



University of Newcastle - Honeysuckle City Campus Development

Stormwater and Servicing Assessment



REPORT DOCUMENT CONTROL

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Prepared:

Reviewed:

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Appendix A – Flood Certificate

Appendix B – Council Correspondence

Appendix C – Concept Design Drawings

Appendix D – MUSIC-link Report

Appendix E – Hunter Water Correspondence

1.1 The Development

- Lot 1, 2 and 3 DP 1163346 – known hereafter as Site 1;
- Lot 21 DP 1165985 and a portion of Lot 2 DP 1226145 (former rail corridor) – known hereafter as Sites 2 and 3.

An aerial photograph of a coastal urban area, likely the Port of Los Angeles. Three specific sites are highlighted in yellow and outlined with a red dashed line. Site 1 is located in the upper left, bounded by Honeysuckle Drive to the north, Settlement Lane to the east, and Wright Lane to the south. Site 2 is located in the lower left, bounded by Wright Lane to the north, Hunter Street to the south, and Worth Place to the west. Site 3 is located in the lower right, bounded by Wright Lane to the north, Hunter Street to the south, and Settlement Lane to the east. The map shows various industrial buildings, parking lots, and a body of water in the upper right corner. Labels for the streets and sites are overlaid on the image.

At present, the HCCD development is to be completed over multiple stages, over a number of years, as shown in Figure 1-2;

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Figure 1-2: Proposed Building Footprints (Cox Architecture, 2017)

As nominated in the Concept Master Plan Report (COX Architecture, October 2017) the campus will have a total yield of 62,574 m² gross floor area (GFA), comprised of the following:

- Academic space - 50,746 m² GFA (approximately 800 staff & 4,380 students)
- Student accommodation - 11,828 m² GFA (394 beds)

1.2 Existing Site

The site is bounded by Honeysuckle Drive to the north, Civic Lane to the south, Settlement Lane to the east and Worth Place to the west. It is understood that Wright Lane, which separates Sites 1 and 2, is currently owned by Hunter Development Corporation and will be retained as a public access way.

Site 1 is currently being used as a construction compound for the Newcastle light rail project. It is understood that on completion of the work, the site is to be left in good order, including turfing or seeding of disturbed areas. Sites 2 and 3 currently consist of an existing sealed carpark operated by Newcastle City Council (NCC) accessible off Wright Lane, along with a portion of the old rail corridor which is currently vacant. The three sites are generally flat, with grades of approximately 2%.

Existing stormwater drainage networks exist along Honeysuckle Drive, Worth Place and Wright Lane. These stormwater networks all discharge to a trunk drainage culvert which drains to Newcastle Harbour. There is no known existing drainage infrastructure within the former rail corridor.

2 FLOODING ASSESSMENT

Northrop Consulting Engineers have been engaged to undertake a flooding assessment at the proposed HCCD project site to satisfy Clause 8 of the Secretary's Environmental Assessment Requirements (SEARs) for SSDA 9262. This section 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 9262 requires;

The Environment Impact Statement (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), Waterfront and Cottage Creek Flood Management Plan 1999, Newcastle City-wide Floodplain Risk Management Study and Plan 2012, and the Honeysuckle Redevelopment Area Flood Study 2018, including:

- *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;*
- *Assessment of potential impacts of the proposed development on flood behaviour at the site and impacts on adjacent land, 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*

In order to address these requirements, 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);
- Waterfront and Cottage Creek Flood Management Plan 1999;
- Newcastle City-wide Floodplain Risk Management Study and Plan (2012);
- Newcastle City Council DCP 2012 Section 4.01 Flood Management;
- Honeysuckle Redevelopment Area Flood Study (2018);
- Flood Information Certificate FL2018/00123.

2.1 Existing Flood Behaviour and Impact of Climate Change

Existing flood behaviour has been obtained from Flood Information Certificate No. FL2018/00123, found in Appendix A. The subject site is affected by ocean and local catchment flooding.

As noted in the certificate, a peak water level of 2.43m AHD is expected at the site during the 1% Annual Exceedance Probability (AEP) event, as a result of local catchment flooding. A peak water level of 3.40m AHD is expected in the Probable Maximum Flood (PMF) as a result of ocean flooding. 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.

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.

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. This was confirmed with Council, and the correspondence is included in Appendix B. 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 proposed site of the HCCD project 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*”.

2.2 Proposed Impact of the Development on Flooding and the Environment

The HCCD site forms part of the Honeysuckle Redevelopment area, and as such, has been included in the Honeysuckle Redevelopment Area Flood Study 2018. As shown in Figure 2-1.



As mentioned above, 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 site, referred to as Worth Place Floodway. The Honeysuckle Redevelopment Area Flood Study (2018), which supersedes the earlier plan, retains the 20m Worth Place floodway, and also includes a 10m wide floodway between Wright Lane Site 1 (Building B) and Wright Lane Site 2 (Building D) to allow an overland flow path to be maintained between Civil Lane and Wright Lane. Design consideration will need to be given to this floodway, however the proposed development footprint does not impede on the floodways and 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.

2.3 Compatibility with Floodplain Risk Management Plans and Flood Hazard

The proposed development is generally compatible with the 2012 NCC DCP and Newcastle City-wide Floodplain Risk Management Study and Plan (2012) with respect to habitable floor levels and

All habitable floor levels are set at the Flood Planning Level, being 2.80m AHD, which equates to the 1% AEP plus 370mm freeboard.

A summary of flooding characteristics is shown below in Table 2-1, noting that the flooding data shown is the maximum for the overall site.

Table 2-1: Summary of flooding characteristics and proposed development

1% AEP Ocean Flooding	2.30m AHD
1% AEP Local Catchment Flooding	2.43m AHD
PMF Ocean Flooding	3.40m AHD
PMF Local Catchment Flooding	3.31m AHD
Proposed Habitable Floor Level	2.80m AHD

2.4 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 building occupants 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 evacuation, 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.

3 STORMWATER MANAGEMENT

Northrop Consulting Engineers have prepared a stormwater management strategy for the proposed HCCD project site (Sites 1, 2 and 3). The existing site in total is approximately 2Ha, and the proposed development will utilise this entire area.

Existing stormwater drainage networks are located along Honeysuckle Drive, Worth Place and Wright Lane. These stormwater networks all discharge to a trunk drainage culvert which drains to Newcastle Harbour. There is no known existing drainage infrastructure within the former rail corridor.

NCC will require the provision of onsite stormwater retention and detention as a condition of development approval. As a result, it is not expected the existing stormwater network will require upgrading as a direct result of the development.

This stormwater management strategy has been developed in accordance with the NCC Development Control Plan (DCP) 2012 and the NCC Stormwater and Water Efficiency for Development Technical Manual (2017). This report intends to discuss stormwater issues relating to the site at a level appropriate for a Development Application submission and should be read in conjunction with drawing DA.01 (Rev A), included in Appendix C.

3.1 Proposed Stormwater Management Strategy

The proposed stormwater management strategy for the development site can be summarised as follows:

- The roof area of each building will be captured via charged or gravity downpipes and directed to the proposed storage tanks. The stored volume will be reused internally through toilet and laundry connections and external uses;
- Runoff from internal paved areas and footpaths will be collected and conveyed to above-ground bioretention basins (rain gardens) in an underground pit and pipe network via a gross pollutant trap. Outlet subsoil drainage pipes from the basins will be directed to the proposed detention storage tanks. The internal pit and pipe network will be designed to cater for the 10% Annual Exceedance Probability (AEP) Storm Event. Overland flow paths will be designed for the 100% AEP Storm Event in accordance with NCC's requirements;
- Outlets from the detention/retention storage tanks will be directed to the nearest existing stormwater pit in Honeysuckle Drive, Worth Place or Wright Lane. Depending on the outlet location, the construction of additional junction or kerb inlet pits along the existing stormwater line may be required;
- The existing Wright Lane corridor is the primary overland flow path through the site. Wright Lane is proposed to become a pedestrian street/plaza, and any modification to site levels will be carefully considered to ensure overland flow is maintained.

3.2 Stormwater Quantity Assessment

NCC's DCP 2012 requires the provision of site storage controls to limit peak runoff from the development. The objectives of these measures are to reduce the impact of the development on downstream stormwater infrastructure and receiving waters. To satisfy these requirements, stormwater storage is to be provided for each of the proposed buildings. Preliminary storage volumes have been estimated in accordance with Council's storage depth calculation method, as

detailed in DCP Section 7.06 (Stormwater). The estimated site storage requirements for each building are provided in Table 3-1.

Table 3-1: Site Storage Requirements for Individual Buildings

Site	Building	Total Site Area (m ²)	Estimated Impervious Area (m ²)	Impervious Fraction	Estimated Combined Storage Requirement
Site 1	A1	2,000	1,790	89%	40 kL
	A2	2,150	2,010	93%	50 kL
	C	4,750	4,260	90%	95 kL
Site 2	B	3,800	3,430	90%	80 kL
	D	3,370	2,990	89%	70 kL
Site 3	E	1,950	1,790	91%	45 kL
	F	3,000	2,770	92%	65 kL

Captured rainwater would be reticulated internally for recycled-water uses, including toilet and laundry connections, as well as externally for landscape irrigation. The volume of reuse provided would be subject to a reuse efficiency analysis, with a typical target efficiency of 80% desirable. The detention component will be provided in below-ground storage tanks which will be designed to ensure the development results in no increase in stormwater outflows to the external stormwater network. As the storage will be below the flood level, a backflow prevention device will be provided at the outlet of each storage device. Full stormwater modelling of the proposed detention system will be undertaken at the detailed design phase.

3.3 Stormwater Quality Assessment

Stormwater quality on-site is proposed to be managed through a treatment train approach to minimise any adverse impacts on the ecology of downstream watercourses and to meet the pollutant removal efficiency targets outlined in Council's DCP 7.06 (2012). These targets are reproduced in Table 3-2.

The performance of the proposed stormwater management strategy was assessed against these targets using the conceptual software MUSIC (Version 6.3.0). The MUSIC model was developed in accordance with the "NSW MUSIC Modelling Guidelines" (BMT WBM, 2015) and the NCC Technical Manual (2017), using the NCC MUSIC-link. The NCC MUSIC-link was used to set up all default source node data, rainfall data and evapotranspiration data.

The MUSIC model catchment area includes Sites 1, 2 and 3. It was broken down into sub-catchments to effectively simulate the proposed treatment measures along the treatment train. A schematic of the MUSIC model can be seen below in Figure 3-1.



It has been assumed in the model that 5% of the ground level catchment will by-pass the treatment train.

- Primary treatment via rainwater tanks and proprietary gross pollutant traps (Ecosol GPT – High Flow – 4450 or approved equivalent); and
- Tertiary treatment via a series of bio-retention basins.

Rainwater Tank

The internal and external re-use demands in the model were based on commercial re-use data presented in Table 4.1 in Council's Technical Manual (2017). Internal re-use was calculated for each building based on 0.1kL/day/m² of roof area, and external re-use was based on 20kL/yr/1000m².

Bio-retention Basins

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The results from the MUSIC modelling are presented in Table 3-2.

	Source Load (kg/yr)	Residual Loads (kg/yr)	Percentage Reduction	Target Objectives
Total Suspended Solids (TSS)	1480	215	85.5	85 %
Total Phosphorous (TP)	4.27	1.42	66.8	65 %
Total Nitrogen (TN)	43.7	18.6	57.6	45 %
Gross Pollutants	498	10.7	97.8	90 %

MUSIC data files have been included with this report in Appendix D. Music Model can be provided upon request.

The Stream Erosion Index (SEI) has not been quantified for this development due to the close proximity to the harbour. We note the proposed system will connect to in-ground stormwater infrastructure which drains directly to the harbour, therefore the SEI calculation has been deemed irrelevant in this application.

4 UTILITIES

4.1 Water Reticulation

Hunter Water have been contacted for preliminary servicing advice for the development. Existing water infrastructure is available to the site, and Hunter Water have advised that there is presently sufficient network capacity to service the development. It should be noted however that future development within the precinct has the potential to absorb this additional capacity.

As part of Stage 1A and 1B enabling works, Hunter Water Corporation (HWC) have requested the extension of an existing 150mm watermain along Worth Place to connect into the existing 200mm watermain on Honeysuckle Drive. Servicing of the subsequent stages of the development will require the construction of a 150mm watermain from Worth Place along Wright Lane, for future connection into the 200mm main at the intersection of Honeysuckle Drive and Workshop Way. Correspondence with Hunter Water has been included with this report in Appendix E.

An application for Notice of Requirements (Section 50) has been lodged with HWC for the proposed works.

4.2 Sewer

The development is located in close proximity to the Newcastle 12 Wastewater Pump Station and is proposed to be connected to an existing 300mm gravity main on Worth Place. Hunter Water have confirmed that there is sufficient capacity within both the pump station and the gravity main to service the proposed development. There is the potential for this additional sewer capacity to be absorbed in the future, which may require developer funded upgrade works to the sewer network.

An internal gravity sewer main will be constructed along Wright Lane, which will connect into an existing maintenance hole on Worth Place.

An application for Notice of Requirements (Section 50) has been lodged with HWC for the proposed works.

4.3 Gas

Jemena have been contacted for preliminary servicing advice for the development. Jemena have advised that there is sufficient capacity within the existing distribution mains to service the development.

Gas is expected to be supplied to Site 1 by connecting to an existing 30kPa network main on the northern side of Honeysuckle Drive. Site 2 is expected to be serviced from another 30kPa network main on the southern side of the rail corridor. Gas would be then distributed through each of the buildings via internal pipework.

Northrop Consulting Engineers have prepared a concept erosion and sediment control plan in accordance with the guidelines set out in Landcom's 'Managing Urban Stormwater: Soils and Construction' ("The Blue Book"). The plan, DA.01, is included in Appendix C, and is intended to provide sufficient information for the purposes of approval at the concept stage.

All work is to be carried out in accordance with relevant ordinances and regulations; note in particular the requirements of the 'Blue Book'. The Contractor shall be responsible for adequately implementing the measures in these documents.

To ensure that dust generation is eliminated or reduced where possible and practical, all site operations shall be undertaken with consideration given to their potential to produce dust. A management strategy of *avoid > minimise > control* shall be implemented.

- Program works around periods of significant and adverse meteorological conditions.
- Install wind fences around stockpiles with significant amounts of fine particulates.
- Maintain vegetation across the site where possible, otherwise establish vegetation or seal disturbed site areas as soon as practical.
- Provide water trucks or sprinkling devices during construction as required to suppress dust, specifically for site vehicular traffic or dumping and filling operations.

A summary of findings of this report are as follows:

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.
- Will have a Flood Emergency Management Plan prepared and implemented prior to occupation of the building;
- Is not expected to cause migration of the ecosystem in the vicinity of the development; and,
- Is not expected to cause avoidable stream erosion, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.

Given the results of the above investigations, it is reasoned that the stormwater management strategy meets NCC's requirements:

- Onsite detention is proposed to reduce post-developed peak discharge to below the pre-developed peaks;
- The treatment of stormwater runoff for waterborne pollutants is achieved through the proposed treatment train. This includes the use of rainwater tanks, bioretention basins and proprietary gross pollutant traps;
- The stream erosion index for the site was not quantified due to the site discharging to an existing stormwater network which connects directly to the harbour.

- Existing water infrastructure is available at the site and Hunter Water have advised that the reticulation system has sufficient capacity to support the development;
- Hunter water have advised that there is sufficient capacity within the nearby Newcastle 12 Wastewater Pump Station and 300mm gravity main to service the whole development;
- Jemena have been contacted for preliminary servicing advice for the development. Jemena have advised that there is sufficient capacity within the existing distribution mains to service the development.

**APPENDIX A –
FLOOD CERTIFICATE**

REQUEST FOR INFORMATION REGARDING COMPLYING DEVELOPMENT CRITERIA

09 May 2018

Northrop Consulting Engineers
Suite 4, Level 1, 2115 Pacific Highway
CHARLESTOWN NSW 2290



PO Box 489, Newcastle
NSW 2300 Australia
Phone: 4974 2000
Fax: 4974 2222
Email: mail@ncc.nsw.gov.au
www.newcastle.nsw.gov.au

Dear Sir/Madam

Flood Information Certificate No: FL2018/00123

Land: Lot 4 DP 1111305, Lot 1 DP 1163346
Lot 2 DP 1163346, Lot 3 DP 1163346
Lot 21 DP 1165985, Lot 2 DP 1226145

Property Address: 16B Honeysuckle Drive Newcastle NSW 2300
16A Honeysuckle Drive Newcastle NSW 2300
16 Honeysuckle Drive Newcastle NSW 2300
20B Wright Lane Newcastle NSW 2300
20A Wright Lane 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 flood information comes from the Honeysuckle Redevelopment Area Flood Study prepared by BMT (Revision 8 dated 8/03/18). A copy of this flood study is available on Council's website. The flood information provided is generally for the proposed sites noted as Sites 11-15 on Figure 6-6 of the report (Honeysuckle Central & Sites 1 - 4) and based on the Context Plan submitted with your application

http://www.newcastle.nsw.gov.au/Newcastle/media/Documents/environment/Flooding/Honeysuckle-Redevelopment-Area-Flood-Study_March-2018.pdf

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 Exceedance Probability event level: (equivalent to the "Defined Flood Level" in the Building Code of Australia)	2.3m AHD
Estimated Maximum Flow Velocity of floodwaters (in the "Defined Flood Event" as per the Building Code of Australia)	0.1m/s
Highest Property Hazard Category	P1
Estimated Probable Maximum Flood Level	3.4m AHD

Highest Life Hazard Category	L1
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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).

Local Catchment Flooding

Is any part of the site affected by a floodway?	Yes (See Figure D-9) - Wright Lane is A Floodway
Is any part of the site affected by a flood storage area?	Yes (See Figure D-9)
Estimated 1% Annual Exceedance Probability event level: (equivalent to the “ <i>Defined Flood Level</i> ” in the Building Code of Australia)	2.43m AHD (Site 2)
Estimated Maximum Flow Velocity of floodwaters (in the “ <i>Defined Flood Event</i> ” as per the Building Code of Australia)	0.3m/s
Highest Property Hazard Category	P2
Estimated Probable Maximum Flood Level	3.31m AHD (Site 1)
Highest Life Hazard Category	L5 (at Honeysuckle Central)

Note: Flood data taken from Table 6-7 in the BMT Honeysuckle Redevelopment Area Flood Study (Rev. 8 dated 8/03/18.) Indicated Local Catchment Flooding Data is for the maximum for the overall site. For Individual sites, See Table 6-7.

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 ¹
Filling of a flood storage area by more than 20% is not generally allowable due to redistribution of flood water.	Applicable ¹
Minimum floor level for occupiable rooms in a new development on this site is: (equivalent to the “ <i>Flood Hazard Level</i> ” in the Building Code of Australia)	2.8m AHD
Is onsite flood refuge required?	Yes

¹ Note: Wright Lane is floodway and part storage - See Figure D-9.

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.

Complying Development Criteria

1.	Is the land identified as a Flood Control Lot?	Yes
2.	Is any part of the land identified as being:	
	a) a flood storage area, or	Yes
	b) a floodway area, or	Yes
	c) a flow path, or	Yes
	d) a high hazard area, or	Yes
	e) a high risk area	Yes

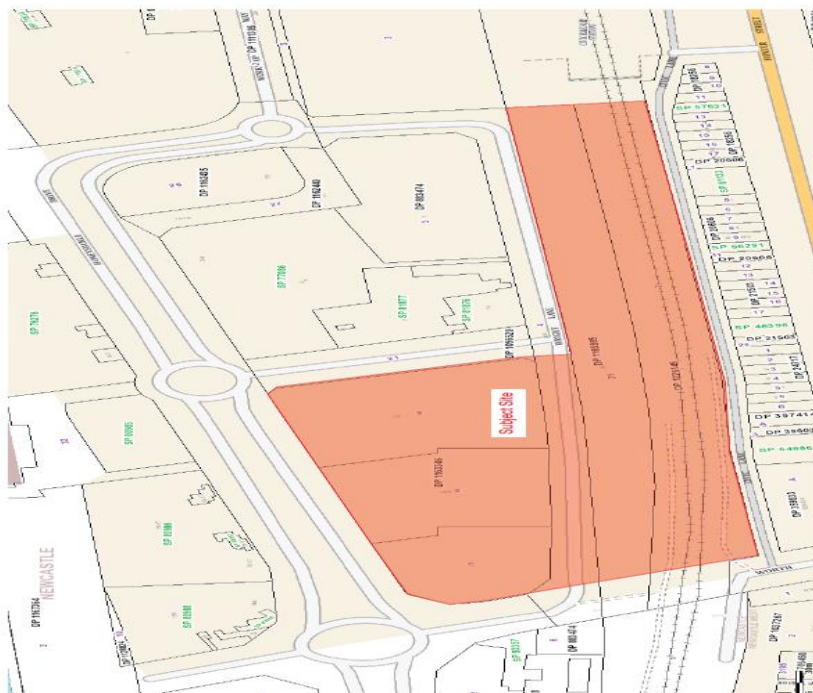
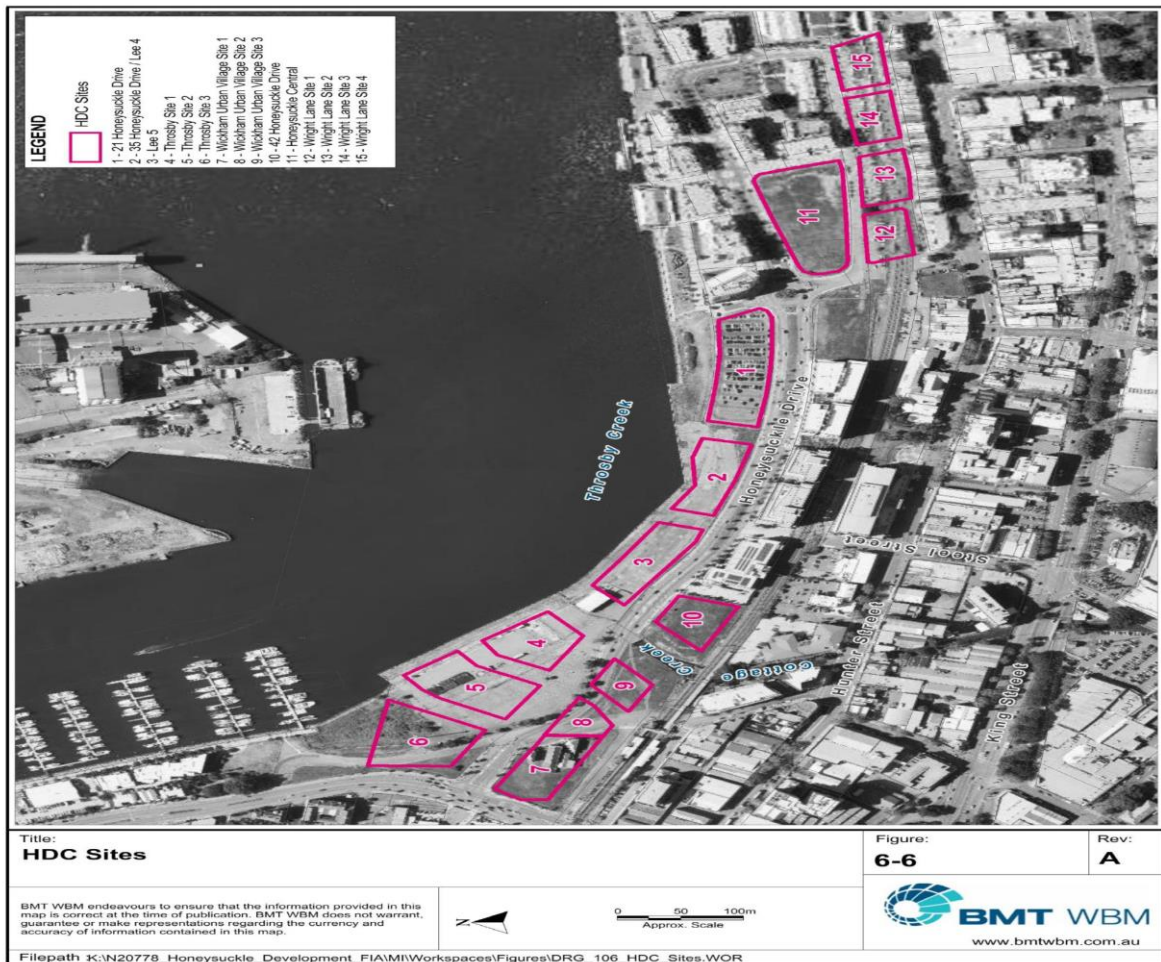
Based on the information contained within the above table the lot does not meet the "development standards for flood control lots", as specified within *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

Please note that 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 Rajnesh Prakash on 4974 2137.

Yours faithfully

Rajnesh Prakash
SENIOR DEVELOPMENT OFFICER



Site Context Plan

**APPENDIX B –
COUNCIL CORRESPONDENCE**

Chris Piper

From: Rajnesh Prakash <rprakash@ncc.nsw.gov.au>
Sent: Thursday, 10 May 2018 9:55 AM
To: Sophie Croft
Cc: Chris Piper
Subject: RE: Enquiry regarding Flood Certificate FL2018-00123

Hi Sophie

Honeysuckle Central is not a floodway (No clarification has been provided in the BMT report on where the L5 risk point is taken), however the interpretation of Figure D-9 indicates that Wright Lane is a floodway. The risk to life at Wright Lane is very likely to have L5 risk to life due to Velocity Depth criteria.

Honeysuckle Central is noted to be developable land in the BMT report and I have the same opinion that the Risk to Life for Honeysuckle Central is L4.

I hope this information assists.

Many Thanks

Raj

Rajnesh Prakash | Senior Development Officer (Engineering)
Development and Building Services | Planning and Regulatory
Newcastle City Council
Phone: +61 2 4974 2137 | **Fax:** +61 2 4974 2701 | **Mobile:** 0478 486 327
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Web: www.newcastle.nsw.gov.au
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From: Sophie Croft [mailto:SCroft@northrop.com.au]
Sent: Thursday, 10 May 2018 8:19 AM
To: Rajnesh Prakash
Cc: Chris Piper
Subject: Enquiry regarding Flood Certificate FL2018-00123

Good morning Raj,

Thank you for sending through the attached Flood Certificate yesterday.

We have noticed that the Honeysuckle Central site has an L5 Life Hazard Category, based on Table 6-7 of the Honeysuckle Redevelopment Area Flood Study. Our understanding of Figure D-9 is that the L5 rating relates to the adjacent Wright Lane, and not the Honeysuckle Central site. We are not proposing to alter the Wright Lane floodway as part of the development.

Could you please confirm that the L5 does not apply to the Honeysuckle Central Site (16, 16A & 16B Honeysuckle Drive)? At this stage it reads as though no development can occur on this site, even though the flood study appears to have specifically included the site for development.



Kind regards,



Sophie Croft

Graduate Civil Engineer

Northrop Consulting Engineers Pty Ltd

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APPENDIX C – CONCEPT DESIGN DRAWINGS

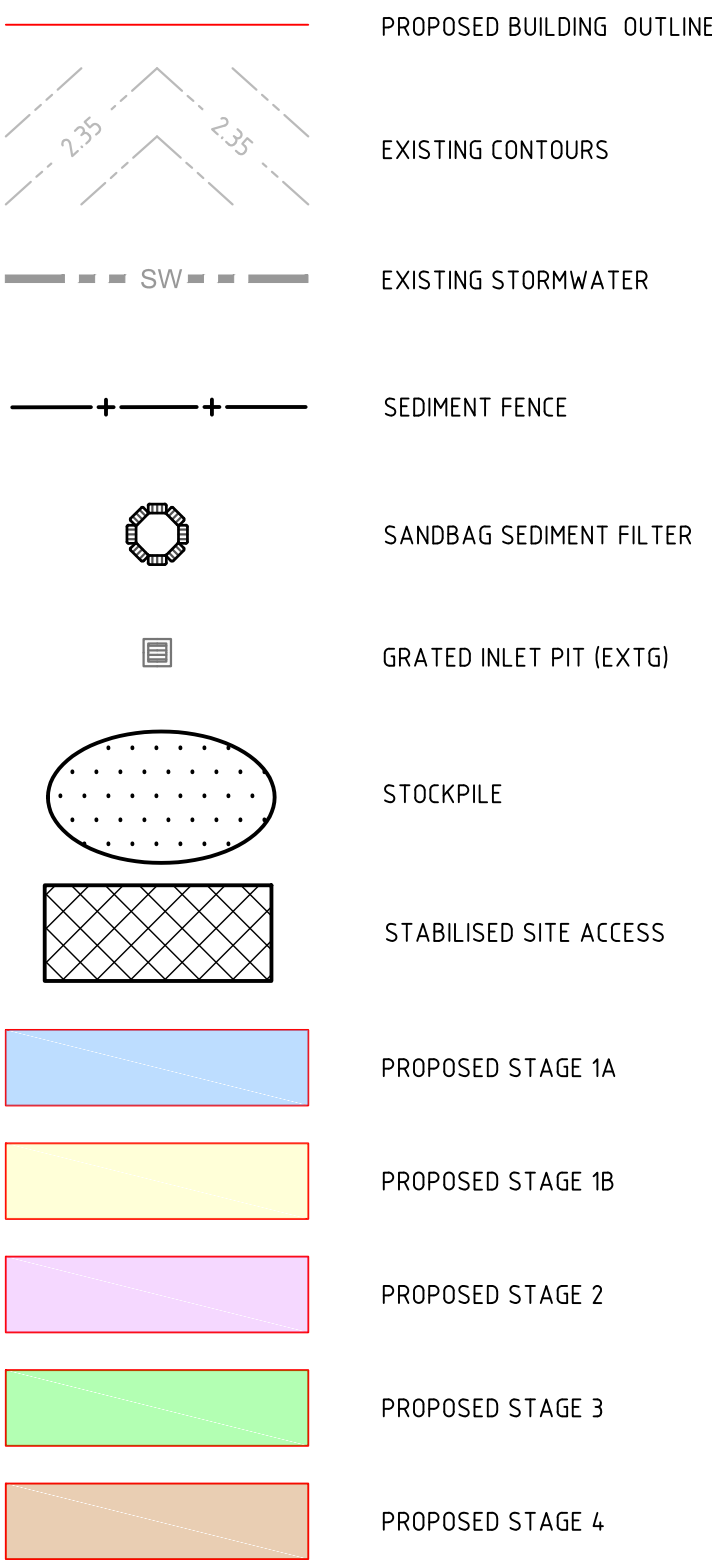
EROSION AND SEDIMENTATION CONTROL NOTES

- ALL EROSION AND SEDIMENTATION CONTROL MEASURES MUST BE APPROPRIATE FOR THE SEDIMENT TYPE(S) OF THE SOILS ON-SITE, IN ACCORDANCE WITH THE 'BLUE BOOK' (MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION. LANDCOM, 2004), OR OTHER CURRENT RECOGNISED INDUSTRY STANDARDS FOR EROSION AND SEDIMENT CONTROL FOR AUSTRALIAN CONDITIONS. THIS INCLUDES SEDIMENT TRAPS AND LINING OF CHANNELS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING A DETAILED WRITTEN RECORD OF ALL EROSION AND SEDIMENT CONTROLS ON-SITE DURING THE CONSTRUCTION PERIOD. THIS RECORD SHALL BE UPDATED ON A DAILY BASIS AND SHALL CONTAIN DETAILS ON THE CONDITION OF CONTROLS AND ANY/ALL MAINTENANCE, CLEANING AND BREACHES. THIS RECORD SHALL BE KEPT ON-SITE AT ALL TIMES AND SHALL BE MADE AVAILABLE FOR INSPECTION BY THE PRINCIPAL CERTIFYING AUTHORITY AND THE SUPERINTENDENT DURING NORMAL WORKING HOURS.
- INSTALL SEDIMENT PROTECTION FILTERS ON ALL NEW AND EXISTING STORMWATER INLET PITS IN ACCORDANCE WITH EITHER THE MESH AND GRAVEL INLET FILTER DETAIL SD6-11 OR THE GEOTEXTILE INLET FILTER DETAIL SD6-12 OF THE 'BLUE BOOK'.
- ESTABLISH ALL REQUIRED SEDIMENT FENCES IN ACCORDANCE WITH DETAIL SD6-8 OF THE 'BLUE BOOK'.
- INSTALL SEDIMENT FENCING, OR OTHER SEDIMENT CONTROL DEVICES, AROUND INDIVIDUAL BUILDING ZONES/AREAS AS REQUIRED AND AS DIRECTED BY THE SUPERINTENDENT OR APPROPRIATE COUNCIL OFFICER.
- ALL TRENCHES INCLUDING ALL SERVICE TRENCHES AND SWALE EXCAVATION SHALL BE SIDE-CAST TO THE HIGH SIDE AND CLOSED AT THE END OF EACH DAYS WORK.
- THE CONTRACTOR SHALL ENSURE THAT ALL VEGETATION (TREE, SHRUB & GROUND COVER) WHICH IS TO BE RETAINED SHALL BE PROTECTED DURING THE DURATION OF CONSTRUCTION.
- ALL VEGETATION TO BE REMOVED SHALL BE MULCHED ON-SITE AND SPREAD/STOCKPILED AS DIRECTED BY THE SUPERINTENDENT.
- STRIP TOPSOIL IN AREAS DESIGNATED FOR STRIPPING AND STOCKPILE FOR RE-USE AS REQUIRED. ANY SURPLUS MATERIAL SHALL BE SPREAD ON-SITE AS DIRECTED BY THE SUPERINTENDENT OR REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH EPA GUIDELINES.
- CONSTRUCT AND MAINTAIN ALL MATERIAL STOCKPILES IN ACCORDANCE WITH DETAIL SD4-1 OF THE 'BLUE BOOK' (INCLUDING CUT-OFF SWALES TO THE HIGH SIDE AND SEDIMENT FENCES TO THE LOW SIDE).
- ENSURE STOCKPILES DO NOT EXCEED 2.0m HIGH. PROVIDE WIND AND RAIN EROSION PROTECTION AS REQUIRED IN ACCORDANCE WITH THE 'BLUE BOOK'.
- PROVIDE WATER TRUCKS OR SPRINKLER DEVICES DURING CONSTRUCTION AS REQUIRED TO SUPPRESS DUST.
- ONCE CUT/FILL OPERATIONS HAVE BEEN FINALIZED ALL DISTURBED AREAS THAT ARE NOT BEING WORKED ON SHALL BE RE-VEGETATED AS SOON AS IS PRACTICAL.

SITE PARAMETERS

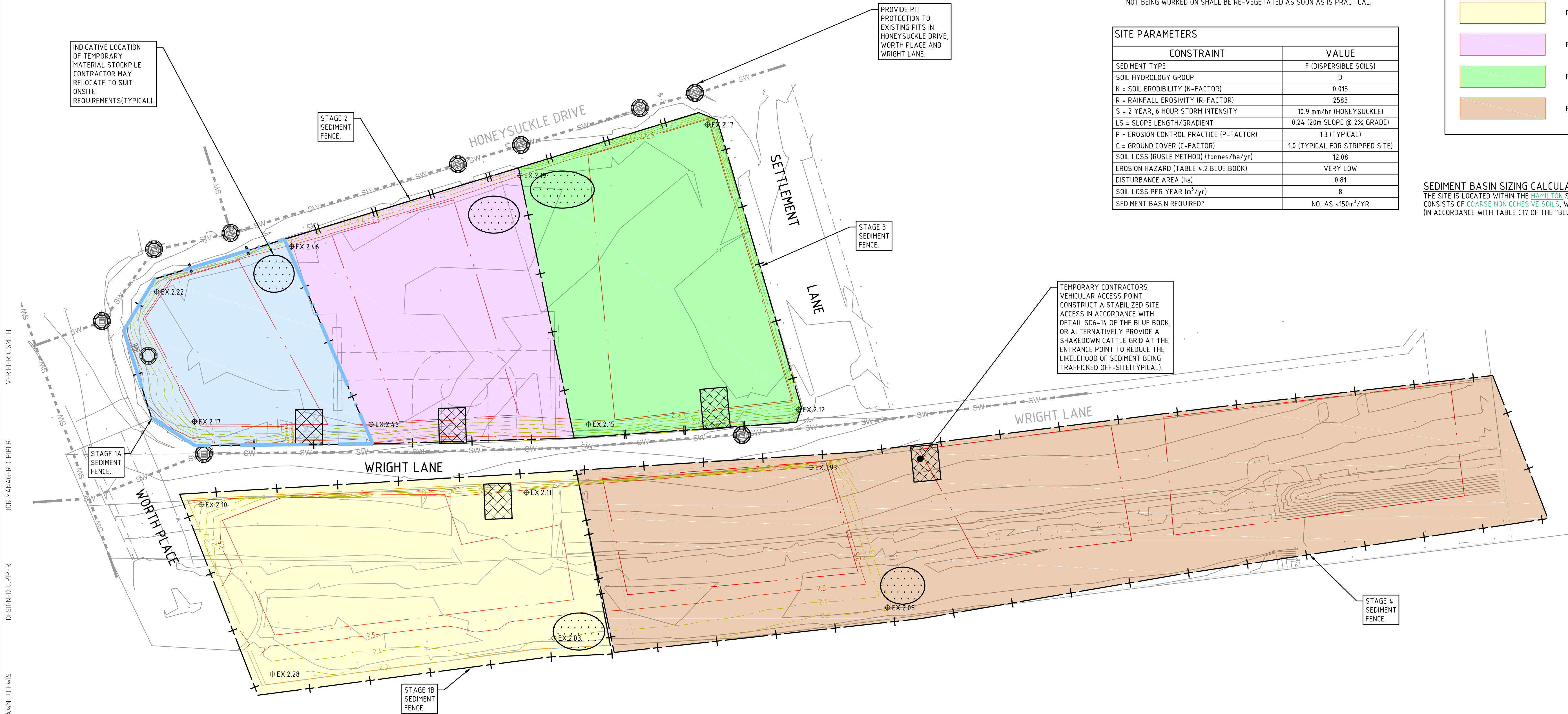
CONSTRAINT	VALUE
SEDIMENT TYPE	F (DISPERSIBLE SOILS)
SOIL HYDROLOGY GROUP	D
K = SOIL ERODIBILITY (K-FACTOR)	0.015
R = RAINFALL EROSIVITY (R-FACTOR)	2583
S = 2 YEAR, 6 HOUR STORM INTENSITY	10.9 mm/hr (HONEYSUCKLE)
LS = SLOPE LENGTH/GRADIENT	0.24 (20m SLOPE @ 2% GRADE)
P = EROSION CONTROL PRACTICE (P-FACTOR)	13 (TYPICAL)
C = GROUND COVER (C-FACTOR)	1.0 (TYPICAL FOR STRIPPED SITE)
SOIL LOSS (RUSLE METHOD) (Tonnes/ha/yr)	12.08
EROSION HAZARD (TABLE 4.2 BLUE BOOK)	VERY LOW
DISTURBANCE AREA (ha)	0.81
SOIL LOSS PER YEAR (m ³ /yr)	8
SEDIMENT BASIN REQUIRED?	NO, AS <150m ³ /YR

LEGEND



SEDIMENT BASIN SIZING CALCULATION

THE SITE IS LOCATED WITHIN THE HAMILTON SOIL LANDSCAPE AND PRIMARILY CONSISTS OF COARSE NON COHESIVE SOILS, WHICH HAS THE FOLLOWING PROPERTIES (IN ACCORDANCE WITH TABLE C17 OF THE 'BLUE BOOK'):



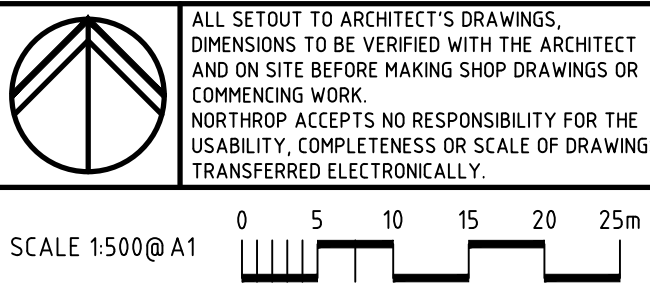
NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	DRAFT FOR INFORMATION	SC		CP	11/05/18
2	FOR APPROVAL	SC		CP	30/05/18



DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

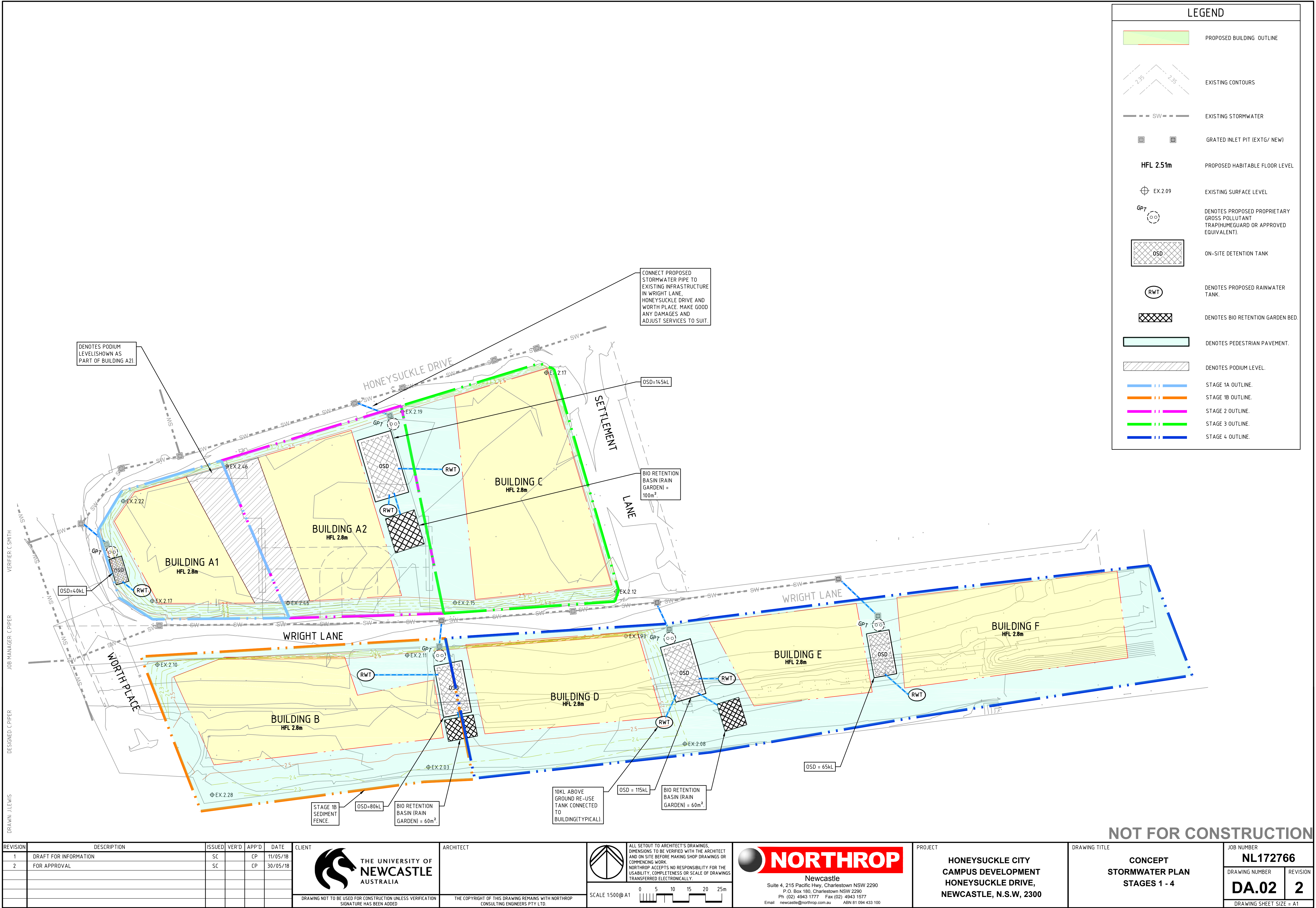
ARCHITECT	CLIENT
THE UNIVERSITY OF NEWCASTLE AUSTRALIA	
THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHTROP CONSULTING ENGINEERS PTY LTD.	



PROJECT
HONEYSUCKLE CITY CAMPUS DEVELOPMENT HONEYSUCKLE DRIVE, NEWCASTLE, N.S.W, 2300

DRAWING TITLE
CONCEPT EROSION AND SEDIMENT CONTROL PLAN STAGES 1 - 4

JOB NUMBER
NL172766
DRAWING NUMBER
DA.01
REVISION
2
DRAWING SHEET SIZE = A1



APPENDIX D – MUSIC-LINK REPORT

MUSIC-*link* Report

Project Details		Company Details	
Project:	NL172766	Company:	Northrop Consulting Engineers
Report Export Date:	11/05/2018	Contact:	Chris Piper
Catchment Name:	NL172766_Concept_SC	Address:	Level 1, 215 Pacific Highway, Charlestown 2290
Catchment Area:	1.772ha	Phone:	02 4943 1777
Impervious Area*:	94.61%	Email:	
Rainfall Station:	61078 WILLIAMTOWN		
Modelling Time-step:	6 Minutes		
Modelling Period:	1/01/1995 - 31/12/2008 11:54:00 PM		
Mean Annual Rainfall:	1125mm		
Evapotranspiration:	1735mm		
MUSIC Version:	6.3.0		
MUSIC-link data Version:	6.30		
Study Area:	Newcastle		
Scenario:	Newcastle		

* takes into account area from all source nodes that link to the chosen reporting node, excluding Import Data Nodes

Treatment Train Effectiveness		Treatment Nodes		Source Nodes	
Node: Post-Development Node	Reduction	Node Type	Number	Node Type	Number
Flow	6.52%	Rain Water Tank Node	7	Urban Source Node	18
TSS	85.5%	Bio Retention Node	4		
TP	66.8%	GPT Node	5		
TN	57.6%				
GP	97.8%				

Comments

Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Bio	Bioretention 1	Hi-flow bypass rate (cum/sec)	None	None	100
Bio	Bioretention 1	PET Scaling Factor	2.1	2.1	2.1
Bio	Bioretention 2	Hi-flow bypass rate (cum/sec)	None	None	100
Bio	Bioretention 2	PET Scaling Factor	2.1	2.1	2.1
Bio	Bioretention 3	Hi-flow bypass rate (cum/sec)	None	None	100
Bio	Bioretention 3	Hi-flow bypass rate (cum/sec)	None	None	100
Bio	Bioretention 3	PET Scaling Factor	2.1	2.1	2.1
Bio	Bioretention 3	PET Scaling Factor	2.1	2.1	2.1
GPT	Ecosol GPT- TFR High Flow- 4450	Hi-flow bypass rate (cum/sec)	None	None	0.26
GPT	Ecosol GPT- TFR High Flow- 4450	Hi-flow bypass rate (cum/sec)	None	None	0.26
GPT	Ecosol GPT- TFR High Flow- 4450	Hi-flow bypass rate (cum/sec)	None	None	0.26
GPT	Ecosol GPT- TFR High Flow- 4450	Hi-flow bypass rate (cum/sec)	None	None	0.26
GPT	Ecosol GPT- TFR High Flow- 4450	Hi-flow bypass rate (cum/sec)	None	None	0.26
Post	Post-Development Node	% Load Reduction	None	None	6.52
Post	Post-Development Node	GP % Load Reduction	90	None	97.8
Post	Post-Development Node	TN % Load Reduction	45	None	57.6
Post	Post-Development Node	TP % Load Reduction	65	None	66.8
Post	Post-Development Node	TSS % Load Reduction	85	None	85.5
Rain	Rainwater Tank A1	% Reuse Demand Met	70	None	98.16
Rain	Rainwater Tank A2	% Reuse Demand Met	70	None	97.81
Rain	Rainwater Tank C	% Reuse Demand Met	70	None	97.2979
Rain	Rainwater Tank D	% Reuse Demand Met	70	None	97.32
Rain	Rainwater Tank E	% Reuse Demand Met	70	None	97.9179
Rain	Rainwater Tank F	% Reuse Demand Met	70	None	97.29
Rain	Rainwater TankB	% Reuse Demand Met	70	None	97.16
Urban	Building A to Water Quality	Area Impervious (ha)	None	None	0.125
Urban	Building A to Water Quality	Area Pervious (ha)	None	None	0
Urban	Building A to Water Quality	Total Area (ha)	None	None	0.125
Urban	Building A1	Area Impervious (ha)	None	None	0.092
Urban	Building A1	Area Pervious (ha)	None	None	0
Urban	Building A1	Total Area (ha)	None	None	0.092
Urban	Building A2	Area Impervious (ha)	None	None	0.127
Urban	Building A2	Area Pervious (ha)	None	None	0
Urban	Building A2	Total Area (ha)	None	None	0.127
Urban	Building B	Area Impervious (ha)	None	None	0.157
Urban	Building B	Area Pervious (ha)	None	None	0
Urban	Building B	Total Area (ha)	None	None	0.157
Urban	Building B to Water Quality	Area Impervious (ha)	None	None	0.053
Urban	Building B to Water Quality	Area Pervious (ha)	None	None	0
Urban	Building B to Water Quality	Total Area (ha)	None	None	0.053

Only certain parameters are reported when they pass validation

NOTE: A successful self-validation check of your model does not constitute an approved model by The City of Newcastle
MUSIC-*link* now in MUSIC by eWater – leading software for modelling stormwater solutions

Node Type	Node Name	Parameter	Min	Max	Actual
Urban	Building C	Area Impervious (ha)	None	None	0.17
Urban	Building C	Area Pervious (ha)	None	None	0
Urban	Building C	Total Area (ha)	None	None	0.17
Urban	Building C to Water Quality	Area Impervious (ha)	None	None	0.068
Urban	Building C to Water Quality	Area Pervious (ha)	None	None	0
Urban	Building C to Water Quality	Total Area (ha)	None	None	0.068
Urban	Building D	Area Impervious (ha)	None	None	0.137
Urban	Building D	Area Pervious (ha)	None	None	0
Urban	Building D	Total Area (ha)	None	None	0.137
Urban	BUilding D to Water Quality	Area Impervious (ha)	None	None	0.016
Urban	BUilding D to Water Quality	Area Pervious (ha)	None	None	0
Urban	BUilding D to Water Quality	Total Area (ha)	None	None	0.016
Urban	Building E	Area Impervious (ha)	None	None	0.114
Urban	Building E	Area Pervious (ha)	None	None	0
Urban	Building E	Total Area (ha)	None	None	0.114
Urban	Building E to Water Quality	Area Impervious (ha)	None	None	0.014
Urban	Building E to Water Quality	Area Pervious (ha)	None	None	0
Urban	Building E to Water Quality	Total Area (ha)	None	None	0.014
Urban	Building F	Area Impervious (ha)	None	None	0.175
Urban	Building F	Area Pervious (ha)	None	None	0
Urban	Building F	Total Area (ha)	None	None	0.175
Urban	Building F to Water Quality	Area Impervious (ha)	None	None	0.021
Urban	Building F to Water Quality	Area Pervious (ha)	None	None	0
Urban	Building F to Water Quality	Total Area (ha)	None	None	0.021
Urban	Copy of Site 3 Ground Level	Area Impervious (ha)	None	None	0.085
Urban	Copy of Site 3 Ground Level	Area Pervious (ha)	None	None	0.014
Urban	Copy of Site 3 Ground Level	Total Area (ha)	None	None	0.1
Urban	Ground Level By-Pass	Area Impervious (ha)	None	None	0.033
Urban	Ground Level By-Pass	Area Pervious (ha)	None	None	0.005
Urban	Ground Level By-Pass	Total Area (ha)	None	None	0.039
Urban	Site 1 Ground Level	Area Impervious (ha)	None	None	0.222
Urban	Site 1 Ground Level	Area Pervious (ha)	None	None	0.037
Urban	Site 1 Ground Level	Total Area (ha)	None	None	0.26
Urban	Site 2 Ground Level	Area Impervious (ha)	None	None	0.204
Urban	Site 2 Ground Level	Area Pervious (ha)	None	None	0.036
Urban	Site 2 Ground Level	Total Area (ha)	None	None	0.241
Urban	Site 3 Ground Level	Area Impervious (ha)	None	None	0.112
Urban	Site 3 Ground Level	Area Pervious (ha)	None	None	0.019
Urban	Site 3 Ground Level	Total Area (ha)	None	None	0.132

Only certain parameters are reported when they pass validation



THE CITY OF NEWCASTLE



APPENDIX E – HUNTER WATER CORRESPONDENCE



Hunter Water Corporation
ABN 46 228 513 446

PO Box 5171
HRMC NSW 2310
36 Honeysuckle Drive
NEWCASTLE NSW 2300
1300 657 657 (T)
(02) 4979 9625 (F)
enquiries@hunterwater.com.au
hunterwater.com.au

4 July 2017

Our Ref: 2017-760/2

Hunter Development Corporation
C/- ADW Johnson
7/335 Hillsborough Road
Warners Bay, NSW 2282

Attention: Mr Cameron Black

Dear Cameron

PRELIMINARY SERVICING ADVICE FOR PROPOSED DEVELOPMENT

Thank you for your request for Hunter Water's preliminary servicing advice for the provision of water and sewer services to the proposed development of the University Campus within the Honeysuckle Precinct.

General information on water and sewer issues relevant to the proposal is included in this correspondence. This information is based on Hunter Water's knowledge of its system performance and other potential development in the area at the present time.

Preliminary servicing advice is not a commitment by Hunter Water and may be subject to significant change prior to the development proceeding. General information on the provision of Hunter Water funded and delivered infrastructure may also be provided. This advice may also change substantially due to a range of factors. In particular, you should note that water and sewer systems are dynamic by nature and, as such, capacity availability and system performance varies over time. As a consequence, the advice provided herein regarding servicing availability is indicative only. A detailed analysis of available capacity will be undertaken upon lodgement of an application for a Notice of Formal Requirements.

If you proceed with a development application you will need to lodge a further application with Hunter Water to then determine the formal requirements that shall apply. Hunter Water will then issue a **Notice of Formal Requirements**. You will need to comply with each of the requirements in this Notice for the issue of a Section 50 Compliance Certificate for the specific development.

Hunter Water anticipates that the development will place an additional demand of approximately 270 Equivalent Tenements (ET) on the water supply and 415 ET on the wastewater system and has reviewed system capacity and performance on this basis. As a result, Hunter Water's preliminary advice is as follows:

Water

The site of the proposed development is located in the Newcastle water supply system and is supplied from the North Lambton Reservoir. The nearest water connection point is the existing 200mm UPVC water main located along Honeysuckle Drive.

There is currently sufficient capacity available in these mains to serve the proposed development, however, as noted elsewhere in this correspondence, capacity availability and system performance varies over time. A detailed analysis will be undertaken upon lodgement of an application for a **Notice of Formal Requirements**.

The developer is required to extend the 150mm water main along Wright Lane and connect back into the 200mm water main on Honeysuckle Drive.

Wastewater Transportation

The site of the development is located in the Newcastle 12 Wastewater Pumping Station (WWPS) catchment area, which pumps into Newcastle West 1 WWPS and to the Burwood Beach Wastewater Treatment Works (WWTW).

The nearest connection point for the development is access chamber G7081 located on a DN300 sewer main along Worth Place and it appears that the site can drain by gravity to this point. There is sufficient capacity within the gravity main and WWPS for this development.

However, as noted elsewhere in this correspondence, capacity availability and system performance varies over time. A detailed analysis will be undertaken upon lodgement of a **Notice of Formal Requirements**.

Wastewater Treatment

The proposed development falls within the Burwood Beach Wastewater Treatment Works (WWTW) catchment. Whilst this development was not included in growth projections for the Burwood Beach WWTW, Hunter Water's treatment facilities are continually reviewed and upgraded over time to meet demand from growth, and future capacity upgrades can be brought forward if required.

Financial Contribution

Dependent on the connection points and utilisation of infrastructure, it may be necessary to pay a reimbursement towards capacity uptake in infrastructure assets constructed by other developers. Hunter Water administers reimbursements for a maximum period of 15 years following hand over to Hunter Water.

It is not possible to calculate reimbursement values at this time due to the tentative nature of information, connection points etc, and accordingly such calculations are usually deferred until definitive information is available.

Environmental Assessment

Please note that a Review of Environmental Factors will be required for any works external to a particular development site, or where the service design includes infrastructure or activities that may have environmental impacts that would not have been specifically addressed in the consent authorities assessment and determination of the proposed development. Examples may be the construction of new or augmented water and sewer pump stations, sewer vents, trunk mains, reservoirs, development in a Wastewater Treatment Plant buffer zone, or development in a water reserve. Furthermore, a Controlled Activity Approval will be required from the NSW Office of Water for any excavation within 40m of a water body or should groundwater be present.

Prior to commencement of environmental assessment please contact the Hunter Water Developer Services Group to confirm the scope and need for such an assessment. It is recommended to meet and agree these matters prior to the developer engaging the services of a design or environmental consultant. In addition, please refer to the Hunter Water Review of Environmental Factors Guidance Notes, located in the Building & Development section of the Hunter Water website. The document provides the minimum requirements and an example template for the preparation of a REF.

Should you require further clarification or assistance please do not hesitate to contact me on 4979 9545.

Yours Sincerely

A handwritten signature in blue ink, appearing to read 'WJ', with a horizontal line extending to the right.

Wesley Jones
Acting Developer Services Engineer

Figure 1 – Proposed Water and Wastewater Connection Points



Chris Piper

From: Wesley Jones <wesley.jones@hunterwater.com.au>
Sent: Monday, 19 February 2018 11:00 AM
To: Chris Piper
Cc: david.alexander@newcastle.edu.au; Lachlan McRae; Chris Barker
Subject: RE: University of Newcastle - Honeysuckle Campus

Correct, the Wright Lane extension will only be required as each stage progresses.

Regards,

Wesley Jones

Development Services Engineer | Hunter Water Corporation
36 Honeysuckle Drive Newcastle NSW 2300 | PO BOX 5171 HRMC NSW 2310
T 02 4979 9676 | Twitter: [@hunterwater](#)
wesley.jones@hunterwater.com.au | hunterwater.com.au
Please consider the environment before printing this email

From: CPiper@northrop.com.au [mailto:CPiper@northrop.com.au]
Sent: Monday, 19 February 2018 10:57 AM
To: Wesley Jones <wesley.jones@hunterwater.com.au>
Cc: david.alexander@newcastle.edu.au; Lachlan McRae <LMcRae@northrop.com.au>; Chris Barker <chris.barker@hunterwater.com.au>
Subject: RE: University of Newcastle - Honeysuckle Campus

Thanks Wesley,

As I mentioned on the phone, the development will be staged, and we expect the 150mm dia watermain main along Wright lane would not be required until Building A2, C, D, E or F are constructed. At this stage we are looking at Building A1 and B only. Let me know if I have misunderstood.

Thanks,



Kind regards

Chris Piper

Senior Engineer

Northrop Consulting Engineers Pty Ltd

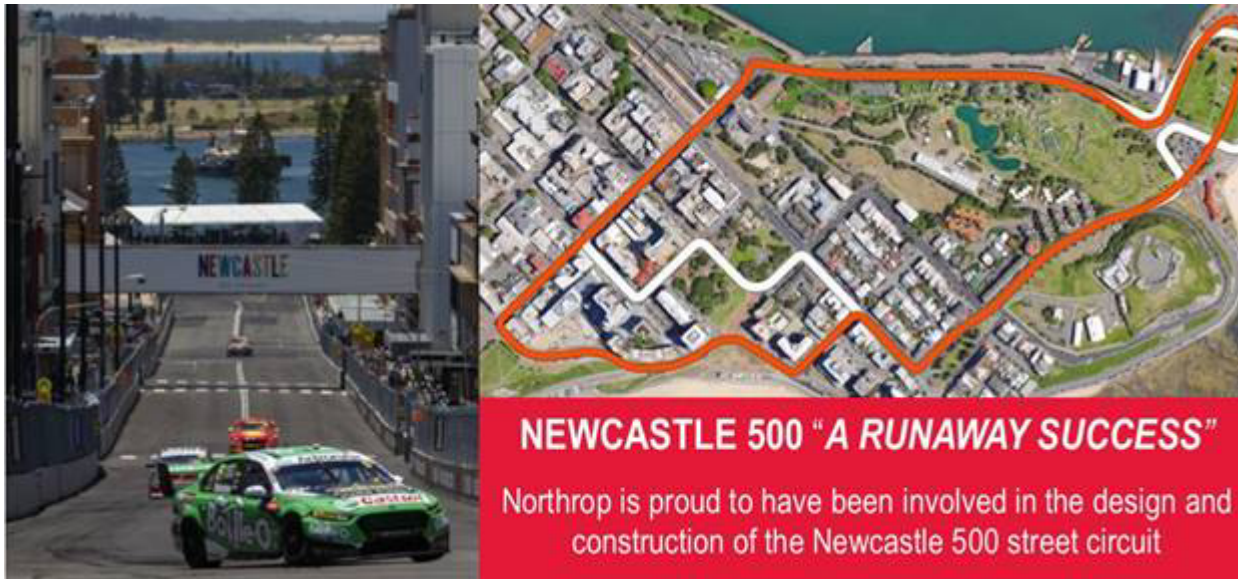
M: 0407 9404 81

F: 02 4943 1577

Level 1, 215 Pacific Highway Charlestown NSW 2290

PO Box 180 Charlestown NSW 2290

www.northrop.com.au



From: Wesley Jones [<mailto:wesley.jones@hunterwater.com.au>]

Sent: Monday, 19 February 2018 10:45 AM

To: Chris Piper <CPiper@northrop.com.au>

Cc: david.alexander@newcastle.edu.au; Lachlan McRae <LMcRae@northrop.com.au>; Chris Barker <chris.barker@hunterwater.com.au>

Subject: RE: University of Newcastle - Honeysuckle Campus

Hi Chris,

I can confirm that the servicing advice from last July is still relevant, with the exception of the proposed watermain amendment. A DN150 watermain is to be installed between the existing DN200 in Honeysuckle Drive and the DN150 on Worth Place, as well as the DN150 extension along Wright Lane to the existing main near the Newcastle Museum.

The site is to be served by a DN150 sewermain along Wright Lane.

If you have any concerns with the above please do not hesitate to call me on the number below.

Regards,

Wesley Jones

Development Services Engineer | Hunter Water Corporation
36 Honeysuckle Drive Newcastle NSW 2300 | PO BOX 5171 HRMC NSW 2310
T 02 4979 9676 | Twitter: [@hunterwater](https://twitter.com/hunterwater)
wesley.jones@hunterwater.com.au | hunterwater.com.au
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From: CPiper@northrop.com.au [<mailto:CPiper@northrop.com.au>]
Sent: Monday, 19 February 2018 9:37 AM
To: Wesley Jones <wesley.jones@hunterwater.com.au>
Cc: david.alexander@newcastle.edu.au; Lachlan McRae <LMcRae@northrop.com.au>
Subject: RE: University of Newcastle - Honeysuckle Campus

Hi Wesley,

Thanks for the call just now. As we discussed, I understand that there is no change from the preliminary servicing advice, and that there is still capacity in the surrounding network to service the proposed site for both sewer and water. I note that we clarified that the wording in the preliminary servicing advice is to mean – a 150mm dia main is to be constructed from the northern side of Honeysuckle Drive to the existing 150mm dia main on Worth Place (not Wright Lane), as shown in the attached drawing.

Thanks again for your help,



Kind regards

Chris Piper

Senior Engineer

Northrop Consulting Engineers Pty Ltd

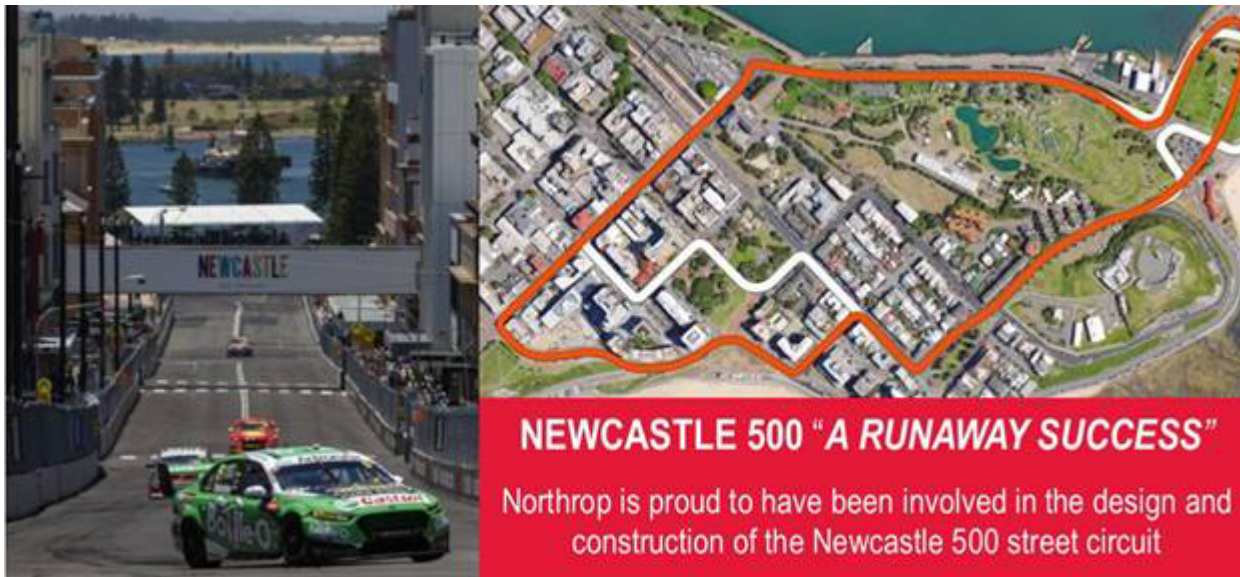
M: 0407 9404 81

F: 02 4943 1577

Level 1, 215 Pacific Highway Charlestown NSW 2290

PO Box 180 Charlestown NSW 2290

www.northrop.com.au



From: Chris Piper
Sent: Tuesday, 13 February 2018 11:13 AM
To: 'wesley.jones@hunterwater.com.au' <wesley.jones@hunterwater.com.au>
Cc: Malcolm Withers (malcolm.withers@hunterwater.com.au) <malcolm.withers@hunterwater.com.au>; 'david.alexander@newcastle.edu.au' <david.alexander@newcastle.edu.au>; Lachlan McRae <lmcrae@northrop.com.au>
Subject: University of Newcastle - Honeysuckle Campus

Hi Wesley,

Further to the attached preliminary servicing advice, we have been engaged by Newcastle University to develop the first stages of the development.

I just wanted to check that the preliminary advice is still relevant, and in line with HUW expectations, as we will be looking to lodge a Section 50 in the next few months for Stage 1 of the works.

Please call to discuss further if necessary.

Thanks,



Kind regards

Chris Piper

Senior Engineer

Northrop Consulting Engineers Pty Ltd

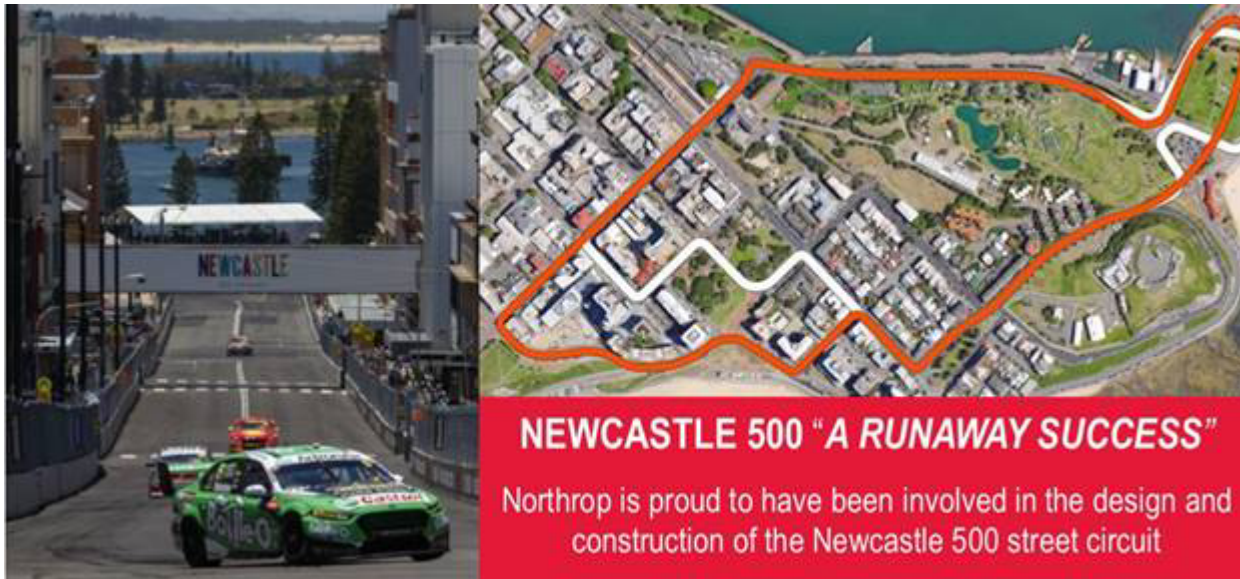
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F: 02 4943 1577

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www.northrop.com.au



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Chris Piper

From: Aaron Greaves <Aaron.Greaves@jemena.com.au>
Sent: Monday, 23 April 2018 10:51 AM
To: Chris Piper
Cc: Lachlan McRae
Subject: RE: University of Newcastle - Honeysuckle Campus Connection

Hi Chris

As discussed, There is sufficient capacity, at this time, in the 30kPa network off of Honeysuckle Drive to supply Building 1A based on an initial assessment that the load requirement for the building is ~ 1,500 mj/hr. When the final gas appliance loads are confirmed and the building is ready for connection, please submit an application for gas via Jemena's gas portal and a full assessment will be completed at that time.

Jemena will facilitate the connection strategy for Buildings 1A and 1B as you have proposed, however I would recommend that for the future stages you employ a servicing strategy using an internal ring main, as it is Jemena's policy that each land title should only have a single service connection.

Cgeers

Aaron Greaves
Network Development Manager I & C
Customer & Markets
Jemena
Level 12, 99 Walker Street, North Sydney, NSW 2060
(02) 9867 7144 | 0419 230 600
Aaron.Greaves@jemena.com.au | www.jemena.com.au



Manage your gas, your way at
mygasservices.jemena.com.au



From: Chris Piper <CPiper@northrop.com.au>
Sent: Monday, 12 February 2018 12:35 PM
To: Mustafa Karacanta <Mustafa.Karacanta@jemena.com.au>
Cc: Lachlan McRae <LMcRae@northrop.com.au>
Subject: University of Newcastle - Honeysuckle Campus Connection

Hi Mustafa,

Thank you for the call just now, as we discussed we are just trying to firm up some preliminary advice previously given regarding a gas connection for a new university campus in Newcastle, NSW.

I have attached a copy of the DBYD with proposed connection points. We expect the use for Stage 1A will be 6 storey academic campus. Stage 1B will be a 9 storey 400 bed student accommodation. Stage 1A and 1B are expected to be built in the next 2 years.

In total, the development is expected to consist of 62,573m³ GFA developed over the next 10 years.

I would like to confirm;

- If 30kPa connection would be sufficient for the intended use, or if 1050kPa connection would be required.
- Ballpark cost for a connection of this type, noting it would include a road crossing.

Previous advice was that there should not be any concerns with the supply from existing network.

Please call to discuss further if required.

Thanks,



Kind regards

Chris Piper

Senior Engineer

Northrop Consulting Engineers Pty Ltd

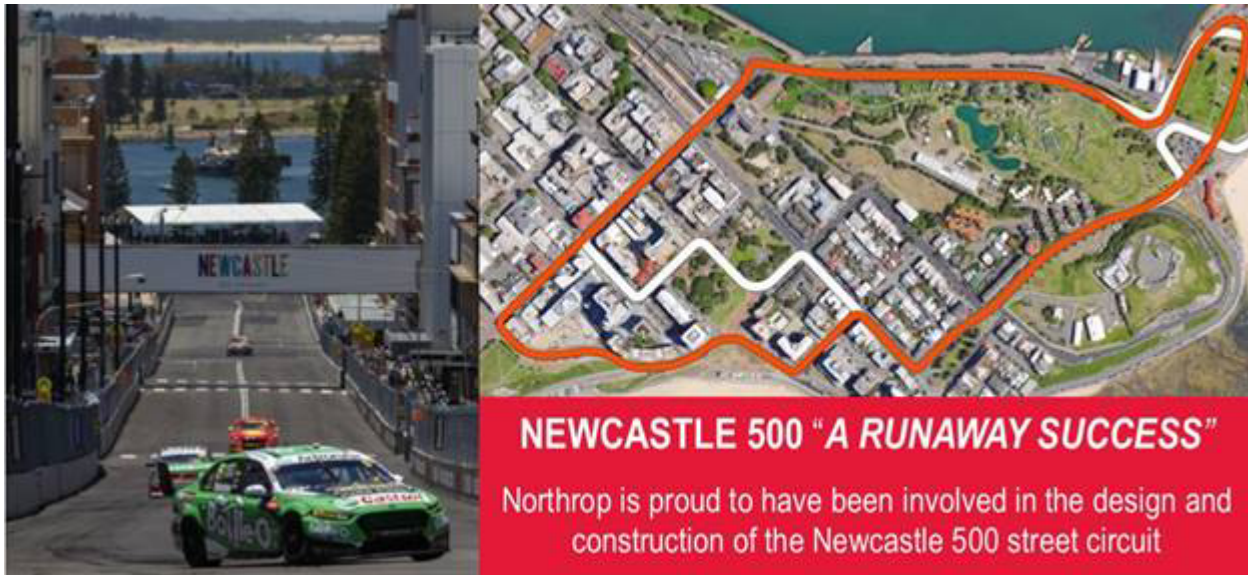
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