

Frasers Property Australia & Dexu
Funds Management Limited.

**Western Gateway Sub-Precinct
Proposal: Block B
14-30 Lee St, Haymarket NSW
2000**

Stormwater Management
Assessment and Concept Plan

HDP-Arup-Stormwater-Planning Sub Report

Issue 4 | 9 October 2019

This report takes into account the particular
instructions and requirements of our client.

It is not intended for and should not be relied
upon by any third party and no responsibility
is undertaken to any third party.

Job number 265869-11

Arup Australia Projects Pty Ltd ABN 57 625 911 711

Arup
Level 5
151 Clarence Street
Sydney NSW 2000
Australia
www.arup.com

ARUP

Document verification

ARUP

Job title		Western Gateway Sub-Precinct Proposal: Block B 14-30 Lee St, Haymarket NSW 2000		Job number 265869-11	
Document title		Stormwater Management Assessment and Concept Plan		File reference	
Document ref		HDP-Arup-Stormwater-Planning Sub Report			
Revision	Date	Filename	265869-CIDR-RPT-0300.docx		
Draft 1	03 Jul 2019	Description	First draft		
			Prepared by	Checked by	Approved by
		Name	Andrew Crouch	Euan Mitchell	Peter Bailey
		Signature			
Issue 1	29 Jul 2019	Filename	HDP-Arup-Stormwater-Planning Sub Report		
		Description	Updated to address client comments		
			Prepared by	Checked by	Approved by
		Name	Andrew Crouch	Euan Mitchell	Peter Bailey
		Signature			
Issue 2	23 August 2019	Filename	HDP-Arup-Stormwater-Planning Sub Report		
		Description	Updated for extended precinct including client comments		
			Prepared by	Checked by	Approved by
		Name	Andrew Crouch	Euan Mitchell	Peter Bailey
		Signature			
Issue 3	16 Sep 2019	Filename	HDP-Arup-Drainage-Stormwater Management Assessment-Issue 02.docx		
		Description	Client changes to introductory text		
			Prepared by	Checked by	Approved by
		Name	Negin Sharifi	Euan Mitchell	Peter Bailey
		Signature			

Issue Document verification with document



Document Verification

Page 2 of 2

Job title		Western Gateway Sub-Precinct Proposal: Block B 14-30 Lee St, Haymarket NSW 2000		Job number 265869-11	
Document title		Stormwater Management Assessment and Concept Plan		File reference	
Document ref		HDP-Arup-Stormwater-Planning Sub Report			
Revision	Date	Filename	HDP-Arup-Drainage-Stormwater Management Assessment-		
Issue 4	9 Oct 2019	Description	Client changes to introductory text		
			Prepared by	Checked by	Approved by
		Name	Negin Sharifi	Euan Mitchell	Peter Bailey
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
Issue Document Verification with Document ☒					

Contents

	Page
Executive Summary	1
Glossary / Abbreviations	2
1 Introduction	4
1.1 Context of Proposed Modifications	7
1.2 Background	9
1.3 Site Description	10
2 Relevant Stormwater Management Legislation	12
2.1 Sydney Local Environment Plan 2012	12
2.2 EPA Act and NSW Floodplain Development Manual	13
2.3 Sydney Development Control Plan 2012	13
2.4 Interim Floodplain Management Policy	14
2.5 Sydney Water On-Site Stormwater Detention Policy	15
3 Existing Site Stormwater Management	16
3.1 Site Topography	16
3.2 Existing Stormwater Infrastructure	17
3.3 Previous Flood Studies	18
4 Post Development Concept Stormwater Management Plan	24
4.1 Flood Management	24
4.2 Site Drainage and Stormwater Quantity Management	24
4.3 Stormwater Quality Management	25
5 Summary	27
6 Recommendations	28

Appendices

Appendix A

Topographical Survey

Appendix B

Sydney Water Record Drawing

Appendix C

Correspondence with Sydney Water

Executive Summary

Arup has been engaged to prepare Engineering Reports in support of Planning submission to rezone the Site; Lots 12, 14 and 15 in DP 1062447 at 14-30 Lee St, Haymarket, otherwise known as Block B within the Western Gateway Sub-Precinct. This stormwater management assessment and concept plan considers the whole Western Gateway Sub-Precinct including Blocks A, B & C.

To facilitate this vision, the existing planning controls are required to be amended. This report supports a Planning Submission to the Secretary of the Department of Planning, Industry and Environment ('the DPIE') pursuant to Part 3 of the Environmental Planning and Assessment Act 1979 (EP&A Act) on behalf of the Consortium. The Planning Submission seeks to amend the height and density controls within the *Sydney Local Environmental Plan 2012* (Sydney LEP 2012).

A review of available information for the proposed redevelopment has been undertaken to determine stormwater management requirements at the site. As part of this review relevant stormwater management legislation, including the Sydney LEP and DCP, was considered to determine requirements for the proposed development.

This review also included an assessment of previous stormwater and flooding investigations completed for the site and surrounding area.

Existing flood mapping undertaken by the City of Sydney show that existing flooding on the site is limited to localised shallow flooding between buildings. There are no overland flow routes through the site. The proposal to amend building height and density controls would not have a material impact on the existing flood conditions on the site.

During later design stages the Council adopted models would be required to be updated to accurately reflect existing local drainage not currently included in the model as well as any changes to topography associated with the proposed development.

A proposed stormwater management strategy for the site has also been developed which includes the following:

- The proposed development is to include a combination of stormwater quality strategies including green roofs, rainwater harvesting and reuse, gross pollutant traps and filtration systems to meet Council water quality requirements. The final configuration of these features will be determined during later design stages.
- Based on advice from Sydney Water it is not anticipated that OSD will be required as part of the proposed development.
- Stormwater discharge from the site will utilise existing connections to the adjacent stormwater network located under Henry Deane Plaza or Lee Street.

Glossary / Abbreviations

Abbreviation	Expanded Text
Block A	YHA Site Current owner of the land located at 8-10 Lee St, Haymarket. Land that includes Part Lot 13, DP1062447; Lot 116, DP1078271A; Lot 117, DP1078271; Part Lot 118, DP1078271 (Airspace). Formerly known as Inwards Parcel Shed
Block B	The Site Land located at 14-30 Lee St, Haymarket. Legally described as Lot 12, DP1062447; Lot 14, DP1062447; Lot 15, DP1062447.
Block C	Refers to Adina Hotel & Henry Deane Plaza Land located at 2 Lee St, Haymarket. Land that includes Part Lot 13, DP1062447; Lot 30, DP877478A. Formerly known as Parcels Post Office.
Central Precinct State Significant Precinct	The nominated State Significant Precinct comprising an approximately 24 Hectare area including Central Station and surrounding NSW Government owned land along the rail corridor, Goulburn Street Car Park and the strip of land along the Lee Street edge of the Central Precinct, known as the Western Gateway sub-precinct.
Central Station	Refers to Central Railway Station.
CPRP	Central Precinct Renewal Project
Consortium, the	Used when collectively referring to Dexu and Fraser's as the proponents of the Central USP Stage 2 Proposal.
Devonshire Street Tunnel	Refers to the official name of the pedestrian tunnel connecting Chalmers and Lee Streets.
DPIE	Department of Planning, Industry and Environment
Environmental Planning Instrument (EPI)	EPI has the same meaning as under the Environmental Planning and Assessment Act 1979. EPIs are either SEPPs or Local Environmental Plans but does not include a Development Control Plan.
FSR	Floor Space Ratio
Goods Line	The official name for the partly elevated walkway from Central Station to Darling Harbour following the route of a disused railway line.
Railway Square	The official name given to the area between Lee Street and Broadway, comprising a plaza, bus stands and underground access/uses.

Abbreviation	Expanded Text
State Significant Precinct (SSP)	State Significant Precincts are areas with state or regional planning significance because of their social, economic or environmental characteristics.
Sub-precincts	Definable areas within the Central Precinct SSP due to its unique local character, opportunities and constraints, either current or future. The Western Gateway is a sub-precinct.
Sydney Metro	The rail network connecting Sydney's north-west and south-west regions, serviced by driverless metro services, contracted to private operator Metro Trains Sydney (MTS).
Transport for NSW	The statutory authority of the New South Wales Government responsible for managing transport services in New South Wales.
Western Gateway sub-precinct	The land along the Lee Street edge of the Central Precinct and that is a sub-precinct of the Central Precinct State Significant Precinct. The Western Gateway includes existing commercial office space and retail around Henry Dean Plaza, YHA Railway Square, Adina Hotel as well as public domain for both lower and upper stratum lots.

1 Introduction

Dexus Funds Management Limited (Dexus) and Fraser's Property Australia (Fraser's Property) (the Consortium) is seeking to create a new precinct vision and redevelop their property at 14-30 Lee Street, Haymarket, otherwise known as the Site or Block B within the Western Gateway Sub-Precinct, as illustrated in Figure 1.

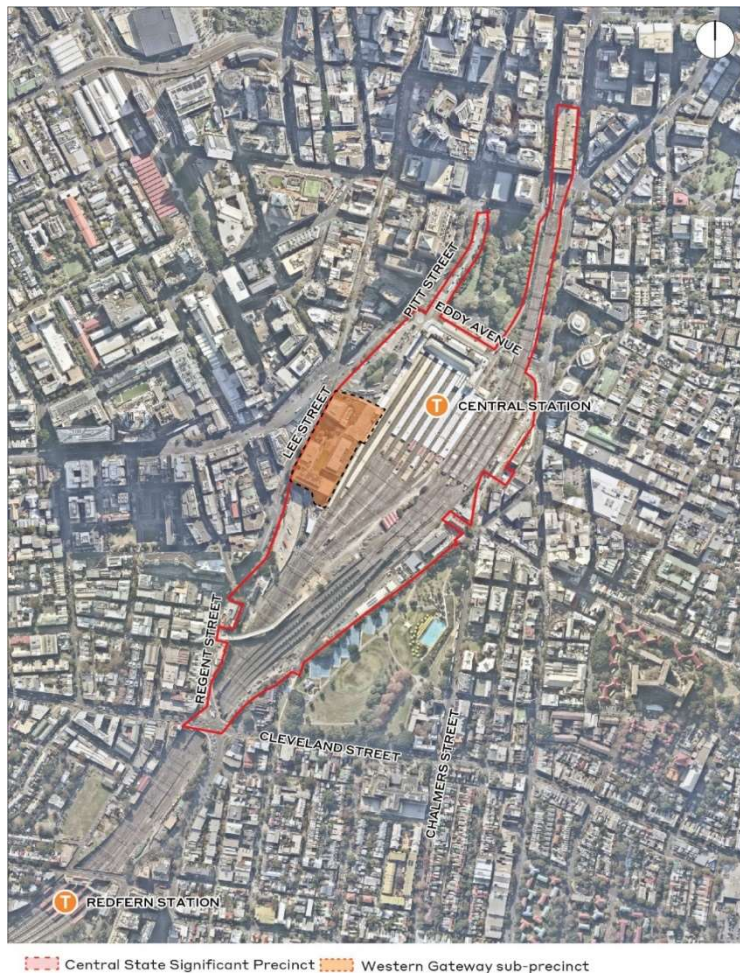


Figure 1 – Central Station SSP Boundary

The Western Gateway sub-precinct is made up of three landholdings as illustrated in Figure 2:

- Block A – land predominantly occupied by the YHA Hostel;
- Block B – the site subject of this report;
- Block C – land on which the Adina Hotel and Henry Deane Plaza are located.



Figure 2 – Western Gateway Landholdings

To facilitate redevelopment of the Western Gateway sub-precinct, the existing planning controls are required to be amended. This report supports a submission to the Secretary of the Department of Planning, Industry and Environment ('the DPIE') which seeks to amend the height and density controls within the *Sydney Local Environmental Plan 2012* (Sydney LEP 2012).

Arup Australia Projects Pty Ltd ("Arup") has been engaged by the Consortium to prepare Engineering Reports in support of the proposed planning control amendments as they relate to Block B, see Figure 3.



Figure 3 – Aerial View of Western Gateway Sub-Precinct (Block B outlined in white)

This Stormwater Management Assessment and Concept Plan summarises the proposed stormwater management strategies to be implemented as part of the development. The stormwater assessment considers the entire Western Gateway Sub-Precinct (Blocks A, B and C) as shown in Figure 2.

The following stormwater requirements have been evaluated as part of this report:

- Flooding;
- Stormwater detention;
- Trunk drainage; and
- Water Sensitive Urban Design (WSUD).

This report should be read in conjunction with the other appended technical reports that have been prepared for Block B and Western Gateway sub-precinct.

1.1 Context of Proposed Modifications

The request to amend the planning controls follows the Minister for Planning and Public Spaces recent declaration the Central Station Precinct has been identified as a State Significant Precinct (SSP). The Western Gateway, located within the Central Precinct SSP, is earmarked as a sub-precinct within the proposed SSP boundary for early consideration for rezoning.

Transport for New South Wales (TfNSW) is developing a vision for the growth and development of this precinct and is preparing a Strategic Framework to guide future detailed planning in this area. The Strategic Framework will be placed on exhibition for public comment concurrently with the stage one rezoning of the Western Gateway.

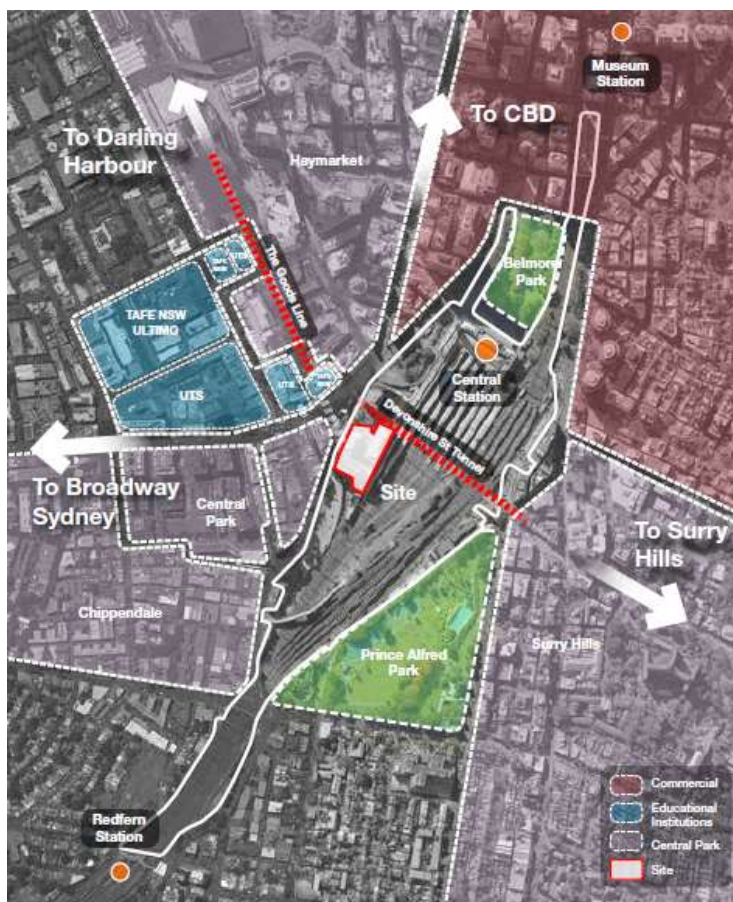


Figure 4 – Site Context

This report relates to the Western Gateway sub-precinct, and has been prepared in support of the proposed planning control amendments as they relate to Block B. These proposed amendments to the Sydney LEP 2012 align with State, regional and local strategic planning objectives and initiatives.

The Consortium intends to develop up to 155,000m² of commercial and retail GFA within a podium, two towers, lower and upper ground plane over a three level basement. The Project comprises:

- Two commercial towers comprising 46,000m² and 42,000m² located above the podium with floorplates of approx. 1,850 m² and 2,000m² GFA;
- 61,500m² of commercial office space located within the podium which provide flexibility and campus style / large floorplates approx. 6,200m² GFA,
- A retail offering of approx. 5,500m² accessible from lower and upper ground levels, including food and beverage catering to station, visitors and Western Gateway commercial occupants providing an activated frontage and interface to Henry Deane Plaza. This includes an activated Lee Street frontage and lobby located at upper ground level, providing access to the commercial office podium levels and towers above.
- Three levels of basement car parking to accommodate:
 - 48 service vehicle and loading dock parking and distribution area within an Integrated Distribution Facility (IDF)
 - Service vehicle, loading dock and distribution area for all stakeholders within the Western Gateway;
 - Provision for emergency, maintenance and service vehicle parking and distribution area for future Central Over Station Development (OSD within the IDF);
 - 121 parking spaces for Block B occupants;
 - Provision for Block A and C vehicle access via the Block B;
 - Bicycle parking and end of trip facilities for staff;
 - Bicycle parking spaces for customers/visitors;
- Podium and tower rooftops designed for passive activation and gatherings for occupants of the Project to utilise and appreciate the views of the city and harbour;
- Redeveloped public space and stairs from Block B to future Central Precinct Over Station Development (OSD) providing an east-west pedestrian connection to and from the Western Gateway Sub-Precinct;
- Integration with a redeveloped Henry Deane Plaza to accommodate the increased pedestrian movement from existing and future pedestrian connections to various modes of transport;

To prepare Block B for future development, an increase in building height and floor space controls is sought. These proposed amendments to the Sydney LEP 2012 align with State, regional and local strategic planning objectives and initiatives.

This report should be read in conjunction with the Planning Statement prepared by MG Planning, and the other appended technical reports.

1.2 Background

The Site is situated in a primary transport interchange in central Sydney. Railway Square is located to the west of the site while the eastern boundary of the site is adjacent to the heritage listed Central Railway Station which was built in 1906. The rail terminal itself pre-dates the sandstone station building with records showing a railway terminus in this area in 1855.

Formerly a train and tram interchange in the early 1900's, Railway Square now contains a bus terminal and acts as a key hub for bus and rail commuters. Railway Square is not only traversed underneath by the extension of the Devonshire Street Tunnel, but also by a railway tunnel that runs underneath at the southern end of the square. The tunnel was part of the Metropolitan Goods line linking the main lines south from Central with Darling Harbour. This tunnel is the oldest railway tunnel in New South Wales and is now disused. The section of the rail line between the tunnel and the Powerhouse Museum is now a park and pedestrian pathway called The Goods Line.

An aerial image from 1943 shows the Parcel Post Office Building, the Goods Line and the western carriage shed on the site that is subject to the re-zoning application (refer Figure 5).

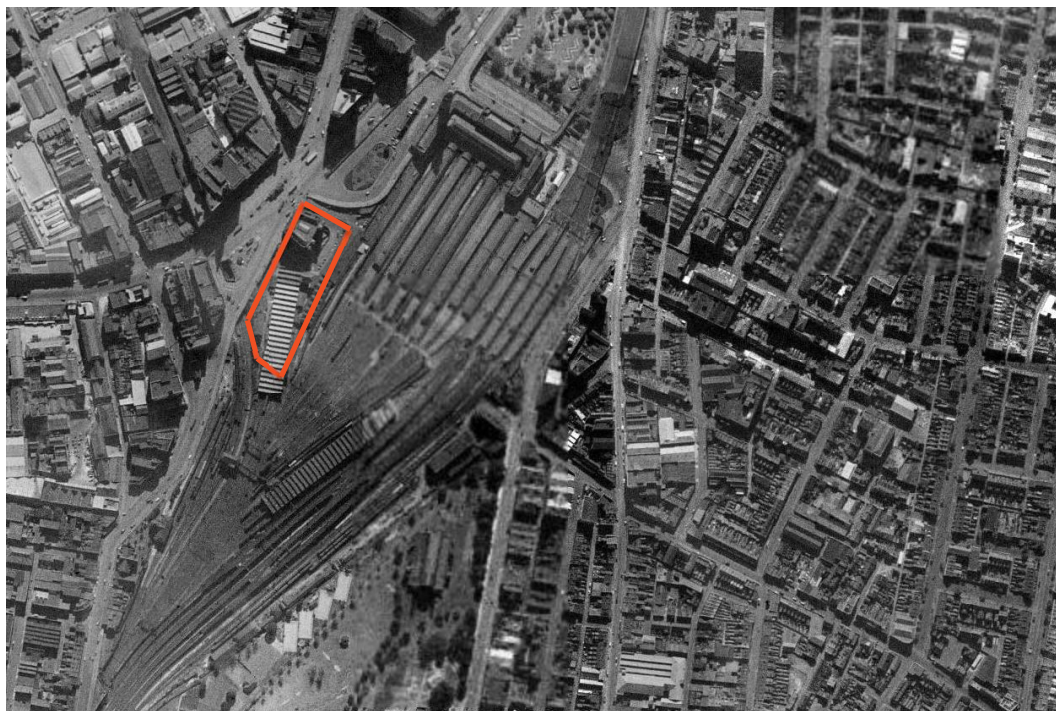


Figure 5 Aerial Image from 1943 (Source: <http://maps.six.nsw.gov.au>)

A masterplan was undertaken in the late 1990's to re-zone the area, creating Railway Square, Henry Deane Park and the bus layover south of the site.

1.3 Site Description

The Consortium's Proposal relates to land located at 14-30 Lee Street, Haymarket as illustrated in Figure 6. Identified as Block B within the proposed Western Gateway sub-precinct the site is legally described as Lots 12, 14 and 15 in DP 1062447. Legal descriptions of each parcel within Block B are detailed below.

Title Details	Legal Description
Lot 12 in DP 1062447	The proprietor of the fee simple is Rail Corporation of New South Wales. The proprietor of the leasehold estate of the land and the buildings on the land created by lease AA651830 expiring on 30 June 2099 is Dexu CP Pty Ltd A.C.N. 160 685 156.
Lot 14 in DP 1062247	The proprietor of the fee simple is Rail Corporation of New South Wales. The proprietor of the leasehold estate of the land and the buildings on the land created by lease AA651832 expiring on 30 November 2100 is Henry Deane Building Nominees Pty Ltd A.C.N. 081 941 951
Lot 15 in DP 1062447	The proprietor of the fee simple is Rail Corporation of New South Wales. The proprietor of the leasehold estate of the land and the buildings on the land created by lease AA651833 expiring on 31 March 2101 is Gateway Building Nominees Pty Ltd A.C.N. 081 951 822.

The buildings within Block B are multi-storey commercial buildings with associated public realm which were all commissioned in the early 2000's. The Adina Hotel sits inside the façade of the Parcel Post Office which was constructed in 1912 to serve the railway station. Figure 6 shows a current aerial image of the site and the surrounding area.

A mixture of hard and soft landscaping is provided in-between the Adina Hotel (Block C) and Sydney Railway Square Youth Hostel (Block A) and in-between SRA House and Henry Deane Building. Henry Deane Plaza (located on the lower datum) is centrally located within the Western Gateway and primarily funnels pedestrians between Devonshire Street tunnel, accessed from the Site's eastern boundary, and Lee Street tunnel, Railway Square, and tertiary institutions to the west.

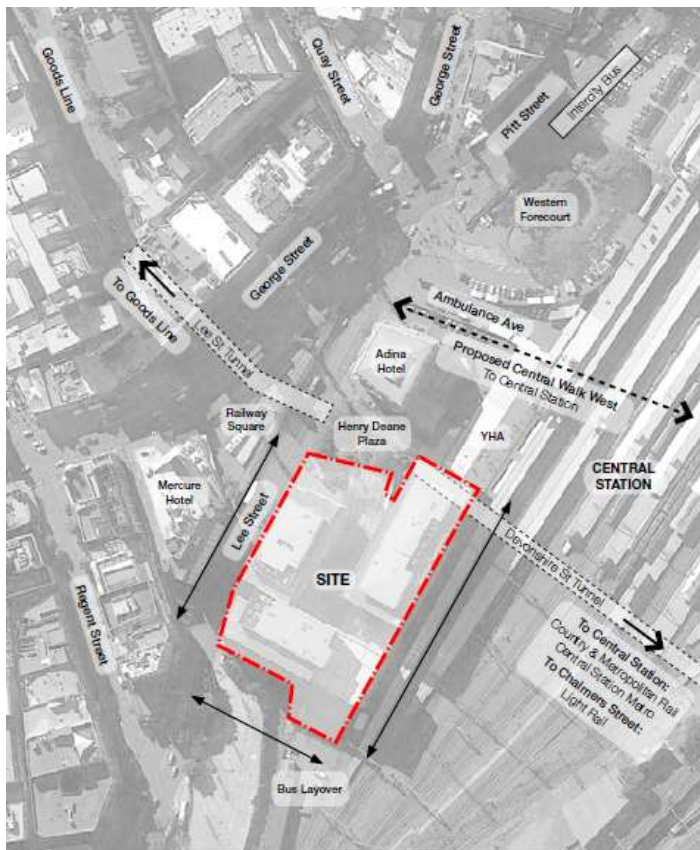


Figure 6 Aerial Image of Existing Site (Block B outlined in red)

Central Station lies immediately to the east of the site with the Goods Line running under Gateway House. Ambulance Avenue and the Central Station Western Forecourt are located north of the site.

The Devonshire Street Tunnel runs under the ground to the east of the site and links Devonshire Street with Lee Street. This 300m long pedestrian tunnel begins at a head house descending from Chalmers Street to a vestibule from which both Central station and the tunnel can be accessed. The tunnel continues west from the vestibule under the tracks and platforms of the station, and opens onto Henry Deane Plaza, a sunken urban square in-between Henry Deane Building and the Adina Hotel.

2 Relevant Stormwater Management Legislation

2.1 Sydney Local Environment Plan 2012

The Sydney Local Environment Plan 2012 (LEP) is the City of Sydney's principal planning document that applies to the development site. The LEP includes the following requirements related to flood planning.

7.15 Flood planning

(1) The objectives of this clause are as follows:

- (a) to minimise the flood risk to life and property associated with the use of land,
- (b) to allow development on land that is compatible with the land's flood hazard, taking into consideration projected changes as a result of climate change,
- (c) to avoid significant adverse impacts on flood behaviour and the environment.

(2) This clause applies to land at or below the flood planning level.

(3) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that the development:

- (a) is compatible with the flood hazard of the land, and
- (b) is not likely to significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and
- (c) incorporates appropriate measures to manage risk to life from flood, and
- (d) is not likely to significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses, and
- (e) is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding.

(4) A word or expression used in this clause has the same meaning as it has in the NSW Government's *Floodplain Development Manual* (ISBN 0 7347 5476 0) published in 2005, unless it is otherwise defined in this clause.

(5) In this clause:

flood planning level means the level of a 1:100 ARI (average recurrent interval) flood event plus 0.5 metres freeboard.

While this clause applied specifically to development application it has been taken into account in the development of this stormwater strategy.

2.2 EPA Act and NSW Floodplain Development Manual

Direction 4.3 of Section 117(2) in the EPA Act 1979, details the objectives and requirements with which developments in flood prone land must comply, making reference to the New South Wales Floodplain Development Manual (2005) (the FDM). The FDM outlines the NSW Government's Flood Prone Land Policy. The primary objective of this policy is to reduce the impact of flooding and flood liability on owners and occupiers of flood prone properties whilst recognising the benefits from the use, occupation and development of flood prone land.

2.3 Sydney Development Control Plan 2012

The Sydney Development Control Plan 2012 (DCP) applies to the development of the site. It includes controls related to flooding and stormwater management, in addition to other planning controls, that must be adhered to. Particular controls related to stormwater and flood management are included in Section 3.7 of the DCP.

Flooding

Section 3.7.1 includes a summary of controls related to flooding for development proposals. Where sites include land below the flood planning level, a site-specific flood study is required. Further direction on flood planning is provided in the Interim Floodplain Management Policy (2014) which is discussed in Section 2.4.

Drainage and Stormwater Management

Section 3.7.2 of the DCP includes controls in relation to managing stormwater within the site. This section requires that a local management plan is prepared for the development of the site as it is greater than 1,800m² in size. This plan will cover aspects such as hydrology, soil types, groundwater levels, any on-site detention or retention and re-use.

The design of site drainage is required to be such that stormwater flows up to the 5% AEP event are conveyed by a minor drainage system and flows in larger events are conveyed by the major network (clause 3.7.2 5) b)).

The following key controls will need to be considered as part of the final design:

8) Minor flows from a development site are not to be discharged to the kerb if direct connection to an existing stormwater pipe is available, unless it can be demonstrated there is sufficient capacity within the existing gutter and the flow velocity and depth within the gutter will remain below 400mm.

10) Connection to existing stormwater infrastructure are not to reduce the capacity of that infrastructure by more than 10%. The development proposal is to show the level of impact on the existing stormwater infrastructure as a result of the proposed new connection.

11) The post development run-off from impermeable surfaces (such as roofs, driveways and paved areas) is to be managed by stormwater source measures that:

- (a) contain frequent low-magnitude flows;*
- (b) maintain the natural balance between run-off and infiltration;*
- (c) remove some pollutants prior to discharge into receiving waters;*
- (d) prevent nuisance flows from affecting adjacent properties; and*
- (e) enable appropriate use of rainwater and stormwater.*

(12) Post-development stormwater volumes during an average rainfall year are to be:

- (a) 70% of the volume if no measures were applied to reduce stormwater volume; or*
- (b) the equivalent volume generated if the site were 50% pervious, whichever results in the greater volume of detention required.*

Stormwater Quality

Section 3.7.3 includes a summary of controls related to stormwater quality for development proposals. The following stormwater quality reduction targets apply to developments greater than 1,000m² in size:

- Reduce the baseline annual pollutant load for litter and vegetation larger than 5mm by 90%;
- Reduce the baseline annual pollutant load for total suspended solids by 85%;
- Reduce the baseline annual pollutant load for total phosphorus by 65%;
- Reduce the baseline annual pollutant load for total nitrogen by 45%.

This performance is to be confirmed in a site stormwater quality assessment including water quality modelling.

2.4 Interim Floodplain Management Policy

The City of Sydney Interim Floodplain Management Policy (2014) provides controls related to flood risk in the City of Sydney LGA. The Policy was written to be read in conjunction with the Sydney LEP 2012 and Sydney DCP 2012. Key floodplain management requirements related to the proposed development are summarised in Table 1.

Table 1 Flood Planning Level Requirements

Development	Flood Planning Level
Industrial or commercial, business subject to mainstream or local drainage flooding	Merits approach with a minimum of the 1% AEP flood level
Industrial or commercial, retail floor levels subject to mainstream or local drainage flooding	Merits approach with a minimum of the 1% AEP flood level. Must demonstrate a reasonable balance between flood protection and urban design outcomes for street level activation.
Below-ground car park outside floodplain*	0.3 m above the surrounding surface
Below-ground car park subject to mainstream or local drainage flooding	1% AEP flood level + 0.5 m or the PMF (whichever is the higher)

* The criteria for below ground car park includes any intended use for spaces located below the surrounding surface levels e.g. car parking, retail, commercial uses etc.

2.5 Sydney Water On-Site Stormwater Detention Policy

The requirements for on-site detention (OSD) in the City of Sydney Local Government Area are outlined in the Sydney Water On-site Stormwater Detention Policy (2014). This policy states that, “the OSD system must be site-specific and offset the stormwater run-off due to the development”. It is a requirement that any OSD system store runoff up to the 100-year Average Recurrence Interval (1% AEP equivalent) and that runoff is discharged in a controlled manner that downstream stormwater assets can handle.

Some developments may be exempt from providing OSD based on their site area, location in the catchment or where an existing building is being refurbished and the existing drainage system is being maintained.

3 Existing Site Stormwater Management

3.1 Site Topography

A topographical survey of the Site and a section of Lee Street was completed by LTS Lockley Pty Ltd in April 2019. A copy of the survey information is contained within Appendix A.

Lee Street has a cambered carriageway with the 2No southbound lanes draining towards kerb inlet pits adjacent to the site. The 3No northbound lanes fall towards Railway Square. In this area Lee Street has a 1-2% longitudinal fall directing flows north towards the intersection with George Street and Pitt Street.

The majority of the Block B site is currently occupied by the 3No buildings with pedestrian areas to the north linking with Henry Deane Plaza and the Devonshire Street Tunnel.

Vehicle access to the southern portion of the site is via an access road from Lee Street to the south of Gateway House at 19.0mAHD. From Lee Street this access road rises at approximately 10% to suit the bridge which spans over The Goods Line. Beyond the bridge the road continues providing access into the ground floor and basement level of Gateway House and the recently completed substation to the south of the site.

Access to the Adina Hotel (Block C) and Sydney Railway Square Youth Hostel (Block A) is via a separate access road from Lee Street to the north of the Adina Hotel. This access road also rises steeply from Lee Street. This access road turns to the south to run along the side of the Sydney Railway Square Youth Hostel and provides access to this building.

A boundary wall and metal fence separate the site from Central Station. Track levels adjacent to the site are approximately 1.5m above the level of the access road. The boundary wall has a small upstand of 300-400mm. North of the access road, the buildings form the eastern edge of the site boundary.

A central courtyard lies between the buildings in Block B and sits at 19.60mAHD. This 1050m² courtyard comprises of perimeter footways providing access to the building and the larger, central grassed area which occupies the majority of the space.

Henry Deane Plaza is located to the north of the central courtyard and connects Lee Street and the buildings with the Devonshire Street Tunnel and surrounding retail premises. A 15m – 20m wide area of public realm, at 19.5 – 20.0mAHD lies to the north of Henry Deane Building. A number of retail buildings sit underneath this public realm with the building structure delineating the southern boundary of Henry Deane Plaza some 4.0m below.

East of the retail buildings is an 8.0m wide set of steps providing pedestrian access from SRA House to Henry Deane Plaza.

The footway adjacent to the steps and Henry Deane Plaza itself contain a variety of street furniture including seating, bollards, a bus-stop and tree planters.

3.2 Existing Stormwater Infrastructure

Draining from the west of the site and through the northern end of the sub-precinct a 1500Ø stormwater culvert runs adjacent to the Devonshire Street Tunnel. This is the primary drain serving the southeast portion of the Darling Harbour catchment, east of Central Station. West of the Adina Hotel this drain reduces to a 1350Ø RC culvert that conveys flow northwest towards Darling Drive.

Surface collection of the pedestrian and plaza areas is primarily via linear grated drains at key locations such as the perimeter of the grassed courtyard, top and bottom of stairs and ramps.

The access road to the east of the bridge is drained by grated drains located at the building edge. These drain towards an existing 150Ø drain positioned within the footprint of Gateway House. This 150Ø drain flows adjacent to the eastern then northern façade of the building prior to discharging to the external system near the main entrance of Gateway House, which is located at the centre of the northern façade.

West of the bridge, a kerb inlet pit drains the carriageway upstream of the junction with Lee Street. In reference to the Sydney Water record drawing contained in Appendix B, this pit is assumed to connect into the 300Ø concrete pipe that runs north under Little Regent Street.

No other kerb inlet pits were identified on Lee Street adjacent to the site. Surface water flows are directed north to kerb inlet pits at Railway Square which are shown to connect into the existing stormwater and sewer culverts near the junction of Lee Street and George Street.

Information detailing the existing drainage layout on the site is limited and it is recommended that investigations are undertaken as part of future design stages to confirm the existing drainage arrangement and its condition.

Outside Block B limited information has been provided on the existing stormwater drainage in Blocks A and C. Drainage serving these blocks are private and are not included on Sydney Water or City of Sydney Council drawings. It is anticipated that Blocks A and C discharge to the 1500Ø stormwater culvert or to the 300ØVC pipe under Lee Street however investigations are required to confirm the configuration of the existing stormwater networks.

Construction drawings from 2008 show two number subterranean detention tanks present to the north of Block A. These tanks are 35 x 3.0 x 3.25m high and 48 x 16 x 2.0m high respectively and are understood to serve Central Station.

It is understood that these detention tanks were to be renovated as part of the works currently being constructed at Central Station. Records drawings of the completed upgrade works should be obtained to understand the exact location and function of these tanks and any potential impact to Block A.

3.3 Previous Flood Studies

A review of previous flood studies relevant to the site has been undertaken to gain an understanding of existing stormwater drainage and flooding behaviour. The following studies were identified as being relevant to the site:

- City of Sydney Darling Harbour Catchment Flood Study (BMT WBM, 2014)
- City of Sydney Darling Harbour Catchment Floodplain Risk Management Study (WMA Water, 2016)
- Central Precinct Renewal Project, Stormwater Drainage Desktop Study (GHD, 2018)

A summary of information relevant to the development site from each of these reports is included in the following sections.

3.3.1 City of Sydney Darling Harbour Catchment Flood Study (BMT WBM, 2014)

The City of Sydney engaged BMT WBM to prepare the Darling Harbour Catchment Flood Study which was completed and adopted in 2014. The development site is located within the study area. As part of this flood study a TUFLOW direct-rainfall hydrological and hydraulic flood model was developed for the catchment. Australian Rainfall and Runoff 1987 data was used for design storm simulations in this study.

The flood model incorporated the subsurface drainage network from the City of Sydney GIS database. An extract of the map of the subsurface pit and pipe network incorporated in the model is shown in Figure 7. As can be seen, the trunk 1500Ø culvert parallel to the Devonshire Street Tunnel was included in the model. This drain subsequently drains from east to west immediately north of the study site. No local drainage infrastructure within the study site or Central Station was included in the flood model. The buildings at the study site were not identified as being subject to flooding in the flood study.

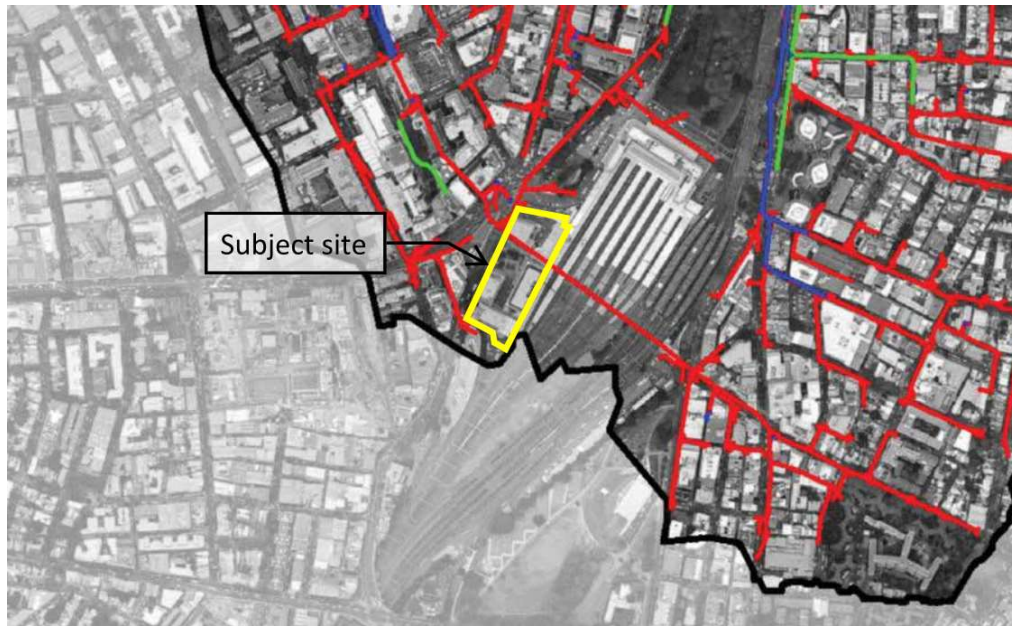


Figure 7 Darling Harbour catchment stormwater pit/pipe dataset (Darling Harbour Catchment Flood Study (BMT WBM, 2014))

Flood maps for the 5% AEP, 1% AEP and PMF design flood events are included in 8, 9 and 10 respectively. These maps show some localised shallow flooding between buildings at the subject site. This flooding is likely due to local site topography and private drainage not being included in the flood model. Localised flooding is also shown at Henry Deane Plaza and at Central Station near the subject site.

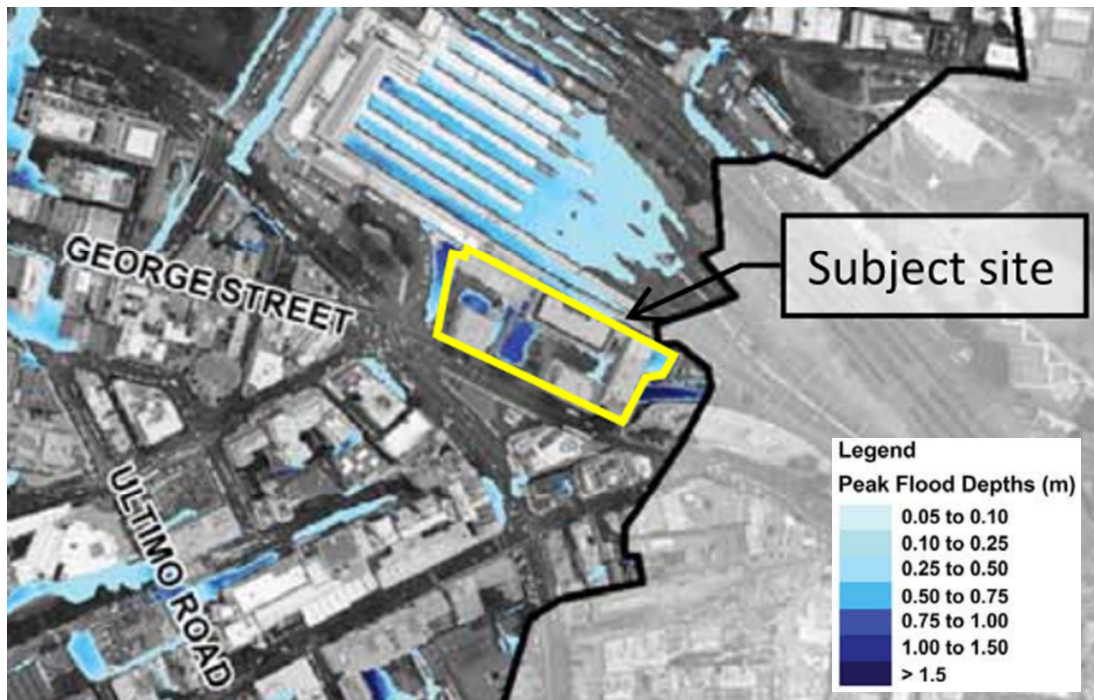


Figure 8 Peak flood depths for 5% AEP design flood event (Darling Harbour Catchment Flood Study, 2014)

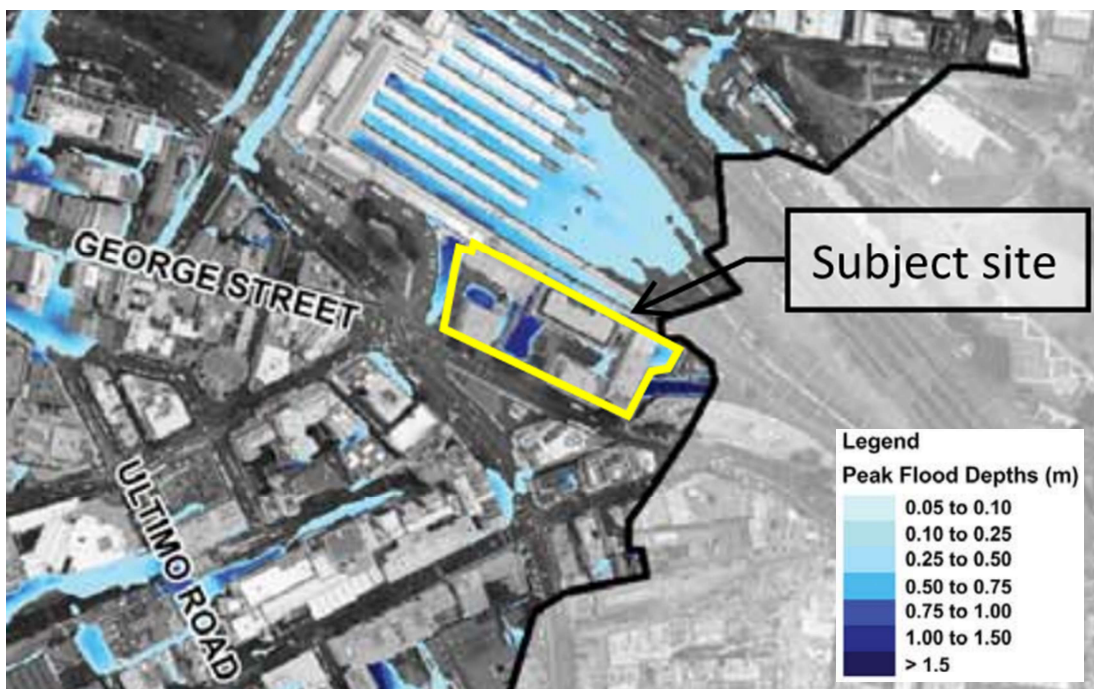


Figure 9 Peak flood depths for 1% AEP design flood event (Darling Harbour Catchment Flood Study, 2014)

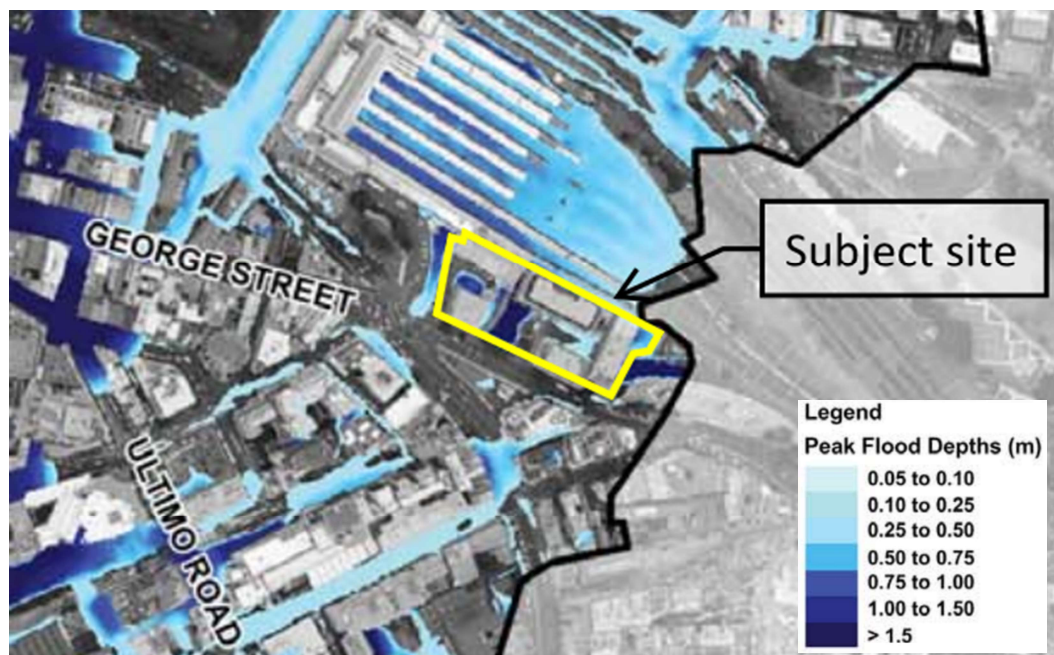


Figure 10 Peak flood depths for PMF design flood event (Darling Harbour Catchment Flood Study, 2014)

3.3.2 City of Sydney Darling Harbour Catchment Floodplain Risk Management Plan and Study (WMA Water, 2016)

Following on from the Darling Harbour Catchment Flood Study, the City of Sydney commissioned WMA Water to prepare a Floodplain Risk Management Plan and Study for the catchment. These included proposed upgrades and flood response measures to mitigate flood risk in the catchment. None of the infrastructure improvements proposed in the plan are sufficiently close to the proposed development site to have an impact on flood behaviour at the site.

As part of this study, a review of the flood model developed as part of the flood study was undertaken. Some minor modifications were made to the model to reflect changes within the catchment area and the collection of additional data.

Flood maps for the development site extracted from the study are included in 11 and 12 for the 1% AEP and PMF design flood events, respectively. These maps show shallow ponding in between buildings at the development site, likely due to the site subsurface drainage network not being incorporated in the flood model. Flooding is also shown adjacent to the eastern boundary of the site at Central Station, however this is also likely due to local drainage not being included in the model in this area.

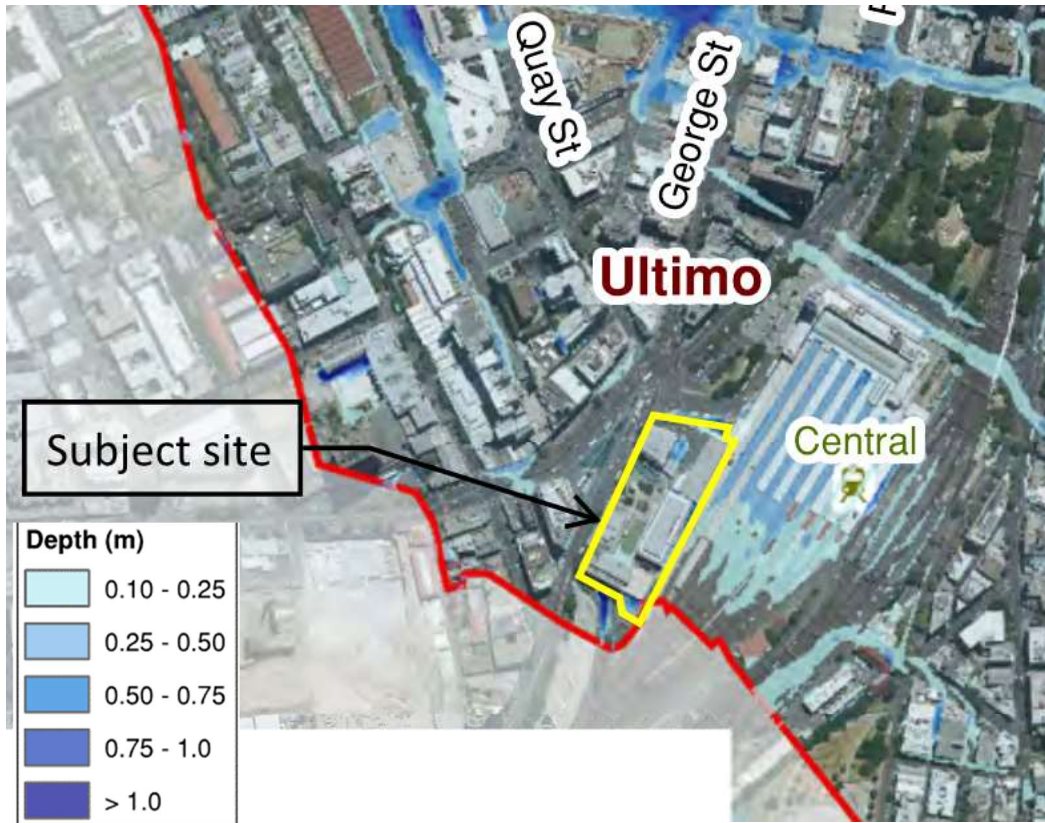


Figure 11 Peak flood depths for 1% AEP design flood event (Flood Risk Management Plan, 2016)

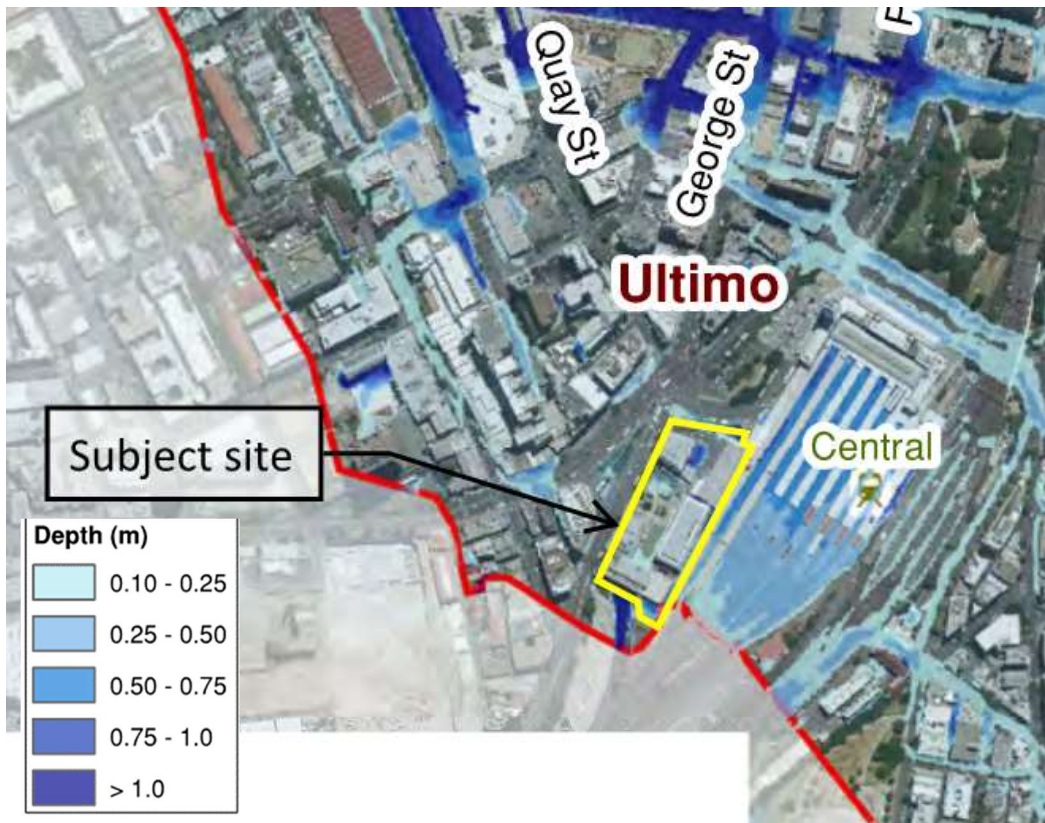


Figure 12 Peak flood depths for PMF flood event (Flood Risk Management Plan, 2016)

3.3.3 Central Precinct Renewal Project, Stormwater Drainage Desktop Study (GHD, 2018)

As part of an overall study associated with CPRP, GHD prepared a stormwater drainage desktop study on behalf of TfNSW. This study considered a wider, precinct redevelopment and included a section on flooding.

This report concluded that no on-site detention was required for areas within the Darling Harbour catchment.

A review of flood history revealed anecdotal evidence of flooding within parts of Central Station for rainfall intensities as low as the 5-year ARI. Formal records are limited to an event in 1949 where 9 inches of water was reported at the front of Central Station emanating from Surry Hills.

Preliminary modelling undertaken by GHD was developed in TUFLOW and assumed “blocking out” the sections of Central Station where development was proposed. This assumption means water would be unable to flow through or over any part of proposed buildings.

As this model was prepared for the wider CPRP and has made several assumptions it is considered that these models do not accurately reflect the existing or proposed scenarios at the development site. The adopted City of Sydney models are therefore, deemed to be more accurate and will form the basis of any future flood modelling developed in support of this redevelopment.

3.3.4 Impact of Re-Zoning

At present, the land occupied by Blocks A, B and C can be considered 100% impermeable with formal drainage systems provided to serve the existing buildings and hard landscaping present. As a result of re-zoning, the net catchment area would remain the same with minor differences between the proportion of the site that is occupied by building footprint.

From a flooding perspective, the proposal to amend building height and density controls would not have a material impact on the existing flood conditions on the site. Current flood mapping shows no major overland flow routes through the site and the re-zoning application would not impact this.

Ponding in-between existing buildings that is shown on current flood mapping may be removed by the proposed re-development depending on the configuration of the proposed building(s). Appropriate drainage measures will require to drain sunken areas of hardstanding near the Devonshire Street Tunnel.

During later stages, checks would be required to ensure that proposed buildings have floor levels compliant with the requirements described in the City of Sydney Interim Floodplain Management Policy (2014).

4 Post Development Concept Stormwater Management Plan

4.1 Flood Management

Floor levels of buildings within the development will be designed to have floor levels and basement car park entrances at levels that adhere to the City of Sydney interim flood policy. In particular:

- Building flood levels will be set above the 1% AEP flood level
- Below ground car park access points will be set above the 1% AEP flood level + 0.5m or the PMF (whichever is higher)

A site specific-flood study that incorporates local drainage at and nearby the development site is recommended to be undertaken as part of later design stages.

4.2 Site Drainage and Stormwater Quantity Management

Site drainage will connect to the existing Council and Sydney Water stormwater network. It is intended that this would be consistent with the existing site drainage and is likely to include connection points at Henry Deane Plaza and/or Lee Street. Further investigation is recommended during later design stages to confirm the location and size of existing stormwater connection points from the development site.

Initial advice from Sydney Water has indicated that on-site detention would not be required as part of the redevelopment of the Western Gateway sub-precinct. Correspondence with Sydney Water is included in Appendix C.

Further discussions with City of Sydney Council confirmed the following:

- Sydney Water would determine site specific OSD controls for the site
- Section 3.7.2 and 3.7.3 of DCP 2012 would however apply to this scale of development. These controls address storm water quantity and quality targets for development on a site of this site. It would be expected that a DRAINS model would assess site storm water management for both “minor” and “major” drainage systems. Any piped stormwater system from the site to connect into the Sydney Water culvert would need to convey the 5% AEP event and be a minimum 375mm RCP.
- Water quality assessment needs to use the “Sydney City Council Link” built in to the MUSIC model to achieve the required water quality targets.

4.3 Stormwater Quality Management

In order to meet City of Sydney water quality pollutant reduction targets, it is proposed that the development would include a combination of the following treatment methods:

- Rainwater collection and reuse
- Green roofs
- Gross pollutant traps including
- Cartridge filtration systems

These strategies would be considered in more detail as part of future design stages. A summary of these strategies and their associated benefits is included in Table 2.

Table 2 Summary of best practice WSUD devices

WSUD Technology	Description	Contribution to WSUD Strategies	Typical Images
Rainwater Harvesting	Roof water can be collected in above-ground or below-ground rainwater tanks for re-use.	Water conservation by reducing the demand for potable water. Reduction in stormwater runoff	 (Concept Design Guidelines for WSUD pp 63, Water by Design, 2009)
Gross Pollutant Traps	Many types of devices which can be located at point of entry to subsurface network or on-line in a pit or at a discharge point	Removal of visually obtrusive litter and depending on the device, some coarse sediment. Most suitable at locations that generate high levels of litter (e.g. commercial areas)	 (Rocla, http://www.rocla.com.au/CleansAll.php)
Filtration Systems	Stormwater filtration devices that can be installed in stormwater pits. Devices typically using cartridges to filter nutrients from stormwater runoff.	Removal of litter, oil, suspended solids and particulate-bound pollutants such as phosphorus and nitrogen	 (Stormwater360)

WSUD Technology	Description	Contribution to WSUD Strategies	Typical Images
Green Roofs	Multi-layered systems that cover the roof of a building with vegetation cover/landscaping over a drainage layer. Designed to intercept and retain precipitation, reducing the volume of runoff and attenuating peak flows.	Mimics greenfield state of building footprint for high density developments, good removal of pollutants	 (Chicago Ciy Hall, New York Times via Domain, http://www.domain.com.au/news/diy-rooftop-gardens-20120829-250aa/)

The final arrangement and design of these features would be determined at later design stages, with the performance of the proposed treatment train to be confirmed using MUSIC water quality modelling. Sydney City Council MUSIC-Link data would be incorporated in the model.

5 Summary

Arup has been engaged by the Consortium to prepare Engineering Reports in support of Planning Submission for Rezoning Application for their property at 14-30 Lee Street, Haymarket, otherwise known as Block B within the Western Gateway Sub-Precinct.

This stormwater management assessment and concept plan has been prepared for the Western Gateway Sub-Precinct which comprises Blocks A, B and C.

The Western Gateway Sub-Precinct is currently occupied by 5 buildings; Henry Deane Building, Gateway House, SRA House, Adina Hotel and YHA Hostel which all sit within the Darling Harbour catchment.

The Sydney Local Environment Plan 2012 (LEP) is the City of Sydney's principal planning document that applies to the development site. This sets out the requirements for flood planning at the development application stage.

The proposal to amend building height and density controls would not have a material impact on the existing flood conditions on the site. Existing flood mapping undertaken by the City of Sydney shows that existing flooding on the site is limited to localised shallow flooding between buildings. This flooding is likely due to local site topography and private drainage not being included in the flood model.

The adopted Council model would be used as the base-line for future flood modelling if required.

Existing buildings and hardstanding on the site are assumed to drain north and connect into the 1500Ø stormwater culvert that runs adjacent to the Devonshire Street Tunnel. This is the primary drain serving the southeast portion of the Darling Harbour catchment.

Initial advice from Sydney Water has indicated that on-site detention would not be required as part of the redevelopment of the Western Gateway Sub-Precinct.

Water quality assessment would require using the "Sydney City Council Link" built in to the MUSIC model to achieve the required water quality targets.

The proposed site drainage would utilise existing connections to the existing stormwater network; specifically, the 1500Ø stormwater culvert to the north of the site.

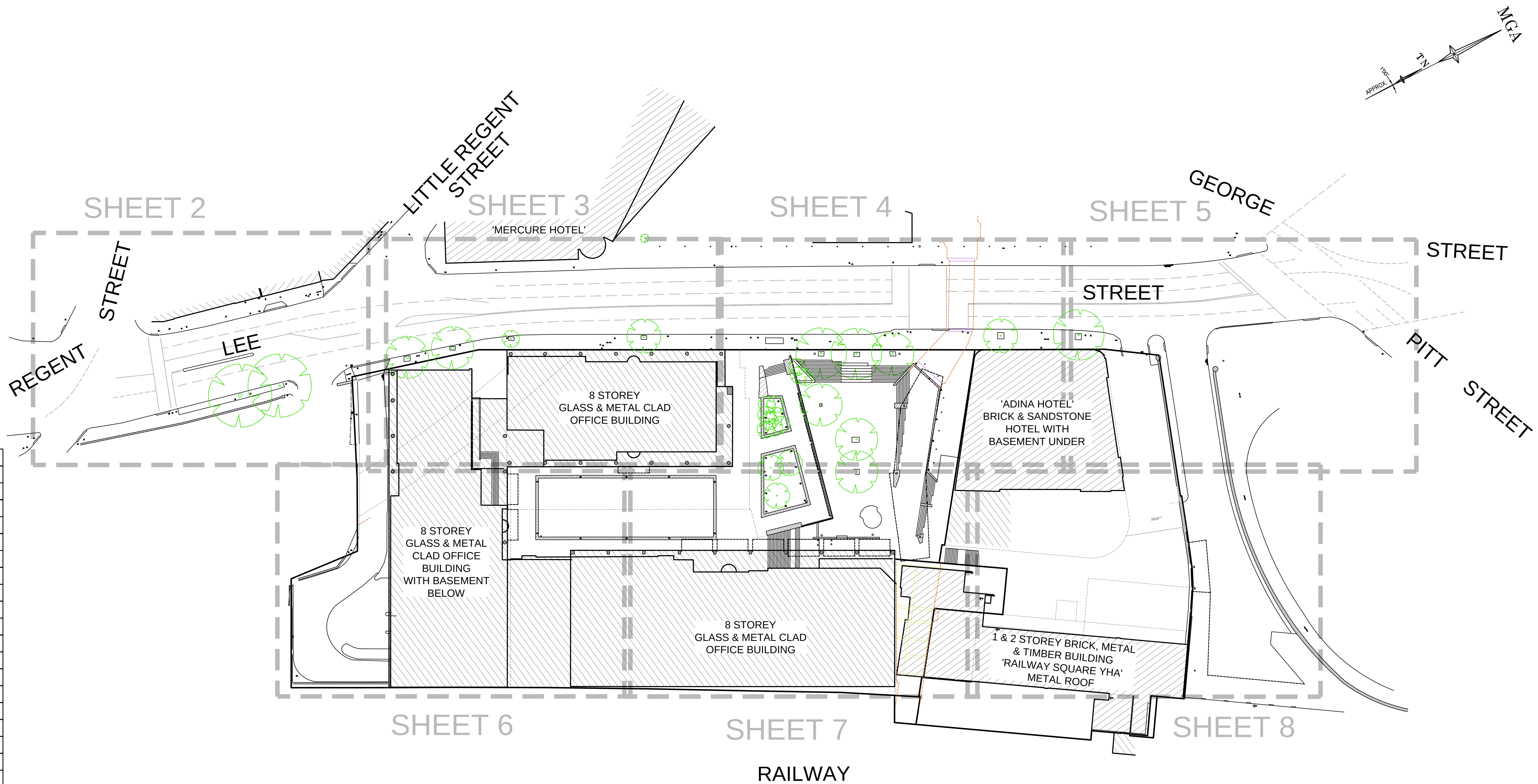
6 Recommendations

To support future stages of design the following works are recommended:

- Undertake site investigations to confirm the location and size of existing stormwater drainage and the connection points from the development site.
- Prepare a site specific-flood study that incorporates local drainage at and nearby the development site.
- Agree with City of Sydney Council Water Quality targets for this development.

Appendix A

Topographical Survey



LEGEND

BENCH MARK	▲
TELSTRA PIT	TEL
ELECTRIC LIGHT POLE	ELP
ELECTRIC LIGHT BOLLARD	LB
LIGHT POLE	LP
ELECTRICITY PIT	EPIT
ELECTRICITY BOX	EBOX
SERVICE PIT	LID
PIT WITH CONCRETE LID	CLID
PIT WITH METAL LID	MLID
TRAFFIC LIGHT	TL
STREET SIGN	SS
BOLLARD	BOL
UMBRELLA	UMB
ROADS & MARITIME SERVICES	RMS
GRATED INLET PIT	GIP
KERB INLET PIT	KIP
MANHOLE	MH
SEWER INSPECTION POINT	SIP
SEWER VENT	SVENT
SEWER MANHOLE	SMH
STOP VALVE	SV
HYDRANT	HYD
WATER METER	WM
WATER TAP	TAP
WATER VALVE	WV
GAS VALVE	GAS
VEHICLE CROSSING	(VC)
PRAM CROSSING	(PC)
WINDOW	W
DOOR	D
HEAD/SILL	H/S
COMMUNICATION (DBYD)	C
GAS (DBYD)	G
WATER (DBYD)	W
STORMWATER (DBYD)	SW
SEWER (DBYD)	S
ELECTRICITY (U'GROUND) (DBYD)	E

NOTES

1. THE BOUNDARIES HAVE NOT BEEN MARKED
2. ALL AREAS AND DIMENSIONS HAVE BEEN COMPILED FROM PLANS MADE AVAILABLE BY NSW LAND REGISTRY SERVICES AND ARE SUBJECT TO FINAL SURVEY. BOUNDARIES SHOWN ARE AT THE GROUND LEVEL OF THE SITE (APPROXIMATE RL 19.10)
3. ORIGIN OF LEVELS ON A.H.D. IS TAKEN FROM SSM 168140 R.L. 16.115 (A.H.D.) IN LEE STREET
4. CONTOUR INTERVAL 0.5 m
5. CONTOURS ARE INDICATIVE ONLY. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION
6. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION
7. KERB LEVELS ARE TO THE TOP OF KERB UNLESS SHOWN OTHERWISE
8. FLOOR LEVELS SHOWN ARE THRESHOLD LEVELS. NO INVESTIGATION OF INTERNAL FLOOR LEVELS HAS BEEN UNDERTAKEN
9. NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. SERVICES HAVE BEEN PLOTTED FROM RELEVANT AUTHORITIES INFORMATION AND HAVE NOT BEEN SURVEYED. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE
10. 8/4/7 DENOTES TREE SPREAD OF 8m, TRUNK DIAMETER OF 0.4m & APPROX HEIGHT OF 7m
11. BEARINGS SHOWN ARE MGA (MAP GRID OF AUSTRALIA) ADD APPROX. 1°00' FOR TRUE NORTH



REFER TO NOTES AND LEGEND



D	00/00/00	-	00
C	00/00/00	-	00
B	00/00/00	-	00
A	00/00/00	-	00
Revision	Date	Description	Reference

THIS IS THE PLAN REFERRED TO IN MY LETTER DATED:

.....

Registered Surveyor NSW

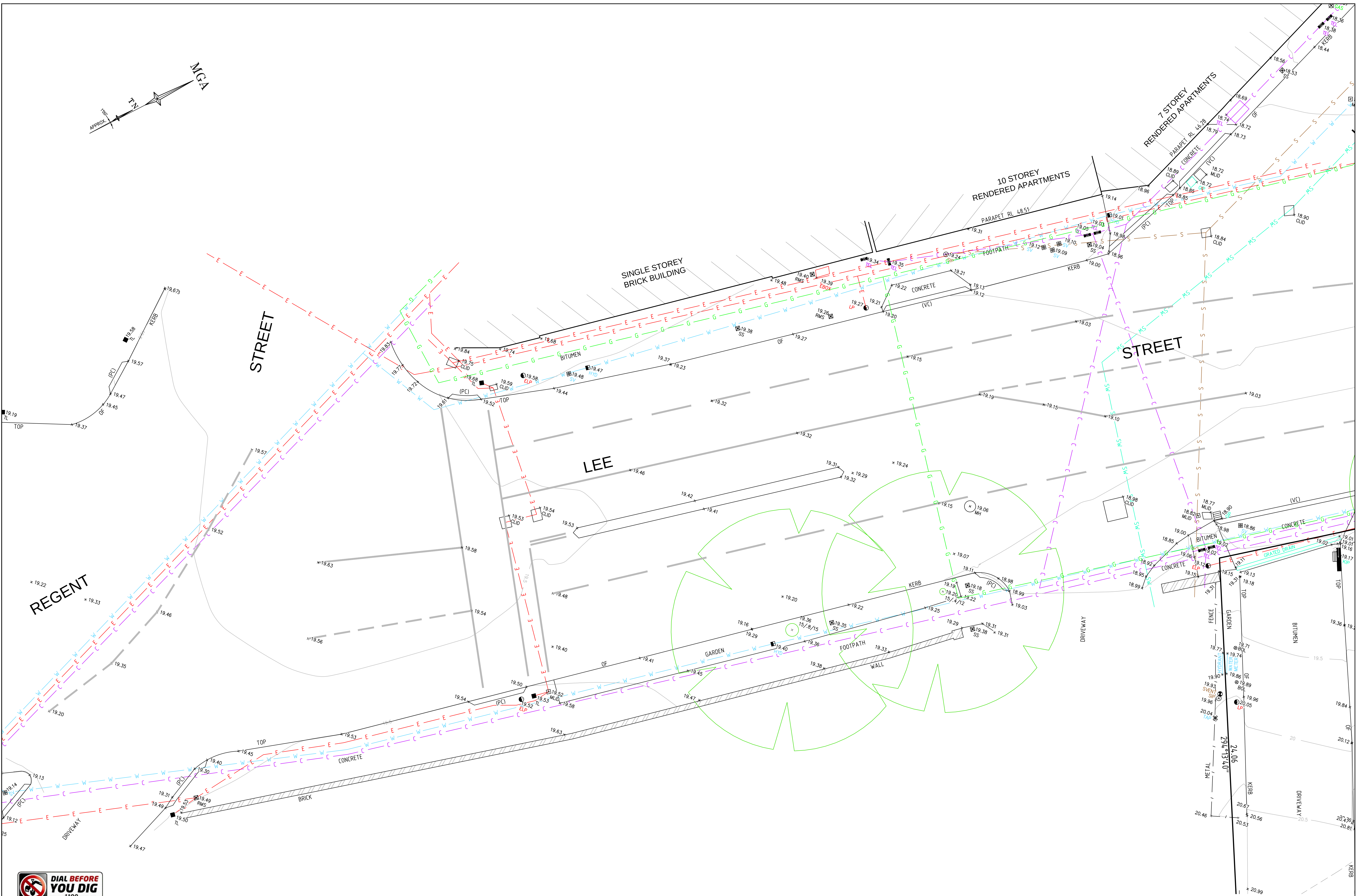


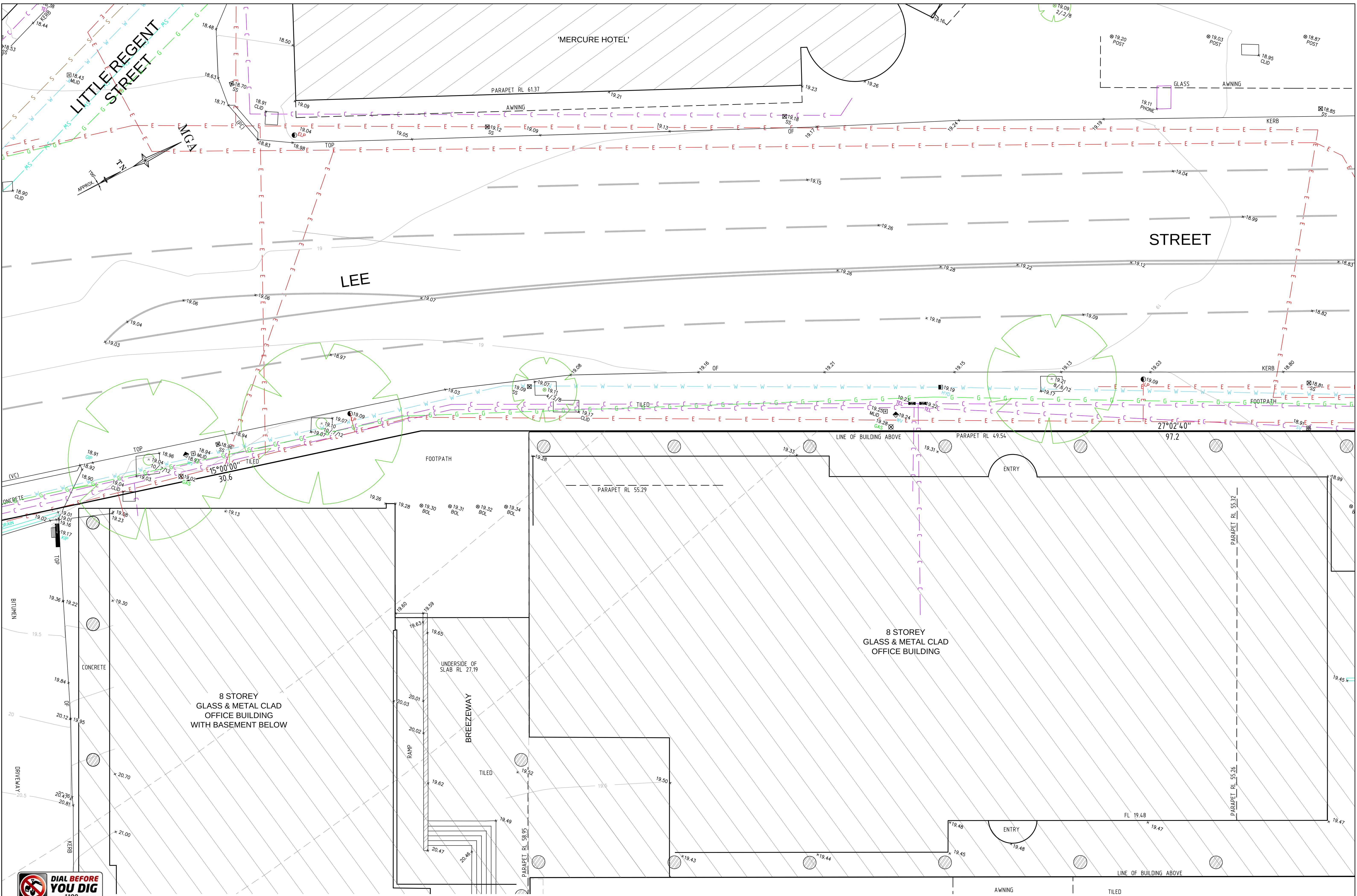
Suite 1, Level 1
810 Pacific Highway
Gordon NSW 2072
Locked Bag 5
Gordon NSW 2072
P 1300 587 000
F 02 9499 7760

Client FRASERS PROPERTY GROUP & DEXUS

Drawing title
PLAN OF DETAIL AND LEVELS OVER LOTS 13-15 IN
DP 1062447, No.12-14 & No.24-26 LEE STREET,
HAYMARKET

datum AHD	reference number	50367 004DT
site Area ----m ²	scale	1:500 @A1
LGA SYDNEY	date of survey	29/04/19
	SHEET OF 12	1





REFER TO NOTES AND LEGEND



SEE SHEET 1 FOR NOTES & LEGEND

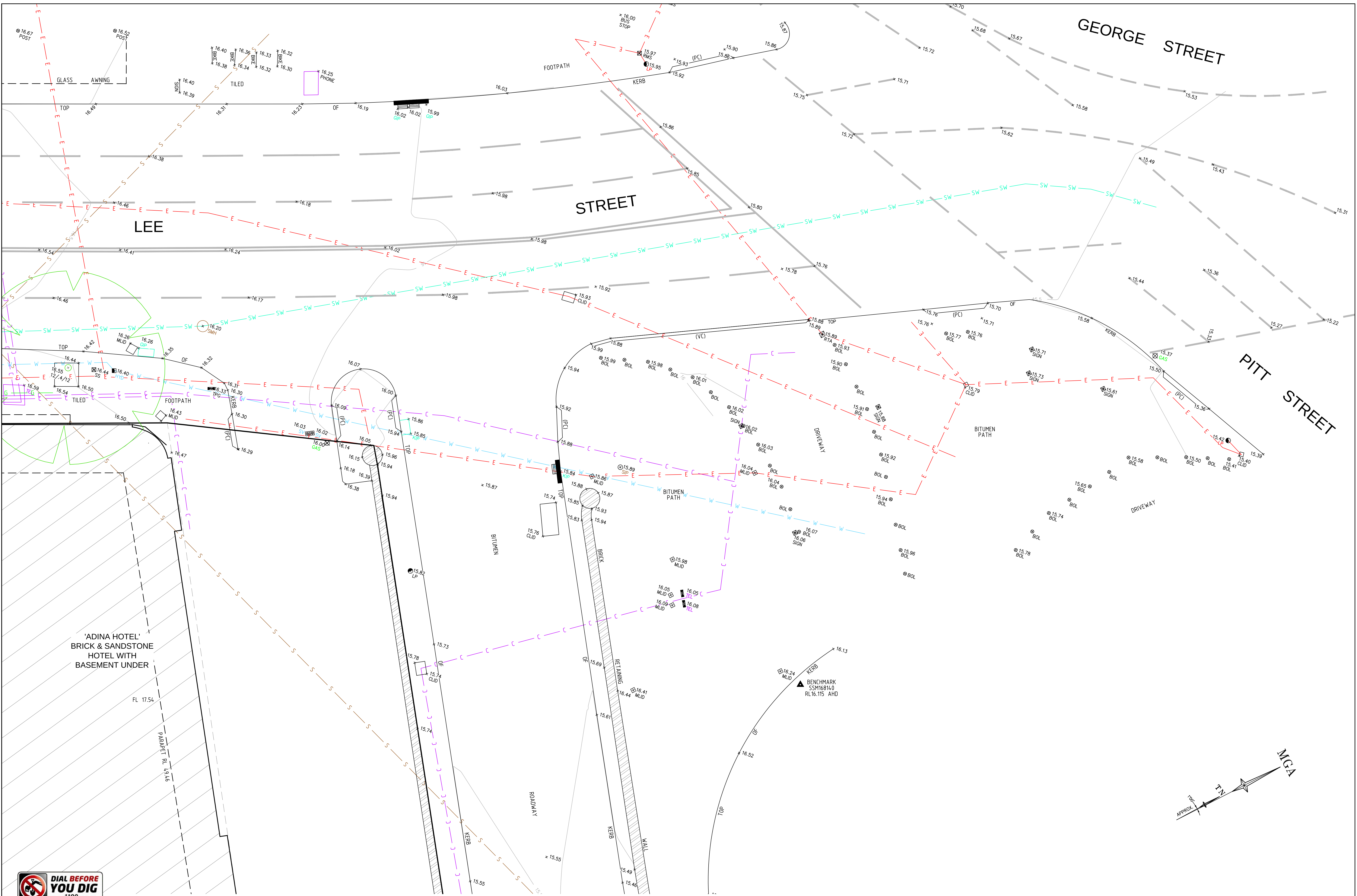
D	00/00/00	-	00
C	00/00/00	-	00
B	00/00/00	-	00
A	00/00/00	-	00
Revision	Date	Description	Reference

THIS IS THE PLAN REFERRED TO
IN MY LETTER DATED:
.....
Registered Surveyor NSW



Client FRASERS PROPERTY GROUP & DEXUS
Drawing title
PLAN OF DETAIL AND LEVELS OVER LOTS 13-15 IN
DP 1062447, No.12-14 & No.24-26 LEE STREET,
HAYMARKET

datum
AHD
site Area
-----m²
LGA
SYDNEY
reference
number
50367 004DT
scale
1:100 @A1
date of survey
29/04/19
SHEET
12
3



REFER TO NOTES AND LEGEND



SEE SHEET 1 FOR NOTES & LEGEND

D	00/00/00	-	00
C	00/00/00	-	00
B	00/00/00	-	00
A	00/00/00	-	00
Revision	Date	Description	Reference

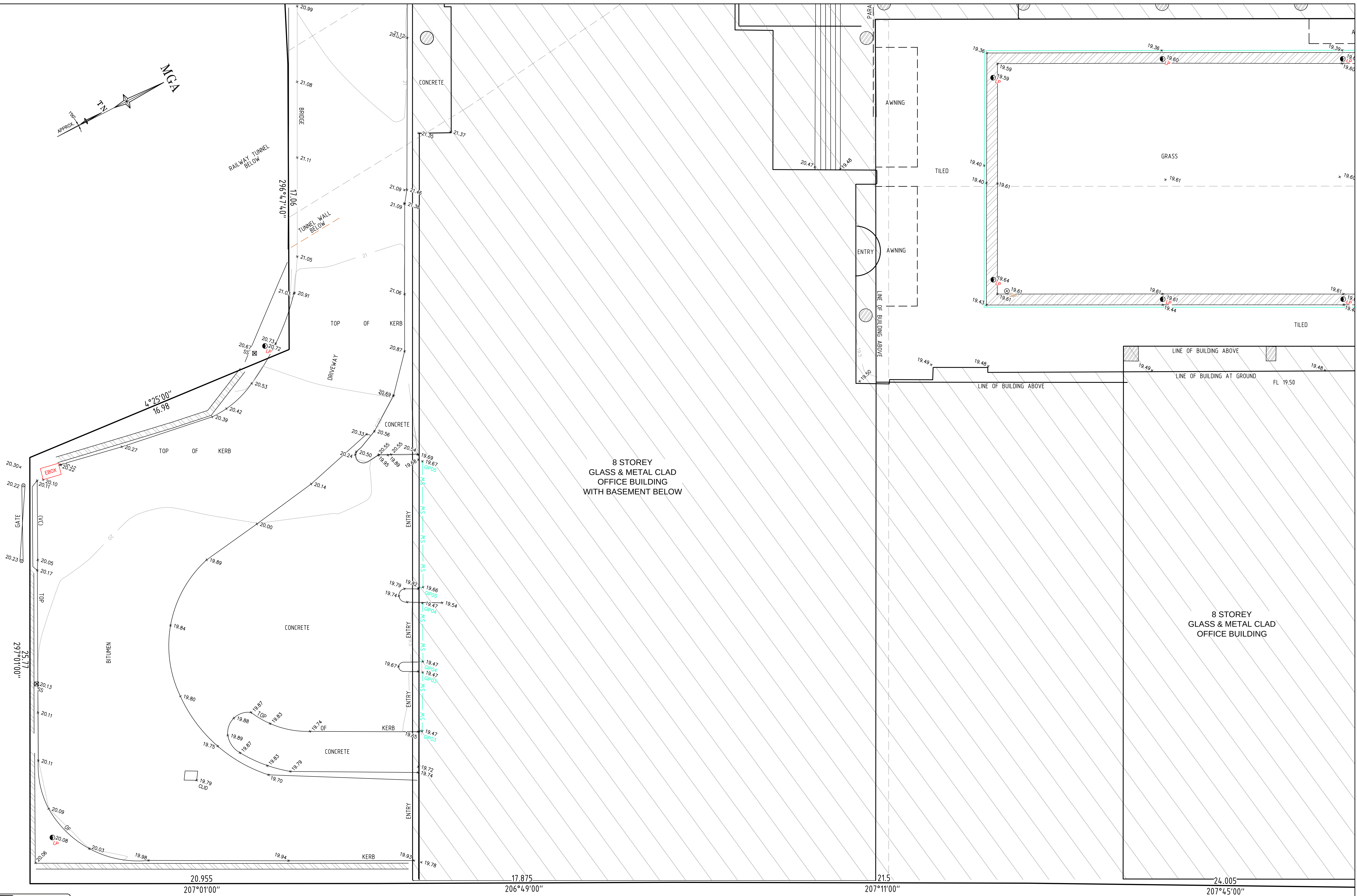
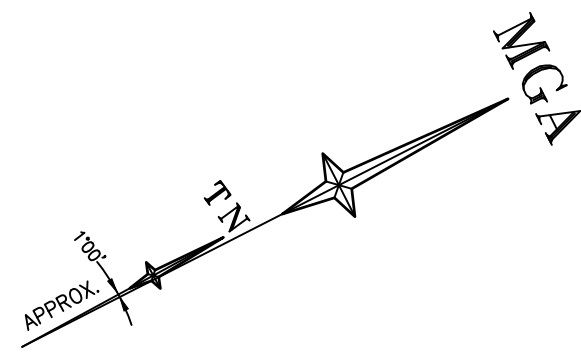
THIS IS THE PLAN REFERRED TO IN MY LETTER DATED:
Registered Surveyor NSW

LTS
LOCKLEY
Registered Surveyors NSW
www.ltsl.com.au

Suite 1, Level 1
810 Pacific Highway
Gordon NSW 2072
Locked Bag 5
Gordon NSW 2072
P 1300 587 000
F 02 9499 7760

Client **FRASERS PROPERTY GROUP & DEXUS**
Drawing title
PLAN OF DETAIL AND LEVELS OVER LOTS 13-15 IN DP 1062447, No.12-14 & No.24-26 LEE STREET, HAYMARKET

datum	AHD	reference number	50367 004DT
site Area	-----m ²	scale	1:100 @A1
LGA	SYDNEY	date of survey	29/04/19
OF	12	SHEET	5



REFER TO NOTES AND LEGEND



SEE SHEET 1 FOR NOTES & LEGEND

D	00/00/00	-	00
C	00/00/00	-	00
B	00/00/00	-	00
A	00/00/00	-	00
Revision	Date	Description	Reference

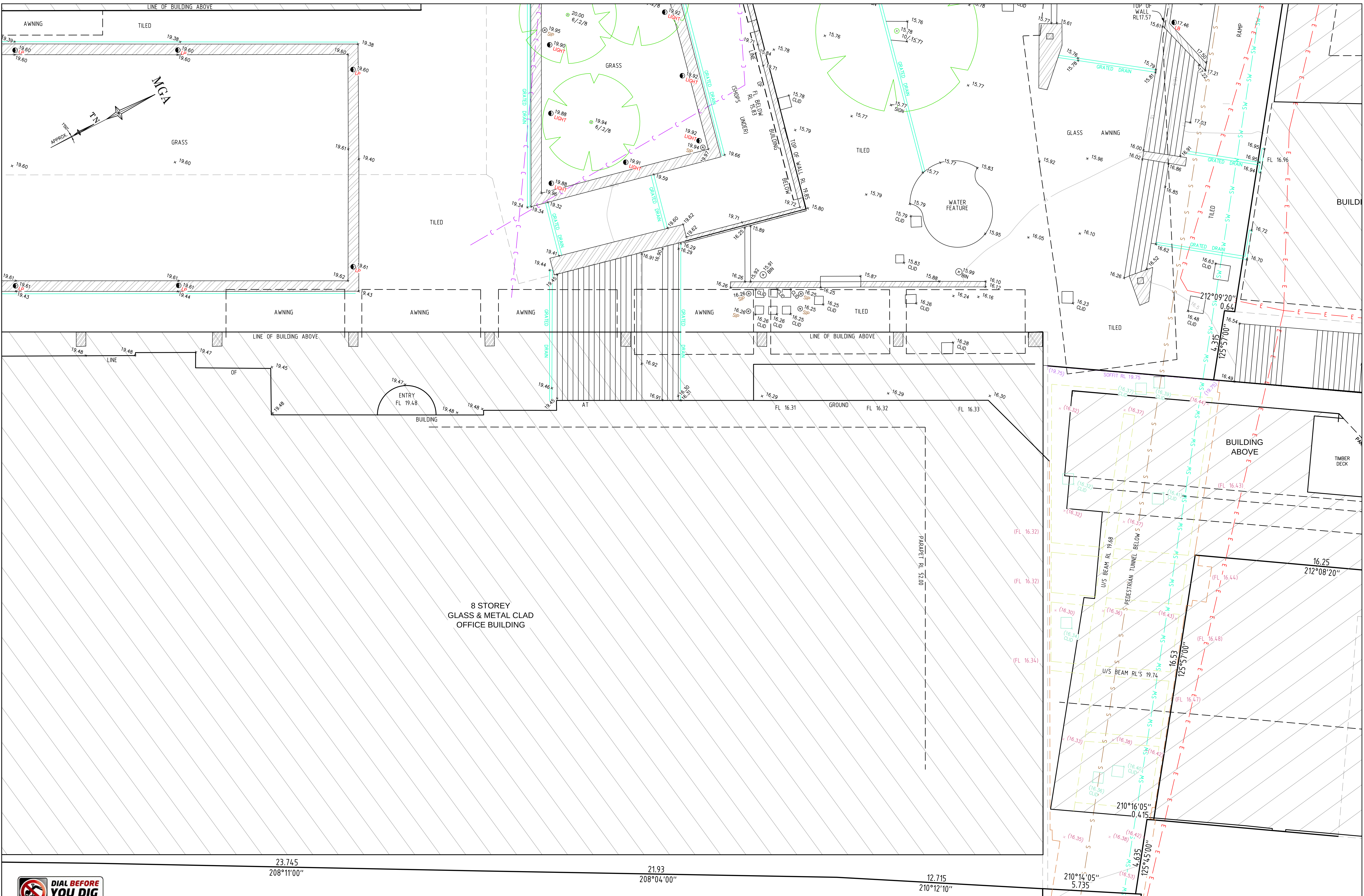
THIS IS THE PLAN REFERRED TO
IN MY LETTER DATED:
.....
Registered Surveyor NSW



Suite 1, Level 1
810 Pacific Highway
Gordon NSW 2072
Locked Bag 5
Gordon NSW 2072
P 1300 587 000
F 02 9499 7760

Client FRASERS PROPERTY GROUP & DEXUS
Drawing title
PLAN OF DETAIL AND LEVELS OVER LOTS 13-15 IN
DP 1062447, No.12-14 & No.24-26 LEE STREET,
HAYMARKET

datum AHD	reference number	50367 004DT
site Area -----m ²	scale	1:100 @A1
LGA SYDNEY	date of survey	29/04/19
	SHEET OF 12	6



REFER TO NOTES AND LEGEND



SEE SHEET 1 FOR NOTES & LEGEND

D	00/00/00	-		00
C	00/00/00	-		00
B	00/00/00	-		00
A	00/00/00	-		00
Revision	Date		Description	Reference

THIS IS THE PLAN REFERRED TO IN MY LETTER DATED:
.....
Registered Surveyor NSW

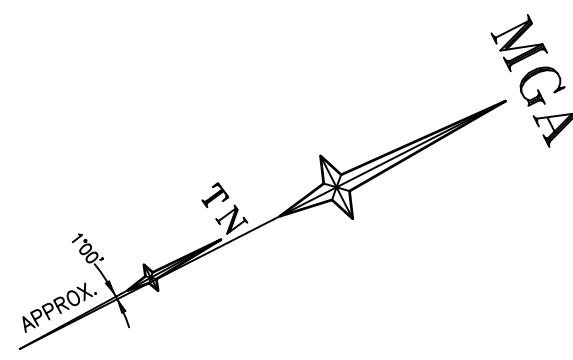


LOCKLEY
Registered Surveyors NSW
www.ltsl.com.au

Suite 1, Level 1
810 Pacific Highway
Gordon NSW 2072
Locked Bag 5
Gordon NSW 2072
P 1300 587 000
F 02 9499 7760

Client FRASERS PROPERTY GROUP & DEXUS
Drawing title
PLAN OF DETAIL AND LEVELS OVER LOTS 13-15 IN
DP 1062447, No.12-14 & No.24-26 LEE STREET,
HAYMARKET

datum AHD	reference number 50367 004DT
site Area -----m ²	scale 1:100 @A1
LGA SYDNEY	date of survey 29/04/19
	SHEET OF 12 7

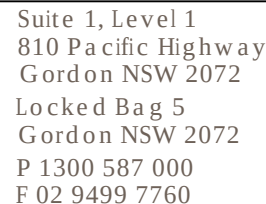


SEE SHEET 1 FOR NOTES & LEGEND

THIS IS THE PLAN REFERRED TO
IN MY LETTER DATED:

.....

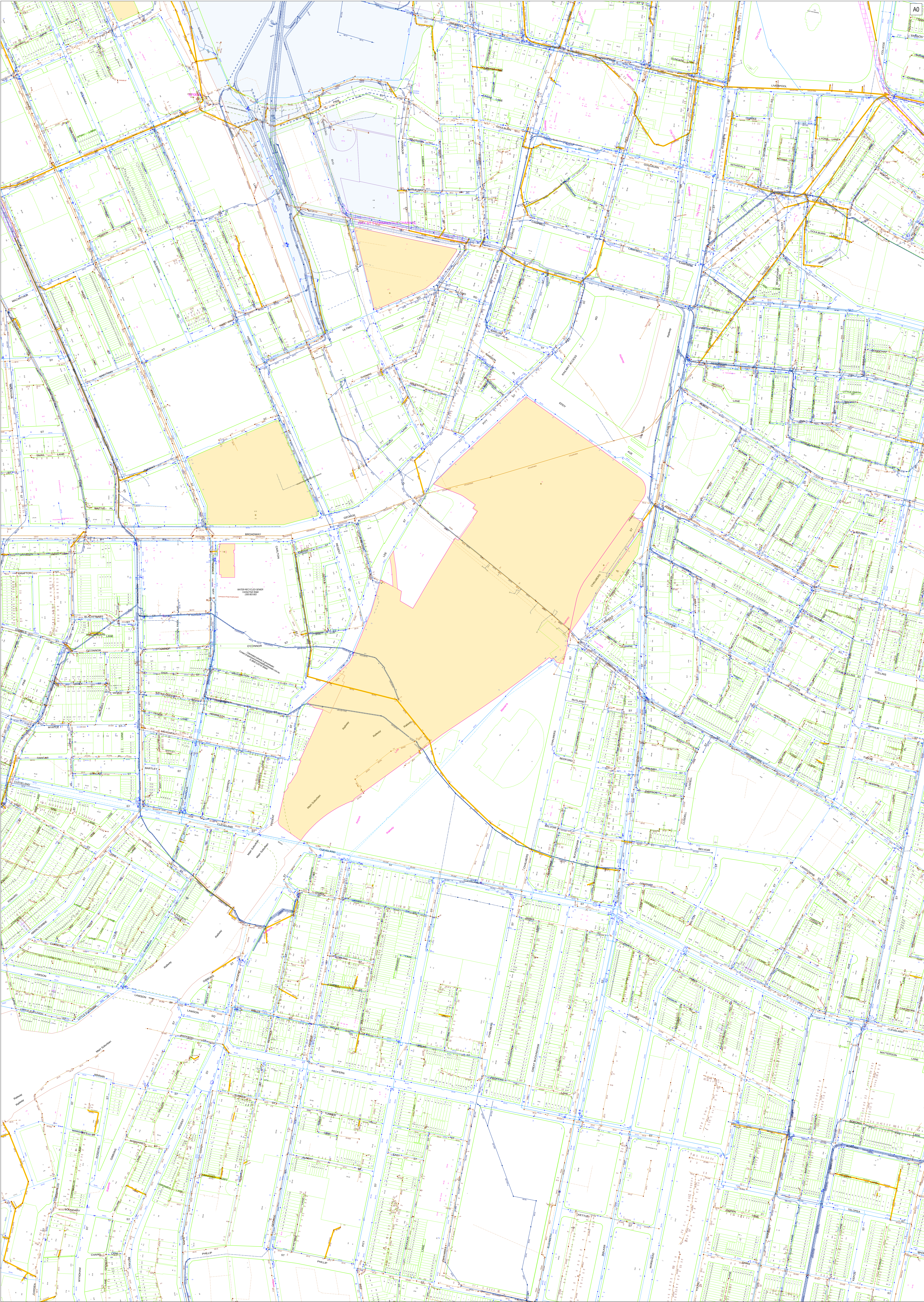
Registered Surveyor NSW



datum AHD	reference number	50367 004DT	
site Area ---m ²	scale	date of survey	
	1:100 @A1	29/04/19	
LGA SYDNEY		SHEET 12	8

Appendix B

Sydney Water Record Drawing



Appendix C

Correspondence with Sydney Water

Andrew Crouch

From: Stormwater <Stormwater@sydneywater.com.au>
Sent: Friday, August 16, 2019 12:01 PM
To: Andrew Crouch
Subject: [External] RE: OSD Requirement Enquiry - Lee Street, Haymarket

Andrew,

On Site Detention is not required for any development at 2 – 10 Lee Street, Haymarket including the site area marked in thick blue line as “revised overall study area” in the email dated 15 August 2019.

Best Regards



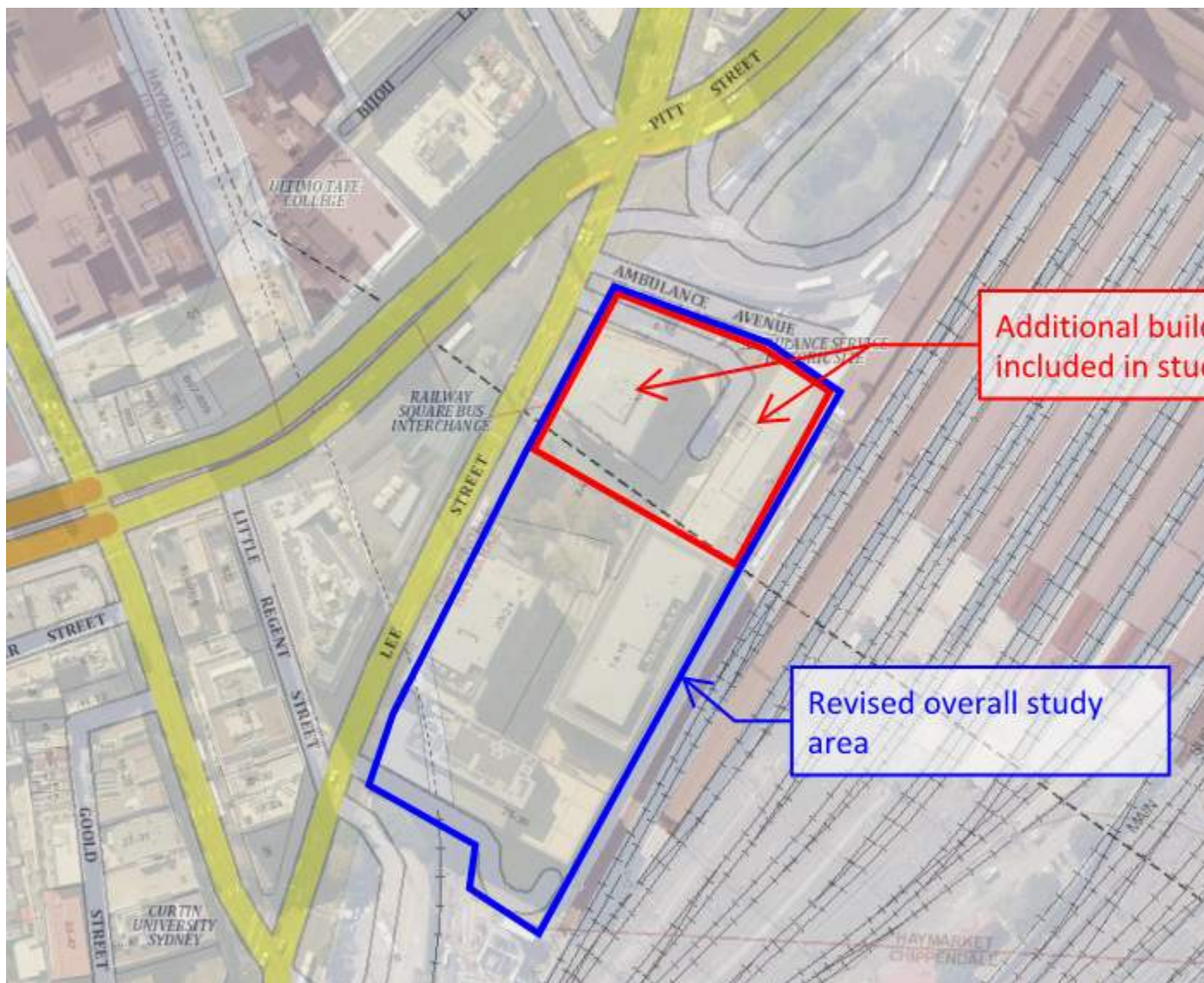
Jeya Jeyadevan | Senior Capability Assessor
Liveable City Solutions | Sydney Water
Level 7, 1 Smith St Parramatta NSW 2150
PO Box 399 Parramatta NSW 2124
T 8849 6118 | **Mobile** 0409 318 827 | **Email**
jeya.jeyadevan@sydneywater.com.au
sydneywater.com.au

From: Andrew Crouch <Andrew.Crouch@arup.com>
Sent: Thursday, 15 August 2019 9:19 AM
To: Stormwater <Stormwater@sydneywater.com.au>
Subject: RE: OSD Requirement Enquiry - Lee Street, Haymarket

Hi Duncan,

Following on from our earlier enquiry regarding a proposed redevelopment at Lee Street near Central Station, we have now been asked to expand our study area to also include the adjacent sites at 2 Lee Street and 8-10 Lee Street. Harry Deane Plaza is also included in the study area but is intended to be maintained as open space. The additional building locations as well as the revised overall study area is shown in the figure below.

We would like to confirm whether on-site detention would be required for the redevelopment of these buildings?



Regards

[Andrew Crouch](#)

Senior Civil Engineer | NSW & ACT Transport
BEng (Hons-1) CPEng NER MIEAust

Arup

Level 5, 151 Clarence Street Sydney NSW 2000 Australia
t: +61 2 9320 9320 d: +61 2 9320 9151
www.arup.com

From: Stormwater <Stormwater@sydneywater.com.au>
Sent: Monday, June 24, 2019 9:33 AM
To: Andrew Crouch <Andrew.Crouch@arup.com>
Subject: [External] RE: OSD Requirement Enquiry - Lee Street, Haymarket

Hi Andrew,

Our records and plans indicate that Sydney Water does not require the installation of an OSD for this site.

However I would check with council around their requirements given that you will need to connect to their local stormwater system.

Cheers

Duncan

Duncan Laurie | Team Manager, Planning & Technical

Development Services, City Growth & Development | Sydney Water

1 Smith Street Parramatta

Mobile 0408 659 807

E duncan.laurie@sydneywater.com.au | sydneywater.com.au



There is no task so urgent and no service so important that we cannot take time to do it safely

From: Andrew Crouch <Andrew.Crouch@arup.com>

Sent: Friday, 21 June 2019 9:46 AM

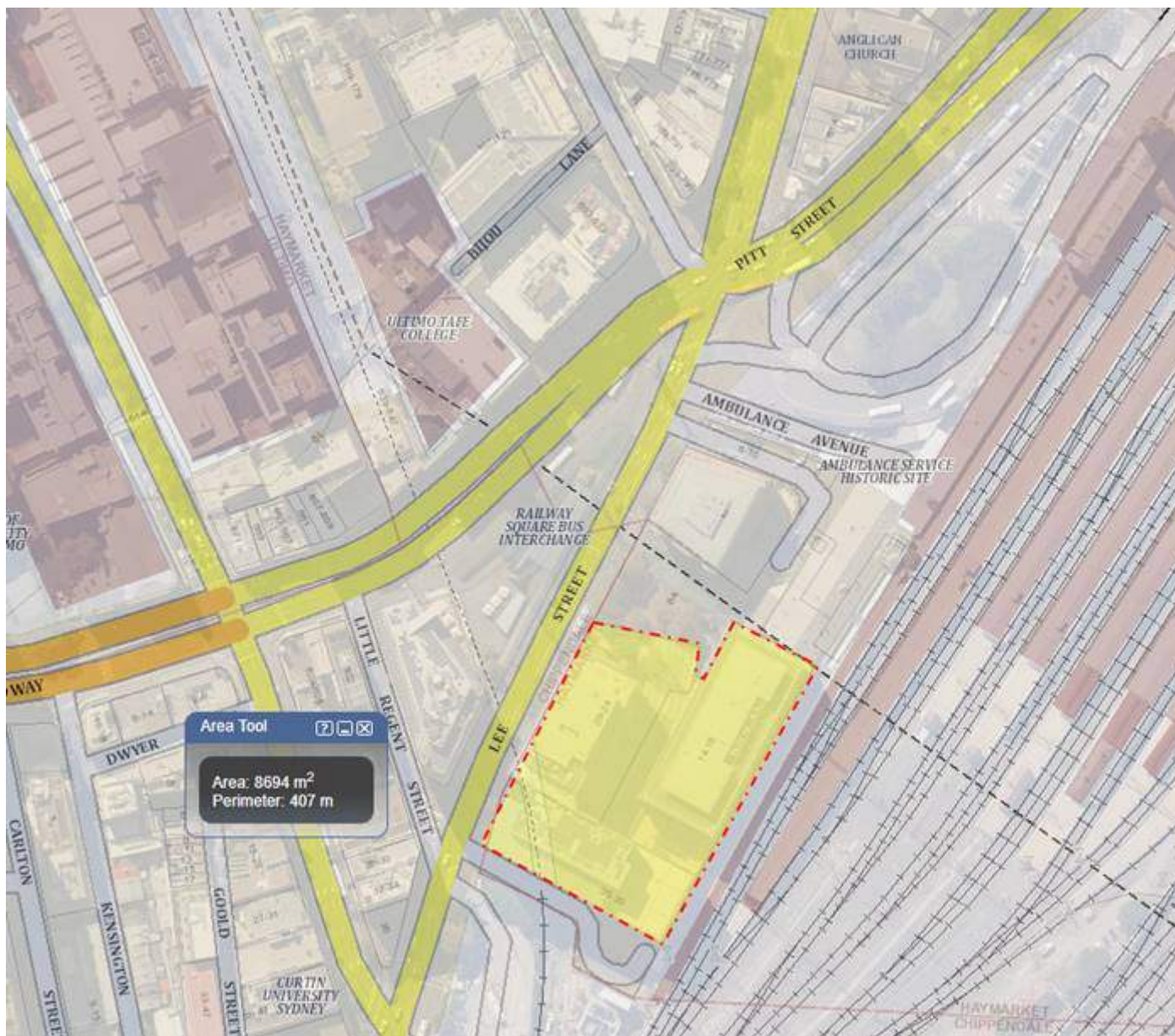
To: Stormwater <Stormwater@sydneywater.com.au>

Cc: Euan Mitchell <Euan.Mitchell@arup.com>

Subject: OSD Requirement Enquiry - Lee Street, Haymarket

Hi,

We are currently working on the feasibility stage of a project to redevelop a three buildings near Central Station at 14-16, 20-24 and 26-30 Lee Street, Haymarket. The site is shown in the figure below and has a total area of approximately 8,700m². Based on our review of the City of Sydney flood studies we understand that the site is within the Darling Harbour catchment.



We would like to understand whether on-site detention would be required as part of any redevelopment of this site. Earlier advice suggested that it would not be required. If it is required, are you able to give an indication of the permissible site discharge and storage volume that would be required?

Kind regards

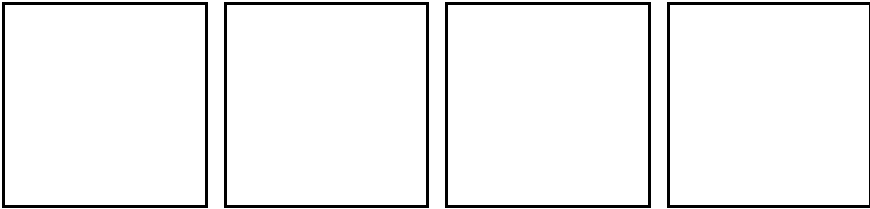
Andrew Crouch

Senior Civil Engineer | NSW & ACT Transport
BEng (Hons-1) CPEng NER MIEAust

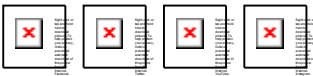
Arup

Level 5, 151 Clarence Street Sydney NSW 2000 Australia
t: +61 2 9320 9320 d: +61 2 9320 9151
www.arup.com

Electronic mail messages entering and leaving Arup business systems are scanned for viruses and acceptability of content.



NOTICE: This email is confidential. If you are not the nominated recipient, please immediately delete this email, destroy all copies and inform the sender. Sydney Water Corporation (Sydney Water) prohibits the unauthorised copying or distribution of this email. This email does not necessarily express the views of Sydney Water. Sydney Water does not warrant nor guarantee that this email communication is free from errors, virus, interception or interference.



NOTICE: This email is confidential. If you are not the nominated recipient, please immediately delete this email, destroy all copies and inform the sender. Sydney Water Corporation (Sydney Water) prohibits the unauthorised copying or distribution of this email. This email does not necessarily express the views of Sydney Water. Sydney Water does not warrant nor guarantee that this email communication is free from errors, virus, interception or interference.
