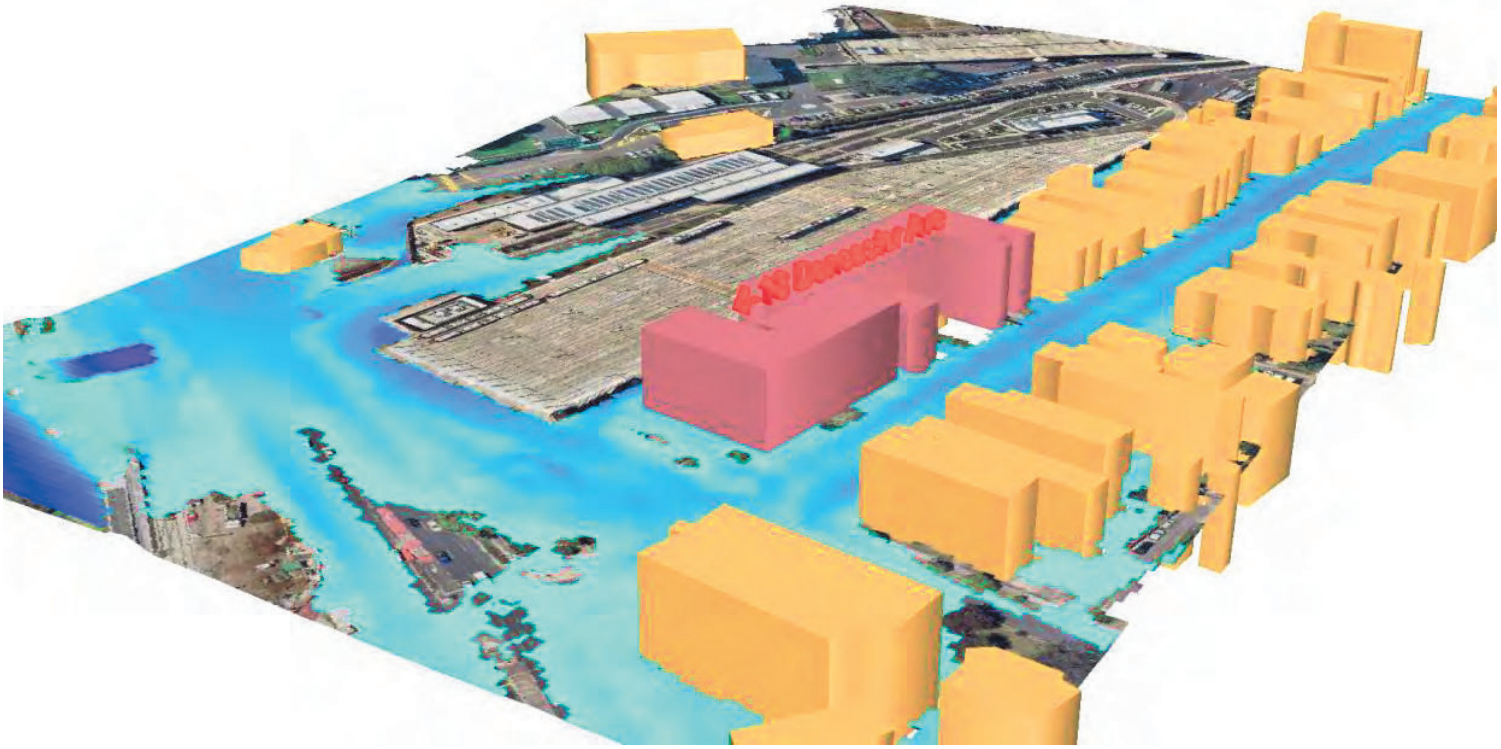
4-18 Doncaster Avenue *KENSINGTON—*

Flood Risk Assessment



FOR / Civil Engineering Services

CLIENT / Blue Sky Alternative Investments Limited

DOCUMENT NO / S18360-REP-A-0001 REV / 0 DATE / 20/12/2018

bgeeng.com—

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Document *Control*

Revision	Date	Description	Prepared	Reviewed	Approved
A	06/12/2018	Draft	Ainis Vincevicius	Brett Stinton	Brett Stinton
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1 INTRODUCTION

1.1 Scope

BG&E Pty Limited (BG&E) has been engaged by Blue Sky Alternative Investments Limited (Blue Sky) to prepare a flood risk assessment for the proposed development of 4-18 Doncaster Avenue, Kensington which is located within the Kensington Centennial Park Floodplain Risk Management Study area (Figure 1). The proposed development will replace a number of free standing dwellings with a multi-storey building and underground parking, intended for student accommodation.

Figure 1 - Locality Plan (source: Nearmap, aerial image taken 2018 10 23)

The flood risk assessment has been prepared by BG&E to support the development application (DA) and to:

- Describe flood behaviour in the vicinity of the site;
- Outline Council's requirements for flood risk management;
- Describe how the proposed development satisfies these conditions; and
- Recommend any flood risk management measures required.

1.2 Existing Land Use

The site has an area of 0.42 ha and is bounded by Doncaster Avenue to the west, residential properties to the south, and the Light Rail Stabling Yard (TfNSW site) to the north and east. Existing surface levels across the site range from approximately 28.6 mAHD along the northern boundary to 28.0 mAHD along the southern boundary providing a gradual 0.5% fall from north to south. Site survey is included in Appendix A.

The site currently contains several single and double storey residential buildings surrounded by timber and blockwork perimeter fencing. The southern portion of the site (#18) contains a grass and bitumen surface with permeable chain wire fencing along the western and eastern boundaries which previously provided vehicle access between Doncaster Avenue and Randwick Racecourse (now Light Rail Stabling Yard).

Photographs of the existing site are included in Appendix D.

1.3 Proposed Development

The proposed Student accommodation development consist of:

- Residential student accommodation units
- Internal communal areas
- Underground basement parking
- External communal areas (courtyards)

Architectural drawings of the development have been prepared by Hayball Architects (dated 07/12/2018).

The proposed student accommodation development will impact existing flow paths within the site and requires modelling and investigation of the impacts to neighbouring properties. Also, the proposed new building and basement car park is required to comply with Randwick City Council Flood Planning Level requirements as per Councils DCP requirements (Development Control Plan 2013).

2 DATA USED

The following data was used to undertake this flood risk assessment:

- Topographical survey plan (07/05/2014) – Appendix A
- Flood advice certificate provided by Randwick City Council (16/10/2018) – Appendix B
- Randwick City Council Development Control Plan (2013)
- The Kensington Centennial Park Floodplain Risk Management Study TUFLOW flood model (provided by Council on 30/10/2018 and re-issued with some amendments on 12/12/2018)
- Latest LiDAR data downloaded from ELVIS (Elevation and Depth – Foundation Spatial Data) (captured in 2013-04)

2.1 Council TUFLOW Model

The proposed development was discussed with Council in October 2018 to determine available data and requirements for the flood risk assessment. As part of the *Kensington - Centennial Park Floodplain Risk Management Study* (unpublished) a TUFLOW hydraulic model was developed which is currently being used by Council to nominate flood levels in the area. The flood model incorporates recent changes to infrastructure in the catchment, including the Light Rail Stabling Yard, and new methodology based on the recommendations in the 2016 edition of Australian Rainfall and Runoff (ARR 2016).

The TUFLOW model was provided by Council on 30 October 2018 for use in this study. BG&E carried out a high level review of the model in the vicinity of the site and was able to re-run the baseline scenario to reproduce the design flood levels shown on Councils flood certificate for the site (refer Appendix B). Two issues with the model were identified and reported to Randwick Council Flood engineers:

- The newly constructed flood storage and conveyance structure under the Light Rail Stabling Yard was not incorporated in the TUFLOW model which has a significant influence on flow distribution upstream of the site. The finished surface level of the Stabling Yard was incorporated into the TUFLOW model which results in a blockage to flow paths and flood storage areas directly upstream of the site.
- Buildings which have been demolished within the Stabling Yard area were still present in the model which results in further blockage to flow paths upstream of the site.

These issues were discussed with Council's flood engineer (Sebastien Le Coustumer). A revised TUFLOW model was re-issued to BG&E on 12 December 2018. The latest model does not reproduce the same flood levels as Council's flood certificate for the site. Flood levels at the northern portion of the site are lower in the latest TUFLOW model and equal to or higher at the southern portion of the site (#18).

The following data has been used to inform the development:

- Flood Planning Levels (FPLs) for the development have been based on the nominated design flood levels shown on Council's flood certificate for the site. These levels have been used to advise architects on finished floor levels (FFLs) of the building ground floor and ramp levels to the basement car park to comply with Council's DCP.
- Potential impacts to existing flood behaviour has been based on the latest TUFLOW model provided on 12 December 2018 which incorporates the latest model amendments and better represents the Stabling Yard and flow distribution around the site.

3 FLOOD BEHAVIOUR

Council's latest TUFLOW model was used to simulate baseline flooding under the current day scenario. Flood mapping for the 1% annual exceedance probability (AEP) event is shown in Figure 1 in Appendix C. Council's flood related development controls are based on the 1% AEP design flood event which forms the basis for this assessment. Information relating to other flood events is included in Council's flood certificate (Appendix B).

3.1 Flood Levels

Flood levels for the development summarised in Table 3.1. FPL's have been based on the flood levels shown in Council's flood certificate for the site. While Council's flood related development controls are based on the 1% AEP flood event, Probable Maximum Flood (PMF) level is 30.82 mAHD based on the *Kensington – Centennial Park Flood Study* (2013) which is approximately 1.6 m higher than the 1% AEP flood level. Updated PMF level has not been provided by council and it is still based on older ARR1987 methodology. The PMF is the largest flood that could conceivably occur.

Property	**1% AEP Flood Level (Flood Certificate – Appendix B) [mAHD]**	**1% AEP Flood Level (based on revised Council's baseline TUFLOW model result files) [mAHD]**
4-8 Doncaster Avenue	**29.21**	28.90
10 Doncaster Avenue	**28.77**	28.83
12 Doncaster Avenue	**28.71**	28.81
14 Doncaster Avenue	**28.66**	28.78
16 Doncaster Avenue	**28.66**	28.78
18 Doncaster Avenue	**28.65**	28.78

Table 3.1 – Baseline Flood Levels

3.2 Flood Depths

1% AEP flood depths across the site range from 0.6 m at the northern boundary to 0.7 m to the south of the site (based on flood certificate levels). PMF flood depths range from 2.2 to 2.3m.

3.3 Flood Velocities

1% AEP flood velocities within the site are less than 1 m/s. Flood velocities of around to 2 m/s (up to 2.6 m/s at the junction of Alison Road and Doncaster Avenue) are shown to occur along Doncaster Avenue which conveys flow from Alison Road in a southerly direction.

4 FLOOD RISK MANAGEMENT

Requirements for flood risk management within the City of Randwick are outlined in Section 5 Part B8 of the *Randwick Comprehensive Development Control Plan 2013* (DCP). Relevant controls for the development are addressed in the following sections. Full architectural drawings are included in Appendix E.

4.1 Floor Levels

Clause 5.3 requires building floor levels for residential developments to be at or above the 1% AEP flood level plus 0.5 m freeboard.

The 1% AEP flood level for the site varies between 29.21 mAHD at the northern end of the site and 28.65 mAHD at the southern end of the site. The proposed FFL for the main new building ground floor is 29.71 mAHD. This provides 0.5 m freeboard to the 1% AEP design flood level which meets the requirement of Clause 5.3.

The existing heritage building (10-12 Doncaster Avenue) has an existing ground floor FFL of 28.56 mAHD (door sill level is 28.59). This FFL is fixed by the existing building and can't be changed due to its heritage status. The 1% AEP flood level is 28.77 mAHD and the 5% AEP flood level is 28.50 mAHD. However, the entrance to this building is from the Doncaster Avenue side, which has a 1% AEP flood level of 28.70 mAHD. The existing FFL is above the 5% AEP flood level, but 140 mm below the 1% AEP flood level. In the event floodwaters enter the building, occupants can evacuate to the upper floor and shelter-in-place in the communal area of the building.

4.2 Basement Car Parking

Clause 5.5 requires the high point of driveway entries to underground car parks to be at or above the 1% AEP flood level plus 0.3 m freeboard. Any other entrance (evacuation route) should have threshold of at least 0.5m freeboard and at least 0.2m above the car park entry ramp crest.

The 1% AEP flood level varies across the site. For the northern end the 1% AEP flood level is 29.21 mAHD, however, the driveway entry ramp is located to the south of the site where the 1% AEP flood level is 28.65 mAHD. The adopted underground car park driveway entry ramp crest level is 28.95 mAHD which provides 0.3 m freeboard to the 1% AEP flood level at the entry and meets the requirement of Clause 5.5. All emergency exits from the basement are via stairwells to the ground floor level which is at least 0.5 m above the 1% AEP flood level and at least 0.2 m above the driveway ramp crest level. All other openings to the basement will be sealed up to the 1% AEP flood level plus 0.5 m freeboard. Appendix E contains architectural drawings, which provide the location and crest level of car park entry ramp.

The 1% AEP flood level from Council's revised flood model is 28.67 mAHD which is 20 mm higher than that shown on the flood certificate and would provide 0.28 m of freeboard to the driveway crest.

4.3 Flood Evacuation

Clause 5.6 states that the development must provide for the safety of persons and emergency access during a flood.

While Council's requirements for flood risk management are based on the 1% AEP event, larger flood events can and do occur. The PMF flood level for the site is 30.82 mAHD which is 1.1 m above the ground floor FFL (29.71) and well above the driveway entry ramp threshold to the basement (28.95 mAHD). Internal refuge is available on-site to the first and second floors which are above the PMF level. All emergency exits from the basement will provide access to the ground floor of the main building which is 0.5 m above the 1% AEP flood level, from which pedestrians can access the upper floors. A shelter-in-place strategy is therefore recommended for the development given the nature of flooding around the site. A flood evacuation plan should be prepared for the site prior to occupancy to minimise the risk during a flood.

4.4 Flood Affectation

Clause 5.2 states that the development shall not increase flood effects elsewhere for floods up to and including the 1% AEP flood.

Hydraulic modelling of the proposed development has been carried out using Council's TUFLOW model which was adopted for the *Kensington – Centennial Park Flood Risk Management Study* (unpublished) and revised to better represent the Light Rail Stabling Yard (refer Section 2.1). The following tasks were carried out for the 1% AEP flood event:

- Simulate flooding with the site in its current form (baseline scenario, model dated 12 December 2018);
- Simulate flooding with the site in its developed form (development scenario);
- Quantify any increase in flood levels due to the development;
- Incorporate measures to mitigate any unacceptable increase in flood levels.

4.4.1 Baseline Scenario

The following model inputs are relevant to the local flood assessment;

- The TUFLOW model utilised a 2 m grid spacing which is typical for urban areas;
- The existing residential buildings on the site are represented as complete blockages within the model. Floodwaters are generally conveyed through the site between the existing buildings from east (TfNSW site) to west (Doncaster Avenue). The width of conveyance across the site is approximately 50 m;
- The perimeter timber fences will obstruct the movement of flow through the site. The fences themselves are permeable and would likely be damaged during a 1% AEP flood. A roughness value of n=0.06 has been applied to the area within the site to represent these areas (derived from Council model).

4.4.2 Developed Scenario

The proposed development covers the majority of the site with the ground floor level raised 0.5 m above the 1% AEP flood level. The TUFLOW model was initially updated to represent the proposed building as a

complete blockage to flow. Flood levels to the east and north of the building were shown to increase by over 100 mm as flows are diverted around the building towards Doncaster Avenue.

Several measures were incorporated into the development to mitigate increase in flood levels:

- Perimeter fencing will incorporate a low level permeable mesh that extends from ground level to 29.71 mAHD (0.5 m above the 1% AEP flood level);
- Several voids have been incorporated into the basement structure below the ground floor slab which allow floodwater to be conveyed through the site to mimic current flood behaviour. The 1% AEP flood level within the site will incorporate a freeboard to the underside of the ground floor slab, allowing flows to move freely through the structure;
- Permeable coverings to the voids will be provided along the building perimeter to prevent undesirable access. Coverings will incorporate hinges and locks to allow access for maintenance (identical to adjacent TfNSW detention device).
- Dedicated flood transfer areas outside the building footprint, but within the tenement boundary of 4-18 Doncaster Avenue, should be kept clear from planting pods or other obstructions which would restrict water flow or cause potential blockage risk.

Several scenarios were modelled for various void sizes, invert levels and arrangements. The following modelling approach was adopted:

- Closed sections of the building were modelled as complete blockages within the model (Figures 1-4 in Appendix C, grey polygons);
- The voids were modelled within the 2D domain given the 1% AEP flood will have a free surface through these areas. A roughness value n=0.045 has been applied. This approach is consistent with the baseline scenario as newly designed voids are expected to have less obstacles compared to baseline.

A total void width of approximately 50 m resulted in flood levels which closely match the baseline scenario. The conveyance width in the site is comparable to the baseline scenario.

1% AEP flood depths for the baseline and developed scenario are shown in Figure 1 in Appendix C. Figure 2 shows 30-40mm backwater against adjacent properties which are approximately flooded by 0.6m depth. Figure 3 presents 1% AEP flood levels for the developed case scenario.

4.4.3 Blockage Discussion

There is a potential for flows to be obstructed through the void areas due to:

- The permeable coverings along the building perimeter. These coverings will be mostly open;
- Collection of debris at the inlet. The perimeter fences along the northern, eastern, and southern boundary of the site will incorporate a low level permeable mesh which is likely to collect the majority of debris prior reaching the building itself.

Currently permeable timber fences are located along the boundary of the majority of the site which will also obstruct flow through the site. It is expected that any blockage potential due to the development will be comparable to the current scenario.

4.4.4 Precedence

A meeting was held with John Flanigan (Council Development Engineer Coordinator) and Sebastien Le Coustumer (Council Drainage Engineer) on 4 December 2015 to discuss the development (previous proposed development of residential apartment building). Council provided support in principal for the proposed risk flood management measures.

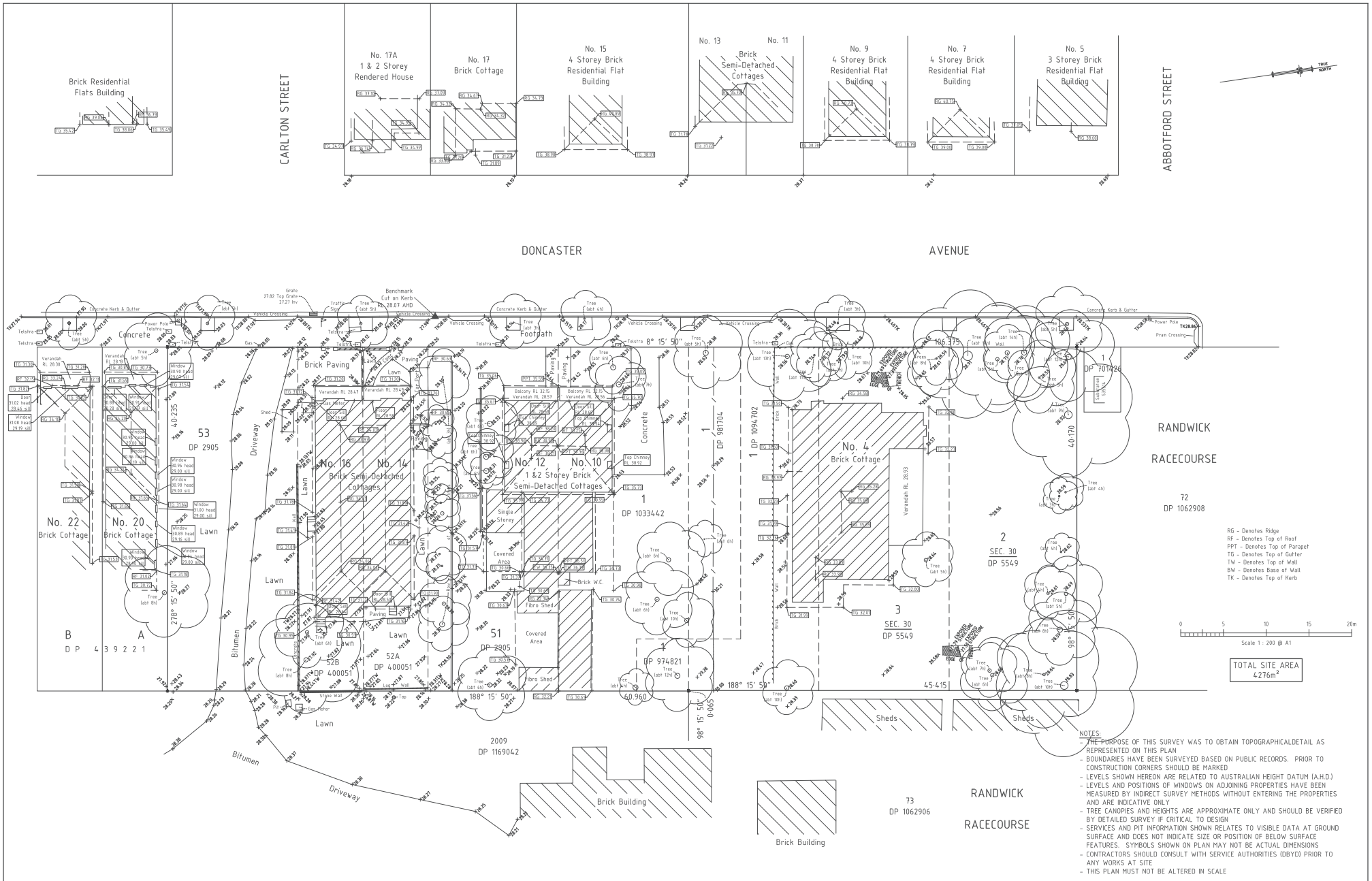
The construction of a void(s) within the building/structure to convey floodwaters has been utilised on similar developments at TfNSW site adjacent to the proposed development also in number of buildings in Parramatta located within the Clay Cliff Creek floodplain, including:

Photo 1 – 39 Cowper Street, Parramatta

Photo 2 – 40 Cowper Street, Parramatta

APPENDIX A

Topographical Survey



RG - Denotes Ridge
RF - Denotes Top of Roof
PPT - Denotes Top of Parapet
TG - Denotes Top of Gutter
TW - Denotes Top of Wall
BW - Denotes Base of Wall
TK - Denotes Top of Kerb

NOTES:
- THE PURPOSE OF THIS SURVEY WAS TO OBTAIN TOPOGRAPHICALDETAIL AS REPRESENTED ON THIS PLAN
- BOUNDARIES HAVE BEEN SURVEYED BASED ON PUBLIC RECORDS. PRIOR TO CONSTRUCTION CORNERS SHOULD BE MARKED
- LEVELS SHOWN HEREON ARE RELATED TO AUSTRALIAN HEIGHT DATUM (A.H.D.)
- LEVELS AND POSITIONS OF WINDOWS ON ADJOINING PROPERTIES HAVE BEEN MEASURED BY INDIRECT SURVEY METHODS WITHOUT ENTERING THE PROPERTIES AND ARE INDICATIVE ONLY
- TREE CANOPIES AND HEIGHTS ARE APPROXIMATE ONLY AND SHOULD BE VERIFIED BY DETAILED SURVEY IF CRITICAL TO DESIGN
- SERVICES AND PIT INFORMATION SHOWN RELATES TO VISIBLE DATA AT GROUND SURFACE AND DOES NOT INDICATE SIZE OR POSITION OF BELOW SURFACE FEATURES. SYMBOLS SHOWN ON PLAN MAY NOT BE ACTUAL DIMENSIONS
- CONTRACTORS SHOULD CONSULT WITH SERVICE AUTHORITIES (DBYD) PRIOR TO ANY WORKS AT SITE
- THIS PLAN MUST NOT BE ALTERED IN SCALE

AMENDMENTS:
19/8/2014 DRAINAGE STRUCTURE
7/9/2015 DETAIL ADDED

DRAWN: J.G.
SURVEYED: J.G.
DESIGNED:

CLIENT:
BUILT
c/- SJB ARCHITECTURE PTY LTD

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TITLE
PLAN OF THE LAND COMPRISED IN
CERTIFICATE OF TITLES 51/2905, 1/1033442, 1/974821, 1/981704, 1/1094702, 2/30/5549, 3/30/5549
AT KENSINGTON
IN THE LGA OF RANDWICK

DUNLOP THORPE & CO. PTY. LTD.
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www.dunlopthorpe.com.au

REDUCTION RATIO	1:200
SIZE	A1
LEVEL DATUM	A.H.D.
DATE	07.05.2014
SHEET	1 OF 3 SHEETS
REFERENCE No.	18143

APPENDIX B

Council Flood Certificate (16/10/2018)

Randwick City Council
a sense of community

Randwick City Council
30 Frances Street
Randwick NSW 2031
Phone 1300 722 542
Fax (02) 9319 1510
ABN: 77 362 844 121

council@randwick.nsw.gov.au
www.randwick.nsw.gov.au

Follow us here

File No: F2012/00106
Doc No: D03325130

Tuesday, 16 October 2018

Blue Sky Alternative Investments Limited
Level 46 111 Eagle Street
BRISBANE CITY QLD 4000

Dear Edan Norris,

RE: 4-18 DONCASTER AVENUE, Kensington 2033

I refer to your recent application for a flood report. Flooding advice is provided as follows.

Property Details

Title Refs:	Lot 2 Sec 30 DP 5549, Lot 3 Sec 30 DP 5549, Lot 1 DP 1094702, Lot 1 DP 974821, Lot 1 DP 1033442, Lot 1 DP 981704, LOT 51 DP 2905 SUBJ TO CROSS EA, Lot 52A DP 400051, LOT 52B DP 400051 SUBJ TO CROSS EA, Lot 53 DP 2905
Address	**4-18 DONCASTER AVENUE, Kensington 2033**

Calculated Flood Level and Flood Depth

Flood event	**Flood Level**					
	4-8 Doncaster Avenue	**10 Doncaster Avenue**	**12 Doncaster Avenue**	**14 Doncaster Avenue**	**16 Doncaster Avenue**	**18 Doncaster Avenue**
1% AEP Flood	29.21m AHD	28.77m AHD	28.71m AHD	28.66m AHD	28.66m AHD	28.65m AHD
5% AEP Flood	28.93m AHD	28.50m AHD	28.37m AHD	28.33m AHD	28.32m AHD	28.32m AHD

Refer to glossary for definitions

The residential flood planning level for 4-8 Doncaster Avenue is 29.71m AHD.

The residential flood planning level for 10 Doncaster Avenue is 29.27m AHD.

The residential flood planning level for 12 Doncaster Avenue is 29.21m AHD.

The residential flood planning level for 14 Doncaster Avenue is 29.16m AHD.

The residential flood planning level for 16 Doncaster Avenue is 29.16m AHD.

The residential flood planning level for 18 Doncaster Avenue is 29.15m AHD.

English

If you need help to understand this letter, please come to Council's Customer Service Centre and ask for assistance in your language or you can contact the Telephone Interpreter Service (TIS) on 131 450 and ask them to contact Council on 1300 722 542.

Greek

Αν χρειάζεστε βοήθεια για να κατανοήσετε αυτή την επιστολή, παρακαλούμε να έρθετε στο Κέντρο Εξυπηρέτησης Πελατών της Δημαρχίας (Council Customer Service Centre) και να ζητήσετε βοήθεια στη γλώσσα σας ή τηλεφωνήστε στην Τηλεφωνική Υπηρεσία Διερμηνέων (Telephone Interpreter Service – TIS) τηλ. 131 450 και να ζητήσετε να επικοινωνήσουν με τη Δημαρχία τηλ. 1300 722 542.

Italian

Se avete bisogno di aiuto per capire il contenuto di questa lettera, recatevi presso il Customer Service Centre del Municipio dove potrete chiedere di essere assistiti nella vostra lingua oppure mettetevi in contatto con il Servizio Telefonico Interpreti (TIS) al 131 450 e chiedete loro di mettersi in contatto col Municipio al 1300 722 542.

Croatian

Ako vam je potrebna pomoć da biste razumjeli ovu poruku, molimo dođite u Općinski uslužni centar za klijente (Council's Customer Service Centre) i zatražite pomoć na svom jeziku, ili možete nazvati Telefonsku službu tumača (TIS) na 131 450 i zamoliti njih da nazovu Općinu na 1300 722 542.

Spanish

A la persona que necesite ayuda para entender esta carta se le ruega venir al Centro de Servicios para Clientes [Customer Service Centre] de la Municipalidad y pedir asistencia en su propio idioma, o bien ponerse en contacto con el Servicio Telefónico de Intérpretes [“TIS”], número 131 450, para pedir que le comuniquen con la Municipalidad, cuyo teléfono es 1300 722 542.

Vietnamese

Nếu quí vị không hiểu lá thư này và cần sự giúp đỡ, mời quí vị đến Trung Tâm Dịch Vụ Hướng Dẫn Khách Hàng của Hội Đồng Thành Phố (Council's Customer Service Centre) để có người nói ngôn ngữ của quí vị giúp hay quí vị có thể liên lạc Dịch Vụ Thông Dịch qua Điện Thoại (TIS) ở số 131 450 và yêu cầu họ liên lạc với Hội Đồng Thành Phố (Council) ở số 1300 722 542.

Polish

Jeśli potrzebujesz pomocy w zrozumieniu treści tego pisma, przyjdź do punktu obsługi klientów (Customer Service Centre) przy Radzie Miejskiej i poproś o pomoc w języku polskim, albo zadzwoń do Telefonicznego Biura Tłumaczy (Telephone Interpreter Service – TIS) pod numer 131 450 i poproś o skontaktowanie się z Radą Miejską (Council) pod numerem 1300 722 542.

Indonesian

Jika Anda memerlukan bantuan untuk memahami surat ini, silakan datang ke Pusat Pelayanan Pelanggan (Customer Service Centre) Pemerintah Kotamadya (Council) dan mintalah untuk bantuan dalam bahasa Anda, atau Anda dapat menghubungi Jasa Juru Bahasa Telepon (Telephone Interpreter Service – TIS) pada nomor 131 450 dan memintа supaya mereka menghubungi Pemerintah Kotamadya pada nomor 1300 722 542.

Turkish

Bu mektubu anlamak için yardıma ihtiyacınız varsa, lütfen Belediye'nin Müşteri Hizmetleri Merkezi'ne gelip kendi dilinizde yardım isteyiniz veya 131 450'den Telefonla Tercüme Servisi'ni (TIS) arayarak onlardan 1300 722 542 numaradan Belediye ile ilişkiye geçmelerini isteyiniz.

Hungarian

Amennyiben a levél tartalmát nem ért és segítségre van szüksége, kérjük látogassa meg a Tanácsház Ügyfél Szolgálatát (Customer Service Centre), ahol magyar nyelven kaphat felvilágosítást, vagy hívja a Telefon Tolmács Szolgálatot (TIS) a 131 450 telefonszámon és kérje, hogy kapcsolják a Tanácsházat a 1300 722 542 telefonszámon.

Czech

Jestliže potřebujete pomoc při porozumění tohoto dopisu, navštivte prosím naše Střediско služeb pro veřejnost (Council's Customer Service Centre) a požádejte o poskytnutí pomoci ve vaší řeči anebo zavolejte Telefonní tlumočnickou službu (TIS) na tel. čísle 131 450 a požádejte je, aby oni zavolali Městský úřad Ranbvčik na tel. čísle 1300 722 542.

Arabic

إذا أردت مساعدة لفهم هذه الرسالة، نرجوك الحضور إلى مركز خدمة عملاء المجلس واطلب المساعدة في لغتك، أو يمكنك الاتصال بخدمة الترجمة الهاتفية (TIS) على هاتف رقم 131 450 واطلب منهم الاتصال بالمجلس على رقم 1300 722 542.

Chinese

如果你需要人幫助你了解這封信的內容，請來市政會顧客服務中心要求翻譯服務，或者與電話傳譯服務（TIS）聯係，號碼是131 450，請他們幫助你打電話給市政會，號碼是1300 722 542。

Russian

Если Вам требуется помощь, чтобы разобраться в этом письме, то пожалуйста, обратитесь в Муниципальный Центр Обслуживания Клиентов и попросите оказать Вам помощь на Вашем языке или же Вы можете позвонить в Телефонную Службу Переводчиков (TIS) по номеру 131 450 и попросить их связаться с Муниципалитетом по номеру 1300 722 542.

Serbian

Ако вам треба помоћ да разумете ово писмо, молимо вас да дођете до Центра за услуге муштеријама при Општини (Customer Service Centre) и затражите од вас помоћ на вашем језику или можете назвати Телефонску преводилачку службу (TIS) на 131 450 и замолите их да вас повежу са Општином на 1300 722 542.

Hazard and Hydraulic Categorisation
The table below contains hazard and hydraulic categorisation for 4-18 Doncaster Avenue in accordance with the NSW Floodplain Development Manual April 2005.

1% AEP flood hazard	☐ Property is categorised as high hazard ☒ Part of Property is categorised as high hazard ☒ Property is adjacent to a high hazard area **(only for 14-16 Doncaster Avenue)** ☒ Part of Property is categorised as Low hazard ☐ Property is categorised as low hazard ☐ Property does not have a hazard categorisation
Hydraulic categorisation	☒ Property is located in a floodway ☐ Part of Property is located in a floodway ☒ Property is located in a flood storage area ☐ Part of Property is located in a flood storage area ☐ Property is located in a flood fringe ☒ Part of Property is located in flood fringe **(only for 4-12 Doncaster Avenue)**

Source of Flooding Information

Kensington Centennial Park Floodplain Risk Management Study and Plan 2018

State Environmental Planning Policy (Exempt and Complying Development Codes) 2008

Council's flooding information indicates that a whole or part of the properties is located within at least one of the exclusionary categories in Clause 3.36C (2) of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 and therefore complying development may not be permitted.

The minimum habitable floor level under Clause 3.36C (3) (a) of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 is:

- 1% AEP flood plus 0.5m freeboard

Council policy regarding flooding

The Randwick City Council Flooding Advice and Flood Related Development Controls Policy sets out flood planning levels and development principles for these properties.

Validity

This report is valid for a period of six months from the date of issue. It should be noted that flood studies, legislation, manuals and policy documents may change in the future. Changes to these documents or the built form may impact on the information provided.

Verification

Prepared by:

Angela Peyiotis

Checked by:

Stephen Audet

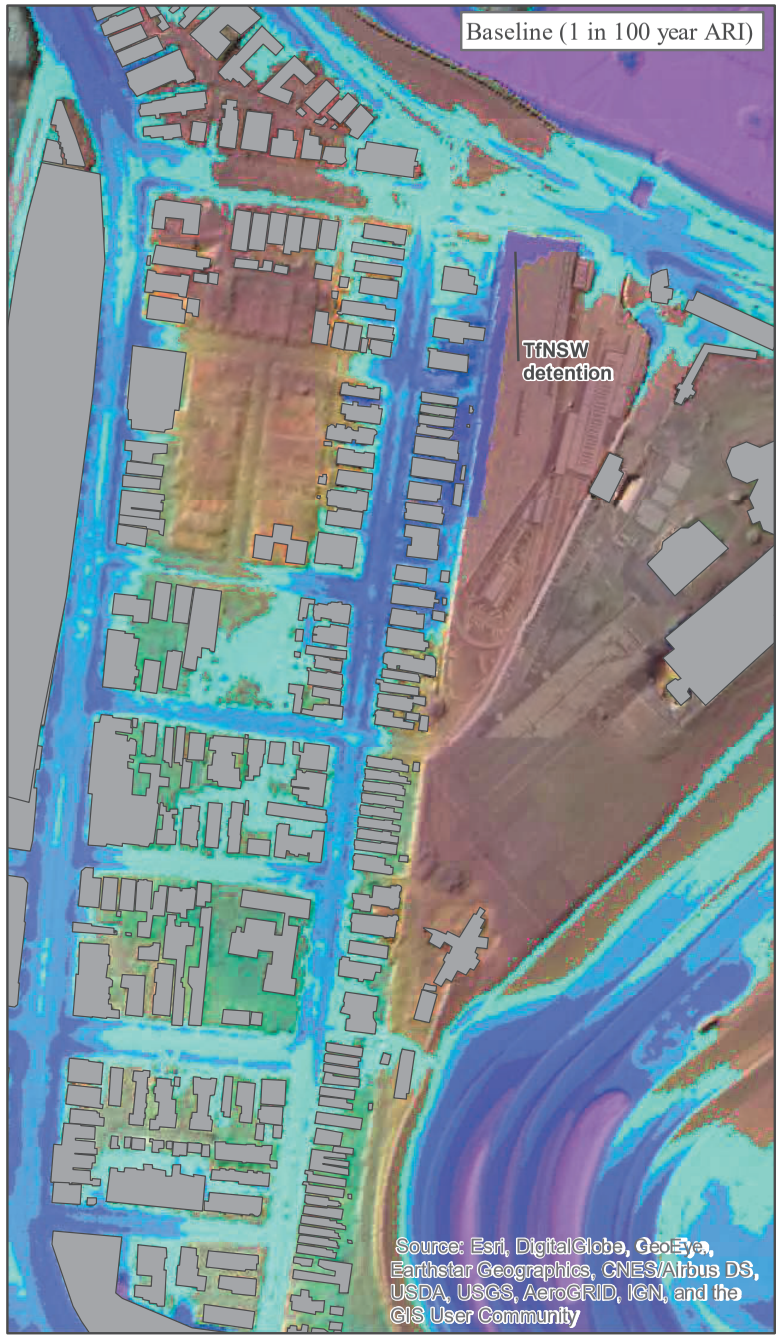
Glossary

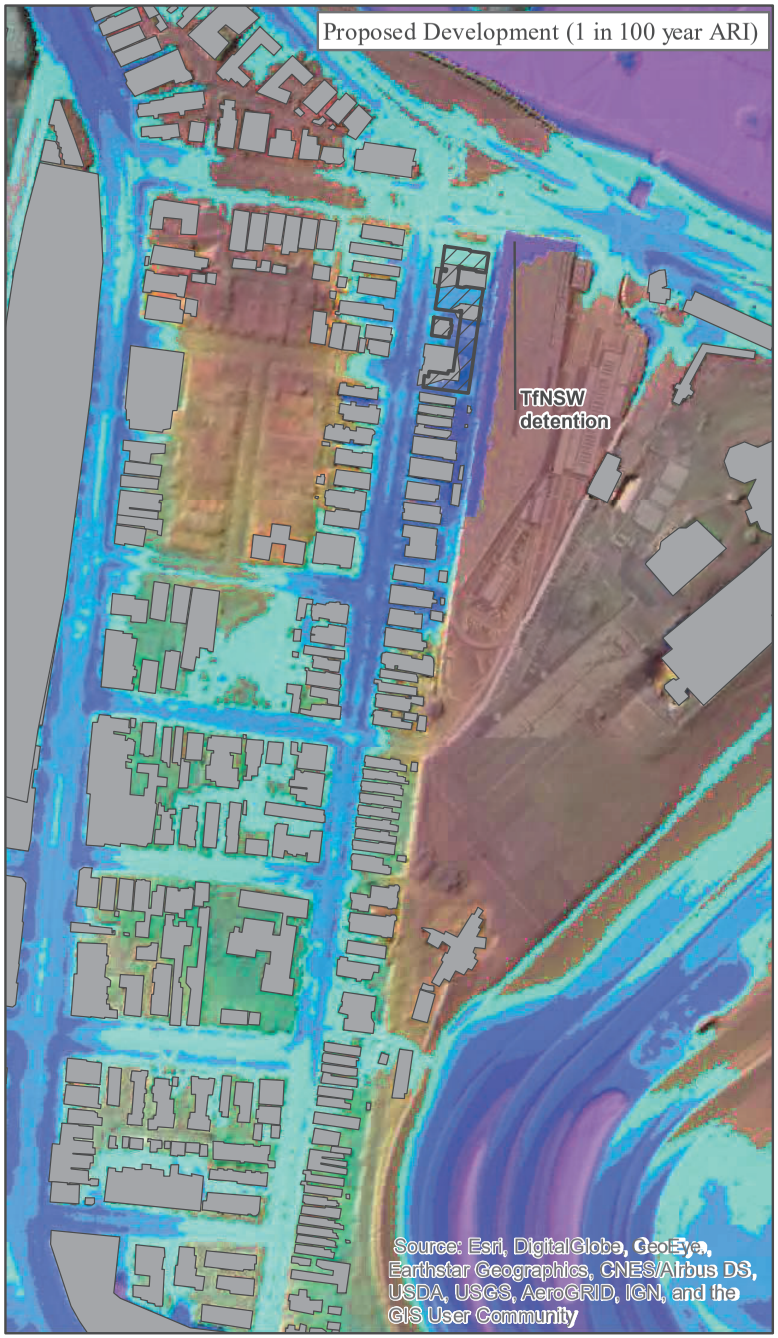
AHD	Australian Height Datum is a common national surface level datum approximately corresponding to mean sea level.
1% AEP flood	The 1% Annual Exceedance Probability flood has a 1% (1:100) probability of occurring in any given year. This flood is also known as 1 in 100, 100yr ARI or Q100.
5% AEP flood	The 5% Annual Exceedance Probability flood has a 5% (1:20) probability of occurring in any given year. This flood is also known as 1 in 20, 20yr ARI or Q20.
High Hazard Categorisation*	Possible danger to personal safety; evacuation by trucks difficult; able-bodied adults would have difficulty in wading to safety; potential for significant structural damage to buildings.
Low Hazard Categorisation*	Should it be necessary, trucks could evacuate people and their possessions; able-bodied adults would have little difficulty in wading to safety.
Floodways*	Those areas where a significant volume of water flows during floods and are often aligned with obvious natural channels. They are areas that, even if only partially blocked, would cause a significant increase I flood levels and/or a significant redistribution of flood flow, which may in turn adversely affect other areas. They are often, but not necessarily, areas with deeper flow or areas where higher velocities occur.
Flood storage*	Those parts of the floodplain are important for the temporary storage of floodwaters during the passage of flood. If the capacity of a flood storage area is substantially reduced by, for example, the construction of levees or by landfill, flood levels in nearby areas may rise and the peak discharge downstream may be increased. Substantial reduction of the capacity of a flood storage area can also cause a significant redistribution of flood flows.
Flood fringe*	The remaining area of land affected by flooding, after floodway and flood storage areas have been defined.

* Source – NSW Floodplain Development Manual April 2005
* Note: Flooding related development controls are applicable to all land that is below the 1% AEP flood plus half a metre freeboard.

APPENDIX C

Figures





Proposed Building Outline

Buildings (blocking water)

Max. Depth [m]

- 0 - 0.25
- 0.25 - 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- 2.0 - 5.6

0 0.125 0.25 Km

SCALE 1:5,000 (@ A3)

DRAWN AV
REVIEWED BS
APPROVED BS
DATE 17/12/2018
PROJECT S18360

N

BG&E

4-18 DONCASTER AVENUE
FLOOD RISK ASSESSMENT

Fig. 01 Maximum Flood Extents and Depth for 1 in 100 year ARI (Baseline 950 and Developed Case vOB_01)

DATUM GDA 1994 MGA Zone 56

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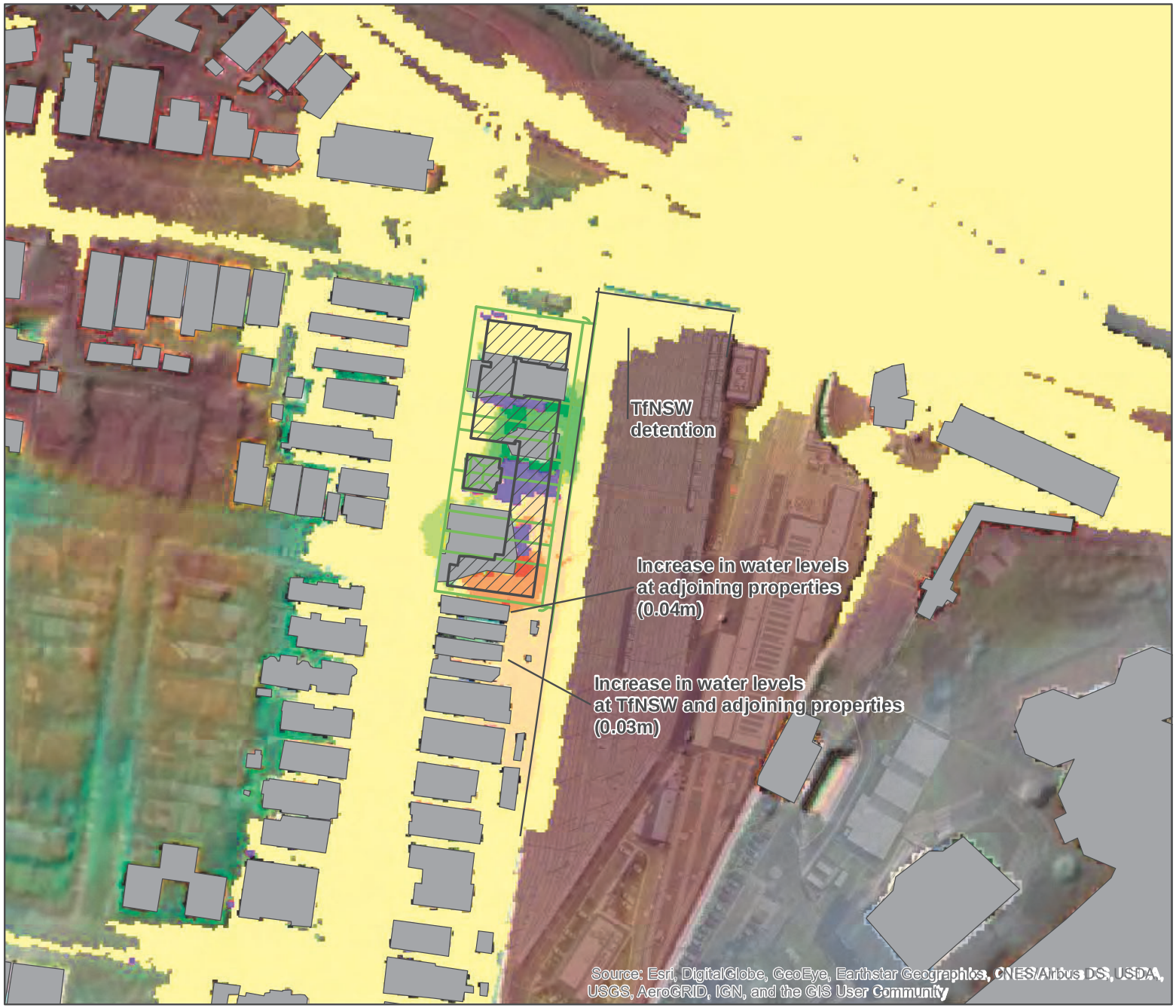
BlueSky Alternative Thinking



Proposed Building Outline

Lot Boundaries

Buildings (blocking water)

WL Difference [m]

- 0.05 - 0.14
- 0.03 - 0.05
- 0.02 - 0.03
- -0.02 - 0.02
- -0.03 - -0.02
- -0.05 - -0.03
- -0.08 - -0.05
- Was wet, now dry
- Was dry, now wet (old buildings)

Note:
Green Colours indicates water level drop in the proposed development scenario and orange / brown indicate water level increase

0 0.05 0.1 Km

SCALE 1:2,000 (@ A3)

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REVIEWED BS
APPROVED BS
DATE 17/12/2018
PROJECT S18360

N

BG&E

4-18 DONCASTER AVENUE
FLOOD RISK ASSESSMENT

Fig. 02 Maximum Depth Difference
for 1 in 100 year ARI
(Baseline 950 and Developed Case vOB_01)

DATUM GDA 1994 MGA Zone 56

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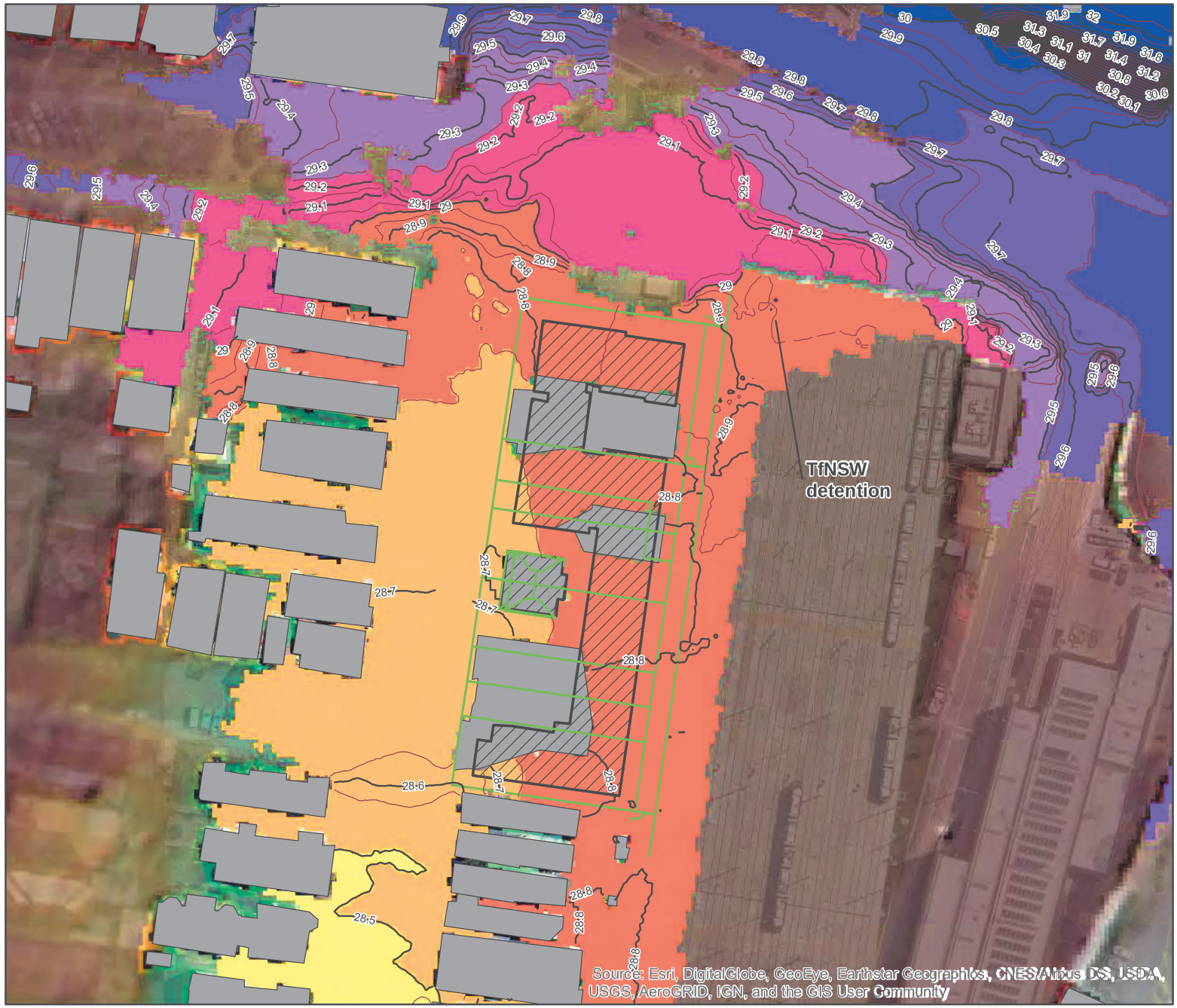
BlueSky Alternative Thinking



WL Contours 0.1m interval [mAHD]

WL Contours 0.05m interval [mAHD]

Lot Boundaries

Proposed Building Outline

Buildings (blocking water)

Max Water Level [mAHD]

- 30.00 - 47.94
- 29.75 - 30.00
- 29.50 - 29.75
- 29.25 - 29.50
- 29.00 - 29.25
- 28.75 - 29.00
- 28.50 - 28.75
- 28.25 - 28.50
- 28.00 - 28.25
- 16.00 - 28.00

0 25 50 Meters

SCALE 1:1,166 (@ A3)

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DATE 17/12/2018
PROJECT S14066

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BG&E

4-18 DONCASTER AVENUE
FLOOD RISK ASSESSMENT

Fig. 03 Maximum Water Level
for 1 in 100 year ARI
(Baseline 950 and Developed Case vOB_01)

DATUM GDA 1994 MGA Zone 56

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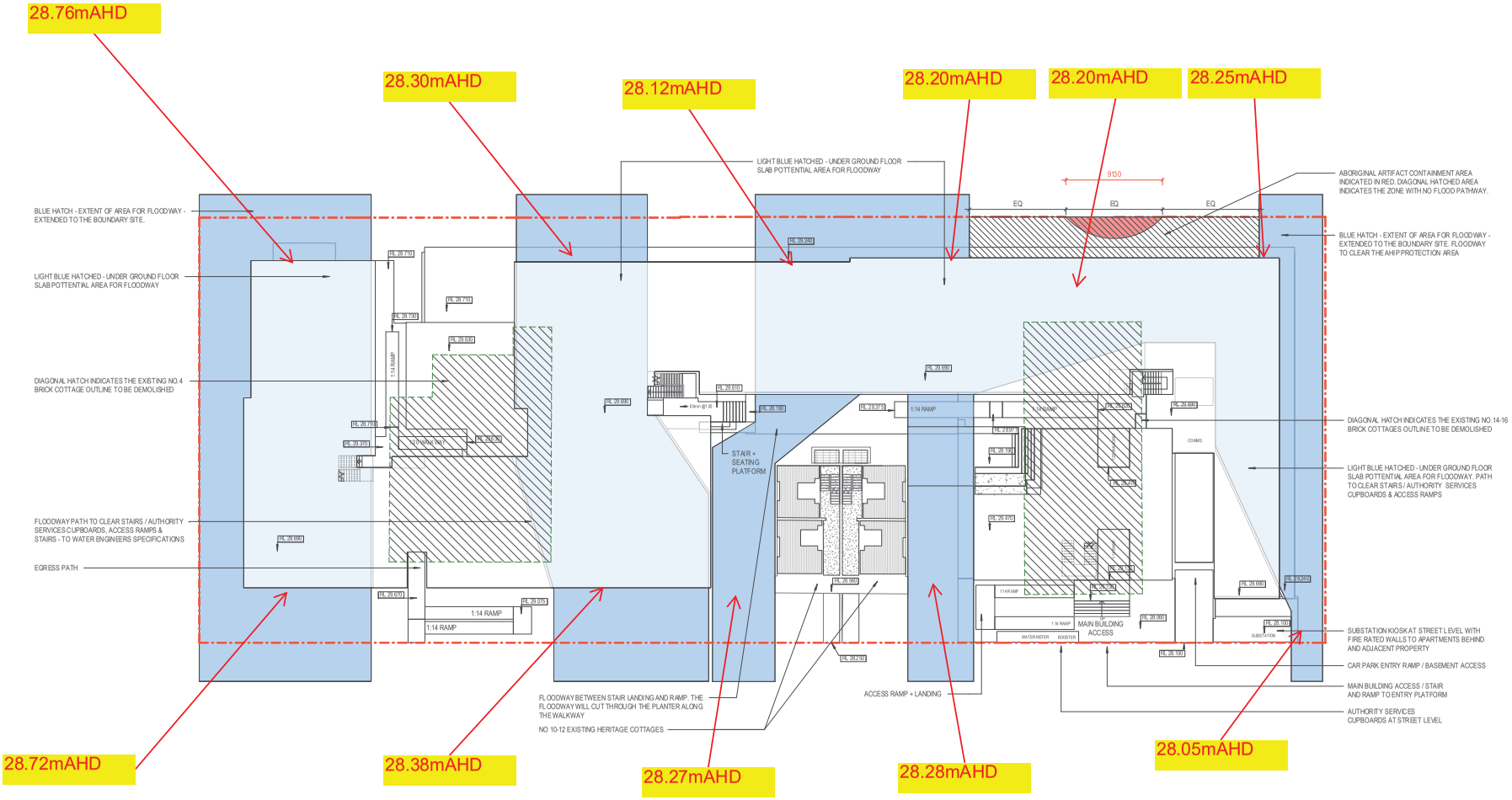
BlueSky Alternative Thinking

BG&E mark-ups: Invert Levels (IL) as modelled in developed case scenario



Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	GROUND - FLOODWATER CHANNEL LOCATIONS	PRELIMINARY ISSUE	2309	TP02.06	2

Drawn By: Author
Checked By: Checker
Date Printed: 12/12/2018 11:33:17 AM
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Rev	Date	Description
1	07/12/2018	PRELIMINARY WIP ISSUE
2	12/12/2018	FLOOD PATHWAYS - PRELIMINARY

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APPENDIX D

Site Photographs

PHOTOGRAPHIC RECORD – site visit 02/11/2018

1. View from 18 Doncaster ave. eastwards

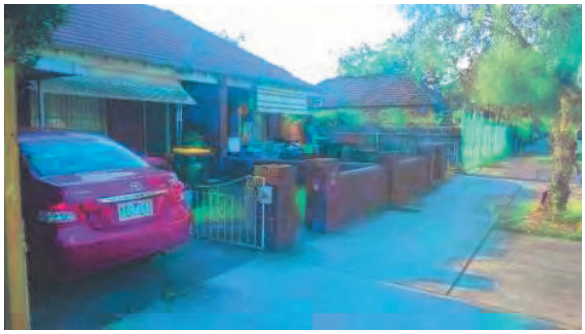
2. View to the South along TfNSW easement

3. View to the North along TfNSW easement

4. View to the South along TfNSW easement, existing wooden fencing

5. View from 18 Doncaster ave. to TfNSW

6. Fencing of 12 Doncaster ave. from Doncaster ave. side



7. 14-16 Doncaster ave. from Doncaster ave. side

8. 4 Doncaster ave. from Doncaster ave. side

9. 4 Doncaster ave. from Doncaster ave. side

10. 4 Doncaster ave. from Doncaster ave. side

APPENDIX E

Architectual Drawings

NO	SHEET NAME
TP00.00	COVER SHEET
TP01.01	EXISTING SITE PLAN
TP01.02	PROPOSED SITE PLAN
TP02.01	BASEMENT PLAN
TP02.02	GROUND FLOOR PLAN
TP02.03	LEVEL 1 PLAN
TP02.04	LEVEL 2 PLAN
TP02.05	ROOF PLAN
TP02.06	GROUND - FLOODWATER CHANNEL LOCATIONS
TP03.01	ELEVATIONS
TP03.02	PART ELEVATIONS
TP03.03	FLOODWATER CHANNEL LOCATIONS
TP04.01	SECTION A&B, C&D
TP05.01	DEMOLITION FLOOR PLAN-10&12 DONCASTER AVE
TP05.02	DETAIL FLOOR PLANS-10&12 DONCASTER AVE
TP05.03	WEST ELEVATION-10&12 DONCASTER AVE
TP05.04	SOUTH ELEVATION-10&12 DONCASTER AVE
TP05.05	EAST ELEVATION-10&12 DONCASTER AVE
TP05.06	NORTH ELEVATION-10&12 DONCASTER AVE
TP06.01	AREA PLANS GFA
TP06.02	SHADOW DIAGRAMS
TP06.03	SHADOW STUDY - SOUTHERN INTERFACE - LANDSCAPE
TP06.04	SHADOW STUDY - SOUTHERN INTERFACE 21ST JUNE

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	COVER SHEET	PRELIMINARY ISSUE	2309	TP00.00	1

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Checked By	Checker
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Rev	Date	Description
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hayball

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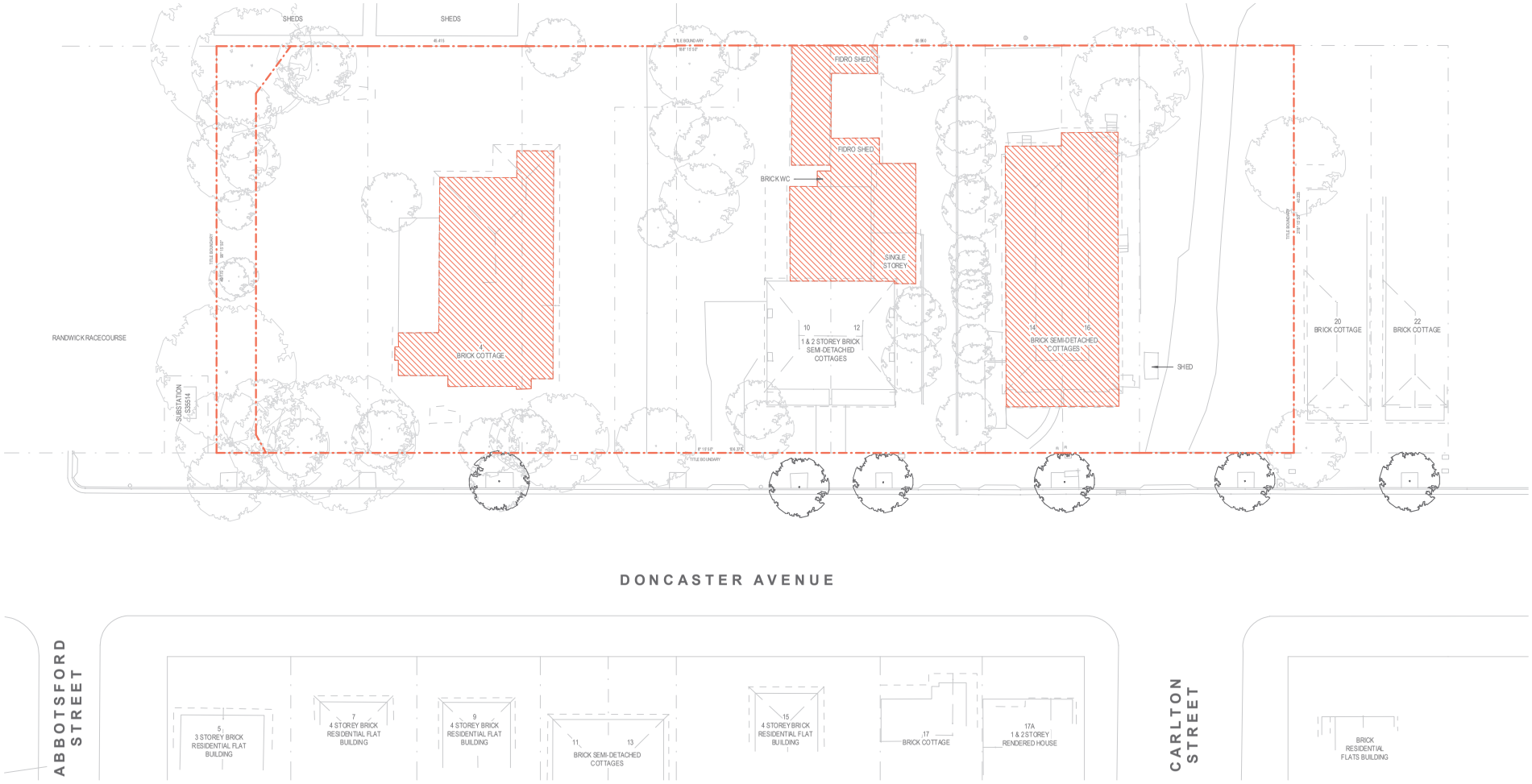
EXISTING BUILDINGS TO BE DEMOLISHED



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Rev	Date	Description
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2	07/12/2018	PRELIMINARY WIP ISSUE

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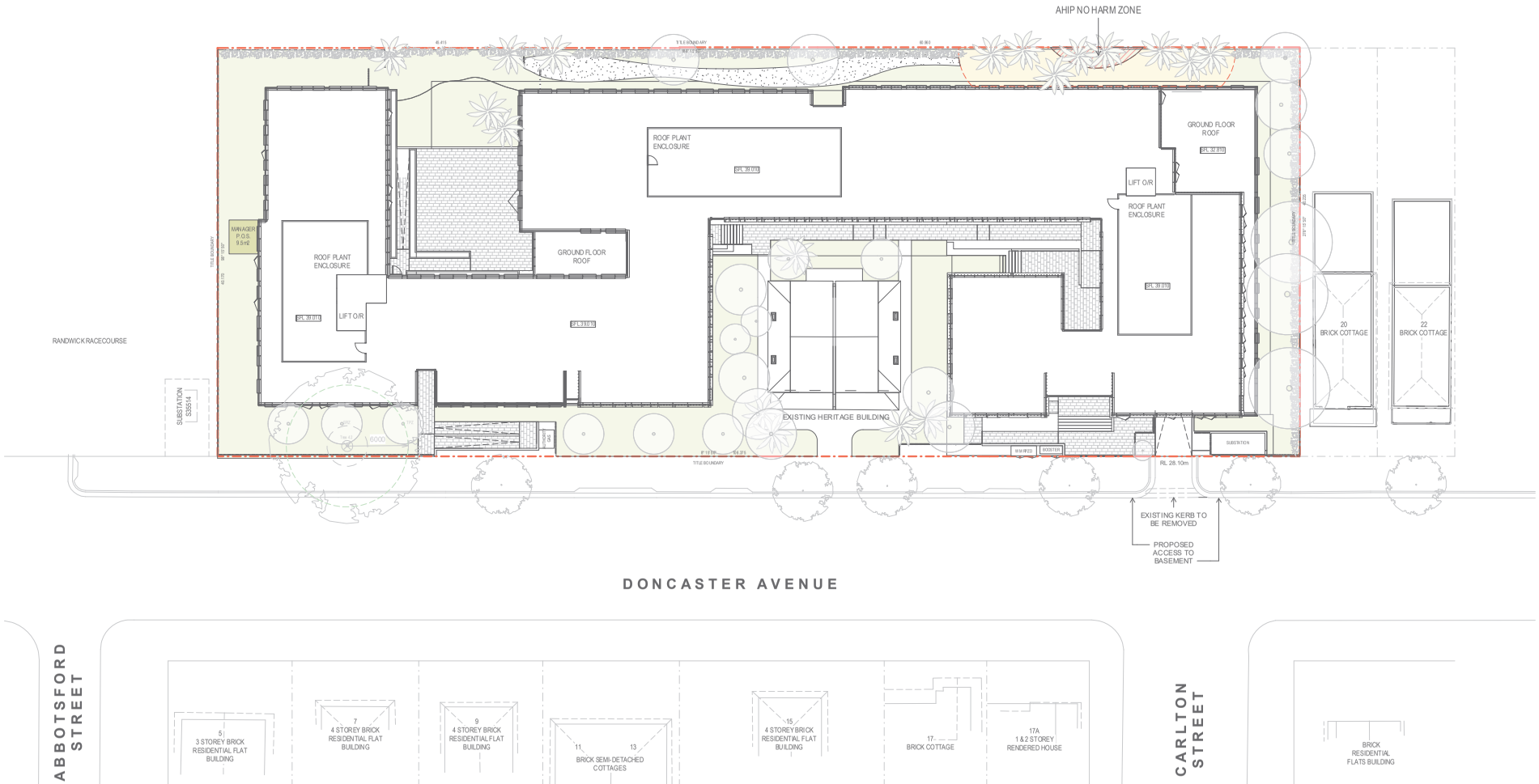

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Rev	Date	Description
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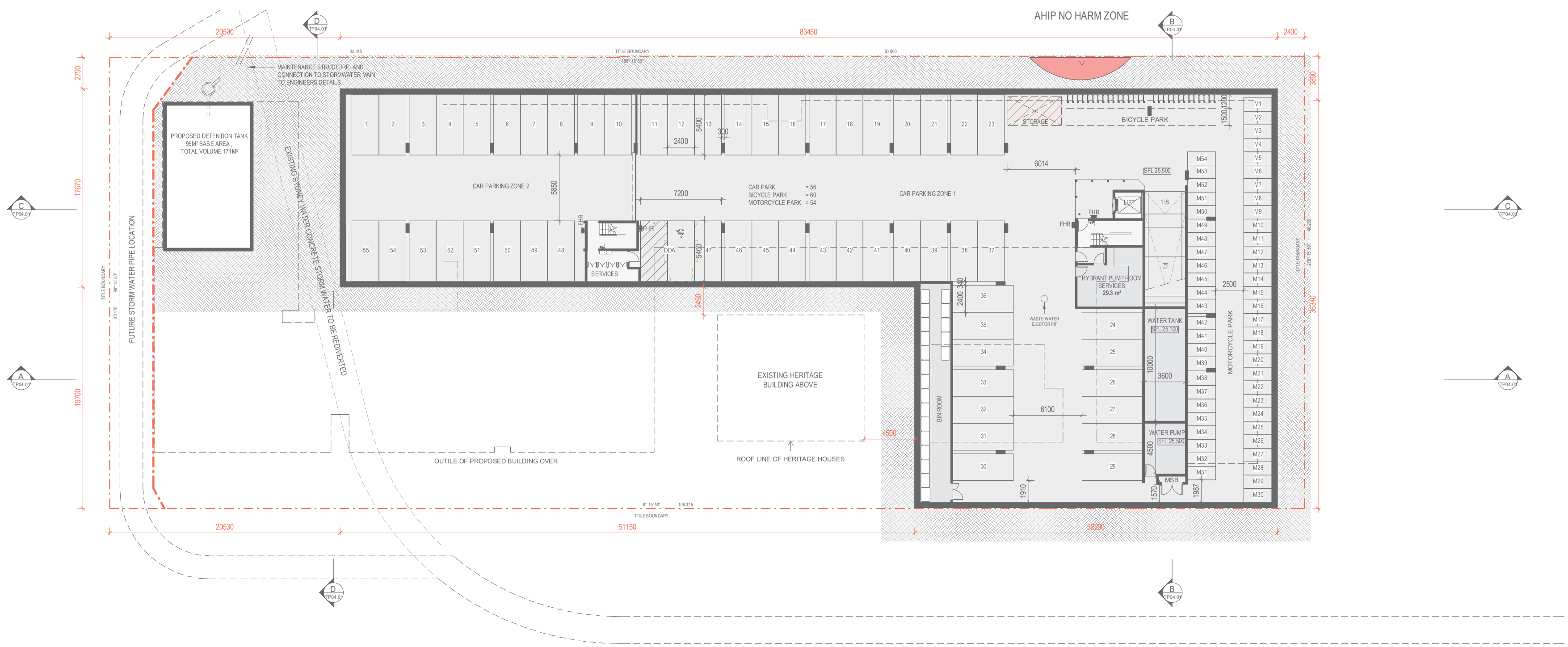

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2	16/11/18	FOR INFORMATION
3	05/12/2018	PRELIMINARY WIP ISSUE
4	07/12/2018	PRELIMINARY WIP ISSUE

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ABN: 84006394261 NSW Nominated Architects:Tom Jordan 7521, Richard Leonard 7522, David Tordoff 8028

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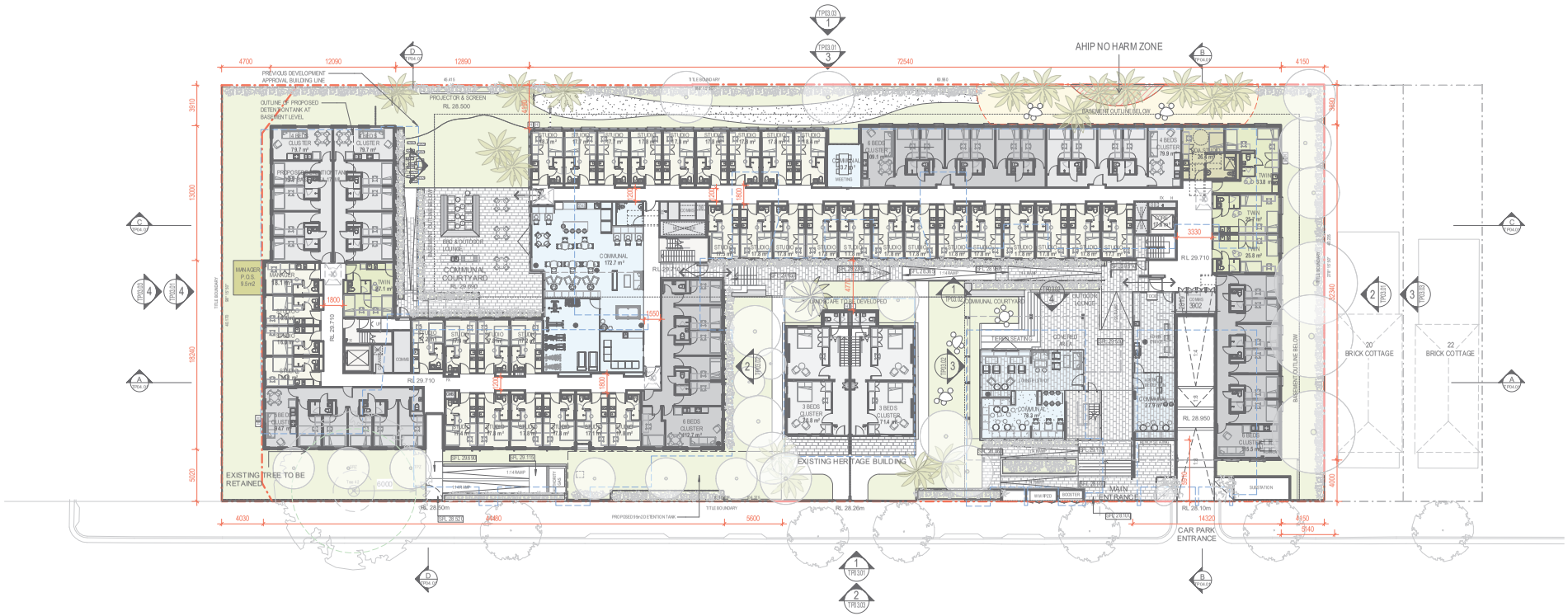

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
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Checked By: EC
Date Printed: 7/12/2018 4:25:33 PM
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2	16/11/18	FOR INFORMATION
3	23/11/2018	FOR INFORMATION
4	30/11/2018	FOR INFORMATION
5	05/12/2018	PRELIMINARY WIP ISSUE
6	07/12/2018	PRELIMINARY WIP ISSUE

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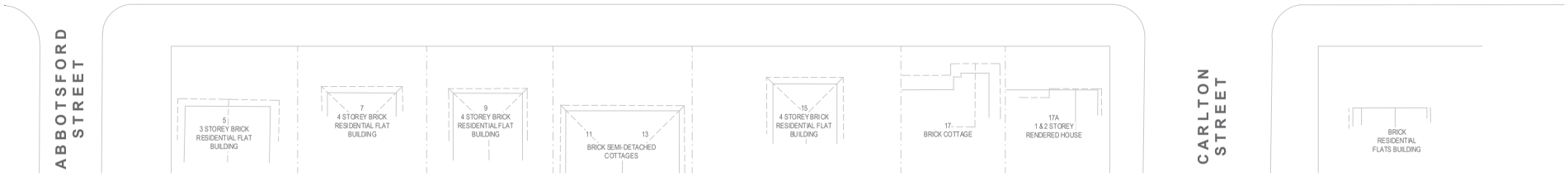

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
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2	16/11/18	FOR INFORMATION
3	23/11/2018	FOR INFORMATION
4	05/12/2018	PRELIMINARY WIP ISSUE
5	07/12/2018	PRELIMINARY WIP ISSUE

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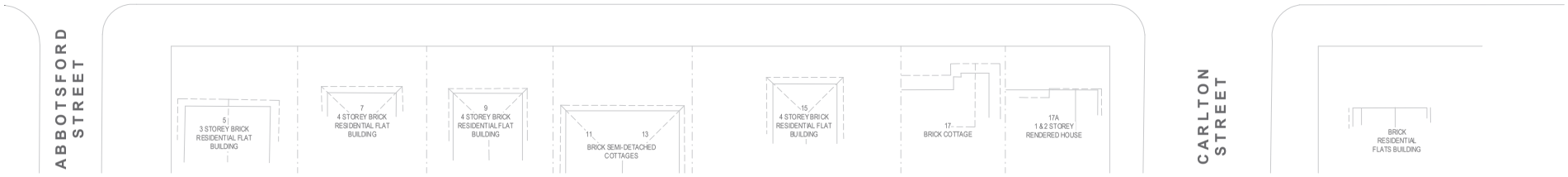

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Checked By	EC
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2	16/11/18	FOR INFORMATION
3	23/11/2018	FOR INFORMATION
4	05/12/2018	PRELIMINARY WIP ISSUE
5	07/12/2018	PRELIMINARY WIP ISSUE

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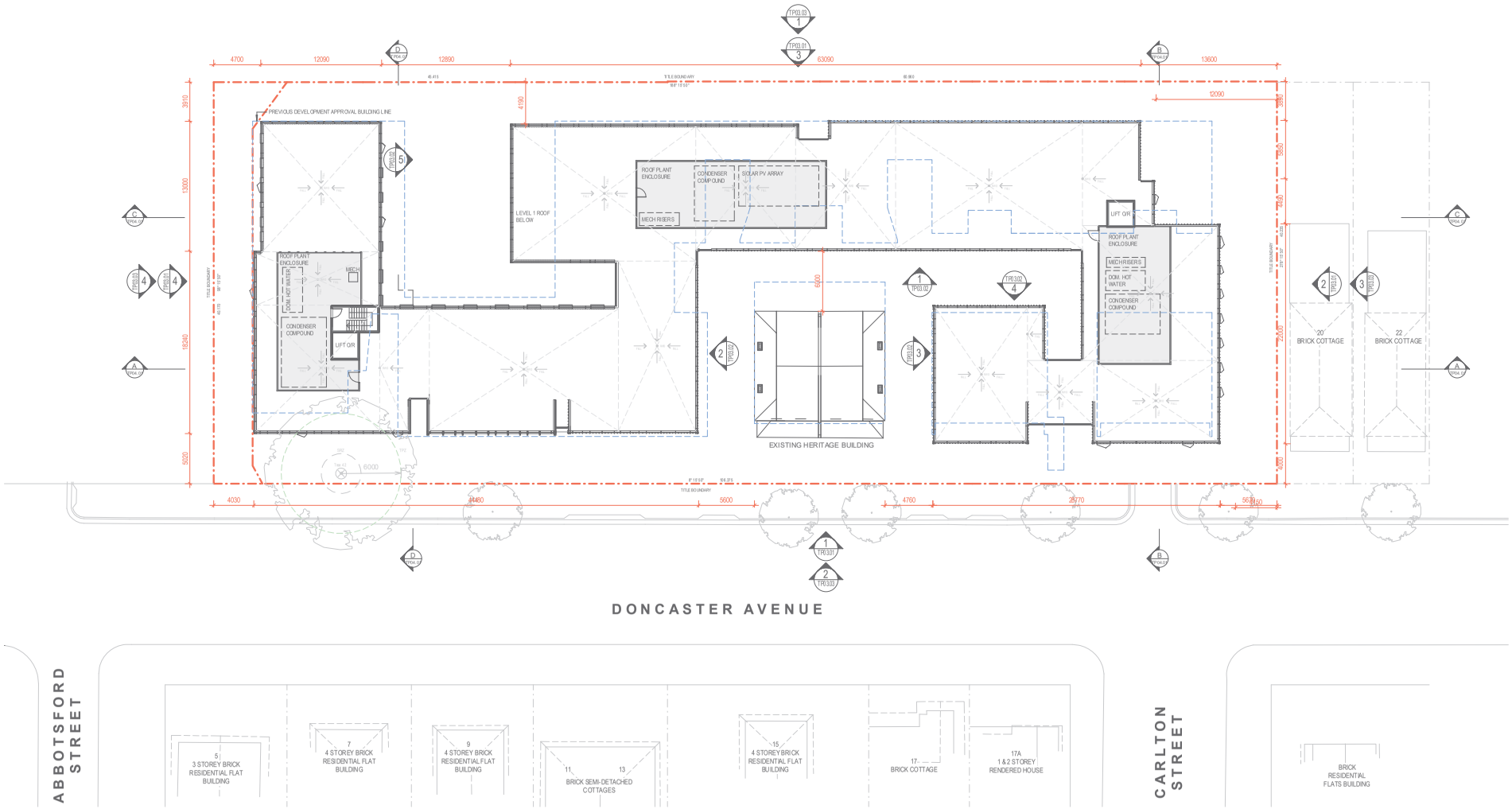

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	ROOF PLAN	PRELIMINARY ISSUE	2309	TP02.05	3

Drawn By	FS / JY
Checked By	EC
Date Printed	7/12/2018 4:25:54 PM
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Rev	Date	Description
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2	05/12/2018	PRELIMINARY WIP ISSUE
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ABN: 84006394261 NSW Nominated Architects: Tom Jordan 7521, Richard Leonard 7522, David Tordoff 8028

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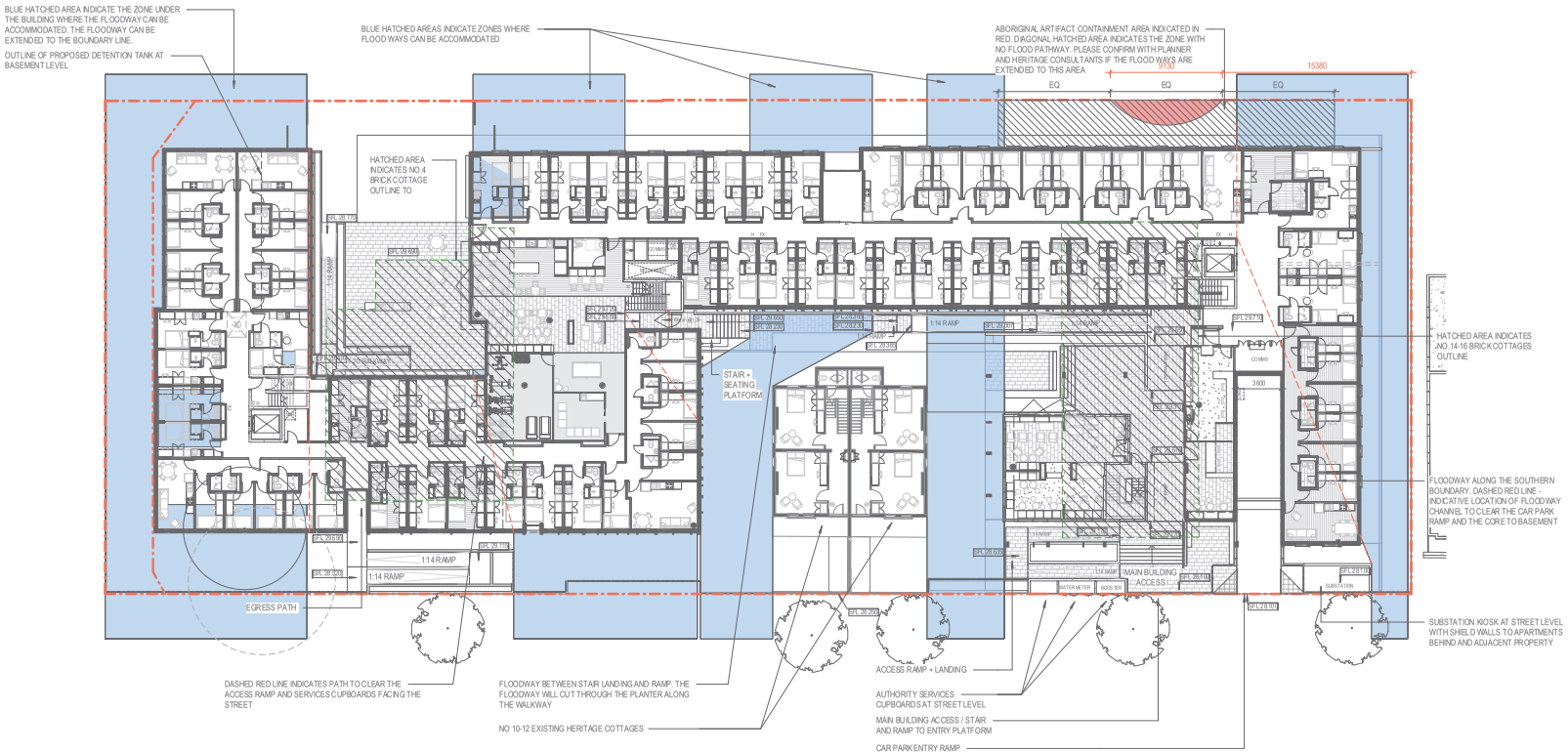

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	GROUND - FLOODWATER CHANNEL LOCATIONS	PRELIMINARY ISSUE	2309	TP02.06	1

Drawn By	Author
Checked By	Checker
Date Printed	7/12/2018 4:26:03 PM
Scale	1 : 200@ A1

0 2 4 6 10 m

Rev	Date	Description
1	07/12/2018	PRELIMINARY WIP ISSUE

Melbourne : 4/135 Sturt Street Southbank, VIC 3006 T +61 3 9699 3644
Sydney : Ground Floor 11-1 Buckingham Street, Surry Hills, NSW 2010 T +61 2 9660 9329
Brisbane : Level 12, 324 Queen Street, Brisbane Qld 4000 T +61 7 3211 9821
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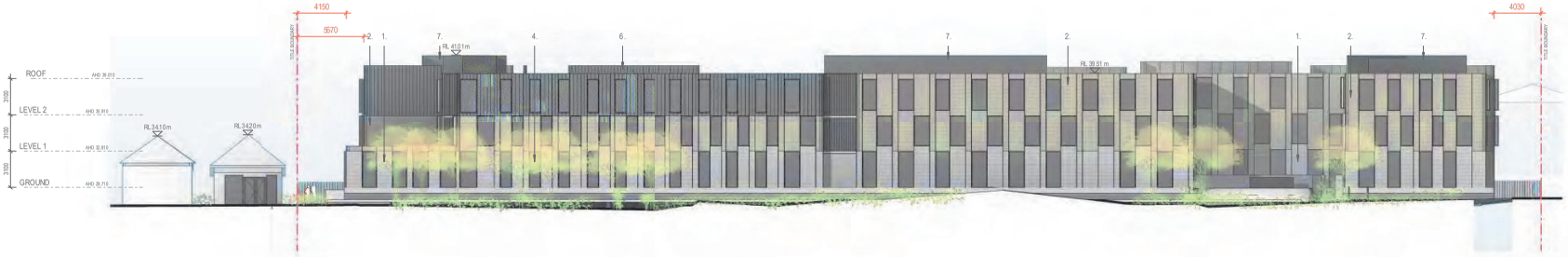
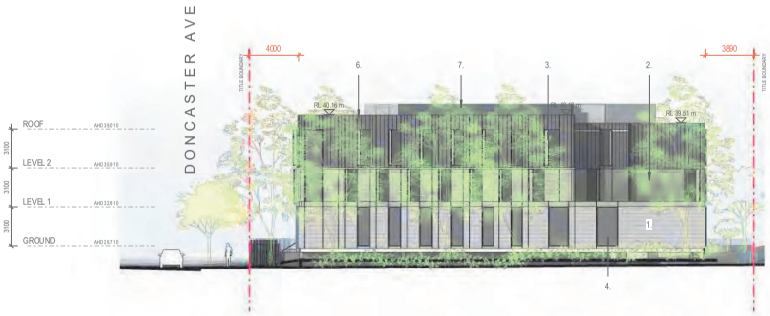
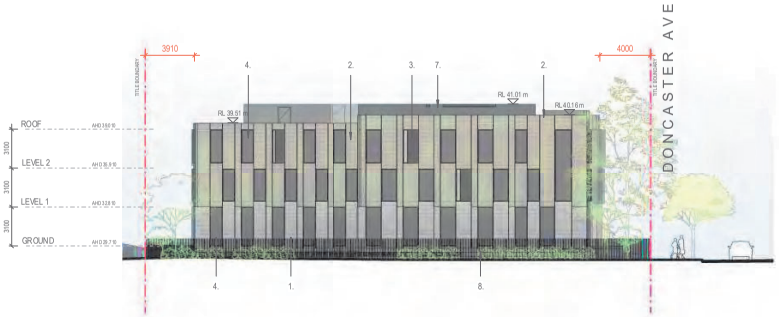
ELEVATION WEST



ELEVATION EAST



ELEVATION SOUTH



ELEVATION NORTH

1. AUSTRAL BRICKS LA PALOMA CASTELLANA.

2. AUSTRAL BRICKS LA PALOMA MIRO.

3. POWDER COATED FOLDED ALUMINIUM WITH DULUX DURALLOY, MONUMENT MATT FINISH.

4.GREY BODY TINT GLASS WITH DULUX DURALLOY, MONUMENT MATT FINISH FRAMES.

6. STANDING SEAM METAL PANEL SYSTEM WITH MONUMENT MATT FINISH.

7. FLAT METAL CLADDING MONUMENT MATT FINISH.

8. VERTICAL FIN FENCE WITH MONUMENT MATT FINISH.

9. CLEAR VISION GLASS.

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	ELEVATIONS	PRELIMINARY ISSUE	2309	TP03.01	2

Drawn By	Author
Checked By	Checker
Date Printed	7/12/2018 4:27:07 PM
Scale	1 : 200@ A1

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Rev	Date	Description
1	05/12/2018	PRELIMINARY WIP ISSUE
2	07/12/2018	PRELIMINARY WIP ISSUE

Melbourne : 4/135 Sturt Street Southbank, VIC 3006 T +61 3 9699 3644
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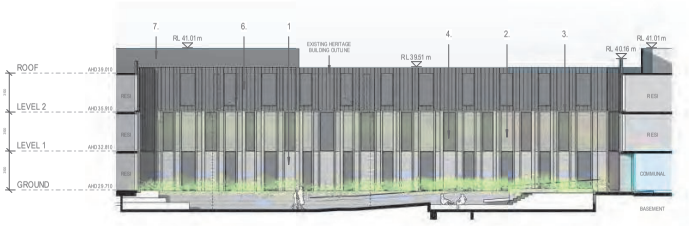
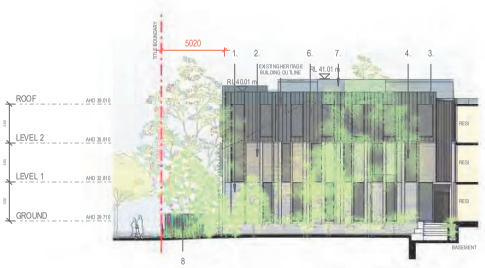


PART ELEVATION 1



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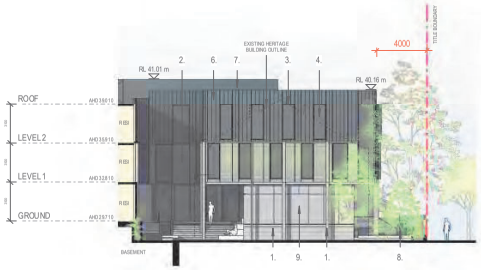
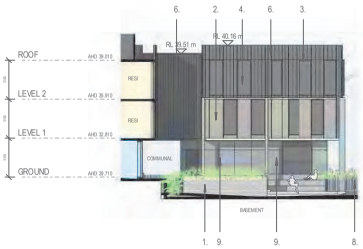
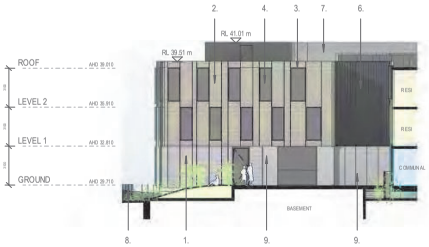


PART ELEVATION 3



PART ELEVATION 4



PART ELEVATION 5

1. AUSTRAL BRICKS LA PALOMA CASTELLANA.

2. AUSTRAL BRICKS LA PALOMA MIRO.

3. POWDER COATED FOLDED ALUMINIUM WITH DULUX DURALLOY, MONUMENT MATT FINISH.

4.GREY BODY TINT GLASS WITH DULUX DURALLOY, MONUMENT MATT FINISH FRAMES.

6. STANDING SEAM METAL PANEL SYSTEM WITH MONUMENT MATT FINISH.

7. FLAT METAL CLADDING MONUMENT MATT FINISH.

8. VERTICAL FIN FENCE WITH MONUMENT MATT FINISH.

9. CLEAR VISION GLASS.

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	PART ELEVATIONS	PRELIMINARY ISSUE	2309	TP03.02	1

Drawn By	Author
Checked By	Checker
Date Printed	7/12/2018 4:27:23 PM
Scale	1 : 200@ A1

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Rev	Date	Description
1	07/12/2018	PRELIMINARY WIP ISSUE

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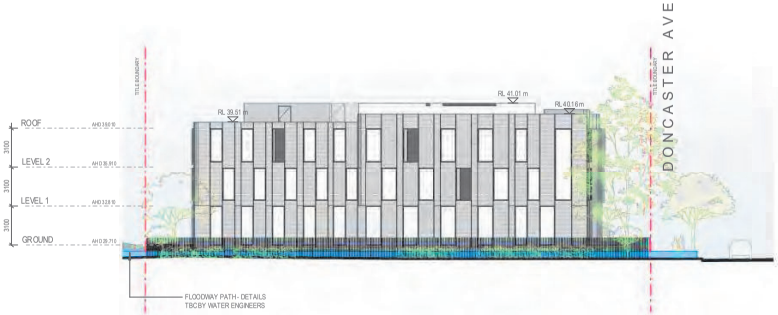
ELEVATION WEST-FLOODWAY

ELEVATION EAST-FLOODWAY

ELEVATION SOUTH-FLOODWAY



ELEVATION NORTH-FLOODWAY

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	FLOODWATER CHANNEL LOCATIONS	PRELIMINARY ISSUE	2309	TP03.03	1

Drawn By	Author
Checked By	Checker
Date Printed	7/12/2018 4:28:34 PM
Scale	1 : 200@ A1

Rev	Date	Description
1	07/12/2018	PRELIMINARY WIP ISSUE

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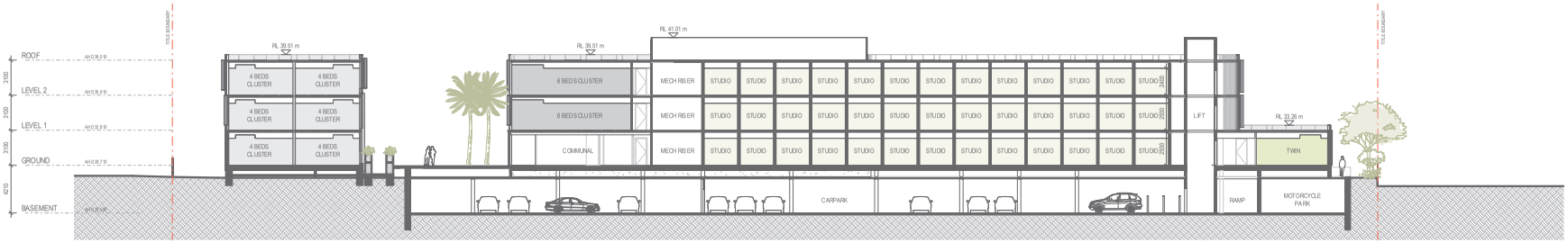
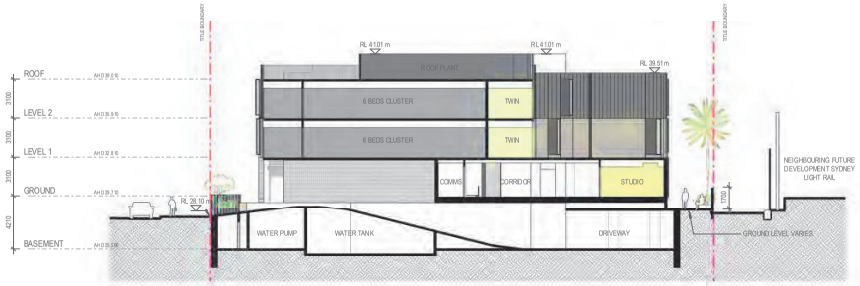
Section A



Section C



Section B

Section D

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	SECTION A&B, C&D	PRELIMINARY ISSUE	2309	TP04.01	1

Drawn By	Author
Checked By	Checker
Date Printed	7/12/2018 4:28:30 PM
Scale	1 : 200@ A1

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Rev	Date	Description
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hayball

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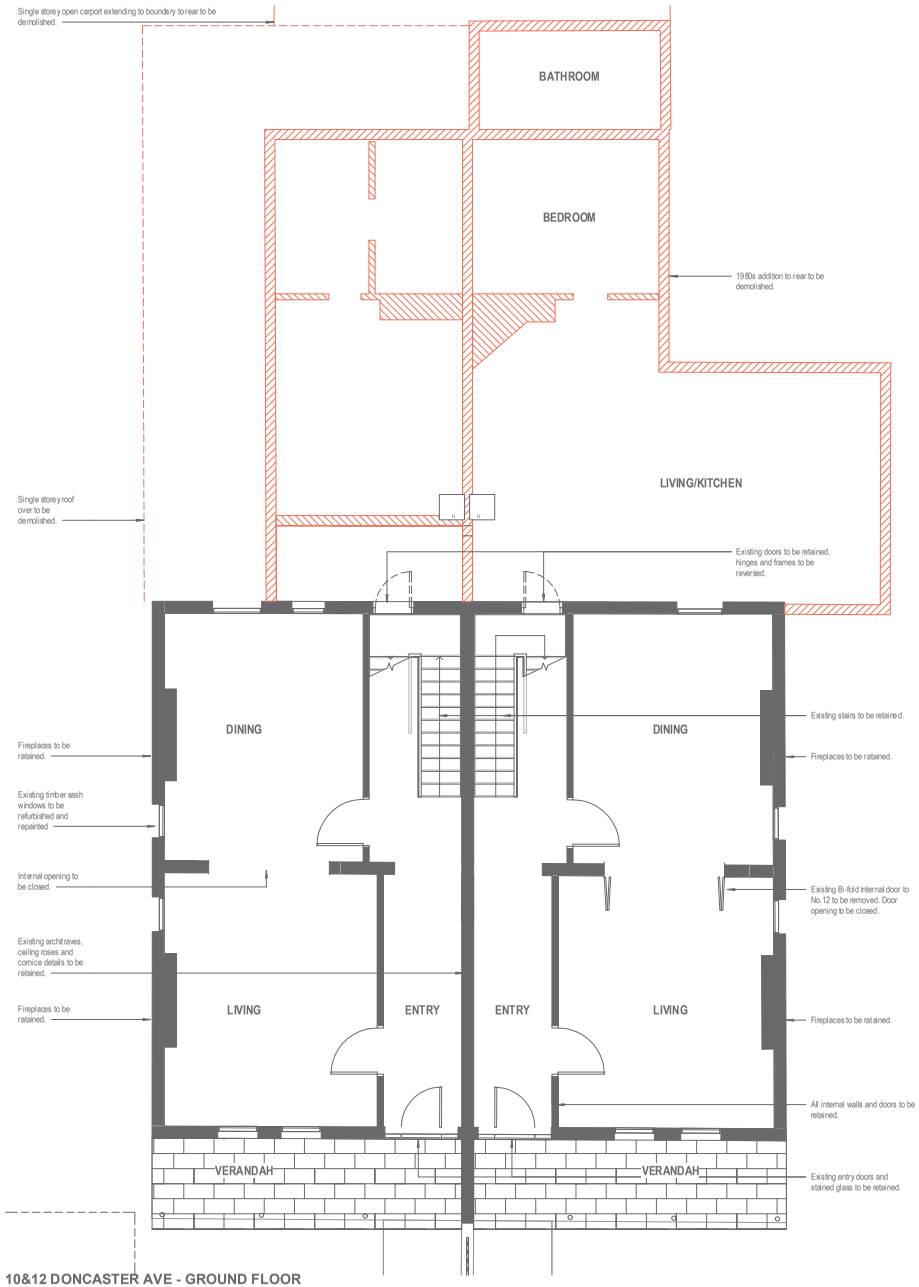
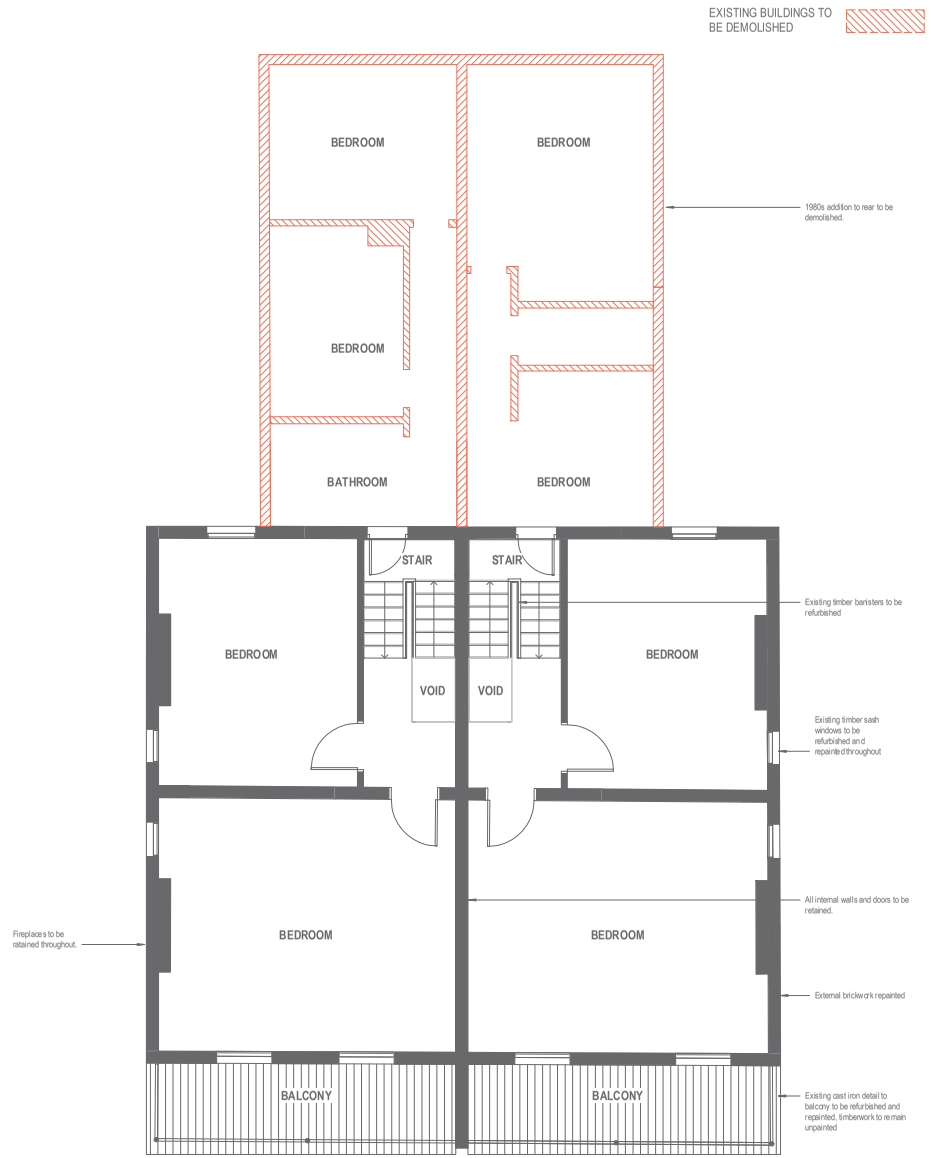


10&12 DONCASTER AVE - GROUND FLOOR PLAN_DEMOLITION



10&12 DONCASTER AVE - FIRST FLOOR PLAN_DEMOLITION

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	DEMOLITION FLOOR PLAN-10&12 DONCASTER AVE	PRELIMINARY ISSUE	2309	TP05.01	1

Drawn By	Author
Checked By	Checker
Date Printed	7/12/2018 4:28:32 PM
Scale	As indicated@ A1

0 2 4 6 10 m

Rev	Date	Description
1	07/12/2018	PRELIMINARY WIP ISSUE

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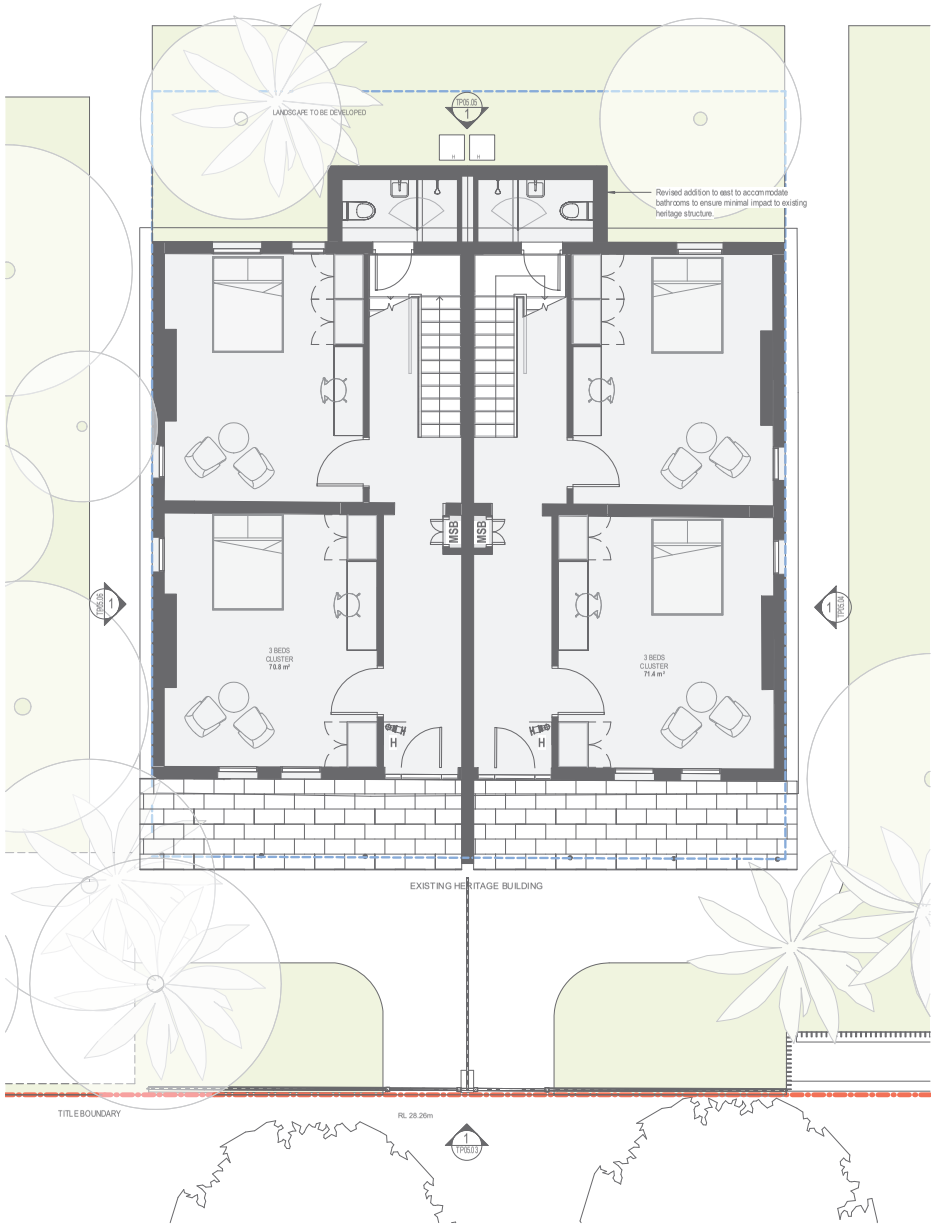
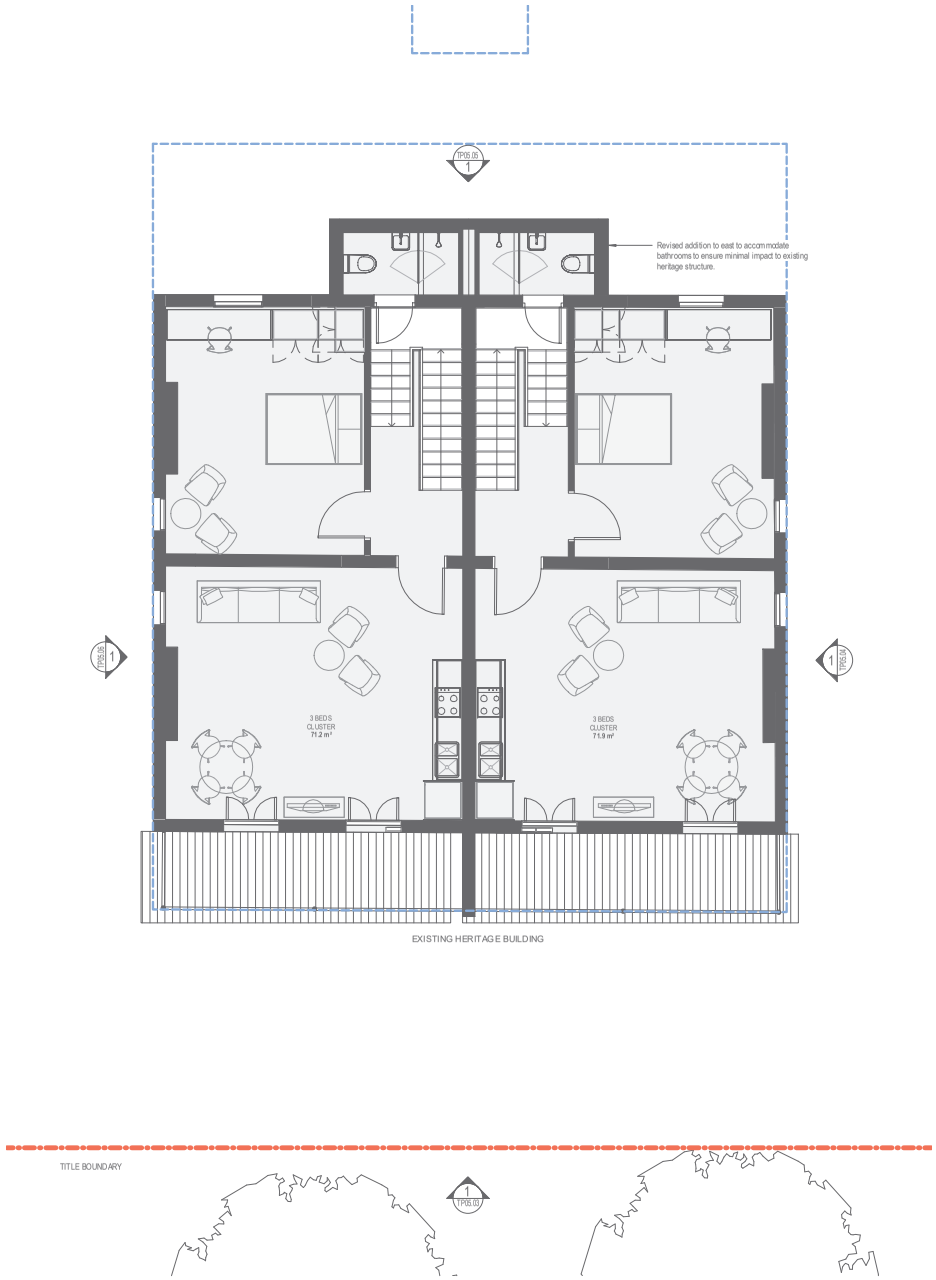


10&12 DONCASTER AVE - GROUND FLOOR PLAN



10&12 DONCASTER AVE - FIRST FLOOR PLAN

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	DETAIL FLOOR PLANS-10&12 DONCASTER AVE	PRELIMINARY ISSUE	2309	TP05.02	1

Drawn By	Author
Checked By	Checker
Date Printed	7/12/2018 4:28:37 PM
Scale	1 : 50@ A1

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Rev	Date	Description
1	07/12/2018	PRELIMINARY WIP ISSUE

Melbourne : 4/135 Sturt Street Southbank, VIC 3006 T +61 3 9699 3644
Sydney : Ground Floor 11-1 Buckingham Street, Surry Hills, NSW 2010 T +61 2 9660 9329
Brisbane : Level 12, 324 Queen Street, Brisbane Qld 4000 T +61 7 3211 9821
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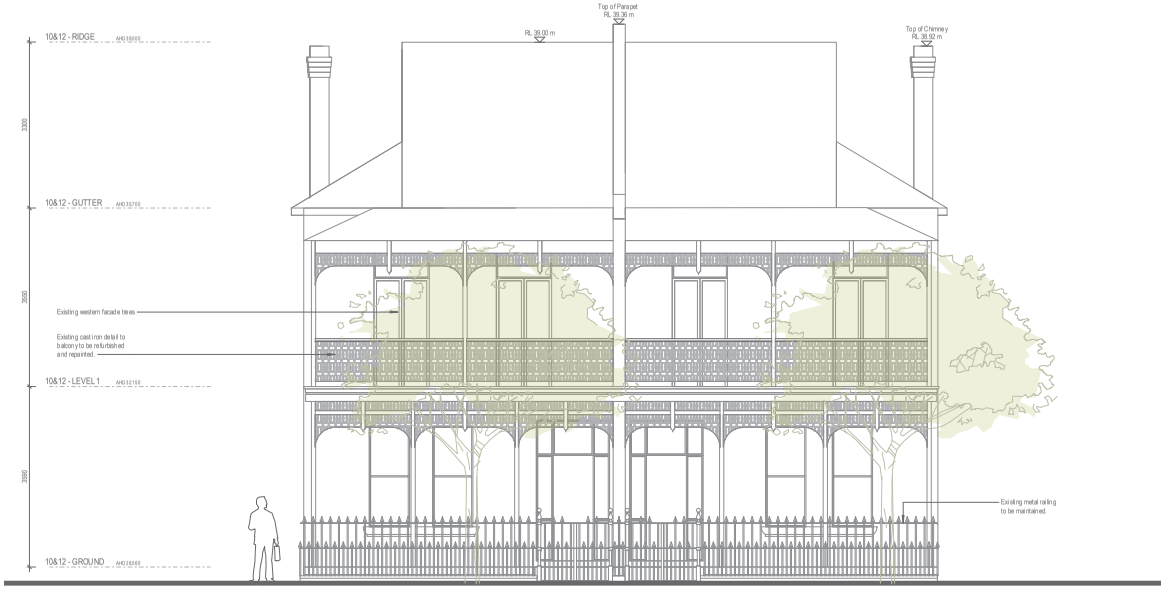

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	WEST ELEVATION-10&12 DONCASTER AVE	PRELIMINARY ISSUE	2309	TP05.03	1

Drawn By	Author
Checked By	Checker
Date Printed	7/12/2018 4:28:39 PM
Scale	1 : 50@ A1

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Rev	Date	Description
1	07/12/2018	PRELIMINARY WIP ISSUE

Melbourne : 4/135 Sturt Street Southbank, VIC 3006 T +61 3 9699 3644
Sydney : Ground Floor 11-1 Buckingham Street, Surry Hills, NSW 2010 T +61 2 9660 9329
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Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	SOUTH ELEVATION-10&12 DONCASTER AVE	PRELIMINARY ISSUE	2309	TP05.04	1

Drawn By	Author
Checked By	Checker
Date Printed	7/12/2018 4:28:40 PM
Scale	1 : 50@ A1

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Rev	Date	Description
1	07/12/2018	PRELIMINARY WIP ISSUE

Melbourne : 4/135 Sturt Street Southbank, VIC 3006 T +61 3 9699 3644
Sydney : GroundFloor11-1 Buckingham Street,Surry Hills, NSW 2010T +61 2 9660 9329
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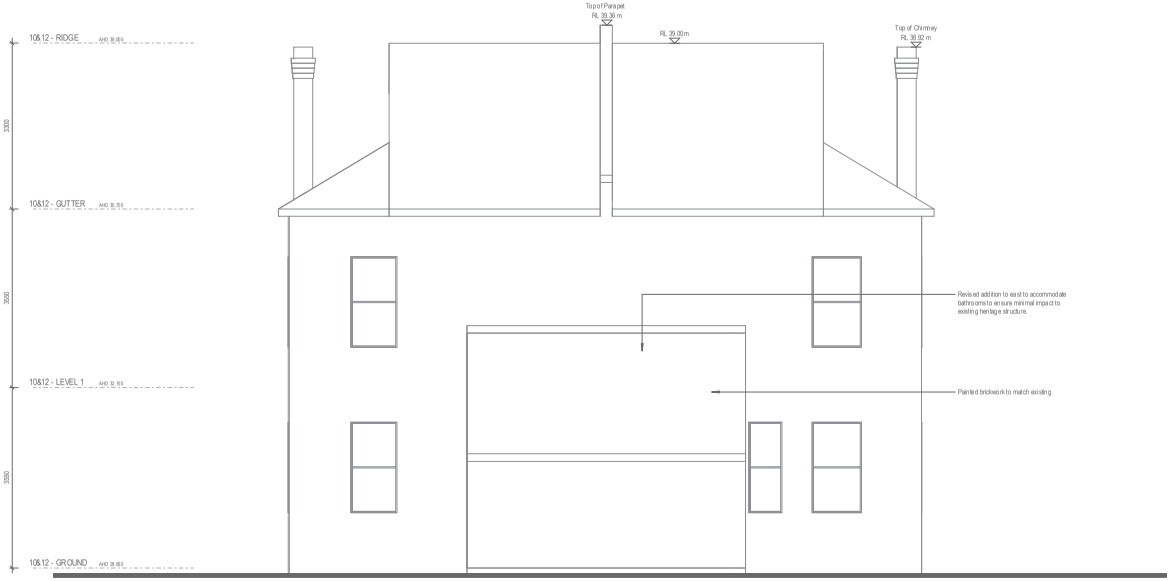

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	EAST ELEVATION-10&12 DONCASTER AVE	PRELIMINARY ISSUE	2309	TP05.05	1

Drawn By	Author
Checked By	Checker
Date Printed	7/12/2018 4:28:41 PM
Scale	1 : 50@ A1

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Rev	Date	Description
1	07/12/2018	PRELIMINARY WIP ISSUE

Melbourne : 4/135 Sturt Street Southbank, VIC 3006 T +61 3 9699 3644
Sydney : Ground Floor 11-1 Buckingham Street, Surry Hills, NSW 2010 T +61 2 9660 9329
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Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	NORTH ELEVATION-10&12 DONCASTER AVE	PRELIMINARY ISSUE	2309	TP05.06	1

Drawn By	Author
Checked By	Checker
Date Printed	7/12/2018 4:28:43 PM
Scale	1 : 50@ A1

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Rev	Date	Description
1	07/12/2018	PRELIMINARY WIP ISSUE

Melbourne : 4/135 Sturt Street Southbank, VIC 3006 T +61 3 9699 3644
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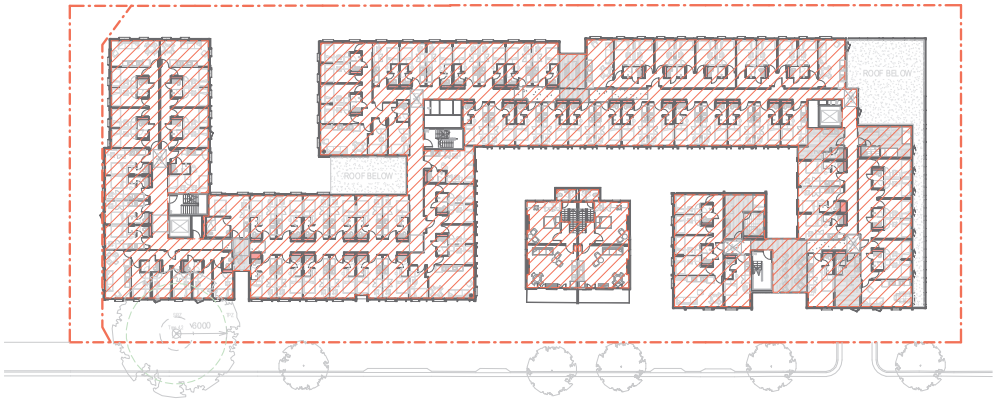
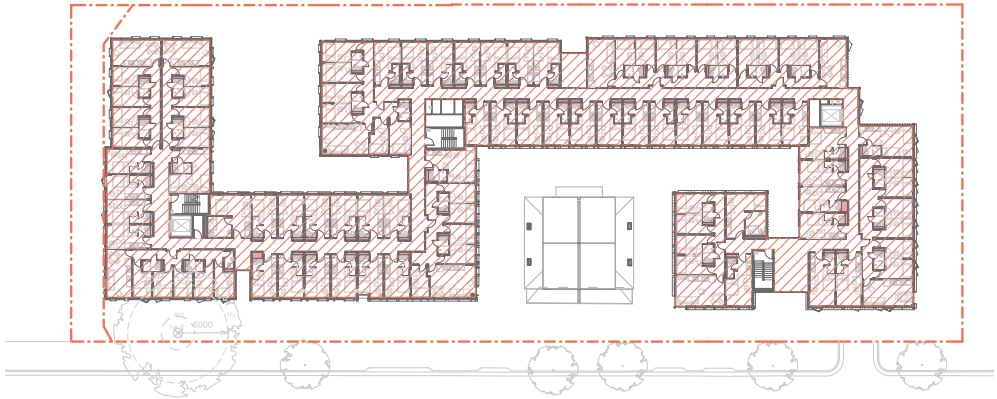
GROUND - AREA GFA



LEVEL 1 - AREA GFA



LEVEL 2 - AREA GFA

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
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Drawn By	Author
Checked By	Checker
Date Printed	7/12/2018 4:29:12 PM
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Rev	Date	Description
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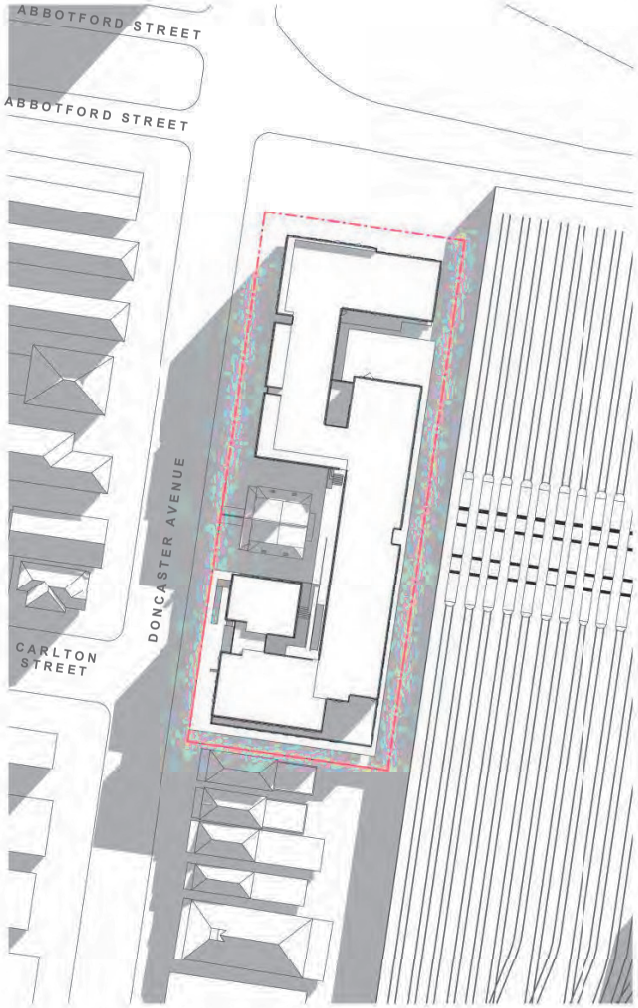
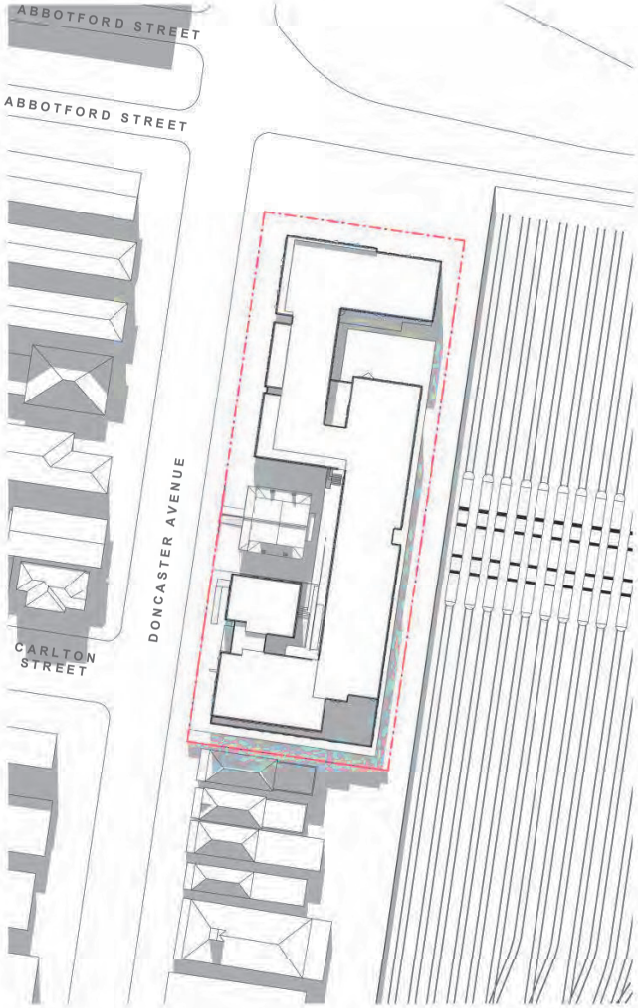
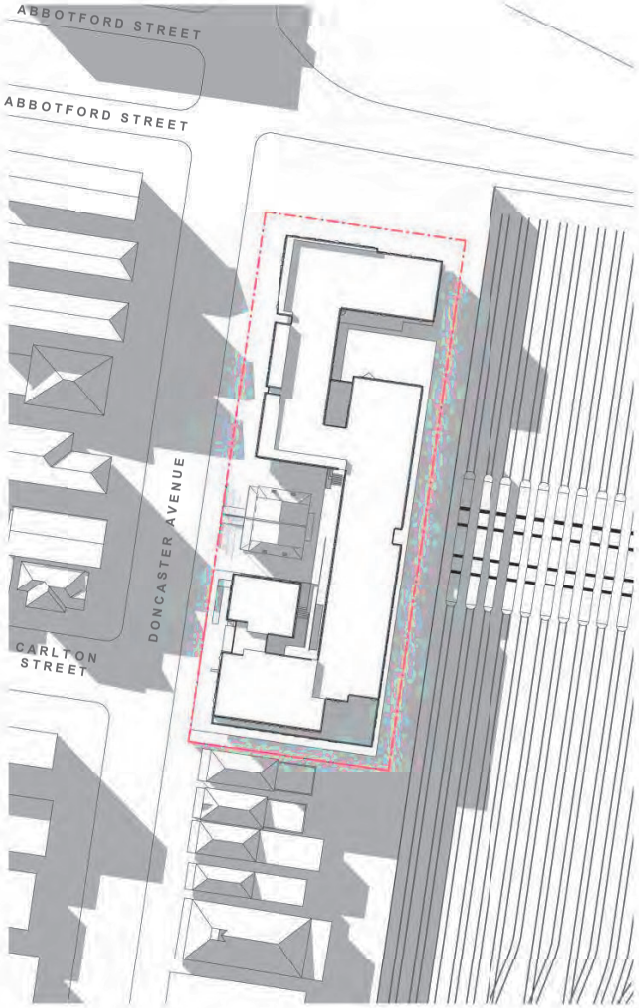


SHADOW DIAGRAM - 21ST JUNE 9AM



SHADOW DIAGRAM - 21ST JUNE 12PM



SHADOW DIAGRAM - 21ST JUNE 3PM

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	SHADOW DIAGRAMS	CONSTRUCTION ISSUE	2309	TP06.02	2

Drawn By	Author
Checked By	Checker
Date Printed	7/12/2018 4:29:35 PM
Scale	1 : 500@ A1

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Rev	Date	Description
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Sydney : GroundFloor11-1 Buckingham Street,Surry Hills, NSW 2010T +61 2 9660 9329
Brisbane : Level 12,324 Queen Street, Brisbane Qld 4000 T +61 7 3211 9821
ABN: 84006394261 NSW Nominated Architects:Tom Jordan 7521,
Richard Leonard 7522, David Tordoff 8028

hayball

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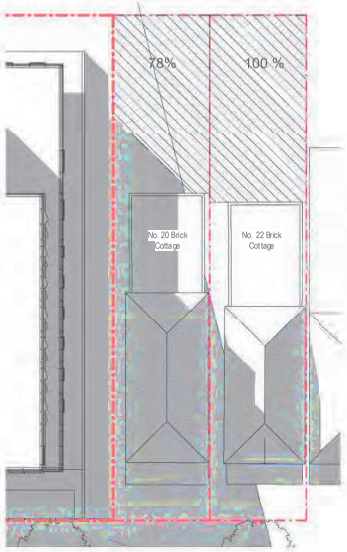
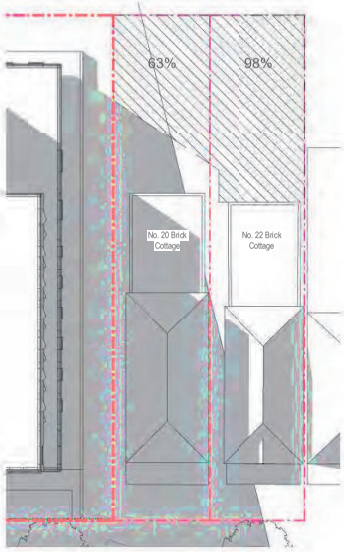


COURTYARD SUN STUDY - 21ST JUNE 8AM



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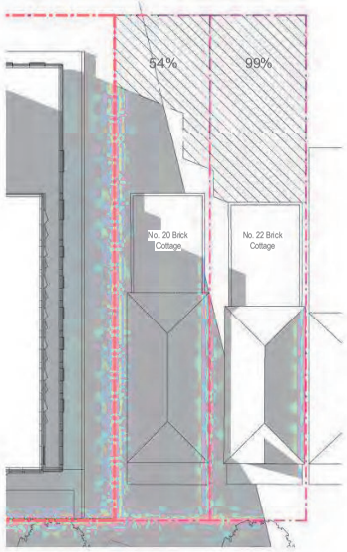
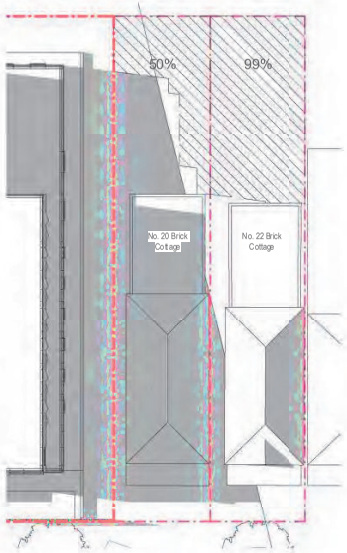


COURTYARD SUN STUDY - 21ST JUNE 10AM



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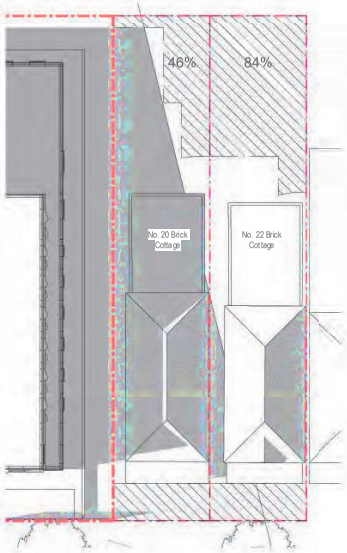

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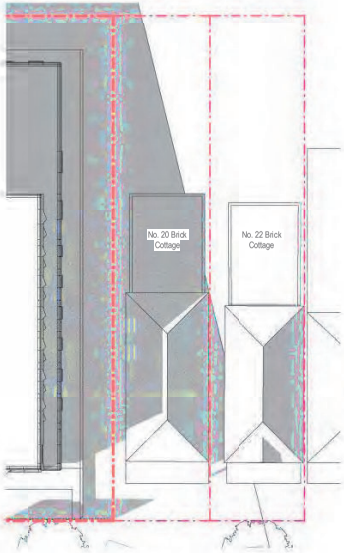

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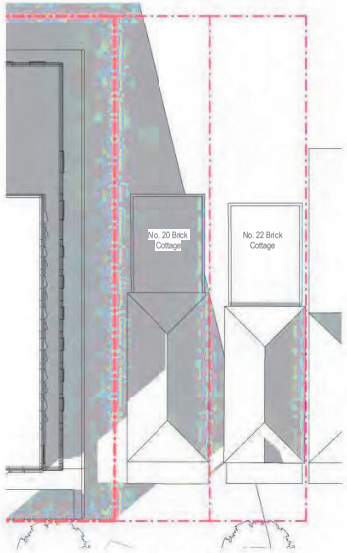

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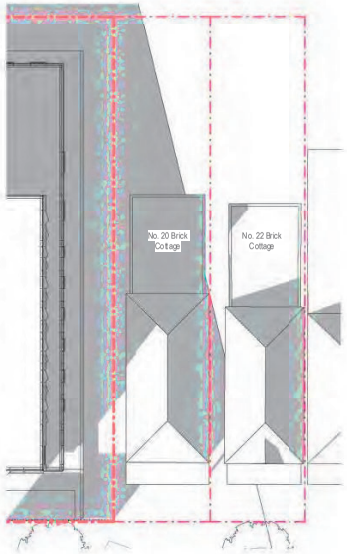

COURTYARD SUN STUDY - 21ST JUNE 3PM

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	SHADOW STUDY - SOUTHERN INTERFACE - LANDSCAPE	PRELIMINARY ISSUE	2309	TP06.03	2

Drawn By	Author
Checked By	Checker
Date Printed	7/12/2018 4:29:35 PM
Scale	1 : 200@ A1

0 2 4 6 10 m

Rev	Date	Description
1	05/12/2018	PRELIMINARY WIP ISSUE
2	07/12/2018	PRELIMINARY WIP ISSUE

Melbourne : 4/135 Sturt Street Southbank, VIC 3006 T +61 3 9699 3644
Sydney : Ground Floor 11-1 Buckingham Street, Surry Hills, NSW 2010 T +61 2 9660 9329
Brisbane : Level 12, 324 Queen Street, Brisbane Qld 4000 T +61 7 3211 9821
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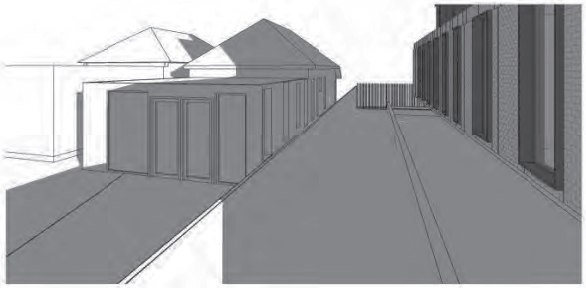

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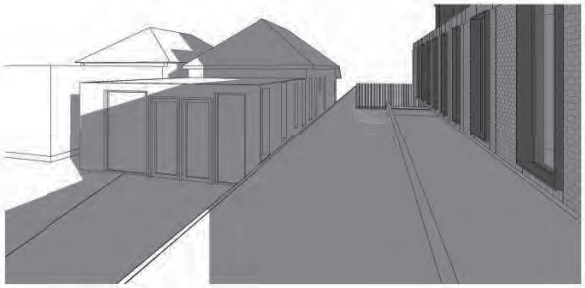

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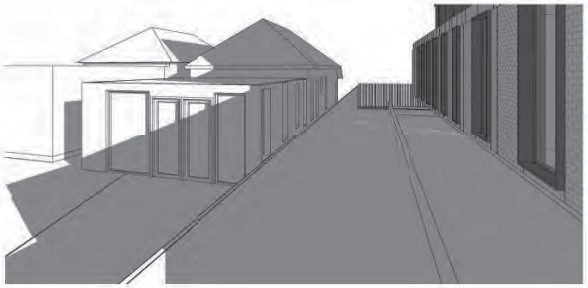

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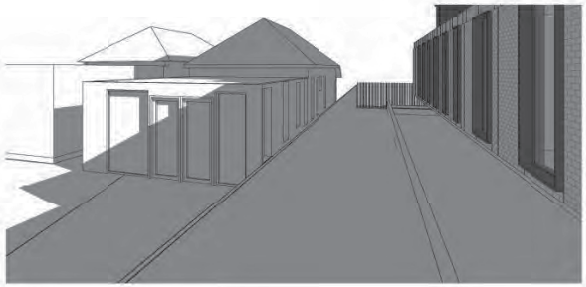

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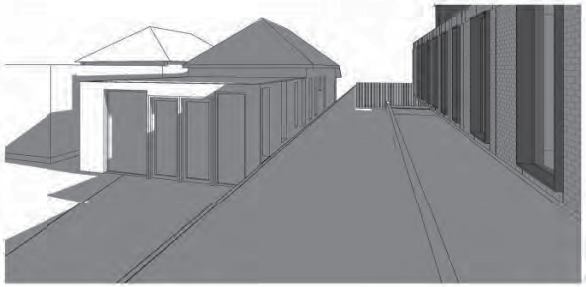

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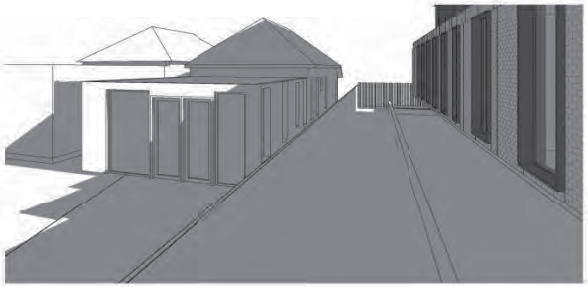

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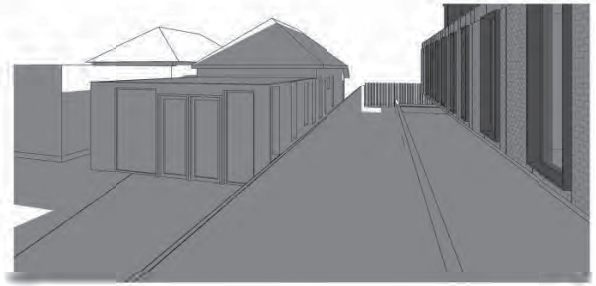
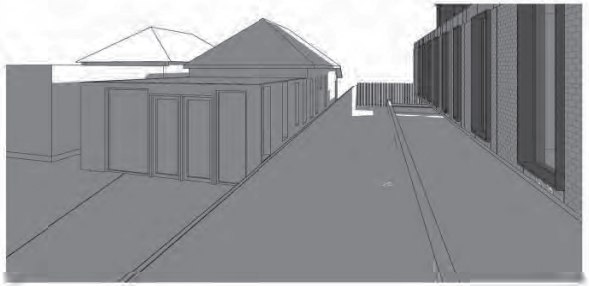


SHADOW STUDY-20 DONCASTER AVE-21ST JUNE 12PM



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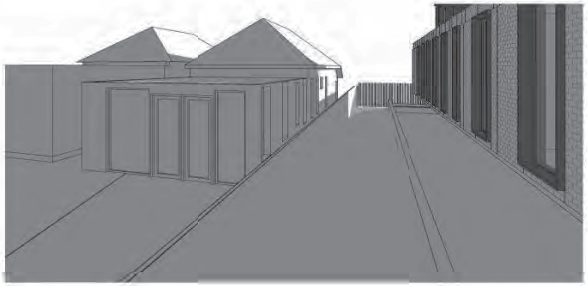

SHADOW STUDY-20 DONCASTER AVE-21ST JUNE 4PM

Project Title	Drawing Title	Status	Project No	Drawing No	Revision
4-DONCASTER AVE KENSINGTON SYDNEY	SHADOW STUDY - SOUTHERN INTERFACE 21ST JUNE	PRELIMINARY ISSUE	2309	TP06.04	1

Drawn By	Author
Checked By	Checker
Date Printed	7/12/2018 4:31:49 PM
Scale	@ A1

Rev	Date	Description
1	07/12/2018	PRELIMINARY WIP ISSUE

Melbourne : 4/135 Sturt Street Southbank, VIC 3006 T +61 3 9699 3644
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