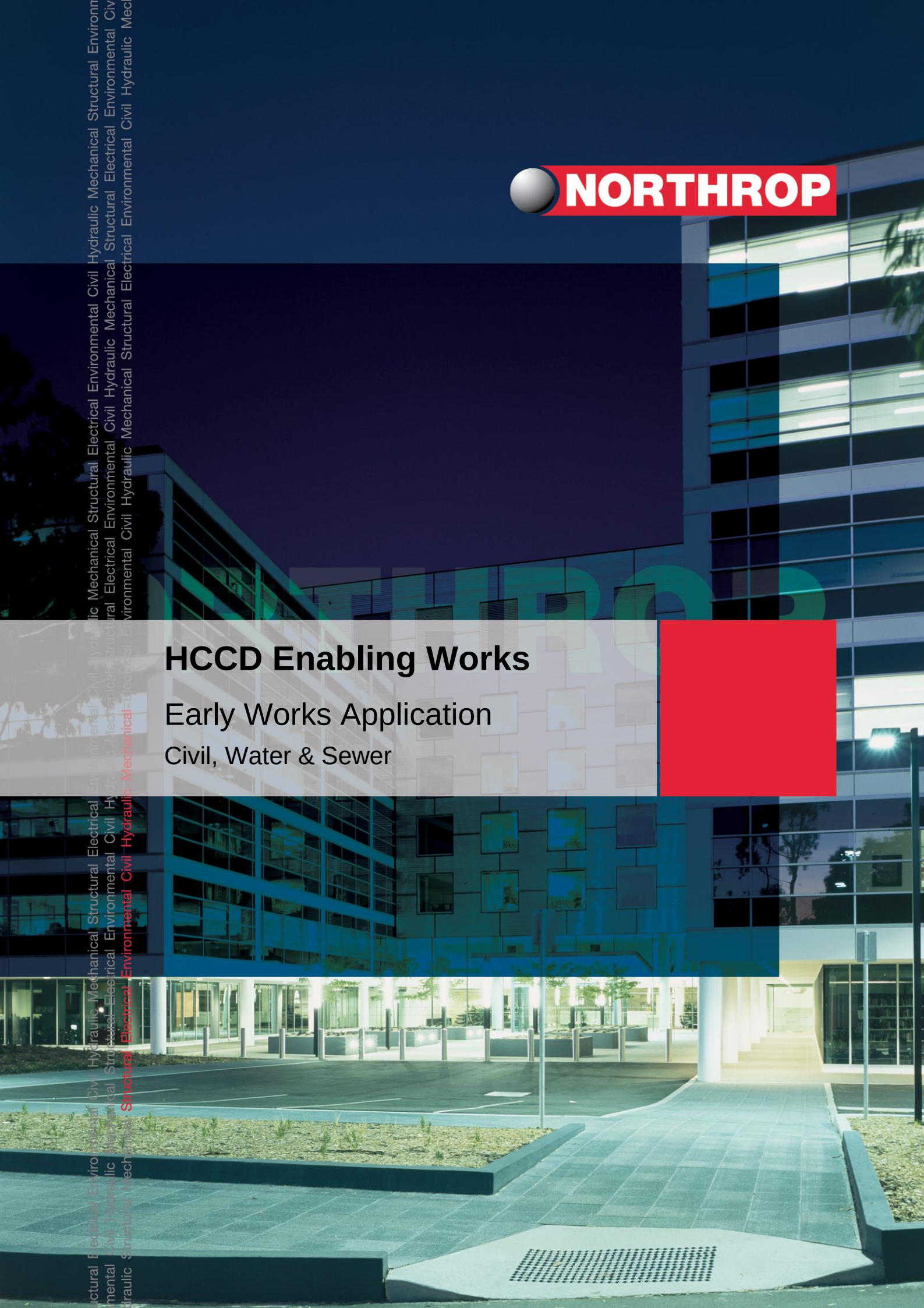
NORTHROP
HCCD Enabling Works
Early Works Application
Civil, Water & Sewer

REPORT DOCUMENT CONTROL

Project: HCCD

Project Ref: NL172766

Document Ref: E04

File Name: NL172766_E04.ABK [C] - Early Works Application.docx

Client: University of Newcastle

Title: Early Works Application - Civil, Water & Sewer

Revision History:

Revision	Report Status	Issue Date	Prepared	Reviewed	Admin
A	Draft Issue	16/05/18	A. Killen	C. Piper	B. McLaren
B	Issued for DA	31/05/18	A. Killen	C. Piper	B. McLaren
C	Issued for DA	4/07/18	A. Killen	C. Piper	B. McLaren
D	Issued for DA	4/03/19			

Prepared:

Andrew Killen
Civil Engineer
BEng (Civil)

Reviewed:

Chris Piper
Senior Civil Engineer
BEng (Civil)

Limitation Statement

Northrop Consulting Engineers Pty Ltd (Northrop) has been retained to prepare this report based on specific instructions, scope of work and purpose pursuant to a contract with its client. It has been prepared in accordance with the usual care and thoroughness of the consulting profession for the use by The University of Newcastle. The report is based on generally accepted practices and standards applicable to the scope of work at the time it was prepared. No other warranty, express or implied, is made as to the professional advice included in this report.

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The report was prepared on the dates shown and is based on the conditions and information received at the time of preparation.

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TABLE OF CONTENTS

APPENDICES

1 INTRODUCTION

1.1 Background

The University of Newcastle (UoN) is seeking to expand its presence in the CBD of Newcastle and is in the process of acquiring three parcels of land within the Honeysuckle Precinct. The three sites are proposed to house the Honeysuckle City Campus Development (HCCD), intended to be a large scale academic precinct. At present, the HCCD development is to be completed over several stages;

- Stage 1A – Construction of Building A1 (Site 1);
- Stage 1B – Construction of Building B (Site 2);
- Stage 2 – Construction of Building A2 (Site 1);
- Stage 3 – Construction of Building C (Site 1)
- Stage 4 – Construction of Buildings D, E & F (Site 2 & 3)

The layout of the proposed development is provided in Figure 1-1.

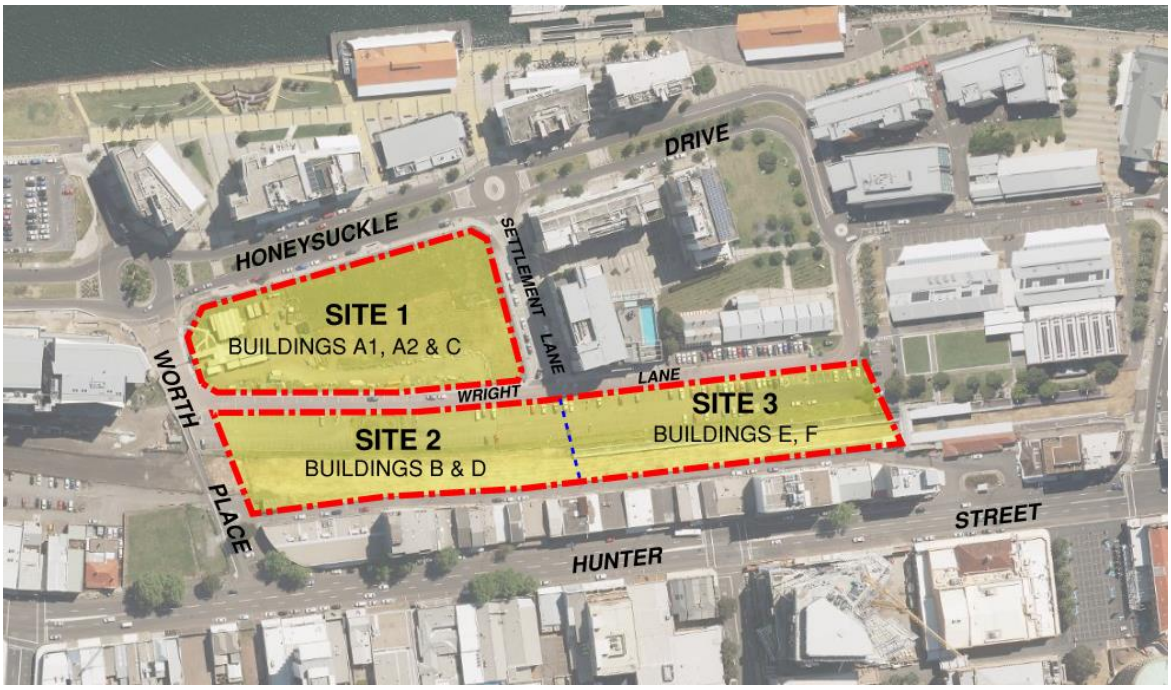


Figure 1-1: HCCD Development.

1.2 Purpose and Scope

The purpose of this report is to provide input to support the preparation of an early works application for Stage 1A of the early works phase of the development (Site 1 works). The scope of information provided in this report relates to the civil portion of the development consisting of the following:

- Demolition works;
- Civil works including bulk earthworks;
- Water and sewer servicing; and
- Erosion and sediment control.

2 PROPOSAL DETAILS

2.1 Demolition Works

No demolition works will be required within Site 1 as part of Stage 1A works.

2.2 Bulk Earthworks

Current site levels range from 2.0 to 2.5 mAHD. As noted in the Schematic Design report, the minimum habitable floor level for Site 1, in line with Council's current flood management plan is 2.8 mAHD. Filling of the site will therefore be required to achieve the required minimum floor levels.

The bulk earthworks strategy for Stage 1A is expected to be generally as follows;

- Strip the existing topsoil layer, to a nominal depth of 200mm, resulting in approximately 1,700m³. Topsoil is to be stockpiled on site during construction, with suitable erosion and dust control measures.

- Import approximately 3,650 m^3 to fill the full Site 1. It is expected that fill will be imported from off site and trucked to site, placed and compacted.

- Once filling is completed, the stockpiled topsoil will be respread to the remainder of the site outside of Stage 1A building footprint. Respread of topsoil will be staged to minimise any double handling off imported fill or topsoil.

Procurement of fill material is to be confirmed by the contractor at time of tendering. Requirements for the acceptance of fill material will be required at detailed design stage. Verification sampling will be carried out by the principal geotechnical consultant at time of construction.

Management of any unexpected contamination identified on site will be undertaken in accordance with the Contaminated Land Management Plan and Unexpected Finds Protocol (Coffey 2019), that has been prepared for the site.

2.3 Water Reticulation

Hunter Water have issued a Notice of Formal Requirements (NOR) for Stage 1A and 1B, which confirms that the existing water reticulation network has sufficient capacity to service the proposed development. This is based on an estimated additional water demand of 270 Equivalent Tenements (ET). Northrop have undertaken an independent demand calculation and is satisfied that HWC have made sufficient allowance for the proposed development, as presented in COX Concept Master Plan Report, dated October 2017. It is noted however that Hunter Water's demand calculations are based on a higher GFA than is currently proposed. A copy of the NOR is contained in Appendix B.

It is noted that this advice is time limited and the current excess capacity could be absorbed in the medium term by other developments in the area. In this instance, further upgrades to the existing water network may be required. Available demand would be calculated on a building by building basis.

The water reticulation strategy for Stage 1A can be summarised as follows and is illustrated in Figure 2-1.

- Install 173m x 250mm diameter PVC Class 16 watermain;

- Install 57m x 150mm diameter PVC Class 16 watermain;

- *Optional*: Install additional 60m x 150mm diameter PVC Class 16 (to Building C). This is to be confirmed by HWC at time of detailed building design.

2.4 Sewer

Hunter Water have issued a Notice of Formal Requirements (NOR) for Stage 1A and 1B, which confirms that the existing Newcastle 12 Waste Water Pumping Station (WWPS) and 300mm gravity main have sufficient capacity to service the proposed development. This is based on an estimated additional demand of 415 Equivalent Tenements (ET). Northrop have undertaken an independent demand calculation based on the development's estimated gross-floor area and Hunter Water's demand estimation guidelines (WSA02-2014 Appendix HW N) and is satisfied that the allowance made by HWC reflects the proposed development, as presented in COX Concept Master Plan Report, dated October 2017. A copy of the NOR is contained in Appendix B.

It is noted that concurrent development work within the Newcastle 12 WWPS catchment may absorb the additional sewer capacity. In this instance, upgrades to the existing sewer network may be required. Available demand would be calculated on a building by building basis.

The sewer servicing strategy for Stage 1A can be summarised as follows and is illustrated in Figure 2-1:

- Install 70m x 150mm diameter uPVC SN8 sewer main (3 to 4.5m deep).
- Install 20m x 150mm diameter uPVC SN8 sewer main (1.5 to 3m deep).
- Install Maintenance Chamber x 3.
- *Optional:* Install additional 60m x 150mm diameter uPVC SN8 (1.5 to 3m deep) (to Building C) including maintenance chamber. This is to be confirmed by HWC at time of detailed building design.
- *Optional:* Install additional Maintenance Chamber x 1. This is to be confirmed by HWC at time of detailed building design.

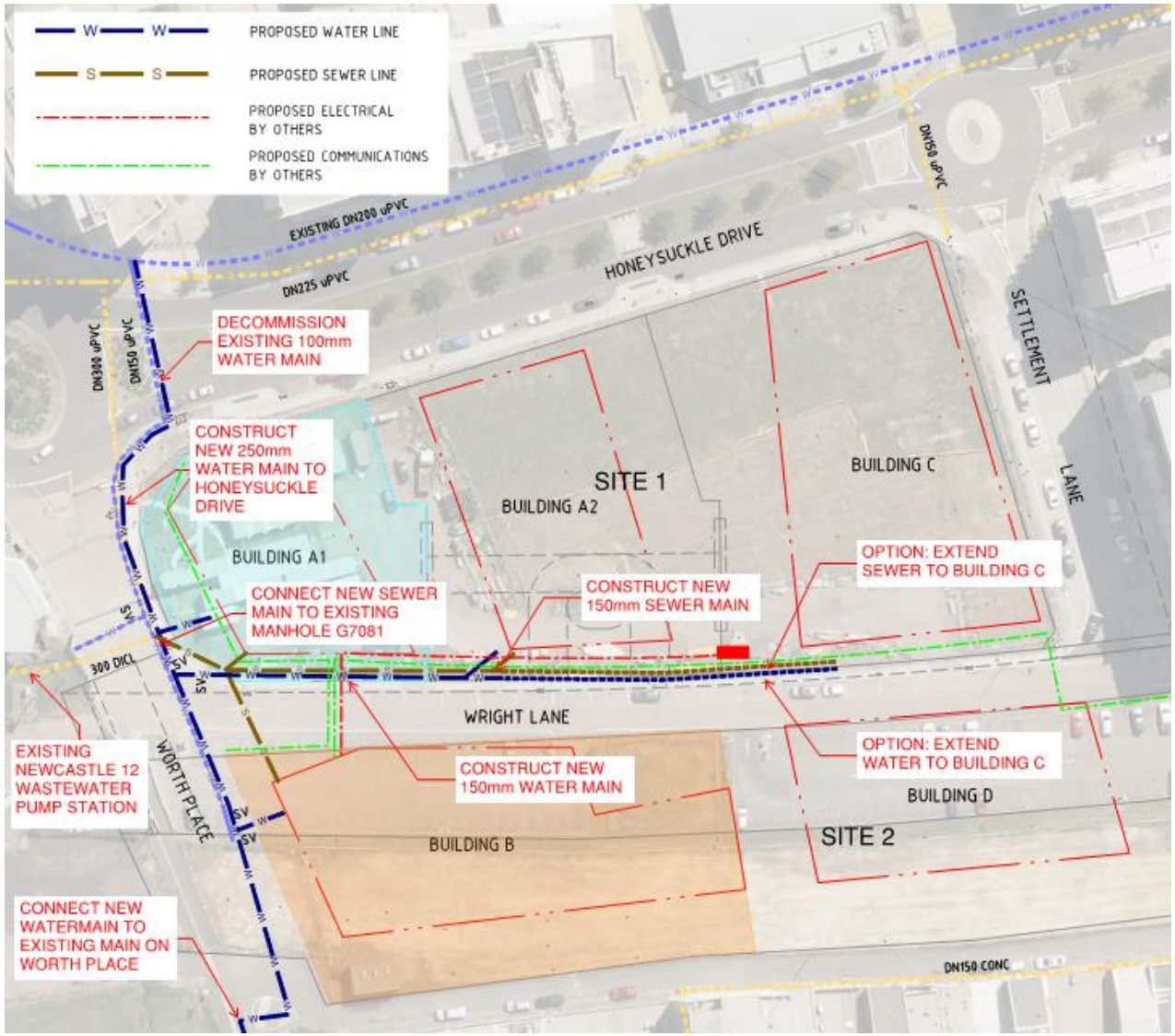


Figure 2-1: Stage 1A Servicing Strategy.

3 CONSTRUCTION METHODOLOGY

3.1 Bulk Earthworks

Bulk earthworks operations, including topsoil stripping, excavation, filling and compaction works will be contained within Site 1. Associated site works carried out will generally include:

- Site establishment including temporary fencing, site compound establishment and site preparation works;
- Sediment and erosion control works;
- Traffic control;
- Revegetation works.

Topsoil and fill material will be stockpiled within the Site 1 compound to allow appropriate management of erosion, leachate and dust dispersion risks. Any materials reused onsite, or imported from another project would be subject to testing to determine waste classification. Unsuitable or unexpected contaminated material excavated from the site will be classified prior to removal from the site and disposed of to an approved waste management facility in accordance with the Contaminated Land Management Plan and Unexpected Finds Protocol (Coffey 2019).

3.2 Water

Water infrastructure will be constructed by open trenching in the majority of cases, however trenchless techniques may be investigated for pipe installations beneath major roads such as Honeysuckle Drive. Depth of trenching will be dictated by the depth of existing connecting services and Hunter Water's minimum pipe cover requirements. For watermains under Council Roads, the preferred minimum cover is 900 mm. Following backfilling of the proposed water mains, disturbed road pavements are to be reinstated and other areas topsoiled and turfed as required.

3.3 Sewer

Sewer infrastructure will be installed via open trenching. Deep trenching up to 5.5 m below natural surface levels will be required at the downstream end of the proposed sewer. This will require specialised shoring and/or benching as well as excavation dewatering. It is likely that sections of existing road pavement and footpath will require demolition prior to excavation of trenches. Adequate structural support will also need to be provided to existing services for the duration of the works. Following backfilling of the proposed sewer, disturbed road pavements are to be reinstated and other areas topsoiled and turfed as required. Any acidic or acid sulphate soils will be identified, tested and managed in accordance with the Acid Sulfate Soil Management Plan (Coffey 2019) prepared for the site.

3.4 Erosion and Sediment Control

It will be the Contractor's responsibility to ensure that sediment, erosion and dust control measures required under the approved Erosion and Sediment Control Plan and general policy requirements (the publication 'Managing Urban Stormwater, Soils and Construction') are maintained throughout the construction period. In general, all land disturbed by earthworks must be revegetated (turfed) once work has been finalised in that area. Refer to Appendix C for a Concept Erosion and Sediment Control Plan.

APPENDIX A –
ENABLING WORKS DRAWINGS

BULK EARTHWORKS SUMMARY TABLE

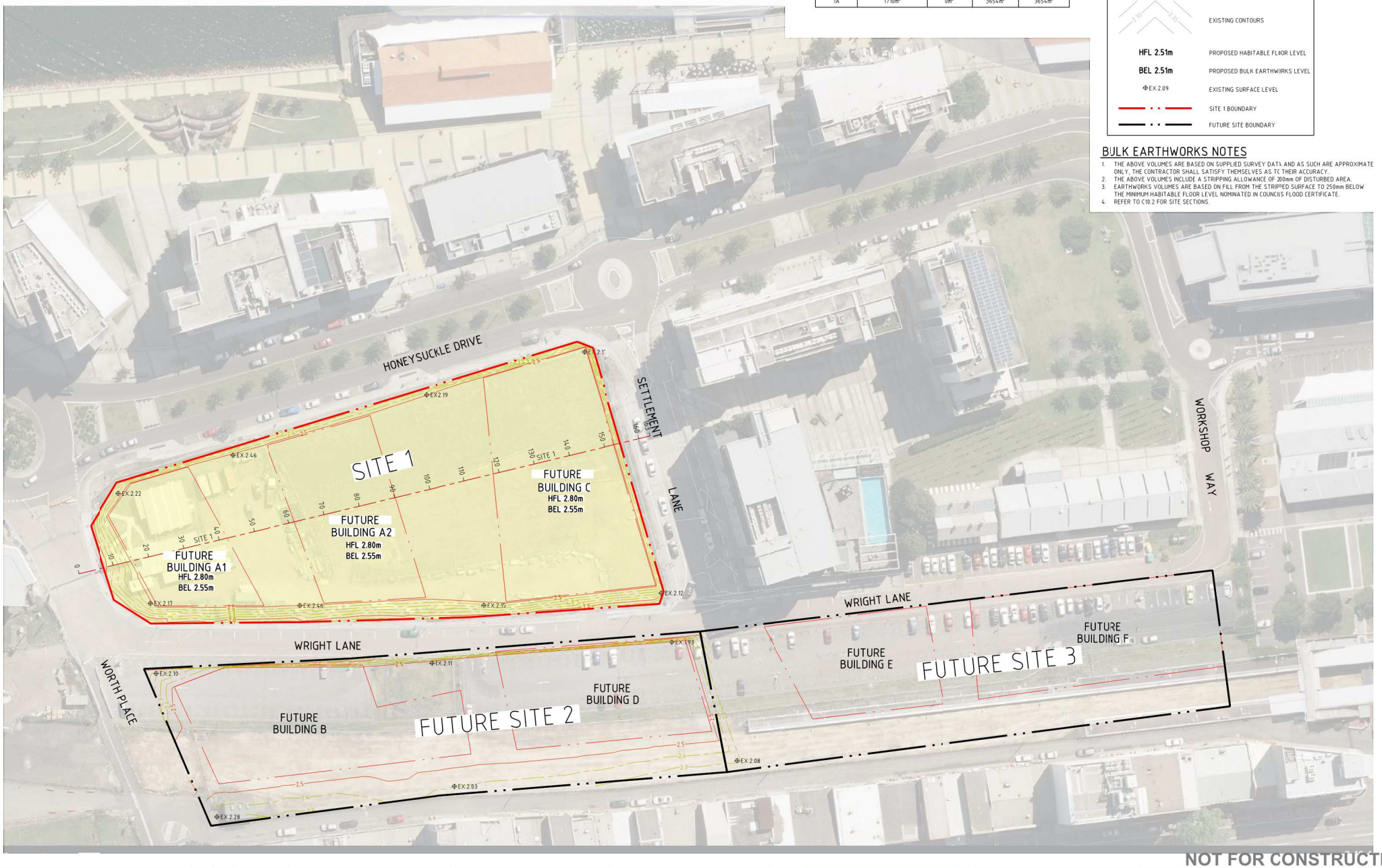
STAGE	STRIP VOLUME	CUT	FILL	IMPORT
1A	1710m³	0m³	3654m³	3654m³

LEGEND

- PROPOSED BUILDING OUTLINE
- EXISTING CONTOURS
- HFL 2.51m — PROPOSED HABITABLE FLOOR LEVEL
- BEL 2.51m — PROPOSED BULK EARTHWORKS LEVEL
- EX 2.09 — EXISTING SURFACE LEVEL
- SITE 1 BOUNDARY
- FUTURE SITE BOUNDARY

BULK EARTHWORKS NOTES

1. THE ABOVE VOLUMES ARE BASED ON SUPPLIED SURVEY DATA AND AS SUCH ARE APPROXIMATE ONLY, THE CONTRACTOR SHALL SATISFY THEMSELVES AS TO THEIR ACCURACY.
2. THE ABOVE VOLUMES INCLUDE A STRIPPING ALLOWANCE OF 200mm OF DISTURBED AREA.
3. EARTHWORKS VOLUMES ARE BASED ON FILL FROM THE STRIPPED SURFACE TO 250mm BELOW THE MINIMUM HABITABLE FLOOR LEVEL NOMINATED IN COUNCILS FLOOD CERTIFICATE.
4. REFER TO C10.2 FOR SITE SECTIONS.



NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	EARLY WORKS APPLICATION	JP	CP	SC	0507.18

CLIENT: THE UNIVERSITY OF NEWCASTLE AUSTRALIA
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT

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Suite 4, 215 Pacific Hwy, Charlestown NSW 2290
P.O. Box 180, Charlestown NSW 2290
Ph (02) 4943 1777 Fax (02) 4943 1577
Email newcastle@northrop.com.au ABN 81 094 433 100

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

DRAWING TITLE: BULK EARTHWORKS PLAN STAGE 1A

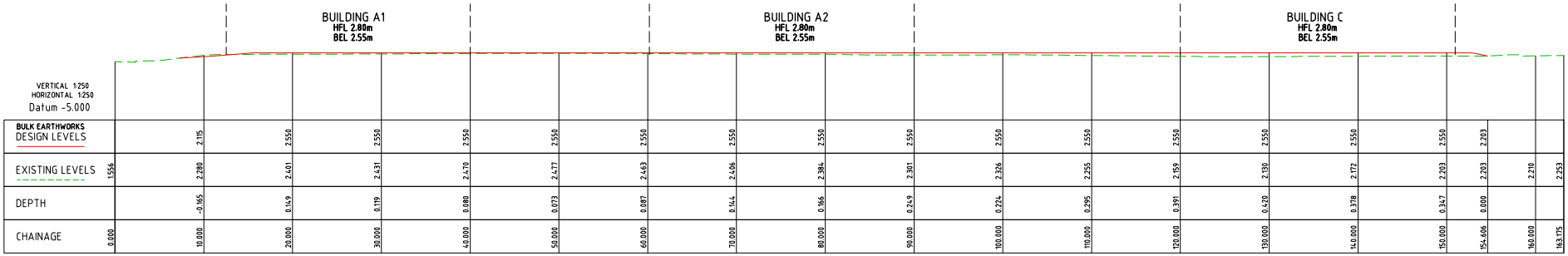
JOB NUMBER: NL172766

DRAWING NUMBER: C10.1

REVISION: 1

DRAWING SHEET SIZE = A1

DRAWN J.GEARING
DESIGNED C.PIPER
JOB MANAGER C.PIPER
VERIFIER C.SMITH



SITE 1 LONG SECTION

VERIFIER: C.SMITH

JOB MANAGER: C.PIPER

DESIGNED: C.PIPER

DRAWN: J.GEARING

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	EARLY WORKS APPLICATION	JP	CP	SC	05.07.18

CLIENT

THE UNIVERSITY OF NEWCASTLE AUSTRALIA

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ARCHITECT

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Ph (02) 4943 1777 Fax (02) 4943 1577
Email newcastle@northrop.com.au ABN 81 094 433 100

PROJECT

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

DRAWING TITLE

BULK EARTHWORKS
LONGITUDINAL SECTIONS

JOB NUMBER
NL172766

DRAWING NUMBER	REVISION
C10.2	1

DRAWING SHEET SIZE = A1

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	EARLY WORKS APPLICATION	JP	CP	SC	0507.18

CLIENT: THE UNIVERSITY OF NEWCASTLE AUSTRALIA

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ARCHITECT

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SCALE 1:500@A1 — 0 5 10 15 20 25m

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P.O. Box 180, Charlestown NSW 2290
Ph (02) 4943 1777 Fax (02) 4943 1577
Email newcastle@northrop.com.au ABN 81 094 433 100

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

DRAWING TITLE: WATER AND SEWER STRATEGY STAGE 1A

JOB NUMBER: NL172766

DRAWING NUMBER: C10.3

REVISION: 1

DRAWING SHEET SIZE = A1

APPENDIX B – 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)
hunterwater.com.au

24 May 2018

Ref: 2017-760

Hunter Development Corporation
C/- Northrop Consulting Engineers
P O Box 180
Charlestown NSW 2290

Attention: Andrew Killen

Dear Andrew

AMENDED NOTICE OF FORMAL REQUIREMENTS FOR PROPOSED DEVELOPMENT

Hunter Water implemented a new asset creation process for developer works on 1 July 2017. All developer works from the implementation date are required to be delivered in accordance with the new process. Details are available on Hunter Water's website: www.hunterwater.com.au (Building and Development/New Model for Developer Works)

The Developer is required to download the relevant version of the Developer Works Deed (the Deed), noted below, by visiting Hunter Water's website. Ensure that you have a full appreciation of the content of the Deed and obligations of all parties. The Developer will need to sign and return the Deed to developer.deed@hunterwater.com.au .

The Developer is able to engage Accredited Suppliers only after Hunter Water has returned the signed Deed.

Hunter Water's amended requirements for the provision of water and sewerage facilities to the Stage 1A and 1B development of a multi-staged University Campus at Lot 1, 2, 3 DP 1163346, Lot 4 DP 1111305, Lot 2 DP 1226145 & Lot 21 DP 1165985, Newcastle are below. The amendments are based on WSAA Code requirements for buildings over eight stories to be served by a minimum 250mm water main.

Please note that the following requirements are specific to the Stage 1A and 1B developments and do not necessaily correspond to your proposed servicing arrangements. Should you wish to explore a servicing strategy for the overall development, Hunter Water would be happy to facilitate a meeting to discuss this matter further. Please note that subsequent stages of this development will require separate application to Hunter Water.

Network Infrastructure and Delivery

1 Design and construct developer works under a **Routine Major Works** Deed with Hunter Water to connect each of the lots to the existing water and sewer system(s).

The works must be designed and certified by an Accredited Design Consultant in accordance with the new asset creation process for Developer Works and the **Specific Connection Details** below.

The Deed Number for these works will be **2017-760/5.**

Please note the nominal water and sewer connection points listed in this Notice Letter. Please contact Hunter Water if the proposed connection points are unable to be utilised.

The works design must be compliant with Hunter Water's Deed, Technical Specifications and Standard Drawings.

If the works involve a system shutdown or impact on existing customers you will be required to submit a request to Shutdownrequests@hunterwater.com.au prior to submitting the final design.

It is the responsibility of the Accredited Design Consultant to lodge the finished design Documentation and Design Compliance Certificate to Hunter Water at design.submission@hunterwater.com.au prior to construction starting.

All suppliers engaged by the developer must have insurances in place in accordance with the Deed.

If necessary, you will be required to pay $622 compensation for each maintenance structure constructed on a third party property.

Specific Connection Details

2 Water Supply

The developer must extend a DN250 water main to connect the DN200 UPVC-HD20 water main along Honeysuckle Drive to the DN150 CICL-S along Worth Street (refer to **Figure 1**). The DN100 UPVC-HD20 along Worth Place will also require upsizing to DN250.

For subsequent stages of the University Precinct, the developer will need to extend a water main to provide a frontage to each building within the Precinct. Should any building be greater than 8 stories, the water main should be a minimum 250mm diameter main.

3 Wastewater Transportation

The development can connect to MH G7081 located along Worth Place (refer to **Figure 2**).

Asset Protection

4 Build-Over-Sewer Policy

The development must comply with Hunter Water's Building Over Sewer Assets Policy as it may impact the DN150 UPVC-SN8, DN150 Concrete, and DN300 UPVC-SN8 sewer mains located adjacent to the development lot(s). As such:

a All buildings, structures, landscaping and improvements to the land which are located over or adjacent to the sewer main must not impose any loading on the sewer main nor interfere with or obstruct the sewer in conveying flows.

b Compliance with Hunter Water's Act with respect to the design and construction of all building, structures, landscaping and improvements is required (refer to the Building Over Sewer Assets Policy attached to this Notice of Requirements).

c Hunter Water's minimum cover requirements are to be maintained.

d A minimum clearance of 1.5 m is to be maintained off the Dead End along Wright Lane.

5 Watermain Along Footpath

Ensure that all due care is taken by all contractors in the course of construction activities including construction of the driveway and accessing the construction site as there is a watermain located in the footpath along Worth Place adjacent to the Western boundary of the proposed development site.

The developer should confirm the depth of the watermain by site survey prior to construction to ensure Hunter Water's minimum cover requirements will be complied with in relation to the driveway. If this minimum cover requirement cannot be met, please contact Hunter Water to discuss options for protection of the watermain. An option may be lowering the watermain under a Major Works contract with Hunter Water.

Please note that it is Hunter Water's practice to seek the full costs of repairs should any damage occur to Hunter Water assets.

Other Connection Requirements

6 Environmental Assessment

You will be required to submit a Review of Environmental Factors (REF) (refer Appendix HW 1 of Water Supply Code of Australia – Hunter Water Edition) to Hunter Water for the construction and operation of the proposed works. The REF will need to be approved by Hunter Water prior to the design process being finalised.

An REF considers the likely impacts a development may have on the environment. At all times, methods for preventing or reducing adverse environmental impacts should be considered and where appropriate, incorporated into the project design.

Hunter Water will make a determination in accordance with Environmental Planning and Assessment Act 1979. An environmental report assessment fee should be pain when the REF is submitted.

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 Guidance Notes provide the minimum requirements and an example template for the preparation of a REF.

Please note that a Controlled Activity Approval will be required from the NSW Office of Water for any excavation within 40 metres of a water body or should groundwater be present.

7 Third Party Entry

The proposed works will require entry to another property. You will need to arrange for entry and have evidence of consent by way of a signed Entry Permit with the affected landowner. The Permit is to be submitted with the Design submission.

8 Development Consent

Submit the Development Consent Conditions determined by Council or the Complying Development Certificate for this specific development. Hunter Water will confirm that the final development description is consistent with the details supplied by you for this application. If there are any subsequent amendments to this development consent, Hunter Water will require you to submit a revision application.

9 Trade Waste

Your proposed development has been identified as having the potential to discharge trade waste into Hunter Water's sewerage system. You are required to contact Hunter Water's Technical Services Team on (02) 4979 9712 or via email plumbing@hunterwater.com.au in order to confirm if an application for a Trade Wastewater Agreement is required or if an existing agreement will need to be amended. The discharge of trade waste to the sewer will not be permitted without a valid agreement authorising that discharge. (Refer to the Trade Wastewater factsheet on Hunter Water's website for more information).

10 Hydraulic Assessment

You will be required to submit an application for a hydraulic design assessment of internal water and sewerage services for this development, including rainwater tanks and any alternative water supply systems. Please contact Hunter Water's Technical Services Team on (02) 4979 9712 or via email plumbing@hunterwater.com.au to confirm the specific requirements. (Refer to the Hydraulic Plan Assessment factsheet on Hunter Water's website for more information).

Please note, the information shown on the plan provided with this letter may not be up to date and Hunter Water accepts no responsibility for its accuracy. Any contractor(s) or consultant(s) engaged by the developer should confirm all levels by field survey.

These requirements are valid for 12 months from the date of this letter and are specific to this development. All fees and charges are subject to adjustment using the Consumer Price Index (CPI) adjustment on 1 July each year.

Please refer to the attached Supplementary Information and Guidance which details the conditions under which water and sewer facilities are available to new customers. Hunter Water reserves its right to amend the requirements set out above prior to issuing a Section 50 Compliance Certificate.

Yours faithfully

MALCOLM WITHERS
Account Manager Major Development

Enquiries: Malcolm Withers
Tel: 02 4979 9545
Email: malcolm.withers@hunterwater.com.au

Figure 1 – Water Supply Connection Point

Figure 2 – Sewer Connection Point

BUILDING OVER SEWER ASSETS STANDARD

PURPOSE

Hunter Water maintains a network of sewer mains within its area of operation. Under its Operating Licence Hunter Water is required to meet specified levels of performance with respect to the operation of this sewerage system. The sewerage network requires regular maintenance to ensure its continued operation. Access to underground pipelines is a key factor in providing prompt and cost effective maintenance. The presence of a building or structure over a sewer main restricts or may preclude Hunter Water from accessing the asset for repairs.

SCOPE

This policy applies to all developments proposing to build over or adjacent to Hunter Water's sewer network assets.

POLICY STATEMENT

The policy of Hunter Water is to ensure compliance with the legislation (Hunter Water Act, 1991, as amended) and requires all sewer network assets to be diverted clear of proposed buildings, structures, landscaping and improvements so as to ensure ongoing access to operate and maintain the asset.

Where Hunter Water agrees that there may be a suitably low residual risk, Hunter Water may require that the asset be replaced in-situ with flexible and more durable plastic pipe prior to building works commencing. This work is at the landowner's expense and can usually be carried out by an accredited contractor. Where existing sewer mains are located on the development lot, the landowner is required to undertake work so that the sewer mains comply with the latest Hunter Water Edition, WSAA Design Manual guidelines.

APPLICATION OF POLICY

This policy applies to any development, subdivision, building (residential, commercial or industrial), or any structure proposed to be placed over or adjacent to a sewer asset of Hunter Water.

Where subdivision is proposed and the future building alignments are not known, Hunter Water requires the existing sewer mains to be relocated adjacent to boundaries in accordance with the latest Hunter Water Edition WSAA Design Manual

All footings crossing or adjacent to a sewer main should be strengthened or underpinned to prevent loading upon the sewer and to protect the stability of the structure in the event of subsidence of the

sewer trench, collapse of the sewer, or excavation by Hunter Water to repair or maintain the sewer. In this regard, it may be necessary to consult a competent designer or structural engineer.

Special consideration to footing design should extend to land within the Zone of Influence. This is a nominal strip of land (usually about twice as wide as the sewer is deep) within which the sewer main is centrally located. Ground conditions are an important consideration in determining the likely zone of influence and it may be necessary for you to engage a qualified Geotechnical Engineer to determine the appropriate design parameters influencing the structural performance of proposed foundations, footings or piers. Hunter Water requires a minimum working clearance of 1.5 metres from the centre of any access chamber to a building wall.

The location of the sewer main can be determined from the plan attached to the Section 50 Notice of Requirements. A surveyor or building contractor engaged by the developer will confirm this location. Hunter Water Corporation will not accept responsibility for future maintenance on the shaft and/or branch contained in or under the structure. Conversion of the structure to a habitable area, with or without plumbing fixtures, is not compliant with Plumbing Code of Australia and Australian/New Zealand Standard 3500 (AS/NZS 3500:1).

Enquiries on Hunter Water Corporation's Building Over Sewer Assets Policy should be directed to Hunter Water's 1300 657 657 number.

POLICY ADMINISTRATION

Effective from	29 August 2014
Approved by	Chief Customer Service Officer
Policy Owner	Manager Developer Services
Policy Administrator	Manager Developer Services
Application	All Policies and Schedules of Hunter Water Corporation
Last review date	29 August 2014
Next review date	29 August 2017
Version	2.0
File reference	HW2007-2963/1.003
Published externally	Yes

Approval Signature	Managing Director / Company Secretary

RELATED DOCUMENTS

Building Over Easement or Property

ASSOCIATED REGULATIONS AND STANDARDS

The Hunter Water Corporation Act (1991) requires that no building or structure is to impose any loading on a sewer nor interfere with or obstruct the sewer in conveying flows. Hunter Water's powers allow it to take legal action where there is a breach or threatened breach of the requirements and to recover associated costs from the landowner. Hunter Water may in any case where there is a threatened breach of these conditions; obtain an injunction to prevent any damage to, or interference with, its sewerage system or other works.

ENTRY PERMIT

File Number: 2017-760

……being the Owner/s of the Land described in Schedule A, grants permission to:

……(the Developer), described in Schedule B, to enter upon the Land and carry out the Work described in Schedule C.

The Owner acknowledges that the Developer will execute the Deed with the Hunter Water Corporation for delivery of the Work described in Schedule C.

The Owner acknowledges that upon completion of the Works the infrastructure will be handed over to Hunter Water for ownership and operation under the Hunter Water Act 1991.

Dated at ..... (*Place*) this .....day of.....2017

…….....(Signature/s of Owner/s)

…….....(Signature of Witness)

……..... (Name of Witness)

SCHEDULE A (Land)

LOT: …….. DP: ……SUBURB: ……

SCHEDULE B (Developer)

Company: ……ABN: …….

Contact:……..Position:……..……Phone:……

…….....(Signature)

SCHEDULE C (Work)

……

……

……

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

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

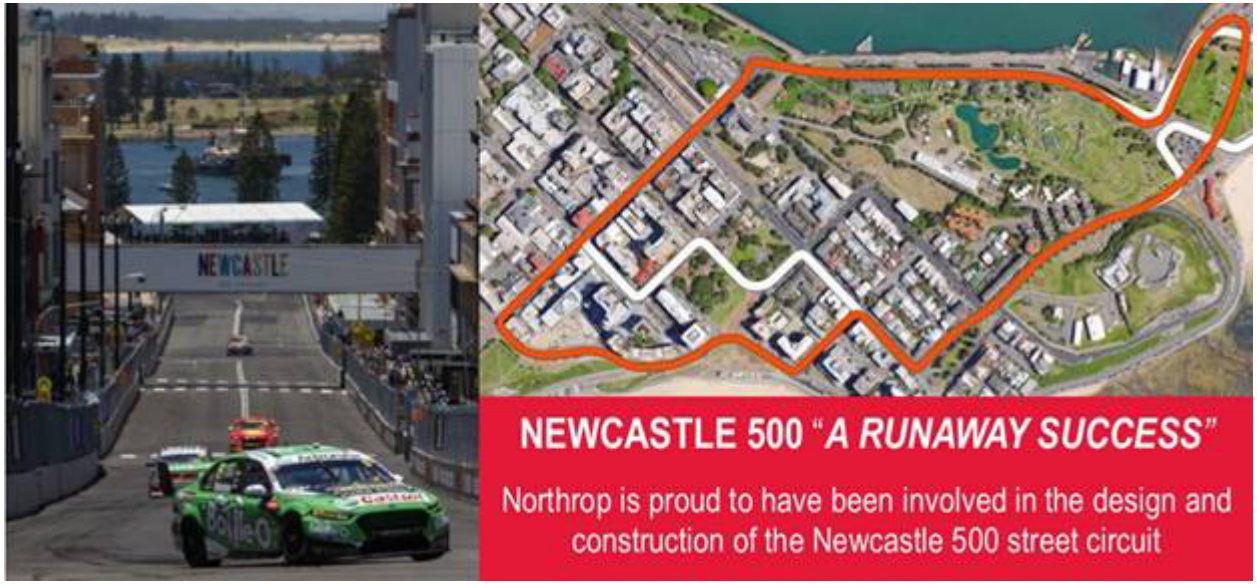
From: CPiper@northrop.com.au [mailto:CPiper@northrop.com.au]
Sent: Monday, 19 February 2018 10:57 AM
To: Wesley Jones <wesley.jones@hunterwater.com.au>
Cc: david.alexander@newcastle.edu.au; Lachlan McRae <LMcRae@northrop.com.au>; Chris Barker <chris.barker@hunterwater.com.au>
Subject: RE: University 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
wesley.jones@hunterwater.com.au | hunterwater.com.au
Please consider the environment before printing this email

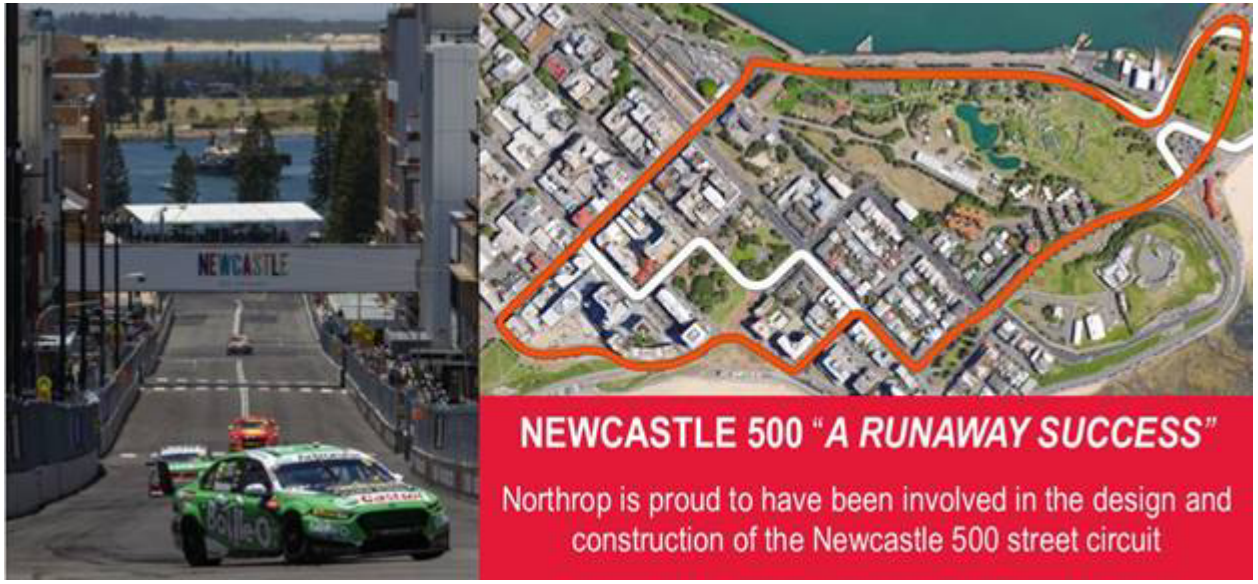
From: CPiper@northrop.com.au [mailto:CPiper@northrop.com.au]
Sent: Monday, 19 February 2018 9:37 AM
To: Wesley Jones <wesley.jones@hunterwater.com.au>
Cc: david.alexander@newcastle.edu.au; Lachlan McRae <LMcRae@northrop.com.au>
Subject: RE: University of Newcastle - Honeysuckle Campus

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,

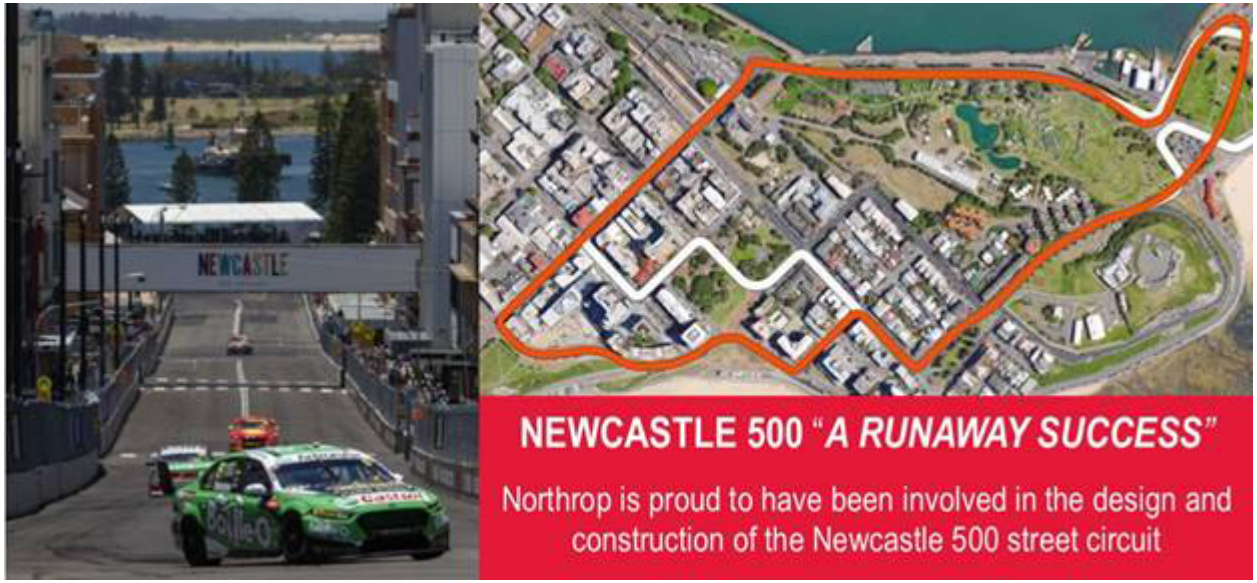
Further to the attached preliminary servicing advice, we have been engaged by Newcastle University to develop the first stages of the development.

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
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



APPENDIX C –
CONCEPT EROSION AND SEDIMENT CONTROL PLAN

EROSION AND SEDIMENTATION CONTROL NOTES

1. 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.
2. 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.
3. 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'.
4. ESTABLISH ALL REQUIRED SEDIMENT FENCES IN ACCORDANCE WITH DETAIL SD6-8 OF THE 'BLUE BOOK'.
5. 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.
6. 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.
7. THE CONTRACTOR SHALL ENSURE THAT ALL VEGETATION (TREE, SHRUB & GROUND COVER) WHICH IS TO BE RETAINED SHALL BE PROTECTED DURING THE DURATION OF CONSTRUCTION.
8. ALL VEGETATION TO BE REMOVED SHALL BE MULCHED ON-SITE AND SPREAD/STOCKPILED AS DIRECTED BY THE SUPERINTENDENT.
9. 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.
10. 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).
11. ENSURE STOCKPILES DO NOT EXCEED 2.0m HIGH. PROVIDE WIND AND RAIN EROSION PROTECTION AS REQUIRED IN ACCORDANCE WITH THE 'BLUE BOOK'.
12. PROVIDE WATER TRUCKS OR SPRINKLER DEVICES DURING CONSTRUCTION AS REQUIRED TO SUPPRESS DUST.
13. 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.

LEGEND

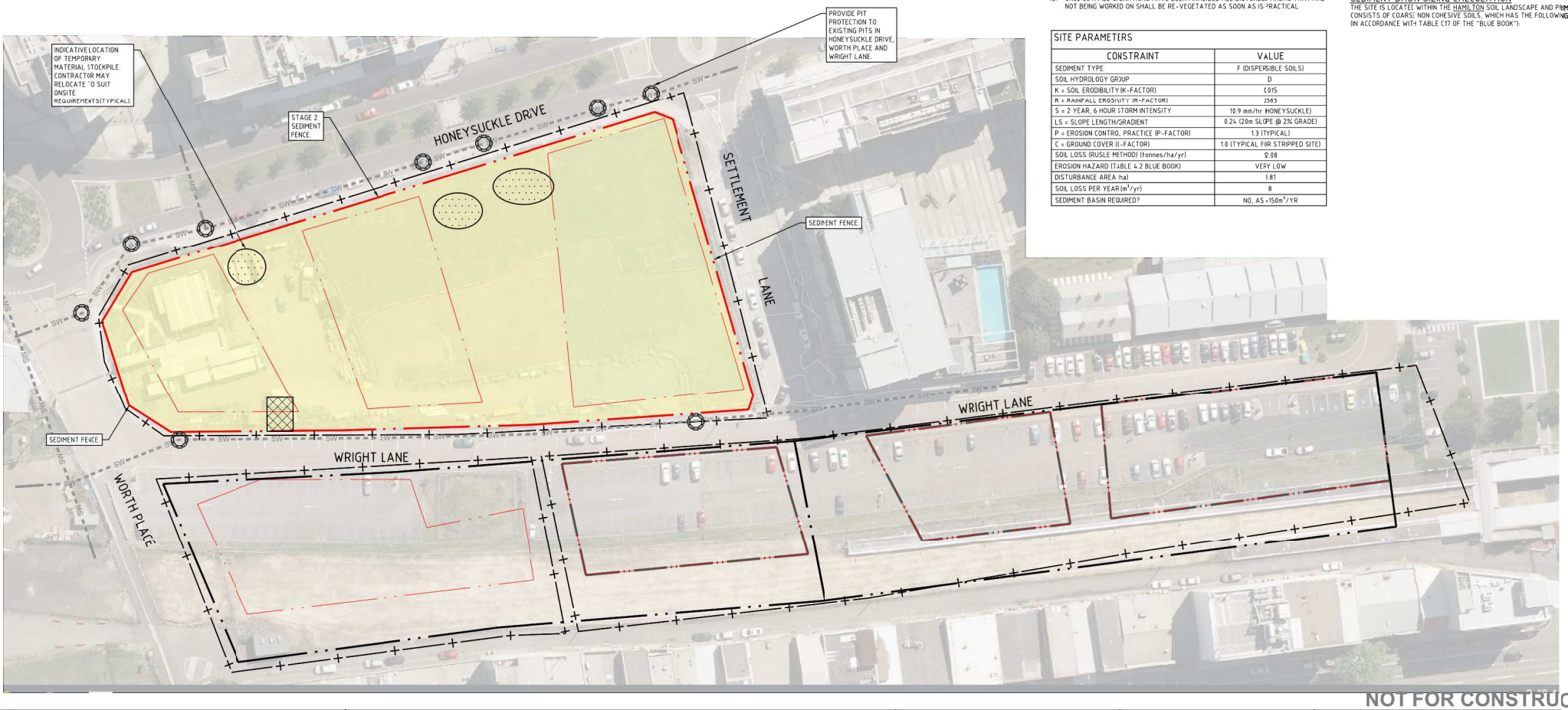
- PROPOSED BUILDING OUTLINE
- EXISTING CONTOURS
- EXISTING STORMWATER
- SEDIMENT FENCE
- SANDBAG SEDIMENT FILTER
- GRATED INLET PIT (EXTG)
- STOCKPILE
- STABILISED SITE ACCESS

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 CONTRO, PRACTICE (P-FACTOR)	1.3 (TYPICAL)
C = GROUND COVER (I-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)	1.81
SOIL LOSS PER YEAR (m^3/yr)	8
SEDIMENT BASIN REQUIRED?	NO, AS <150m^3/YR

SEDIMENT BASN SIZING CALCULATION

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



VERIFIER C SMITH
JOB MANAGER C PIPER
DESIGNED C PIPER
DRAWN J GEARING

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	EARLY WORKS APPLICATION	JP	CP	SC	05.07.18

CLIENT: THE UNIVERSITY OF NEWCASTLE AUSTRALIA
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT

ALL SETOUT TO ARCHITECT'S DRAWINGS. DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT AND ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.

SCALE 1:500@A1 0 5 10 15 20 25m

NORTHROP
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Suite 4, 21E Pacific Hwy, Charlestown NSW 2290
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Ph (02) 4943 1777 Fax (02) 4943 1577
Email newcastle@northrop.com.au ABN 81 094 433 100

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

DRAWING TITLE: CONCEPT EROSION AND SEDIMENT CONTROL PLAN SITE 1

JOB NUMBER: NL172766
DRAWING NUMBER: C10.4
REVISION: 1
DRAWING SHEET SIZE = A1