Attachment M

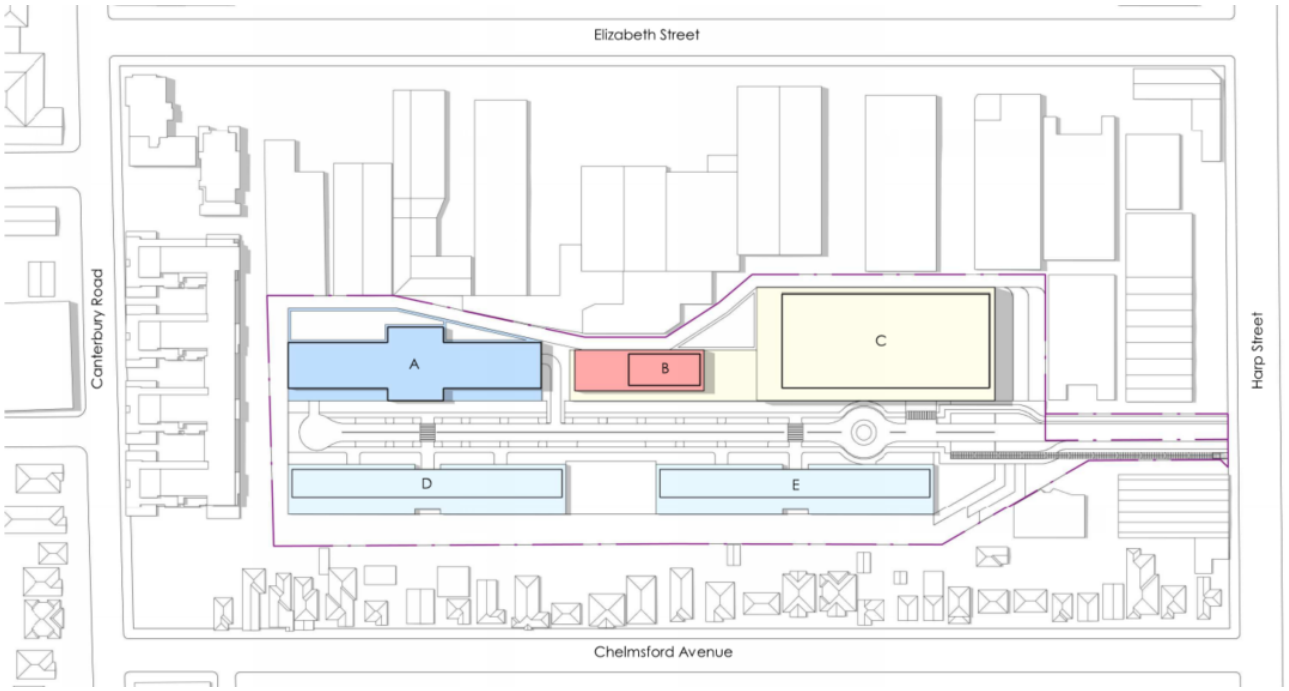
NEETAN

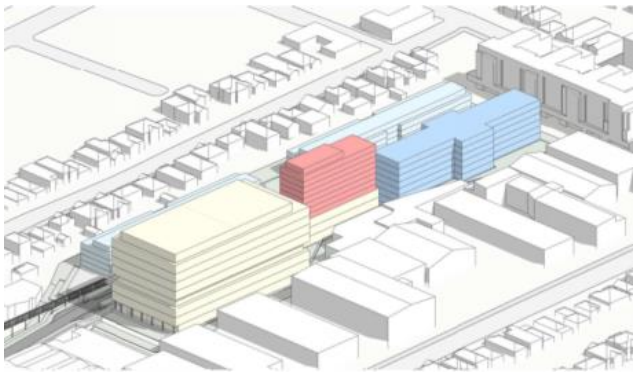
BG&E

11 Harp Street, Campsie

Health Precinct—

Servicing Strategy Report





FOR / Project Management Services

CLIENT / NEETAN INVESTMENTS PTY LTD ATF

DOCUMENT NO / S18225-RPT-Servicing Strategy Report-004 REV / 4

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CONTENTS

Document *Control*

Revision	Date	Description	Prepared	Reviewed	Approved
1	05/07/2019	DRAFT	AJT	CL	DF
2	11/07/2019	FINAL DRAFT	AJT	CL	DF
3	26/07/2019	FINAL	AJT	CL	DF
4	08/08/2019	FINAL REVISED	AJT	DF	DF

1 BACKGROUND

Neetan Investments Pty Ltd Atf / Neetan Development Trust No 8 (Neetan) requires a suitably qualified multi-disciplinary engineering consultant to undertake civil engineering and utility coordination services for a development site in Campsie. The development is proposed to be a health precinct, to be designed in general accordance with the Development Application (DA) plans – reference no. 2005-095, prepared by Burgess, Arnott Grava Pty Ltd in June 2005 (refer Appendix A).

In preparing this document, consideration has been given to both the specific characteristic of the site and level of detail/technical investigation set out in the Guidelines for the Preparation of Planning Proposals. This servicing strategy report informs the preliminary investigations and authority engagements advanced during the Planning Proposal phase of the project. It has been assumed that no objections will be raised by the servicing authorities, and matters involving detailed design, licensing and future connection arrangements have not been taken into consideration at this stage. In accordance with the requirements of the local Development Control Plan (DCP), final servicing and licensing arrangements are required to be established prior to the Construction Certificate stage of the proposed dwellings.

This report will be included as part of a Planning Proposal to be lodged in August 2019. The development will include up to 705 dwellings comprising a 150-200 room aged care facility, a 60-100 room hotel, 180-200 room hospital and rehabilitation facility, a 100-120 place early learning centre, medical centre and medical research facility, 70 aged care independent living units and 15 disability housing units.

The subject site is located at 11 Harp Street, Campsie, Lot 3 DP270114 in the Canterbury Bankstown local government area (LGA). The site is 3.1ha and bounded by Canterbury Road to the north, Elizabeth Street to the east, Harp Street to the south, and Chelmsford Avenue to the west. Indicative site locality and preliminary layout of the development is shown in *Figure 1* below.

Figure 1: 11 Harp Street, Campsie Health Precinct

2 INTRODUCTION

BG&E Pty Ltd (BG&E) has been engaged by Neetan to assess the servicing requirements for the proposed 11 Harp Street health precinct, located in Campsie, New South Wales. The preliminary layout of the development is shown in *Figure 2* below.

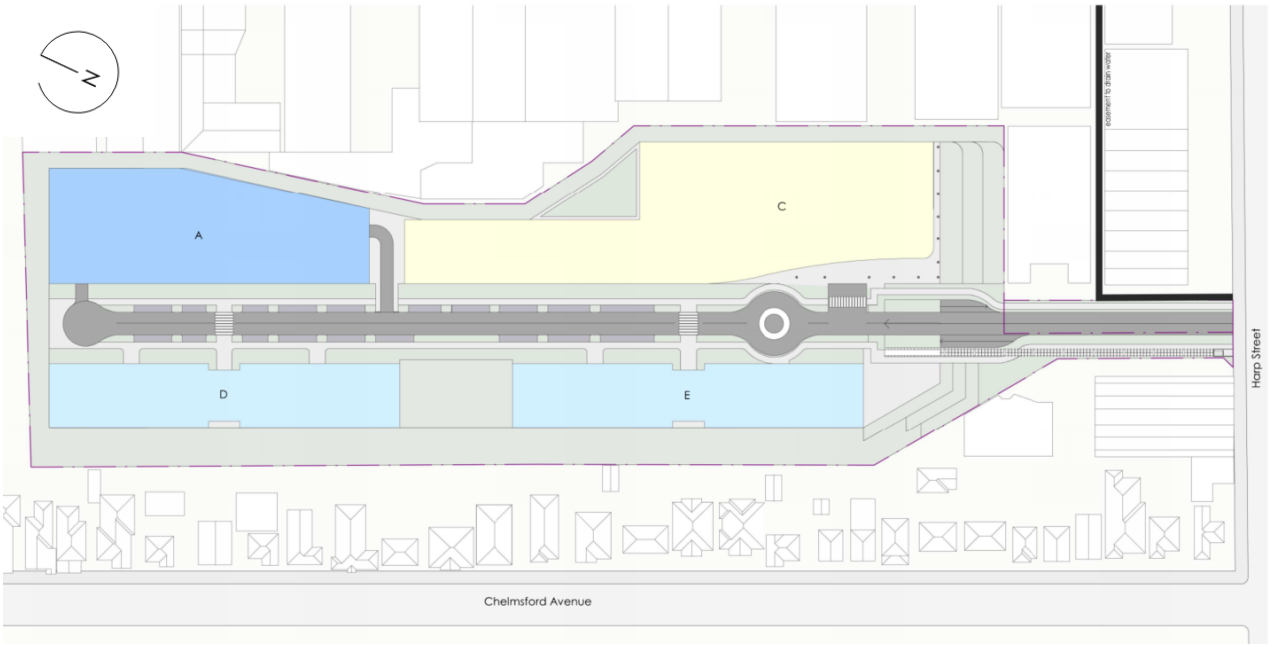


Figure 2: Preliminary Site Layout

REPORT DISCLAIMER

This servicing strategy report has been developed on the basis of preliminary architectural plans (refer Appendix B) and development yield estimates, professional opinion developed from previous experience completing development servicing strategies, publicly available documentation and consultation with relevant utility consultants and servicing authorities. The overall servicing strategy for the site has been developed in accordance with the following development details:

- Maximum 705 dwellings; *and*
- 1,103 estimated population (EP).

All conclusions and assumptions depicted in this document are subject to finalised development yield data and detailed technical reviews/feasibility assessments, to be completed and provided by servicing authorities at a later date. Upon provision of determinations and advice from servicing authorities, this report will be revised to incorporate and reflect concluded outcomes and development servicing requirements.

Key components of the development are as per Table 1.

Table 1: Key Development Components

DEVELOPMENT TYPE	DETAILS
Aged Care Facility (RACF)	Construction of a 150-200 room aged care facility (Building A) and associated car park.
Medi Hotel	Construction of a 60-100 room hotel (Building B) and associated car park.
Private Hospital and Rehabilitation	Construction of a 180-200 room hospital and rehabilitation facility (Building C) and associated car park.
Early Learning Centre, Medical Centre and Medical Research	Construction of a 100-120 place early learning centre, medical centre and medical research facility (Building C) and associated car park.
Independent Living Unit (ILU)	Construction of 25 aged care – independent living units (Building D) and an additional 45 aged care – independent living units (Building E).
Disability Housing	Construction of 15 disability housing units (Building D).
Access Road (Private)	Upgrade of existing site access road.
Infrastructure Works	Site establishment, services and required infrastructure works.
Public Domain Works	Public domain/open space improvements and site landscaping.

A desktop analysis of the development site and relevant surrounding infrastructure has been conducted in order to assess the likely impacts on existing utility infrastructure as a result of the increase in network demand, by the proposed development. The following services have been assessed:

- Potable Water – Sydney Water;
- Wastewater – Sydney Water;
- Electrical – Ausgrid;
- Telecommunications – NBN Co and Telstra; *and*
- Gas – Jemena.

BG&E has conducted a Dial Before You Dig investigation to review existing services information and engaged with relevant utility consultants and authorities to develop the servicing strategy report.

In addition, as a result of the sites significant geotechnical constraints surrounding contamination and remediation, BG&E has conducted preliminary investigations and developed the concept Stormwater Management Strategy for the proposed development at 11 Harp Street, Campsie. The strategy covers:

- Stormwater Conveyance;
- On Site Detention (OSD); *and*
- Water Sensitive Urban Design (WSUD).

3 SERVICING STRATEGIES

3.1 POTABLE WATER SERVICING

BG&E have submitted a Technical Review Request directly to Sydney Water (SWC) on the 8th of July 2019, to assess the proposed development in conjunction with the existing and future network capacities and determine the sites servicing requirements.

Preliminary investigations confirm that the site is currently serviced by a Sydney Water DN100 CICL potable water main, fronting the site along Harp Street. This available asset is a suitable option to provide potable water servicing to the proposed health precinct. An extract of the existing Sydney Water asset is shown in blue in *Figure 3* below.

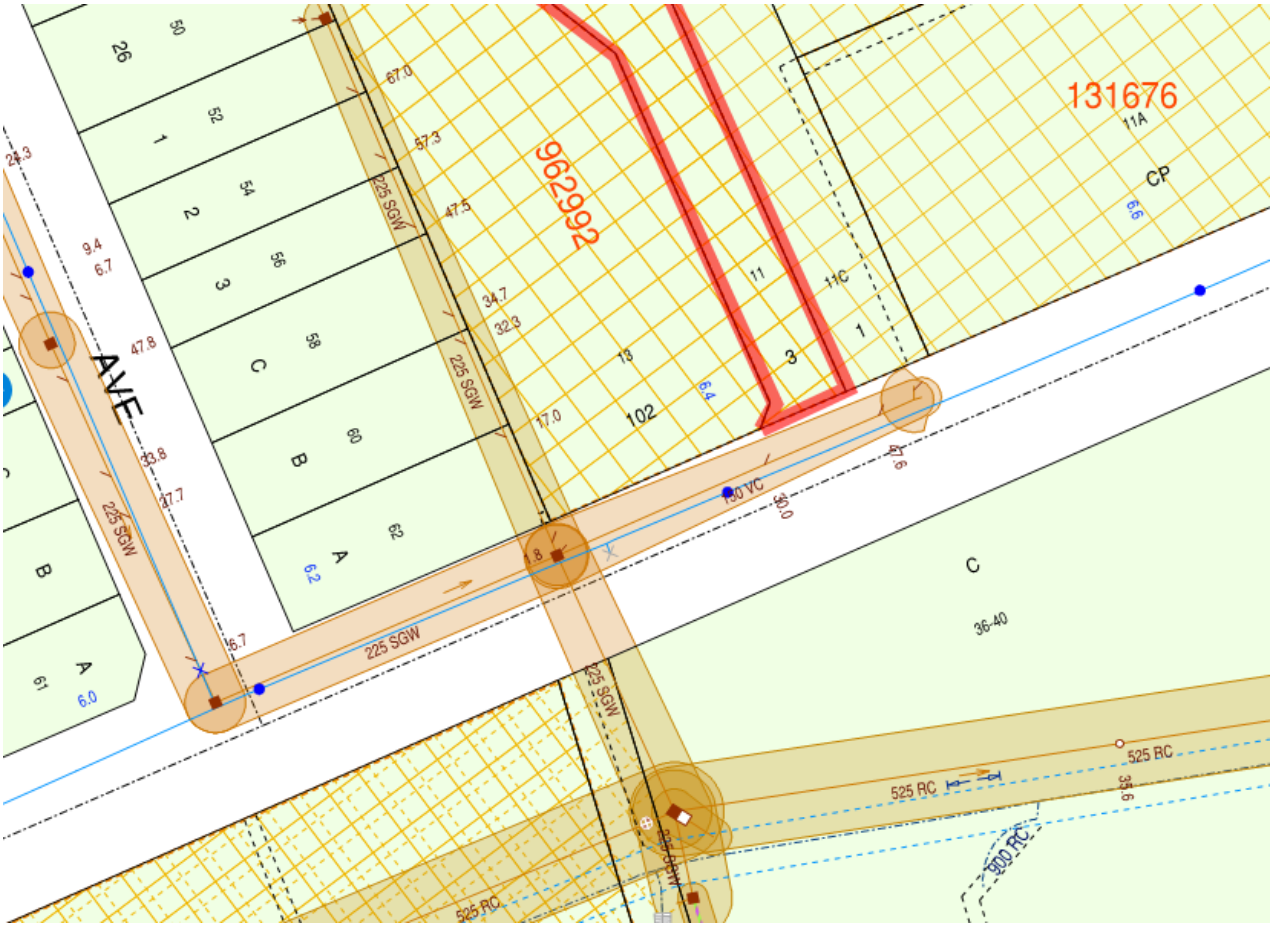


Figure 3: Sydney Water HYDRA Plot

On the basis of the proposed 1,103EP development demand and required pressure to accommodate the 8 level development building height, it is likely that the existing Sydney Water potable water network will require upsizing and augmentation in order to service the demand of the proposed health precinct. We have identified potential augmentation options for potable water servicing in *Figure 4*.

Proposed augmentation options have been developed in accordance with the Water Supply Code of Australia, Part 1 – Table 3.1, however do not consider matters surrounding future-planned developments in the area – these options include:

A. Upsizing approximately 160m of existing DN100 CICL potable water main and approximately 50m of existing DN150 CICL potable water main along the northern side of Harp Street to DN250 DICL. Connect via TEE into existing DN250 CICL main on the eastern side of Kingsgrove Road. Upgrade fittings, valving and appurtenances accordingly.

B. Constructing approximately 240m new independent DN200 DICL cross-connection along the southern side of Harp Street. Connect via TEE into existing DN375 CICL main on the western side of Kingsgrove Road as secondary supply to the development.

Figure 4: Potable Water Augmentation Options

It is envisaged that potable water will be delivered to site by utilising one of the proposed augmentation options. Potable water will then be distributed within the development via an internal potable water reticulation network, to be metered at the individual building locations and at the entry of the site, depending on wider development requirements.

The proposed strategy is outlined in Table 2.

Table 2: Potable Servicing Strategy

Stage	Action
a.	Engage Sydney Water accredited Water Servicing Coordinator
b.	Adjustment/Deviation (if augmentation/upsizing required) - Prepare and submit Adjustment/Deviation application to Sydney Water. - Complete detailed design of potable water augmentation. - Asset constructed in accordance with approved Sydney Water design.
c.	Submit pressure enquiry and potable water connection application (size to be determined on the basis of required augmentation) through Sydney Water Tap-In
d.	Prepare and submit Section 73 application to Sydney Water
e.	Potable water reticulation constructed in conjunction with the project civil works

3.2 WASTEWATER SERVICING

BG&E have submitted a Technical Review Request directly to Sydney Water (SWC) on the 8th of July 2019, to assess the proposed development in conjunction with the existing and future network capacities and determine the sites servicing requirements.

The site is currently serviced by an existing Sydney Water DN150 VC gravity wastewater main, fronting the development. Flows through this main are diverted to an existing DN225 SGW wastewater main crossing Harp Street and discharged to an existing DN525 RC trunk main. An extract of the existing Sydney Water asset is shown in orange in *Figure 5* below.

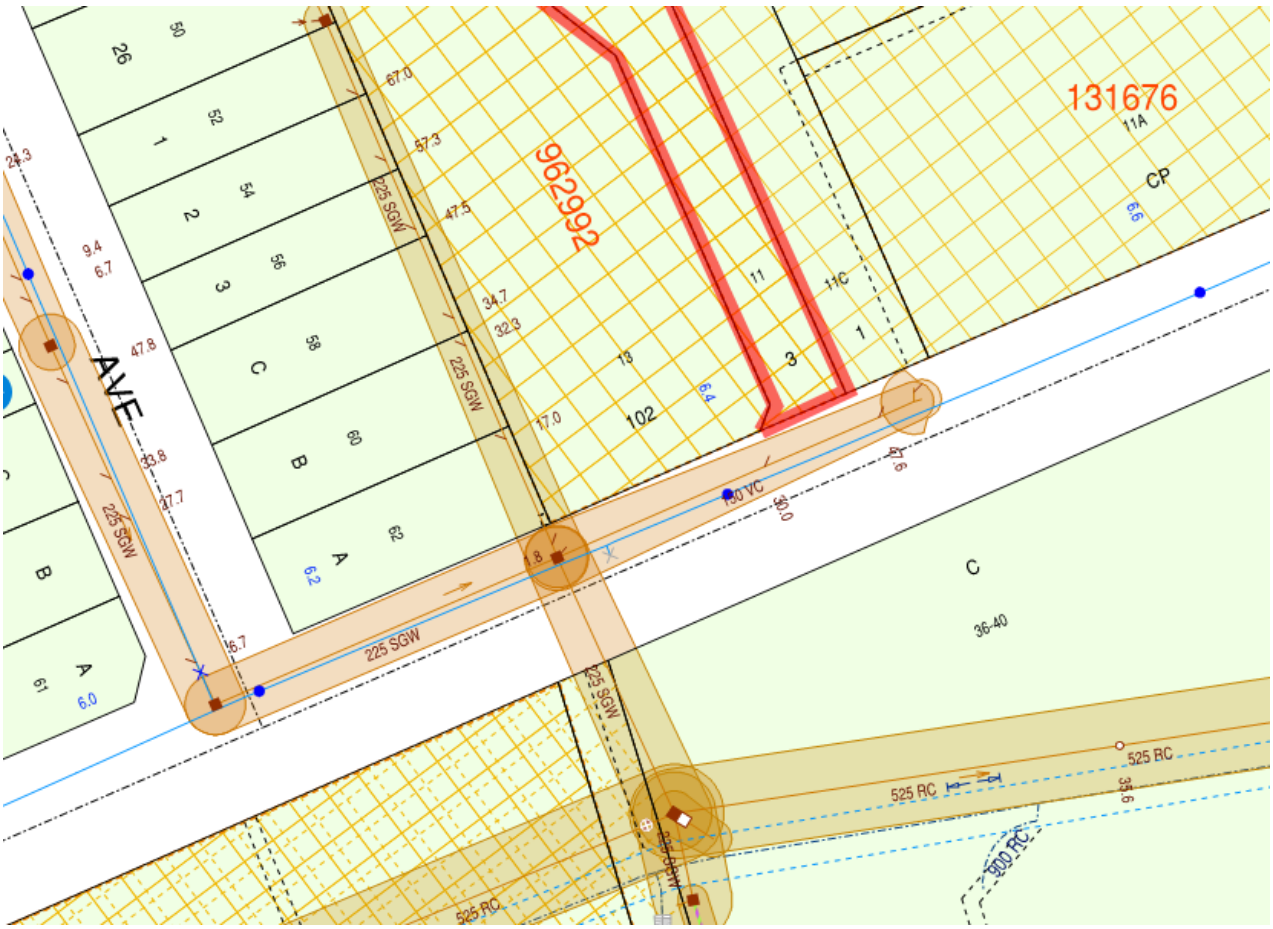


Figure 5: Sydney Water HYDRA Plot

On the basis of the proposed 1,103EP development demand, the existing Sydney Water wastewater network will require upsizing and augmentation in order to service the demand of the proposed health precinct. We have identified network augmentations which will likely be required for wastewater servicing in *Figure 6* – these augmentations have been developed in accordance with the Sewerage Code of Australia, Part 1 – Table 4.4., however do not consider matters surrounding future-planned developments in the area.

Proposed wastewater augmentations include:

1. Upsize approximately 51.5m of existing DN150 VC main (600EP capacity limit) fronting the site to a DN225 (1,600EP capacity limit) to accommodate proposed and existing demands; *and*

2. Upsize approximately 35m of DN225 SGW main (1,600 capacity limit) crossing Harp Street to a DN375 (4,500 capacity limit) in order to accommodate proposed and existing demands.

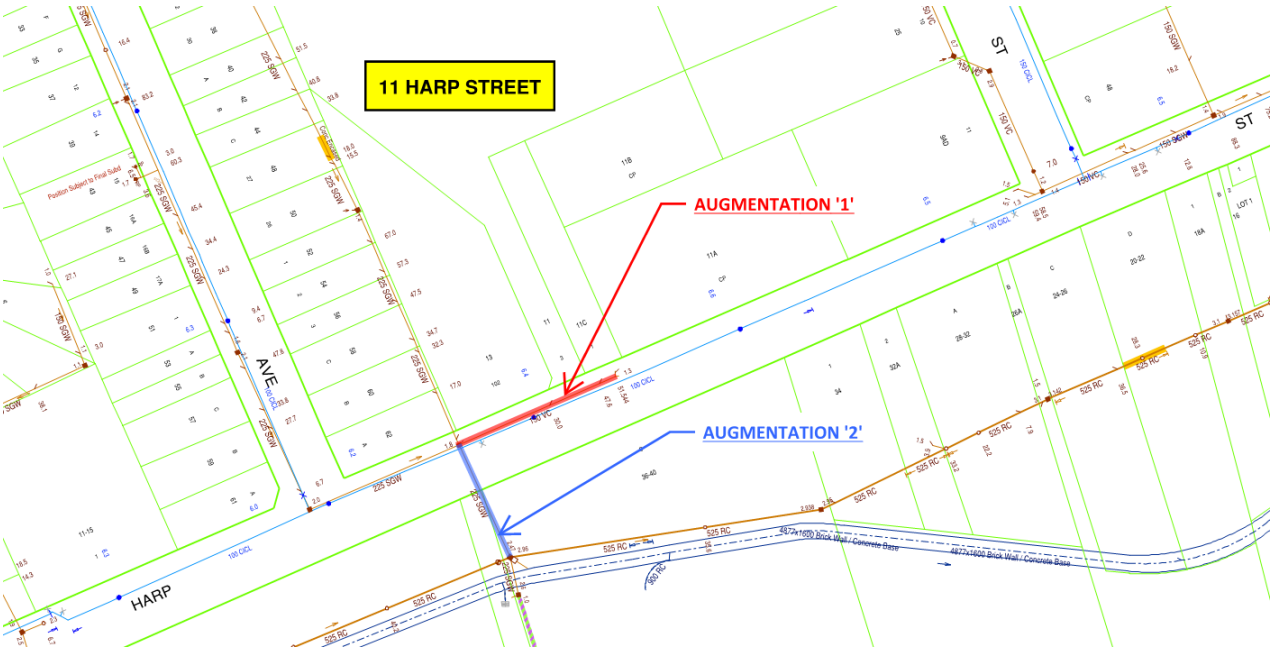


Figure 6: Proposed Wastewater Augmentations

It is envisaged that wastewater servicing will be provided to site by utilising either 'Augmentation 1'or both of the proposed augmentations. This upgraded Sydney Water network will accommodate all flows from the development discharged via an internal wastewater reticulation network. In regards to applicable trade wastewater fees and charges, for one year from 1st of July 2019 prices are to be in accordance with the Independent Pricing and Regulatory Tribunal (IPART) determination No 5, 2016.

The proposed strategy is outlined in Table 3.

Table 3: Wastewater Servicing Strategy

Stage	Action
a.	Engage Sydney Water accredited Water Servicing Coordinator
b.	Adjustment/Deviation (if augmentation/upsizing required) - Prepare and submit Adjustment/Deviation application to Sydney Water. - Complete detailed design of wastewater augmentation. - Asset constructed in accordance with approved Sydney Water design.
c.	Submit wastewater connection application (size to be determined on the basis of required augmentation) and Trade Waste Agreement application through Sydney Water Tap-In
d.	Prepare and submit Section 73 application to Sydney Water
e.	Wastewater reticulation constructed in conjunction with the project civil works

3.3 ELECTRICAL SERVICING

A Technical Review Application was submitted to Ausgrid on the 5th of July 2019 – reference no. 0013560, to assess the proposed development in conjunction with the existing and future network capacities and determine the sites servicing requirements.

Preliminary investigations confirm the site is currently serviced by an existing Ausgrid overhead electrical network, fronting the development along Harp Street. A Nearmap street-view extract of the asset is shown in *Figure 7* below.

Figure 7: Existing Ausgrid Overhead Electrical Network

Our calculations have estimated the site to impose an electrical demand of 3.5kVA per unit/resident, resulting in an ultimate network load of approximately 3.9MVA.

As details surrounding available network capacity is currently unknown and the existing electrical network servicing the site appears to be low voltage (LV) 11kV network from a visual study of the system. It is envisaged that augmentation to the existing electrical network will likely be required in order to service the proposed development. Should there be any complications or potential constraints on the proposed connection which may require augmentation, there will likely be a potential requirement for a high voltage (HV) 22kV backup feeder. We have assumed that the proposed development will incorporate on-site backup diesel generators with instantaneous response in the event of an electrical outage. In turn, provision of associated power demands have not been allowed for.

Dial Before You Dig (DBYD) investigations confirm that there is existing and proposed underground electrical networks within close proximity to the proposed development, along the southern side of Harp Street. Primarily, there are 3 existing electrical substations located at the following nearby addresses:

- 16 Harp Street – Approximately 200m east;
- 24-26 Harp Street – Approximately 150m east; *and*
- 56-72 Kingsgrove Road – Approximately 300m south west.

Extracts of the electrical substation locations and associated Ausgrid underground network is shown in *Figure 8* and *Figure 9*.

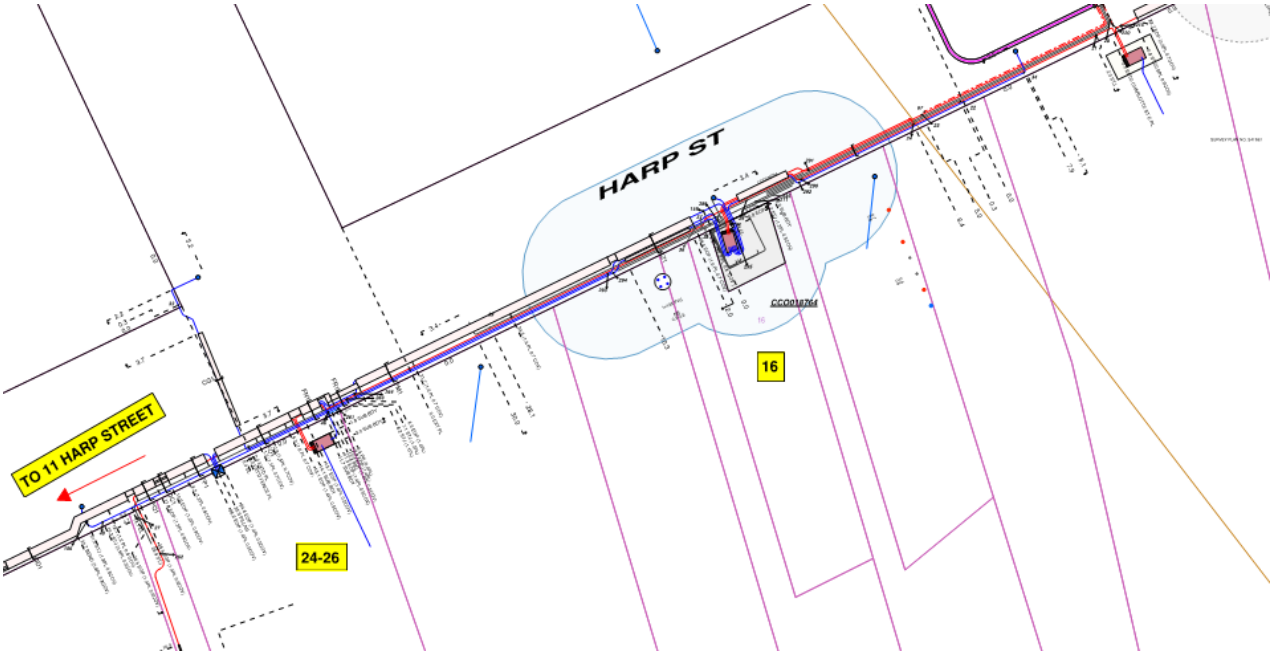


Figure 8: Ausgrid Underground Network (DBYD)- 24-26 and 16 Harp Street

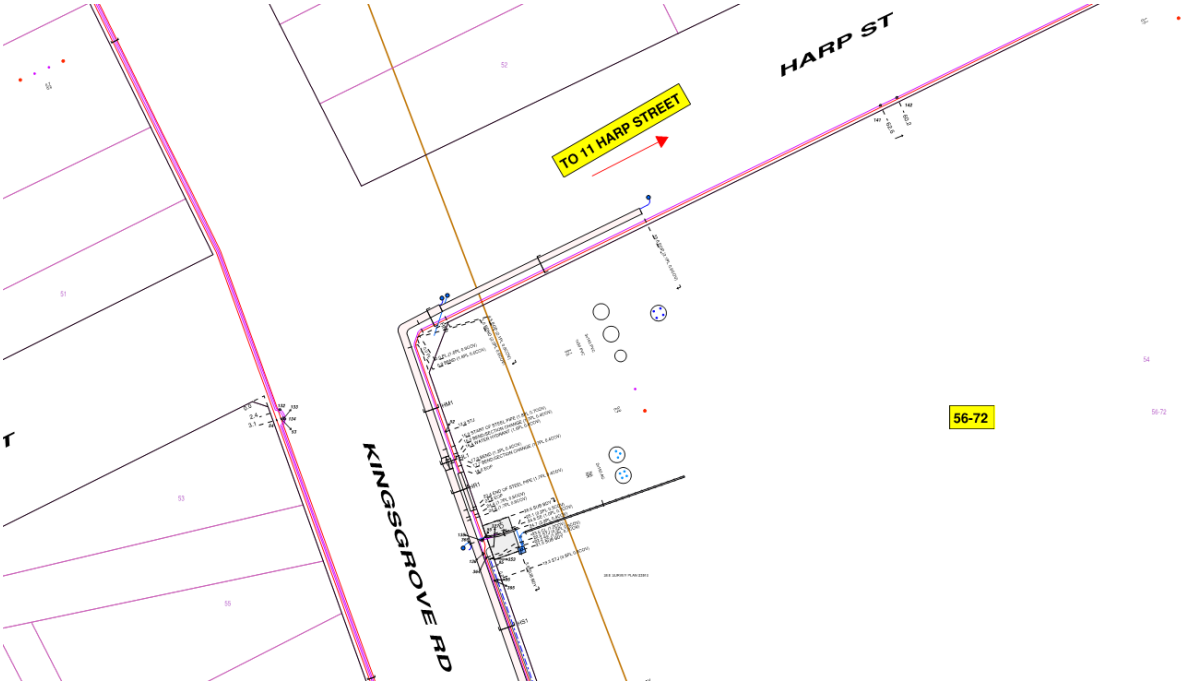


Figure 9: Ausgrid Underground Network (DBYD)- 56-72 Kingsgrove Road

It is possible that these underground electrical networks may have sufficient capacity to service the electrical demands of the proposed development, whereby utilising either and/or a combination of the available networks. Available Augrid network capacities will be determined upon review and assessment from the servicing authority, whereby up until this time, the available capacities of these networks cannot accurately be determined.

Electricity will be delivered to site by either the existing Ausgrid underground or overhead electrical network (subject to potential augmentation and available capacities) and distributed within the site via an internal electrical reticulation network.

On the basis of previous experience, establishing a private Embedded Electrical Network (EEN) would likely prove to be an effective option – combining the energy consumption within a complex to a single metered point, installed between the incoming supply and Main Switch Board (MSB) to record the total electrical load of the building, as shown in *Figure 10*.

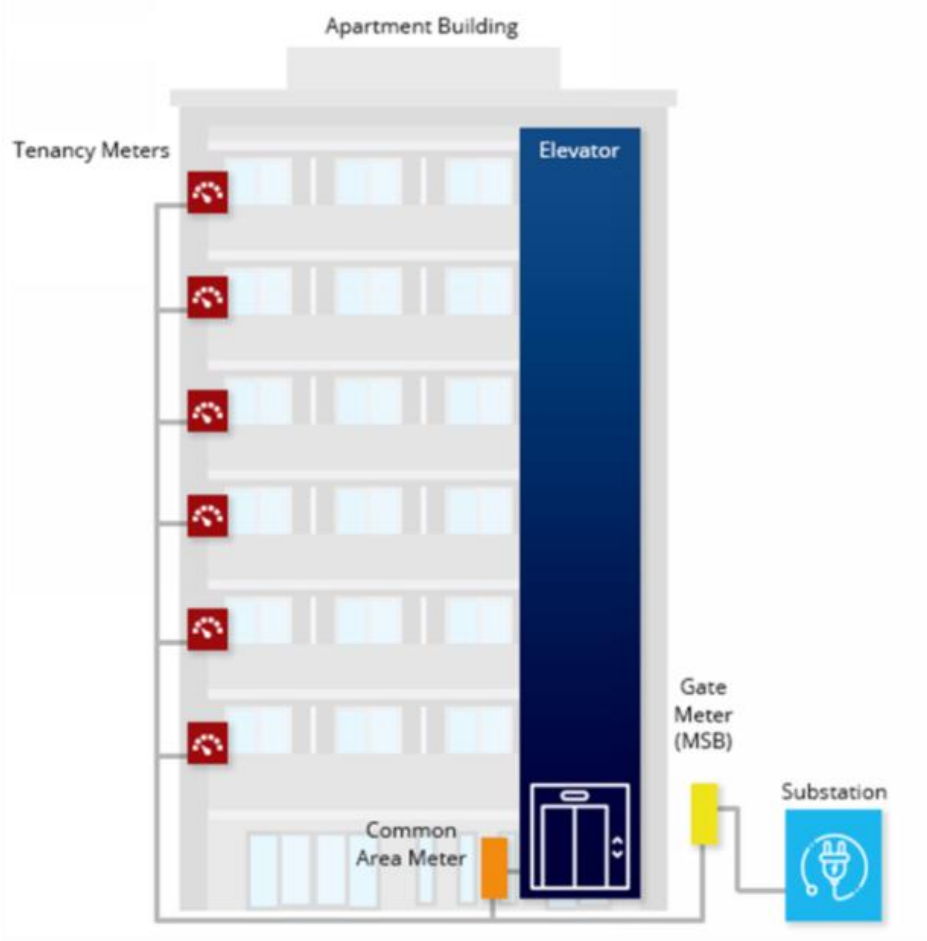


Figure 10: Embedded Electrical Network (EEN)

This network and process is typically managed by an appointed Embedded Network Operator (ENO) whom then purchases electricity from the local service provider (Ausgrid) at the parent meter as a large market user and on-sells this to tenants at discounted residential rates. After consultation with Arc Energy Group, a potential ENO, all costs relating to the installation of the EEN infrastructure will be covered by the appointed network operator.

The EEN will be configured with Australian compliant Ausgrid meters with electrical works associated with the embedded network completed in accordance with the requirements of the following:

- New South Wales Electricity Distributors – Service and Installation Rules; *and*
- AS/NZS 3000:2007 – Wiring Rules.

The proposed strategy is shown in Table 4.

Table 4: Electrical Servicing Strategy

Stage	Action
a.	Engage Electrical Level 3 Accredited Service Provider
b.	Services/Infrastructure Concept Design - Review existing electrical assets. - Establish electrical requirements for each key development component. This will require input from the Building services designers for the Private Hospital, Aged Care Facilities and Medi Hotel. - Establish ultimate combined development electrical requirements. - Develop electrical servicing delivery program in conjunction with the overall Development Staging (if required). - Establish extent of public/private assets leading into the development. - Request meeting with Ausgrid to discuss delivery strategy and any lead-in infrastructure/augmentation requirements.
c.	Prepare lead in design/required augmentation and submit application
d.	Construct lead in infrastructure/required augmentation in accordance with approved Ausgrid design – Timing dependent on Ausgrid requirements
e.	Prepare Connection Applications and submit to Ausgrid
f.	Electrical reticulation constructed in conjunction with the project civil works (and Embedded Electrical Network if required)

3.4 TELECOMMUNICATIONS SERVICING

The development is currently serviced by existing Telstra via copper infrastructure and existing NBN Co optic fibre network, fronting the site along Harp Street. An extract of the existing Telstra underground network is shown in *Figure 11* below and existing NBN Co in *Figure 12* below.

Figure 11: Telstra Underground Network (DBYD)

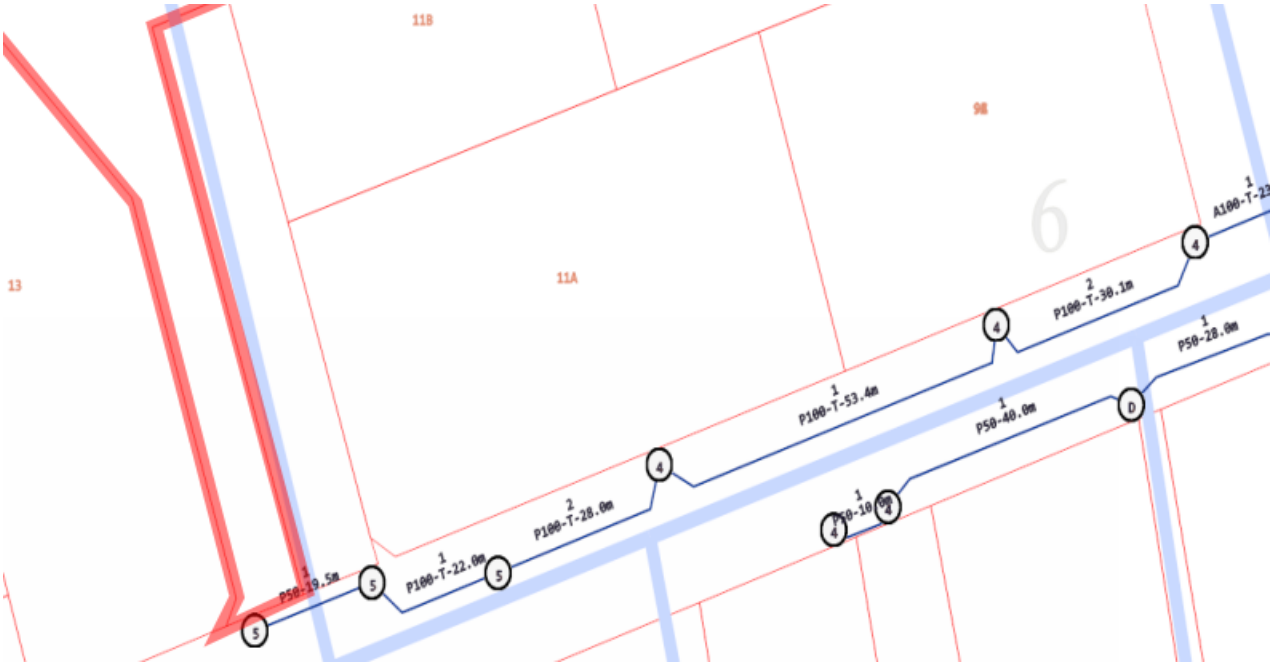


Figure 12: NBN Co Underground Network (DBYD)

An experienced telecommunications designer was consulted on 4th July 2019 regarding the proposed development and capacity of existing Telstra and NBN Co networks surrounding the site.

On the basis of previous experience completing servicing strategies for similar sized developments, whereby Telecommunication capacity was assessed, it is assumed and envisaged that both existing NBN Co and Telstra assets will have sufficient capacity to service the overall demand of the proposed health precinct. As existing copper infrastructure may not provide data speeds to meet market expectations, it is recommended advancing development servicing with NBN Co. As the development has a connection requirement equivalent to that of over 100 individual lots it is expected that it will automatically qualify for fibre to the premises (FTTP).

It is envisaged that NBN Co will be delivered to site by the existing NBN Co network (subject to potential augmentation) and distributed via an internal telecommunications network, designed by an accredited NBN designer. Alternatively an embedded telecommunications network could potentially be packaged with the embedded electrical network as GPON Fibre to the Home (NBN equivalent) and managed in a similar manner, as detailed in Section 3.3.

A suitable alternative options for telecommunications servicing would be utilising the existing available Telstra network currently located within the site and fronting the development along Harp Street.

The proposed strategy for NBN Co servicing, having consulted with an experienced telecommunications designer, is shown in Table 5.

Table 5: Telecommunications Servicing Strategy

Stage	Action
a.	Engage appropriately accredited telecommunications designer.
b.	Services/Infrastructure Master Planning and Concept Design - Review existing telecommunications assets. - Establish telecommunications requirements for each key development component. This will require input from the Building services designers for the Private Hospital, Aged Care Facilities and Medi Hotel. - Establish ultimate combined development telecommunications requirements. - Develop telecommunications servicing delivery program in conjunction with the overall Development Staging. - Request meeting with NBN Co to discuss delivery strategy and any lead-in infrastructure requirements.
c.	Prepare Connection Applications and submit to NBN
d.	Telecommunications reticulation constructed in conjunction with the project civil works

3.5 GAS SERVICING

A Technical Review Request was submitted to Jemena on the 3rd of July 2019, to assess the proposed development in conjunction with the existing and future network capacities and determine the sites servicing requirements.

Preliminary investigations confirm there is an existing DN110 210kPa Jemena gas main fronting the development along Harp Street. An extract of the existing Jemena gas network is shown in *Figure 13* below.

Figure 13: Jemena Gas Underground Network (DBYD)

On the basis of previous experience completing servicing strategies for similar sized developments, whereby Jemena gas capacity was assessed, it is envisaged that this existing asset will have sufficient capacity to service the overall demand of the proposed health precinct.

3.6 STORMWATER MANAGEMENT STRATEGY

EXISTING SITE CONDITIONS

The site is bound by:

- Low rise residential properties to the west;
- High Rise residential properties to the north; *and*
- Industrial developments to the east and Harp Street to the south.

Due to the elevated position of the site there are no upstream catchments. Currently the site is used as a car lot and is 100% impervious. Stormwater runoff is directed to the centrally aligned access road where it is collected by a pit and pipe network. This pit and pipe network discharges to the council operated stormwater network in Harp Street. BG&E are not aware of any existing On Site Detention (OSD) or WSUD infrastructure on the site. Upon review of the geotechnical investigations and Geotechnical Assessment completed for the site – document no. R.001.Rev0, prepared by Douglas Partners on 10th August 2018, it is understood that the site soil is contaminated. An appropriate management plan for ground contamination shall be submitted for approval.

PROPOSED DEVELOPMENT

The development is proposed to comprise several multi-storey residential buildings, including basement levels and associated open space. The development will retain the existing site access location and internal site road alignment. The development proposes to excavate a portion of the contaminated material and construct the site roads and open space on a podium slab.

COUNCIL REQUIREMENTS

The development is located within the local government area of Canterbury Bankstown. Their engineering requirements are set out in Development Engineering Standards (Bankstown City Council, 2009). This document outlines the following requirements in relation to stormwater for this development.

ON-SITE DETENTION (OSD)

Council require OSD where increased stormwater runoff from a site has the potential to have adverse impacts on downstream drainage systems. Flows captured on impervious future development area will be detained in on-site detention in accordance with the DA plans prepared by Burgess, Arnott Grava Pty Ltd in 2005 (refer Appendix A). Where required, council require adequate storage to be provided to limit the site discharge to the Permitted Site Discharge (PSD). The PSD can be calculated by using either of the following two methods:

- Limiting post development flows to pre development levels; or
- 0.026 L/s/m2 of impervious area on the site.

WATER SENSITIVE URBAN DESIGN (WSUD)

Councils available engineering guidelines require only limited controls be implemented for this development. Given the age of this document and standard practice across the industry, BG&E anticipate that council will require more onerous controls to be implemented as part of the development. BG&E have consulted with Council regarding these requirements (refer Appendix C), whereby Council recommended the following pollution reduction targets to be implemented as part of this development:

- 80% reduction in Total Suspended Solids;
- 55% reduction in Total Phosphorus; *and*

- 40% reduction in Total Nitrogen.

These reduction targets are recommendations of the Botany Bay water quality guidelines, whereby with successful implementation, the redevelopment of the site could provide the opportunity to improve upon existing water quality conditions. As part of the Planning Proposal process a more specific WSUD requirement will be forthcoming and to encompass Councils review of the DCP.

PROPOSED STORMWATER STRATEGY

The development site will incorporate a stormwater management system that meets the principles of councils engineering guidelines. The proposed system will include the following components:

- Stormwater run-off from the proposed roofs will be conveyed to the in-ground stormwater system via downpipes;
- Runoff from the site road and open spaces will be collected via inlet pits and discharged via the proposed in-ground stormwater system to combined WSUD/OSD tanks; *and*
- Treated and attenuated flows from the combined tanks are connected via a pipe running under the site road to the existing connection point – Council stormwater network in Harp Street.

DRAINAGE CONCEPT AND CATCHMENT PLANNING

It is proposed to provide several or a singular OSD tank located under the main site access road or within the basement footprint with a volume generally in accordance with the concept shown on the DA plans prepared by Burgess, Arnott Grava Pty Ltd in 2005 (refer Appendix A). On the basis of the proposed architectural plans completed for the development (refer Appendix B), the basement floor surface level is envisaged to be RL17.4, the existing Harp Street surface level is estimated to be RL10.1 – allowing the minimum drainage grade across the site to be around 0.5%.

The site would nominally be designed as a single catchment to discharge to the existing Harp street drainage network via a new stormwater pit and pipe network, to be designed in 12D and DRAINS. Network flows and overland flows from the site will be discharged to the existing Harp Street stormwater network and ultimately delivered to existing Cup and Saucer Creek channel, draining to the east as shown in *Figure 14*.

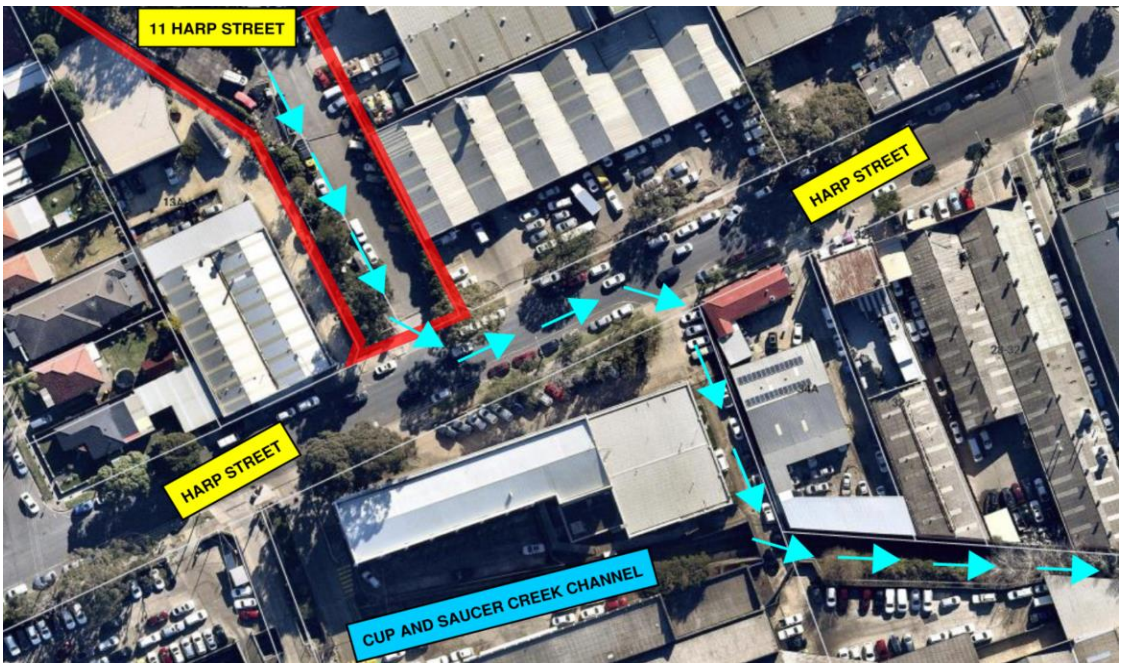


Figure 14: Proposed Stormwater Network Flows

To ensure pre and post development flows are equal and to address the assumed WSUD requirements and ensure water quality of the existing Cooks River is not impacted, the following treatment train is proposed:

- Site roads and open spaces drain to inlet pits containing catchpit inserts (removes gross pollutants, total suspended solids and some nutrients);
- The site stormwater system drains to the combined water quality / plastic or concrete OSD tanks containing tertiary treatment cartridges (removes total suspended solids and nutrients). OSD and basement discharge to be free draining to Harp Street – it is not likely that pumping will be required;
- Ultimate stormwater overland flows from the development will be discharged to existing Cup and Saucer Creek channel located south of the proposed development;
- Stormwater modelling for building stormwater hydraulics, roads and pervious areas to be combined in order to develop an overall drainage strategy for the site;
- MUSIC modelling will be utilised (if required) to visualise potential strategies to develop urban stormwater hydrology and mitigate pollution impacts; *and*
- Street verge deep soil and landscaped areas will have appropriate subsoil and subsoil drainage designs which will be included as part of the landscape architecture and civil engineering designs.

It is proposed to use proprietary products for the treatment train, rather than using vegetated swales and bio retention basins for the following reasons:

- Limited site area;
- Preventing surface runoff from infiltrating the contaminated in-situ soils and generating polluted groundwater runoff; *and*
- Separating stormwater flows from groundwater, noting the proposed drainage concept and catchment planning.

ECOLOGICALLY SUSTAINABLE DESIGN / WATER EFFICIENCY

It is proposed to incorporate ecologically sustainable design into the ultimate development. This can be achieved through a variety of diverse methodologies, including:

- Water efficiency and water efficient devices such as:
  - Utilisation of plants and vegetation that have low water requirements, drought tolerant and reduce lawn areas to minimise water use.
  - Provide water cycle management in streetscape and hard landscape design – incorporation of rainwater tanks for grey water reuse in gardens and landscape areas.
  - Water-efficient shower heads with a three-star rating or better under Water Efficiency Labelling and Standards (WELS) scheme or shower heads that have a maximum flow-rate of nine litres per minute.
  - Water-efficient taps with a three-star rating or better under WELS, or a tap that has a maximum flow-rate of nine litres per minute.
  - Water-efficient toilets with a three-star rating (6/3 litres) or better under WELS.
  - Water-efficient trigger sprays with a three-star rating or better under WELS, or a trigger spray with a maximum flow-rate of nine litres per minute.

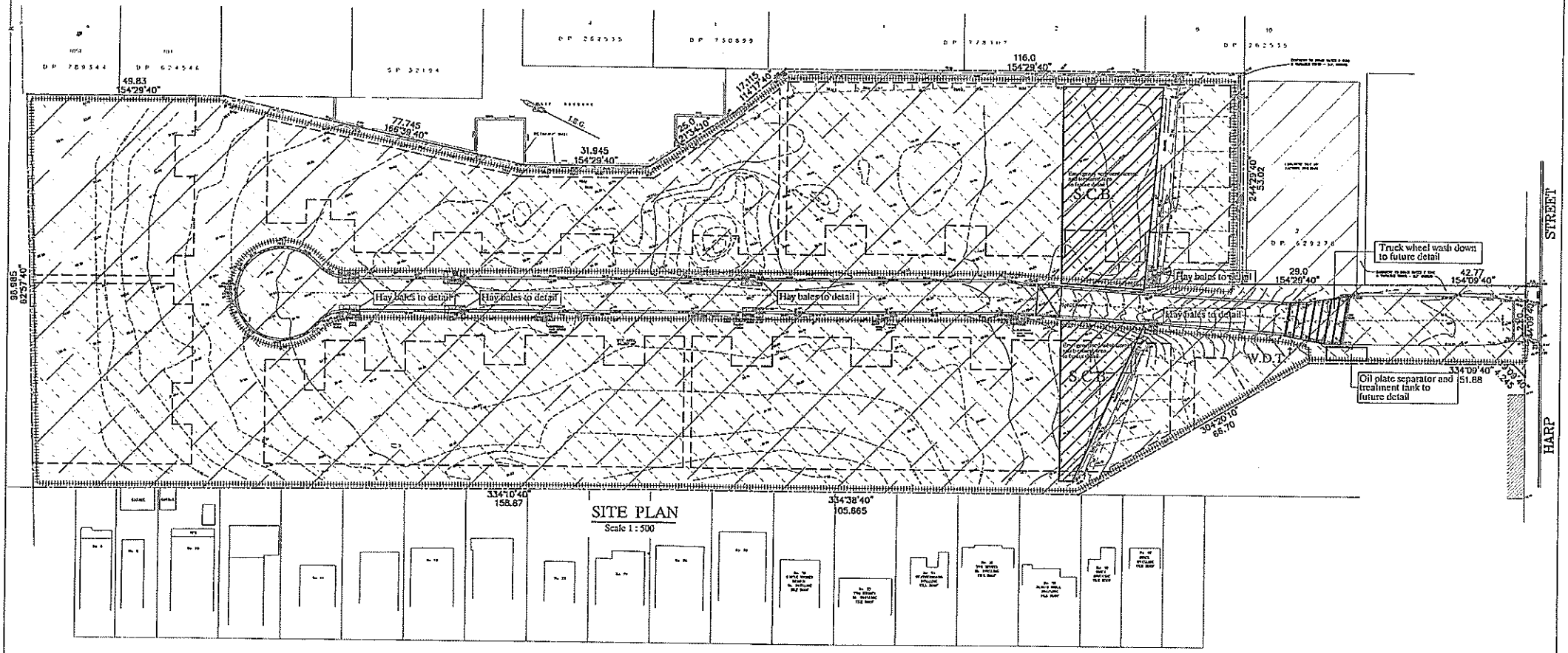
4 CONCLUSION

As a result of conducting a desktop review of the existing assets and liaising with service providers and consultants – Servicing the proposed development, a health precinct at 11 Harp Street Campsie, will be achieved in the following manner:

- Potable Water provided by Sydney Water;
- Wastewater provided by Sydney Water;
- Electrical provided by Ausgrid;
- Telecommunications provided by NBN;
- Gas provided by Jemena; *and*
- Effective implementation of stormwater management.

A sufficient level of investigation has been completed to confirm the suitability and capability of the land for the intended development outcome from a services perspective. Concept and detailed designs, and delivery strategies will be subject to further discussion with each service provider during the relevant approval stages.

APPENDIX A 2005-095 DA PLANS – PREPARED BY BURGESS, ARNOTT GRAVA PTY LTD



SITE PLAN
Scale 1 : 500

PROCEDURE FOR SILTATION CONTROL DURING CONSTRUCTION

1. Construct silt trap fence, hay bale barriers, stablized construction entrance & wheel rumble , outlet pits, sediment catment basins and wash down tap located near exit
2. Commence construction providing drainage from excavations to sediment catchment basin
3. Should sediment basin fill to within 30% of capacity remove silt from basin with pump out tanker and despose of at an approved waste site
4. Provide site watering should wind erosion occur
5. Carry out daily site inspections of silt fences and hay bale barriers to ensure all are in working order
6. Reposition silt fences and hale bales where required to complete construction and ground works
7. Remove silt fences and hay bales only when construction and landscaping is 100% finished
8. The contractor shall be responsible for conforming to all existing legislation under the ENVIRONMENTAL OFFENCES & PENALTIES ACT 1989 as amended and CLEAN WATERS ACT1995 as amended

SEDIMENT CONTROL

All precautions shall be taken by the contractor to prevent the transportion of material from the site area by wind, stormwater runoff or artificial means. The site shall be watered in dry periods and should clear areas become barren, then these areas are to be turf and watered to promote grass cover. The sediment control fabric fences and hay bales indicated on the plan shall be taken sa a minimum protection measure only. Extra controls shall be establised to provide an effective protection where required. Support measures such as hay bales shall be used in areas of steep slops, stream flows and kerb gully inlet pits.

LEGEND

SEDIMENT CATCHMENT BASIN	S.C.B.
SILT FENCE	
STABILIZED CONSTRUCTION ENTRANCE	
CATCHMENT AREA	
AREA TO BE DISTURBED	
WASH DOWN TAP WITH HOSE	† W.D.T.

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NOT FOR CONSTRUCTION

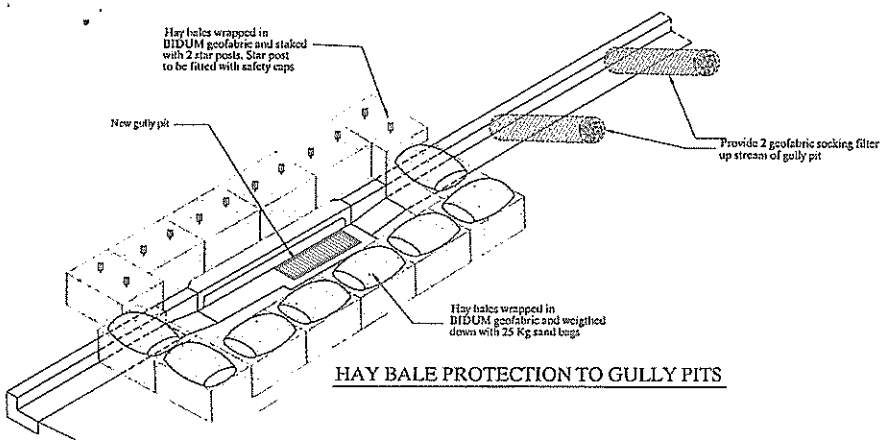
Revision	Details	Date

WAREHOUSE DEVELOPMENT AT
11 HARP STREET CAMPSIE FOR
C.L. & G.L. INVESTMENTS PTY. LTD.

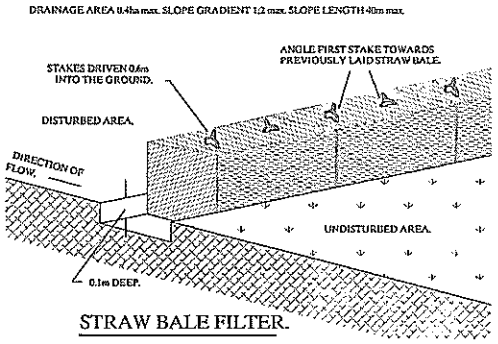
BURGESS, ARNOTT & GRAVA PTY. LTD.
CONSULTING STRUCTURAL, CIVIL & HYDRAULIC ENGINEERS
6/A THE CENTRE FORESTVILLE P.O. BOX 69 FORESTVILLE 2087
Ph. 9451 6411 Fax. 9975 2274
email burgessarnott@ozemail.com.au

SITE SOIL AND WATER MANAGEMENT SITE PLAN

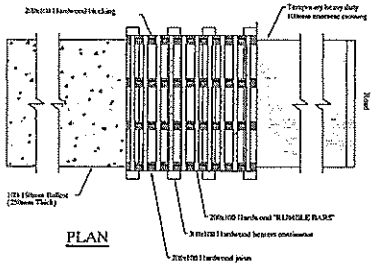
Checked	Scale	Date	Drawing No.
R. Grava	1 : 500	June 2005	2005-095-P1
Approved		Chartered Engineer	Drawing 1 in set of 3 Drawing size A1



HAY BALE PROTECTION TO GULLY PITS

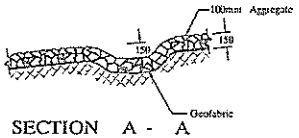


STRAW BALE FILTER.

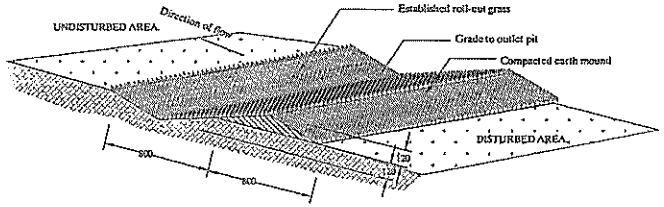


WHEEL RUMBLE DETAIL

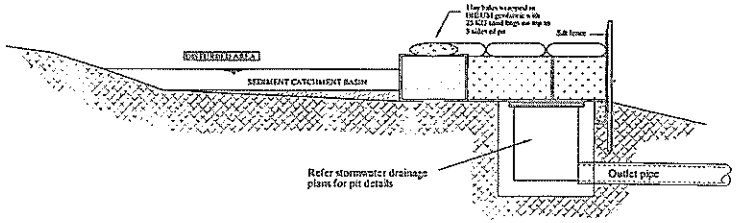
CONSTRUCTION EXIT



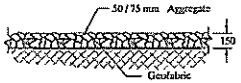
SECTION A - A



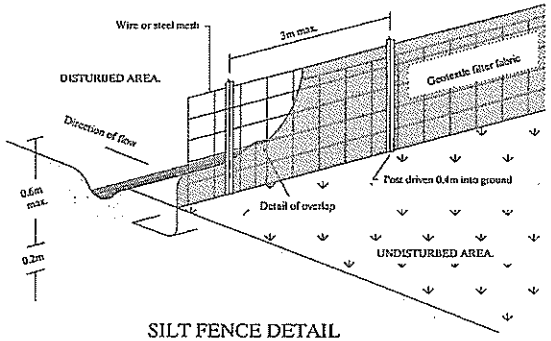
GRASSED OVERLAND FLOW DIVERSION SWALE



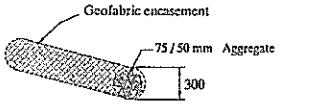
TYPICAL SECTION AT SEDIMENT CATCHMENT BASIN AT OUTLET PIT



STABILIZED CONSTRUCTION ENTRANCE



SILT FENCE DETAIL



TYPICAL SECTION OF GEOFABRIC SOCKING FILTER

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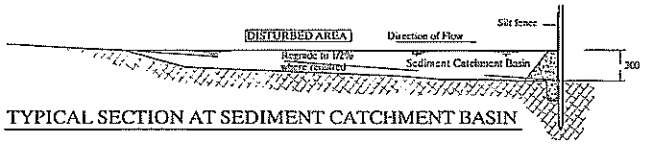
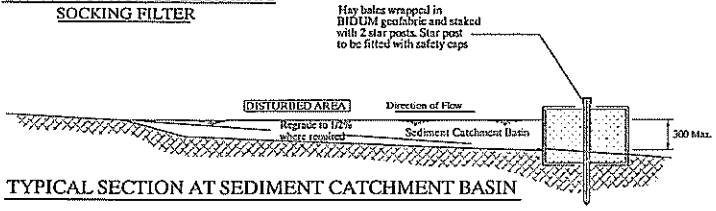


TYPICAL SECTION AT SEDIMENT CATCHMENT BASIN



TYPICAL SECTION AT SEDIMENT CATCHMENT BASIN

Revision	Details	Date

WAREHOUSE DEVELOPMENT AT
11 HARP STREET CAMPSIE FOR
C.L. & G.L. INVESTMENTS PTY. LTD.

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61A THE CENTRE FORESTVILLE P.O. BOX 69 FORESTVILLE 2087
Ph. 9451 4411 Fax. 9975 2274
email burgessarnott@ozemail.com.au

SITE SOIL AND WATER MANAGEMENT DETAILS

Checked	Scale	Date	Drawing No.
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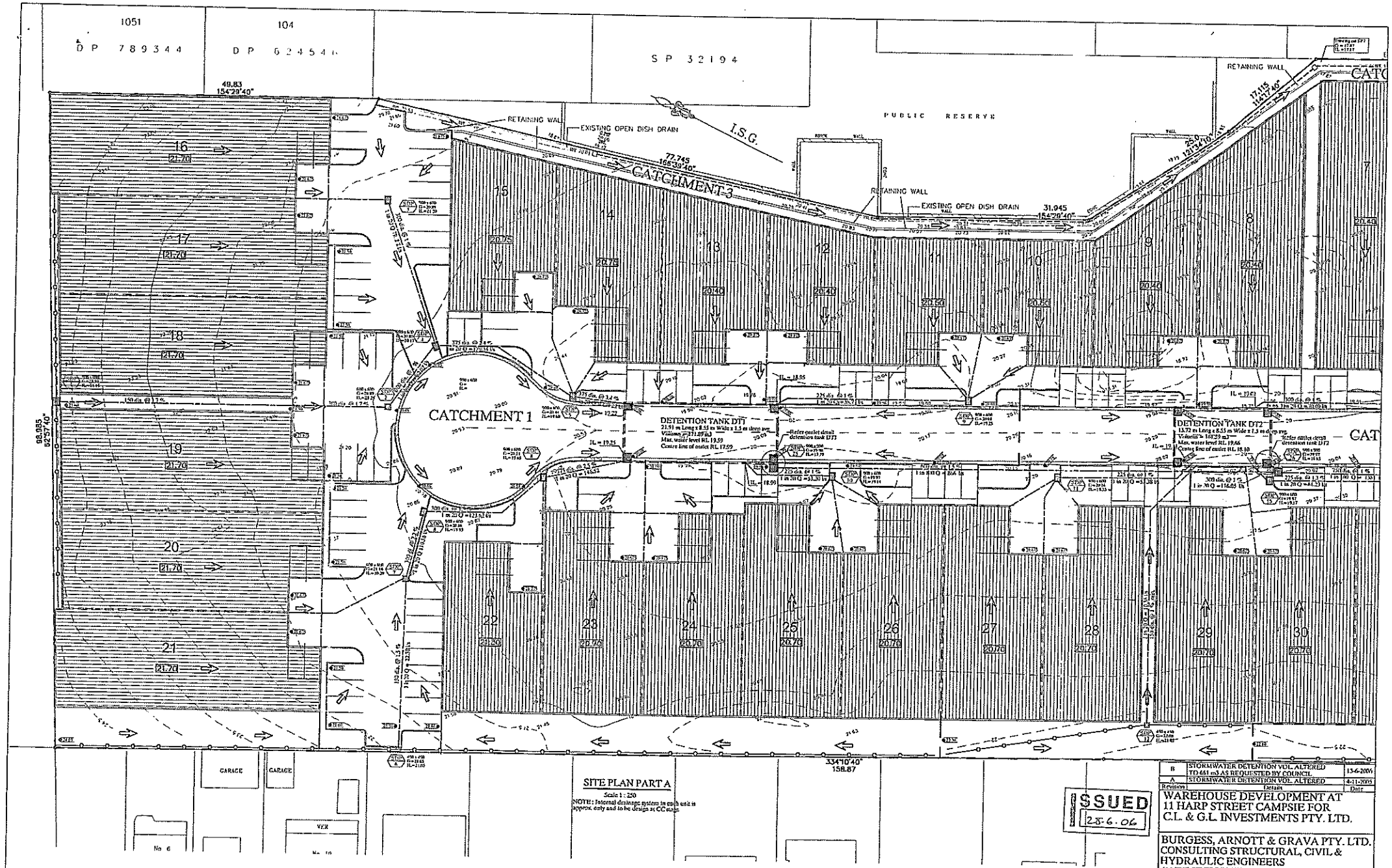
Approved		Chartered Engineer	Drawing 2 in set of 2
			Drawing size A1



SITE PLAN PART A

Scale 1 : 250

NOTE: Internal drainage system in each unit is approx. only and to be design at CC stage

ISSUED
28.6.06

CONCEPT DESIGN ONLY
FOR D.A. APPLICATION
NOT FOR CONSTRUCTION

Revision	Details	Date
B	STORMWATER DETENTION VOL. ALTERED TO 661 m3 AS REQUESTED BY COUNCIL	13-6-2006
A	STORMWATER DETENTION VOL. ALTERED	4-11-2005

WAREHOUSE DEVELOPMENT AT
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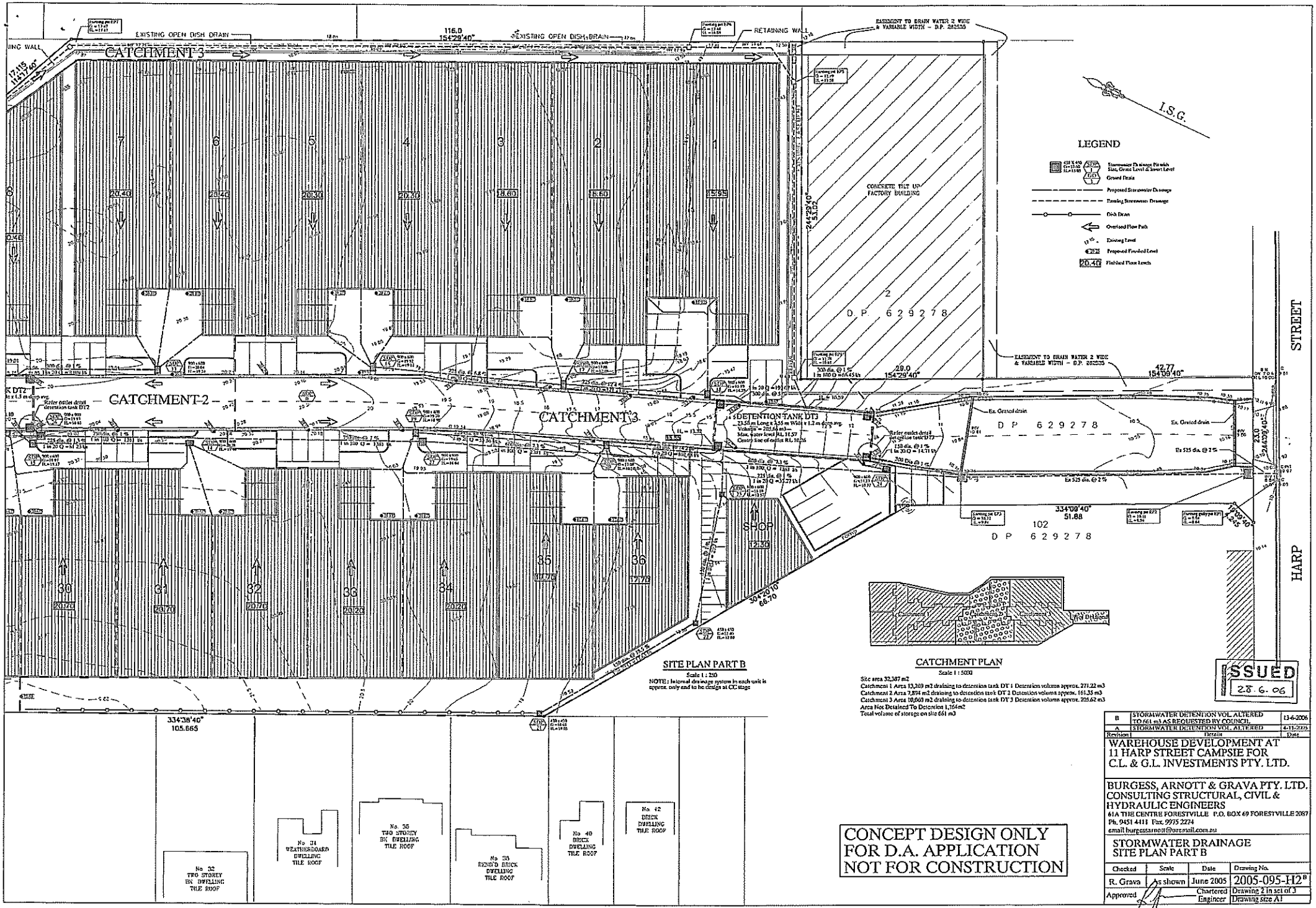
STORMWATER DRAINAGE
SITE PLAN PART A

Checked	Scale	Date	Drawing No.
R. Grava	As shown	June 2005	2005-095-H1 B
Approved		Chartered Engineer	Drawing 1 in set of 3
			Drawing size A1



SITE PLAN PART B

Scale 1 : 250

NOTE : Internal drainage system in each unit is approx. only and to be design at CC stage

CATCHMENT PLAN

Scale 1 : 5000

Site area 32,387 m2
Catchment 1 Area 13,269 m2 draining to detention tank DT 1 Detention volume approx. 271.22 m3
Catchment 2 Area 7,854 m2 draining to detention tank DT 2 Detention volume approx. 161.35 m3
Catchment 3 Area 10,660 m2 draining to detention tank DT 3 Detention volume approx. 205.62 m3
Area Not Detained To Detention 1,764m2
Total volume of storage on site 651 m3

ISSUED 28.6.06

CONCEPT DESIGN ONLY
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Revision	Details	Date
B	STORMWATER DETENTION VOL ALTERED TO 661 m3 AS REQUESTED BY COUNCIL	13-6-2006
A	STORMWATER DETENTION VOL ALTERED	4-11-2005

WAREHOUSE DEVELOPMENT AT
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STORMWATER DRAINAGE
SITE PLAN PART B

Checked	Scale	Date	Drawing No.
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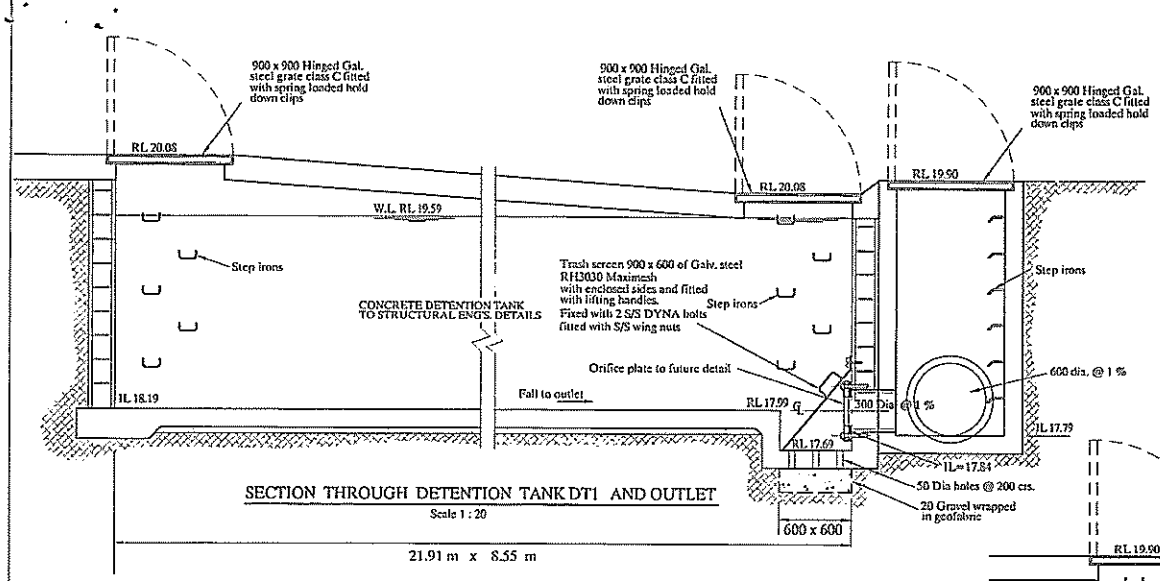
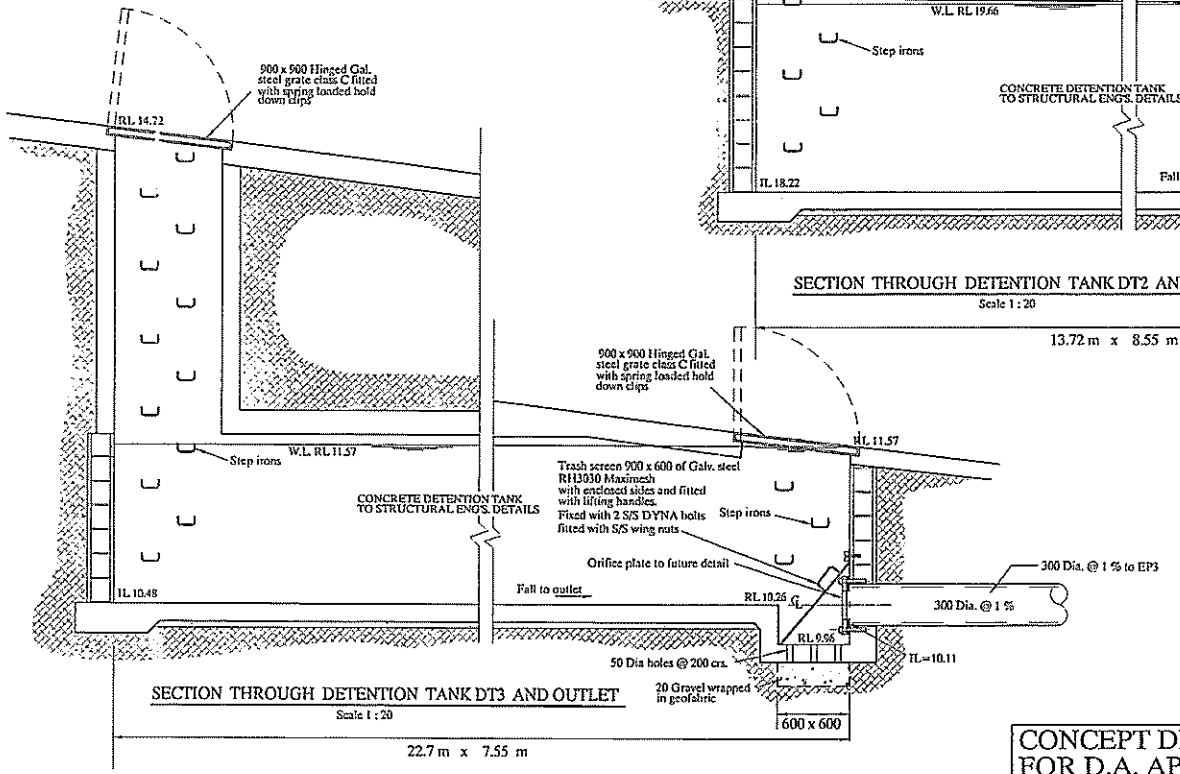
Approved		Chartered Engineer	Drawing 2 in set of 3
			Drawing size A1



SECTION THROUGH DETENTION TANK DT1 AND OUTLET

Scale 1 : 20

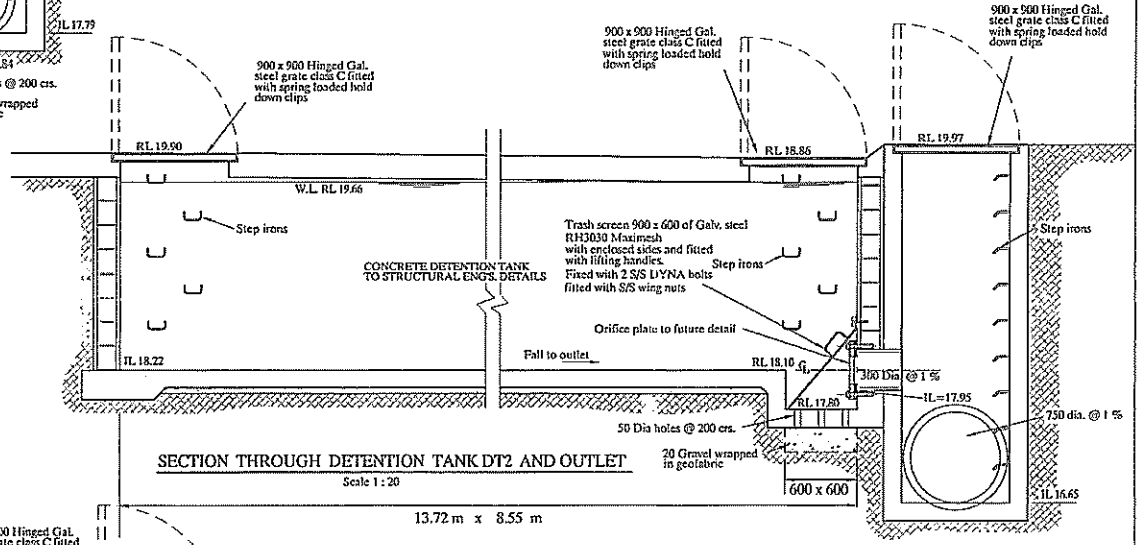
21.91 m x 8.55 m



SECTION THROUGH DETENTION TANK DT3 AND OUTLET

Scale 1 : 20

22.7 m x 7.55 m



SECTION THROUGH DETENTION TANK DT2 AND OUTLET

Scale 1 : 20

13.72 m x 8.55 m

ISSUED
23. 6. 06

CONCEPT DESIGN ONLY
FOR D.A. APPLICATION
NOT FOR CONSTRUCTION

Revision	Details	Date
B	STORMWATER DETENTION VOL. ALTERED TO 661 m3 AS REQUESTED BY COUNCIL	13-6-2006
A	STORMWATER DETENTION VOL. ALTERED	4-11-2005

WAREHOUSE DEVELOPMENT AT
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STORMWATER DRAINAGE DETAILS

Checked	Scale	Date	Drawing No.
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Approved		Chartered Engineer	Drawing 3 in set of 3
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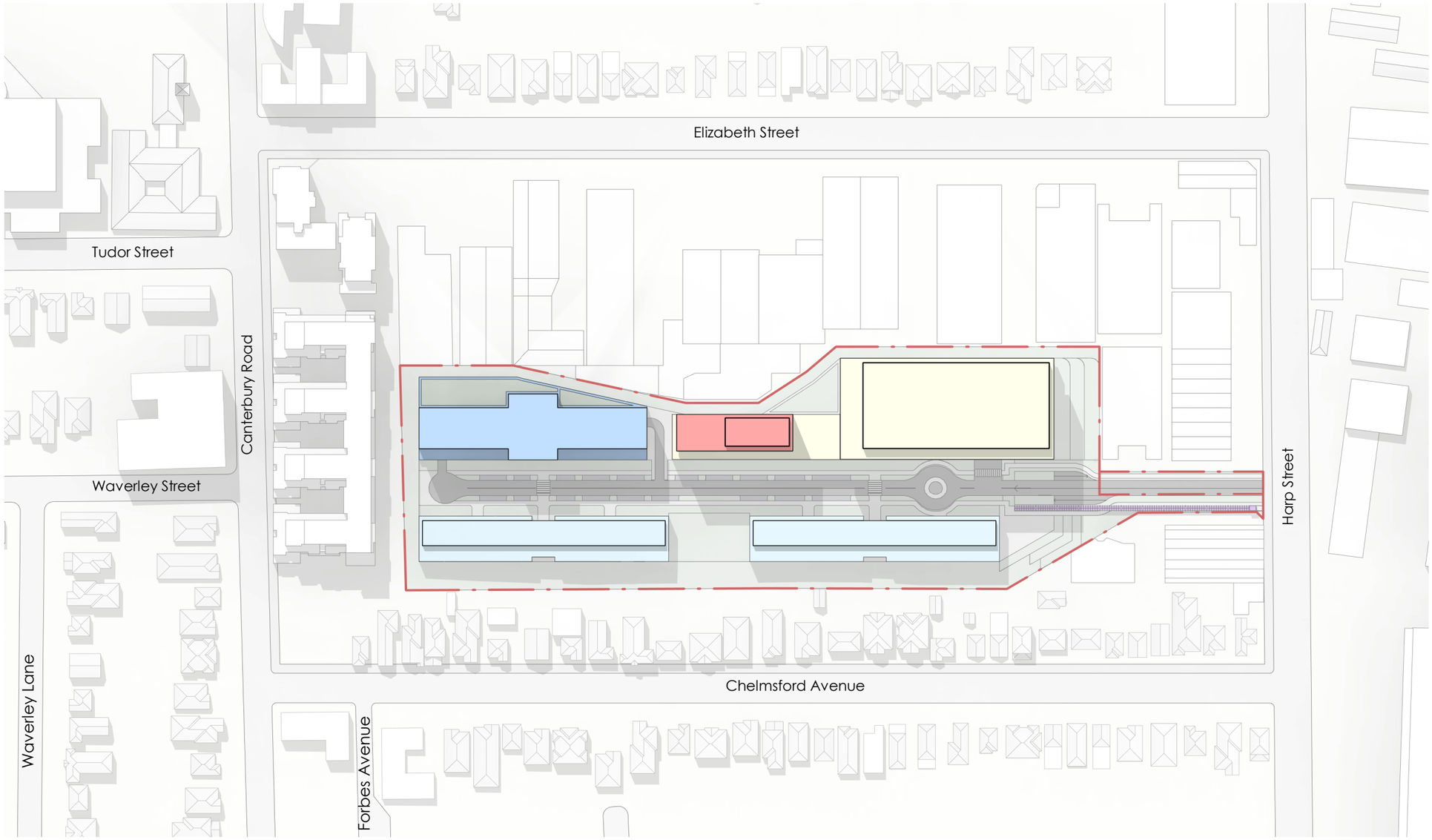
APPENDIX B PRELIMINARY ARCHITECTURAL PLANS



1 Location Plan
1 : 2000

Legend

- Age Care (A)
- Medihotel (B)
- Hospital (C)
- ILU (D,E)
- Loading / BOH / Parking
- Pedestrian Link Bridge

NEETAN KANNFINCH URBIS

Campsie Health Precinct

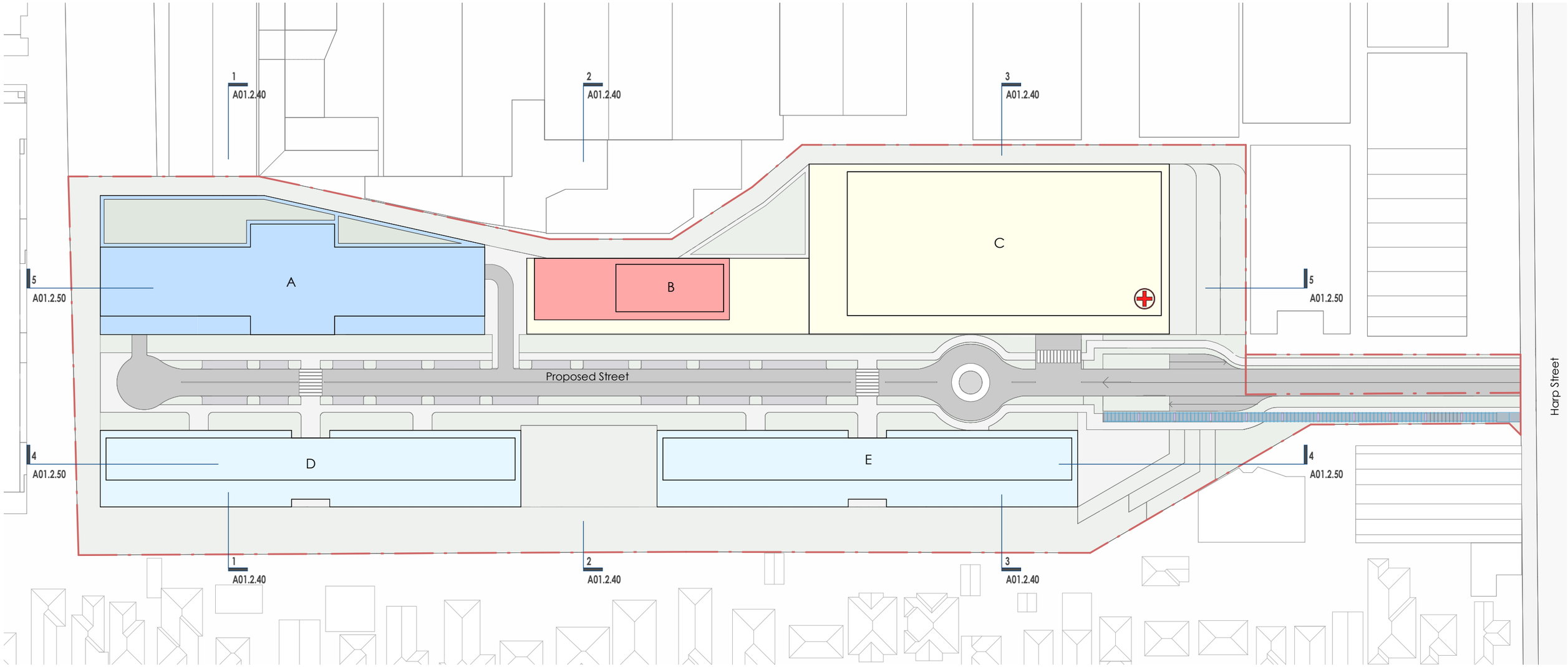
11 Harp St, Campsie NSW 2194

Location Plan

Scale 1:2000

0 10m 20m 50m 100m

N



1 Site Plan
1 : 1000

Legend

- Age Care (A)
- Medihotel (B)
- Hospital (C)
- ILU (D,E)
- Loading / BOH / Parking
- Pedestrian Link Bridge

NEETAN KANNFINCH URBIS

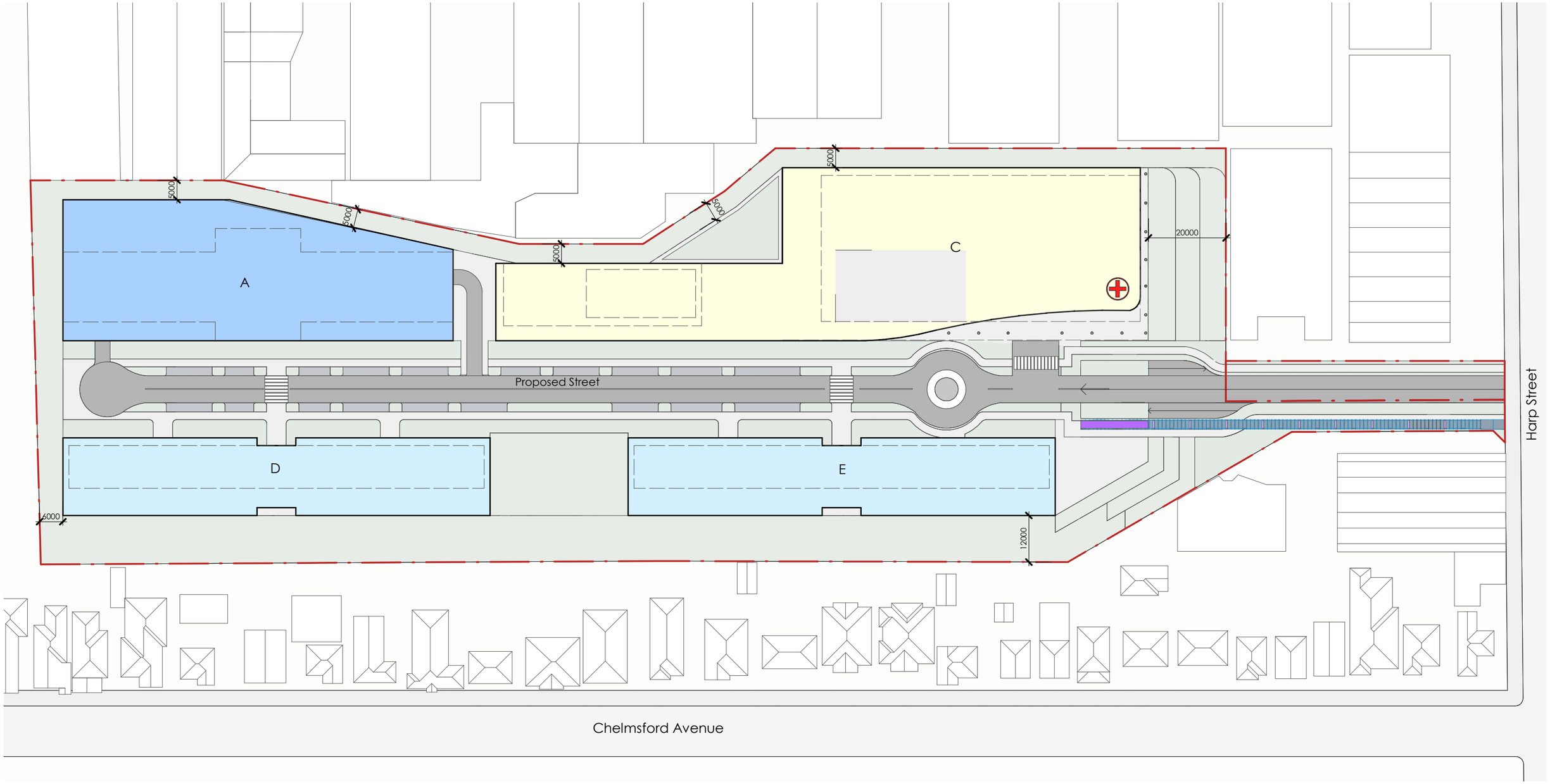
Campsie Health Precinct

11 Harp St, Campsie NSW 2194

Site Plan

Scale 1:1000

0 5m 10m 25m 50m



1 Ground Floor Plan
1 : 1000

Legend

- Age Care (A)
- Medihotel (B)
- Hospital (C)
- ILU (D,E)
- Loading / BOH / Parking
- Pedestrian Link Bridge

NEETAN KANNFINCH URBIS

Campsie Health Precinct

11 Harp St, Campsie NSW 2194

Ground Floor Plan

Scale 1:1000

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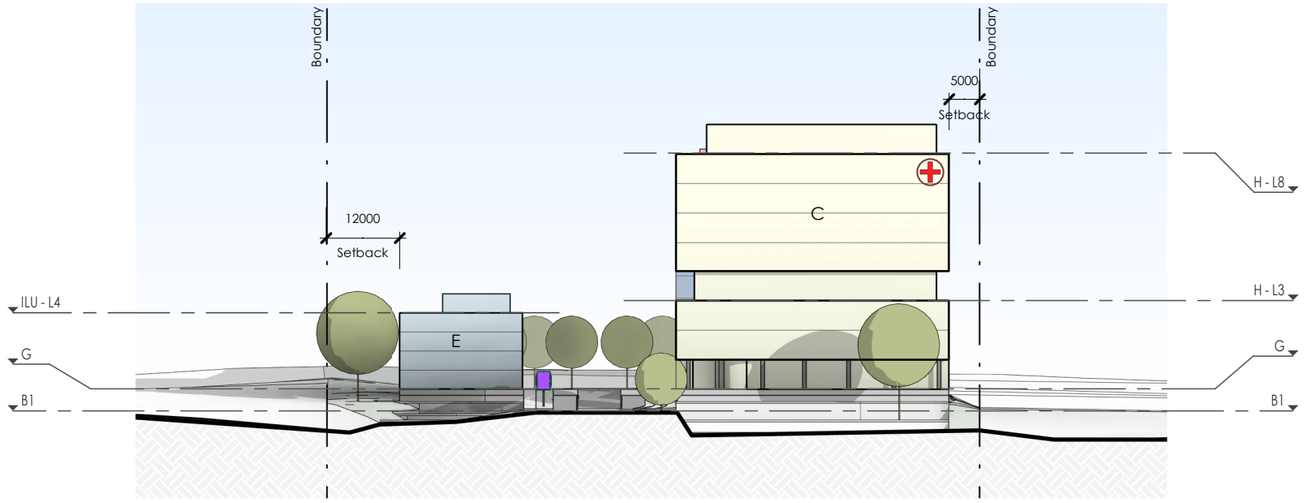

1 South Elevation
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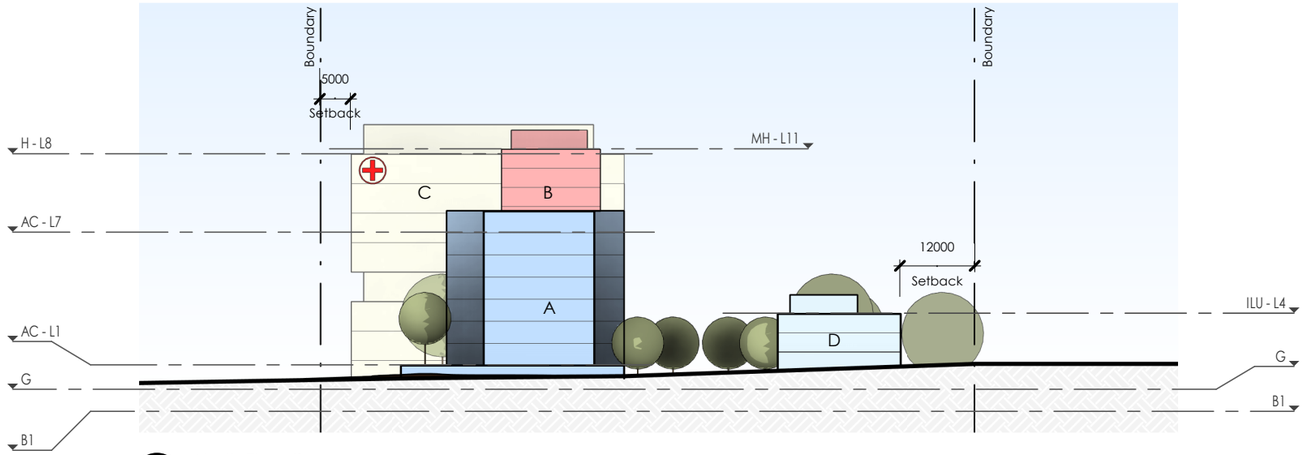


2 North Elevation
1 : 1000

Legend

- Age Care (A)
- Medihotel (B)
- Hospital (C)
- ILU (D,E)
- Loading / BOH / Parking

Abbreviations

AC	Age Care
MH	Medihotel
H	Hospital
ILU	Independent Living Units

NEETAN KANNFINCH URBIS

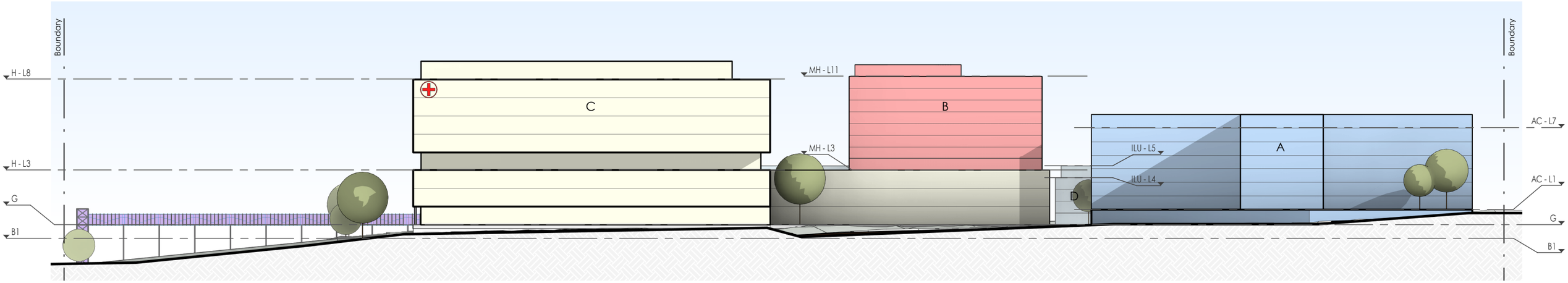
Campsie Health Precinct

11 Harp St, Campsie NSW 2194

Elevations

Scale 1:1000

0 5m 10m 25m 50m



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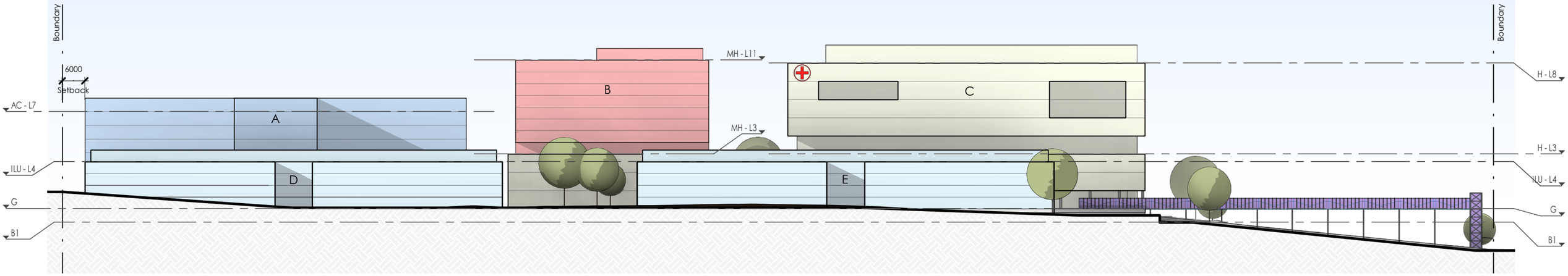
1 : 1000



2 West Elevation
1 : 1000

Legend

- Age Care (A)
- Medihotel (B)
- Hospital (C)
- ILU (D,E)
- Loading / BOH / Parking

Abbreviations

AC	Age Care
MH	Medihotel
H	Hospital
ILU	Independent Living Units

NEETAN KANNFINCH URBIS

Campsie Health Precinct

11 Harp St, Campsie NSW 2194

Elevations

Scale 1:1000

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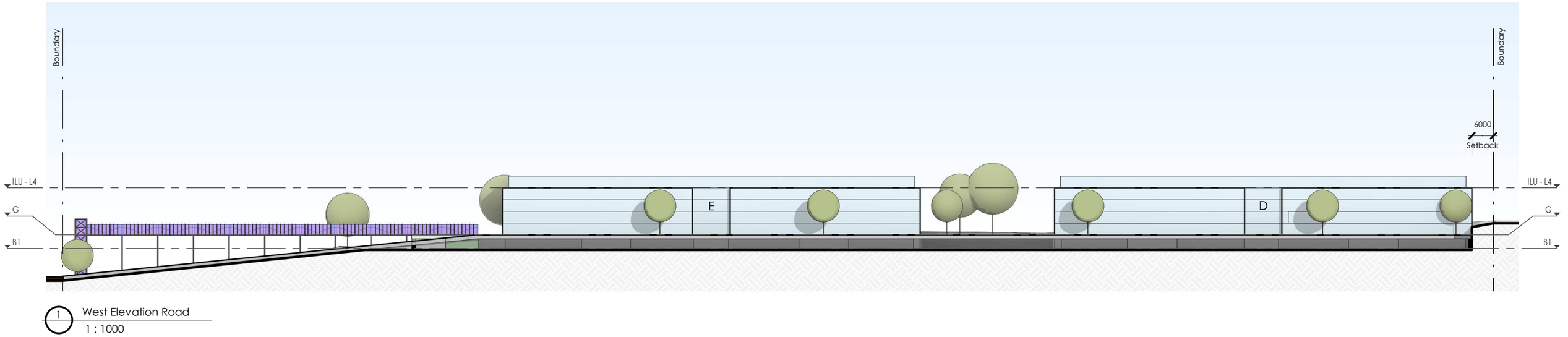
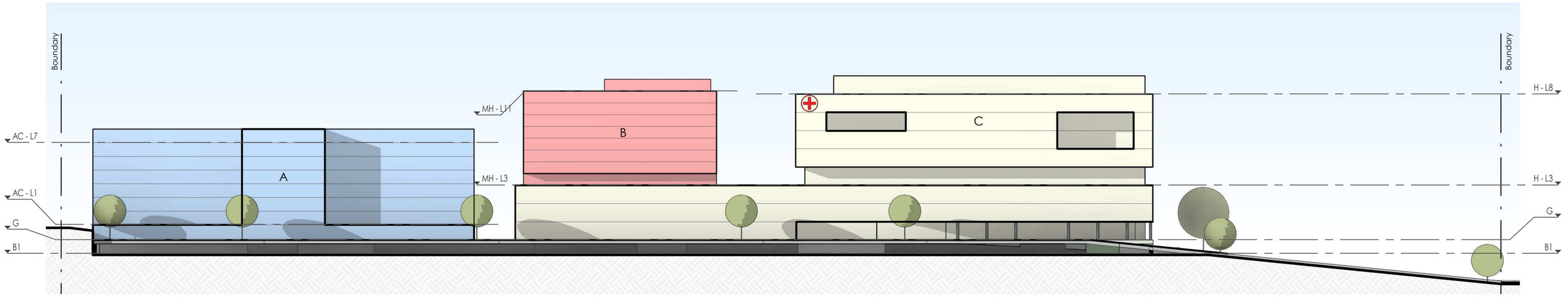


1 West Elevation Road
1 : 1000



2 East Elevation Road
1 : 1000

Legend

- Age Care (A)
- Medihotel (B)
- Hospital (C)
- ILU (D,E)
- Loading / BOH / Parking

Abbreviations

AC	Age Care
MH	Medihotel
H	Hospital
ILU	Independent Living Units

NEETAN KANNFINCH URBIS

Campsie Health Precinct

11 Harp St, Campsie NSW 2194

Elevations

Scale 1:1000

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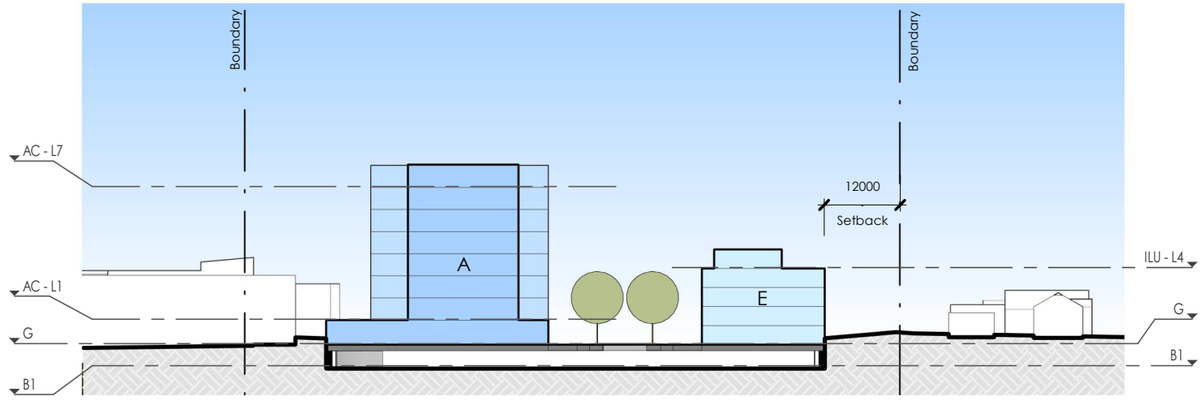

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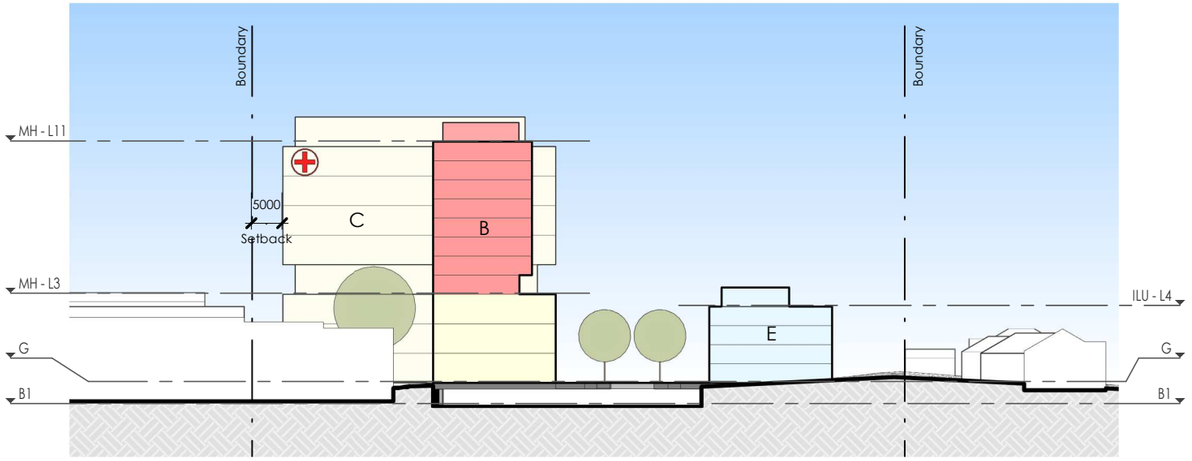

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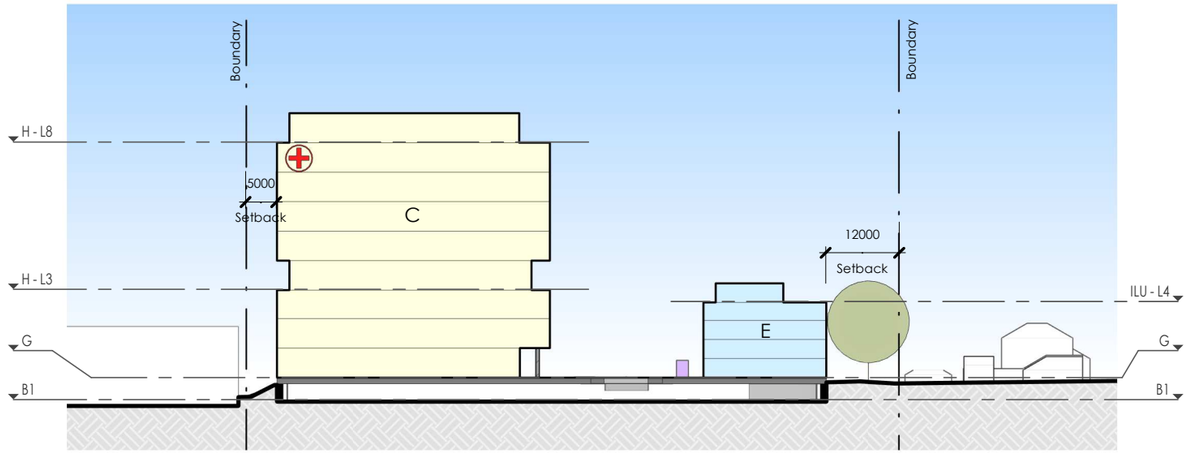


3 Section 03
1 : 1000

Legend

- Age Care (A)
- Medihotel (B)
- Hospital (C)
- ILU (D,E)
- Loading / BOH / Parking

Abbreviations

AC	Age Care
MH	Medihotel
H	Hospital
ILU	Independent Living Units

NEETAN KANNFINCH URBIS

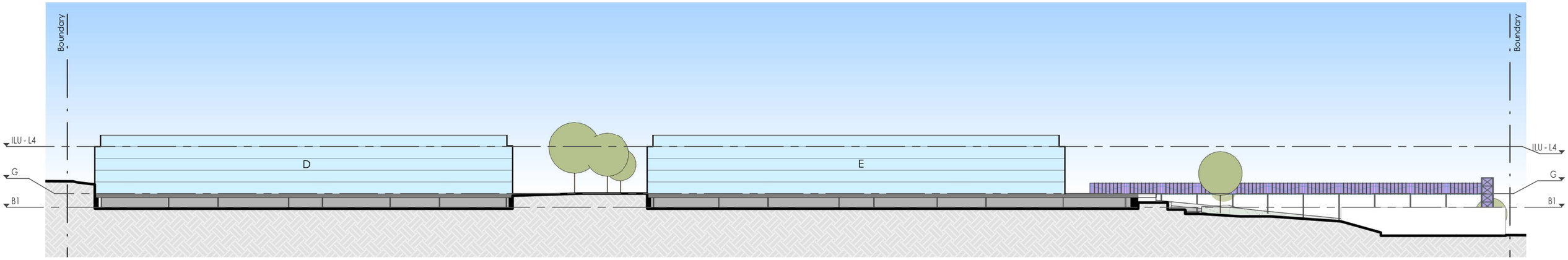
Campsie Health Precinct

11 Harp St, Campsie NSW 2194

Sections

Scale 1:1000

0 5m 10m 25m 50m



4 Section 04
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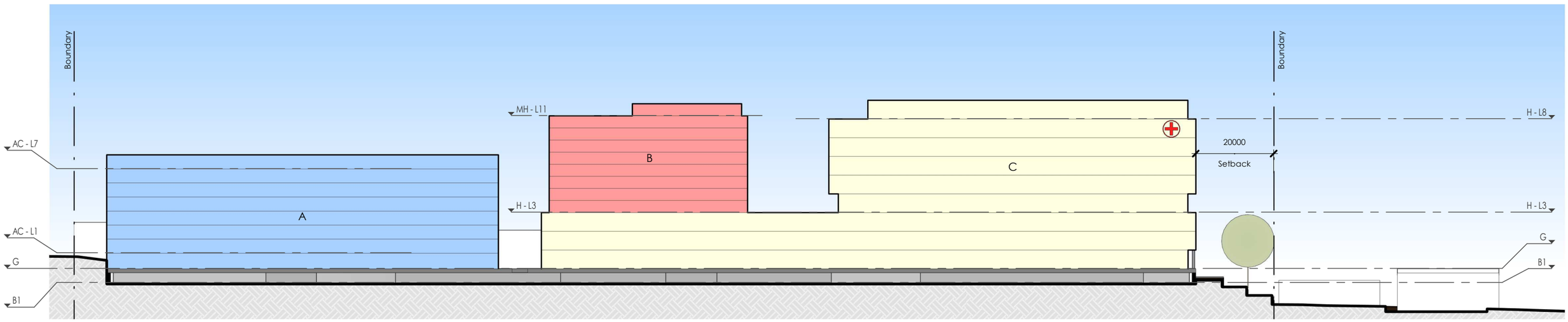

5 Section 05
1 : 1000

Legend

- Age Care (A)
- Medihotel (B)
- Hospital (C)
- ILU (D,E)
- Loading / BOH / Parking

Abbreviations

AC	Age Care
MH	Medihotel
H	Hospital
ILU	Independent Living Units

NEETAN KANNFINCH URBIS

Campsie Health Precinct

11 Harp St, Campsie NSW 2194

Sections

Scale 1:1000

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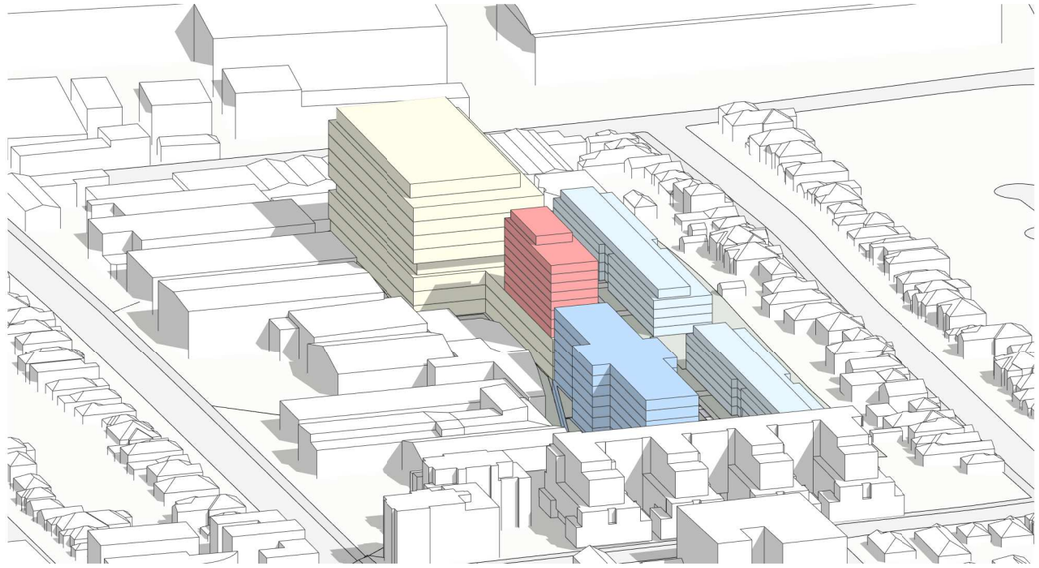

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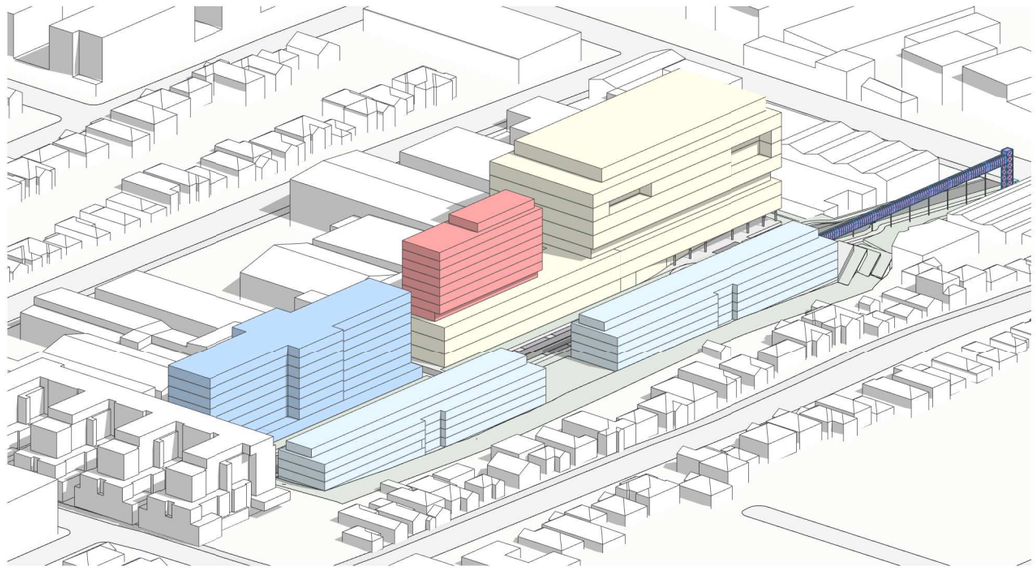
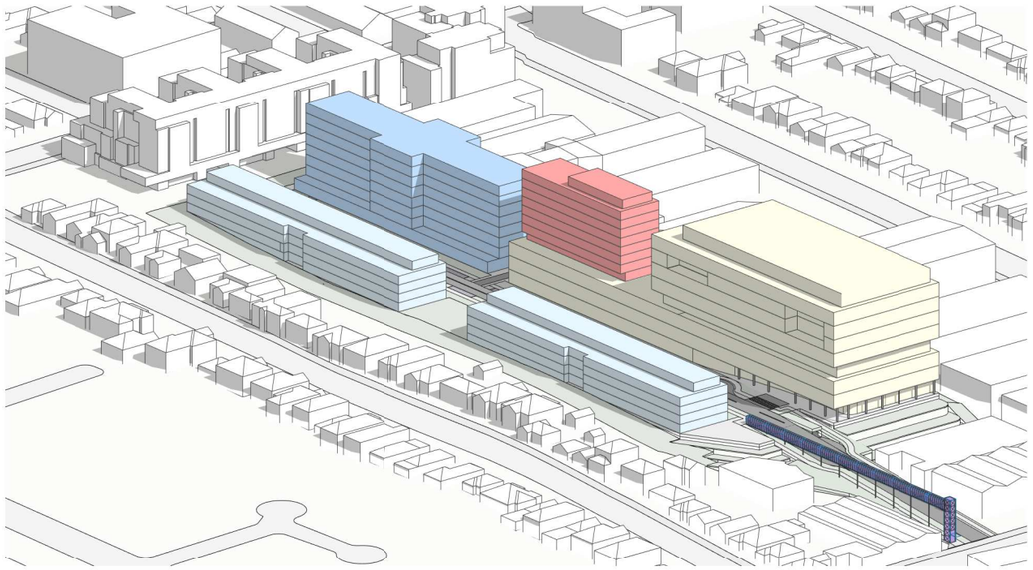
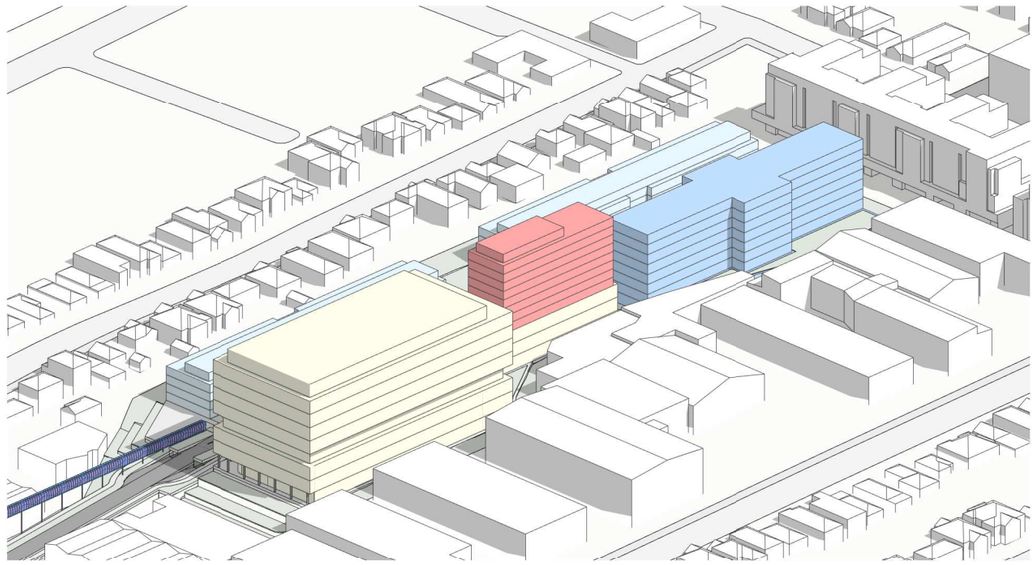


4 North West



2 South West



3 South East

Legend

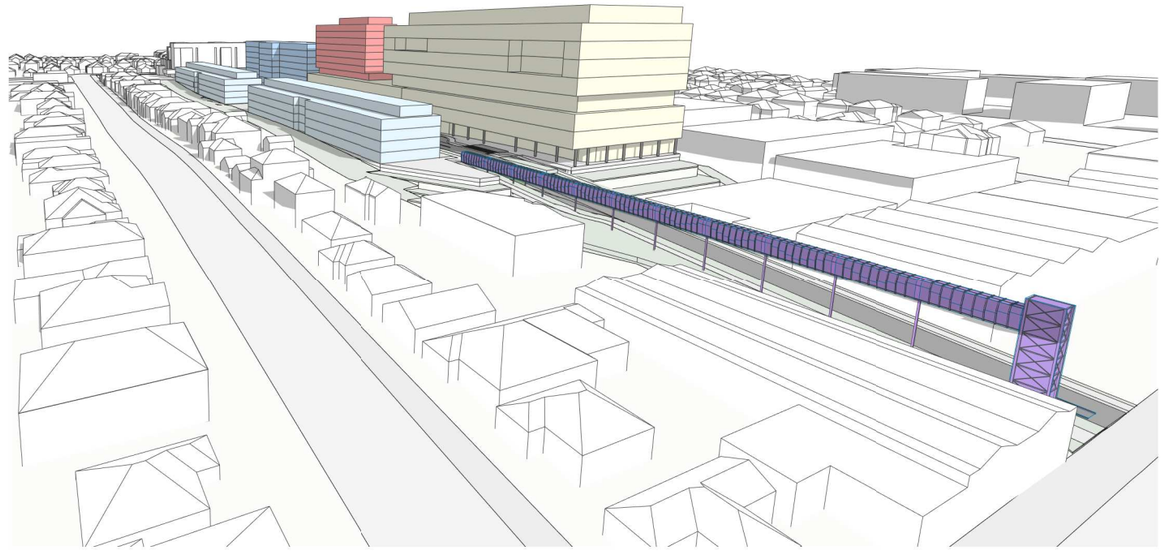
- Age Care (A)
- Medihotel (B)
- Hospital (C)
- ILU (D,E)
- Loading / BOH / Parking
- Pedestrian Link Bridge

NEETAN KANNFINCH URBIS

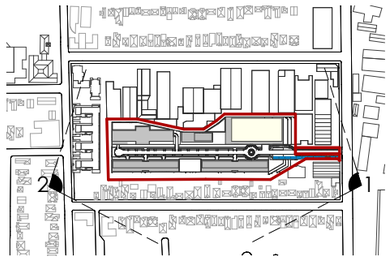
Campsie Health Precinct

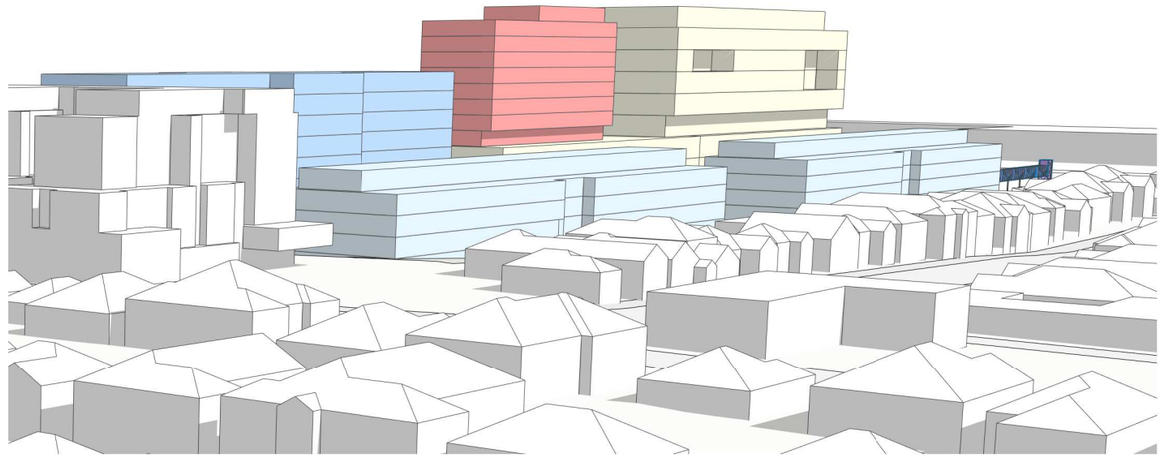
11 Harp St, Campsie NSW 2194

Axometrics



1 View





2 View

Legend

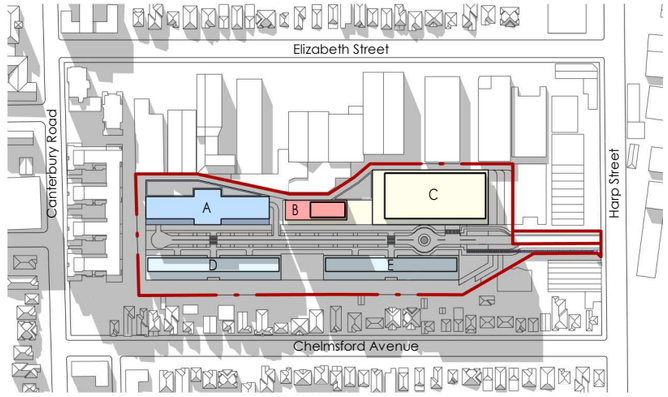
- Age Care (A)
- Medihotel (B)
- Hospital (C)
- ILU (D,E)
- Loading / BOH / Parking
- Pedestrian Link Bridge

NEETAN KANNFINCH URBIS

Campsie Health Precinct

11 Harp St, Campsie NSW 2194

Perspectives



1 June 21 - 9am
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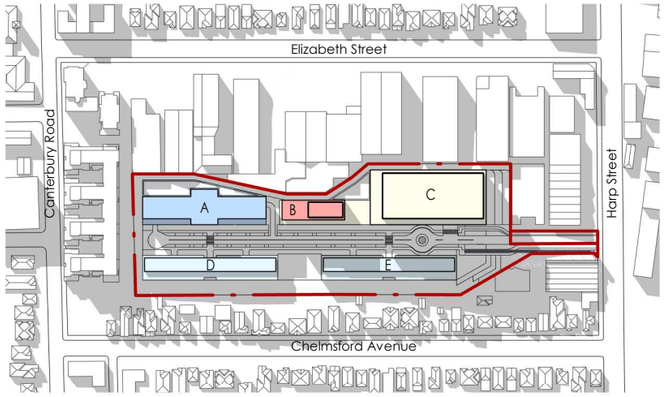

2 June 21 - 10am
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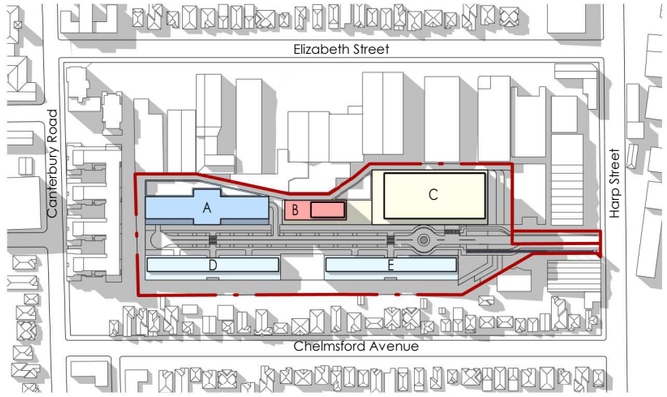

3 June 21 - 11am
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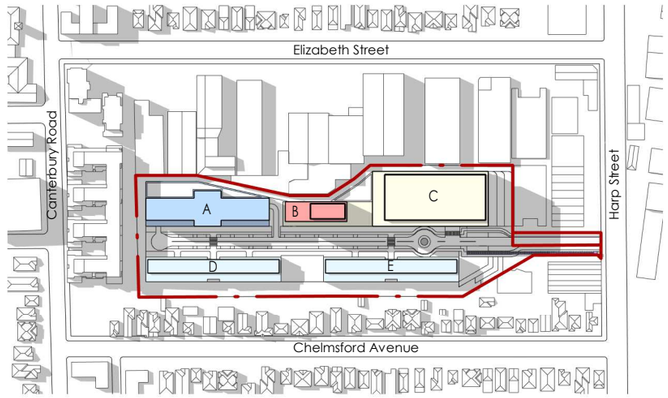

4 June 21 - 12pm
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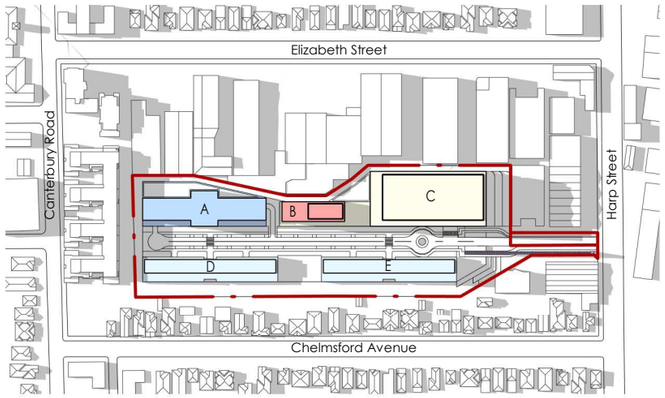

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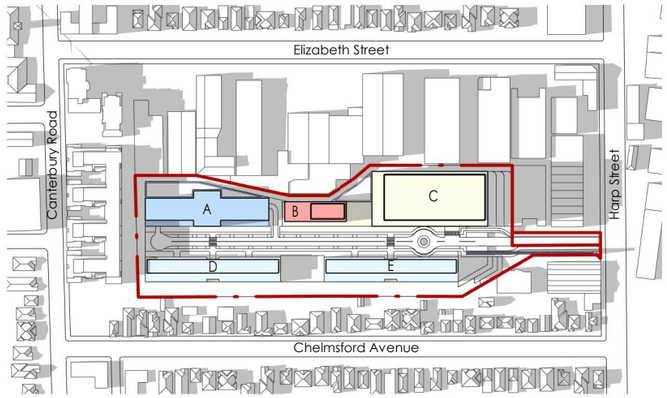
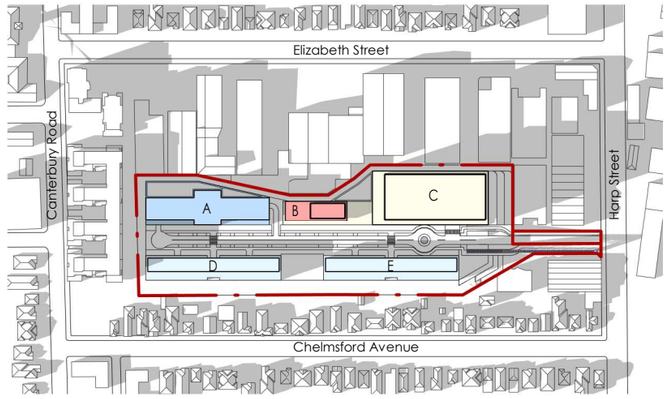


6 June 21 - 2pm
1 : 5000



7 June 21 - 3pm
1 : 5000

Legend

- Age Care (A)
- Medihotel (B)
- Hospital (C)
- ILU (D,E)
- Loading / BOH / Parking
- Pedestrian Link Bridge

NEETAN KANNFINCH URBIS

Campsie Health Precinct

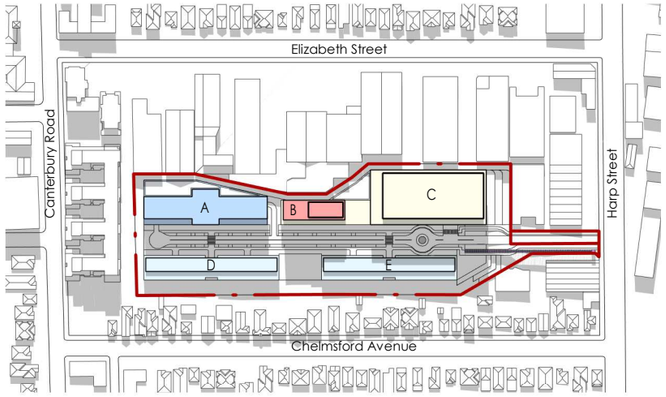
11 Harp St, Campsie NSW 2194

21 June

Winter Shadow Diagram

Scale 1:5000

0 25m 50m 125m 250m



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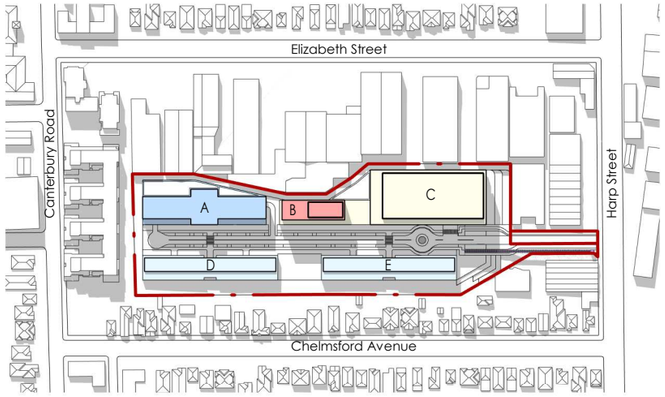

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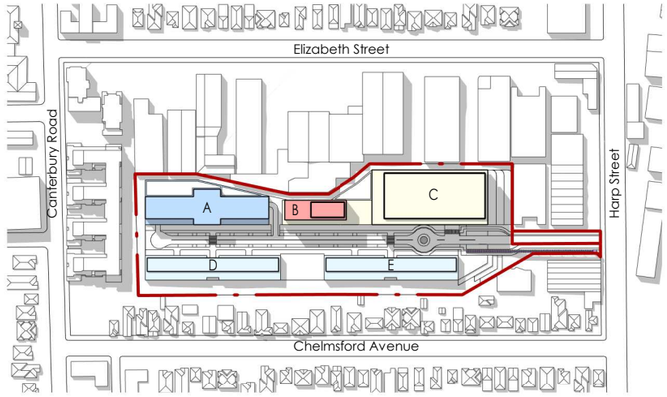
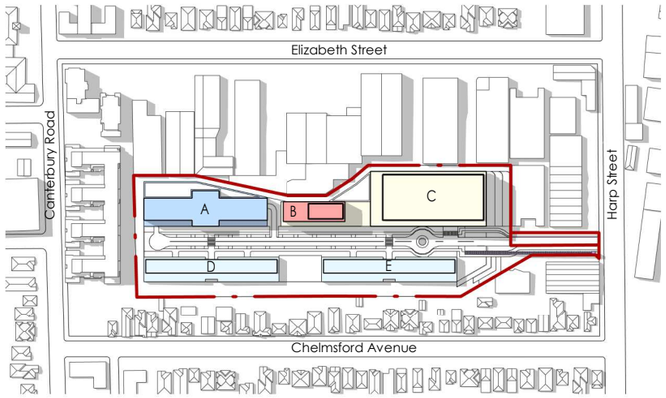
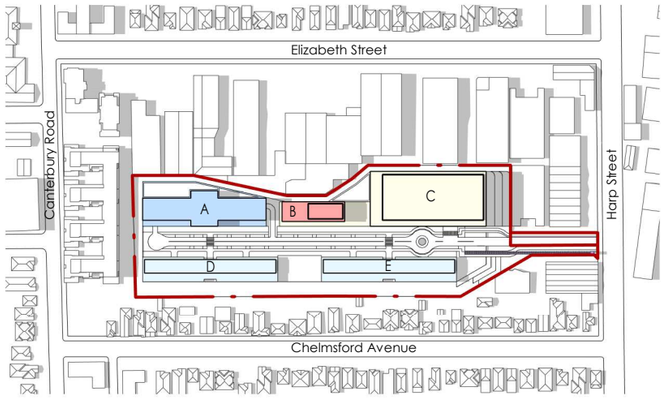
1 : 5000



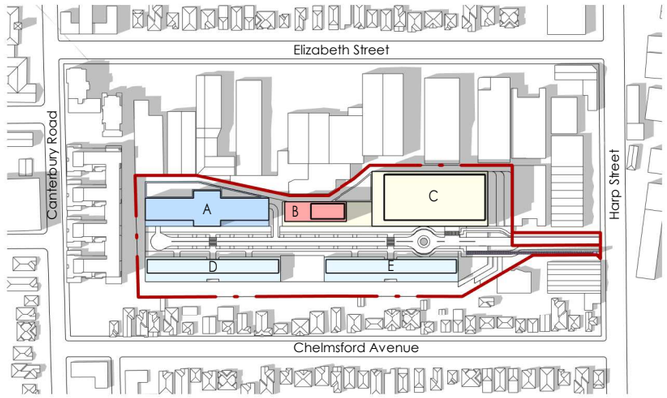
3 March 21 - 11pm
1 : 5000



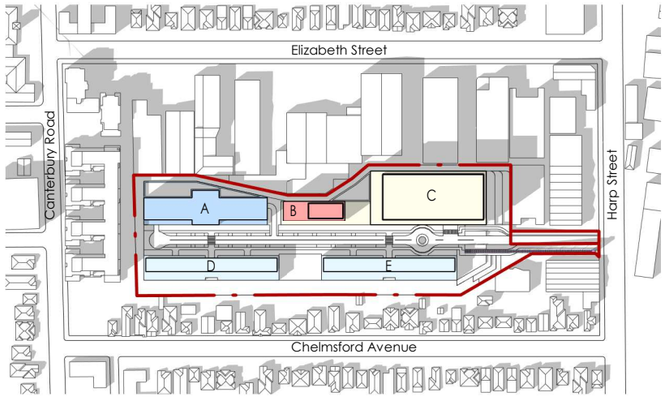
4 March 21 - 12pm
1 : 5000



5 March 21 - 1pm
1 : 5000



6 March 21 - 2pm
1 : 5000



7 March 21 - 3pm
1 : 5000

Legend

- Age Care (A)
- Medihotel (B)
- Hospital (C)
- ILU (D,E)
- Loading / BOH / Parking
- Pedestrian Link Bridge

NEETAN KANNFINCH URBIS

Campsie Health Precinct

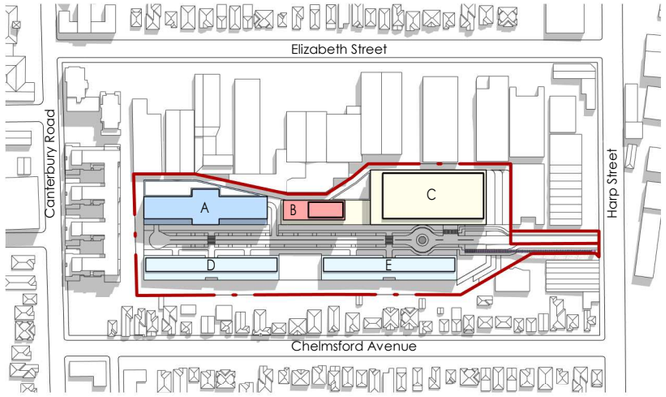
11 Harp St, Campsie NSW 2194

21 March

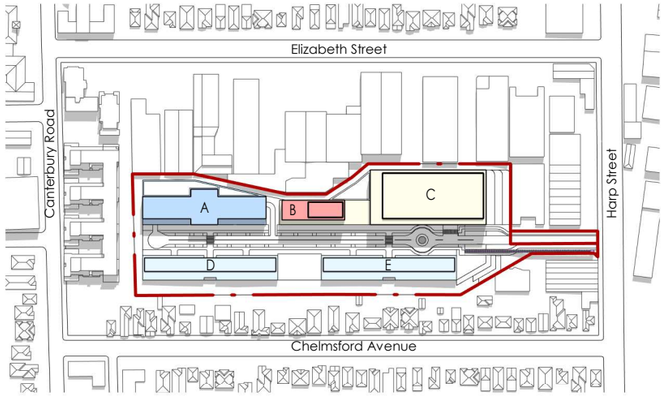
Equinox Shadow Diagram

Scale 1:5000

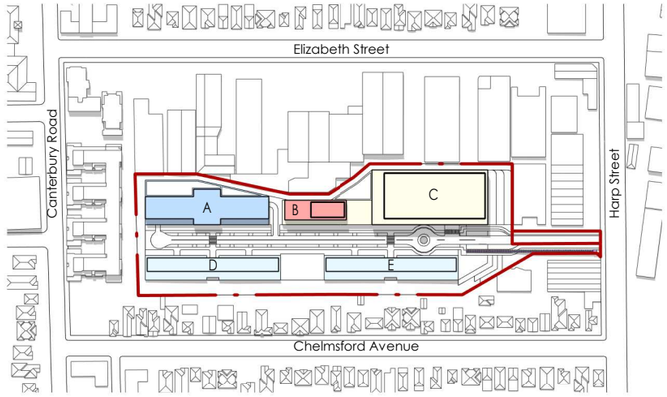
0 25m 50m 125m 250m



1 December 21 - 9am
1 : 5000



2 December 21 - 10am
1 : 5000



3 December 21 - 11pm
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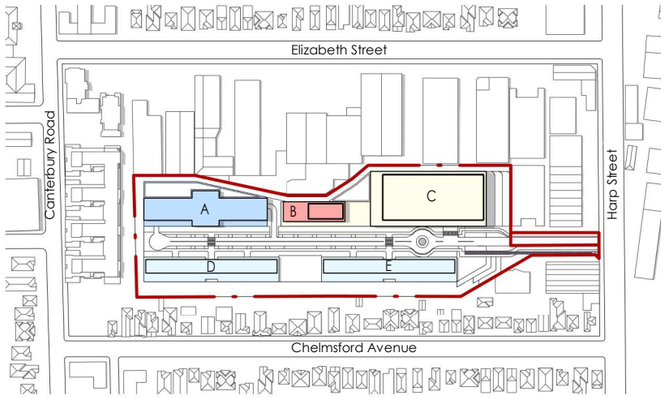
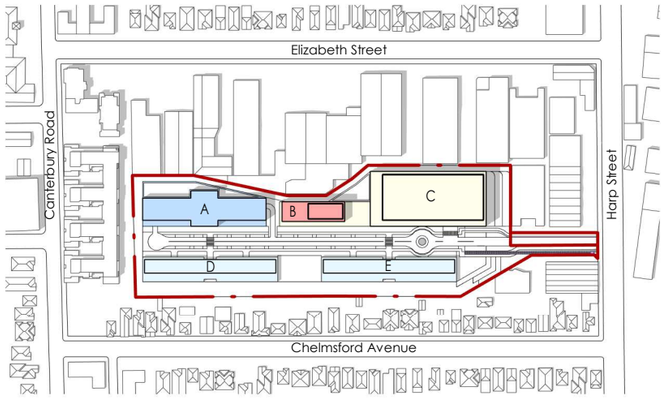
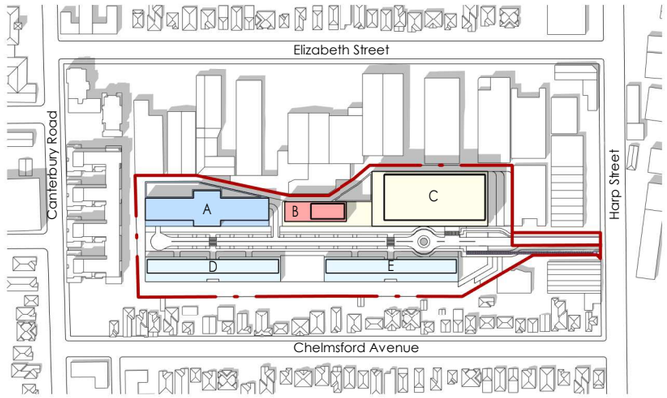


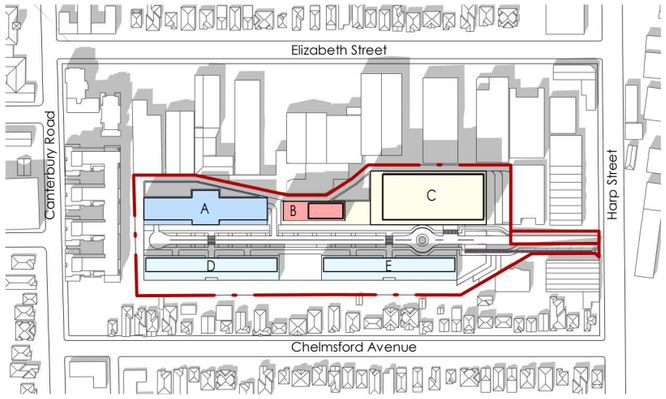
4 December 21 - 12pm
1 : 5000



5 December 21 - 1pm
1 : 5000



6 December 21 - 2pm
1 : 5000



7 December 21 - 3pm
1 : 5000

Legend

- Age Care (A)
- Medihotel (B)
- Hospital (C)
- ILU (D,E)
- Loading / BOH / Parking
- Pedestrian Link Bridge

NEETAN KANNFINCH URBIS

Campsie Health Precinct

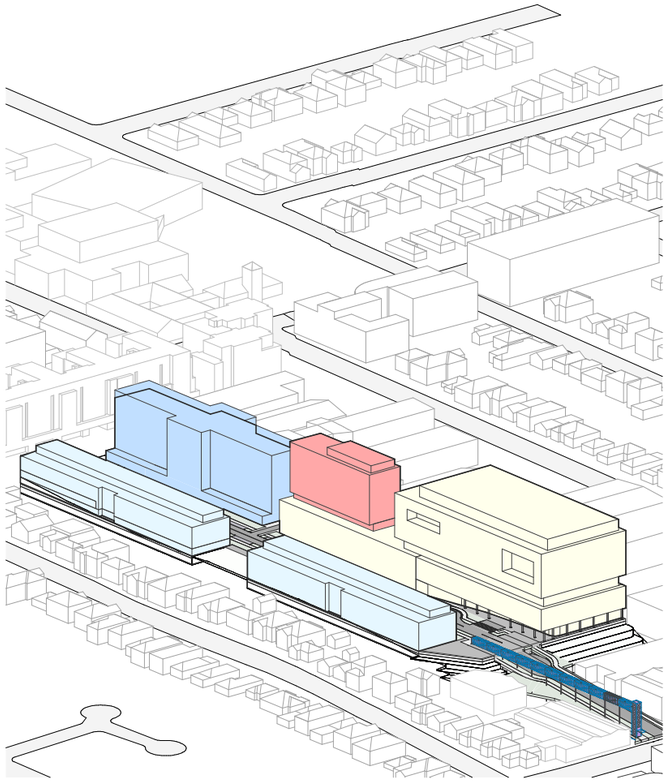
11 Harp St, Campsie NSW 2194

21 Dec

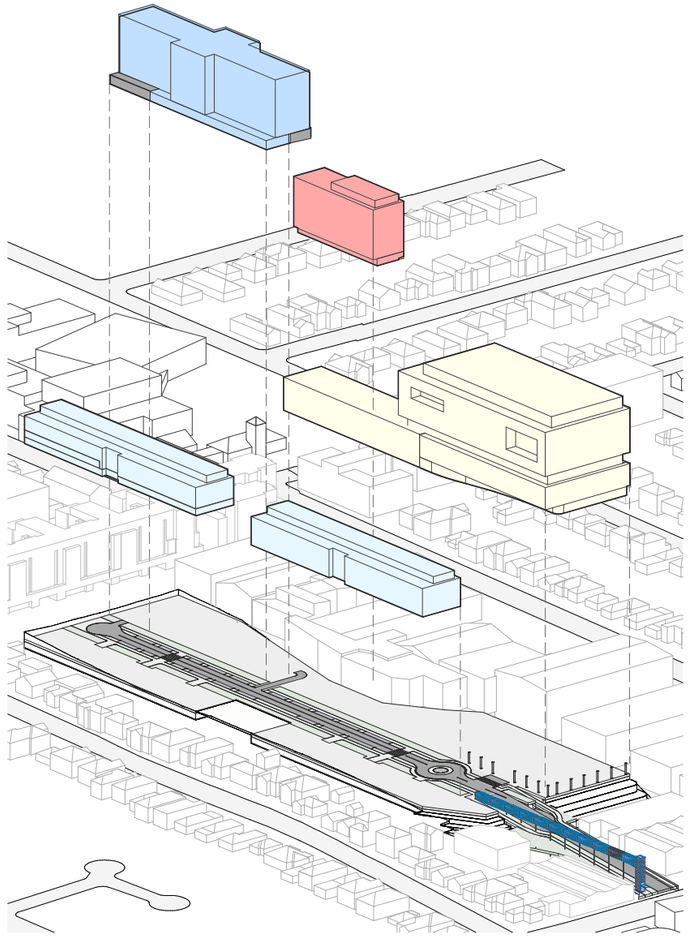
Summer Shadow Diagram

Scale 1:5000

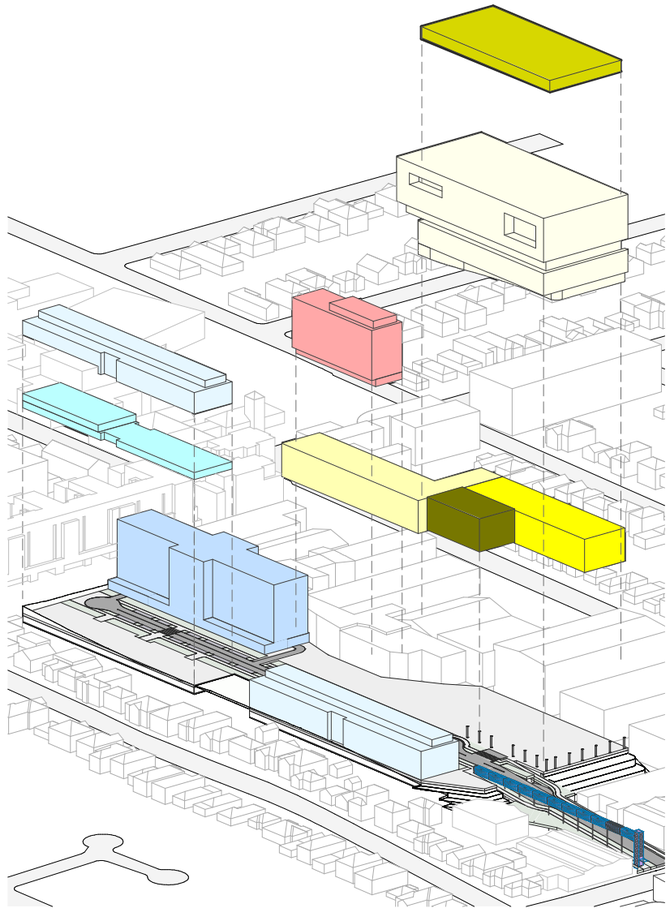
0 25m 50m 125m 250m



1 Usage Consolidated Axonometric



2 Usage Exploded Axonometric



3 Usage Exploded Axonometric

Legend

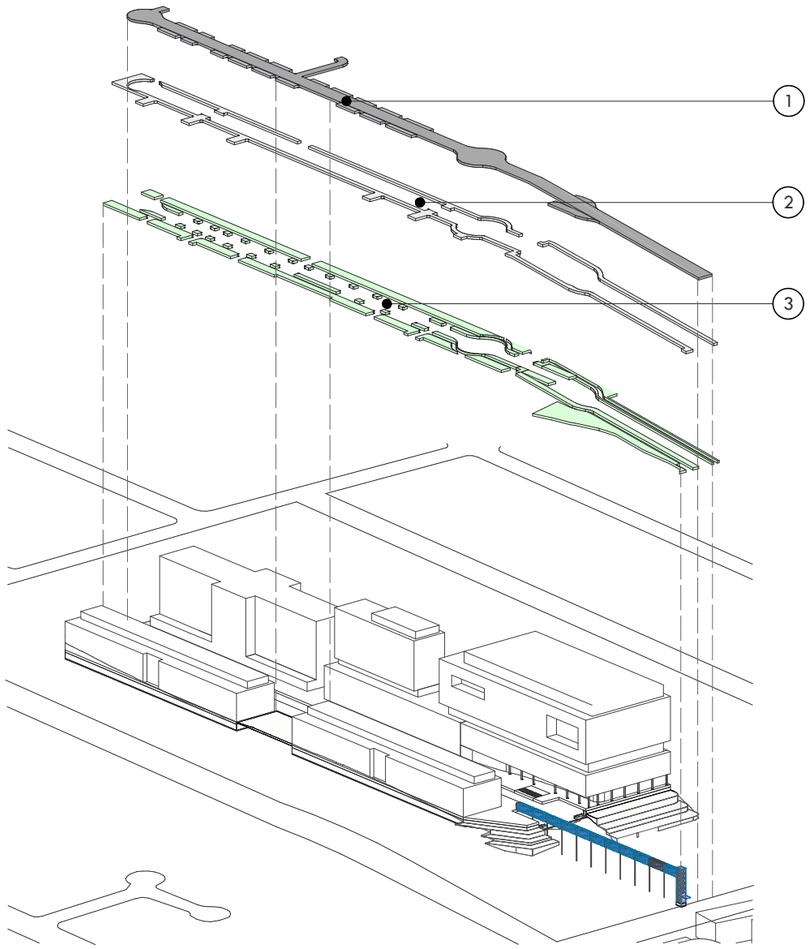
- Age Care (A)
- Medihotel (B)
- Hospital (C)
- ILU (D,E)
- Loading / BOH / Parking
- Pedestrian Link Bridge
- Disability Housing (D)
- Medical Centre (C)
- Medical Research & Innovation (C)
- Rehab (C)
- Early Learning Centre (C)

NEETAN KANNFINCH URBIS

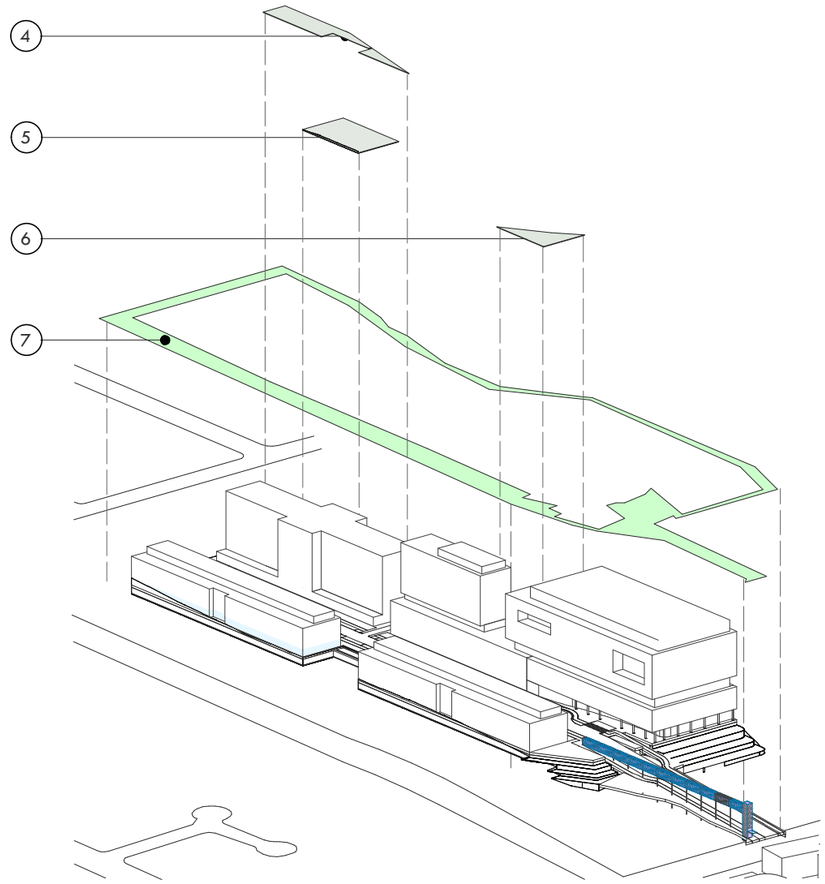
Campsie Health Precinct

11 Harp St, Campsie NSW 2194

Diagrams



1 Road Reserve Exploded Axonometric



2 Landscaping Exploded Axonometric

1. Carriageway & Street Parking
2. Pedestrian Footpath
3. Street Landscaping
4. Age Care Podium Landscaping
5. Town Park
6. Hospital Courtyard
7. Deep Soil

NEETAN KANNFINCH URBIS

Campsie Health Precinct

11 Harp St, Campsie NSW 2194

Diagrams

APPENDIX C COUNCIL STORMWATER CORRESPONDENCE

From: Jeff Senior [mailto:Jeff.Senior@cbcity.nsw.gov.au]
Sent: Friday, 2 August 2019 2:15 PM
To: Nicholas Kelly <nicholas.kelly@bgeeng.com>
Cc: Nina Kierath <Nina.Kierath@cbcity.nsw.gov.au>
Subject: RE: 11 Harp st Campsie - wsud requirements

Hi Nicholas
Have been chasing this down, sorry was off sick for a while.
The current DCP relating to Water Efficiency state
B2.3.4 Water Efficiency;
C1 Use plants that have low water requirements, are drought tolerant and reduce lawn areas to minimise water use.
C2 Use drip irrigation systems in preference to spray watering.
C3 Use measures to limit stormwater run-off from the development so that the pre-development stormwater pattern and flows are maintained.
C4 Integrate landscape design with water and stormwater management - use landscaped detention basins where appropriate.
C5 Provide for water cycle management in streetscape and hard landscape design.
C6 Limit impervious surfaces to reduce run-off and increase stormwater absorption on site.

The DCP are being reviewed and I would suggest that a more specific WSUD requirement would be forthcoming.

I would also suggest that Sydney Water may also require specific works be undertaken given the site will drain to the Sydney Water Channel immediately south of Harp Street,

The Botany Bay water quality recommendations state that the following water quality stormwater pollution reduction targets listed below
Gross Pollutant 90%
Total Suspended Solids TSS – 80%
Total Phosphorus TP – 55%
Total Nitrogen TN – 40%

You can use these requirements as a guide along with the DCP requirements mentioned above.
Think this will have you going in the right direction at this time in the development process

I am on leave till 2 September, but you could reply to Nina, cc'd here , who could be able to answer some elements or direct you to specific drainage officers if required

cheers

CANTERBURY BANKSTOWN

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@ourcbcity
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