NORTHROP
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PO Box 180 Charlestown NSW 2290
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E newcastle@northrop.com.au

9th June 2017

NL167162

The Doma Group
Mr Alex Moulis
PO Box 5419
Kingston ACT 5419

Dear Alex,

Re: Flooding Assessment – 50 Honeysuckle Drive, Newcastle

Northrop Consulting Engineers have been engaged to undertake a flooding assessment at the aforementioned address to satisfy Clauses 6 and 7 of the Secretary's Environmental Assessment Requirements (SEARs) for SSD 8019. This correspondence outlines the requirements of the clauses, the assessment methodology, a description of the existing site and development proposal, and responses to the clauses.

The SEARs for SSD 8019 requires;

> *The EIS is to include an assessment of any potential flood risk on site in accordance with any relevant provisions of the NSW Floodplain Development Manual (2005) including an:*
>
> - *Assessment of existing flood behaviour and impact of Sea Level Rise, Climate Change and Ecosystem Migration;*
> - *Assessment of potential flood impacts on the proposed development and measures to mitigate any potential flooding;*
> - *Emergency Management measures and evacuation;*
> - *Consistency with any floodplain risk management plans;*
> - *Compatibility with the flood hazard of the land;*
> - *Assessment of whether the proposal will significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses; and*
> - *Detailed consideration of the proposed drainage associated with the proposal, including stormwater and drainage infrastructure.*

In order to address this clause, a review of the guideline documents, flood studies affecting the development, and the site-specific Flood Information Certificate was undertaken. Guideline documents reviewed include;

- The NSW Floodplain Development Manual (2005);
- Newcastle City-wide Floodplain Risk Management Study and Plan (2012);
- Newcastle DCP 2012 Section 4.01 Flood Management;
- Waterfront and Cottage Creek Flood Management Plan (1999); and
- Flood Information Certificate FL2016/00299.

Existing Site

The existing site, 50 Honeysuckle Drive is also known as Lot 2000 DP 1145678 and is located on the north-western side of the intersection of Honeysuckle Drive and Worth Place, Newcastle. The site generally falls to the north, towards the Foreshore Promenade, and is elevated in comparison to the adjacent roadways. The existing site levels vary between 4.0m and 2.1m AHD on the southern side and between 2.2m and 1.2m AHD on the northern side.

The existing site in total is approximately 6.4Ha, and is used primarily as a carpark, however there are also a couple of existing buildings, most notably a commercial office building. The proposed development will utilise the far eastern part of the site only, an area of approximately 0.73Ha. This area is currently a public carpark, and will be subdivided into a separate lot as part of the development, as depicted in the attached subdivision plan.

A review of the City of Newcastle stormwater plans indicate infrastructure running north south through the eastern part of the site, but it has been confirmed on site that this line does not exist. There is however an existing stormwater line in Honeysuckle Dr which drains to Worth Place and into the harbour. An extract from these plans is shown as an attachment to this correspondence.

Proposed Development

The proposed development consists primarily of a basement carpark (FFL -0.3m typical), a mixed-use ground floor level covering the majority of the site (FFL 3.0m typical), three two-level residential buildings on the northern side with overlying green-roofs, and three six-level residential buildings on the southern side. The development also includes two new vehicular access points to Honeysuckle Drive, with one proposed to be a shared pedestrian access. In addition, a pedestrian linkage path is proposed from Honeysuckle Drive through to the adjacent northern lot. The ground floor and basement architectural drawings are included as an attachment to this correspondence.

Existing Flood Behaviour and Impact of Climate Change

Existing flood behaviour has been obtained from Flood Information Certificate No. FL2016/00299, included as an attachment to this correspondence. The subject site is affected by ocean and local catchment flooding.

Ocean flooding is critical in terms of water level with a maximum level of 2.20m AHD in the 1% AEP (Annual Exceedance Probability) event and 3.40m AHD in the PMF (Probable Maximum Flood). Flood waters for the ocean flooding are expected to rise slowly relative to the local catchment flood and enter the site from the north west.

Local catchment flooding does not affect the site in the 1% AEP event, however is shown to impact the site in the PMF event. Flood levels for these events are estimated to reach 1.58m and 3.07m AHD respectively. Flood waters for local catchment flooding are expected to rise quickly to the peak, relative to ocean flooding.

A sea level rise of 90cm has been incorporated into the above estimate of ocean flooding and as such it is assumed that this information adequately estimates the impact due to climate change.

In the June 2007 flood event, which was a combination of elevated ocean conditions with local catchment flooding, it was estimated that the flood water reached a level of 2.63m AHD.

Life hazards describe the danger that flood waters might pose to the lives of persons affected by flooding. The Flood Information Certificate indicates that the Highest Life Hazard Category for the overall site is L5 for local catchment flooding, however this is applicable to the nearby floodway, and not to the development area. The highest Hydraulic Behaviour Threshold for the development area is H3, which is equivalent to a Life Hazard Category of L4. An L4 hazard classification is

commensurate with flash flooding, and requires evacuation to a suitable flood free refuge within the enclosed flood waters. This is discussed further in the section below.

For ocean flooding, the Highest Life Hazard Category is L1. An L1 hazard classification is commensurate with slow rising flood waters, and requires evacuation to flood free land outside of the entire flood.

The overall site of Lot 2000 DP 1145678 has various flood classifications, however the most critical classification for the subject area within the development footprint is flood fringe. Flood fringe areas are described in The City of Newcastle DCP as "*the remaining areas of floodplain not included in flood storage areas and floodways. Flood fringe areas can usually be developed without reference to how that development will affect the flood behaviour either upstream or downstream*.".

Proposed Impact of the Development on Flooding and the Environment

The proposed building footprint will inhibit flood water in the 1% AEP ocean flooding event from entering the development site, similar to the behaviour in the current scenario. In PMF events however, flood water will able to enter the development site at localised locations, most notably the pedestrian linkage path and shared vehicular access point.

As mentioned earlier, the most critical flood classification for the subject area within the development footprint is flood fringe. As such it is expected that the development will have no significant adverse impact on the flood behaviour both onsite and on the adjacent properties.

The Waterfront and Cottage Creek Flood Management Plan (1999) depicts a floodway directly to the west of the proposed development site, referred to as HWC floodway, and another directly to the east of the site, referred to as Worth Place Floodway. The proposed development footprint does not impede on either of these floodways, as shown in the attached plan of subdivision. The development is therefore considered to be consistent with the flood management plan.

Given the highly-modified nature of the waterfront land, it is not expected ecosystem migration will occur in the vicinity of the proposed development. Furthermore, it is expected that this development will not cause avoidable stream erosion, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses given its location close to the outlet of the catchment and due to the fact that flow from the site will be conveyed by formal drainage infrastructure, being below ground pipes and through road carriageway for overland flow.

Compatibility with Floodplain Risk Management Plans and Flood Hazard for the Site

The proposed development is generally compatible with the Newcastle DCP 2012 and Newcastle City-wide Floodplain Risk Management Study and Plan with respect to habitable floor levels, vehicular access and on-site refuge.

All ground floor levels, except the proposed retail kiosk, are in excess of the 1% AEP plus 300mm freeboard with the ground floor at 3.0m AHD for habitable floor levels and 2.70m AHD for non-habitable floor levels. The basement parking level is proposed to be at -0.3m AHD which we acknowledge is below the flood planning level, however the proposed crest level of 3.0m AHD at the entry to the carpark exceeds the flood planning level of 2.50m AHD.

We acknowledge the SJB Ground Floor Plan (DA-0201) nominates a floor level of 1.72m AHD for the retail kiosk, which is below the 2.50m AHD Flood Hazard Level for the site. We understand that this increases the risk to property and to life, however provided the appropriate mitigation measures are implemented, we support this proposal. Measures would likely consist of locating electrical fixtures above the flood hazard level, constructing the kiosk of water-resistant materials, providing a flood barrier at the building entry, and providing an internal evacuation route to on-site refuge locations.

The L4 hazard category requires on-site refuge above the PMF. Refuge may be sought all levels above the ground floor.

A summary of flooding characteristics is shown below in Table 1.

Table 1 - Summary of flooding characteristics and proposed development

1% AEP Ocean Flooding	2.20m AHD
1% AEP Local Catchment Flooding	1.58m AHD
PMF Ocean Flooding	3.40m AHD
PMF Local Catchment Flooding	3.07m AHD
Existing site surface levels	
North east	1.97m AHD
South east	1.83m AHD
South west	2.61m AHD
North west	1.22m AHD
Proposed Basement Parking Level	-0.3m AHD
Proposed Ground Floor Level (Habitable)	3.0m AHD
Proposed Ground Floor Level (Non-Habitable)	2.70m AHD

Emergency Management and Evacuation

The emergency response will depend on the type of flooding experienced at the site. For ocean dominated flooding, sufficient warning should be available to evacuate the building to higher ground. Conversely, for extreme local catchment flooding, refuge should be sought onsite. Notwithstanding this, any evacuation or refuge should be self-directed and not reliant on emergency services or SES.

Regardless of the type or magnitude of flooding, no evacuation should be attempted through flood waters by foot or vehicle. It is expected that prior to occupation, emergency response for a range of scenarios will be developed and displayed at prominent locations around the building in the form of a Flood Emergency Management Plan.

Detailed Consideration of the Proposed Drainage

Please refer to the Stormwater Management Report for detail of the proposed drainage infrastructure.

Conclusions

From the flooding assessment undertaken, it has been concluded that the proposed development;

- Is compatible with the flood hazard onsite and floodplain risk management plans that apply to the site;
- Is not likely to cause significant adverse impacts on flood behaviour on adjacent properties; and
- Incorporates design features to minimise risk to property and life from flooding.

Furthermore, we expect that a Flood Emergency Management Plan be prepared and implemented prior to occupation of the building.

We trust this meets your requirements, however should you require anything further, please do not hesitate to contact the undersigned on (02) 4943 1777.

Yours sincerely,

Kane Sinclair
Civil Engineer
BE (Civil) (Hons 1) Grad IE Aust

<u>Attachments</u>

Architectural Plans

Plan of Subdivision

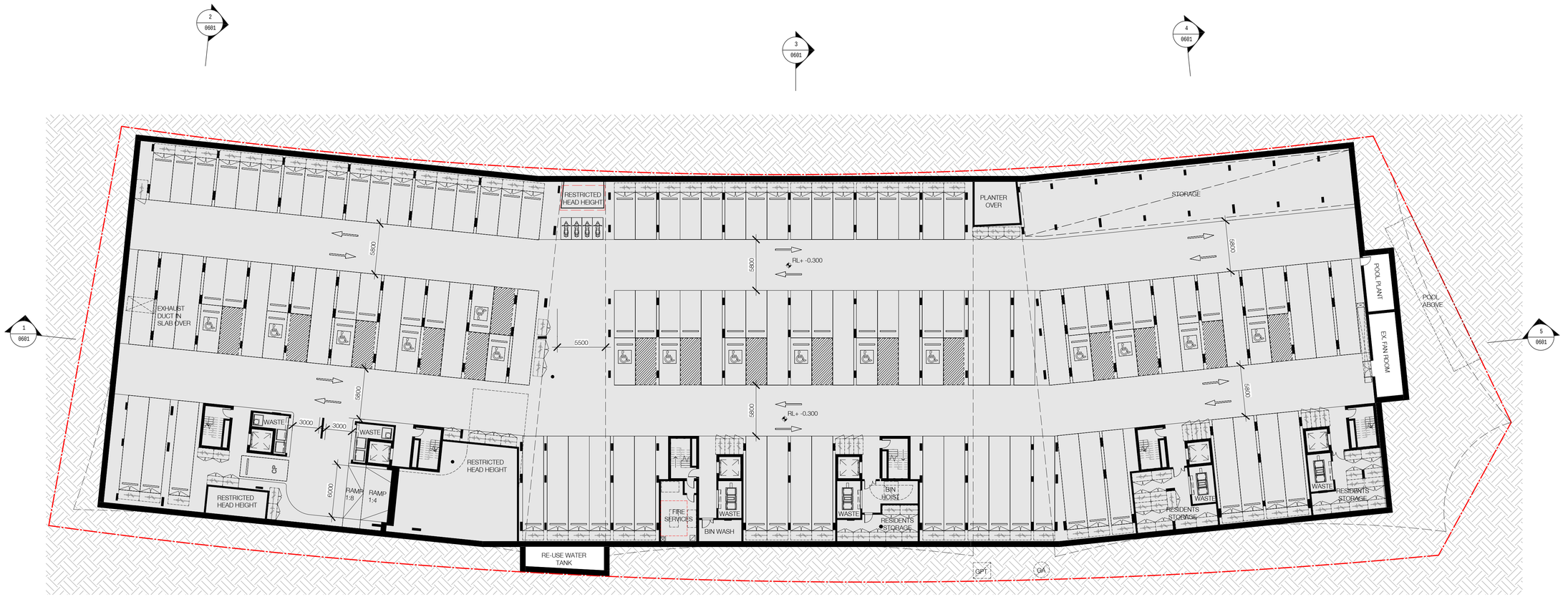
City of Newcastle – Stormwater Infrastructure Extract

City of Newcastle – Flood Information Certificate FL2016/00299

Nominated Architects: Adam Haddow-7188 | John Pradel-7004

FOR APPROVAL

Rev	Date	Revision	By	Chk.
1	17.03.17	DEVELOPMENT APPLICATION ISSUE		
3	23.03.17	REVISED CAR PARK NUMBER		
4	10.04.17	DA SUBMISSION		
6	25.05.17	FOR COORDINATION		
10	29.05.17	ISSUED FOR DA	JO	ML



Client

DOMAGROUP

Project

Project Name

50 Honeysuckle Drive,
Newcastle NSW 2300

Drawing Name

BASEMENT PLAN

Date	Scale	Sheet Size
29.05.17	1 : 250	@ **A1**

Drawn	Chk.
JO	ML

Job No.	Drawing No.	Revision
5485	DA-0200	/ 10

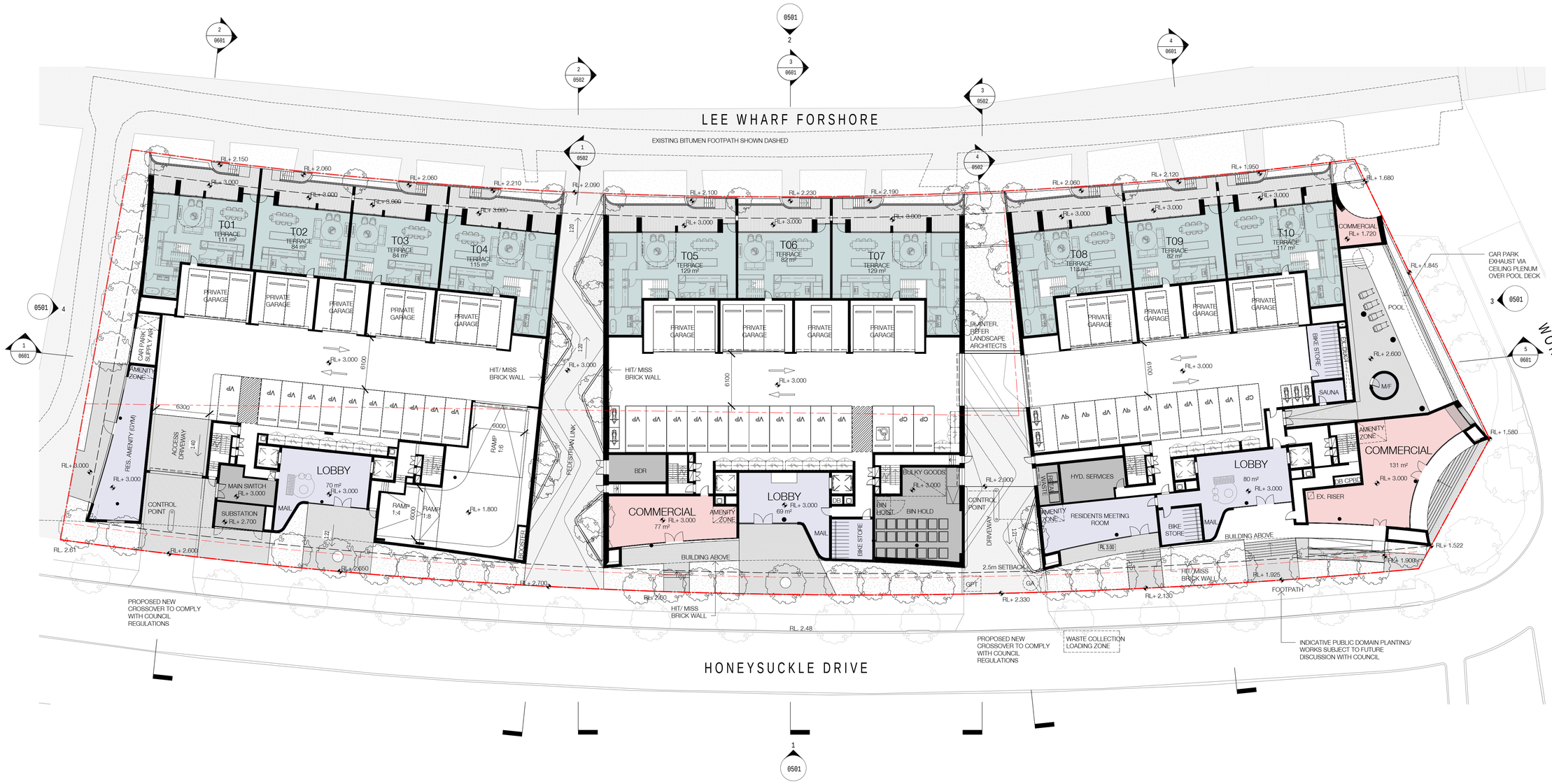
0 5 10 20m
1:250

SJB Architects
Level 2
490 Crown Street
Surry Hills NSW
2010 Australia
T 61 2 9380 9911
F 61 2 9380 9922
www.sjb.com.au

Nominated Architects: Adam Haddow-7188 | John Pradel-7004

FOR APPROVAL

Rev	Date	Revision	By	Chk.
1	17.03.17	DEVELOPMENT APPLICATION ISSUE		
3	23.03.17	REVISED CAR PARK NUMBER		
4	10.04.17	DA SUBMISSION		
5	22.05.17	FOR COORDINATION		
10	29.05.17	ISSUED FOR DA	JO	ML



Client

DOMAGROUP

Project

Honeysuckle

50 Honeysuckle Drive,
Newcastle NSW 2300

Drawing Name

GROUND FLOOR PLAN

Date	Scale	Sheet Size
29.05.17	1 : 250	@ **A1**

Drawn	Chk.
JO	ML

Job No.	Drawing No.	Revision
5485	DA-0201	/ 10

0 5 10 20m
1:250

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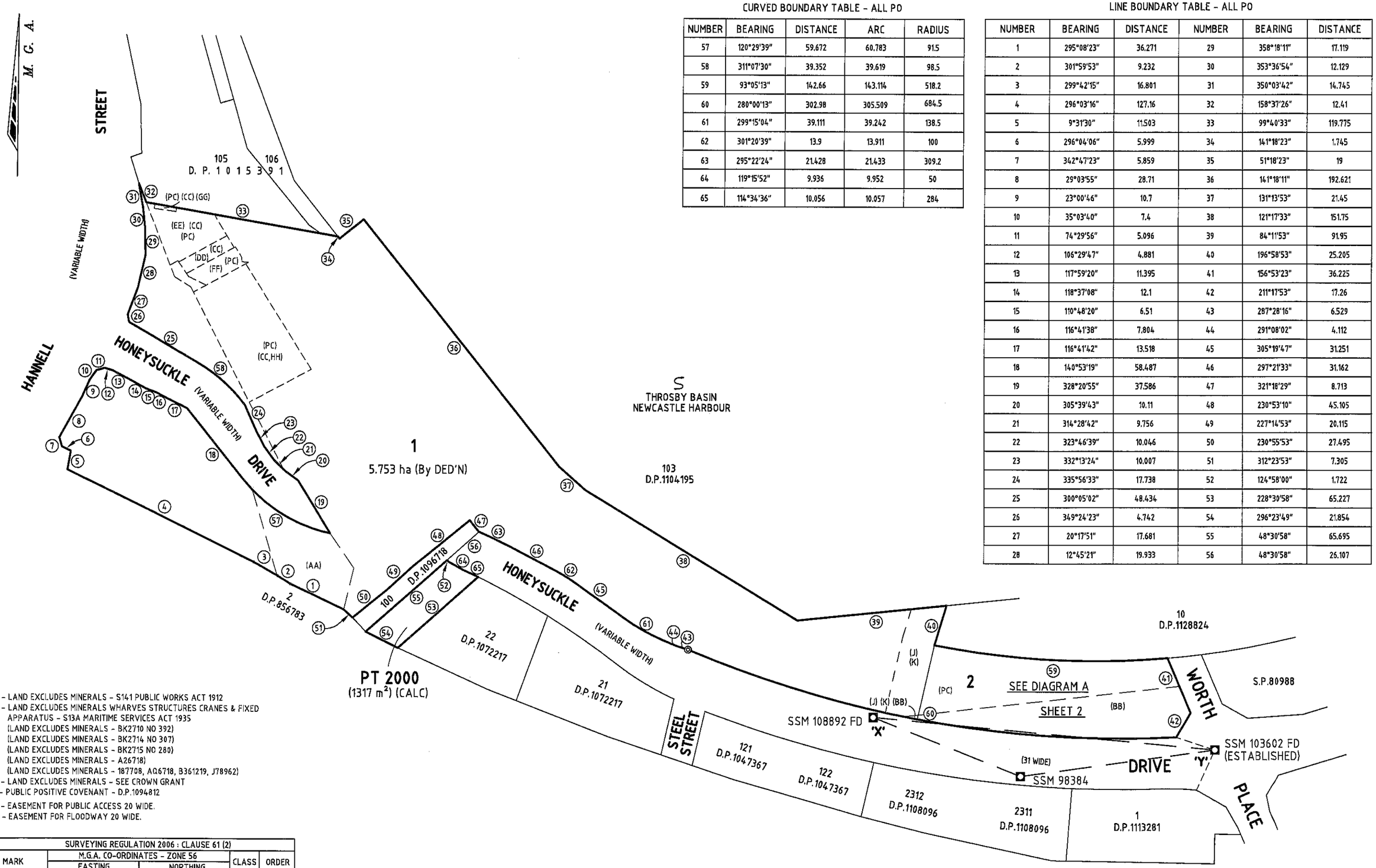


CURVED BOUNDARY TABLE - ALL PO

NUMBER	BEARING	DISTANCE	ARC	RADIUS
57	120°29'39"	59.672	60.783	91.5
58	311°07'30"	39.352	39.619	98.5
59	93°05'13"	142.66	143.114	518.2
60	280°00'13"	302.98	305.509	684.5
61	299°15'04"	39.111	39.242	138.5
62	301°20'39"	13.9	13.911	100
63	295°22'24"	21.428	21.433	309.2
64	119°15'52"	9.936	9.952	50
65	114°34'36"	10.056	10.057	284

LINE BOUNDARY TABLE - ALL PO

NUMBER	BEARING	DISTANCE	NUMBER	BEARING	DISTANCE
1	295°08'23"	36.271	29	358°18'11"	17.119
2	301°59'53"	9.232	30	353°36'54"	12.129
3	299°42'15"	16.801	31	350°03'42"	14.745
4	296°03'16"	127.16	32	158°37'26"	12.41
5	9°31'30"	11.503	33	99°40'33"	119.775
6	296°04'06"	5.999	34	141°18'23"	1.745
7	342°47'23"	5.859	35	51°18'23"	19
8	29°03'55"	28.71	36	141°18'11"	192.621
9	23°00'46"	10.7	37	131°13'53"	21.45
10	35°03'40"	7.4	38	121°17'33"	151.75
11	74°29'56"	5.096	39	84°11'53"	91.95
12	106°29'47"	4.881	40	196°58'53"	25.205
13	117°59'20"	11.395	41	156°53'23"	36.225
14	118°37'08"	12.1	42	211°17'53"	17.26
15	110°48'20"	6.51	43	287°28'16"	6.529
16	116°41'38"	7.804	44	291°08'02"	4.112
17	116°41'42"	13.518	45	305°19'47"	31.251
18	140°53'19"	58.487	46	297°21'33"	31.162
19	328°20'55"	37.586	47	321°18'29"	8.713
20	305°39'43"	10.11	48	230°53'10"	45.105
21	314°28'42"	9.756	49	227°14'53"	20.115
22	323°46'39"	10.046	50	230°55'53"	27.495
23	332°13'24"	10.007	51	312°23'53"	7.305
24	335°56'33"	17.738	52	124°58'00"	1.722
25	300°05'02"	48.434	53	228°30'58"	65.227
26	349°24'23"	4.742	54	296°23'49"	21.854
27	20°17'51"	17.681	55	48°30'58"	65.695
28	12°45'21"	19.933	56	48°30'58"	26.107

(BB) - LAND EXCLUDES MINERALS - S141 PUBLIC WORKS ACT 1912
(CC) - LAND EXCLUDES MINERALS WHARVES STRUCTURES CRANES & FIXED APPARATUS - S13A MARITIME SERVICES ACT 1935
(LAND EXCLUDES MINERALS - BK2710 NO 392)
(LAND EXCLUDES MINERALS - BK2714 NO 307)
(LAND EXCLUDES MINERALS - BK2715 NO 280)
(LAND EXCLUDES MINERALS - A26718)
(LAND EXCLUDES MINERALS - 187708, AQ6718, B361219, J78962)
(AA) - LAND EXCLUDES MINERALS - SEE CROWN GRANT
(PC) - PUBLIC POSITIVE COVENANT - D.P.1094812
(J) - EASEMENT FOR PUBLIC ACCESS 20 WIDE.
(K) - EASEMENT FOR FLOODWAY 20 WIDE.

SURVEYING REGULATION 2006 : CLAUSE 61 (2)				
MARK	M.G.A. CO-ORDINATES - ZONE 56		CLASS	ORDER
	EASTING	NORTHING		
SSM 77150	384 505.832	6 356 295.541	B	2
SSM 103602	384 791.108	6 356 244.843	C	3
SSM 108892	384 582.243	6 356 264.334	C	3
SSM 98384	384 638	6 356 231	U	N/A
COMBINED SCALE AND SEA LEVEL CORRECTION - 0.999764				
SOURCE	M.G.A. CO-ORDINATES ADOPTED FROM S.C.I.M.S. AS AT 17th JULY 2006			

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 Table of mm

Surveyor: STEVEN WAYNE WHITE
DE WITT CONSULTING, CHARLESTOWN
Date of Survey: 17/11/16
Surveyor's Reference: 6582 "2016M7100(1497)"

PLAN OF SUBDIVISION OF LOT 2000 D.P.1145678

LGA: NEWCASTLE
Locality: NEWCASTLE
Subdivision No: N/A
Lengths are in metres. Reduction Ratio 1:1500

Registered

D.P.

M. C. A.

S
THROSBY BASIN
NEWCASTLE HARBOUR

4
D.P.1193181

1
5.753 ha
(By Deduction)

2
D.P.1167364

2
7292m²

122
D.P.1047367

2312
D.P.1108096

2311
D.P.1108096

1
D.P.1113281

S.P.80988

HONEYSUCKLE DRIVE (31 WIDE)

WORTH PLACE

SSM 108892 FD 'X'

SSM 98384

SSM 103602 FD (ESTABLISHED) 'Y'

84° 12' 00" 91.95 (21.693)

R.M.D.H & W.FD 76°59'-161 (D.P.1128824)

196° 59' 25.205

(17.505)

(47.52)

74°55'19"-68.917 BY D.P.883474

321°33'44" 75.021 (D.P.1167364)

R.M.D.H & W's GONE (D.P.883474)

193°32'50" 31.238

R.M.D.H & W's FD: 195°32'50" 4.214 & 26.621

CH 146.426
106°39'07"
A 146.787
RAD. 684.5

(J) (K) (BB)

R.M.D.H & W GONE
R.M.BOLT IN BIT.
142°27'-11.37

12° 58' 25" 46.253

93° 05' 20"
CH 142.66
RAD. 518.2
A 143.114

R.M.D.H & W.FD 318°18'24"-18.795 (D.P.1167364)

R.M.D.H & W. IN CONC. PATH FD. 148°45'-2.335 (D.P.1167364)

CH 20.93
84°01'10"
A 20.93
RAD. 518.2

156° 53' 30" 36.225

32.525

R.M.D.H & W.FD 73°55'15"-4.75 (D.P.883474)

CH 158.447
273° 51' 56"
A 158.803
RAD. 684.5

R.M.D.H & W 71°51'30"-8.93

300°14'52"-64.923 M.G.A. GND.
300°15'00"-64.932 BY ME

95°19'53"-209.823 MGA GND.
95°19'53"-209.817 BY ME.

265°03'29"-153.393 MGA GND.
265°03'27"-153.389 BY ME.

17.26 211° 18' 00"

R.M.D.H & W 254°12'45"-5.605

107°58'-24.94 (D.P.883474)

DIAGRAM "A"
(NOT TO SCALE)

(BB) - LAND EXCLUDES MINERALS - S141 PUBLIC WORKS ACT 1912
(J) - EASEMENT FOR PUBLIC ACCESS 20 WIDE.
(K) - EASEMENT FOR FLOODWAY 20 WIDE.

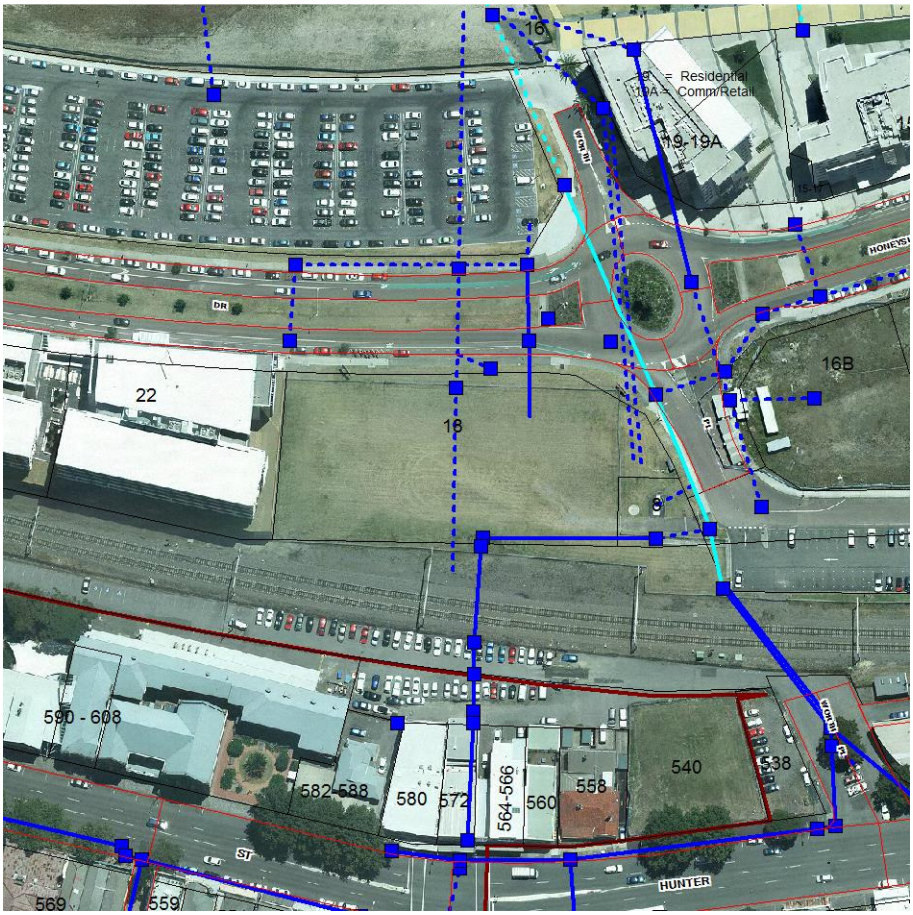
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 Table of mm

Surveyor: STEVEN WAYNE WHITE, DE WITT CONSULTING, CHARLESTOWN Date of Survey: 17/11/16 Surveyor's Reference: 6582 "2016M7100(1497)"	PLAN OF SUBDIVISION OF LOT 2000 D.P.1145678	LGA: NEWCASTLE Locality: NEWCASTLE Subdivision No: N/A Lengths are in metres. Reduction Ratio N.T.S	Registered D.P.

SPATIAL EXTRACT

Newcastle Council GIS Spatial Data

Map



Map Zoom: 238.1 m
Map Scale: 1:1,986

Legend

- House Numbers
- Street Names
- Buildings
- Bridges
- Road Pavement
- Road Segments
- Road Resurfacing & Rehabilitation Projects 2012
- Stormwater Pits
- Stormwater Headwalls
- Stormwater Culverts
- CCTV Inspected
- Unconfirmed Location
- Stormwater Pipes
- CCTV Inspected
- Unconfirmed Location


Hunter Water Channels


Lot Boundaries

Suburbs


Aerial Photography 2012

There are no features selected with textual information.

About this Document

This map has been created to show a possible combination of the following datasets; house numbers, street names, contours, lot boundaries, suburbs, assets, Newcastle Land Register, aerial photography 2008. Property boundary line network data is supplied by NSW Lands Department. Any operational issues or errors should be reported to the GIS team.

11 November 2016

The City of Newcastle

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NSW 2300 Australia
Phone: 4974 2000
Fax: 4974 2222
Email: mail@ncc.nsw.gov.au
www.newcastle.nsw.gov.au

The Doma Group
P O Box 5419
KINGSTON ACT 2604

Flood Information Certificate No:	FL2016/00299
Land:	Lot 2000 DP 1145678
Property Address:	50 Honeysuckle Drive Newcastle NSW 2300

Thank you for your recent enquiry regarding flood behaviour at the above property. This letter confirms the property is located in a flood prone area.

The pertinent features of the flood behaviour are estimated as follows:

Ocean Flooding

Is any part of the site affected by a floodway?	No
Is any part of the site affected by a flood storage area?	No
Estimated 1% Annual Exceedence Probability event level: (equivalent to the "*Defined Flood Level*" in the Building Code of Australia)	2.20m AHD
Highest Property Hazard Category	P5 (See Attachment 1)
Estimated Probable Maximum Flood Level	3.40m AHD
Highest Life Hazard Category	L1 - H5

Local Catchment Flooding

Is any part of the site affected by a floodway?	Yes (See Attachment 2)
Is any part of the site affected by a flood storage area?	Yes (See Attachment 2)
Estimated 1% Annual Exceedence Probability event level: (equivalent to the "*Defined Flood Level*" in the Building Code of Australia)	1.58m AHD (See Attachment 3)
Estimated Maximum Flow Velocity of floodwaters (in the "*Defined Flood Event*" as per the Building Code of Australia)	0.62m/s
Highest Property Hazard Category	P5 (See Attachment 3)
Estimated Probable Maximum Flood Level	3.07m AHD
Highest Life Hazard Category	L5 - H5 (See Attachment 4)

The flood study from which the above information is derived is part of a Newcastle City Wide Floodplain Management Plan. The above advice may change in the future, however the advice is based on the best information held by Council at the time of issue of this certificate.

The above ocean flood level estimates include a sea level rise relative to 1990 mean sea levels of 90cm by 2100, as used in the Newcastle City-wide Floodplain Risk Management Study and Plan (June 2012).

The Newcastle Development Control Plan 2012 addresses the issues of flood management for new development. You can view the development control plan at www.newcastle.nsw.gov.au. In summary, the following requirements apply for all future development applications on the site.

Development in a floodway is not generally allowable due to likely redistribution of flood water.	Applicable
Filling of a flood storage area by more than 20% is not generally allowable due to redistribution of flood water.	Applicable
Minimum floor level for occupiable rooms in a new development on this site is: (equivalent to the "*Flood Hazard Level*" in the Building Code of Australia)	2.50m AHD
Is onsite flood refuge required?	Yes

Council holds no information concerning floor levels of existing structures on the site. Site levels and floor levels should be verified by survey based on the Australian Height Datum.

It is estimated that, during the June 2007 storms, flood waters reached a level of approximately 2.63m AHD in the vicinity of the specified land.

Please note that:

1. No assessment of the lot's suitability for the purposes of making an application for a complying development certificate under the General Housing Code or Rural Housing Code of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*, or for a Secondary Dwelling under *State Environmental Planning Policy (Affordable Rental Housing) 2009,* has been made. This type of flood information can also be obtained from Council via a Flood Information Application. There are two services provided by Council relating to Complying Development flood criteria, as follows:

    a) Identification of lots affected by any of the flood control lot exclusions identified in subclause 3.36C(2) or 3A.38(2) of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.* If this information is required, select Box 4. b) (i) on the Flood Information Application form and pay the required fee.

    b) An assessment of a proposal for development of the lot for compliance with the requirements of subclause 3.36C(3) or 3A.38(3) of *State Environmental Planning Policy (Exempt and Complying Development Codes*) *2008.* If this information is required, select Box 4. b) (ii) on the Flood Information Application form, submit plans and other relevant documentation for the proposal and pay the required fee.

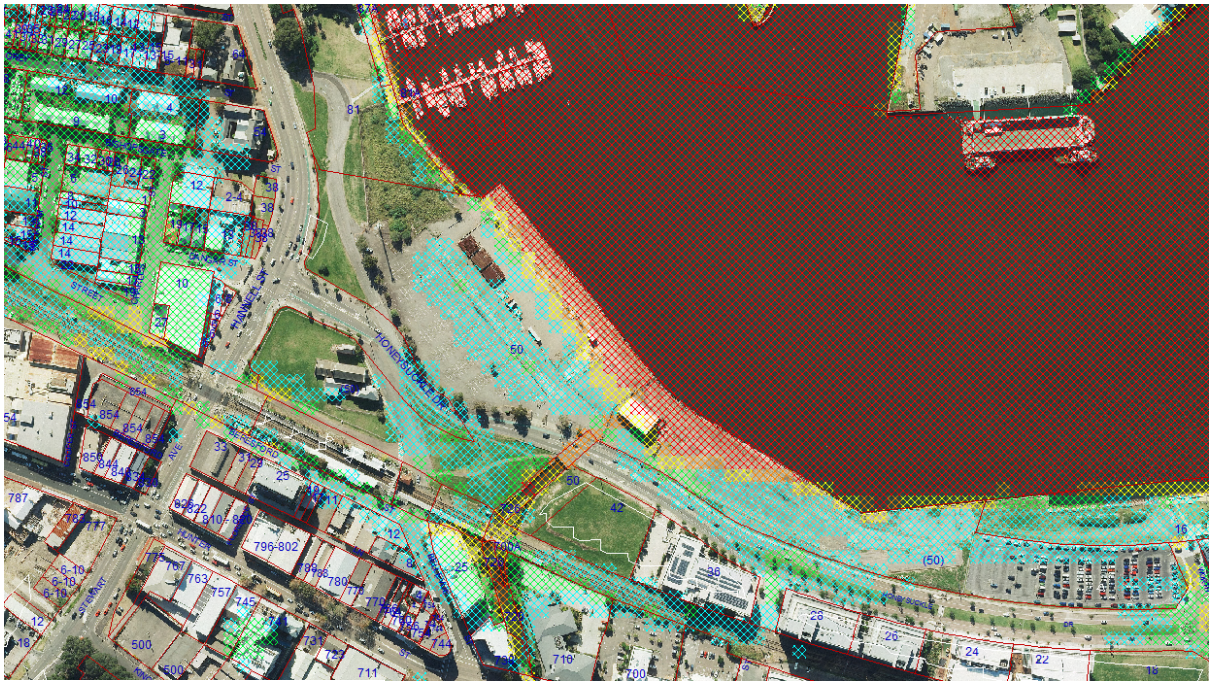
2. The information contained in this certificate may alter in the future. The applicant should at all times ensure the currency of this information.

Should you require any further clarification please contact Chadapa Teeraputtanun on 4974 2748.

Yours faithfully,

Chadapa Teeraputtanun
DEVELOPMENT OFFICER (ENGINEERING)

Attachment 1: Ocean Flooding (Property Hazard Category, the 1% AEP)



Property Hazard Category

P1

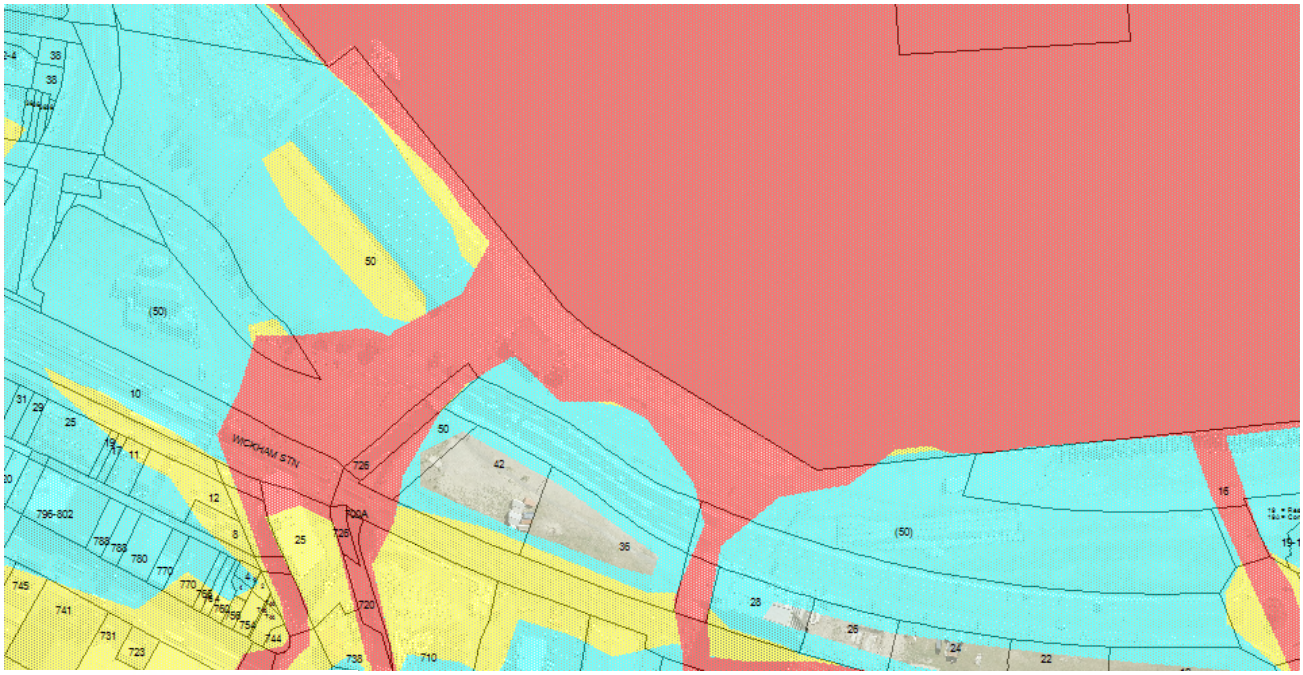
P2

P3

P4

P5

Attachment 2: Local Catchment Flooding (Flood Classification)



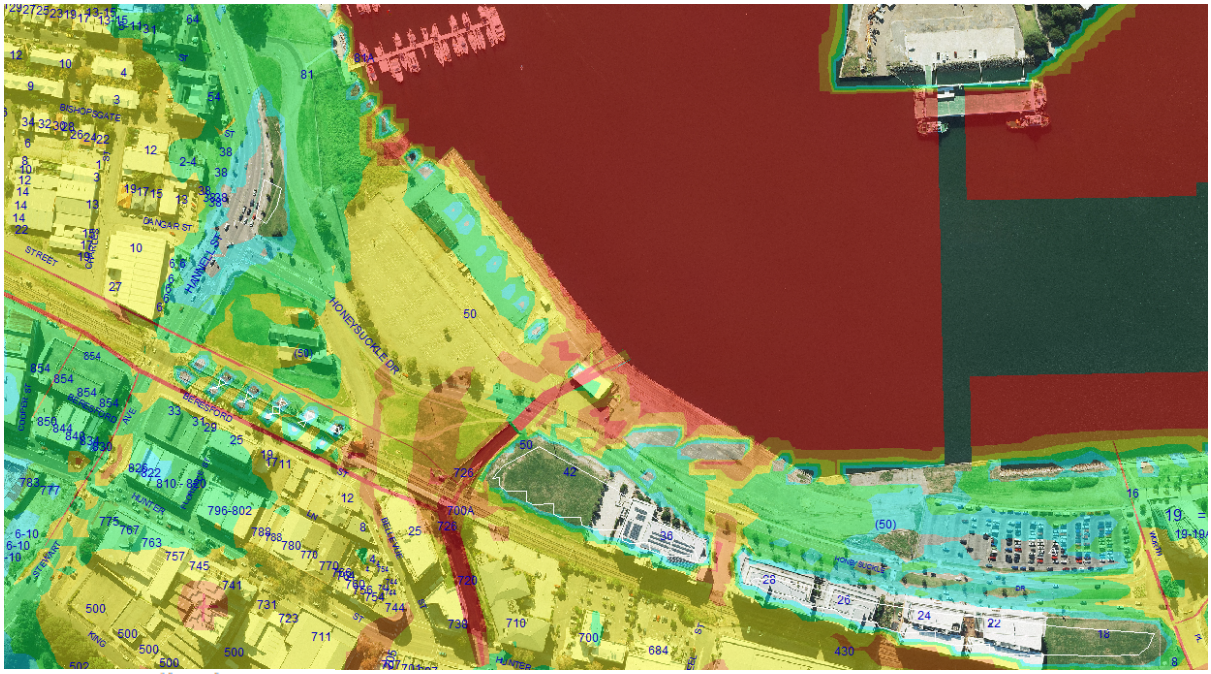
Flood Classification

- Floodway
- Flood Storage
- Flood Fringe

Attachment 3: Local Catchment Flooding (The 1% AEP flood)

The site is identified as being affected from Local Catchment Flooding during the 1% Annual Exceedance Probability Flood as shown in figure above. Note: *Highest Property Hazard Category of P5* only applies to the flood affected areas.

Attachment 4: Local Catchment Flooding (Life Hazard Category, the PMF event)



Hazard

H1

H2

H3

H4

H5

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