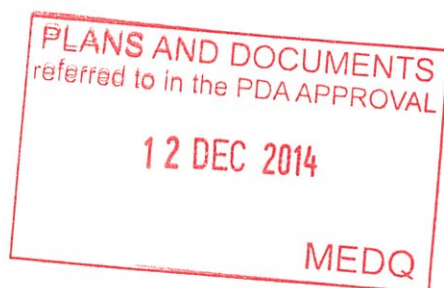


SERVICEABILITY REPORT AND STORMWATER MANAGEMENT PLAN

FOR THE PROPOSED
MIXED USE DEVELOPMENT

LOCATED AT
19 HERCULES STREET
HAMILTON



PREPARED FOR
WENTWORTH EQUITIES

Bornhorst & Ward Project No. **14122**

If you have any queries regarding this report please contact James Dewhurst.

Revision	Date	Description	Author	Rev.	App.
B	July 2014	Amendment	JD	NR	NR
A	July 2014	Issue for Approval	JD	NR	NR

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1. INTRODUCTION

Bornhorst and Ward has been commissioned to investigate and report on the serviceability and stormwater management requirements pertaining to the proposed mixed use development, located at 19 Hercules Street, Hamilton as described by Lot 3 on SP172658.

The development site is located within the Economic Development Queensland (EDQ) Priority Development Area (PDA) of Northshore Hamilton. All engineering requirements for this proposal shall be in accordance with Brisbane City Plan, State Planning Policy (SPP) and the Queensland Urban Drainage Manual (QUDM). This is consistent with other developments within and surrounding the Northshore Hamilton PDA, and EDQ requirements.

This report outlines the proposed design methodology and calculations in support of a Development Application to EDQ and should be read in conjunction with other documents issued by the consultant team.

2. SITE CHARACTERISTICS

2.1 LOCATION

The site has frontage to Hercules Street in the north, Main Road in the south, and is bound by private property to the east and west. It is noted that the podium level Main Road will be extended west to Hercules Street during the construction of Portside Wharf Building 5, to the southwest of the development site. The Brisbane River is located approximately 100m to the south. A Refer to the locality plan below for details.

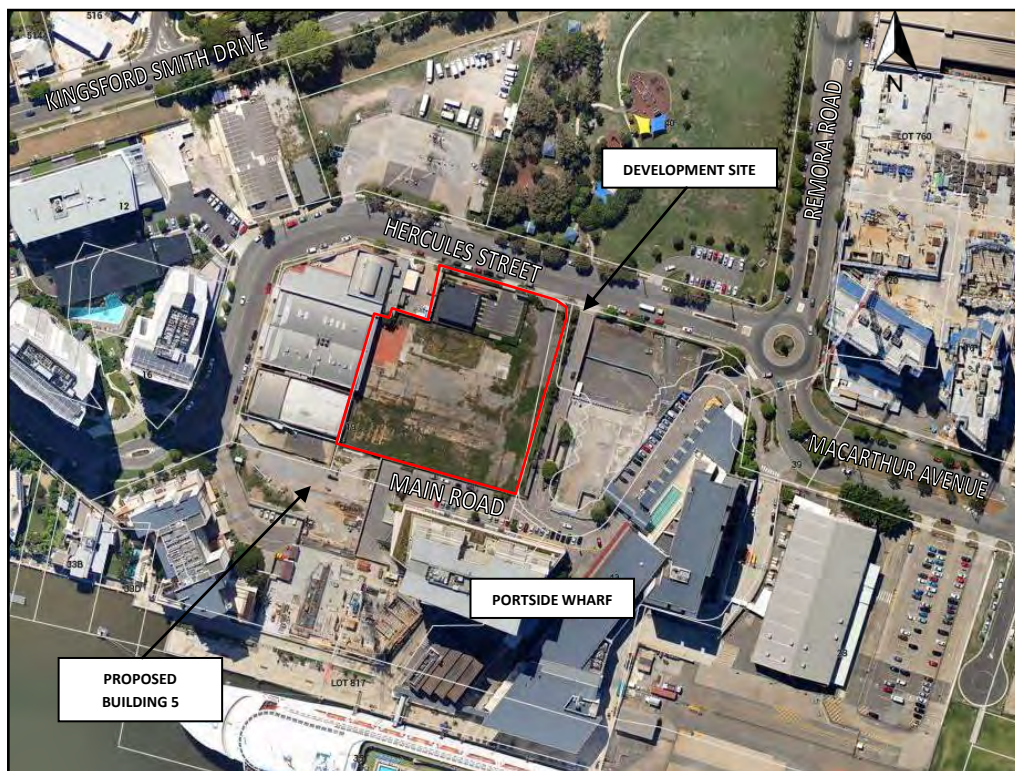


Figure 1: Site Locality Plan

2.2 LANDUSE

2.2.1 EXISTING

The 7637m² development site currently contains a sales office and associated car parking area in the north. Remaining areas are unoccupied and contain hardstand surfaces with some vegetation. There are two existing crossovers to Hercules Street in the north.

The site previously contained a number of warehouse style buildings and car parking areas which were demolished in 2010.

2.2.2 PROPOSED

The development proposal comprises of four buildings that address Hercules and Main Road in the north and south. The proposed scheme includes a mix of building heights containing residential apartments and hotel suits. A central plaza and several retail tenancies are also proposed at the lower flows, connecting the buildings above. Car parking will be provided for within seven basement levels.

Four vehicle entry/exit points will provide access to the proposed basement levels, in addition to the eastern loading docks and southern hotel lobby. This includes two crossovers at Hercules Street in the north and two podium level links to Main Road in the south.

For further details of the proposed development, refer to the Custance DA Drawing Set attached in Appendix B.

2.3 HERCULES STREET ROAD UPGRADES

As part of the Northshore Hamilton Redevelopment, civil engineering designs are being completed for the upgrade of Hercules Street, Remora Road and Macarthur Avenue. This is currently being undertaken by Economic Development Queensland (EDQ) with the design by Bornhorst and Ward. The roadworks include changes to alignments and underground infrastructure, which are outlined in Section 3 of this report. These works are expected to commence in February 2015.

2.4 TOPOGRAPHY & SITE DRAINAGE

In existing conditions, the site is relatively flat with levels ranging between approximately RL 1.8m and RL 3.9m AHD. Stormwater runoff from the site currently discharges through an internal drainage network, which conveys flows south to a piped stormwater connection at the Portside Wharf development.

It is understood that the existing stormwater connection servicing the site will be abandoned under future works in the adjoining allotment to the south. A new stormwater connection at Hercules Street in the north is to be provided to service the site. Refer to Section 3.3.2 for further information.

2.5 SITE FLOODING AND OVERLAND FLOW

2.5.1 STORM TIDE FLOODING

A Brisbane City Council Floodwise Report has been obtained for the site and is attached in Appendix C. The Q_{100} flood level for the site as indicated in the report is 2.5m AHD as a result of storm tide. The January 2011 river flooding event was estimated to have peaked at 2.2m AHD. The proposed development is not affected by storm tide as the ground levels of all adjoining properties and road reserves are above the Q_{100} storm tide level.

2.5.2 EXISTING OVERLAND FLOWS

The existing council drainage network surrounding the development site was upgraded as part of the initial early works for the Portside Wharf development, with the design completed by SKM. The approved infrastructure plans and hydraulic calculations have been obtained and reviewed. These indicate that minor flooding occurs in Hercules Street under existing conditions during Q_{100} storm events due to the very flat grades in the area, and insufficient capacity of the existing drainage network. Based on the drawings, ponding occurs within a sag in Hercules Street, to the west of the development site. The original SKM drawings indicate that stormwater will pond to a level of approximately RL 3.225m while bypassing stormwater back east within Hercules Street.

A weir flow calculation has been undertaken at the crest locations within Hercules Street. Based on the bypass flow information from the SKM drawings, it is believed that stormwater will pond to approximately RL 3.4m AHD at the frontage to the development site. This discrepancy in levels can possibly be attributed to more detailed level information being used for these updated calculations.

2.5.3 FUTURE SCENARIO

The EDQ Hercules Street, Remora Road and Macarthur Avenue roadworks package includes piped drainage upgrades that will capture and convey runoff from rainfall events up to and including Q_{100} . Any ponding of stormwater in Hercules Street will be contained wholly within the road reserve. Given the timing of the works, it is expected that the future scenario will be applicable to the proposed development and no flood immunity measures will be required as a result.

2.5.4 FLOOD IMMUNITY MEASURES

Given the current February 2015 commencement date of the Hercules Street works, it is expected that these will be completed prior to the proposed development. Based on this, the proposed development would not be required to provide immunity to overland flows.

Further investigation is required to determine flood immunity requirements in the scenario the construction of the proposed development is completed prior to the Hercules Street upgrades. In this case, a freeboard to ground levels areas, basement accesses and basement ventilation is recommended.

3. EXISTING AND PROPOSED CIVIL WORKS AND INFRASTRUCTURE

3.1 EARTHWORKS

A Preliminary Earthworks Layout SK-C0011 has been prepared for the site and is attached in Appendix A. A number of assumptions have been made to estimate the earthworks levels indicated on this drawing. These are preliminary only and are subject to modification based on further design and special construction requirements.

Excavation within the site will be required for provision of the basement levels. It is expected that this will entail a cut of up to 23.15m below the existing surface level. Deeper excavation will be necessary to facilitate the lift wells. Minor detailed earthworks will also be required in the form of trenching and temporary excavation for the installation of services.

Due to existing site levels, it is anticipated that acid sulfate soils may be encountered during excavation. Any contaminated material will be treated accordingly before being spoiled offsite.

3.2 ROADWORKS

No major external roadworks are detailed under this application. Minor external earthworks will be required for the construction of the two crossovers to Hercules Street in the north. It is understood that the two proposed podium level vehicle links to Main Road in the south will be constructed under an agreement with the Portside Wharf development.

As part of the EDQ roadworks package, changes to levels and alignment of Hercules Street will affect the frontage of the development site. Refer to SK-C0031 attached in Appendix A which includes details of the proposed works at the frontage to the development site.

The following sections include summaries of stormwater, sewer and water infrastructure works relevant to the development site being completed under the EDQ roadworks package.

3.3 STORMWATER

3.3.1 EXISTING INFRASTRUCTURE

There is existing stormwater infrastructure located within the Hercules Street reserve in proximity to the development site. This includes a 600mm diameter stormwater main to the west and a 1200mm diameter stormwater main to the east. Both of these infrastructure items convey runoff captured a number of gully pits in Hercules Street, south towards the Brisbane River. Refer to the Bennett and Bennett detail survey and BCC Bimap Stormwater Plan, both attached in Appendix D, for further information.

3.3.2 PROPOSED INFRASTRUCTURE

As part of the EDQ Hercules Street, Remora Road and Macarthur Avenue road upgrades, a 675mm diameter stormwater connection will be provided at the Hercules Street frontage to the site. The connection and downstream network have been designed to convey Q_{100} runoff from the site in its developed condition.

All stormwater drainage infrastructure internal to the site will drain to this connection and be documented by the hydraulic consultant during detailed design. A Stormwater360 proprietary filtration device and rainwater tank will also be installed at the site to meet stormwater quality requirements. Refer to the Bornhorst and Ward Siteworks and Services Layout SKC0031 attached in Appendix A and Stormwater Management Plan in Section 4 of this report for further details.

3.4 SEWER

3.4.1 EXISTING INFRASTRUCTURE

There is an existing 225mm diameter gravity sewer main located in Hercules Street, along the frontage to the site. A 150mm diameter connection to this infrastructure currently services the development site. This infrastructure drains east to an existing 300mm diameter main in Remora Road. Refer to the Bennett and Bennett detail survey and BCC Bimap Sewer Plan, both attached in Appendix D, for further information. It is also noted that sewer infrastructure previously located in adjoining property to the south of the site has been abandoned and removed during the construction of the Portside Wharf development.

Based on discussions with QUU, the existing Hercules Street sewer has reached capacity and is not able to accept additional discharges from further developments.

3.4.2 PROPOSED INFRASTRUCTURE

Under the EDQ Hercules Street, Remora Road and Macarthur Avenue road upgrades, a new 315mm diameter PE sewer will be constructed from a 400mm diameter sewer main in Macarthur Avenue in the east, west through the southern side verge of Hercules Street, to the development site. A 150mm diameter PE property connection will also be provided at the northeast corner of the site during the works to service the proposed development. QUU has advised that the proposed development has an expected peak sewer demand of 20L/s. The proposed Hercules Street sewer and associated site connection have been designed to cater for this discharge. Refer to SK-C0031 attached in Appendix A and supporting QUU Correspondence attached in Appendix E for further information.

All internal sanitary drainage from the proposed development will discharge to the proposed 150mm diameter connection at Hercules Street and be documented by the hydraulic consultant during detailed design.

3.5 WATER

3.5.1 EXISTING INFRASTRUCTURE

There is an existing 150mm diameter potable water main located within the northern verge of Hercules Street, along the frontage to the site. There is also an existing 150mm diameter water connection to the site from this main. This infrastructure connects to an existing 300mm diameter potable water main in Remora Road to the east. Refer to the BCC Bimap Water Plan and Bennett and Bennett detail survey, both attached in Appendix D, for further information.

QUU has recommended that a new water line be constructed within Hercules Street, from the existing 150mm diameter Hercules Street main to the 300mm diameter Remora Road main, to create a dual supply for the proposed development. Refer to the supporting QUU Correspondence attached in Appendix E.

3.5.2 PROPOSED INFRASTRUCTURE

As part of the EDQ Hercules Street upgrades being completed, a new 250mm diameter PE water main will be constructed within the southern verge of Hercules Street. This main will connect to the existing 150mm diameter water main in Hercules Street and to the existing 300mm diameter main in Remora Road to the east. Based on this and the advice provided by QUU, the proposed 250mm diameter main is sufficient to service the proposed development as it will effectively create a dual supply from existing infrastructure. Three 180mm diameter DICL property connections, for domestic, fire and sprinkler services will be constructed to provide connection from this new main to the site. Refer SK-C0031 attached in Appendix A for further information.

All internal water infrastructure will be documented by the hydraulic consultant during detailed design.

3.6 OTHER UNDERGROUND SERVICES

A Dial Before You Dig (DBYD) enquiry has been lodged to confirm the presence of other underground services within the vicinity of the development site. There is existing electrical, gas and telecommunications infrastructure located within Hercules Street along the frontage to the site. It is expected that the proposed development can service its electrical, gas and telecommunications requirements through connection to these items. Details, including any additional requirements will be specified by the services consultants for the project, and the asset operators.

It is noted from the plans returned through DBYD indicate that there are also communications cables and a dormant gas main currently located internal to the development site. These items do not appear to provide service to any external areas and will required removal prior to construction, with the approval of APA Group and Telstra.

4. SITE BASED STORMWATER MANAGEMENT PLAN

4.1 STORMWATER OBJECTIVES

Under the Brisbane City Plan, several design elements were identified in relation to stormwater management issues. EDQ must be satisfied that:

- The proposed development can be drained.
- The stormwater management system can follow the features and functions of the natural drainage system.
- The volume, timing, velocity and pollutant load of stormwater has no adverse effect on any surrounding properties.
- Suitable provision is made in the design layout to accommodate for major drainage.

4.2 EXISTING AND PROPOSED CATCHMENT DESCRIPTION

The existing site catchment can be considered to have a high fraction of impervious land area considering the extent of hardstand surfaces remaining from previous developments. The proposed development has been taken as completely impervious.

4.3 LAWFUL POINT OF DISCHARGE

Under QUDM Section 3.02, determination of whether a lawful point of discharge exists at a particular location is subject to the following two-point test:

- a) The location of the discharge is under the lawful control of the local government or statutory authority from whom permission to discharge has been received.
- b) That in discharging in that location, the discharge will not cause an actionable nuisance.

The developed point of discharge for the site will be a 675mm diameter stormwater connection in Hercules Street, as described in Section 3.3.2 of this report. This infrastructure will handed over to Council has been designed to cater for Q_{100} developed site discharge rates. As a result, the proposed point of discharge satisfies the above two point test and can thus be considered lawful.

4.4 STORMWATER QUANTITY

4.4.1 STORMWATER DRAINAGE METHODOLOGY

Stormwater runoff quantity has been considered for the existing case and operational phase of the development. In order to assess the existing and predicted future (operational phase) discharge rates from the development site, calculations have been completed based on the Rational Method, according to the methods specified in QUDM and the Brisbane City Plan.

4.4.2 PEAK FLOW CALCULATIONS

The Rational Method as outlined in QUDM was used to determine the peak flow rate corresponding to the minor and major storm events for this development. The fraction impervious for the existing and developed conditions have been estimated based on a review aerial photography and the proposed development layout, respectively.

Flow rates were calculated at the point of discharge from the site for the existing (pre developed) and developed phases of the site and are indicated in Table 1. Detailed calculations can be reviewed in Appendix F.

Table 1: Pre & Post Development Peak Flow Calculations

	Parameter	Existing	Proposed	Difference
Catchment Details	Area (Ha)	0.7637	0.7637	-
	Fraction Impervious	90%	100%	-
	Coefficient of Runoff (C10)	0.88	0.90	-
	Time of Concentration (min)	5.0	5.0	-
	10 year Rainfall Intensity (mm/hr)	214	214	-
	50 year Rainfall Intensity (mm/hr)	287	287	-
	100 year Rainfall Intensity (mm/hr)	319	319	-
	1 in 10 year ARI (m^3/s)	0.400	0.410	+0.10
Discharge	1 in 50 year ARI (m^3/s)	0.609	0.609	0
	1 in 100 year ARI (m^3/s)	0.676	0.676	0

As indicated in the table above, the discharge rates from the proposed development increase slightly during minor storm events. The proposed stormwater connection and downstream network has been designed to cater for the developed site discharges up to and including the Q_{100} event. Therefore no stormwater detention is proposed or required.

4.5 STORMWATER QUALITY

Stormwater Quality for the site has been assessed in accordance with Part E of the Queensland Government State Planning Policy. The following extract from the document describes when the policy is applicable:

Receiving waters – a development application for any of the following:

1. *A material change of use for urban purposes that involves a land area greater than 2500 square metres that:*
 - a) *Will result in an impervious area greater than 25 per cent of the net developable area, or*
 - b) *Will result in six or more dwellings, or*
2. *Reconfiguring a lot for urban purposes that involves a land area greater than 2500 square metres and will result in six or more lots, or*
3. *Operational works for urban purposes that involve disturbing more than 2500 square metres of land.*

As the proposed development involves a material change of use for urban purposes on a land area larger than 2500m² that will result in an impervious area greater than 25 per cent of the net developable area and more than six dwellings, State Planning Policy is applicable.

All references to water quality designs and requirements have been made from Queensland Water Quality Guidelines, State Planning Policy and the reference material - Water by Design: MUSIC Modelling Guidelines.

4.5.1 POLLUTANTS OF CONCERN

Key pollutants to be targeted and the minimum reduction in pollutant mean annual loads relevant to the development site correspond to the WQOs for South-East Queensland as outlined in Table B, Part H of the State Planning Policy. These WQOs are summarised in Table 2.

Table 2: Water Quality Objectives

Pollutant	Mean Annual Load Reduction
Total Suspended Solids (TSS)	80%
Total Phosphorus (TP)	60%
Total Nitrogen (TN)	45%
Gross Pollutants (GP)	90%

4.5.2 MODELLING/ASSESSMENT APPROACH

A quantitative assessment of stormwater runoff quality was considered for the operational phase of the development.

The predicted reductions in mean annual loads of key pollutants have been identified using the “Model for Urban Stormwater Improvement Conceptualisation (MUSIC)” version 6.0.4. MUSIC is a stormwater quality

modelling program that provides estimates of stormwater pollution generation and the performance of stormwater management measures used in series or parallel to form a 'treatment train'.

4.5.3 METEOROLOGICAL DATA

The first step in creating the MUSIC model was to select the appropriate meteorological data set (period and time step) to be used as the basis for the runoff algorithms. Section 3.1 – Meteorological Data and Section 3.2 – Modelling Period and time-step, of the reference material details the Rainfall Data and Time Step process requirements of the model, respectively.

The meteorological template was taken directly from the MUSIC-link tab: Brisbane Aero 1980 – 1989 6 Minute.

4.5.4 SOURCE NODES

The second step taken in creating the MUSIC models was to define 'source nodes'. Input parameters used for modelling the source nodes and sub-catchments were adopted in accordance with the Water by Design MUSIC Modelling Guidelines.

Based on the proposed architectural layout, the MUSIC model consisted of three source node types; commercial roof, commercial road and commercial podium areas. Commercial type source nodes were considered a conservative representation of the mixed use nature of the development. All proposed landscaping at the site was included as a pervious fraction of the podium source node. Source node input parameters for each node type were adopted from the Water by Design MUSIC Modelling Guidelines.

4.5.5 TREATMENT METHODOLOGY

In order to comply with the stormwater quality pollutant reduction targets stipulated in the State Planning Policy, treatment measures are required.

A treatment train, consisting of Stormwater360 StormFilter cartridges, a Stormwater360 Enviropod and a rainwater tank was chosen. Roofwater will drain to the rainwater tank while the entire site area, including overflow from the rainwater tank, will be treated through the Enviropod and StormFilter system.

Details of the treatment nodes are outlined in the following section.

4.5.6 TREATMENT NODES

Information on the stormwater quality treatment devices has been sourced from the reference material and Stormwater360 with details outlined in Table 3.

Table 3: Selected Stormwater Quality Treatment Devices

Stormwater Quality Treatment Device	Discussion
Stormwater360 StormFilter Cartridges	Stormwater360 StormFilter cartridges are proprietary devices designed to remove nutrients and sediments from stormwater runoff. A 22 x 690mm tall cartridge StormFilter system with a 35L/s treatable flow rate is proposed for the development site. The location of this system will be determined during detailed design through coordination with the hydraulic consultant for the project.
Stormwater360 Enviropods	Stormwater360 Enviropods are Gross Pollutant Traps (GPTs) designed to remove gross pollutants and suspended solids from runoff, as well as some nutrients prior to treatment within the StormFilter system. A single EnviroPod GPT is proposed for the development site. It is expected that this device will be located at the inlet to the StormFilter system. The final location will be confirmed through coordination with the hydraulic consultant during detailed design.
Rainwater Tank	Rainwater tanks capture stormwater runoff for on-site reuse to supplement potable water consumption. A 65kL rainwater tank is proposed for the development to be used for the irrigation of landscaped areas. Rainwater re-use has been included in the MUSIC model, with reuse parameters determined in accordance with the reference material as follows: 65kL Rainwater Tank (as modelled): - Storage volume = 110kL - Surface area = 55m² - Annual Demand = 1112kL/yr (PET – Rain Distribution)

The proposed treatment train is illustrated in Figure 2.

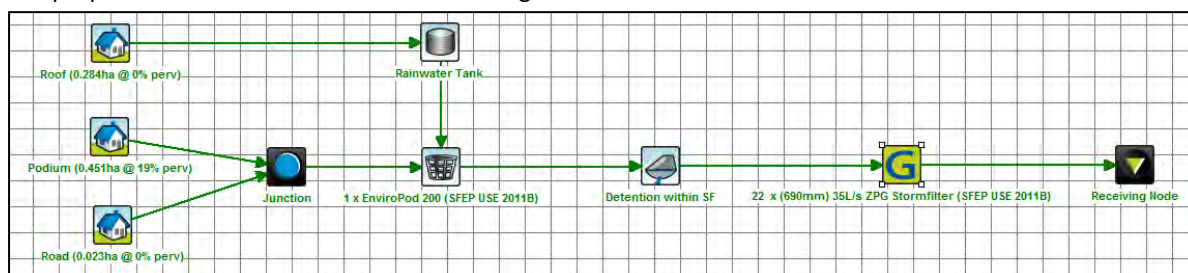


Figure 2: Proposed Treatment Train

4.5.7 RESULTS

The reduction in mean annual loads of key pollutants for the developed phase obtained from the MUSIC model and analysis are shown in Table 4.

Table 4: Treatment Train Effectiveness Results

Pollutant	TSS (%)	TP (%)	TN (%)	GP (%)
Treatment Train	80.0	63.0	49.9	100
Water Quality Objectives	80.0	60.0	45.0	90.0

Indicated in the table above, the reduction in target pollutants; total suspended solids (TSS), total phosphorus (TP), total nitrogen (TN) and gross pollutants, meet the South-East Queensland WQOs as outlined in State Planning Policy December 2013. On this basis, the treatment train proposed for the development site will yield satisfactory pollutant removal.

5. SUMMARY

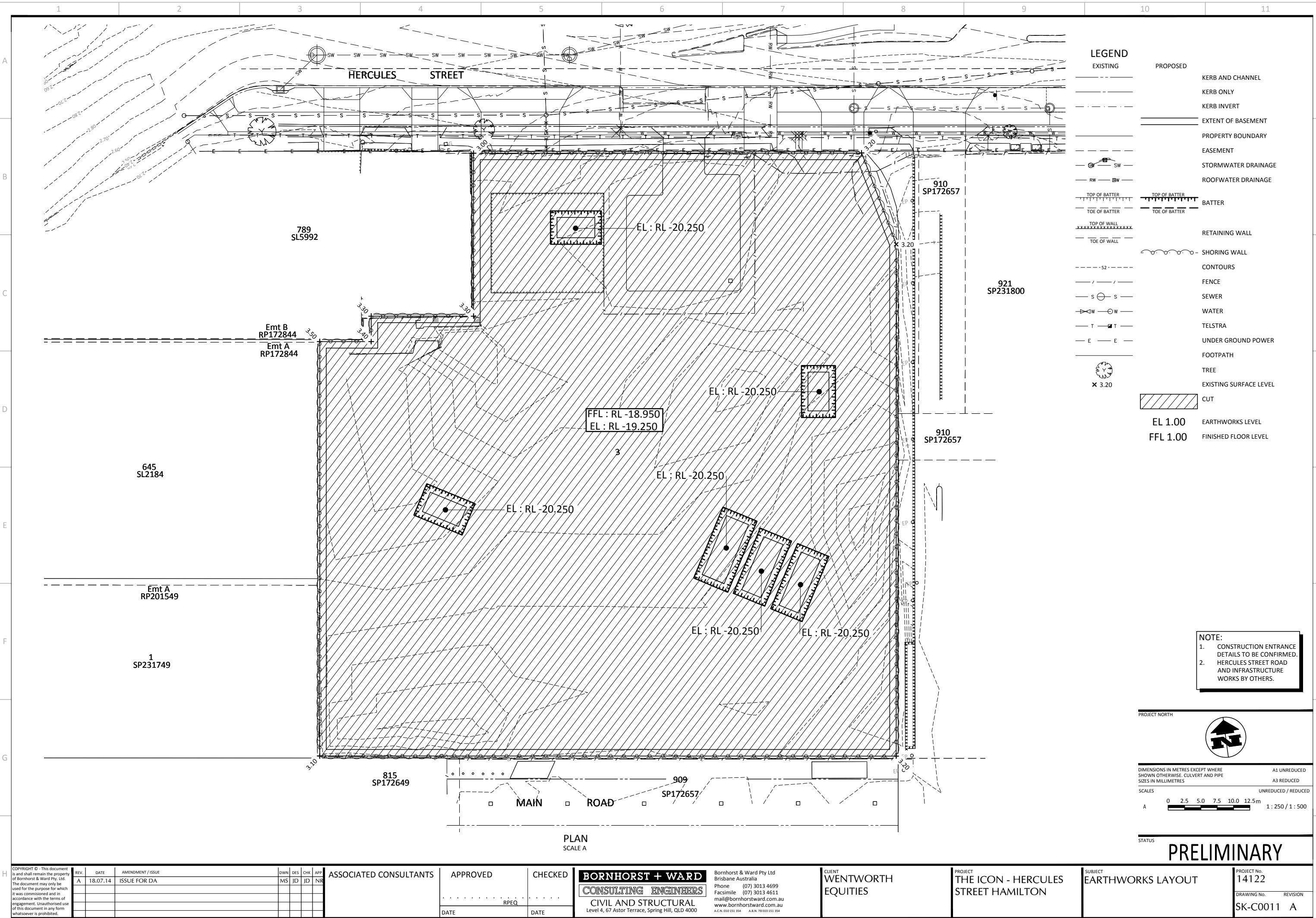
This reporting relating to the proposed mixed use development located at 19 Hercules Street, Hamilton has found the following:

- The proposed development will be at minimal risk of flooding from storm tide or overland flows.
- External roadworks are being completed by Economic Development Queensland at Hercules Street, along the frontage to the site. These works are expected to commence in February 2015.
- Stormwater, sewer and water connections will be provided to the site as part of the proposed roadworks. The proposed connections will have adequate capacity to service the proposed development.
- No stormwater detention is proposed or required.
- A rainwater tank and proprietary filtration device in the form of a 'treatment train' are proposed to meet Water Quality Objectives.

From the investigations conducted, it has been shown that the proposed development can be constructed and serviced in accordance with the Brisbane City Plan, State Planning Policy and the Queensland Urban Drainage Manual, which is consistent with Economic Development Queensland requirements. It has also been demonstrated that adequate stormwater management is achievable under the proposal.

APPENDIX A

**BORNHORST AND WARD
CIVIL ENGINEERING DRAWINGS**



LEGEND

EXISTING

PROPOSED

KERB AND CHANNEL

KERB ONLY

KERB INVERT

EXTENT OF BASEMENT

PROPERTY BOUNDARY

EASEMENT

STORMWATER DRAINAGE

ROOFWATER DRAINAGE

TOP OF BATTER

TOE OF BATTER

TOP OF WALL

TOE OF WALL

BATTER

RETAINING WALL

SHORING WALL

CONTOURS

FENCE

SEWER

WATER

TELSTRA

UNDER GROUND POWER

FOOTPATH

TREE

EXISTING SURFACE LEVEL

CUT

EL 1.00

FFL 1.00

EARTHWORKS LEVEL

FINISHED FLOOR LEVEL

NOTE:
1. CONSTRUCTION ENTRANCE DETAILS TO BE CONFIRMED.
2. HERCULES STREET ROAD AND INFRASTRUCTURE WORKS BY OTHERS.

PROJECT NORTH

DIMENSIONS IN METRES EXCEPT WHERE SHOWN OTHERWISE. CULVERT AND PIPE SIZES IN MILLIMETRES

A1 UNREDUCED
A3 REDUCED

SCALES

UNREDUCED / REDUCED

A 0 2.5 5.0 7.5 10.0 12.5m 1:250 / 1:500

STATUS

PRELIMINARY

PROJECT

THE ICON - HERCULES STREET HAMILTON

SUBJECT

EARTHWORKS LAYOUT

PROJECT No.

14122

DRAWING No.

SK-C0011

REVISION

A

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ASSOCIATED CONSULTANTS

APPROVED
CHECKED
DATE
DATE

BORNHORST + WARD

CONSULTING ENGINEERS

CIVIL AND STRUCTURAL

Level 4, 67 Astor Terrace, Spring Hill, QLD 4000

Bornhorst & Ward Pty Ltd

Brisbane Australia

Phone (07) 3013 4699

Facsimile (07) 3013 4611

mail@bornhorstward.com.au

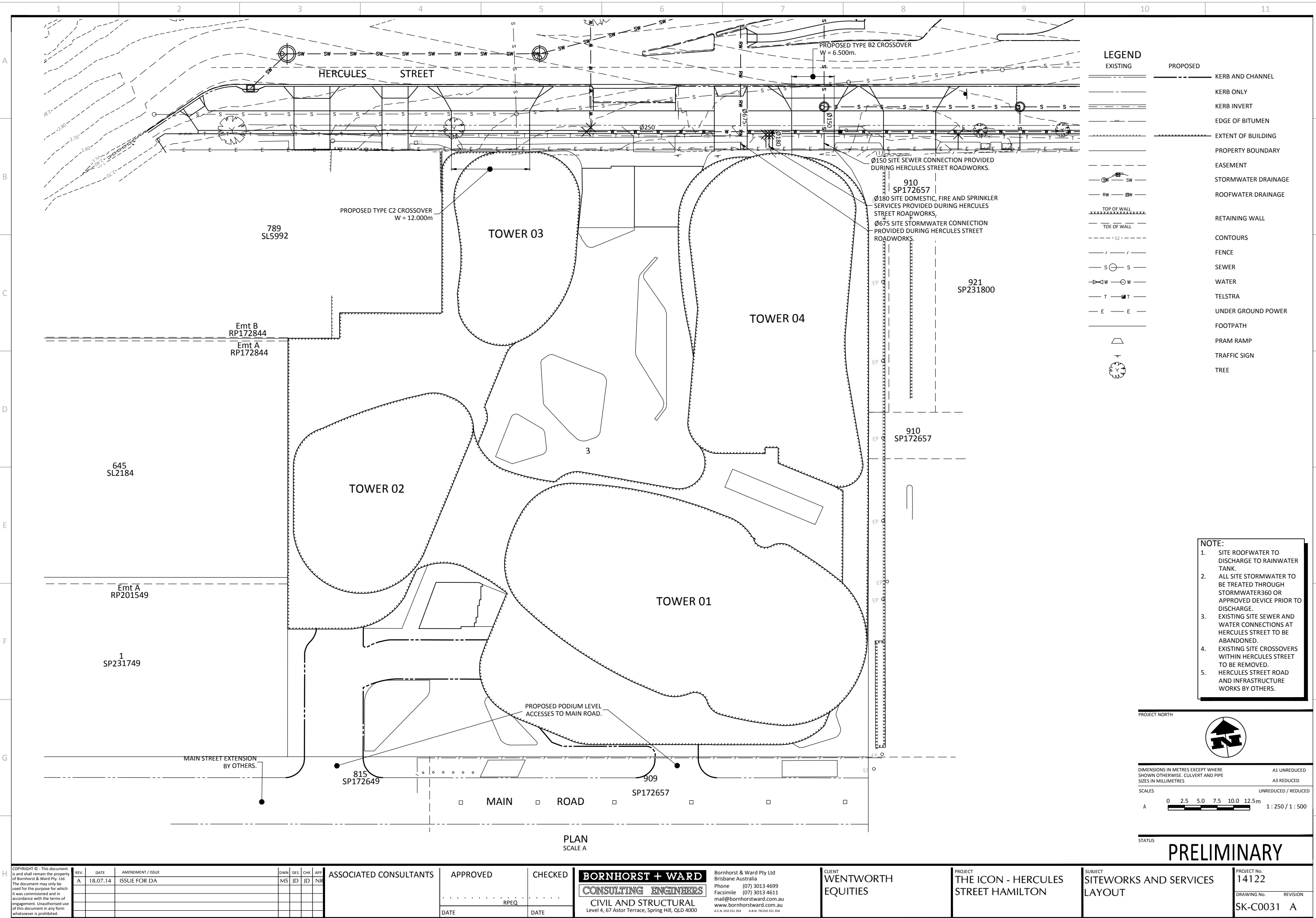
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CLIENT
WENTWORTH EQUITIES

PROJECT
THE ICON - HERCULES STREET HAMILTON

STATUS
PRELIMINARY



APPENDIX B

CUSTOMER ARCHITECTURAL DRAWINGS

NOTES : DEVELOPMENT APPLICATION

1. DESIGN RESOLUTION

- The drawings represent general architectural intent for the purpose of this development application only.
- The internal layout is shown indicatively and is subject to further design development.
- The dimensions shown are general only and are subject to further design resolution.
- Location of car park entry point is general only and will be confirmed and dimensioned at later stage.
- The size and position of privacy screens, louvres is indicative and shown in open and closed positions.
- Please refer to Landscape drawings for Landscape component (shown indicatively only in this set)
- Location & sizes of plant, equipment, service areas and service risers on drawings is general and indicative only, and does not include minor elements, such as vent pipes, flues, aerials, etc.

2. GRAPHIC PRESENTATION

Colours presented on drawings are generic only and indicative of the architectural design intent.

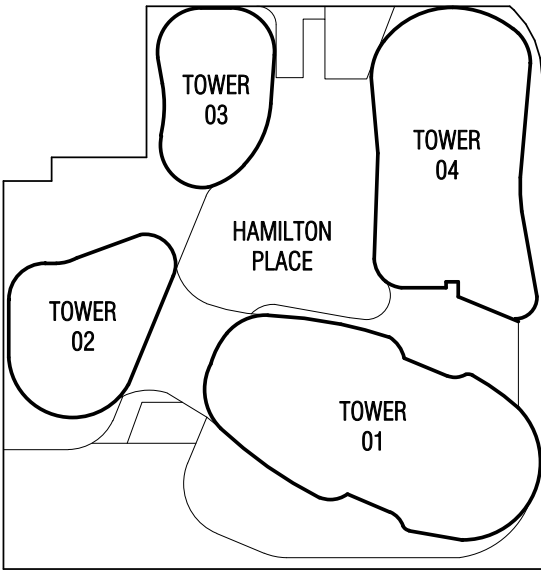
3. EXISTING STRUCTURES AND SERVICES

Extent and location of existing and proposed neighbouring structures and services is according to the available survey information and will need to be verified on site at later stage.



1 SITE PLAN
1 : 500

Revision	Description	Date
A	DEVELOPMENT APPLICATION	24.07.14



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CIVIL AND STRUCTURAL

DEVELOPMENT MANAGERS AND ENGINEERS

Client

WENTWORTH EQUITIES

Strategy
Urban Design
Architecture
Interior Design

SYDNEY
Level M, 50 Carrington St
Sydney, NSW
2000, Australia
www.custance.com.au

Project

HAMILTON BRISBANE
19 HERCULES ST HAMILTON, BRISBANE

Sheet Title
SITE PLAN

Drawn	Checked	Date	Scale
Author	CS	27.05.14	1 : 500 @ A1

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Project No.	Sheet No.	Type	Revision
3100	DA-001		A

NOTES : DEVELOPMENT APPLICATION

1. DESIGN RESOLUTION

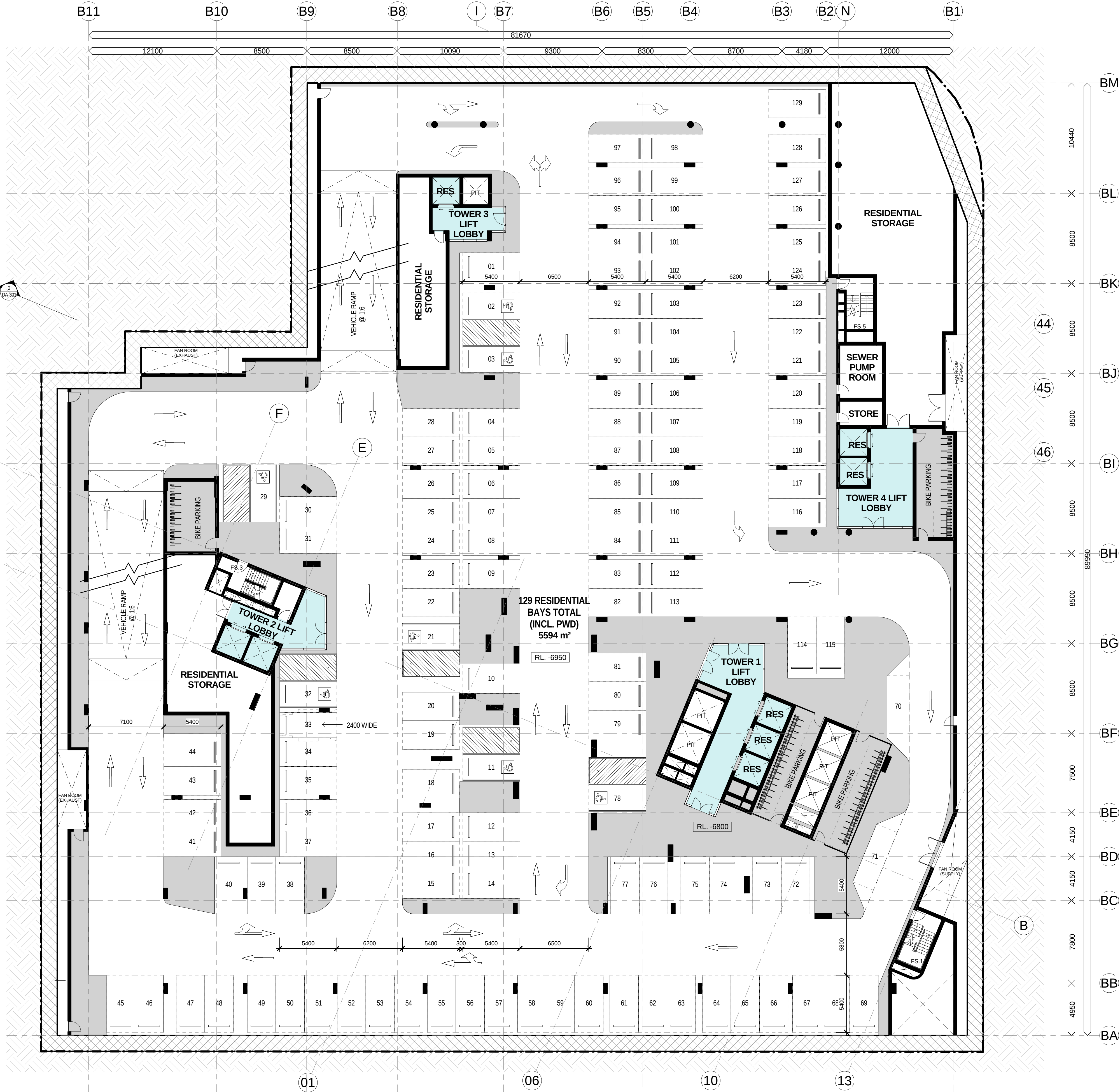
- The drawings represent general architectural intent for the purpose of this development application only.
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- Please refer to Landscape drawings for Landscape component (shown indicatively only in this set)
- Location & sizes of plant, equipment, service areas and service risers on drawings is general and indicative only, and does not include minor elements, such as vent pipes, flues, aerials, etc.

2. GRAPHIC PRESENTATION

Colours presented on drawings are generic only and indicative of the architectural design intent.

3. EXISTING STRUCTURES AND SERVICES

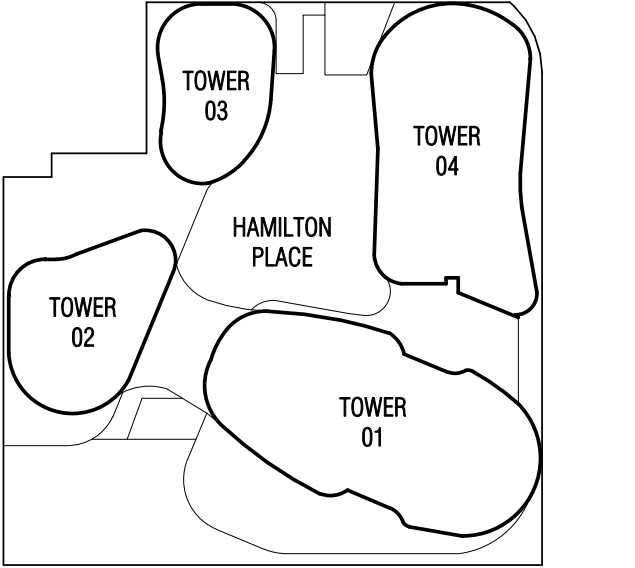
Extent and location of existing and proposed neighbouring structures and services is according to the available survey information and will need to be verified on site at later stage.



PARKING SCHEDULE	
B1	
HOTEL: 59	
B1	
RETAIL: 48	
B1: 107	
B2	
HOTEL: 59	
B2	
RETAIL: 48	
B2: 107	
B3	
RES: 129	
B3: 129	
B4	
RES: 129	
B4: 129	
B5	
RES: 129	
B5: 129	
B6	
RES: 129	
B6: 129	
B7	
RES: 129	
B7: 129	
Grand total: 859	

BIKE PARKING SCHEDULE	
B1	
RES: 12	
B1: 12	
B3	
RES: 29	
B3: 29	
B4	
RES: 29	
B4: 29	
B5	
RES: 29	
B5: 29	
B6	
RES: 29	
B6: 29	
B7	
RES: 29	
B7: 29	
Grand total: 157	
*BIKE RACK HOLDS 4 BIKES PER ITEM THERE THE TOTAL BIKE STORAGE IS 157 x 4 = 628 BIKES	
5 PARKING BAYS WILL BE IDENTIFIED AT THE NEXT STAGE TO BE CHARGING BAYS FOR ELECTRIC CARS.	
1 PARKING BAY WILL BE NOMINATED AS A CAR POOL / CAR SHARE PARKING BAY AT THE NEXT STAGE.	

Revision	Description	Date
A	DEVELOPMENT APPLICATION	24.07.14



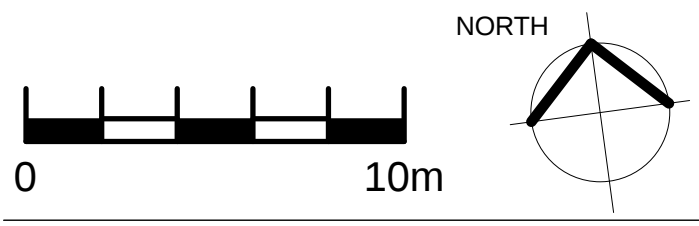
DEVELOPMENT MANAGERS AND ENGINEERS

Client
WENTWORTH EQUITIES



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Project
HAMILTON BRISBANE
19 HERCULES ST HAMILTON, BRISBANE
Sheet Title
BASEMENT LEVEL 3 - 7



Drawn	Checked	Date	Scale
SP	CS	27.05.14	1 : 200 @ A1

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Project No.	Sheet No.	Type	Revision
3100	DA-100		A

NOTES : DEVELOPMENT APPLICATION

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2. GRAPHIC PRESENTATION

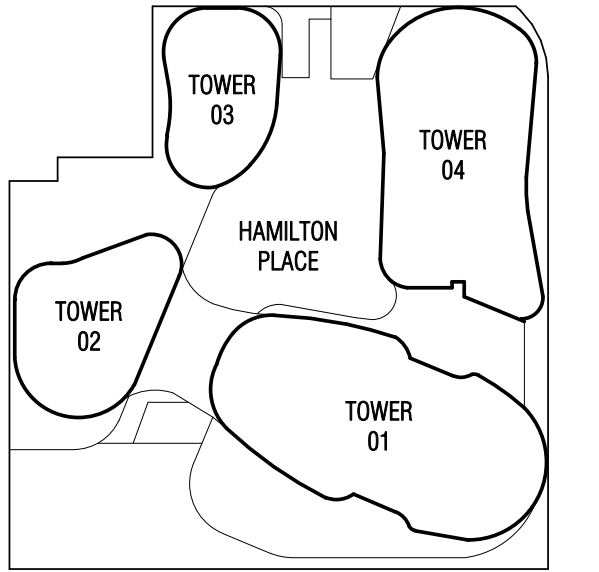
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Revision	Description	Date
A	DEVELOPMENT APPLICATION	24.07.14



DEVELOPMENT MANAGERS AND ENGINEERS

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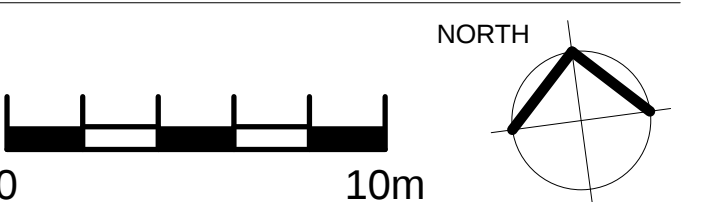
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Project

HAMILTON BRISBANE
19 HERCULES ST HAMILTON, BRISBANE

Sheet Title

HERCULES ST LEVEL



Drawn	Checked	Date	Scale
Author	CS	27.05.14	1 : 200 @ A1

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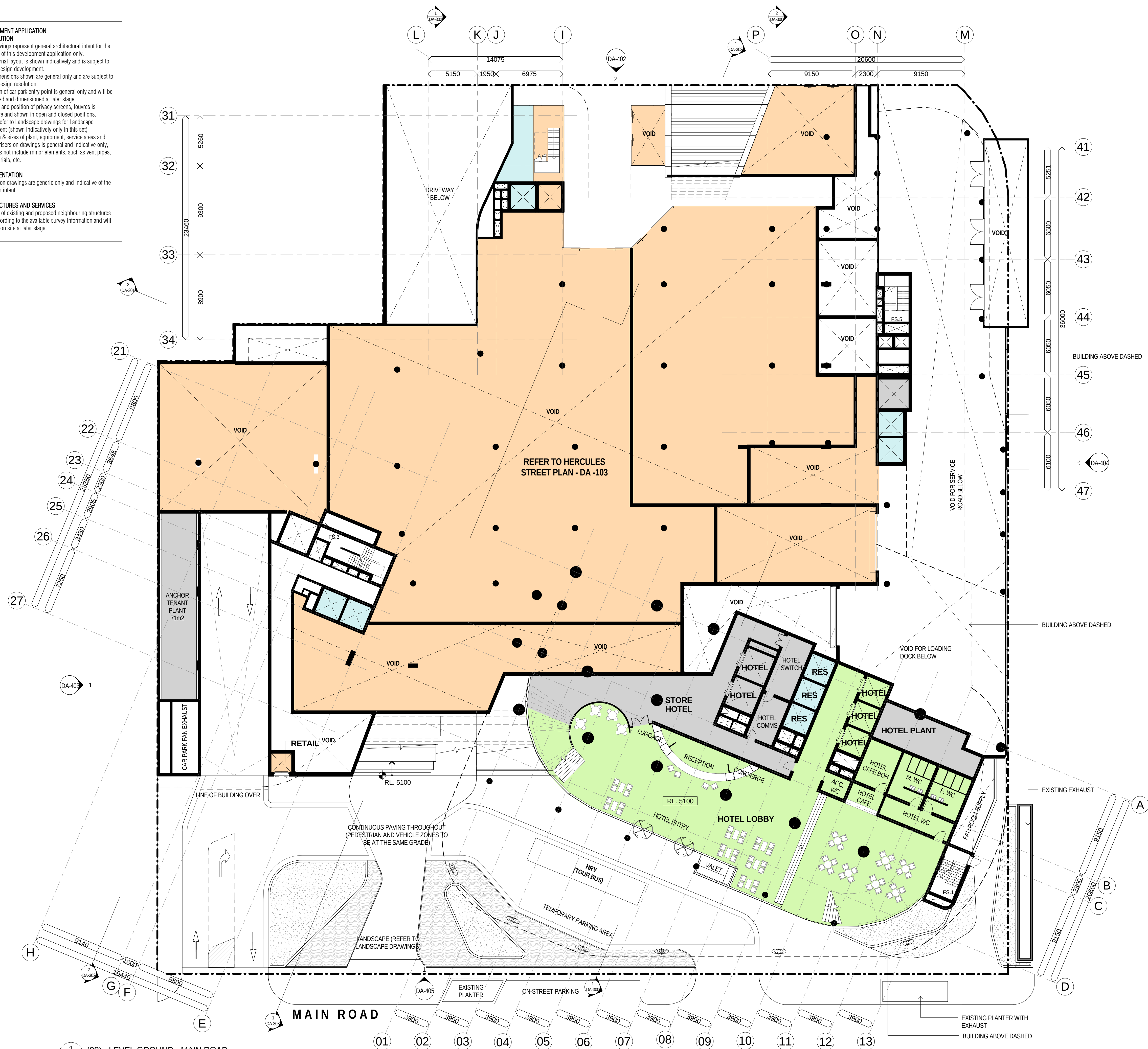
Project No.	Sheet No.	Type	Revision
3100	DA-103		A

- **DESIGN RESOLUTION**
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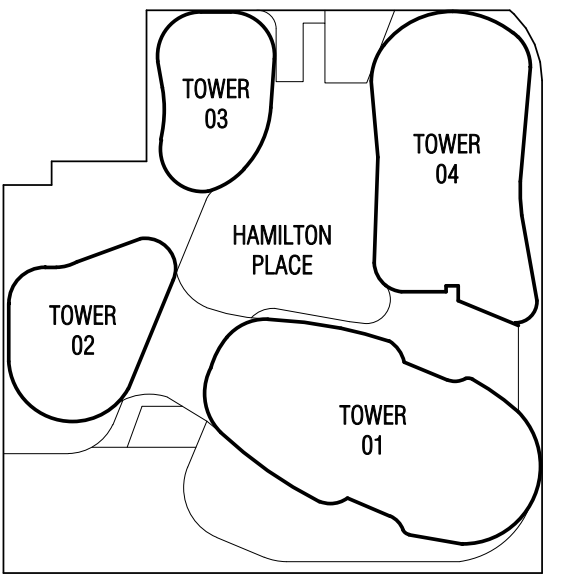
2. GRAPHIC PRESENTATION
Colours presented on drawings are generic only and indicative of the architectural design intent.

3. EXISTING STRUCTURES AND SERVICES

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Revision	Description	Date
A	DEVELOPMENT APPLICATION	24.07.14



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WENTWORTH EQUITIES



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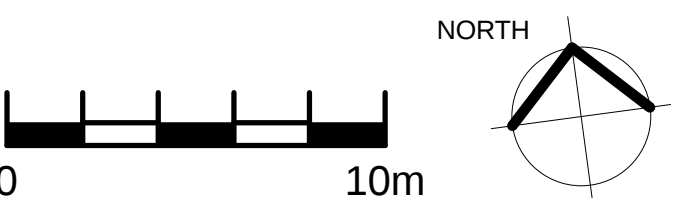
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Project

HAMILTON BRISBANE
19 HERCULES ST HAMILTON, BRISBANE

Sheet Title

HOTEL LOBBY

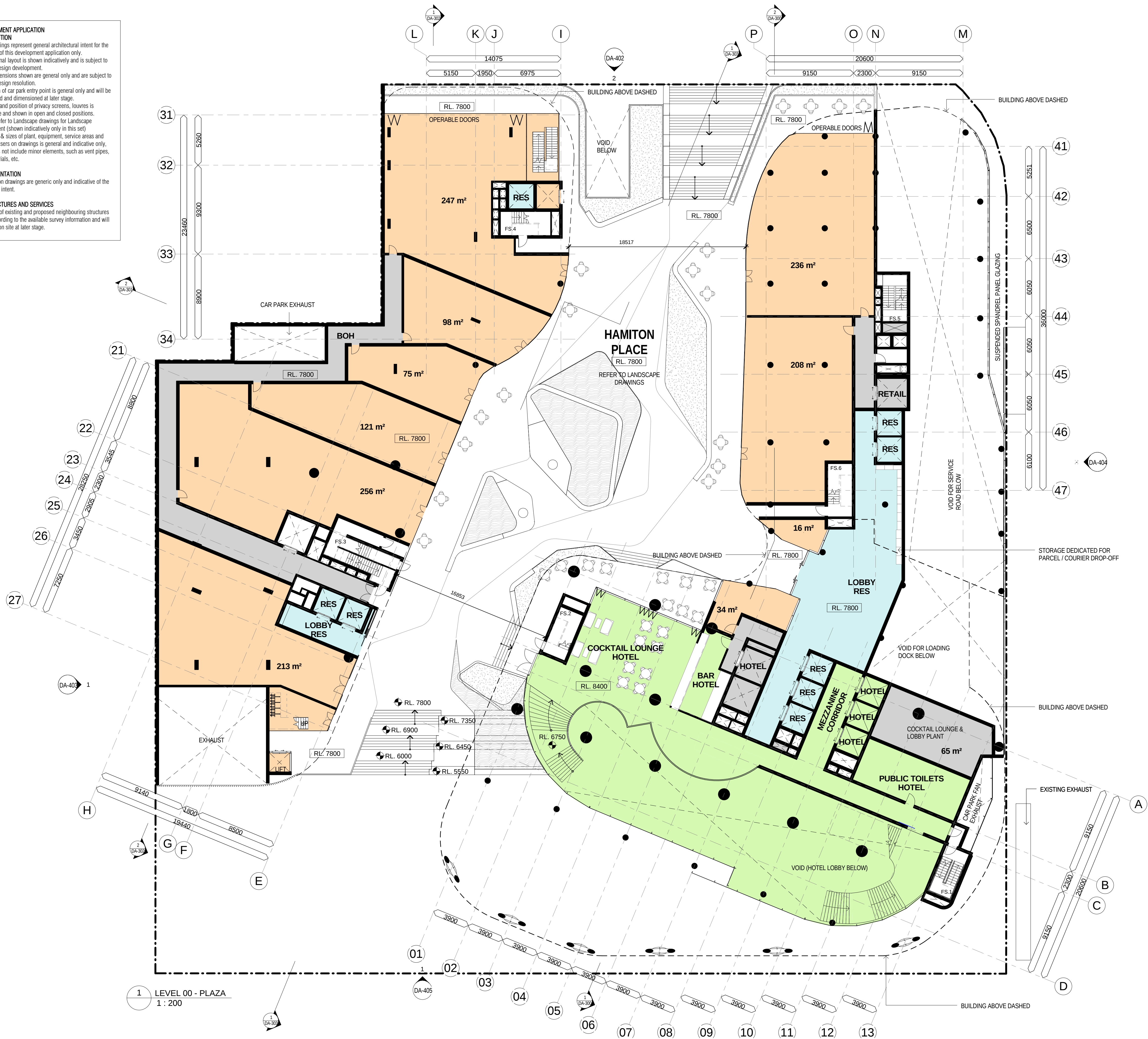


Drawn	Checked	Date	Scale
AS	CS	27.05.14	1 : 200 @ A1

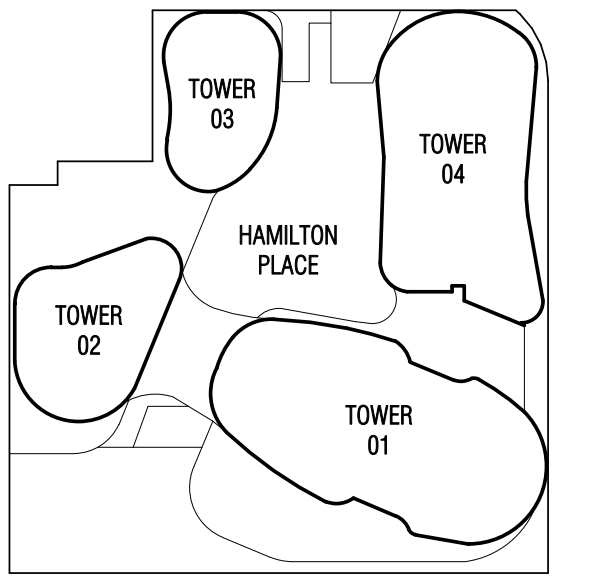
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Project No.	Sheet No.	Type	Revision
3100	DA-104		A

- NOTES : DEVELOPMENT APPLICATION**
- 1. DESIGN RESOLUTION**
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Revision	Description	Date
A	DEVELOPMENT APPLICATION	24.07.14



DEVELOPMENT MANAGERS AND ENGINEERS

Client

WENTWORTH EQUITIES



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Sydney, NSW
2000, Australia

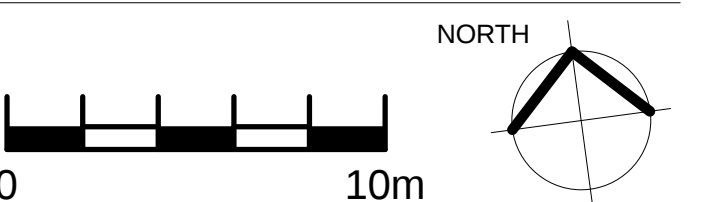
www.custance.com.au

Project

HAMILTON BRISBANE
19 HERCULES ST HAMILTON, BRISBANE

Sheet Title

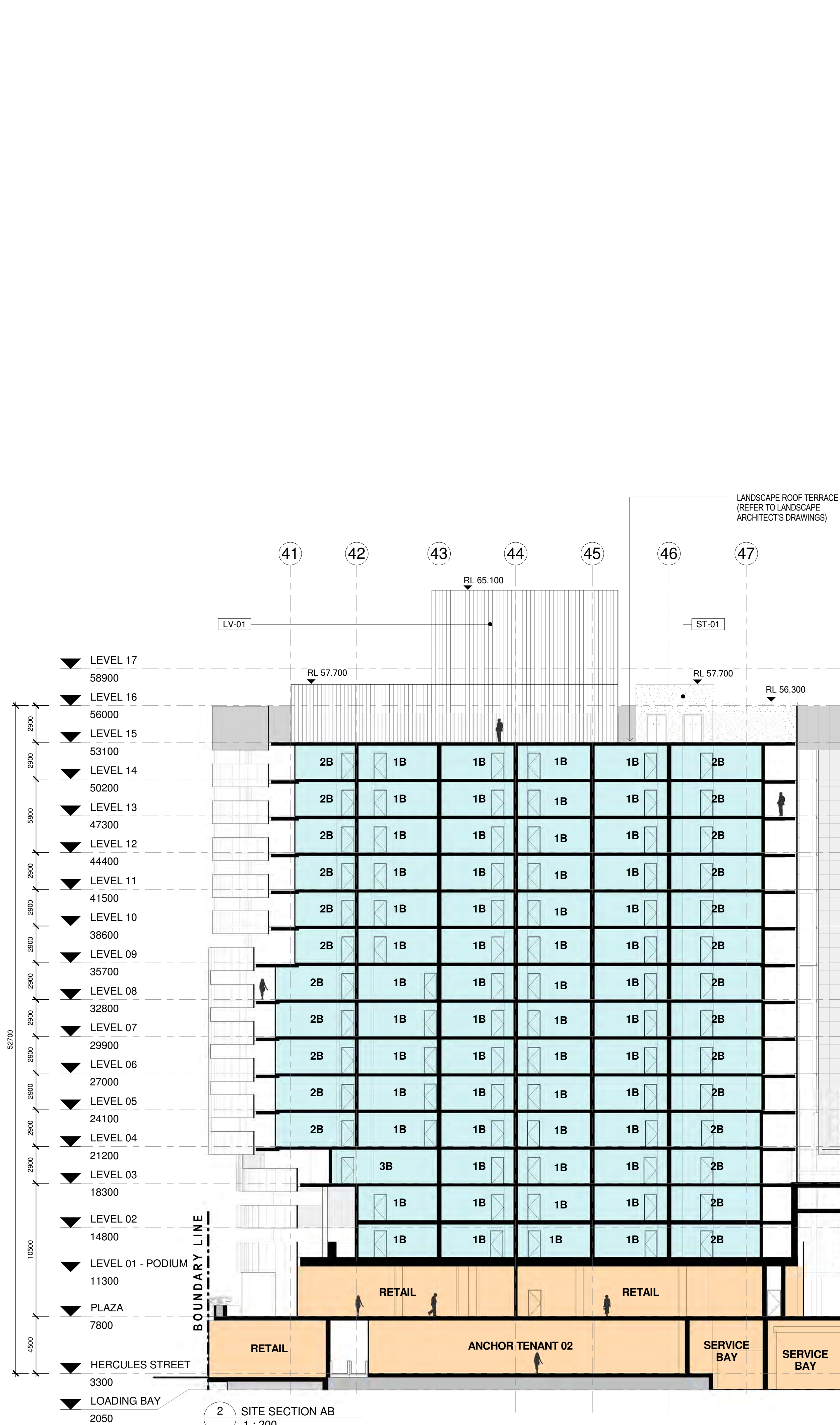
LEVEL 00 - PLAZA



Drawn	Checked	Date	Scale
AS	CS	27.05.14	1 : 200 @ A1

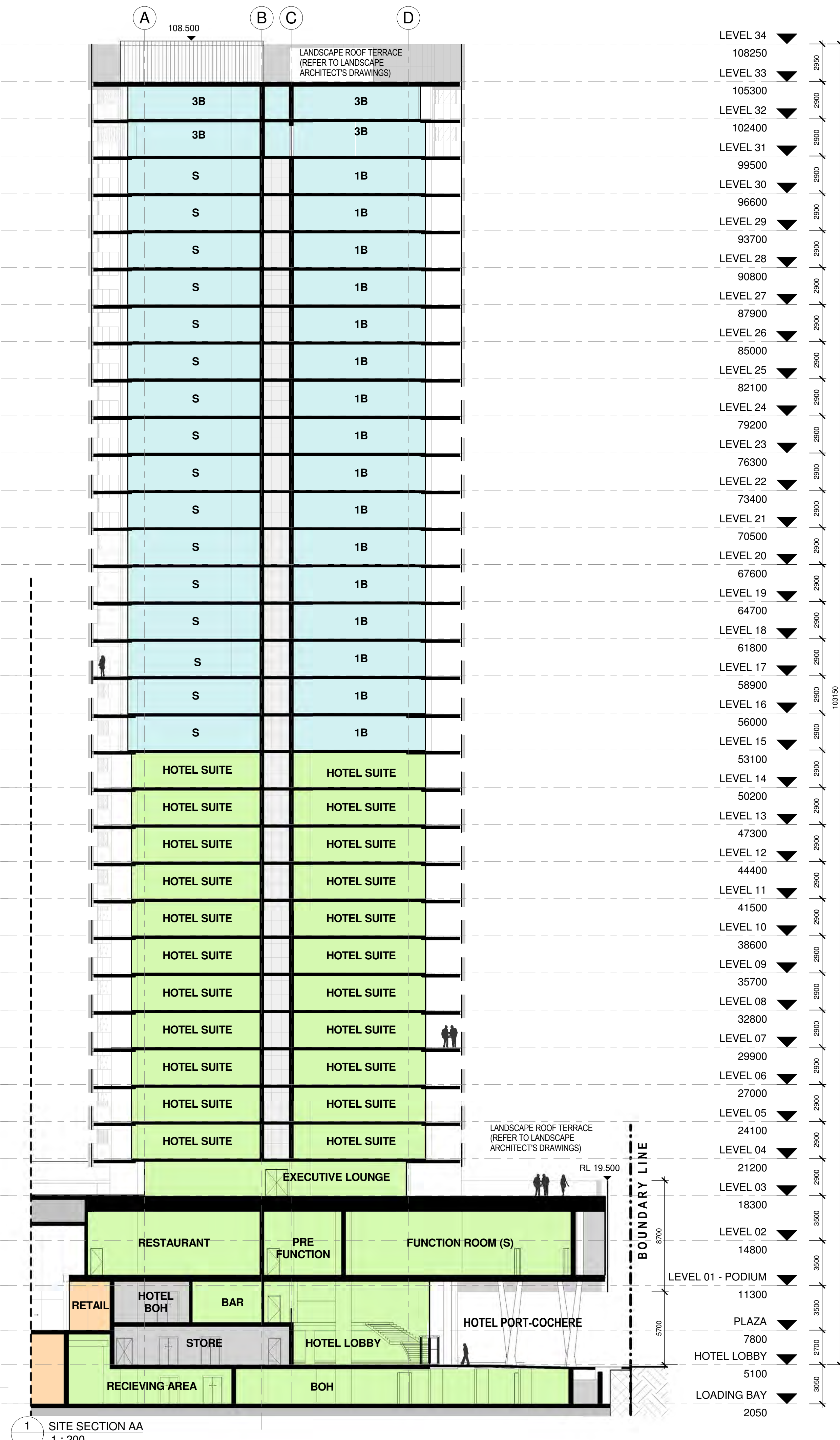
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Project No.	Sheet No.	Type	Revision
3100	DA-105		A



2 SITE SECTION AB
1 : 200

FOLD IN SECTION LINE



1 SITE SECTION AA
1 : 200

LEVEL 34	108250	LEVEL 33	105300	LEVEL 32	102400	LEVEL 31	99500	LEVEL 30	96600	LEVEL 29	93700	LEVEL 28	90800	LEVEL 27	87900	LEVEL 26	85000	LEVEL 25	82100	LEVEL 24	79200	LEVEL 23	76300	LEVEL 22	73400	LEVEL 21	70500	LEVEL 20	67600	LEVEL 19	64700	LEVEL 18	61800	LEVEL 17	58900	LEVEL 16	56000	LEVEL 15	53100	LEVEL 14	50200	LEVEL 13	47300	LEVEL 12	44400	LEVEL 11	41500	LEVEL 10	38600	LEVEL 09	35700	LEVEL 08	32800	LEVEL 07	29900	LEVEL 06	27000	LEVEL 05	24100	LEVEL 04	21200	LEVEL 03	18300	LEVEL 02	14800	LEVEL 01 - PODIUM	11300	PLAZA	7800	HERCULES STREET	3300	LOADING BAY	2050
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RevisionDescriptionDate

ADEVELOPMENT APPLICATION24.07.14

MATERIAL FINISHES LEGEND

CO-01CONCRETE TYPE 01

GL-01GLASS TYPE 01

GL-02GLASS TYPE 02

GL-02.1GLASS TYPE 02 (OPERABLE)

GL-03GLASS TYPE 03

GL-03.1GLASS TYPE 03 (OPERABLE)

LV-01LOUVRE TYPE 01 - VERTICAL

LV-01COLOUR BRONZE

LV-02LOUVRE TYPE 02 - HORIZONTAL

LV-02COLOUR GREY

MC-01METAL CLADDING - COLOUR BRONZE

MC-02METAL CLADDING - COLOUR GREY

PF-01PAINT FINISH - COLOUR WHITE

ST-01STONE TILE CLADDING - GRANITE (GREY)

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BORNHORST + WARD

CONSULTING ENGINEERS

CIVIL AND STRUCTURAL

ttn

urbis

Property Development Systems Australia

DEVELOPMENT MANAGERS AND ENGINEERS

Client

WENTWORTH EQUITIES

CUSTANCE

Strategy

Urban Design

Architecture

Interior Design

SYDNEY

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Sydney, NSW

2000, Australia

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Project

HAMILTON BRISBANE

19 HERCULES ST HAMILTON, BRISBANE

Sheet Title

SITE SECTION - AA

010m

DrawnCheckedDateScale

AuthorCS27.05.141 : 200 @ A1

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Project No.3100

Sheet No.DA-300

Type

RevisionA

NOTES : DEVELOPMENT APPLICATION

1. DESIGN RESOLUTION

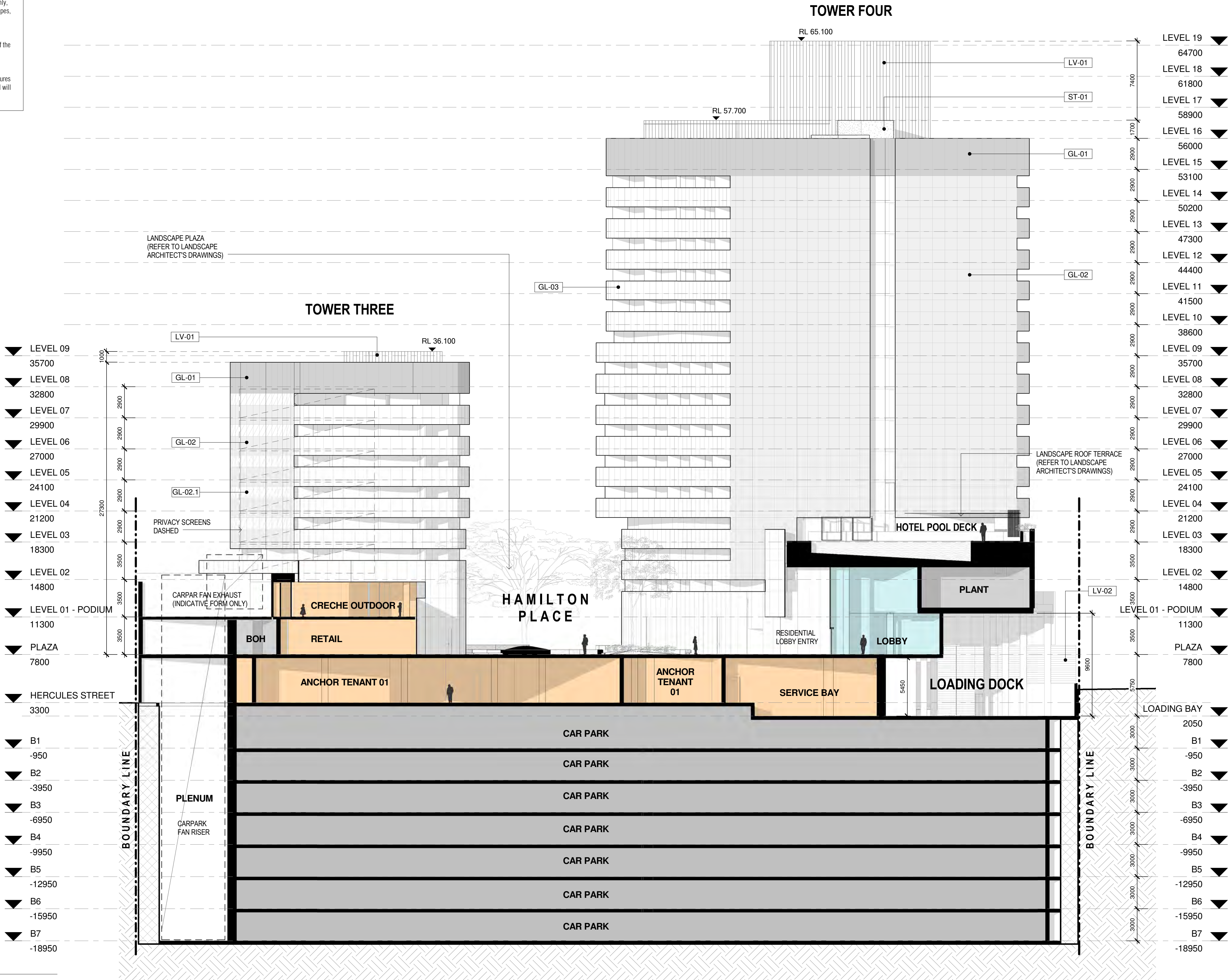
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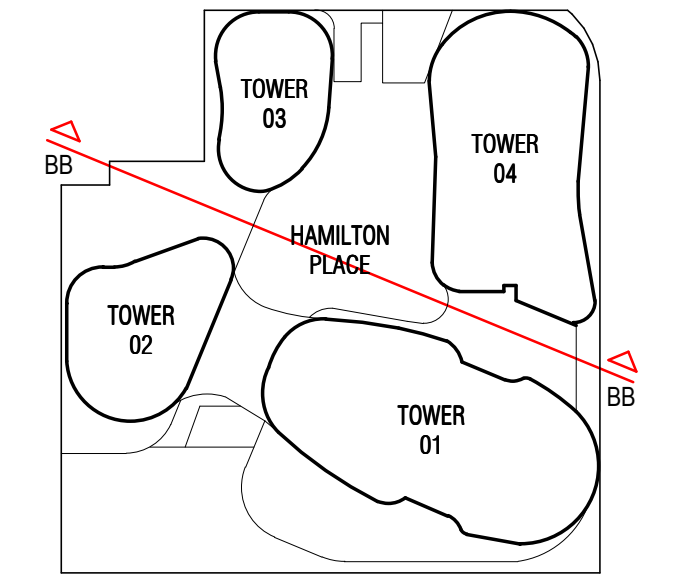
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Extent and location of existing and proposed neighbouring structures and services is according to the available survey information and will need to be verified on site at later stage.



Revision	Description	Date
A	DEVELOPMENT APPLICATION	24.07.14

MATERIAL FINISHES LEGEND	
CO-01	CONCRETE TYPE 01
GL-01	GLASS TYPE 01
GL-02	GLASS TYPE 02
GL-02.1	GLASS TYPE 02 (OPERABLE)
GL-03	GLASS TYPE 03
GL-03.1	GLASS TYPE 03 (OPERABLE)
LV-01	LOUVRE TYPE 01 - VERTICAL, COLOUR BRONZE
LV-02	LOUVRE TYPE 02 - HORIZONTAL, COLOUR GREY
MC-01	METAL CLADDING - COLOUR BRONZE
MC-02	METAL CLADDING - COLOUR GREY
PF-01	PAINT FINISH - COLOUR WHITE
ST-01	STONE TILE CLADDING - GRANITE (GREY)



DEVELOPMENT MANAGERS AND ENGINEERS

Client

WENTWORTH EQUITIES



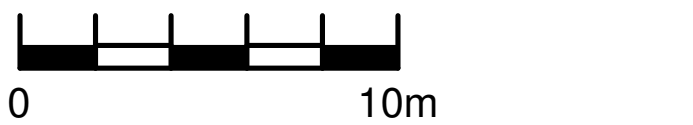
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Project

HAMILTON BRISBANE
19 HERCULES ST HAMILTON, BRISBANE

Sheet Title

SITE SECTION - BB



Drawn	Checked	Date	Scale
Author	CS	27.05.14	1 : 200 @ A1

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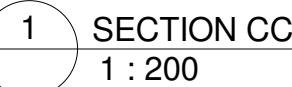
Project No.	Sheet No.	Type	Revision
3100	DA-301		A

1. DESIGN RESOLUTION

- ## 2. GRAPHIC PRESENTATION

3. EXISTING STRUCTURES AND SERVICES

FOLD IN SECTION LINE



Project No.	Sheet No.	Type	Revision
3100	DA-302		A

NOTES : DEVELOPMENT APPLICATION

1. DESIGN RESOLUTION

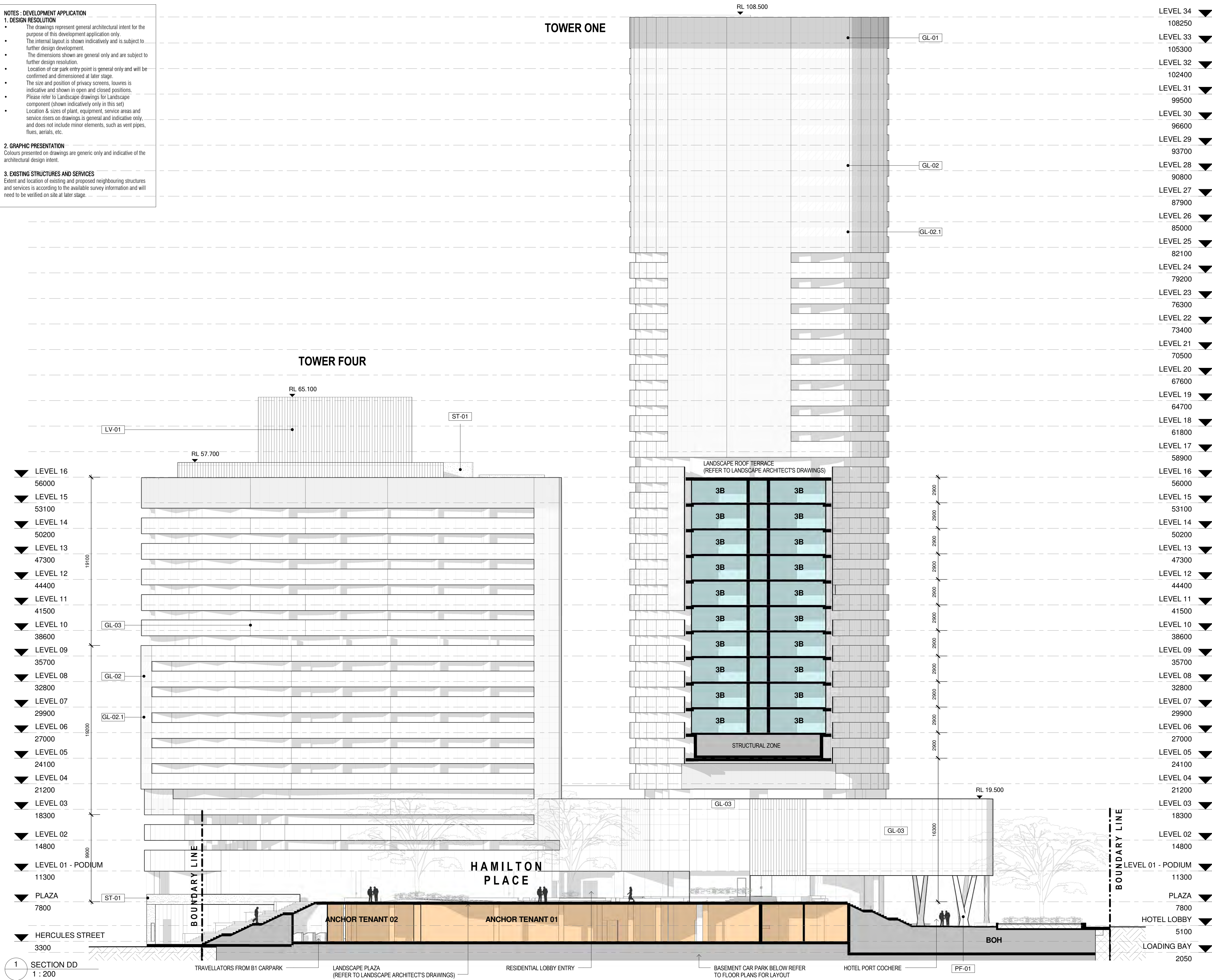
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Revision	Description	Date
A	DEVELOPMENT APPLICATION	24.07.14

MATERIAL FINISHES LEGEND

CO-01	CONCRETE TYPE 01
GL-01	GLASS TYPE 01
GL-02	GLASS TYPE 02
GL-02.1	GLASS TYPE 02 (OPERABLE)
GL-03	GLASS TYPE 03
GL-03.1	GLASS TYPE 03 (OPERABLE)
LV-01	LOUVRE TYPE 01 - VERTICAL, COLOUR BRONZE
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MC-02	METAL CLADDING - COLOUR GREY
PF-01	PAINT FINISH - COLOUR WHITE
ST-01	STONE TILE CLADDING - GRANITE (GREY)

BB



DEVELOPMENT MANAGERS AND ENGINEERS

Client

WENTWORTH EQUITIES

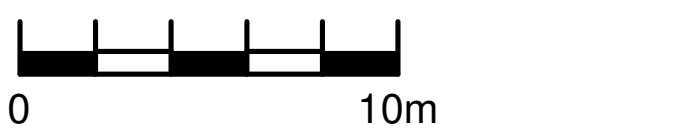


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Project

HAMILTON BRISBANE
19 HERCULES ST HAMILTON, BRISBANE

Sheet Title
SITE SECTION - DD



Drawn	Checked	Date	Scale
Author	CS	27.05.14	1 : 200 @ A1

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Project No.	Sheet No.	Type	Revision
3100	DA-303		A

APPENDIX C

BCC FLOODWISE PROPERTY REPORT



Brisbane City Council FloodWise Property Report

Report Reference

3076604

06/06/2014 13:49:51

Dedicated to a better Brisbane

THIS REPORT IS FOR BUILDING AND DEVELOPMENT PURPOSES ONLY.

The FloodWise Property Report is a free report to inform Brisbane residents and professionals about flood risks for a specified lot or property to plan and build in accordance with Council requirements. A flood level higher than those shown below can occur in any year, although such events are rare.

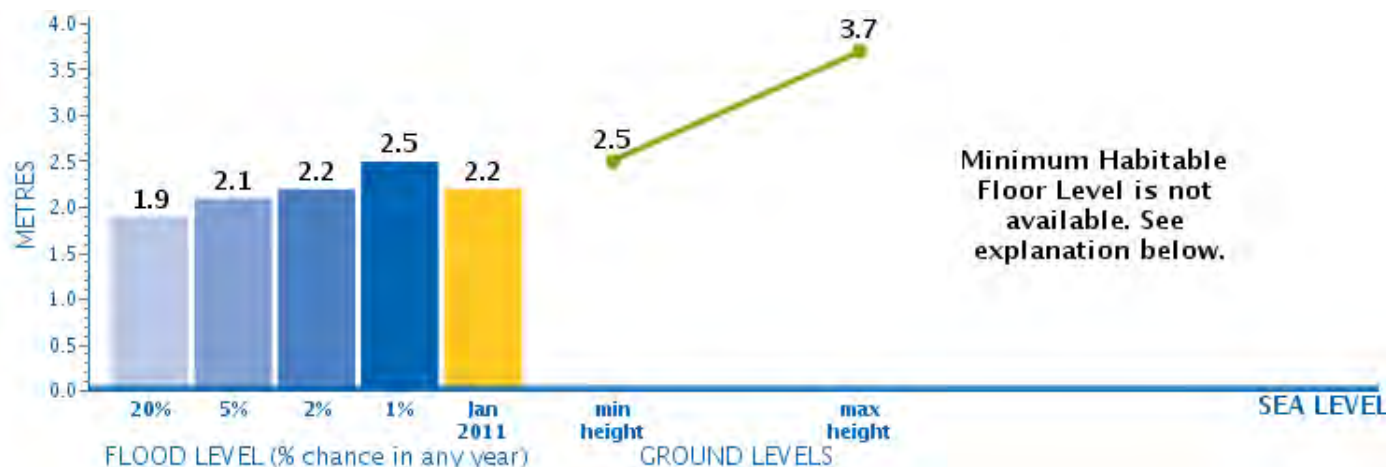
To find out more about how the contents of this report may affect your ability to build or renovate, as well as Council advice on how to protect your property and family by being FloodWise, visit www.brisbane.qld.gov.au, a Customer Service Centre or call (07) 3403 8888.

PROPERTY DETAILS:

Address: 19 HERCULES ST HAMILTON QLD 4007

Lot Details: L.3/SP.172658

FLOOD LEVEL INFORMATION



Flood Levels

The blue bars in the graph above show the percentage chance of that level being reached or exceeded in any year. The orange bar shows the January 2011 flood level at this address or lot.

Ground Levels (Min - Max)

The line above shows this property's lowest and highest ground levels. Confirm with a surveyor.

Minimum Habitable Floor Level

If a property is in an overland flow path or a large allotment a minimum habitable floor level cannot be provided. See flood and property flag information over page.

For a detailed summary of anticipated flood levels and flags see technical summary over page.

HIGHEST SOURCE OF FLOODING

STORM TIDE The highest source of flooding affecting this property originates from storm tide.

FLOOD AND PROPERTY DEVELOPMENT FLAGS

Current records indicate this property may be affected by one or more flood or property development flags. Please review the technical summary over page for more detail.

Technical Summary

Use this summary to supply information about this property to surveyors, builders, certifiers, architects and engineers who may request this FloodWise Property Report. This summary has been designed to be easily read if scanned or faxed.

Property Details

Address: 19 HERCULES ST HAMILTON QLD 4007

Lot Details: L.3/SP.172658

Property Information

Minimum Ground Level (AHD)	2.5 m
Maximum Ground Level (AHD)	3.7 m
Defined Flood Level (DFL)	2.5 m
Defined Flood Level Source	STORM TIDE
Minimum Habitable Floor Level (AHD)	N/A

Estimated Peak Flooding Levels

ARI (Years)	% chance	Level (AHD)	Source
5	20%	1.9 m	STORM TIDE
20	5%	2.1 m	STORM TIDE
50	2%	2.2 m	STORM TIDE
100	1%	2.5 m	STORM TIDE
January 2011		2.2 m	RIVER

Flooding may also occur from:

OVERLAND FLOW

Flood and Property Development Flags

Overland Flow Path

Mapping indicates this property is in an overland flow path. Overland flow is the excess run-off during high rainfall events that travels overland following low-lying, natural drainage paths. Such flooding commonly occurs when underground drainage exceeds capacity. It is recommended you consult a Registered Professional Engineer of Queensland to determine this property's habitable floor level and flooding depth.

Large Allotment

This property is a Large Allotment of over 1000 square metres. Flood levels may vary significantly across allotments of this size. Further investigations may be warranted in determining the variation in flood levels and the minimum habitable floor level across this site. For more information or advice, it is recommended you engage a Registered Professional Engineer of Queensland.

Disclaimer

- 1 Defined Flood Levels and Interim Residential Flood Levels, and the Minimum Habitable Floor Levels based on them, are determined from the information available to Council at the date of issue. These flood levels, for a particular property, may change if more detailed information becomes available or changes are made in the method of calculating flood levels.
- 2 Council makes no warranty or representation regarding the accuracy or completeness of a FloodWise Property Report. Council disclaims any responsibility or liability in relation to the use or reliance by any person on a FloodWise Property Report.

Useful Definitions

Australian Height Datum (AHD) – The reference level for defining ground levels in Australia. The level of 0.0m AHD is approximately mean sea level.

Average Recurrence Interval (ARI) or % Chance – The probability of experiencing a flood of a particular magnitude. ARI can be interpreted in terms of years (frequency). ARI levels quoted in this report are measured in height above sea level (AHD). ARI can also be described as the percentage chance that a location will flood in any one year. For example, a 5 year ARI flood event corresponds to a 20% likelihood of a flood of this magnitude or greater occurring in any one year.

Defined Flood Level (DFL) – The DFL is the minimum flood planning level that development must adhere to in a given location to minimise the risk of potential flooding. The DFL is dependent on the type of development, the source of flooding and the severity of a flood event. Locating development at or above this level does not mean the property is immune to flooding.

Maximum and Minimum Ground Level – Highest and lowest ground levels on the property based on available ground level information. A Registered Surveyor can confirm exact ground levels.

Minimum Habitable Floor Level – The minimum level above sea level at which habitable areas of development (generally including bedrooms, living rooms, kitchen, study, family and rumpus rooms) must be constructed.

City Plan 2000 – City Plan 2000 sets out what you can build and where new development should go. Council assesses proposed new development against the City Plan 2000.

Find Out More

For general information on your flood risk and how to prepare your home or business for potential flooding visit <http://www.brisbane.qld.gov.au/beprepared>.

If you are planning to renovate or build, Council recommends you engage a Registered Professional Engineer of Queensland to undertake a thorough assessment of all flood risks specific to the property.



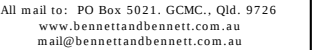
Planning to build or renovate?

For information, guidelines, tools and resources to help you track, plan or apply for your development visit www.brisbane.qld.gov.au/planning-building

You can also find Brisbane City Council's City Plan 2000, draft new City Plan, Neighbourhood Plans as well as other information and training videos to help with your building or development plans.

APPENDIX D

**DETAIL SURVEY AND
EXISTING INFRASTRUCTURE PLANS**



BRISBANE OFFICE	COOMERA OFFICE
Ph (07) 3839 7200	Ph (07) 5573 6177
IPSWICH OFFICE	SUNSHINE COAST OFFICE
Ph (07) 3202 1575	Ph (07) 5438 8104

[illegible]

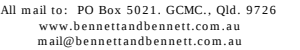
NOTES

1. Drawn to scale on an A1 sheet.
2. All levels are in metres on Australian Height Datum as determined by PSM 35295 - RL 3.11m AHD.
3. All dimensions are vide title and subject to confirmation by survey.
4. Area vide title 7637 m²
5. The location of services is approximate only and is plotted from surface installations and the relevant authority records. The exact nature and location of these services should be confirmed prior to construction.
6. Contour Interval . . . 0.25m
7. Boundaries need to be confirmed vide field survey.

TITLE

Client					
WENTWORTH EQUITIES					
Local Government BRISBANE CITY COUNCIL					
Locality HAMILTON					
Comp File					
10391.project					
Drawn		Surv'd		Approved	
SS		CD		CWW	
Date Created		Job Ref.			
3/4/14		10391			
SCALE @ A1		1:250		PLAN No.	
SCALE @ A3		1:500		4	
				Rev. C	

Plot Date: 08/04/2014 10391DET2_C.DWG



BRISBANE OFFICE
Ph (07) 3829 7200

COOMERA OFFICE
Ph. (07) 5572 6177

SUNSHINE COAST OFFICE
Ph (07) 5438 8104

Experience, Resources... Results

Revision	Date
A	4/07/2011
B	26/08/2011
C	3/04/2014

	Underground Sewer Line
	Underground Stormwater Line
	Underground Water Retention Line
	Underground Telecommunications Line
	Overhead Power Line
	Underground Power Line
	Underground Gas Line
	Sewer By Records
	Stormwater By Records
	Water By Records
	Gas By Records
	Electricity By Records
	Telecommunications By Records
	Building Line
	Edge of Bitumen
	Top of Bank
	Toe of Bank
	Telecom Pit
	Power Pole
	Light Pole
	Direction & Number of Photograph

1. Drawn to scale on an A1 sheet.
2. All levels are in metres on Australian Height Datum as determined by PSM 35295 - RL 3.11 m AHD.
3. All dimensions are vide title and subject to confirmation by survey.
4. Area vide title 7637m²
5. The location of services is approximate only and is plotted from surface inspections and the relevant authority records. The exact nature and location of these services should be confirmed prior to construction.
6. Contour Interval 0.25m
7. Boundaries need to be confirmed vide field survey.

Sheet 2 of 2

**Plan of
Detail Survey
19 Hercules Street
(Lot 3 on SP172658)**

Client **WENTWORTH EQUITIES**

Local Government
BRISBANE CITY COUNCIL

locality
HAMILTON

10391.project

Drawn	Surv'd	Approved
SS	CD	CWW

SS	CD	CWW
Date Created	Job Ref.	
3/4/14	10391	

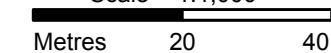
SCALE @ A1	1:250	PLAN No.	Rev.
SCALE @ A3	1:500	4	C

Plot Date: 08/04/2014 1039IDE12_C.DWG

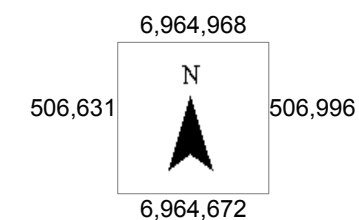
BCC BIMAP

EXISTING STORMWATER PLAN

Scale = 1:1,000



Location :



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BCC BIMAP

EXISTING SEWER PLAN

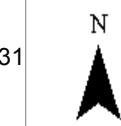
Scale = 1:1,000

Metres 20 40

Location :

6,964,968

506,631



506,996

6,964,672



Disclaimer :

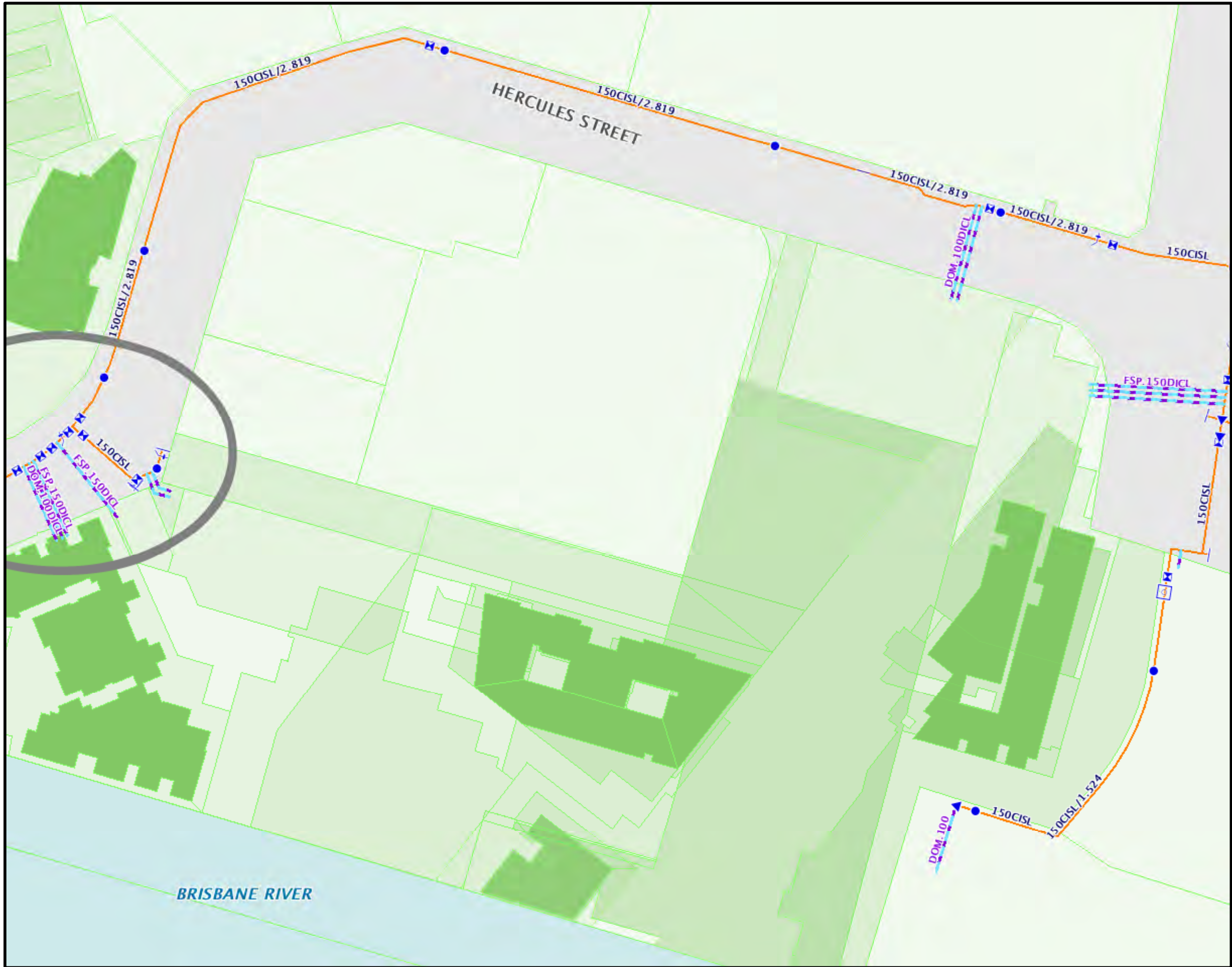
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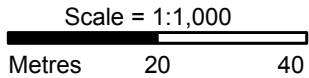


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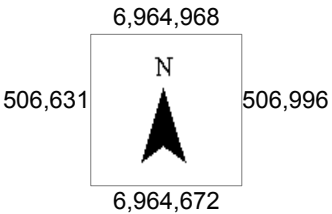


BCC BIMAP

EXISTING WATER
PLAN



Location :



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APPENDIX E

QUU CORRESPONDANCE

28 May 2014
Ref. No. 12191

Queensland Urban Utilities
Email: Sajid.Syed@urbanutilities.com.au

ATTENTION: SAJID SYED

Dear Sir,

Re: HERCULES STREET SEWER STRATEGY

We provide the following information in relation to the Hercules Street Sewer Strategy.

BACKGROUND

Through discussions with QUU regarding the existing and future developments proposed surrounding Hercules Street, we understand that the existing 225mm diameter sewer located within Hercules Street has reached capacity. The original servicing strategy completed by Parsons Brinckerhoff required a new line to be extended from the existing 400 diameter sewer in Macarthur Avenue, to Hercules Street, with diversion of existing properties to this line. Given level constraints of existing connections and existing stormwater infrastructure posing potential services clashes an alternative strategy is proposed.

INVESTIGATION

Bornhorst & Ward have completed an investigation into the site constraints, the existing and proposed land uses, and the sewer connection locations in the area thorough discussion with property owners and developers. The development densities obtained through this investigation are marked on drawing SK-C0061 attached. A summary of these findings are as follows:

- Proposed Catchments 1 and 2 do not currently have a sewer connection. Proposed Catchment 1, has a flow rate of 20L/s as advised by QUU.
- The existing Portside Development (Catchments 3A – 3F) discharges to Hercules Street, via a 225mm diameter property connection at the corner of Hercules Street and Remora Road. Through discussions with the property owners, it is believed that this is accurate; however no plans were obtained confirming the location of internal plumbing lines.
- The existing property connection level as discussed above is too low to gravitate to the existing 400 diameter sewer in Macarthur Avenue.
- Proposed catchments 3G and 5, and existing catchment 6, and connect to the existing Hercules Street Sewer.
- Future development loading on Catchment 4 is unknown.

- Catchment 7 is future parkland, however if this is changed to a development site, connection to the S1 Sewer in Kingsford Smith Drive will be required.
- It is noted that the existing Hamilton Harbour Development on the northern side of Hercules Street connects directly to the S1 sewer in Kingsford Smith Drive.
- There is an existing 1950mm diameter stormwater line running south through the intersection of Remora Road and Hercules Street. This poses constraint to gravitate a line through Hercules Street to Macarthur Avenue.

Based on connection locations and density information we have calculated a Peak Wet Weather Flow from each site, in accordance with the following parameters:

- 1.79 EP per Attached Dwelling (Appendix A4 SEQ WS&S D&C Code)
- 152EP/Ha of GFA for Commercial & Retail (Former BCC / QUU Advice)
- ADWF = 210 L/EP/Day (Table 10 SEQ WS&S D&C Code)
- PWWF = 5 x ADWF (Table 10 SEQ WS&S D&C Code)

SEWER STRATEGY

It is proposed to extend a new 315mm diameter sewer from the existing 400mm diameter Macarthur Avenue sewer, to Hercules Street. This sewer will be specifically to provide sewer connections to Catchments 1 and 2. All other existing sewer connections will remain, to the existing Hercules Street sewer. Refer drawing SK-C0061 attached.

It is noted as part of future road works, the 4.25m wide Hercules Street verge will remain, with an additional 3.0m bikelane being added, providing a minimum 7.25m distance from property boundary to kerb line. It is proposed to provide this sewer on a non standard alignment within additional 3.0m verge width (outside standard services zones). Manholes will be located outside the bikelane pavement.

With regards to the existing stormwater lines within the road reserves, it is proposed to replace a portion of this line to allow crossing of the sewer. A conceptual long section of the proposed sewer has been completed indicating the possible levels, and stormwater crossing details.

It is understood through discussions with QUU that diversion of these catchments to the new 315mm diameter line will relieve capacity in the existing Hercules Street sewer lines for future development on the southern side of Hercules Street (i.e. Catchments 3A – G, 4, 5 and 6).

TIMING

As part of the Northshore Hamilton Redevelopment, Civil Engineering Designs are currently being completed for realignment of Remora Road, Macarthur Avenue and Hercules Street. This is currently being undertaken by Economic Development Queensland and Bornhorst & Ward, and is expected to commence construction works later this year.

As part of these works, services upgrades will be provided including the sewer line proposed as part of this strategy.

We trust that this information is acceptable. If there are any queries, please contact the undersigned.

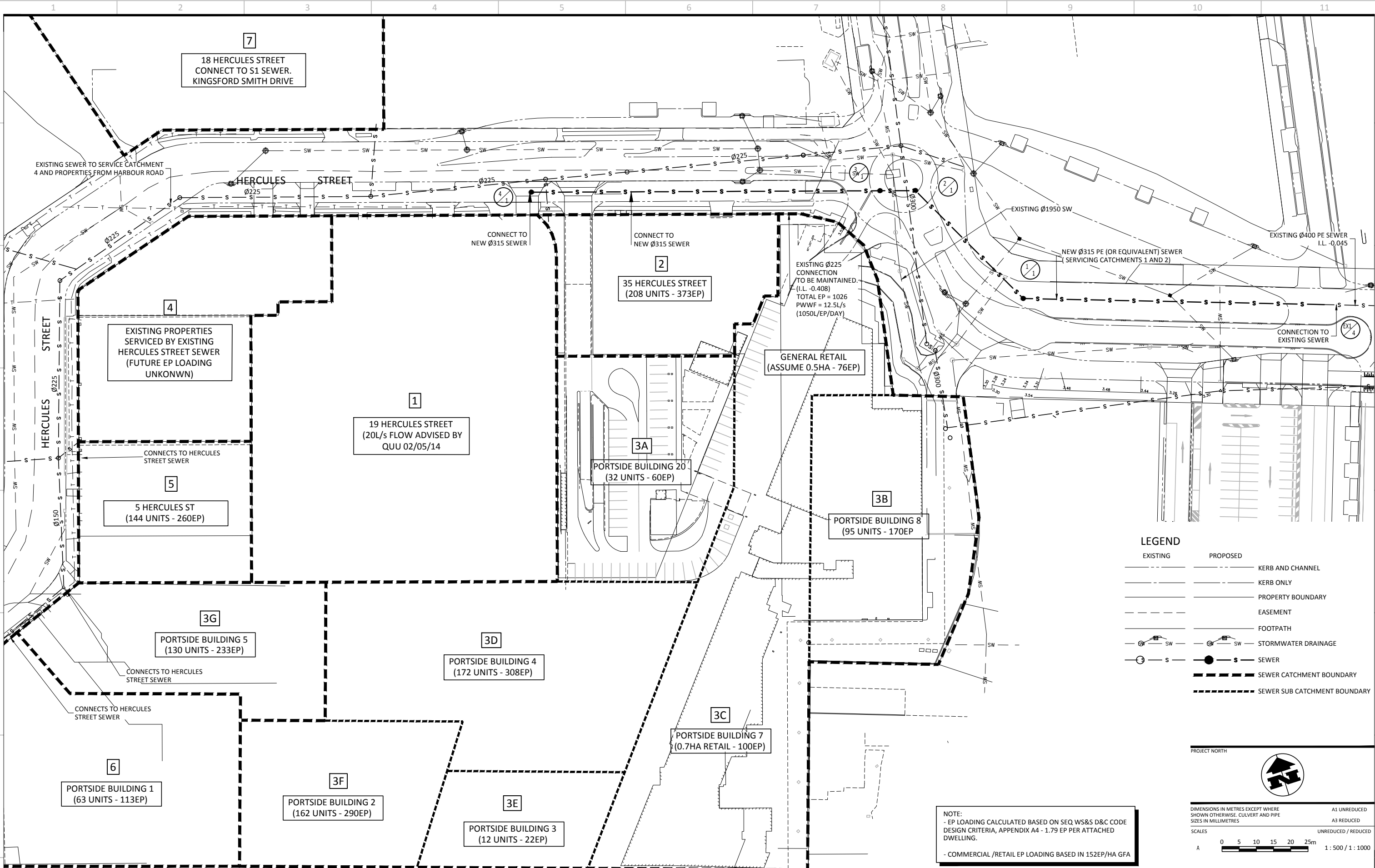
Yours faithfully,

BORNHORST & WARD PTY LTD



Per: KRIS RENSCH
CIVIL ENGINEER

Encl. Bornhorst & Ward Drawings SK-C0061, SK-C0062



18 HERCULES STREET
CONNECT TO S1 SEWER.
KINGSFORD SMITH DRIVE

7

EXISTING SEWER TO SERVICE CATCHMENT
4 AND PROPERTIES FROM HARBOUR ROAD

HERCULES STREET

4

EXISTING PROPERTIES
SERVICED BY EXISTING
HERCULES STREET SEWER
(FUTURE EP LOADING
UNKONWN)

5

5 HERCULES ST
(144 UNITS - 260EP)

3G

PORTSIDE BUILDING 5
(130 UNITS - 233EP)

6

PORTSIDE BUILDING 1
(63 UNITS - 113EP)

3F

PORTSIDE BUILDING 2
(162 UNITS - 290EP)

3E

PORTSIDE BUILDING 3
(12 UNITS - 22EP)

3D

PORTSIDE BUILDING 4
(172 UNITS - 308EP)

3C

PORTSIDE BUILDING 7
(0.7HA RETAIL - 100EP)

3B

PORTSIDE BUILDING 8
(95 UNITS - 170EP)

3A

PORTSIDE BUILDING 20
(32 UNITS - 60EP)

2

35 HERCULES STREET
(208 UNITS - 373EP)

1

19 HERCULES STREET
(20L/s FLOW ADVISED BY
QUU 02/05/14)

CONNECT TO NEW Ø315 SEWER

CONNECT TO NEW Ø315 SEWER

EXISTING Ø225
CONNECTION
TO BE MAINTAINED.
(I.L. -0.408)
TOTAL EP = 1026
PWWF = 12.5L/s
(1050L/EP/DAY)

GENERAL RETAIL
(ASSUME 0.5HA - 76EP)

EXISTING Ø1950 SW

NEW Ø315 PE (OR EQUIVALENT) SEWER
(SERVICING CATCHMENTS 1 AND 2)

EXISTING Ø400 PE SEWER
I.L. -0.045

CONNECTION TO EXISTING SEWER

CONNECTS TO HERCULES
STREET SEWER

CONNECTS TO HERCULES
STREET SEWER

CONNECTS TO HERCULES
STREET SEWER

LEGEND

EXISTING

PROPOSED

KERB AND CHANNEL

KERB ONLY

PROPERTY BOUNDARY

EASEMENT

FOOTPATH

STORMWATER DRAINAGE

SEWER

SEWER CATCHMENT BOUNDARY

SEWER SUB CATCHMENT BOUNDARY

PROJECT NORTH

DIMENSIONS IN METRES EXCEPT WHERE
SHOWN OTHERWISE. CULVERT AND PIPE
SIZES IN MILLIMETRES

A1 UNREDUCED
A3 REDUCED

SCALES

UNREDUCED / REDUCED

0 5 10 15 20 25m

1: 500 / 1: 1000

NOTE:

- EP LOADING CALCULATED BASED ON SEQ WS&S D&C CODE
DESIGN CRITERIA, APPENDIX A4 - 1.79 EP PER ATTACHED
DWELLING.

- COMMERCIAL /RETAIL EP LOADING BASED IN 152EP/HA GFA

PLAN
SCALE A

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REV.	DATE	AMENDMENT / ISSUE	DWN	DES	CHK	APP
C	28.05.14	FOR APPROVAL	MS	KR	NR	NR
B	22.05.14	ISSUE FOR QUU COMMENT	MS	KR	NR	NR
A	05.05.14	PRELIMINARY ISSUE FOR QUU COMMENT	MS	KR	NR	NR

ASSOCIATED CONSULTANTS

APPROVED

CHECKED

BORNHORST + WARD

CONSULTING ENGINEERS

CIVIL AND STRUCTURAL

Level 4, 67 Astor Terrace, Spring Hill, QLD 4000

Bornhorst & Ward Pty Ltd
Brisbane Australia
Phone (07) 3013 4699
Facsimile (07) 3013 4611
mail@bornhorstward.com.au
www.bornhorstward.com.au
A.C.N. 002 151 354 A.B.N. 78 002 151 354

CLIENT
URBAN LAND
DEVELOPMENT
AUTHORITY

PROJECT
NORTHSHORE HAMILTON
REMORA ROAD
ROADWORKS

SUBJECT
HERCULES STREET SEWER
STRATEGY

PROJECT No.
12191

DRAWING No.
SK-C0061

REVISION
C

James Dewhurst

From: Sajid Imam Syed [Sajid.Syed@urbanutilities.com.au]
Sent: Thursday, 17 July 2014 11:21 AM
To: James Dewhurst
Subject: FW: Completed - 13/5348, #b214046 Water Supply and Sewer Drainage - 19 Hercules Street, Hamilton - Sajid
Attachments: l140528 - Sewer Strategy.pdf; 19 Hercules Street Hamilton.pdf; Figure 1.pdf

FYI<

Kind Regards

Sajid Imam Syed
Engineer
Planning, Development Services

T 07 38556646 | 0738556099
E sajid.syed@urbanutilities.com.au
www.urbanutilities.com.au



From: Sajid Imam Syed
Sent: Monday, 16 June 2014 12:08 PM
To: 'bartp@emf.com.au'
Cc: DevelopmentEnquiries; Robert Kwok (Robert.Kwok@dsdip.qld.gov.au); Ian Hatton (Ian.Hatton@dsdip.qld.gov.au); Gary Quinn
Subject: Completed - 13/5348, #b214046 Water Supply and Sewer Drainage - 19 Hercules Street, Hamilton - Sajid

Hi Bart,

I refer to your email of 30 April 2014 requesting advice regarding the existing water supply and sewerage infrastructure and its ability to service a proposed development at 19 Hercules Street, Hamilton.

The proposed development has been assessed as a mixed used development (Hotel Rooms – 250, Retail – 5500 m2 and Residential Apartments – 650 Units).

Water

Please find below QUU response to your enquiries in red:

- The size of the water connection main (highlighted yellow) coming into the property at 19 Hercules Street, Hamilton,
The size of property connection is 150mm dia. There is an additional 20mm water service connection servicing the property in accordance with the QUU's GIS information. Please verify these sizes on site.
- The size of the water main (highlighted orange) in Hercules Street,

The existing water main in Hercules Street is 150mm dia. Cast Iron Spun Lined constructed in 1962.

- The town main (highlighted orange) in Hercules Street is either independent or form part of an interconnected system,

Town main in Hercules Street form part of interconnected system.

- The town main (highlighted orange) in Hercules Street is connected to more than one source, and

The town main in Hercules Street is connected to more than one reservoir.

- Urban Utilities will allow two connections (for the fire sprinkler system) to be made to the town main (highlighted orange) in Hercules Street.

Urban Utilities can allow two connections for the fire sprinkler system. However for the reliability of supply, it is recommended to construct a new 150mm or equivalent ID water main from Point A-B as shown in attached Figure 1. The construction of proposed water main will provide dual feed to the development in an event of the existing water main failure on either side of the development. The two connections for fire sprinkler system can be provided one from existing 150mm water main and one from proposed 150mm water main.

- Can you please provide a pressure and flow model for the water main in Hercules Street.

Please find attached.

- Can you please model the pressure and flow for this main up to the maximum flow or 60 litres/second whichever is greater.

Please find attached.

- can you please confirm whether QUU can guarantee the maximum modelled water supply for a minimum period of one hour at any given time.

No, The developer's hydraulic consultant should assess the risk and provide necessary measures on site to mitigate those risk.

Sewer

The proposed development is required to be serviced by a new DN315mm sewer in Hercules Street, connecting to the existing DN400mm sewer in Macarthur Avenue in accordance with the attached sewer servicing strategy (By Bornhorst + Ward dated 28/05/2014) of the area agreed with Economic Development Queensland (EDQ).

If you wish to discuss this matter further please e-mail developmentenquiries@urbanutilities.com.au with the QUU reference number or call (07) 34322200.

For all new enquiries please e-mail them to developmentenquiries@urbanutilities.com.au so the request can be recorded and allocated to an available officer. Request sent directly to officer will not be actioned

Kind regards

Sajid Imam Syed
Engineer
Development Services

T 07 38556646 |
E sajid.syed@urbanutilities.com.au
www.urbanutilities.com.au

From: Bart Paweloszek [<mailto:bartp@emf.com.au>]

Sent: Wednesday, 30 April 2014 3:36 PM

To: DevelopmentEnquiries

Cc: tbpl16

Subject: Due 26 May 2014, 13/5348, #b214046 Water Supply and Sewer Drainage - 19 Hercules Street, Hamilton - Sajid

To Whom It May Concern,

We are in the process of commencing design work on a new development in Hamilton.

Development Summary:

54000m2 GFA Total

12000m2 for hotel (approx. 250 rooms)

5500m2 retail

36500m2 for residential (650 apartments).

800 car spaces on 7 levels below ground.

1. With respect to the water supply and the attached plan "Water Supply", could you please confirm the following;

- The size of the water connection main (highlighted yellow) coming into the property at 19 Hercules Street, Hamilton,
- The size of the water main (highlighted orange) in Hercules Street,
- The town main (highlighted orange) in Hercules Street is either independent or form part of an interconnected system,
- The town main (highlighted orange) in Hercules Street is connected to more than one source, and
- Urban Utilities will allow two connections (for the fire sprinkler system) to be made to the town main (highlighted orange) in Hercules Street.

Can you please provide a pressure and flow model for the water main in Hercules Street.

Can you please model the pressure and flow for this main up to the maximum flow or 60 litres/second whichever is greater.

Also, can you please confirm whether QUU can guarantee the maximum modelled water supply for a minimum period of one hour at any given time.

2. With respect to sewer drainage and the attached plan "Sewer Drainage", could you please confirm the following;

- Whether the sewer main in Hercules Street has the capacity for sewer discharge from the development based on the information in summary above,
- The required point of connection to QUU sewer main,
- Can multiple sewer connections be made (for example at locations 1 and 2 highlighted in yellow on the attached "Sewer Drainage"),
- Invert level/s at the required connection point/s.

Thank you for your assistance.

Kind regards,
Bart Paweloszek



1991-2014 Celebrating 23 Years

EMF Griffiths | Gold Coast | Sydney | Brisbane

AS/NZS ISO 9001:2008

T: 07 3254 2788 | F: 07 3254 2799 | E: bartp@emf.com.au

82 Arthur Street, Fortitude Valley QLD 4006



COMPETITION: Congratulations to last rounds winners of the EMF Photo Competition and thanks to all the participants. Get your photo of the EMF Dog 'Griffy' or the EMF Bag in a prominent location to vickib@emf.com.au. There will be a prize for best photo with Griffy or the Bag. Competition closes the 31st January 2015.

Please consider the environment before printing this e-mail.

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APPENDIX F

HYDRAULIC CALCULATIONS

INITIAL PEAK FLOW CALCULATIONS

Based on QUDM (2008) 4.00 'Catchment Hydrology'

Written by BB 31/10/08

Job Number: **14122**
 Job Name: **Icon**

Designed: **JD**
 Checked:

IFD Location: **Hamilton**

BORNHORST + WARD
CONSULTING ENGINEERS
CIVIL AND STRUCTURAL

TOTAL RUNOFF COEFF.						
		Sub Catchment Area (Ha)		Runoff Coefficients		Calculated C10
No.	Existing	Proposed	Existing	Proposed	Existing	Proposed
Lot 3 SP 172658	0.764	0.764	0.88	0.90		
	0.7637	0.7637			0.88	0.90

Raw IFD data has been obtained from the Bureau of Meteorology (BOM) website.

EXISTING TIME OF CONCENTRATION		
SHEET FLOW	Std Inlet Time	5
	Site Slope (%)	0
	Flow Length (m)	0
	Horton's "n"	0
	Travel Time (min)	0.00
CHANNEL/PIPE FLOW	Travel Length (m)	0
	Fall (m)	0
	Travel Time (min)	0
	Multiplier	0
	Travel Time (min)	0
	Total Time (Tc)	5.0

DEVELOPED TIME OF CONCENTRATION		
SHEET FLOW	Std Inlet Time	5
	Site Slope (%)	0
	Flow Length (m)	0
	Horton's "n"	0
	Travel Time (min)	0.00
CHANNEL/PIPE FLOW	Travel Length (m)	0
	Fall (m)	0
	Travel Time (min)	0
	Multiplier	0
	Travel Time (min)	0
	Total Time (Tc)	5.0

PEAK RUNOFF CALCULATIONS						
ARI Event yr	Rainfall Intensity (mm/hr)		Coefficient of Runoff		Peak Runoff Rates (m ³ /s)	
	Existing	Proposed	Existing	Proposed	Existing	Proposed
1	119	119	0.70	0.72	0.178	0.182
2	152	152	0.75	0.77	0.242	0.247
5	192	192	0.84	0.86	0.340	0.347
10	214	214	0.88	0.90	0.400	0.410
20	246	246	0.92	0.95	0.482	0.493
50	287	287	1.00	1.00	0.609	0.609
100	319	319	1.00	1.00	0.676	0.676

PEAK FLOWS FOR FREQUENT EVENTS			
ARI Event yr	% of Q1	Peak discharge (m ³ /s)	
		Existing	Proposed
1mth	25%	0.044	0.045
2mth	40%	0.071	0.073
3mth	50%	0.089	0.091
4mth	60%	0.107	0.109
6mth	75%	0.133	0.136
9mth	90%	0.160	0.164
12mth	100%	0.178	0.182