

Flooding & Stormwater Management Planning Report

Proposed Planning Proposal

1-5 Chester Street
Annandale NSW 2038
Lot 11 DP499846

PREPARED BY

ENGINEER Morgan Walter
DATE July 2017
ISSUE 001
REVISION 002

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REF NO. 17123

PREPARED FOR

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Document Control

Revision	Date	Description	Prepared	Reviewed	Approved
1	07.07.17	DRAFT ISSUE	MW	MW	MW
2	07.09.17	ISSUED FOR PLANNING APPROVAL	MW	MW	MW

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Introduction

Sparks and Partners Consulting Engineers have been engaged by Britely Projects to prepare a planning report with respect to flooding and stormwater management for a parcel of land at 1-5 Chester St, Annandale (Lot 11 DP499846). The purpose of the planning report has been undertaken with reference to the planning requirements of the local consent authority being Inner West Council.

Site Description

The site is approximately 1,377m² in area and is located at the northern western side of the southern leg of Chester St. The site is triangular and is bounded by Chester St on the eastern boundary, Johnstons Creek on the western boundary and 17 Chester St on the Southern boundary. The site is currently occupied by an industrial building that houses a vehicle spray painting facility. The topography is such that it falls from the south to the north. A detailed survey of the site is provided in Appendix A for reference.

Planning Controls & Proposal

The site is situated within the local government area (LGA) of Inner West Council (IWC), and is therefore subject to the relevant planning legislation set by this Council. Current planning controls are:

- Leichhardt Local Environmental Plan 2013 (LLEP);
- Leichhardt Development Control Plan 2013 (LDCP);

The site is currently zoned Light Industrial (IN2) as per the current land zoning map, sheet LZN 9 of the Leichhardt Local Environmental Plan 2013, with a copy located in Appendix B for reference.

It is proposed to change the current LLEP zoning for the lot from IN2 to R3 Medium Density Residential to provide additional housing within the inner west council local government area, a copy of the proposed rezoning is located in Appendix C for reference.

Flood Planning Controls

The site is identified as being a flood control lot as per Leichhardt Council Flood Control Map – Southern View, with a copy located in Appendix D for reference. A flood certificate for the site has also been obtained from Inner West Council to assess the the relevant flood levels and planning controls. Refer to Appendix E for a copy of the certificate.

Section E1.3 hazard Management of the LDCP details the relevant controls with respect to flood control lots and flood prone land. This section of the DCP details the relevant controls for floor levels and entrances to a proposed development. A review against the relevant controls for both IN2 and R3 zoning has been undertaken to assess if the change of zoning would result in a significant change to possible flood risks. The below table highlights the applicable planning controls and provides an assessment of the change as a result of the proposed rezoning.

Existing LDCP Control	Proposed LDCP Control	Assessment
C4 Commercial, Industrial and Mixed Use Development - All floor levels, including any existing components to be retained, are to be at or above the Flood Planning Level or raised to the Flood Planning Level.	C3 Multi Unit Residential Development for 3 or more Dwellings – All Floor levels to be at or above the Flood Planning Level	The change of zoning from IN2 to R3 does not affect the planning control with regard to setting of floor levels. Both controls require the floor level to be set at the flood planning level (FPL) as a minimum. The proposed change of zoning

<p>Where constructing the floor level or raising the floor level of existing development to the Flood Planning Level may be impracticable, due to site and access constraints, consideration may be given to some or all of the non-residential floor levels having a freeboard of less than 500mm above the 100 year ARI flood level provided that satisfactory flood proofing (either wet or dry) is achievable to the Flood Planning Level. All entrances and evacuation routes servicing any residential components must be above the Flood Planning Level.</p>		<p>would not introduce any additional risk from current planning controls. The FPL for the site based on the Draft Leichhardt Flood Study (November 2014 prepared by Cardno) is RL5.450 AHD (100yr flood level plus 500mm freeboard). Current site levels indicate the site has an average level of RL7.800 AHD. Therefore any future DA application would be able to achieve this requirement, subject to development of a concept design.</p>
<p>C9 Car parking Facilities and Basements – The floor level of new enclosed garages must be at or above the Flood Planning Level. Consideration may be given to a floor level at a lower level, within 500mm of the Flood Planning Level, where it can be demonstrated that providing the floor level at the Flood Planning Level is not practical within the constraints of compliance with Australian Standard AS/NZS 2890.1 Parking facilities as amended.</p> <p>The floor levels of open car park areas and carports are permissible below the Flood Planning Level, subject to being raised as high as practical within the constraints of compliance with Australian Standard AS/NZS 2890.1 Parking facilities as amended.</p> <p>Basement (below natural ground level) car parking must have all access and potential water entry points above the Probable Maximum Flood Level or Flood Planning Level whichever is the higher, and a clearly signposted flood free pedestrian evacuation</p>	<p>C9 Car parking Facilities and Basements – The floor level of new enclosed garages must be at or above the Flood Planning Level. Consideration may be given to a floor level at a lower level, within 500mm of the Flood Planning Level, where it can be demonstrated that providing the floor level at the Flood Planning Level is not practical within the constraints of compliance with Australian Standard AS/NZS 2890.1 Parking facilities as amended.</p> <p>The floor levels of open car park areas and carports are permissible below the Flood Planning Level, subject to being raised as high as practical within the constraints of compliance with Australian Standard AS/NZS 2890.1 Parking facilities as amended.</p> <p>Basement (below natural ground level) car parking must have all access and potential water entry points above the Probable Maximum Flood Level or Flood Planning Level whichever is the higher, and a clearly signposted flood free pedestrian evacuation</p>	<p>The proposed change of zoning would not introduce any additional risk as no change to the existing planning control occurs due to rezoning of the lot. The Probable Maximum Flood Level for the site based on the Draft Leichhardt Flood Study (November 2014 prepared by Cardno) is RL8.400 AHD. Current site levels indicate that this can be achieved with the south-eastern corner of the site being at RL8.500 AHD. Therefore any future DA application will be able to achieve this requirement, subject to development of a concept design.</p>

route from the basement area separate to the vehicular access ramps.	route from the basement area separate to the vehicular access ramps.	
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Table 1 - Flood Control Summary

Stormwater Management Controls

A review against section E1.2 Water Management of the LDCP has been undertaken. It has been determined that the change of zoning from IN2 to R3 would not change the applicable controls with regard to both stormwater quantity and stormwater quality management.

On-site Detention

Both Council and Sydney Water require the implementation of On-Site Detention (OSD) for the management of stormwater discharge from the site. Section E1.2.3 On-Site Detention of Stormwater of the LDCP details that OSD is to be sized to limit the post developed 100yr ARI storm runoff to the 5yr ARI storm flows for the pre-developed scenario. Sydney Water provide a prescriptive rate for the Permissible Site Discharge (PSD) and OSD volume should direct connection to their system be favorable. Any future DA proposal would need to account for the implementation of OSD to meet the relevant criteria of Council and Sydney Water.

Stormwater Runoff Quality

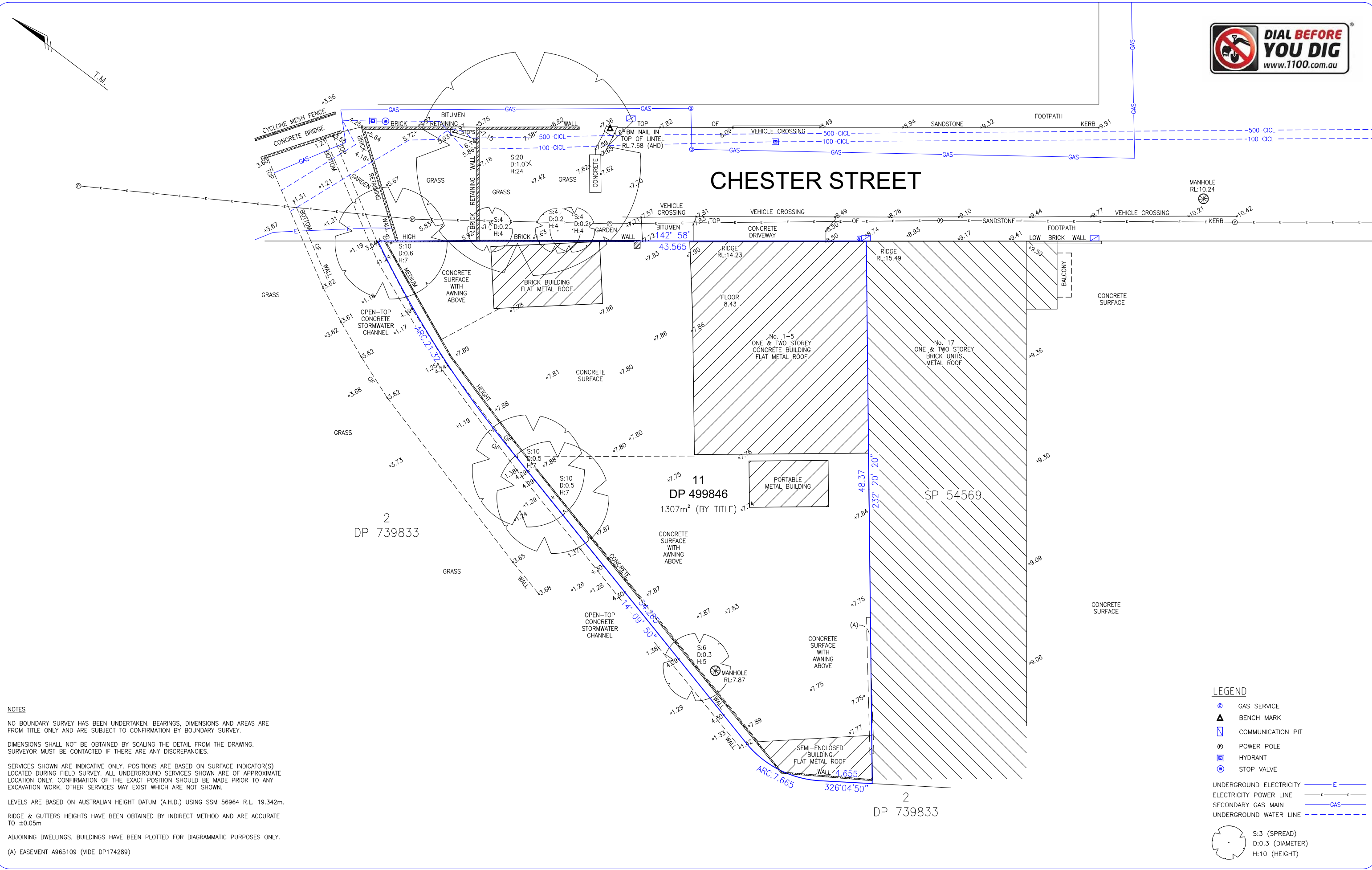
Depending on the size of any future development and the number of dwellings proposed, the development may be required to implement a filtration basket in accordance with Control C1 of Section E1.2.4 Stormwater Treatment, LDCP or similar device, up to a complete treatment train system to achieve pollutant reduction targets as per Control C5 of Section E1.2.4 Stormwater Treatment, LDCP. Any future DA proposal would need to account for the implementation of stormwater filtration/treatment measures to meet the relevant criteria.

Conclusion & Recommendations

The proposed change of zoning from IN2 (Light Industrial) to R3 (Medium Density Residential) is considered to not be affected by section E1.3 Hazard Management of the LDCP. The requirements under control C3 and C4 are considered to be similar with each requiring a minimum of the Flood Planning Level to be adopted for floor levels of any proposed development. Current survey of the site indicates that these flood planning controls are able to be achieved, with any future DA proposal not being compromised. Carparking controls do not change along with the requirements of stormwater management from a quantity and quality perspective. As a result of rezoning there is no increased risk to the site from a Hazard Management perspective.

In this regard, it is recommended that the site can be rezoned to from IN2 to R3 subject to other relevant planning requirements being met.

Appendix A – Site Survey



NOTES

NO BOUNDARY SURVEY HAS BEEN UNDERTAKEN. BEARINGS, DIMENSIONS AND AREAS ARE FROM TITLE ONLY AND ARE SUBJECT TO CONFIRMATION BY BOUNDARY SURVEY.

DIMENSIONS SHALL NOT BE OBTAINED BY SCALING THE DETAIL FROM THE DRAWING. SURVEYOR MUST BE CONTACTED IF THERE ARE ANY DISCREPANCIES.

SERVICES SHOWN ARE INDICATIVE ONLY. POSITIONS ARE BASED ON SURFACE INDICATOR(S) LOCATED DURING FIELD SURVEY. ALL UNDERGROUND SERVICES SHOWN ARE OF APPROXIMATE LOCATION ONLY. CONFIRMATION OF THE EXACT POSITION SHOULD BE MADE PRIOR TO ANY EXCAVATION WORK. OTHER SERVICES MAY EXIST WHICH ARE NOT SHOWN.

LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (A.H.D.) USING SSM 56964 R.L. 19.342m.

RIDGE & GUTTERS HEIGHTS HAVE BEEN OBTAINED BY INDIRECT METHOD AND ARE ACCURATE TO ±0.05m

ADJOINING DWELLINGS, BUILDINGS HAVE BEEN PLOTTED FOR DIAGRAMMATIC PURPOSES ONLY.

(A) EASEMENT A965109 (VIDE DP174289)

LEGEND

- GAS SERVICE
- BENCH MARK
- COMMUNICATION PIT
- POWER POLE
- HYDRANT
- STOP VALVE
- UNDERGROUND ELECTRICITY
- ELECTRICITY POWER LINE
- SECONDARY GAS MAIN
- UNDERGROUND WATER LINE
- S:3 (SPREAD)
D:0.3 (DIAMETER)
H:10 (HEIGHT)

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<p>A 29.06.17</p> <p>INITIAL ISSUE</p>	<p>LOCAL GOVERNMENT AREA</p> <p>INNER-WEST</p>		<p>LEVEL BK</p> <p>DESIGNED BY</p>	<p>DATE OF SURVEY</p> <p>27.06.17</p>	<p>CHECKED BY</p> <p>R.M.</p>		<p>DRAWING TITLE</p> <p>PLAN SHOWING LEVELS & DETAIL OVER LOT 11 IN DP 499846</p>	<p>DRAWING NO</p> <p>170832-001</p>	<p>SHEET 1 OF 1</p>

Appendix B– Zoning Map



Leichhardt Local Environmental Plan 2013

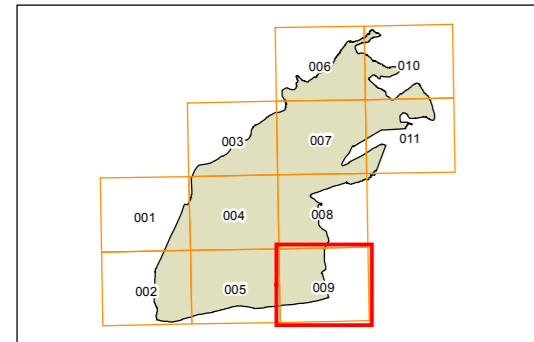
Land Zoning Map - Sheet LZN_009

Zone

- B1 Neighbourhood Centre
- B2 Local Centre
- B4 Mixed Use
- B7 Business Park
- IN2 Light Industrial
- R1 General Residential
- R3 Medium Density Residential
- RE1 Public Recreation
- RE2 Private Recreation
- SP1 Special Activities
- SP2 Infrastructure
- DM Deferred Matter
- SREP Sydney Regional Environmental Plan No. 26 – City West
- CP Callan Park

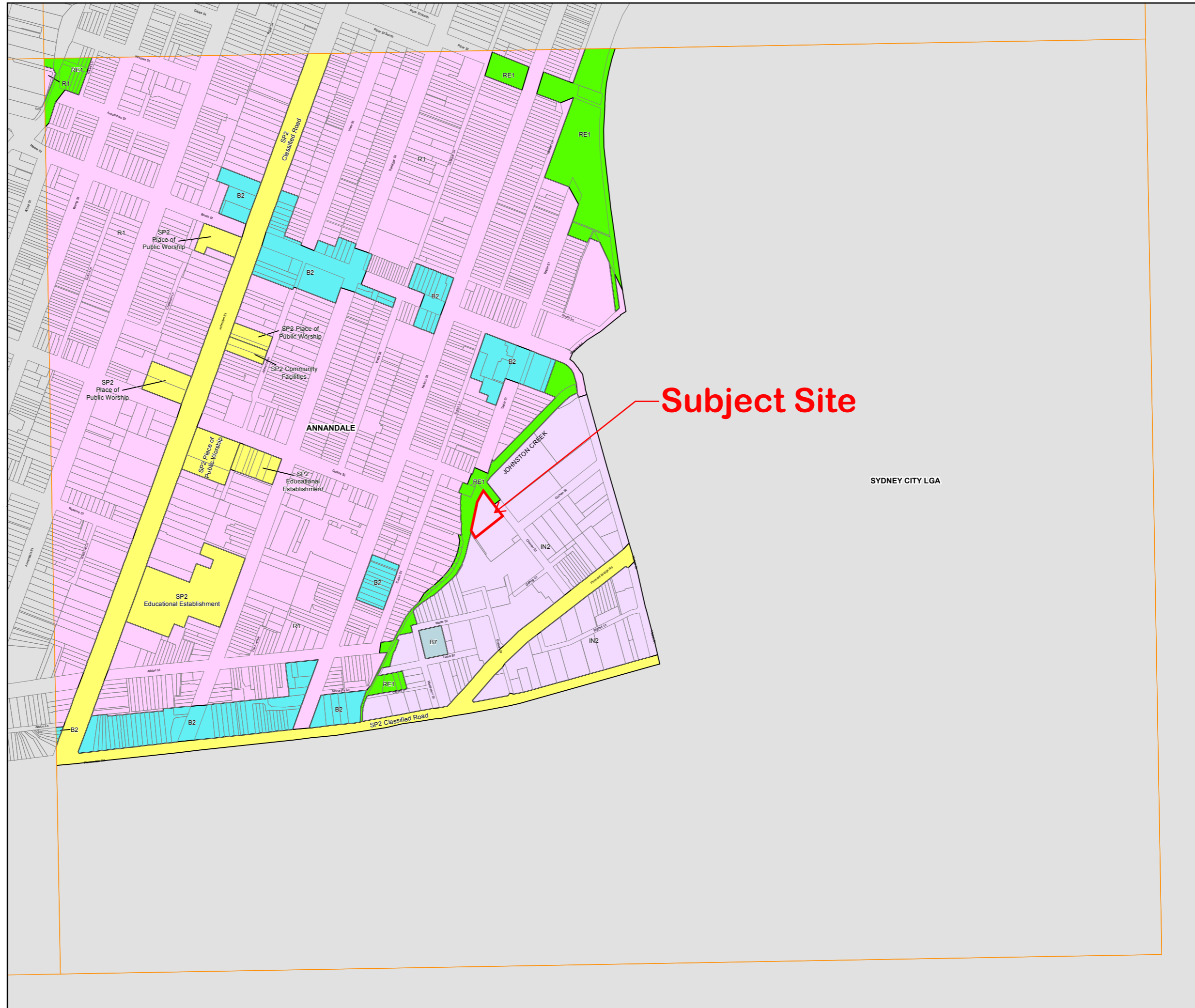
Cadastre

Base data 20/12/2016 © Land and Property Information (LPI)



Projection: GDA 1994
MGA Zone 56

Map identification number: 4800_COM_LZN_009_005_20161220

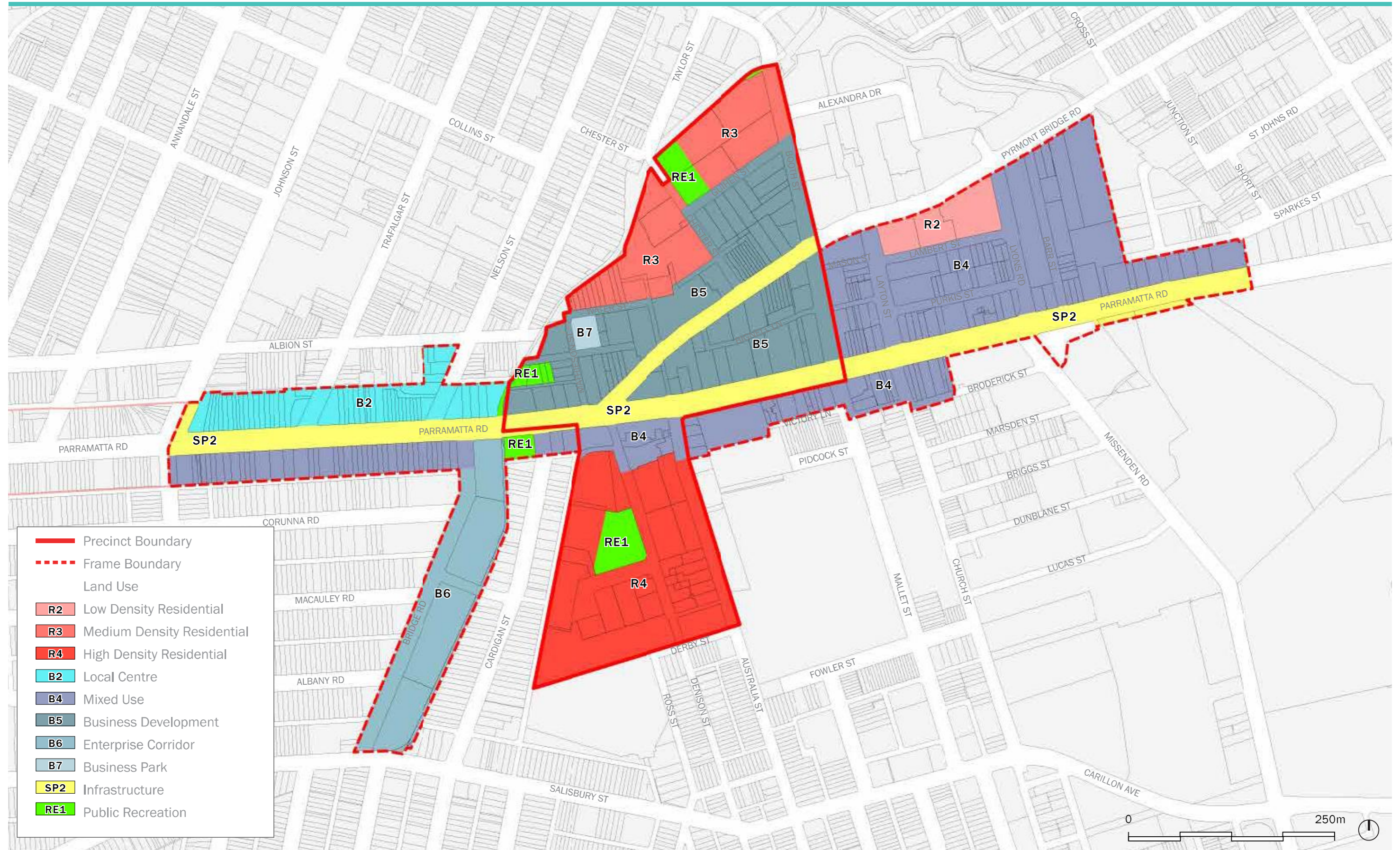


Subject Site

SYDNEY CITY LGA




Appendix C – Proposed Zoning Map

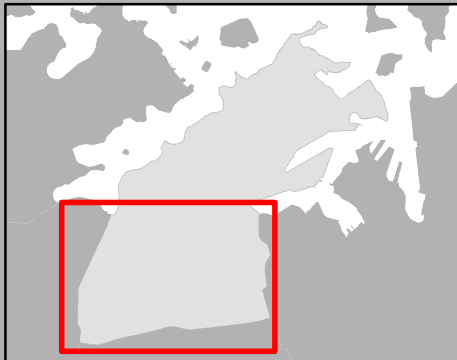
Figure 12.13: Camperdown Recommended Land Uses



Appendix D – Flood Control Lot Map

Legend

-  Flood Control Lots
-  Parks
-  Suburb



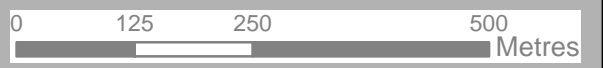
Ashfield Council



Sydney City Council

Marrickville Council

Flood Control Lot Map - Southern View



Appendix E – Flood Certificate

Contact: Mohammad Sikder
Phone: (02) 9367 9005

14 June 2017

Morgan Walter
Level1, 91 George Street
PARRAMATTA NSW 2150

Flood Certificate

As requested, attached is the Flood Level Information Report for the following address:

- **1-5 Chester Street, Annandale**

The information contained in the report is derived from the Draft Leichhardt Flood Study (November 2014 prepared by Cardno).

The information is provided in good faith and in accordance with the provisions of s.733 of the Local Government Act.

Should you have any questions please call Council's Stormwater & Development Section on 9367 9222.

Yours faithfully

David Paton
TEAM LEADER STORMWATER & DEVELOPMENT

Customer Service Centres

Petersham | P (02) 9335 2222 | E council@marrickville.nsw.gov.au | 2-14 Fisher Street, Petersham NSW 2049

Leichhardt | P (02) 9367 9222 | E leichhardt@lmc.nsw.gov.au | 7-15 Wetherill Street Leichhardt NSW 2040

Ashfield | P (02) 9716 1800 | E info@ashfield.nsw.gov.au | 260 Liverpool Road Ashfield NSW 2131

Property Flood Level Information Report

Applicant Name	Morgan Walter	Our Ref	577
Property Address	1-5 Chester Street, Annandale		
Date of Issue	14 June 2017		

About this Report

This report provides flooding information for the area in the vicinity of the above property. This information can be used to assist in understanding the extent of flooding affecting this property and can be used to assist in preparation of a Flood Risk Management Report in accordance with Section E1.1.4 of Council's Development Control Plan (DCP 2013). It is recommended that the information in this report be interpreted by a suitably qualified professional.

This report includes two pages; this cover page with an explanation of the information provided, and the second page is a figure providing information on the flooding behaviour in the area. The figure includes peak water levels, depths and flow rates for the 100 year ARI and peak water levels for the Probable Maximum Flood event.

The flood levels provided are based on available information including numerical modelling results prepared by Cardno for Leichardt Council. Further details are available in the *Draft Leichardt Flood Study* (Cardno, 2014). All flood levels and depths are provided to the nearest 0.05 metres.

Definitions

The following provides a brief definition of some of the key terms utilised in this report:

Average Recurrence Interval (ARI)	The long-term average number of years between the occurrences of a flood as big as or larger than the selected event. The 100 year ARI flood event can be expressed as having a 1% chance of occurrence in any given year or as the flood that could occur once every 100 years.
Probable Maximum Flood (PMF)	The PMF is the largest flood that could conceivably occur at a particular location. This event is used to determine what might occur in events larger than a 100 year ARI.
100 year ARI Flow Path/Extent	The area of land expected to be inundated by either a flow path or mainstream flooding during a 100 year ARI flood event. The extents are limited to the areas where depths of flow are greater than 150mm.
100 year ARI High Hazard	Areas within the 100 year ARI flood extents where the depth and/or velocity of flow is likely to represent a possible danger to personal safety; evacuation by trucks is difficult; able-bodied adults would have difficulty wading to safety; and/or potential for structural damage to buildings.
Flood Planning Level (FPL)	The Flood Planning Level is calculated by adding a 500 mm freeboard onto the 100 year ARI flood level.
Freeboard	The freeboard is incorporated into the Flood Planning Level to provide a factor of safety to the flood levels. It accounts for a number of factors, including wave action, localised obstructions to flows, and model uncertainty.
Australian Height Datum (AHD)	A common national surface level datum approximately corresponding to mean sea level.

Notes

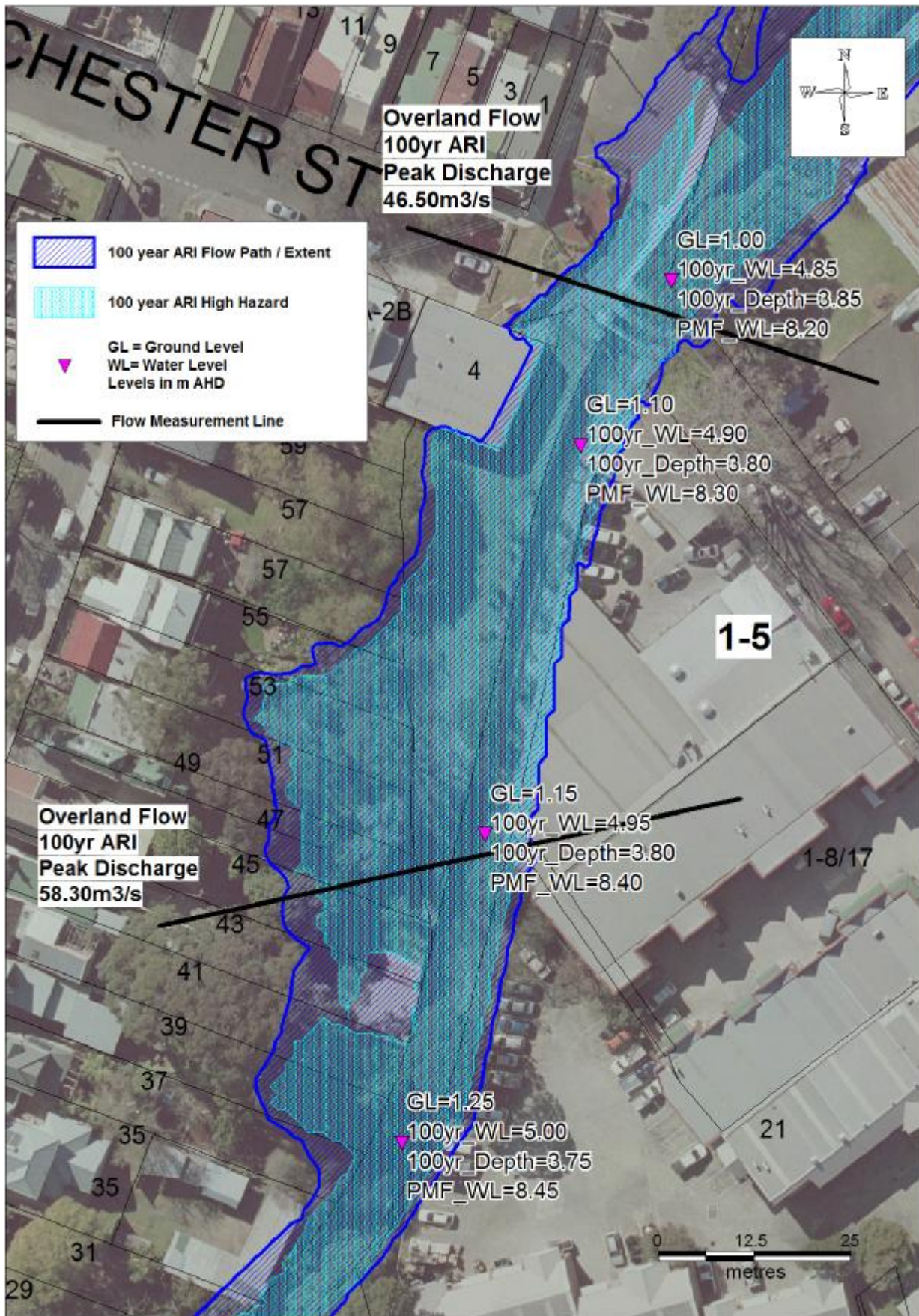
The ground levels shown on the attached figure are based on aerial survey data undertaken by AAM Hatch on behalf of Council. The ground levels should be verified by a suitably qualified surveyor.

The location of stormwater pits and pipes on the attached figure are indicative only. The location and dimensions of pipelines should be verified by a suitably qualified surveyor.

The water depths shown are provided at the location shown and are indicative only. They do not necessarily represent the maximum depth in the area. For example, where a point is located on the centreline of a road, the depths will be higher within the road gutter.

The information is provided in good faith and in accordance with the provisions of s.733 of the *Local Government Act*.

Property Flood Level Information Report



The information provided is in good faith and in accordance with the provisions of s.733 of the *Local Government Act*.

The aerial photo was taken by AAM Hatch and is dated at 2006.

F1 – FLOODING

22 May 2018
Job No: 17123

Inner West Council
C/o
Alex Sicari
Britely Projects
Level 2, 210 Clarence Street
Sydney NSW 2000

PO Box 979
Level 1, 91 George Street
PARRAMATTA NSW 2150
Office 02 9891 5033
Fax 02 9891 3898
admin@sparksandpartners.com.au
sparksandpartners.com.au
ABN 95 161 152 969

Re: 1-5 Chester Street, Annandale NSW – Planning Proposal – Response to Council Flooding Comments

Attention Inner West Council,

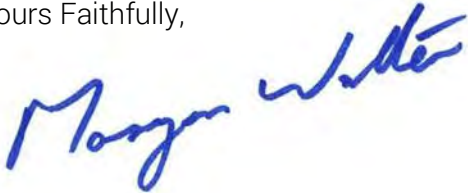
We Sparks & Partners Consulting Engineers being the civil engineers for the above planning proposal have undertaken a review of Councils flooding comments dated 4th May 2018 and provide the following responses.

Council Comment	Development Response
The site is located adjacent to the Johnstons Creek stormwater channel and the property is subject to flooding which can extend beyond the bounds of the channel into the existing undercroft area along the western boundary	Agreed and noted.
Any proposed development must not increase the risk of flooding to the proposal site or other properties along the creek line and should also be designed to improve flood conveyance. The proposed development should be set back from the channel by 6 metres to improve carrying capacity within the floodway. The setback is required to achieve compliance with Controls 8(a) and (b) of LDCP 2013 for Land with a High Hazard Category.	The current design is conceptual only and for planning proposal purposes only. A detailed DA application would be submitted once the site has been rezoned from IN2 to R3, with detailed flood management measures being considered in the design and DA submission to ensure there are no detrimental effects to upstream and downstream properties and that the existing flooding regime is maintained.
Whilst the proposed western boundary wall could provide the required protection to the development, it would remove flow	It is generally agreed that the undercroft area of the existing development does appear to provide flood conveyance in

<p>capacity alongside the Johnstons Creek channel. This would cause an increase in flows and depths beyond the subject site which absolutely cannot be accepted. Consequently any fence on or close to the boundary would need to be an open style. There should be no solid wall protruding above the existing channel wall within the setback area, including that shown in the UDR cross sections as the upper rear wall of the basement car park.</p>	<p>major storm events, which is partly evidenced by the Cardno flood study that has been undertaken. As the current design is conceptual only and for planning proposal purposes only, a detailed assessment of flooding impacts would be undertaken at a detailed DA submission stage to ensure there are no detrimental effects to upstream and downstream properties and that the existing flooding regime is maintained. To convey this intent revised conceptual architectural plans have been prepared and are located in annexure A for reference.</p>
<p>The floor levels of the units/dwellings can be as low as the Flood Planning Level (100 year ARI flood level plus 500mm freeboard).</p>	<p>Any future development of the site would need to address this requirement of Councils DCP as noted in the previously submitted <i>Flooding & Stormwater Management Planning Report, Proposed Planning Proposal, 1-5 Chester Street Annandale NSW 2038, Ref 17123, July 2017, prepared by Sparks & Partners Consulting Engineers</i></p>
<p>The basement carpark needs to be protected up to the Probable Maximum Flood (PMF) level.</p>	<p>Any future development of the site would need to address this requirement of Councils DCP as noted in the previously submitted <i>Flooding & Stormwater Management Planning Report, Proposed Planning Proposal, 1-5 Chester Street Annandale NSW 2038, Ref 17123, July 2017, prepared by Sparks & Partners Consulting Engineers</i></p>
<p>The location of the driveway at the highest point of the site is compatible with this requirement. The actual basement carpark can then be as low as necessary below the units/dwellings as long as it is flood proofed up to the Probable Maximum Flood (PMF) level.</p>	<p>Noted</p>

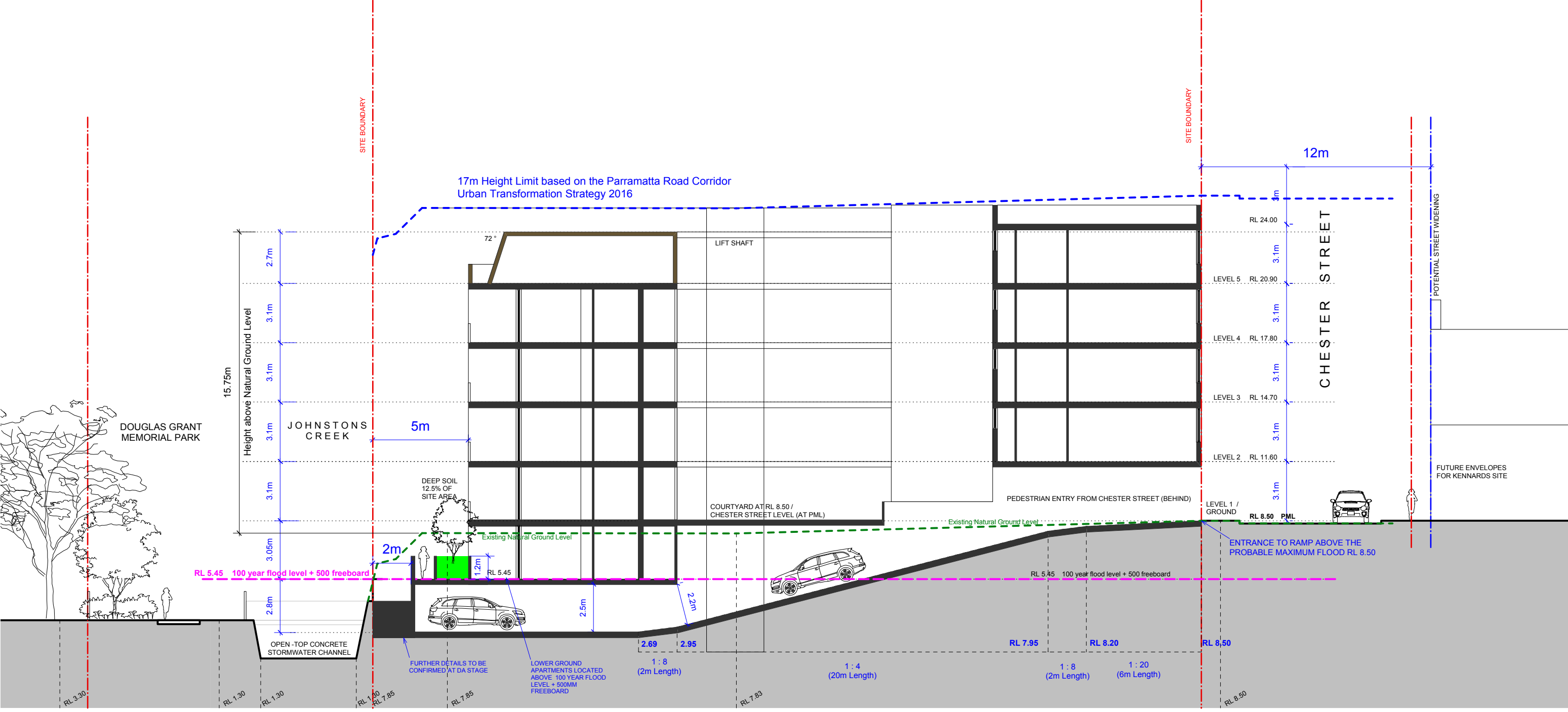
Should you have any questions with regard to the above please do not hesitate to contact the undersigned.

Yours Faithfully,



Morgan Walter
Civil Engineering Manager
Sparks & Partners Consulting Engineers
morgan@sparksandpartners.com.au

Annexure A – Amended Conceptual Architectural Section



SECTION

Project Name
1-5 CHESTER STREET
ANNANDALE

Client Name
BRITELY

Prepared by
ae design partnership
architecture urban design planning

Drawing title	Drawing Number
	A 05
Drawn By	Checked
VL	RD
Date	Issue
23/05/2018	SK