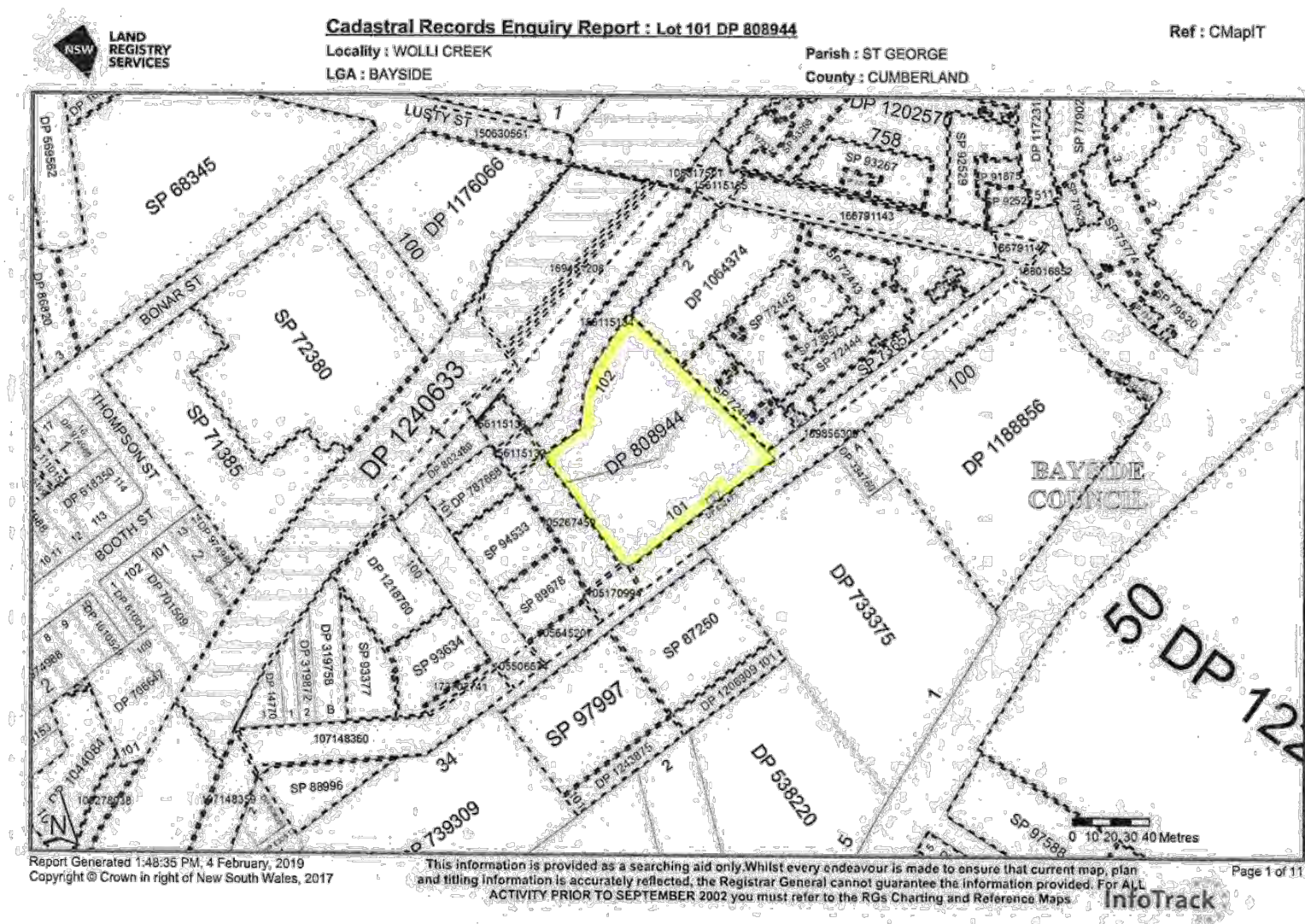
-
38. These terms and conditions can only be amended or varied by a written document signed by both parties.
39. Neither party may assign or transfer any rights or obligations arising in the provision of the Services or these terms and conditions without the other party's written consent.

Defined Terms

Application Form	Means the form and accompanying information provided on the Website, completed and submitted by the User to request the Services.
Document	Includes a report, and any other written or electronic document.
Fee	Means the amount set out in the Application Form or confirmed via an invoice.
Property	Means the property to which the Services and the Report relate.
Report	Means the Document prepared by LI Resources and provided to the User which contains the environmental and development data which is relevant to the Property.
Services	Means the review of data and information on which the Report is based, and the preparation and provision to the User of the Report.
Website	Means LI Resources's online site, that is: www.liresources.com.au
User	Means the person(s) set out in the Application Form including that person's permitted successors.

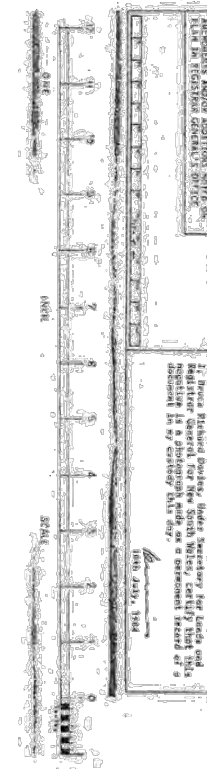
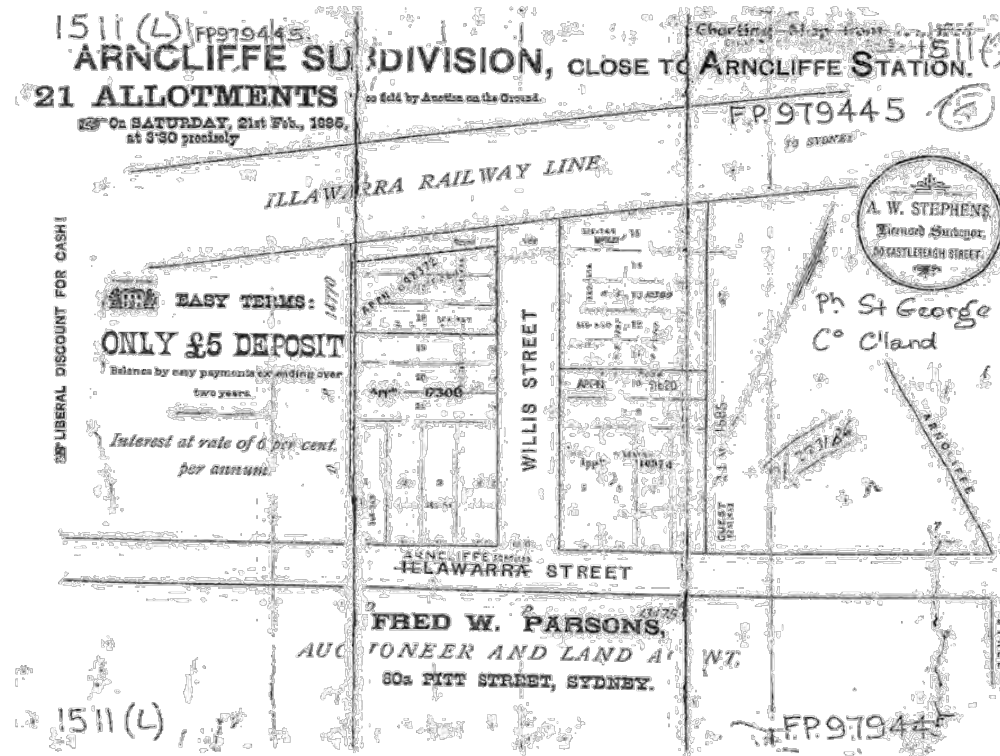


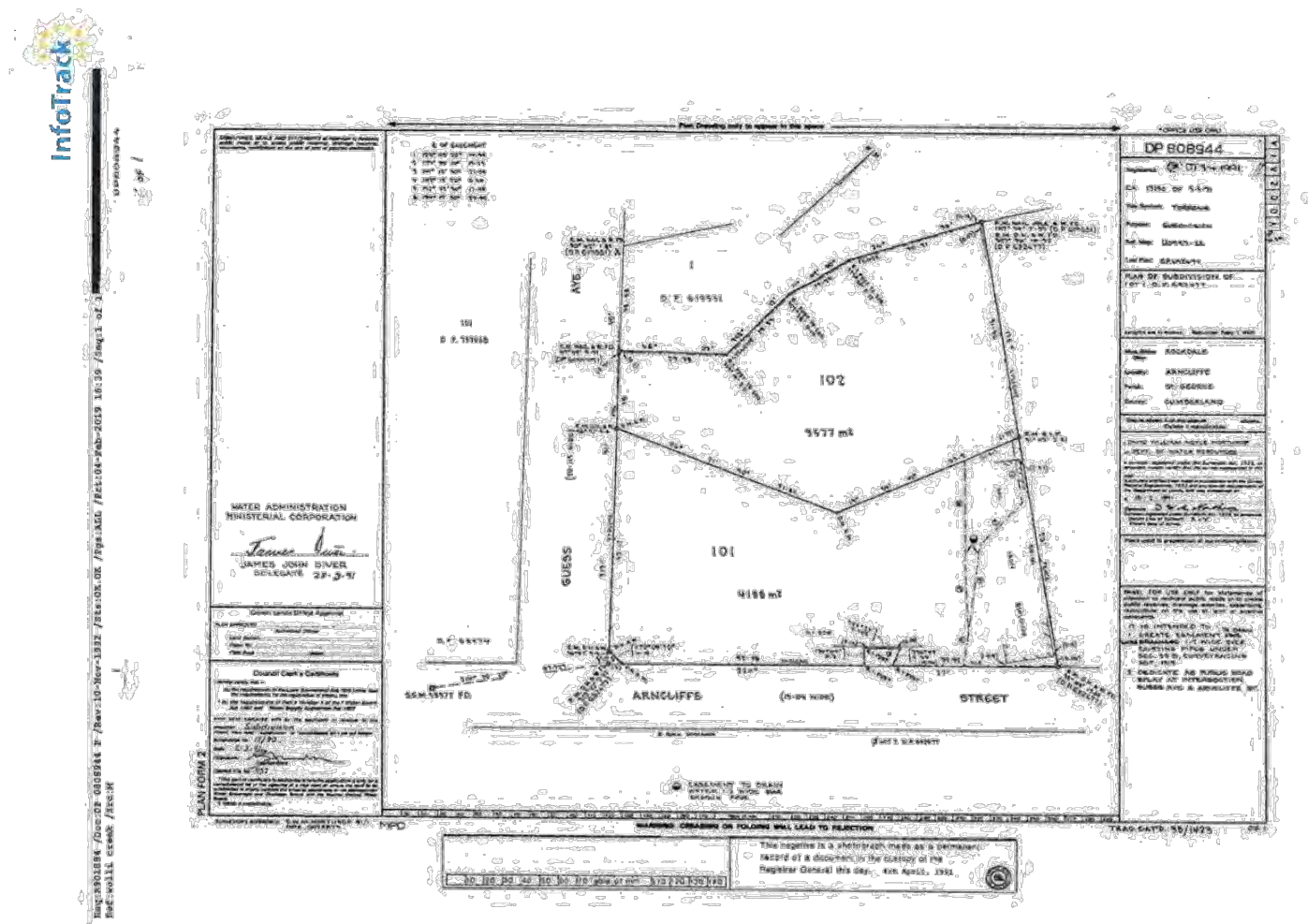






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Req:R899917 / Doc:PA 057085 PA / Rev:22-Jun-2015 / Sta:OK, SC / Pgs:ALL / Prt:04-Feb-2019 14:12 / Seq:1
 Ref:woli creek / Src:M

RIA 57085 **CROWN INSTRUMENT**
 NOT LIABLE TO PAYMENT OF REGISTRATION FEES
 SECRETARY PER *[Signature]*
 NEW SOUTH WALES
PRIMARY APPLICATION
 SECTION 14, REAL PROPERTY ACT, 1900

16-182
 s NIC

CAUTION—Severe penalties are provided by the Conveyancing Act, 1900, and the Real Property Act, 1900, for procuring a certificate of title through fraud.

*Payd 200307
 216-11-2019*

WATER RESOURCES COMMISSION

hereby referred to as the **APPLICANT**

hereby applies to have the undermentioned land brought under the provisions of the Real Property Act, 1900

All that piece of land situated at **Arndcliffe** in the County of **Cumberland** **62477** Parish of **St. George** being Lots 1 and 2 in Deposited Plan **627624** being part of portion 244, being the whole of the land comprised in Conveyance Registered No. **895** Book **2795**

and being the whole of **50** acres granted to **William Porter** by Crown grant dated the **First** day of **January** **1910**

and requests that the certificate of title issue in the name of

the applicant

In support of this application I/We, the **Water Resources Commission** solemnly and sincerely declare that—

1. The applicant is seized for an estate in fee simple of the abovescribed land.
2. There is no person in possession or occupation of the said land or any part thereof adversely to the estate or interest therein of the applicant.
3. The said land is now occupied by the persons specified in the First Schedule as occupiers in respect of Lot 2 in unoccupied in respect of Lot 1 in D.P. **627624** D.P. **627624**.
4. There does not exist any lease or agreement for lease of the said land for any term exceeding a tenancy for one year, or from year to year, except as set out in the First Schedule.
5. There does not exist any right of way, right of drainage or other easement or any restrictive covenant affecting the said land, except as disclosed in the First Schedule.
6. There does not exist any mortgage, lien, writ of execution, order, charge, encumbrance, will, settlement, deed, writing, contract, or dealing giving any right, claim or interest in the said land, or any part thereof, to any person other than the applicant except as set out in the First Schedule; nor, to the best of my knowledge and belief, is there any action, proceeding or suit pending which affects or could affect the said land, or any person other than the applicant who has or claims any estate, right, title or interest therein, except as disclosed in the First Schedule.
7. There is no reservation or instrument whereby minerals or substrata have been excepted or reserved to any person, except as disclosed in the First Schedule.
8. The Second Schedule contains a full and correct list of all settlements, deeds, documents, instruments, maps, plans and papers relating to the said land so far as I have any means of ascertaining them. All such documents as are in my possession or under my control are lodged herewith; the whereabouts of all other documents listed, so far as is known to me, is stated in such list.
9. The applicant has not become bankrupt or assigned his estate for the benefit of creditors.

*Cert. of T. issued Vol. 15043 Fol. 1754-176
 Dated 3-4-2-1943*

Reg:R899917 /Doc:SA 057085 PA /Rev:22-Jun-2015 /Sts:OK SC /Pgs:All /Pct:04-Feb-2019 14:12 /Seq:2
 Ref:woli creek /Sxc:M

10. The information shown in the Schedules hereto is to be taken as part of this declaration.

11. I have been authorised by power of attorney dated the _____ day of _____ 19____
 to make this application on behalf of the applicant, and I have received no notice of revocation of such authority.⁽¹⁾

I make this solemn declaration conscientiously believing the same to be true and by virtue of the Oaths Act, 1900,⁽²⁾ and certify this application to be correct for the purposes of the Real Property Act, 1900,⁽³⁾ and I hereby undertake to notify the Registrar General promptly of any further interest in the said land created after the making of this my declaration and before issue of the certificate of title.

DATE 5th November 1982

The OFFICIAL SEAL of the
 WATER RESOURCES COMMISSION

Signature of witness
 was affixed hereto

Name of witness (block letters)

Qualification of witness

Applicant or authorised agent of applicant⁽⁴⁾
 Secretary (authorised person)

(1) Delete this clause if applicant.
 The relevant power of attorney or other such authority should be lodged with the application.
 (2) If made under the Oaths Act, 1900 and (3) and (4) reference to local Act.
 (4) Any person liable to penalty for failure to comply with the provisions of the Real Property Act, 1900.

(5) This application is a statement of fact and does not constitute a declaration of title. It is subject to the provisions of the Real Property Act, 1900.

CONSENT OF MORTGAGEE

under mortgage registered Book _____ Number _____, hereby joins in and consents to this application subject to—

- (i) entry on the folio of the register to be created and on the certificate of title to issue of a notification relating to such mortgage;⁽⁵⁾
 AND
 (ii) delivery to me of the certificate of title.

(5) See section 29 of the Real Property Act, 1900. If signed, this consent may be signed and the words "consent of mortgagee" under the Real Property Act, 1900, in substitution for such mortgagee's name.

Witness

Mortgagee

FIRST SCHEDULE

PARTICULARS OF SUBSISTING INTERESTS (LEASES, EASEMENTS, MORTGAGES AND OTHER MATTERS REFERRED TO IN CLAUSES 3 TO 7 INCLUSIVE OF DECLARATION)

Full name and address (of occupier, lessee, mortgagee, etc.)	Nature of entitlement ("occupier", "lessee", "mortgagee", etc.)	Particulars of instrument (if any) by which entitlement created ⁽⁶⁾
The Sydney County Council 570 George Street Sydney	Lease of Lot 2 in D.P. 627624	Lease to be formalised on issue of Certificate of Title

(6) Where the whole or part of the land is occupied by a tenant, state also the nature and duration of the tenancy.

WT 4188 11/87

Req:R899917 /Doc:PA 057095 PA /Rev:22-Jun-2015 /Sts:OK.SC /Pgs:ALL /Prt:04-Feb-2019 14:12 /Seq:3
 Ref:woli creek /Str:M

SECOND SCHEDULE

(See notes on back page hereof)

DOCUMENTS REFERRED TO IN CLAUSE 1 OF DECLARATION

To be completed by declarant

Documents Nos.	3 and 4	hereunder LODGED HERewith
Documents Nos.		hereunder WHEREABOUTS UNKNOWN
Documents Nos.		hereunder PERMANENTLY LODGED
Receipt Nos.		
Documents Nos.	1 and 2 and 5 and 6	hereunder TO BE LODGED BY: State Rail Authority of New South Wales

No.	Date	Nature of document	Parties	Registration		FOR OFFICE USE ONLY By whom prepared
				Book	No.	
1	18/8/1913	Conveyance	John George Taggart to Chief Commissioner for Railways and Tramways	1005	545	
2	27/8/1913	Statutory Declaration	by William James Dickson			
3	30/7/1966	Conveyance	The Commissioner for Government Transport to The Water Conservation and Irrigation Commission	2799	995	
4		Search papers	3 & 4 vol no sheet	P27	85	17/11/82
5	3/5/1913	Conveyance	John George Taggart to Chief Commissioner for Railways and Tramways	1005	85	
6	3/12/1913	Conveyance	John George Taggart to Chief Commissioner for Railways and Tramways	1015	841	
Completed Docs 3 & 4 Delivered to Water Resources Commission 17/11/82						

If space is insufficient, add annexure sheet(s)

Item 8.2 – Attachment 2

Req:R899640 /Doc:CT 15083-175 CT /Rev:18-Jan-2011 /Sts:OK.SC /Pgs:ALL /Prt:04-Feb-2019-13:46
 Ref:woli creek /Src:M

CERTIFICATE OF TITLE
 PROPERTY ACT, 1900

NEW SOUTH WALES
 First Title Old System
 Prior Title P.A. 57085

Vol. 15083 Fol. 175
 20 7 1993

I certify that the person named in the First Schedule is the registered proprietor of an estate in fee simple (or such other estate or interest as is set out below) in the land described subject to the recordings appearing in the Second Schedule and to the provisions of the Real Property Act, 1900.

CANCELLED
 Registrar General

PLAN SHOWING LOCATION OF LAND SEE AUTO FOLIO
 LENGTHS ARE IN METRES

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON
 (Page 1) Vol. 15083 Fol. 175

LAND REFERRED TO
 Lot 1 in Deposited Plan 632477 at Arncliffe in the Municipality of Rockdale Parish of St. George County of Cumberland.

FIRST SCHEDULE
 WATER RESOURCES COMMISSION.
 GRY

SECOND SCHEDULE
 1. Reservations and conditions, if any, contained in the Crown Grant.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

RG 2/64

409



**LAND
REGISTRY
SERVICES**

Historical Title



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

29/1/2019 4:20PM

FOLIO: 1/632477

First Title(s): SEE PRIOR TITLE(S)

Prior Title(s): VOL 15083 FOL 175

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
22/9/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
4/4/1991	DP808944	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS

*** END OF SEARCH ***

erika

PRINTED ON 29/1/2019

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Received: 29/01/2019 16:19:54

Req:R905605 /Doc:DL Z862879 /Rev:24-Jun-2010 /Sts:OK.SC /Pgs:ALL /Prt:05-Feb-2019 11:32 /S

Ref:woll1 creek /Src:M

OFFICE USE ONLY

2
862879-L

TRANSFER
REAL PROPERTY ACT, 1900

T of R /

\$

DESCRIPTION OF LAND
Note (a)

Torrens Title Reference

FOLIO IDENTIFIER 101/808944

If Part Only, Define Whole and Give Details

WHOLE

Location

SITUATE AT ARNCLIFFE

TRANSFEROR
Note (b)

WATER ADMINISTRATION MINISTERIAL CORPORATION

ESTATE
Note (c)

(the abovesigned TRANSFEROR) hereby acknowledges receipt of the consideration of \$50,000.00 Six hundred & fifty thousand dollars and transfers an estate in fee simple in the land above described to the TRANSFEE

TRANSFEE
Note (d)

ZINNIA HOLDINGS PTY. LIMITED, ACN.052211515
of 78 Arncliffe Street, Arncliffe.

OFFICE USE ONLY

as joint tenants/tenants in common

PRIOR ENCUMBRANCES
Note (f)

subject to the following PRIOR ENCUMBRANCES

DATE 7-8-91

We hereby certify this dealing to be correct for the purposes of the Real Property Act, 1900.

EXECUTION
Note (g)

Signed in my presence by the transferor who is personally known to me

SIGNED BY ME *Murray Michael Rasmussen*
AS DELEGATE OF THE WATER ADMINISTRATION MINISTERIAL CORPORATION AND I HEREBY CERTIFY THAT I HAVE NO NOTICE OF THE REVOCATION OF SUCH DELEGATION. *Michael Rasmussen*
Signature of Transferor

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address and occupation of Witness

Signed in my presence by the transferee who is personally known to me

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address and occupation of Witness

(J. C. VOSNAKIS)
Solicitor for the Transferee.

TO BE COMPLETED BY LODGING PARTY
Notes (h) and (i)

LODGED BY *ANZ*

CT OTHER

✓

Herewith.

In L.T.O. with

Produced by

Ref: ZINNIA /CR-CD

Delivery Box Number 208

Checked

Passed

REGISTERED

21 AUG 1991

Secondary Directions

Delivery Directions

OFFICE USE ONLY



**LAND
REGISTRY
SERVICES**

Historical Title



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

29/1/2019 4:19PM

FOLIO: 101/808944

First Title(s): OLD SYSTEM

Prior Title(s): 1/632477

Recorded	Number	Type of Instrument	C.T. Issue
4/4/1991	DP808944	DEPOSITED PLAN	FOLIO CREATED EDITION 1
21/8/1991	Z862879	TRANSFER	EDITION 2
21/8/1991	Z862880	MORTGAGE	
27/6/2003	9736367	APPLICATION FOR REPLACEMENT CERTIFICATE OF TITLE	EDITION 3
27/6/2003	9736368	CHANGE OF NAME	
22/7/2003	9810070	LEASE	EDITION 4
8/8/2007	AD323031	LEASE	EDITION 5
20/12/2012	AH453280	LEASE	EDITION 6
31/10/2017	AM843045	LEASE	EDITION 7 CORD ISSUED

*** END OF SEARCH ***

erika

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Received: 29/01/2019 16:19:12

**LAND
REGISTRY Title Search
SERVICES**

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 101/808944

SEARCH DATE	TIME	EDITION NO	DATE
4/2/2019	4:36 PM	7	31/10/2017

NO CERTIFICATE OF TITLE HAS ISSUED FOR THE CURRENT EDITION OF THIS FOLIO.
CONTROL OF THE RIGHT TO DEAL IS HELD BY AUSTRALIA AND NEW ZEALAND BANKING
GROUP LIMITED.

LAND

LOT 101 IN DEPOSITED PLAN 808944
AT ARNCLIFFE
LOCAL GOVERNMENT AREA BAYSIDE
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP808944

FIRST SCHEDULE

NIPPON TRUCK SPARES PTY LTD (CN 9736368)

SECOND SCHEDULE (4 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 EASEMENT(S) AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE
DIAGRAM CREATED BY:
DP808944 - TO DRAIN WATER 1.2 WIDE OVER EXISTING LINE OF
PIPES
- 3 2862880 MORTGAGE TO AUSTRALIA AND NEW ZEALAND BANKING GROUP
LIMITED
- 4 AM943045 LEASE TO NATIONAL TRUCK SPARES PTY LTD EXPIRES:
31/5/2022. OPTION OF RENEWAL: 5 YEARS.

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

wolli creek

PRINTED ON 4/2/2019

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Received: 04/02/2019 16:36:17



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

29/1/2019 4:19PM

FOLIO: 102/808944

First Title(s): OLD SYSTEM

Prior Title(s): 1/632477

Recorded	Number	Type of Instrument	C.T. Issue
4/4/1991	DP808944	DEPOSITED PLAN	FOLIO CREATED EDITION 1
17/7/2018	AN499852	TRANSFER WITHOUT MONETARY CONSIDERATION	EDITION 2

*** END OF SEARCH ***

erika

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LAND REGISTRY SERVICES Title Search



NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 102/808944

SEARCH DATE	TIME	EDITION NO	DATE
4/2/2019	4:36 PM	2	17/7/2018

LAND

LOT 102 IN DEPOSITED PLAN 808944
AT ARNCLIFFE
LOCAL GOVERNMENT AREA BAYSIDE
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP808944

FIRST SCHEDULE

PROPERTY NSW

(TZ AN499852)

SECOND SCHEDULE (2 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 EASEMENT(S) APPURTENANT TO THE LAND ABOVE DESCRIBED CREATED BY:
DP808944 - TO DRAIN WATER 1.2 WIDE OVER EXISTING LINE OF
PIPES

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

wolli creek

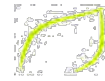
PRINTED ON 4/2/2019

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Received: 04/02/2019 16:36:17

Appendix B: Dangerous Goods Searches



Appendix B: Dangerous Goods Searches

S17035_002_RPT_Rev0
S17035_002_RPT_Rev0



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SafeWork NSW
67-100 Dandenong Street, Gosford, NSW 2250
Locked Bag 2506, Lismore, NSW 2458
Customer Service Centre 13 10 50
licensing@safework.nsw.gov.au www.safework.nsw.gov.au

Our Ref: D16/591189
Your Ref: Emma Lewis

26 May 2016

Attention: Emma Lewis
Greencap
11-17 Khartoum Rd
North Ryde NSW 2113

Dear Ms Lewis

RE SITE: Lot 102 DP 808944 & Lot 2 DP 632477 Wollie Creek NSW

I refer to your site search request received by SafeWork NSW on 19 May 2016 requesting information on Storage of Hazardous Chemicals for the above site.

Enclosed are copies of the documents that SafeWork NSW holds on record number 35/037661 relating to the storage of Hazardous Chemicals at the above-mentioned premises.

For further information or if you have any questions, please call our Customer Service Centre on 13 10 50 or email licensing@safework.nsw.gov.au.

Yours sincerely,


Brent Jones
Customer Service Officer
Customer Service Centre - Operations
SafeWork NSW

Application is hereby made for ~~the transfer of the licence~~ ^{*a licence (or amendment of the licence)} for the keeping of dangerous goods in or on the premises described below.
 (*delete whichever is not required)

FEE: \$10.00 per Depot

Name of Applicant in full (see over)	Surname _____ Given Names _____
Trading name or occupier's name (if any)	Water Resources Commission
Postal address	P.O. Box 952, North Sydney. Postcode 2060
Telephone number of applicant	STD Code 02 Number 5974444
Address of the premises in or on which the depot or depots are situated (including street number, if any)	W.R.C. Materials Laboratory, Corner Guess Ave. & Arncliffe St., Arncliffe. Postcode 2205
Nature of premises (see over)	Laboratory built in brick, steel, timber & veneer.

PLEASE ATTACH SITE PLAN

Particulars of type of depots and maximum quantities of dangerous goods to be kept at any one time.

Depot number	Type of depot (see over)	Storage capacity	Dangerous goods	
			Product being stored	C & C Office use only
1	Indoor Storage Cabinet	Up to 250 litres	Flammable liquids:	6.020 32
2		aggregate	Acetone	
3	<i>presumably D.G. Act Class 3</i>	of flammable liquids and	Benzene	
4		class I	Toluene	
5		dangerous goods or	Methyl Ethyl Ketone	
6		their equivalents	Methyl Isobutyl Ketone	
7			Mineral Turpentine	
8			Kerosene	
9			Methylated Spirits	
10			Ethanol	
11	All water resources Commission have a			
12	expiry date 10 17th November each year			

Name of company supplying flammable liquid (if any) Generally from Government Stores Department

Have premises previously been licensed? No

If known, state name of previous occupier _____ Licence No. _____

Signature of applicant

OFFICER-IN-CHARGE

Date

For external explosives magazine(s), please fill in side 2.

Head Office.

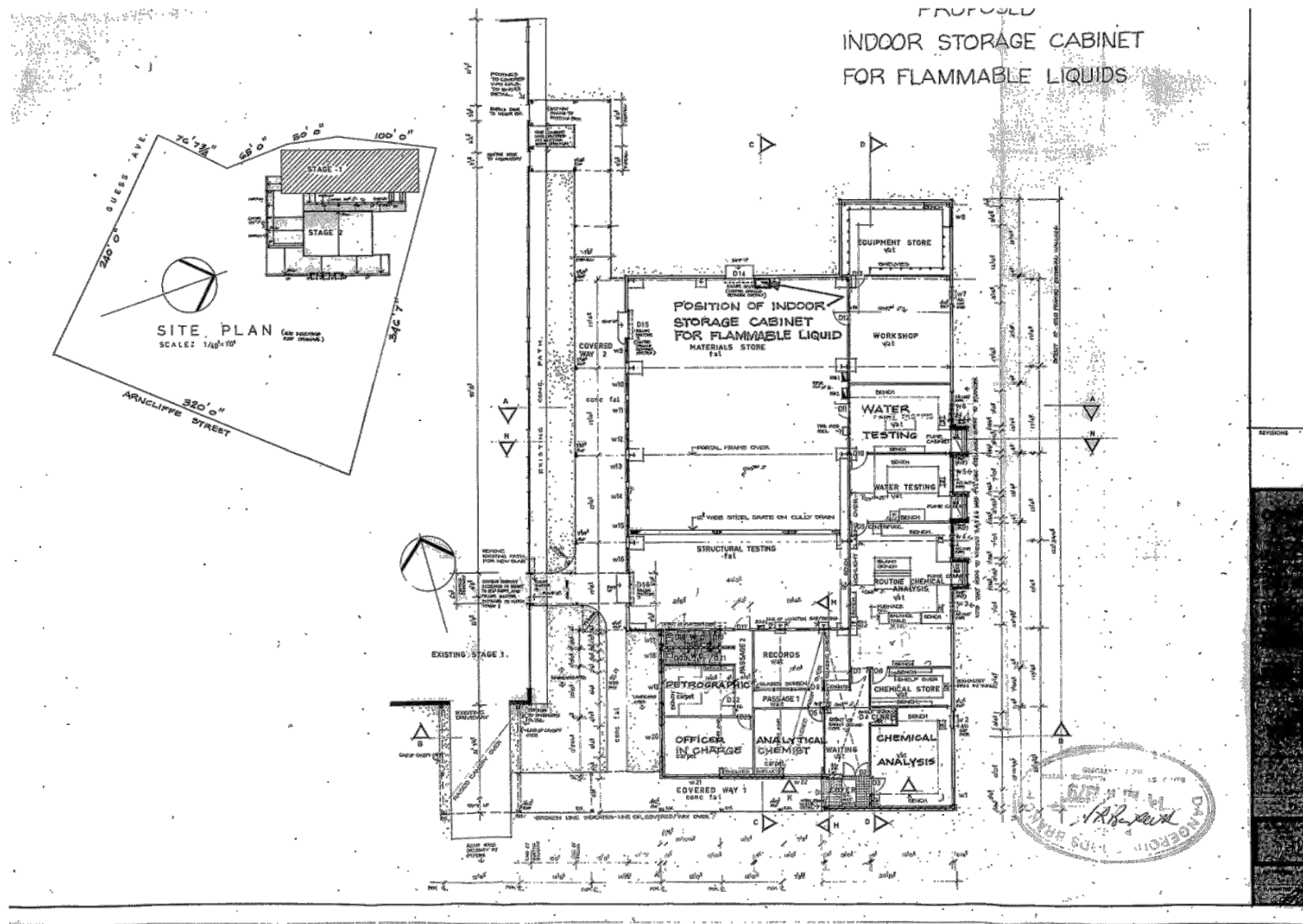
FOR OFFICE USE ONLY Materials Laboratory

CERTIFICATE OF INSPECTION

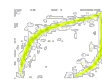
I, Alfred Arthur Conway being an Inspector under the Dangerous Goods Act, 1975, do hereby certify that the premises described above do comply with the requirements of the Dangerous Goods Act, 1975, and the Dangerous Goods Regulation with regard to their situation and construction for the keeping of dangerous goods of the nature and in the quantity specified.

Signature of Inspector

Alfred Arthur Conway



Appendix C: Planning Certificates



Appendix C: Planning Certificates

S17035_002_RPT_Rev0
s17035_002_RPT_Rev0



4 February 2019

Our Ref: Certificate No. 52301
Contact: Customer Service 1300 581 299

Land Insight And Resources
4307/4 Daydream St
WARRENWOOD NSW 2102

Dear Sir/Madam

Following is your planning certificate issued under section 10.7 (2) and (5) of the Environmental Planning and Assessment Act 1979.

This Section 10.7 Certificate has been issued by Bayside Council. Information contained within this Certificate is based on data from Council's records as they existed at the date of this Certificate.

Should you have any enquiries, please contact the Council's Customer Service Centre on 1300 581 299.

SECTION 10.7 PLANNING CERTIFICATE

(under section 10.7 of the Environmental Planning and Assessment Act 1979)

ISSUED TO:

Land Insight And Resources
4307/4 Daydream St
WARRENWOOD NSW 2102

Council: Bayside
County: Cumberland
Parish: St George

Fee: 133.00
Receipt No: 4142221
Receipt Date: 4 February 2019
Your Ref: LIR-459:21033

PROPERTY: 2 GUESS AVENUE, WOLLI CREEK NSW 2205

Lot 101 DP 808944

CT

Assessment No 48843

Date: 4 February 2019

For
Meredith Wallace
General Manager

Mascot Customer Service Centre
141 Coward Street
Mascot NSW 2020, Australia
council@botanybay.nsw.gov.au
DX 4108 Mascot Junction

Rockdale Customer Service Centre
444-446 Princes Highway
Rockdale NSW 2216, Australia
rcc@rockdale.nsw.gov.au
DX 25108 Rockdale

T 1300 581 299 F 02 9562 1777
www.bayside.nsw.gov.au

Postal address: PO Box 21 Rockdale NSW 2216



Telephone Interpreter Services: 131 450

Телефонический интерпретер: 131 450

خدمة الترجمة الهاتفية

電話傳譯服務

Служба за преводање по телефон

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Certificate No. 52301

Note: Where this certificate refers to a specific allotment (or allotments) within a strata plan the certificate is issued for the whole of the land within the strata plan, not just the specific allotment or allotments referred to, and any information contained in the certificate may relate to the whole or any part of the strata plan.

1 Names of relevant planning instruments and DCPs

(1) The name of each environmental planning instrument that applies to the carrying out of development on the land.

Rockdale Local Environmental Plan 2011

State Environmental Planning Policy No 19	Bushland in Urban Areas
State Environmental Planning Policy No 21	Caravan Parks
State Environmental Planning Policy No 30	Intensive Agriculture
State Environmental Planning Policy No 33	Hazardous and Offensive Development
State Environmental Planning Policy No 50	Canal Estates Development
State Environmental Planning Policy No 55	Remediation of Land
State Environmental Planning Policy No 62	Sustainable Aquaculture
State Environmental Planning Policy No 64	Advertising and Signage
State Environmental Planning Policy No 65	Design Quality of Residential Apartment Development
State Environmental Planning Policy No 70	Affordable Housing (Revised Schemes)
State Environmental Planning Policy	(Affordable Rental Housing) 2009
State Environmental Planning Policy	(Building Sustainability Index: BASIX) 2004
State Environmental Planning Policy	(Educational Establishments and Child Care Facilities) 2017
State Environmental Planning Policy	(Exempt and Complying Development Codes) 2008
State Environmental Planning Policy	(Housing for Seniors and People with a Disability) 2004 (Only applies to land referred to in clause 4 (1) of the Policy and does not apply to land referred to in clause 4 (2) of the Policy)
State Environmental Planning Policy	(Infrastructure) 2007
State Environmental Planning Policy	(Mining, Petroleum Production and Extractive Industries) 2007
State Environmental Planning Policy	(State and Regional Development) 2011
State Environmental Planning Policy	(Miscellaneous Consent Provisions) 2007
State Environmental Planning Policy	(Vegetation in Non-Rural Areas) 2017
State Environmental Planning Policy	(Coastal Management) 2018
State Environmental Planning Policy	(Arncliffe and Banksia Precincts) 2018

Greater Metropolitan Regional Environmental Plan No. 2 – Georges River Catchment (only applies to land within the Georges River Catchment, being, in the Bayside Council area, certain land within the suburbs of Dolls Point, Ramsgate, Sandringham and Sans Souci).

(2) The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Director-General has notified the council that the making of the proposed

Certificate No. 52301

instrument has been deferred indefinitely or has not been approved).

No Planning Proposal applies to the land.

- Draft State Environmental Planning Policy – Remediation of Land
- Draft Amendments to State Environmental Planning Policy (Affordable Rental Housing) 2009
- Draft Amendments to State Environmental Planning Policy No. 70 (Affordable Housing)

For more information or to determine whether this applies to your property, visit the Department of Planning and Environment website at www.planning.nsw.gov.au.

- (3) The name of each development control plan that applies to the carrying out of development on the land.**

Rockdale Development Control Plan 2011

- (4) In this clause, proposed environmental planning instrument includes a planning proposal for a LEP or a draft environmental planning instrument.**

2 Zoning and land use under relevant local environmental plans

For each environmental planning instrument or proposed instrument referred to in clause 1 (other than a SEPP or proposed SEPP) that includes the land in any zone (however described):

- 2(a) the identity of the zone, whether by reference to a name or by reference to a number;
- 2(b) the purposes for which the instrument provides that development may be carried out within the zone without the need for development consent;
- 2(c) the purposes for which the instrument provides that development may not be carried out within the zone except with development consent;
- 2(d) the purposes for which the instrument provides that development is prohibited within the zone:

The following zone or zones apply under the local environmental plan or deemed environmental planning instrument referred to in question 1 (1):

Zone B4 Mixed Use

Certificate No. 52301

1 Objectives of zone

- To provide a mixture of compatible land uses.
- To integrate suitable business, office, residential, retail and other development in accessible locations so as to maximise public transport patronage and encourage walking and cycling.

2 Permitted without consent

Home-based child care; Home businesses; Home occupations; Roads.

3 Permitted with consent

Boarding houses; Child care centres; Commercial premises; Community facilities; Educational establishments; Entertainment facilities; Exhibition homes; Function centres; Hotel or motel accommodation; Information and education facilities; Medical centres; Passenger transport facilities; Recreation facilities (indoor); Registered clubs; Respite day care centres; Restricted premises; Seniors housing; Shop top housing; Any other development not specified in item 2 or 4.

4 Prohibited

Agriculture; Air transport facilities; Airstrips; Animal boarding or training establishments; Attached dwellings; Boat building and repair facilities; Boat launching ramps; Boat sheds; Camping grounds; Caravan parks; Cemeteries; Charter and tourism boating facilities; Correctional facilities; Crematoria; Depots; Dual occupancies; Dwelling houses; Eco-tourist facilities; Exhibition villages; Extractive industries; Farm buildings; Forestry; Freight transport facilities; Heavy industrial storage establishments; Highway service centres; Home occupations (sex services); Industrial retail outlets; Industrial training facilities; Industries; Jetties; Marinas; Mooring pens; Moorings; Multi dwelling housing; Open cut mining; Port facilities; Research stations; Rural industries; Rural workers' dwellings; Secondary dwellings; Semi-detached dwellings; Sex services premises; Storage premises; Transport depots; Truck depots; Vehicle body repair workshops; Vehicle repair stations;

Certificate No. 52301

Warehouse or distribution centres; Waste or resource management facilities; Wharf or boating facilities; Wholesale supplies.

Zone RE1 Public Recreation**1 Objectives of zone**

- To enable land to be used for public open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.

2 Permitted without consent

Roads

3 Permitted with consent

Boat launching ramps; Child care centres; Community facilities; Environmental facilities; Environmental protection works; Jetties; Kiosks; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Respite day care centres; Signage; Water supply systems

4 Prohibited

Any development not specified in item 2 or 3

Certificate No. 52301

- 2(e) whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed;**

No environmental planning instrument applies to the land that fixes minimum land dimensions for the erection of a dwelling.

Note:

- (1) Whether or not such a requirement applies to the land under any local environmental plan, deemed environmental planning instrument or draft local environmental plan, the Council does set minimum dimensions and areas for new residential allotments in **Section 4.1.9 of Rockdale Development Control Plan 2011**.
- (2) The above information does not imply that the erection of a dwelling-house is necessarily permissible on the land to which this certificate applies. Refer to the relevant local environmental plan, deemed environmental planning instrument or draft local environmental plan applying to the land to confirm this.

- 2(f) whether the land includes or comprises critical habitat;**

The land does not include or comprise critical habitat.

- 2(g) whether the land is in a conservation area (however described);**

The land is not in a conservation area.

- 2(h) whether an item of environmental heritage (however described) is situated on the land.**

There is no such item situated on the land.

2A Zoning and land use under State Environmental Planning Policy (Sydney Region Growth Centres) 2006

To the extent that the land is within any zone (however described) under:

- (a) Part 3 of the State Environmental Planning Policy (Sydney Region Growth Centres) 2006 (the 2006 SEPP); or
- (b) a Precinct Plan (within the meaning of the 2006 SEPP); or
- (c) a proposed Precinct Plan that is or has been the subject of community consultation or on public exhibition under the Act;

the particulars referred to in clause 2 (a)–(h) in relation to that land (with a reference to “the instrument” in any of those paragraphs being read as a reference to Part 3 of the 2006 SEPP, or the Precinct Plan or proposed Precinct Plan, as the case requires).

Not applicable.

3 Complying development

- 1 The extent to which the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4) and 1.19 of State Environmental Planning Policy (Exempt and Complying**

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Development Codes) 2008;

- 2 The extent to which complying development may not be carried out on that land because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4) and 1.19 of that Policy and the reasons why it may not be carried out under those clauses; and
- 3 If the council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land, a statement that a restriction applies to the land, but it may not apply to all of the land, and that council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.

General Housing Code**Rural Housing Code**

Complying development **may not** be carried out on the land in accordance with the above codes for the following reason/s:

All of the land is reserved for acquisition as identified on the *Rockdale Local Environmental Plan 2011* Land Reservation Acquisition Map.

Commercial and Industrial (New Buildings and Additions) Code

Complying development **may not** be carried out on the land in accordance with the above codes for the following reason(s):

All of the land is reserved for acquisition as identified on the *Rockdale Local Environmental Plan 2011* Land Reservation Acquisition Map.

Housing Alterations Code**General Commercial and Industrial Code****Subdivisions Code****General Development Code****Demolition Code****Commercial and Industrial Alterations Code****Fire Safety Code**

Complying development **may** be carried out on the land in accordance with the above Codes.

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Notes:

- (1) If a reference is made to "part of the land", Complying Development **may** be carried out on the portion of the land not subject to such a restriction.
- (2) This certificate only addresses matters raised in Clause 1.17 and Clause 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*. It is your responsibility to ensure that you comply with any other general requirements of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

4 Coastal protection

Whether or not the land is affected by the operation of section 38 or 39 of the *Coastal Protection Act 1979*, but only to the extent that the council has been so notified by the Department of Public Works

N/A (Repealed)

4A Certain information relating to beaches and coasts

- (1) In relation to a coastal council - whether an order has been made under Part 4D of the *Coastal Protection Act 1979* in relation to temporary coastal protection works (within the meaning of that Act) on the land (or on public land adjacent to that land), except where the council is satisfied that such an order has been fully complied with;

N/A (Repealed)

- (2) In relation to a coastal council:

- (a) whether the council has been notified under section 55X of the *Coastal Protection Act 1979* that temporary coastal protection works (within the meaning of that Act) have been placed on the land (or on public land adjacent to that land); and
- (b) if works have been so placed—whether the council is satisfied that the works have been removed and the land restored in accordance with that Act.

N/A (Repealed)

- (3) In relation to a coastal council—such information (if any) as is required by the regulations under section 56B of the *Coastal Protection Act 1979* to be included in the planning certificate and of which the council has been notified pursuant to those regulations.

N/A (Repealed)

4B Annual charges under *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works

In relation to a coastal council - whether the owner (or any previous owner) of the land has consented in writing to the land being subject to annual charges under section 496B of the *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act).

The land is not so affected.

Certificate No. 52301

5 Mine subsidence

Whether or not the land is proclaimed to be a mine subsidence district within the meaning of section 15 of the *Mine Subsidence Compensation Act 1961*.

The land is not so proclaimed.

6 Road widening and road realignment

Whether or not the land is affected by any road widening or road realignment under:

- (a) Division 2 of Part 3 of the *Roads Act 1993*; or
- (b) Any environmental planning instrument; or
- (c) Any resolution of the council.

The land is not affected by any road widening or road realignment under Division 2 of Part 3 of the *Roads Act 1993*, any environmental planning instrument or any resolution of the Council.

7 Council and other public authority policies on hazard risk restrictions

Whether or not the land is affected by a policy:

- (a) adopted by the council; or
- (b) adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council;

that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding).

Contaminated Land Policy

The Council has adopted by resolution a policy on contaminated land that may restrict the development of the land. This policy is implemented when zoning or land use changes are proposed on lands that have previously been used for certain purposes. The Council's records do not have sufficient information about previous use of this land to determine whether the land is contaminated. Consideration of the Council's adopted policy and the application of provisions under relevant State legislation is warranted.

Policy on Rezoning and Development of Land Affected by Aircraft Noise and Airport Related Height Controls

The former City of Rockdale Council resolved on 4 October 2006 to adopt a policy for assessing the appropriateness of rezoning and development in areas affected by aircraft noise and airport related height controls. This policy applies to all land within the former City of Rockdale.

Other policies

The land is not affected by any other such policy that restricts the development of the land due to hazard risk.

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7A Flood related development control information

- (1) Whether or not development on that land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.

The development of the land or part of the land for such a purpose may be subject to flood related development controls.

- (2) Whether or not development on that land or part of the land for any other purpose is subject to flood related development controls.

The development of the land or part of the land for a purpose not referred to in Question 7A (1) may be subject to flood related development controls.

Note:

(1) The answers above do not imply that the development referred to is necessarily permissible on the land to which this certificate applies. Refer to the relevant local environmental plan, deemed environmental planning instrument or draft local environmental plan applying to the land to confirm this.

(2) Council is not in a position to identify whether the information provided under Clause 7A relates to a current or future hazard as defined in Planning Circular PS 14-003.

Note: Further information relating to flooding is provided in the "Advice under Section 10.7 (5)" attached.

- (3) Words and expressions in this clause have the same meanings as in the instrument set out in the Schedule to the *Standard Instrument (Local Environmental Plans) Order 2006*.

8 Land reserved for acquisition

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in clause 1 makes provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the Act.

All or part of the land is reserved for acquisition under *Rockdale Local Environmental Plan 2011* by Council for the purpose of local open space.

Please refer to the Reservation Acquisition Map of *Rockdale Local Environmental Plan 2011* for more information.

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9 Contributions plans**The name of each contributions plan applying to the land**

Rockdale Section 94 Contributions Plan 2004
Rockdale Section 94A Development Contributions Plan 2008

This property has been specifically identified in *Rockdale Section 94 Contributions Plan 2004* for future acquisition to provide a public facility or service. Refer to the plan for details.

Note: *Rockdale Section 94 Contributions Plan (Amendment No 4)* and *Rockdale Section 94 Contributions Plan 1998* will continue to apply to all development applications and applications for complying development certificates made prior to 1 June 2004.

9A Biodiversity certified land

If the land is biodiversity certified land (within the meaning of Part 7AA of the *Threatened Species Conservation Act 1995*), a statement to that effect.

The land is not so affected.

10 Biobanking agreements

If the land is land to which a biobanking agreement under Part 7A of the *Threatened Species Conservation Act 1995* relates, a statement to that effect (but only if the council has been notified of the existence of the agreement by the Director-General of the Department of Environment, Climate Change and Water).

The land is not affected by such an agreement.

11 Bush fire prone land

If any of the land is bush fire prone land (as defined in the Act), a statement that all or, as the case may be, some of the land is bush fire prone land.

If none of the land is bush fire prone land, a statement to that effect.

The land is not bush fire prone land.

12 Property vegetation plans

If the land is land to which a property vegetation plan under the *Native Vegetation Act 2003* applies, a statement to that effect (but only if the council has been notified of the existence of the plan by the person or body that approved the plan under that Act).

The land is not land to which a property vegetation plan applies.

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13 Orders under *Trees (Disputes Between Neighbours) Act 2006*

Whether an order has been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

The land is not subject to such an order.

14 Directions under Part 3A

If there is a direction by the Minister in force under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect, a statement to that effect identifying the provision that does not have effect.

The land is not subject to any such directions.

15 Site compatibility certificates and conditions for seniors housing

If the land is land to which *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004* applies:

- (a) a statement of whether there is a current site compatibility certificate (seniors housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:
 - (i) the period for which the certificate is current; and
 - (ii) that a copy may be obtained from the head office of the Department of Planning, and
- (b) a statement setting out any terms of a kind referred to in clause 18 (2) of that Policy that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

The land is not subject to any such certificate.

16 Site compatibility certificates for infrastructure

A statement of whether there is a valid site compatibility certificate (infrastructure), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:

- (a) the period for which the certificate is valid, and
- (b) that a copy may be obtained from the head office of the Department of Planning.

The land is not subject to any such certificate.

17 Site compatibility certificates and conditions for affordable rental housing

- (1) A statement of whether there is a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:

Certificate No. 52301

- (a) the period for which the certificate is current; and
 - (b) that a copy may be obtained from the head office of the Department of Planning.
- (2) A statement setting out any terms of a kind referred to in clause 17 (1) or 37 (1) of *State Environmental Planning Policy (Affordable Rental Housing) 2009* that have been imposed as a condition of consent to a development application in respect of the land.

The land is not subject to any such statement.

18 Paper subdivision information

- (1) The name of any development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot.
- (2) The date of any subdivision order that applies to the land.
- (3) Words and expressions used in this clause have the same meaning as they have in Part 16C of this Regulation.

The land is not so affected.

19 Site verification certificates

A statement of whether there is a current site verification certificate, of which the council is aware, in respect of the land and, if there is a certificate, the statement is to include:

- (a) the matter certified by the certificate; and
(Note. A site verification certificate sets out the Director-General's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land—see Division 3 of Part 4AA of *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*)
- (b) the date on which the certificate ceases to be current (if any); and
- (c) that a copy may be obtained from the head office of the Department of Planning and Infrastructure.

The land is not subject to any such certificate.

20 Loose-fill asbestos insulation

If the land includes any residential premises (within the meaning of Division 1A of Part 8 of the *Home Building Act 1989*) that are listed on the register that is required to be maintained under that Division, a statement to that effect.

The land is not so identified.

Note: The register referred to in this question is the *Loose-Fill Asbestos Insulation Register*, which is maintained by the Secretary of NSW Fair Trading.

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Note: The following matters are prescribed by section 59 (2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate:

- (a) that the land to which the certificate relates is significantly contaminated land within the meaning of that Act—if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued;
- (b) that the land to which the certificate relates is subject to a management order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued;
- (c) that the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act—if it is the subject of such an approved proposal at the date when the certificate is issued;
- (d) that the land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued; and
- (e) that the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act—if a copy of such a statement has been provided at any time to the local authority issuing the certificate.

The land is not so affected.

Note: Section 26 of the *Nation Building and Jobs Plan (State Infrastructure Delivery) Act 2009* provides that a planning certificate must include advice about any exemption under section 23 or authorisation under section 24 of that Act if the council is provided with a copy of the exemption or authorisation by the Co-ordinator General under that Act.

The land is not so affected.

21 Affected building notices and building product rectification orders

- (1) A statement of whether there is any affected building notice of which the council is aware that is in force in respect of the land.
- (2) A statement of:
 - (a) whether there is any building product rectification order of which the council is aware that is in force in respect of the land and has not been fully complied with, and
 - (b) whether any notice of intention to make a building product rectification order of which the council is aware has been given in respect of the land and is outstanding.
- (3) In this clause:
affected building notice has the same meaning as in Part 4 of the *Building*

Certificate No. 52301

Products (Safety) Act 2017.
building product rectification order has the same meaning as in the Building
Products (Safety) Act 2017.

Council is not aware of an issue of a notice of intention or order pertaining to building product rectification works.

[End of information under section 10.7 (2)]

Certificate No. 52301

ADVICE UNDER SECTION 10.7 (5)

Note: The Council is under no obligation to furnish any of the information supplied below. Equally, it may be that not every relevant matter relating to the land is provided below. The Council draws your attention to section 10.7 (6) which states that a council shall not incur any liability in respect of any advice provided in good faith under section 10.7 (5).

Further to your application for information under section 10.7 (5), the Council has resolved to supply answers to the following questions:

A. Details of any resolution of the Council to alter the zoning of the land or to alter the provisions of an environmental planning instrument applying to the land, where such an alteration has not yet been placed on exhibition under Schedule 1 Clause 4 of the Act

No Planning Proposal or draft environmental planning instrument applies to the land that has not yet been placed on public exhibition.

B. Details of any provision in a local environmental plan or deemed environmental planning instrument applying to the land that

- (i) Permits any development or class of development without the need for development consent; or
- (ii) Requires development consent for any development or class of development; or
- (iii) Restricts or prohibits any development or class of development;

other than such a provision referred to in Question 2 (a) to (d) of the certificate under section 10.7 (2):

The Schedule at the end of this certificate identifies any such provisions that may apply to the land.

C. Whether or not the Council has information that would indicate that the land is subject to the risk of flooding or tidal inundation for a 1% annual exceedance probability (AEP) (1 in 100 Year) event

The Council is aware of various information that suggests the land may be affected by the 1% AEP flood. The Council is unaware of the accuracy of this information, although further enquiries may be made with the Council's City Services Department in relation to this.

Note: Refer to Question 7A of the preceding certificate under section 10.7 (2) to ascertain whether or not development on the land may be subject to flood related development controls.

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D Whether or not the Council has information that would indicate that the land is subject to slip or subsidence

The Council is not aware of any investigations that have been carried out.

E Details of any tree preservation order applying to the land

N/A (Repealed)

F Whether or not the land is in the vicinity of a heritage item or heritage conservation area identified in an environmental planning instrument or a proposed heritage item or proposed heritage conservation area identified in a draft local environmental plan

The land is not in the vicinity of a heritage item or heritage conservation area identified in an environmental planning instrument or a proposed heritage item or proposed heritage conservation area identified in a draft local environmental plan.

G Whether or not a planning agreement entered into under Subdivision 2 of Division 7.1 of Part 7 of the Environmental Planning and Assessment Act 1979 currently applies to the land (but only if, where the Council is not a party to the agreement, information about the agreement has been provided to the Council)

No planning agreement currently applies to the land.

H Details of the Annual Noise Exposure Forecast (ANEF) applying to the land

The ANEF affectation of the land is less than 20.

Note: The ANEF level may restrict the development of the land due to the risk of exposure to aircraft noise.

[End of advice under Section 10.7 (5)]

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SCHEDULE

Details of any provision in a local environmental plan or deemed environmental planning instrument applying to the land that permit without development consent, require development consent for, or restrict or prohibit, certain development or classes of development

Active street frontages – Clause 6.11 of Rockdale Local Environmental Plan 2011 requires the provision of business or retail premises on the ground floor of land identified in the Active Street Frontages Map.

Additional permitted uses for particular land – Clause 2.5 of Rockdale Local Environmental Plan 2011 allows development to be carried out, with development consent, for certain additional purposes on certain land within the City, as detailed in Schedule 1.

Airspace operations – Clause 6.4 of Rockdale Local Environmental Plan 2011 requires Council to consult with the relevant Commonwealth body on any development application that may penetrate the Obstacle Limitation Surface.

Architectural roof features – Clause 5.6 of Rockdale Local Environmental Plan 2011 permits variation to the maximum building height standards for roof features of visual interest.

Bush fire hazard reduction – Clause 5.11 of Rockdale Local Environmental Plan 2011 permits bush fire hazard reduction work authorised by the Rural Fires Act 1997 on any land without development consent.

Controls relating to miscellaneous permissible uses – Clause 5.4 of Rockdale Local Environmental Plan 2011 provides development controls for the following development types: Bed and breakfast accommodation; Home businesses; Home industries; Industrial retail outlets; Farm stay accommodation; Kiosks; Neighbourhood shops; Roadside stalls and Secondary dwellings.

Conversion of fire alarms – Clause 5.8 of Rockdale Local Environmental Plan 2011 requires development consent for the conversion of a fire alarm system that can be monitored by Fire and Rescue NSW or by a private service provider.

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Demolition requires development consent – Clause 2.7 of Rockdale Local Environmental Plan 2011 requires development consent for demolition, except if it is identified as exempt development in the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

Development below the mean high water mark – Clause 5.7 of Rockdale Local Environmental Plan 2011 requires development consent to carry out any development on land below the mean high water mark.

Development in areas subject to aircraft noise – Clause 6.4 of Rockdale Local Environmental Plan 2011 requires Council to consider the aircraft noise impacts on proposed development. See Question H of this certificate for the actual aircraft noise affectation of the land.

Development on flood prone land – Clause 6.6 of Rockdale Local Environmental Plan 2011 requires development consent for the erection of buildings or the carrying out of work for any purpose on land identified on the 'Flood Planning Area' map. Further information on whether this land may be subject to the risk of flooding is provided in Question C of the "Advice under Section 149 (5)".

Development on land intended to be acquired for public purposes – Clause 5.1A of Rockdale Local Environmental Plan 2011 specifies the permissible land uses for land that is identified for acquisition on the 'Land Acquisition Reservation Map'.

Earthworks – Clause 6.2 of Rockdale Local Environmental Plan 2011 requires development consent for excavating or filling the land to which this Certificate applies, except for excavating and filling referred to in subclause (2).

Exempt and complying development – Clause 3.1, 3.2 and Schedules 2 and 3 of Rockdale Local Environmental Plan 2011 identify the types of development that are "exempt development" and "complying development" (within the meaning of the Act).

Floor space ratio – Clause 4.4 (and supporting maps) of Rockdale Local Environmental Plan 2011 applies maximum allowable floor space ratio standards to all land within the City.

Foreshore building line – Clause 6.5 of Rockdale Local Environmental Plan 2011 applies

Certificate No. 52301

a foreshore building line to certain land within Zone IN2 Light Industry in Henderson Street, Turrella, which generally prohibits the erection of a building or the carrying out of a work between the foreshore building line and Wolli Creek.

Height of buildings – Clause 4.3 (and supporting maps) of Rockdale Local Environmental Plan 2011 applies maximum allowable height of building standards to all land within the City.

Heritage items, heritage conservation areas and relics – Clause 5.10 of Rockdale Local Environmental Plan 2011 requires development consent for certain activities relating to heritage items, heritage conservation areas and relics. If this land is within a heritage conservation area or contains a heritage item it will be indicated in Question 2 (g) or (h), respectively, of this certificate.

Infrastructure development and use of existing buildings of the Crown – Clause 5.12 of Rockdale Local Environmental Plan 2011 does not restrict or prohibit, or enable the restriction or prohibition of, the carrying out of any development, by or on behalf of a public authority, that is permitted to be carried out with or without development consent, or that is exempt development, under State Environmental Planning Policy (Infrastructure) 2007.

Minimum subdivision lot size – Clause 4.1 of Rockdale Local Environmental Plan 2011 sets minimum subdivision lot size for any land shown on the Lot Size Map.

Outdoor advertising – Schedule 2 of Rockdale Local Environmental Plan 2011 allows certain advertisements as exempt development.

Sex services premises – Clause 6.13 of Rockdale Local Environmental Plan 2011 provides locational and amenity assessment criteria for the various types of sex services premises, which includes brothels.

Subdivision – Clause 2.6 of Rockdale Local Environmental Plan 2011 requires development consent for the subdivision of land.

Temporary use of land – Clause 2.8 of Rockdale Local Environmental Plan 2011 allows the use of any land or building for any temporary purpose, with development consent, subject to the considerations identified in that clause.

Trees or vegetation not prescribed by development control plan – State Environmental Planning

Certificate No. 52301

Policy (Vegetation in Non-Rural Areas) 2017 sets out the State Government's policy which aims to:

- (a) Protect the biodiversity values of trees and other vegetation in non-rural areas of the State;
and
- (a) Preserve the amenity of non-rural areas of the State through the preservation of trees and other vegetation.

Please consult this policy document before undertaking any works to trees or other vegetation.'

Unzoned land – Clause 2.4 of Rockdale Local Environmental Plan 2011 allows development to be carried out on unzoned land, but only with consent.

[End of Schedule]

Certificate No. 52301

IMPORTANT NOTICE TO PURCHASERS

ALTERATIONS AND ADDITIONS TO BUILDINGS

Purchasers are reminded that it is necessary to obtain development consent from the Council prior to carrying out any building alterations or additions, including brick reskinning, replacing windows or internal alterations, or for the demolition of any building, unless the proposed work is specifically exempted by *Rockdale Local Environmental Plan 2011* or *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*. All other building work does require the Council's approval.

Should you require any information or advice for any building work that you propose to undertake please contact the Council's Customer Service Centre on 1300 581 299.



7 February 2019

Our Ref: Certificate No. 52333
Contact: Customer Service 1300 581 299

Land Insight And Resources
4307/4 Daydream St
WARRENWOOD NSW 2102

Dear Sir/Madam

Following is your planning certificate issued under section 10.7 (2) and (5) of the Environmental Planning and Assessment Act 1979.

This Section 10.7 Certificate has been issued by Bayside Council. Information contained within this Certificate is based on data from Council's records as they existed at the date of this Certificate.

Should you have any enquiries, please contact the Council's Customer Service Centre on 1300 581 299.

SECTION 10.7 PLANNING CERTIFICATE

(under section 10.7 of the Environmental Planning and Assessment Act 1979)

ISSUED TO:

Land Insight And Resources
4307/4 Daydream St
WARRENWOOD NSW 2102

Council: Bayside
County: Cumberland
Parish: St George

Fee: 133.00
Receipt No: 4142221
Receipt Date: 4 February 2019
Your Ref: LIR-459:21033

PROPERTY: 4 GUESS AVENUE, WOLLI CREEK NSW 2205

Lot 102 DP 808944

CT

Assessment No 48842

Date: 7 February 2019

For
Meredith Wallace
General Manager

Mascot Customer Service Centre
141 Coward Street
Mascot NSW 2020, Australia
council@botanybay.nsw.gov.au
DX 4108 Mascot Junction

Rockdale Customer Service Centre
444-446 Princes Highway
Rockdale NSW 2216, Australia
rcc@rockdale.nsw.gov.au
DX 25108 Rockdale

T 1300 581 299 F 02 9562 1777
www.bayside.nsw.gov.au

Postal address: PO Box 21 Rockdale NSW 2216



Telephone Interpreter Services: 131 450

Телефонический интерпретер: 131 450

خدمة الترجمة الهاتفية

電話傳譯服務

Служба за преводање по телефон

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Certificate No. 52333

Note: Where this certificate refers to a specific allotment (or allotments) within a strata plan the certificate is issued for the whole of the land within the strata plan, not just the specific allotment or allotments referred to, and any information contained in the certificate may relate to the whole or any part of the strata plan.

1 Names of relevant planning instruments and DCPs

(1) The name of each environmental planning instrument that applies to the carrying out of development on the land.

Rockdale Local Environmental Plan 2011

State Environmental Planning Policy No 19	Bushland in Urban Areas
State Environmental Planning Policy No 21	Caravan Parks
State Environmental Planning Policy No 30	Intensive Agriculture
State Environmental Planning Policy No 33	Hazardous and Offensive Development
State Environmental Planning Policy No 50	Canal Estates Development
State Environmental Planning Policy No 55	Remediation of Land
State Environmental Planning Policy No 62	Sustainable Aquaculture
State Environmental Planning Policy No 64	Advertising and Signage
State Environmental Planning Policy No 65	Design Quality of Residential Apartment Development
State Environmental Planning Policy No 70	Affordable Housing (Revised Schemes)
State Environmental Planning Policy	(Affordable Rental Housing) 2009
State Environmental Planning Policy	(Building Sustainability Index: BASIX) 2004
State Environmental Planning Policy	(Educational Establishments and Child Care Facilities) 2017
State Environmental Planning Policy	(Exempt and Complying Development Codes) 2008
State Environmental Planning Policy	(Housing for Seniors and People with a Disability) 2004 (Only applies to land referred to in clause 4 (1) of the Policy and does not apply to land referred to in clause 4 (2) of the Policy)
State Environmental Planning Policy	(Infrastructure) 2007
State Environmental Planning Policy	(Mining, Petroleum Production and Extractive Industries) 2007
State Environmental Planning Policy	(State and Regional Development) 2011
State Environmental Planning Policy	(Miscellaneous Consent Provisions) 2007
State Environmental Planning Policy	(Vegetation in Non-Rural Areas) 2017
State Environmental Planning Policy	(Coastal Management) 2018
State Environmental Planning Policy	(Arncliffe and Banksia Precincts) 2018

Greater Metropolitan Regional Environmental Plan No. 2 – Georges River Catchment (only applies to land within the Georges River Catchment, being, in the Bayside Council area, certain land within the suburbs of Dolls Point, Ramsgate, Sandringham and Sans Souci).

(2) The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Director-General has notified the council that the making of the proposed

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instrument has been deferred indefinitely or has not been approved).

No Planning Proposal applies to the land.

- Draft State Environmental Planning Policy – Remediation of Land
- Draft Amendments to State Environmental Planning Policy (Affordable Rental Housing) 2009
- Draft Amendments to State Environmental Planning Policy No. 70 (Affordable Housing)

For more information or to determine whether this applies to your property, visit the Department of Planning and Environment website at www.planning.nsw.gov.au.

- (3) The name of each development control plan that applies to the carrying out of development on the land.

Rockdale Development Control Plan 2011

- (4) In this clause, proposed environmental planning instrument includes a planning proposal for a LEP or a draft environmental planning instrument.

2 Zoning and land use under relevant local environmental plans

For each environmental planning instrument or proposed instrument referred to in clause 1 (other than a SEPP or proposed SEPP) that includes the land in any zone (however described):

- 2(a) the identity of the zone, whether by reference to a name or by reference to a number;
- 2(b) the purposes for which the instrument provides that development may be carried out within the zone without the need for development consent;
- 2(c) the purposes for which the instrument provides that development may not be carried out within the zone except with development consent;
- 2(d) the purposes for which the instrument provides that development is prohibited within the zone;

The following zone or zones apply under the local environmental plan or deemed environmental planning instrument referred to in question 1 (1):

Zone RE1 Public Recreation

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1 Objectives of zone

- To enable land to be used for public open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.

2 Permitted without consent

Roads

3 Permitted with consent

Boat launching ramps; Child care centres; Community facilities; Environmental facilities; Environmental protection works; Jetties; Kiosks; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Respite day care centres; Signage; Water supply systems

4 Prohibited

Any development not specified in item 2 or 3

2(e) whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed;

No environmental planning instrument applies to the land that fixes minimum land dimensions for the erection of a dwelling.

Note:

- (1) Whether or not such a requirement applies to the land under any local environmental plan, deemed environmental planning instrument or draft local environmental plan, the Council does set minimum dimensions and areas for new residential allotments in **Section 4.1.9 of Rockdale Development Control Plan 2011**.
- (2) The above information does not imply that the erection of a dwelling-house is necessarily permissible on the land to which this certificate applies. Refer to the relevant local environmental plan, deemed environmental planning instrument or draft local environmental plan applying to the land to confirm this.

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2(f) whether the land includes or comprises critical habitat;

The land does not include or comprise critical habitat.

2(g) whether the land is in a conservation area (however described);

The land is not in a conservation area.

2(h) whether an item of environmental heritage (however described) is situated on the land.

There is no such item situated on the land.

2A Zoning and land use under State Environmental Planning Policy (Sydney Region Growth Centres) 2006

To the extent that the land is within any zone (however described) under:

- (a) Part 3 of the State Environmental Planning Policy (Sydney Region Growth Centres) 2006 (the 2006 SEPP); or
- (b) a Precinct Plan (within the meaning of the 2006 SEPP); or
- (c) a proposed Precinct Plan that is or has been the subject of community consultation or on public exhibition under the Act;

the particulars referred to in clause 2 (a)–(h) in relation to that land (with a reference to “the instrument” in any of those paragraphs being read as a reference to Part 3 of the 2006 SEPP, or the Precinct Plan or proposed Precinct Plan, as the case requires).

Not applicable.

3 Complying development

- 1 The extent to which the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*;
- 2 The extent to which complying development may not be carried out on that land because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4) and 1.19 of that Policy and the reasons why it may not be carried out under those clauses; and
- 3 If the council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land, a statement that a restriction applies to the land, but it may not apply to all of the land, and that council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.

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**General Housing Code
Rural Housing Code**

Complying development **may not** be carried out on the land in accordance with the above codes for the following reason/s:

All of the land is reserved for acquisition as identified on the *Rockdale Local Environmental Plan 2011* Land Reservation Acquisition Map.

Commercial and Industrial (New Buildings and Additions) Code

Complying development **may not** be carried out on the land in accordance with the above codes for the following reason(s):

All of the land is reserved for acquisition as identified on the *Rockdale Local Environmental Plan 2011* Land Reservation Acquisition Map.

**Housing Alterations Code
General Commercial and Industrial Code
Subdivisions Code
General Development Code
Demolition Code
Commercial and Industrial Alterations Code
Fire Safety Code**

Complying development **may** be carried out on the land in accordance with the above Codes.

Notes:

(1) If a reference is made to "part of the land", Complying Development **may** be carried out on the portion of the land not subject to such a restriction.
(2) This certificate only addresses matters raised in Clause 1.17 and Clause 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*. It is your responsibility to ensure that you comply with any other general requirements of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

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4 Coastal protection

Whether or not the land is affected by the operation of section 38 or 39 of the *Coastal Protection Act 1979*, but only to the extent that the council has been so notified by the Department of Public Works

N/A (Repealed)

4A Certain information relating to beaches and coasts

- (1) In relation to a coastal council - whether an order has been made under Part 4D of the *Coastal Protection Act 1979* in relation to temporary coastal protection works (within the meaning of that Act) on the land (or on public land adjacent to that land), except where the council is satisfied that such an order has been fully complied with;

N/A (Repealed)

- (2) In relation to a coastal council:

- (a) whether the council has been notified under section 55X of the *Coastal Protection Act 1979* that temporary coastal protection works (within the meaning of that Act) have been placed on the land (or on public land adjacent to that land); and
- (b) if works have been so placed—whether the council is satisfied that the works have been removed and the land restored in accordance with that Act.

N/A (Repealed)

- (3) In relation to a coastal council—such information (if any) as is required by the regulations under section 56B of the *Coastal Protection Act 1979* to be included in the planning certificate and of which the council has been notified pursuant to those regulations.

N/A (Repealed)

4B Annual charges under *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works

In relation to a coastal council - whether the owner (or any previous owner) of the land has consented in writing to the land being subject to annual charges under section 496B of the *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act).

The land is not so affected.

5 Mine subsidence

Whether or not the land is proclaimed to be a mine subsidence district within the meaning of section 15 of the *Mine Subsidence Compensation Act 1961*.

The land is not so proclaimed.

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6 Road widening and road realignment

Whether or not the land is affected by any road widening or road realignment under:

- (a) Division 2 of Part 3 of the *Roads Act 1993*; or
- (b) Any environmental planning instrument; or
- (c) Any resolution of the council.

The land is not affected by any road widening or road realignment under Division 2 of Part 3 of the *Roads Act 1993*, any environmental planning instrument or any resolution of the Council.

7 Council and other public authority policies on hazard risk restrictions

Whether or not the land is affected by a policy:

- (a) adopted by the council; or
- (b) adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council;

that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding).

Contaminated Land Policy

The Council has adopted by resolution a policy on contaminated land that may restrict the development of the land. This policy is implemented when zoning or land use changes are proposed on lands that have previously been used for certain purposes. The Council's records do not have sufficient information about previous use of this land to determine whether the land is contaminated. Consideration of the Council's adopted policy and the application of provisions under relevant State legislation is warranted.

Policy on Rezoning and Development of Land Affected by Aircraft Noise and Airport Related Height Controls

The former City of Rockdale Council resolved on 4 October 2006 to adopt a policy for assessing the appropriateness of rezoning and development in areas affected by aircraft noise and airport related height controls. This policy applies to all land within the former City of Rockdale.

Other policies

The land is not affected by any other such policy that restricts the development of the land due to hazard risk.

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7A Flood related development control information

- (1) Whether or not development on that land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.

The development of the land or part of the land for such a purpose may be subject to flood related development controls.

- (2) Whether or not development on that land or part of the land for any other purpose is subject to flood related development controls.

The development of the land or part of the land for a purpose not referred to in Question 7A (1) may be subject to flood related development controls.

Note:

(1) The answers above do not imply that the development referred to is necessarily permissible on the land to which this certificate applies. Refer to the relevant local environmental plan, deemed environmental planning instrument or draft local environmental plan applying to the land to confirm this.

(2) Council is not in a position to identify whether the information provided under Clause 7A relates to a current or future hazard as defined in Planning Circular PS 14-003.

Note: Further information relating to flooding is provided in the "Advice under Section 10.7 (5)" attached.

- (3) Words and expressions in this clause have the same meanings as in the instrument set out in the Schedule to the *Standard Instrument (Local Environmental Plans) Order 2006*.

8 Land reserved for acquisition

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in clause 1 makes provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the Act.

All or part of the land is reserved for acquisition under *Rockdale Local Environmental Plan 2011* by Council for the purpose of local open space.

Please refer to the Reservation Acquisition Map of *Rockdale Local Environmental Plan 2011* for more information.

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9 Contributions plans

The name of each contributions plan applying to the land

Rockdale Section 94 Contributions Plan 2004
Rockdale Section 94A Development Contributions Plan 2008

This property has been specifically identified in *Rockdale Section 94 Contributions Plan 2004* for future acquisition to provide a public facility or service. Refer to the plan for details.

Note: *Rockdale Section 94 Contributions Plan (Amendment No 4)* and *Rockdale Section 94 Contributions Plan 1998* will continue to apply to all development applications and applications for complying development certificates made prior to 1 June 2004.

9A Biodiversity certified land

If the land is biodiversity certified land (within the meaning of Part 7AA of the *Threatened Species Conservation Act 1995*), a statement to that effect.

The land is not so affected.

10 Biobanking agreements

If the land is land to which a biobanking agreement under Part 7A of the *Threatened Species Conservation Act 1995* relates, a statement to that effect (but only if the council has been notified of the existence of the agreement by the Director-General of the Department of Environment, Climate Change and Water).

The land is not affected by such an agreement.

11 Bush fire prone land

If any of the land is bush fire prone land (as defined in the Act), a statement that all or, as the case may be, some of the land is bush fire prone land.

If none of the land is bush fire prone land, a statement to that effect.

The land is not bush fire prone land.

12 Property vegetation plans

If the land is land to which a property vegetation plan under the *Native Vegetation Act 2003* applies, a statement to that effect (but only if the council has been notified of the existence of the plan by the person or body that approved the plan under that Act).

The land is not land to which a property vegetation plan applies.

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13 Orders under *Trees (Disputes Between Neighbours) Act 2006*

Whether an order has been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

The land is not subject to such an order.

14 Directions under Part 3A

If there is a direction by the Minister in force under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect, a statement to that effect identifying the provision that does not have effect.

The land is not subject to any such directions.

15 Site compatibility certificates and conditions for seniors housing

If the land is land to which *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004* applies:

- (a) a statement of whether there is a current site compatibility certificate (seniors housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:
 - (i) the period for which the certificate is current; and
 - (ii) that a copy may be obtained from the head office of the Department of Planning, and
- (b) a statement setting out any terms of a kind referred to in clause 18 (2) of that Policy that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

The land is not subject to any such certificate.

16 Site compatibility certificates for infrastructure

A statement of whether there is a valid site compatibility certificate (infrastructure), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:

- (a) the period for which the certificate is valid, and
- (b) that a copy may be obtained from the head office of the Department of Planning.

The land is not subject to any such certificate.

17 Site compatibility certificates and conditions for affordable rental housing

- (1) A statement of whether there is a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:

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- (a) the period for which the certificate is current; and
 - (b) that a copy may be obtained from the head office of the Department of Planning.
- (2) A statement setting out any terms of a kind referred to in clause 17 (1) or 37 (1) of *State Environmental Planning Policy (Affordable Rental Housing) 2009* that have been imposed as a condition of consent to a development application in respect of the land.

The land is not subject to any such statement.

18 Paper subdivision information

- (1) The name of any development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot.
- (2) The date of any subdivision order that applies to the land.
- (3) Words and expressions used in this clause have the same meaning as they have in Part 16C of this Regulation.

The land is not so affected.

19 Site verification certificates

A statement of whether there is a current site verification certificate, of which the council is aware, in respect of the land and, if there is a certificate, the statement is to include:

- (a) the matter certified by the certificate; and
(Note. A site verification certificate sets out the Director-General's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land—see Division 3 of Part 4AA of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007)
- (b) the date on which the certificate ceases to be current (if any); and
- (c) that a copy may be obtained from the head office of the Department of Planning and Infrastructure.

The land is not subject to any such certificate.

20 Loose-fill asbestos insulation

If the land includes any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the register that is required to be maintained under that Division, a statement to that effect.

The land is not so identified.

Note: The register referred to in this question is the *Loose-Fill Asbestos Insulation Register*, which is maintained by the Secretary of NSW Fair Trading.

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- Note:** The following matters are prescribed by section 59 (2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate:
- (a) that the land to which the certificate relates is significantly contaminated land within the meaning of that Act—if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued;
 - (b) that the land to which the certificate relates is subject to a management order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued;
 - (c) that the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act—if it is the subject of such an approved proposal at the date when the certificate is issued;
 - (d) that the land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued; and
 - (e) that the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act—if a copy of such a statement has been provided at any time to the local authority issuing the certificate.

The land is not so affected.

- Note:** Section 26 of the *Nation Building and Jobs Plan (State Infrastructure Delivery) Act 2009* provides that a planning certificate must include advice about any exemption under section 23 or authorisation under section 24 of that Act if the council is provided with a copy of the exemption or authorisation by the Co-ordinator General under that Act.

The land is not so affected.

- 21 Affected building notices and building product rectification orders**
- (1) A statement of whether there is any affected building notice of which the council is aware that is in force in respect of the land.
 - (2) A statement of:
 - (a) whether there is any building product rectification order of which the council is aware that is in force in respect of the land and has not been fully complied with, and
 - (b) whether any notice of intention to make a building product rectification order of which the council is aware has been given in respect of the land and is outstanding.
 - (3) In this clause:
affected building notice has the same meaning as in Part 4 of the *Building*

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Products (Safety) Act 2017.

*building product rectification order has the same meaning as in the Building
Products (Safety) Act 2017.*

Council is not aware of an issue of a notice of intention or order pertaining to building product rectification works.

[End of information under section 10.7 (2)]

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ADVICE UNDER SECTION 10.7 (5)

Note: The Council is under no obligation to furnish any of the information supplied below. Equally, it may be that not every relevant matter relating to the land is provided below. The Council draws your attention to section 10.7 (6) which states that a council shall not incur any liability in respect of any advice provided in good faith under section 10.7 (5).

Further to your application for information under section 10.7 (5), the Council has resolved to supply answers to the following questions:

A Details of any resolution of the Council to alter the zoning of the land or to alter the provisions of an environmental planning instrument applying to the land, where such an alteration has not yet been placed on exhibition under Schedule 1 Clause 4 of the Act

No Planning Proposal or draft environmental planning instrument applies to the land that has not yet been placed on public exhibition.

B Details of any provision in a local environmental plan or deemed environmental planning instrument applying to the land that

- (i) Permits any development or class of development without the need for development consent; or
- (ii) Requires development consent for any development or class of development; or
- (iii) Restricts or prohibits any development or class of development;

other than such a provision referred to in Question 2 (a) to (d) of the certificate under section 10.7 (2):

The Schedule at the end of this certificate identifies any such provisions that may apply to the land.

C Whether or not the Council has information that would indicate that the land is subject to the risk of flooding or tidal inundation for a 1% annual exceedance probability (AEP) (1 in 100 Year) event

The Council is aware of various information that suggests the land may be affected by the 1% AEP flood. The Council is unaware of the accuracy of this information, although further enquiries may be made with the Council's City Services Department in relation to this.

Note: Refer to Question 7A of the preceding certificate under section 10.7 (2) to ascertain whether or not development on the land may be subject to flood related development controls.

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D Whether or not the Council has information that would indicate that the land is subject to slip or subsidence

The Council is not aware of any investigations that have been carried out.

E Details of any tree preservation order applying to the land

N/A (Repealed)

F Whether or not the land is in the vicinity of a heritage item or heritage conservation area identified in an environmental planning instrument or a proposed heritage item or proposed heritage conservation area identified in a draft local environmental plan

The land is not in the vicinity of a heritage item or heritage conservation area identified in an environmental planning instrument or a proposed heritage item or proposed heritage conservation area identified in a draft local environmental plan.

G Whether or not a planning agreement entered into under Subdivision 2 of Division 7.1 of Part 7 of the Environmental Planning and Assessment Act 1979 currently applies to the land (but only if, where the Council is not a party to the agreement, information about the agreement has been provided to the Council)

No planning agreement currently applies to the land.

H Details of the Annual Noise Exposure Forecast (ANEF) applying to the land

The ANEF affectation of the land is less than 20.

Note: The ANEF level may restrict the development of the land due to the risk of exposure to aircraft noise.

[End of advice under Section 10.7 (5)]

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SCHEDULE

Details of any provision in a local environmental plan or deemed environmental planning instrument applying to the land that permit without development consent, require development consent for, or restrict or prohibit, certain development or classes of development

Active street frontages – Clause 6.11 of Rockdale Local Environmental Plan 2011 requires the provision of business or retail premises on the ground floor of land identified in the Active Street Frontages Map.

Additional permitted uses for particular land – Clause 2.5 of Rockdale Local Environmental Plan 2011 allows development to be carried out, with development consent, for certain additional purposes on certain land within the City, as detailed in Schedule 1.

Airspace operations – Clause 6.4 of Rockdale Local Environmental Plan 2011 requires Council to consult with the relevant Commonwealth body on any development application that may penetrate the Obstacle Limitation Surface.

Architectural roof features – Clause 5.6 of Rockdale Local Environmental Plan 2011 permits variation to the maximum building height standards for roof features of visual interest.

Bush fire hazard reduction – Clause 5.11 of Rockdale Local Environmental Plan 2011 permits bush fire hazard reduction work authorised by the Rural Fires Act 1997 on any land without development consent.

Controls relating to miscellaneous permissible uses – Clause 5.4 of Rockdale Local Environmental Plan 2011 provides development controls for the following development types: Bed and breakfast accommodation; Home businesses; Home industries; Industrial retail outlets; Farm stay accommodation; Kiosks; Neighbourhood shops; Roadside stalls and Secondary dwellings.

Conversion of fire alarms – Clause 5.8 of Rockdale Local Environmental Plan 2011 requires development consent for the conversion of a fire alarm system that can be monitored by Fire and Rescue NSW or by a private service provider.

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Demolition requires development consent – Clause 2.7 of Rockdale Local Environmental Plan 2011 requires development consent for demolition, except if it is identified as exempt development in the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

Development below the mean high water mark – Clause 5.7 of Rockdale Local Environmental Plan 2011 requires development consent to carry out any development on land below the mean high water mark.

Development in areas subject to aircraft noise – Clause 6.4 of Rockdale Local Environmental Plan 2011 requires Council to consider the aircraft noise impacts on proposed development. See Question H of this certificate for the actual aircraft noise affectation of the land.

Development on flood prone land – Clause 6.6 of Rockdale Local Environmental Plan 2011 requires development consent for the erection of buildings or the carrying out of work for any purpose on land identified on the 'Flood Planning Area' map. Further information on whether this land may be subject to the risk of flooding is provided in Question C of the "Advice under Section 149 (5)".

Development on land intended to be acquired for public purposes – Clause 5.1A of Rockdale Local Environmental Plan 2011 specifies the permissible land uses for land that is identified for acquisition on the 'Land Acquisition Reservation Map'.

Earthworks – Clause 6.2 of Rockdale Local Environmental Plan 2011 requires development consent for excavating or filling the land to which this Certificate applies, except for excavating and filling referred to in subclause (2).

Exempt and complying development – Clause 3.1, 3.2 and Schedules 2 and 3 of Rockdale Local Environmental Plan 2011 identify the types of development that are "exempt development" and "complying development" (within the meaning of the Act).

Floor space ratio – Clause 4.4 (and supporting maps) of Rockdale Local Environmental Plan 2011 applies maximum allowable floor space ratio standards to all land within the City.

Foreshore building line – Clause 6.5 of Rockdale Local Environmental Plan 2011 applies

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a foreshore building line to certain land within Zone IN2 Light Industry in Henderson Street, Turrella, which generally prohibits the erection of a building or the carrying out of a work between the foreshore building line and Wolli Creek.

Height of buildings – Clause 4.3 (and supporting maps) of Rockdale Local Environmental Plan 2011 applies maximum allowable height of building standards to all land within the City.

Heritage items, heritage conservation areas and relics – Clause 5.10 of Rockdale Local Environmental Plan 2011 requires development consent for certain activities relating to heritage items, heritage conservation areas and relics. If this land is within a heritage conservation area or contains a heritage item it will be indicated in Question 2 (g) or (h), respectively, of this certificate.

Infrastructure development and use of existing buildings of the Crown – Clause 5.12 of Rockdale Local Environmental Plan 2011 does not restrict or prohibit, or enable the restriction or prohibition of, the carrying out of any development, by or on behalf of a public authority, that is permitted to be carried out with or without development consent, or that is exempt development, under State Environmental Planning Policy (Infrastructure) 2007.

Minimum subdivision lot size – Clause 4.1 of Rockdale Local Environmental Plan 2011 sets minimum subdivision lot size for any land shown on the Lot Size Map.

Outdoor advertising – Schedule 2 of Rockdale Local Environmental Plan 2011 allows certain advertisements as exempt development.

Sex services premises – Clause 6.13 of Rockdale Local Environmental Plan 2011 provides locational and amenity assessment criteria for the various types of sex services premises, which includes brothels.

Subdivision – Clause 2.6 of Rockdale Local Environmental Plan 2011 requires development consent for the subdivision of land.

Temporary use of land – Clause 2.8 of Rockdale Local Environmental Plan 2011 allows the use of any land or building for any temporary purpose, with development consent, subject to the considerations identified in that clause.

Trees or vegetation not prescribed by development control plan – State Environmental Planning

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Policy (Vegetation in Non-Rural Areas) 2017 sets out the State Government's policy which aims to:

- (a) Protect the biodiversity values of trees and other vegetation in non-rural areas of the State;
and
- (a) Preserve the amenity of non-rural areas of the State through the preservation of trees and other vegetation.

Please consult this policy document before undertaking any works to trees or other vegetation.'

Unzoned land – Clause 2.4 of Rockdale Local Environmental Plan 2011 allows development to be carried out on unzoned land, but only with consent.

[End of Schedule]

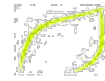
Certificate No. 52333

IMPORTANT NOTICE TO PURCHASERS**ALTERATIONS AND ADDITIONS TO BUILDINGS**

Purchasers are reminded that it is necessary to obtain development consent from the Council prior to carrying out any building alterations or additions, including brick reskinning, replacing windows or internal alterations, or for the demolition of any building, unless the proposed work is specifically exempted by *Rockdale Local Environmental Plan 2011* or *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*. All other building work does require the Council's approval.

Should you require any information or advice for any building work that you propose to undertake please contact the Council's Customer Service Centre on 1300 581 299.

Appendix D: Site Photographs



Appendix D: Site Photographs

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Appendix D: Site Photographs

2-4 Guess Avenue, Wollri Creek, NSW – Site Photographs



Photo 1. View of northern portion of the site, part of Lot 102, where remedial excavation had been undertaken.



Photo 2. View of western portion of the site from Mount Olympus Boulevard.



Photo 3 Façade of Nippon Truck Spares Pty Ltd main building fronting Guess Avenue, located within Lot 101.



Photo 4. Sealed area within western portion of the Lot 101. Currently used for storage of trucks and spare parts.



Photo 5. Storage of tyres, scrap metal and truck parts within sealed central eastern portion of the site.



Photo 6. View of engine test bay with oil-water separator in background.

Appendix D: Site Photographs



Photo 7. View of engine cleaning area.



Photo 8. View of the oil / water separator unit.



Photo 9. View of drainage system, present within cleaning area.



Photo 10. Oil waste drum located within central portion of the site.



Photo 11. View of the UST dipping point.



Photo 12. Hydrocarbon stains observed within UST dipping point surroundings.

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Appendix D: Site Photographs



Photo 13. Hydrocarbon stains observed within UST dipping point surroundings.



Photo 14. Hydrocarbon stains observed onsite.



Photo 15. Oil staining and spills on concrete slab.



Photo 16. View of concrete slab. Cuts and hydrocarbon stains can be observed.



Photo 17. View of caustic bath cleaning unit located in the eastern portion of the site.



Photo 18. Inside view of workshop area located in north-east corner of the site.

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Appendix D: Site Photographs



Photo 19. Depot outside area.



Photo 20. Spill observed inside of the main storage building.



Photo 21. View of the painting cabinet.



Photo 22. Exhauster system of painting cabinet.



Photo 23. Location of the diesel storage tank at the entrance of the Nippon Truck Spares main building.



Photo 24. View of the diesel storage tank.

Appendix D: Site Photographs



Photo 25. View of unsealed area located along western boundary of Lot 101.



Photo 26. Hydrocarbon stain located in the ornamental garden within western portion of the site.



tel: + 61 2 8252 0000

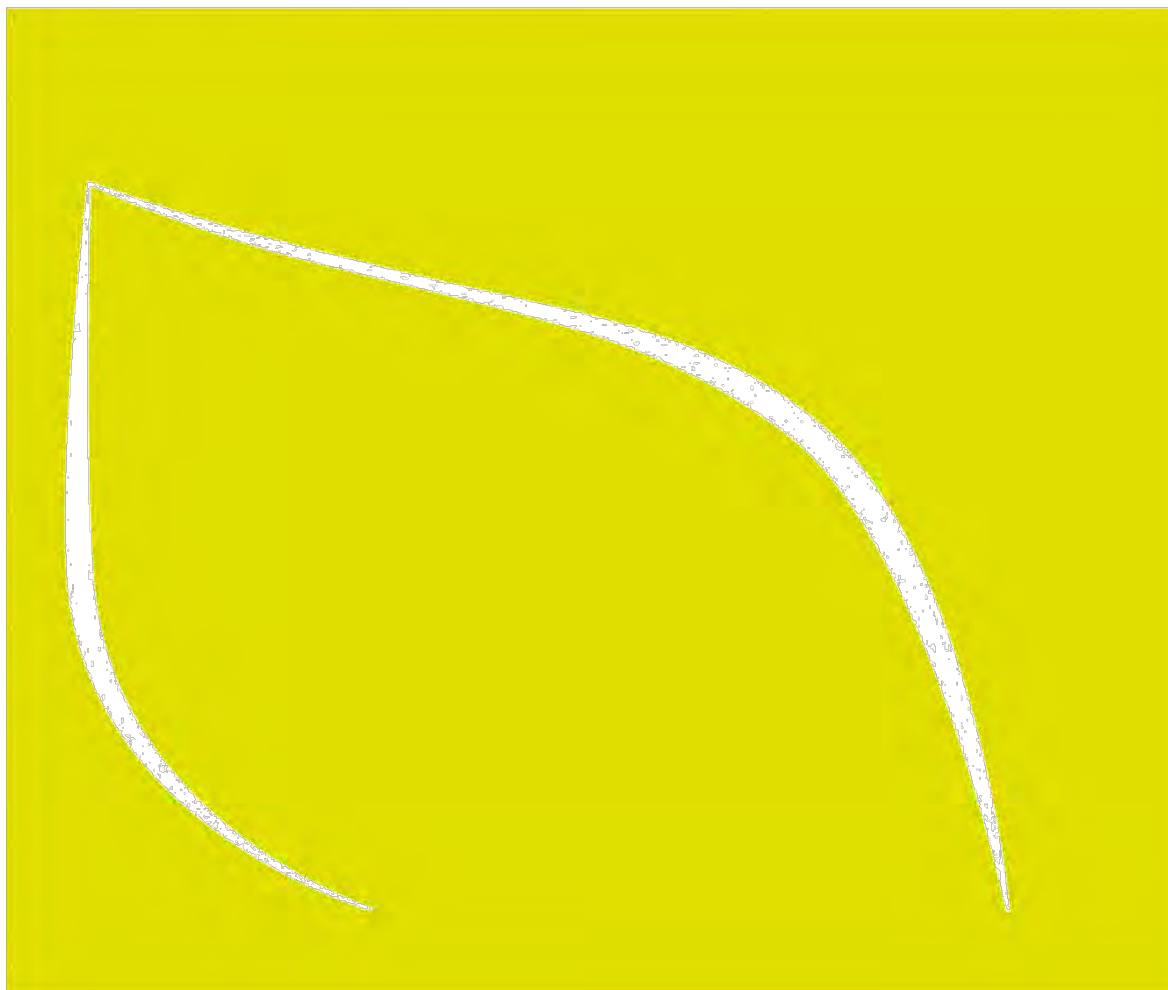
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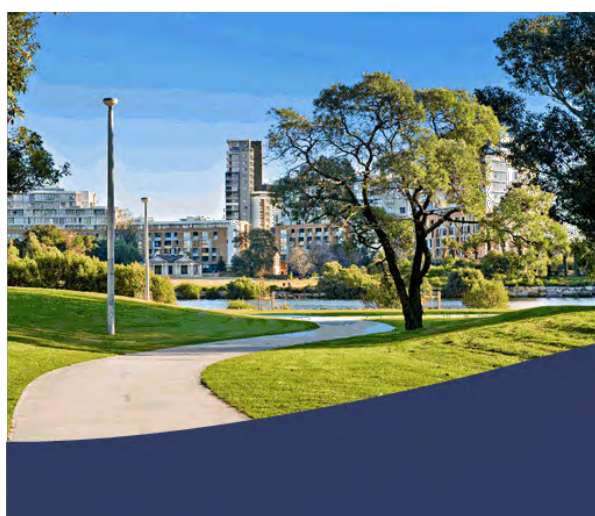
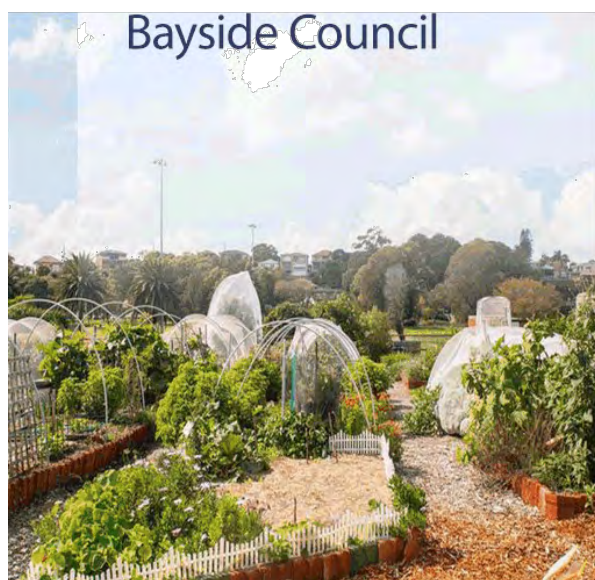
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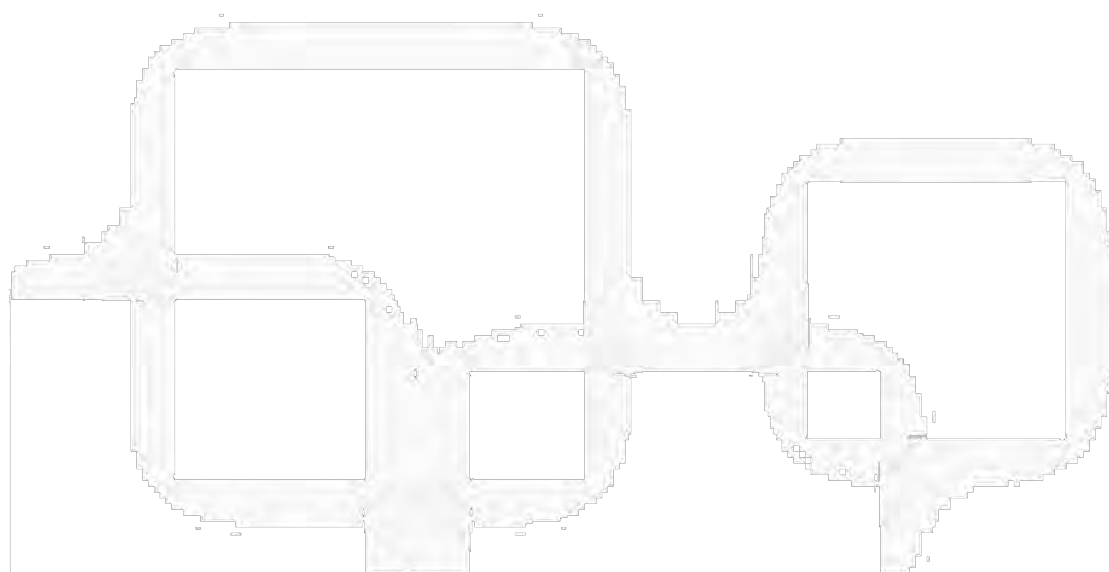


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Quality Control

This document is for discussion purposes only unless signed and dated by a Principal of HillPDA.

Reviewer

Signature



Dated

15/07/19

Report Details

Job Number V19047

Version Final

File Name 2 - 4 Guess Avenue Wolli Creek Commercial and Retail Demand Assessment

Date Printed 15/07/2019

INTRODUCTION

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1.0 INTRODUCTION

Bayside Council (the Client) engaged HillPDA to complete a commercial and retail demand assessment of 2-4 Guess Avenue, Wolli Creek (subject site) for use in a Planning Proposal.

We understand that Council is seeking to submit a Planning Proposal to amend the Rockdale LEP to rezone 2 Guess Avenue, Wolli Creek from RE1 (Public Recreation) to B4 (Mixed Use) and to remove the site from the Land Reservation Acquisition Map. The preferred option for redevelopment ensures 4 Guess Avenue, Wolli Creek will remain as RE1 Open Space lands and remain a part of the Land Reservation Acquisition Map.

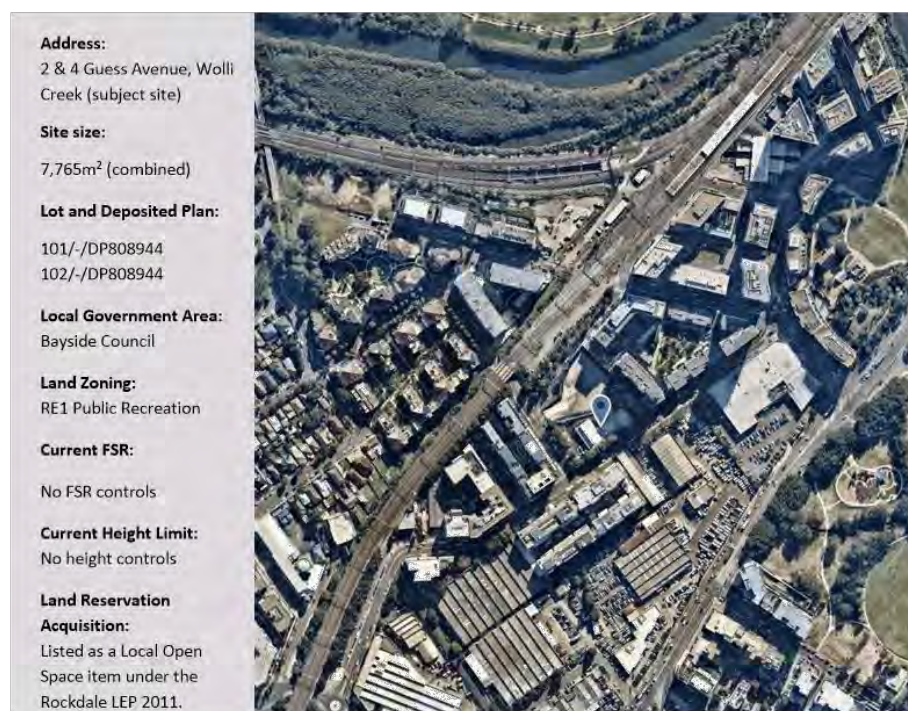
File Planning & Development (FPD) has been engaged to prepare the Planning Proposal, which requires various expert reports. Included in the list of reports is a commercial and retail demand study.

The client does not own the subject sites. The subject sites are privately owned by Nippon Truck Spares Pty Ltd (2 Guess Avenue, Wolli Creek) and Property NSW (4 Guess Avenue, Wolli Creek).

Improvements to 2 Guess Avenue, Wolli Creek are two large industrial sheds used for truck repairs and maintenance owned in a company title with three shareholders each with varying amounts. The sheds are around 20 years old. There are no improvements to 4 Guess Avenue, Wolli Creek.

The subject site is located to the south of the Wolli Creek Town Centre, 500 metres from the Wolli Creek train station and 400 metres from the retail village within Discovery Point.

Figure 1: Site Location



Source: Near Maps 2019

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A panorama view of the subject site in context to the surrounding buildings shows in the immediate vicinity buildings varying from five to six-storey apartment buildings to nine to twentyone-storey mixed-use buildings.

Figure 2: Site Location





SITE PARTICULARS

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2.0 SITE PARTICULARS

2.1 Existing Site Local Policies and Guidance

2.1.1 Rockdale Local Environment Plan 2011

2.1.1.1 Land Zoning

The subject site is zoned RE1 – Public Recreation.

Figure 3: Land Zoning



Source: Rockdale LEP 2011 Zoning Map 003

Objectives of Public Recreation Zone

The subject site is currently zoned RE1 Public Recreation under the Rockdale LEP 2011. The objective of the RE1 zone is to enable land to be used for public open space or recreational purposes.

Permitted without consent

Roads.

Permitted with consent

Boat launching ramps; Centre-based child care facilities; Community facilities; Environmental facilities; Environmental protection works; Jetties; Kiosks; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Respite day care centres; Signage; Water supply systems.

Prohibited

Any development not specified in item 2 or 3.

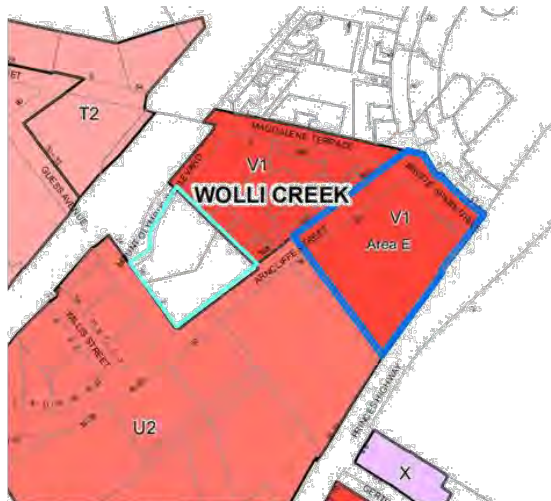
2.1.1.2 Floor Space Ratio

The site is zoned RE1. Therefore, there is no floor space ratio (FSR).

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Figure 4: FSR Ratio

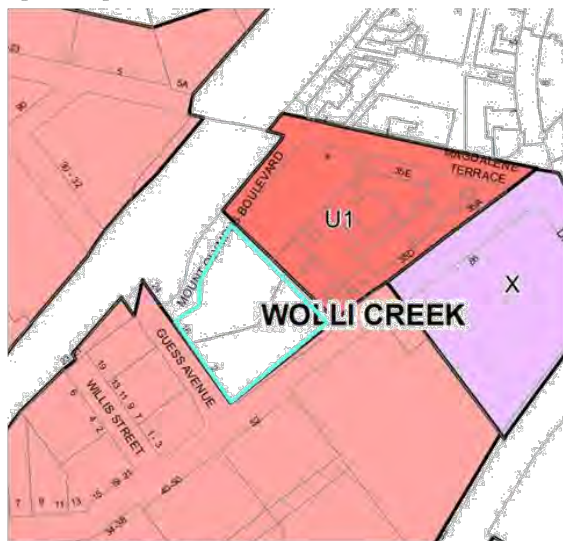


Source: Rockdale LEP 2011 FSR Map 003

2.1.1.3 Height

There is no permitted height under the Rockdale LEP 2011 given the RE1 zoning.

Figure 5: Height



Source: Rockdale LEP 2011 Height Map 003

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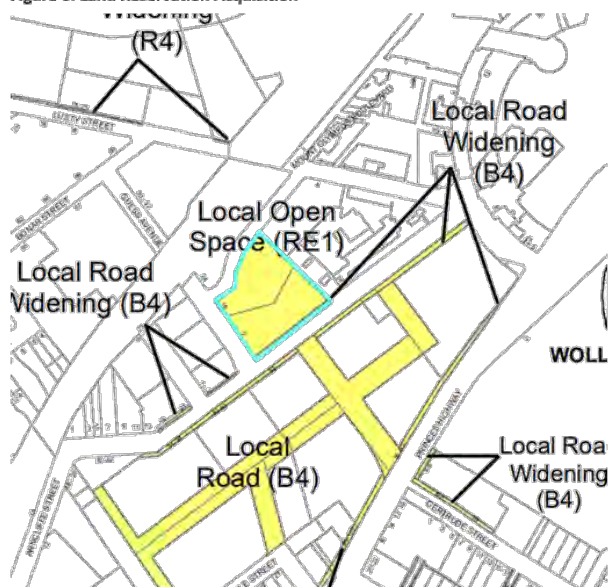
2.1.1.4 Land Reservation Acquisition

The site is earmarked for Local Open Space (RE1) provisions.

The objective of clause 5.1A Miscellaneous Provisions under the Rockdale LEP 2011 is to limit development on certain land intended to be acquired for a public purpose.

Clause 5.1 applies to land shown to the Land Reservation Map and specified Figure 6. The Guess Avenue site has not yet been acquired by the relevant acquisition authority being Council. Development consent must not be granted to any development on land to which this clause applies other than development for a purpose specified in the Rockdale LEP 2011 (being open space).

Figure 6: Land Reservation Acquisition



Source: Rockdale LEP 2011 Land Reservation Acquisition Map 003

COMMERCIAL
FLOORSPEACE
DEMAND

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3.0 COMMERCIAL FLOORSPACE DEMAND

The following Chapter forecasts the amount of additional commercial office space that could be accommodated within the Wolli Creek locality. Projections have been based on State Government employment forecasts at the corresponding Travel Zone (TZ) level¹.

3.1 Commercial Floorspace Projections Methodology

1. Deduce the net commercial office employment growth within the TZ that intersects Wolli Creek.
2. Apply industry standard employment densities to net employment growth to ascertain commercial office floorspace requirements to accommodate related employment growth.

Figure 7: Subject Site and TZ



3.2 Commercial Floorspace Demand

The TZ that intersects the subject site is referred to as *Wolli Creek Station* (refer to the red boundary in Figure 7). The TPA estimates that around 930 jobs are contained within the TZ as of 2019. This is forecast to increase to a total of 2,322 jobs by 2036, representing an increase of 913 jobs or 98% over the period.

¹ A Travel Zone (TZ) is the smallest geographical area that the Transport Performance and Analytics (TPA) forecast employment

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Of the total net growth in employment, around 587 or 62% are related to commercial office jobs².

Table 1: Wolli Creek Station TZ Employment Forecasts

Industry	2019	2026	2036	Growth
Agriculture, Forestry and Fishing	0	0	0	0
Mining	0	0	0	0
Manufacturing	80	65	55	-25
Electricity, Gas, Water and Waste Services	0	0	0	0
Construction	41	46	54	13
Wholesale Trade	15	14	12	-3
Retail Trade	156	198	254	98
Accommodation and Food Services	137	159	189	52
Transport, Postal and Warehousing	40	36	29	-11
Information Media and Telecommunications	31	69	104	73
Financial and Insurance Services	39	82	134	95
Rental, Hiring and Real Estate Services	56	97	146	90
Professional, Scientific and Technical Services	140	264	423	283
Administrative and Support Services	31	53	77	46
Public Administration and Safety	33	55	80	47
Education and Training	18	40	67	49
Health Care and Social Assistance	27	49	78	51
Arts and Recreation Services	28	49	77	49
Other Services	55.8	59	64	8.2
Total	930	1,335	1,843	913

Source: TPA 2016 employment forecasts, HillPDA

To ascertain the amount of floorspace required to accommodate the growth in commercial related office employment, we have applied industry standard employment density benchmarks³.

Using this methodology, we have estimated that between 10,500sqm and 12,900sqm GFA of additional commercial office space would be required over the next 17 years to accommodate the increase in related employment.

The commercial demand projections outline the growth in employment would support additional floorspace within the Wolli Creek Centre over the next 17 years.

Table 2: Projected Commercial Office Floorspace Requirements 2019-2036 (GFA)

	Employment growth 2019-2036	Employment densities sqm/worker	Estimated floorspace requirements sqm of GFA	
Commercial office	587	18sqm to 22sqm	10,573	12,923

Source: HillPDA

² Combination of the ANZSIC 1 digit Industries of Financial and Insurance Services; Rental, Hiring and Real Estate Services; Professional, Scientific and Technical Services; and Public Administration and Safety

³ Employment density benchmarks is the amount of floorspace required per employee

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3.3 Implications for Subject Site

The main commercial areas in Wolli Creek are located adjacent to the railway station with a boundary running along Brodie Spark Drive down to Magdalene Terrace. There is a range of commercial premises within the precinct from small 50sqm suites housing real estate agents to larger 200sqm suites for gymnasiums.

The office and business premise floorspace in the Wolli Creek Centre are relatively diverse. A market analysis identified that the centre is attractive to small-medium enterprise businesses of less than twenty employees. There is also a high presence of real estate agents and cosmetic services in the centre along with medical services. The higher presence of population serving businesses is reflective of the strong surrounding residential catchment. The centre also has a relatively high proportion of specialist consulting services including those relating to property, business consulting and the food and beverage industry.

The subject site is categorised as a secondary location given its proximity to Wolli Creek station and the main commercial precinct. The lack of connectivity between the commercial centre and the subject site produce limitations on the amount of potential commercial floorspace the development could support. While the newly constructed ALDI extends the retail offering down Mount Olympus Boulevard, the existing and new commercial offerings remain centred around the station.

Figure 8: Local Commercial and Retail Context – Wolli Creek



Source: HillPDA

3.3.1 Agents Market Commentary

Discussion with leasing agents who specialise in the Wolli Creek commercial market as having two sub-markets that consisted of prime commercial space north of Magdalene Terrace and secondary office space located in fragments along Arncliffe Street and the corner of Guess Avenue. Proximity to the train station and from the central village endorse the categorisation of prime from secondary.

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The agents also explained the correlation between the drop in both tenant demand and market rents with distance from the train station. They outlined demand would most likely not sustain commercial floorspace on level one of a potential development given the current office market, secondary location and distance from the existing commercial core. Tenants would rather pay slightly increased rents to be located within the newly developed Discovery Point that offers over 1,400sqm of commercial suites within the commercial core.

The agents outlined the location of the commercial suites on the ground floor generated a connection between pedestrians and the services being offered that would be lost if moved onto the first floor. The line of sight is essential to any businesses with passing trade spurring a significant portion of revenue.

3.3.2 Recommendations

The commercial demand projections outline the growth in employment could support additional floorspace within the Wolli Creek Centre over the next 17 years. While the projections outline demand for commercial space within the centre, the subject site has various constraints on its ability to appropriately supply commercial floorspace.

Given the agent's comments and the distance of the subject site from the existing commercial core, it is difficult to ascertain that commercial floorspace would be viable without a large childcare or medical tenant.

HillPDA recommends only a small proportion (100-200sqm) of non-residential uses (primarily retail) could be sustained within the building along Guess Avenue. The area we propose would allow activation within the subject site along the northern edge of the Guess Avenue building, facing onto the park. We would assume a small café or food outlet could take advantage of its park setting as commercial offices would struggle within this location.

Overall, the likelihood that additional childcare or medical tenant would demand the ground floor space within the subject sites is difficult to foresee given locational difficulties and the significant existing supply of these population serving businesses.



RETAIL FLOORSPEACE DEMAND

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4.0 RETAIL FLOORSPACE DEMAND

The following Chapter forecasts the amount of additional retail space that could be accommodated within the Wolli Creek Town Centre locality. A retail floorspace provision has been determined using a population-based method where additional retail space provisions are calculated on a per capita basis.

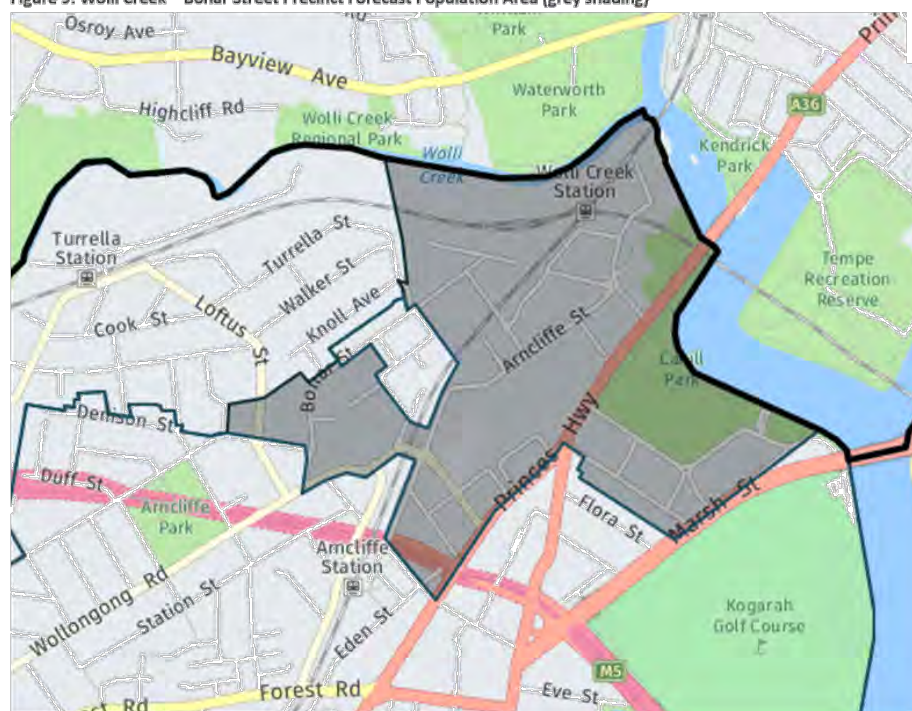
4.1 Retail Floorspace Projections Methodology

1. Analyse population projections for the locality.
2. Deduced total net population growth between 2019-2036.
3. Estimate the amount of retail space demanded by the net increase in population, achieved by applying industry standard retail per capita benchmarks to the growth in population.
4. Estimate the proportion of retail space directed and accommodated within the Wolli Creek Town Centre based on the surrounding context and store type.

4.2 Retail Floorspace Demand

Population id estimate that as of 2019, around 13,845 residents reside within the area known as the *Wolli Creek - Bonar Street Precinct* (refer to Figure 9). This is forecast to increase by around 4,930 residents or 36% over the next 17 years, reaching a total resident population of 18,776 residents by 2036.

Figure 9: Wolli Creek – Bonar Street Precinct Forecast Population Area (grey shading)



Source: Population id

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To estimate the retail floorspace that the additional 4,930 residents would likely require, we have applied average per capita retail provision rates by individual store types.

These rates have been sourced from the Sydney Retail Demand and Supply Consultancy Stage 2 Report commissioned by the NSW DP&E and Greater Sydney Commission in 2016.

Applying these per capita rates, it is estimated that the additional residents would demand around an additional 11,000sqm of retail floorspace. However, not all of this would be directed towards Wollri Creek Town Centre.

Table 3: Total Retail Floorspace Demanded by New Residents 2019-2036 (GFA)

Retail store type	Per capita benchmarks*	Total net floorspace demand
Department stores	0.11	542
Discount department stores	0.12	592
Supermarket (1,000sqm+)	0.23	1,134
Speciality stores	1.15	5,670
Large format	0.63	3,106
Total centre based	2.24	11,043

Source: HillPDA, * Sydney Retail Demand and Supply Consultancy Stage 2 Report - NSW DP&E and Greater Sydney Commission 2016

For example, it is highly unlikely that department store and discount department store space would be accommodated within the Wollri Creek Town Centre. Rather, it would be directed in nearby higher order centres such as Eastlakes, Hurstville or Sydney CBD.

Bulky goods/large format retailing would likely be accommodated within nearby industrial or enterprise corridor zonings (such as Alexandria) given they typically provide lower land values, larger lot sizes, accessibility requirements and highway/main road frontages.

Wollri Creek contains a large amount of supermarket floorspace (an ALDI and Woolworths supermarket). Given the proximity of Arncliffe station and its status as an urban renewal area, it would be appropriate that any additional supermarket space is accommodated in any renewal of its retail centre around the station.

Speciality store space would be directed and accommodated within Wollri Creek Town Centre. However, given the proximity of Arncliffe retail centre (as seen in the figure below), not all this demand would be directed toward Wollri Creek. Some other speciality space would be directed to other surrounding retail locations or close to where these residents work.

As such we have estimated a small proportion that could be retained by Wollri Creek Town Centre. This is estimated at between 30 to 40% of speciality retail floorspace being retained by Wollri Creek Town Centre.

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Figure 10: Walking Catchments – Arncliffe and Wolli Creek Stations



Source: HillPDA

Applying these proportions, we estimate that around an additional 1,700sqm to 2,270sqm of speciality retail space could be accommodated in and around the Wolli Creek Town Centre. These projections outline the potential demand within the town centre and show there is demand for additional retail floorspace.

While the demand for additional retail floorspace exists an understanding of the estimations is crucial to help ensure the appropriate level of floorspace is provided. If the proposed development provided 2,270sqm of specialty retail, this would supply 17 years' worth of retail floorspace in one development. Meaning any additional development that took place in the town centre that provides retail would be supplying floorspace that would not be supported by the increase in population. Therefore, it is critical that the proposed development considers this when assessing the appropriate level of retail floorspace provided. While the retail demand analysis sets out the potential demand generated from the increase in the population, an understanding of other potential developments within the centre and their capability for supplying retail floorspace is also essential.

Table 4: Additional Retail Floorspace Directed Towards Wolli Creek Town Centre

Retail store type	Per capita benchmarks*	Total net floorspace demand	% directed towards Wolli Creek Town Centre	Space directed towards town centre
Department stores	0.11	542	0%	0
Discount department stores	0.12	592	0%	0
Supermarket (1,000sqm+)	0.23	1,134	0%	0
Speciality stores	1.15	5,670	30-40%*	1,701 to 2,268
Large format	0.63	3,106	0%	0
Total centre based	2.24	11,043		1,701 to 2,268

Source: HillPDA, * Sydney Retail Demand and Supply Consultancy Stage 2 Report - NSW DP&E and Greater Sydney Commission 2016

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4.3 Implications for Subject Site

The main retail area in Wolli Creek is located adjacent to the railway station with an ALDI and Woolworths supermarket also located nearby. Some further ground floor retail is located fronting Magdalene Terrace, south of the ALDI.

The recent completion of Discovery Point with over 1,400 apartments and 9,000sqm of non-residential GFA has connected the existing ground floor retail with the shops along Brodie Spark Drive. The development consists of ground floor retail located fronting Brodie Spark Drive that flows north past the train station and into the Village Square precinct.

Figure 11: Local Retail Context – Wolli Creek



4.3.1 Agents Market Commentary

Discussions with leasing agents who specialise in the Wolli Creek retail market outlined the positivity of leasing retail space located around the train station and along the top of Brodie Spark Drive. The agents also indicated that Magdalene Terrace receives tenant interest for smaller suites.

The agents described the Wolli Creek retail market as having two sub-markets that consisted of prime retail space within the recently completed Discovery Point development and secondary retail space located in fragments along Arncliffe Street and Brodie Spark Drive. Proximity to the train station and from the central retail village endorse the categorisation of prime from secondary.

The agents outlined that while the retail market within the core of Wolli Creek was performing well the smaller shops on the outer parts of the suburb had extended vacancies. The pedestrian trade from the train station extends down Brodie Spark Drive and within the Discovery Point development, along Magdalene Terrace and part way along Arncliffe Street. The Woolworths and Dan Murphy's promotes some subdued retail activity along Arncliffe Street that was recommended by the leasing agents as secondary.

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The agents outlined the distance from the train station and the core retail precinct would generate similar issues for retail floorspace as discussed previously to commercial. The agents stated that the existing character of primarily residential development along Guess Avenue and the lower portion of Arncliffe Street would not be conducive to significant retail floorspace within the subject site.

4.3.2 Recommendations

The subject site is somewhat disconnected from the main retail centre and Wolli Creek station. The surrounding developments on Guess Avenue and the south end of Arncliffe Street provide minimal retail for pedestrians with only small scattered shops. As such, most of the retail space would be best located closer to the railway station and supermarkets/retail centre. This being said, some ground floor shop front space could be accommodated on the subject site. However, this would benefit from having direct street exposure and good integration with the nearby ALDI, maximising passing trade opportunities.

The incorporation of the nearby ALDI would help to promote the connectivity of the proposed retail by allowing customers ease of access to surrounding cafes/restaurants on site. An agglomeration of various community uses, cafes and a strip park could be utilised given the connection with ALDI, helping encourage activation along Mount Olympus Boulevard.

In the case where integration between the ALDI and subject site could not exist, the proposed ground floor retail would need to be located within a park setting facing the open space. Given the flow of pedestrian traffic towards the station, the proximity to Wolli Creek station and the main retail precinct located 400 metres north-east of the site the proposed ground floor retail would best be 100-200sqm in size. This would ensure a restaurant, or a few small cafés would be able to take advantage within the proposed development.

Consideration of the retail floorspace projections and the likely integration strategies that could be used on the subject site, there is capacity within Wolli Creek Town Centre to support park facing ground floor retail on the site. An exact calculation of the appropriate floorspace for the retail component of the development would need to be further analysed given design, setbacks and efficiency of the floorplates.



CONCLUSION

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5.0 CONCLUSION

After undertaking a commercial and retail demand assessment, the following conclusions are discussed below:

- Given population projections, the wider Wolli Creek area could support an additional 1,700 to 2,270 sqm of specialty retail; however, most of this retail space would be better located close to the train station.
- Some of this retail demand could be accommodated on the site however, this would need to have frontage to open space.
- The proposed development cannot provide the entire forecast demand of 2,270sqm of specialty retail as this would supply 17 years' worth of retail floorspace in one development. Meaning any additional development that took place in the town centre that provides retail would be supplying floorspace that would not be supported by the increase in population.
- First-floor commercial could also be viable where a large portion of this is committed as a medical, childcare and/or other community use.
- A specific quantity of commercial/retail floorspace is difficult to exactly determine, but we recommend 100-200sqm (primarily retail) could be accommodated within the site given site-specific design outcomes are achieved allowing integration with the proposed open space fronting the development.
- The area we propose would allow activation within the subject site along the northern edge of the Guess Avenue building, facing onto the park. We would assume a small café or food outlet could take advantage of its park setting as commercial offices would struggle within this location.

APPENDICES

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APPENDIX A: RE1 PUBLIC RECREATION VALUES

A.1 Overview

This advice is intended to initiate and facilitate negotiations between Property NSW and Bayside Council regarding the dedication of Lot 102 (4 Guess Avenue, Wolli Creek) as 'Open Space'.

Traditionally, the Land Acquisition (Just Terms Compensations) Act 1991 is the standard framework, however in a scenario of a transfer of land between government departments; conventional considerations to determining compensation (i.e. S. 55) are not applicable.

We consider it reasonable to consider its existing RE1 Public Recreation zoning to form the basis of our assessment.

A.2 Dedication of Lot 102 as 'Open Space'

The 'Open Space' to be dedicated is positioned along the south-eastern corner of the intersection of Guess Avenue and Mount Olympus Boulevard. We have been advised that the land to be dedicated is approximately 3,577sqm (subject to survey).

A.2.1 Recreational land analysis

The primary valuation method for the open space assessment should be the direct comparison approach with recreational land sales evidence (i.e. zoned 'RE1 Public Recreation' or 'RE2 Private Recreation').

The below site sales are dated and reflects the scarcity for this type of sale evidence but reveals that recreational land rates lie between \$1,039/sqm and \$1,143/sqm of land area.

Address	Sale Price Date	Zone	Site area (sqm)	\$/sqm of site area
146 Vimiera Road, Marsfield	\$15,000,000 Aug 2017	RE2 Private Recreation	61,800sqm	\$243/sqm of site area
	This significant rugby playing field known as the TG Millner Oval is zoned RE2. Situated upon the adjoining land (RE1) on Vimiera Road is the North Ryde RSL. This club has strengthened its links to the location by acquiring the Oval without DA consent (i.e. as raw land). The zoning suits its specific purpose as Registered Clubs are expressly permitted as a "With Consent" use under zone RE2. The parties have acknowledged there exists compatible interests in a press release regarding this sale allowing ongoing rugby games in the short term before their relocation.			
1A Little Alfred Street, North Sydney	\$1,900,000 Jan 2015	RE2 Private Recreation	1,829sqm	\$1,039/sqm of site area
	An irregular shaped parcel of land adjoining further RE1 and R2 zoned land and sold improved with three tennis courts and kiosk/office and staff amenities. The purchaser lodged an application for the demolition of existing tennis courts and construction of a four-level indoor recreation facility including a 6 lane bowling alley, wave pool, cafe/lounge, lap pool, screen golf, rifle range, rock climbing, gym, lounge, sauna, day spa, treatment room, basement parking for 31 cars, and landscaping works, that has been refused by Council.			
119 Baton Street, Monterey	\$8,250,000 May 2015	RE2 Private Recreation	7,218sqm	\$1,143/sqm of site area
	An L-shaped parcel of land comprising Bowling Club with a small building footprint synthetic greens and car park. The property was marketed as a potential development site (subject to Council approval). However there has been no planning approvals lodged. The site is surrounded by 'R3 Medium Density Residential'.			

We consider a rate of \$1,100/sqm of land area to be reasonable for the subject site which would equate to \$3,900,000 (rounded).

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6. This report does not constitute a valuation of any property or interest in property. In preparing this report HillPDA has relied upon information concerning the subject property and/or proposed development provided by the Client and HillPDA has not independently verified this information except where noted in this report.
7. In relation to any valuation which is undertaken for a Managed Investment Scheme (as defined by the Managed Investments Act 1998) or for any lender that is subject to the provisions of the Managed Investments Act, the following clause applies:

This valuation is prepared on the assumption that the lender or addressee as referred to in this valuation report (and no other) may rely on the valuation for mortgage finance purposes and the lender has complied with its own lending guidelines as well as prudent finance industry lending practices, and has considered all prudent aspects of credit risk for any potential borrower, including the borrower's ability to service and repay any mortgage loan. Further, the valuation is prepared on the assumption that the lender is providing mortgage financing at a conservative and prudent loan to value ratio.
8. HillPDA makes no representations or warranties of any kind, about the accuracy, reliability, completeness, suitability or fitness in relation to maps generated by HillPDA or contained within this report.

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