MERITON
SUPERIOR QUALITY AND VALUE
SINCE 1963

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12 November 2013

Mr Chris Wilson
Executive Director – Major Projects
NSW Department of Planning and Infrastructure
23-33 Bridge Street
SYDNEY NSW 2000

Dear Mr Wilson

78-90 OLD CANTERNBURY ROAD, LEWISHAM
SECTION 75W – AMENDMENT TO CONDITONS 11 OF CONCEPT APPROVAL MP08-0195)

In accordance with Section 75W of the Environmental Planning and Assessment Act 1979 (as amended from time to time), a modification is sought to amend Condition 11 of MP08-195 ("Concept Approval") to allow for the inclusion of "through site links" and "drainage reserves" as part of the approved Central Open Space.

Currently, the condition does not permit the inclusion of "through site links" in the Central Open Space which is ambiguous given what is shown in the approved Green Space Calculation Analysis plan (refer to ***Annexure 1***). The approved plan includes the major pedestrian/cycle link along the northern boundary of the central open space as well as other links between building A and C that will facilitate through-site access. In addition, the underlying purpose of the Central Open Space as per Section 9.45 of Council's Development Control Plan (DCP) is to provide a thoroughfare to the future light rail station. Accordingly, we seek a change to the condition to clarify that "through site links" can be included in the proposed Central Open Space provision.

The current condition also excludes "drainage reserves" from being included in the Central Open Space provision. Meriton has recently received in-principle support from Marrickville Council (refer to ***Annexure 2***) to realign the existing drainage system that currently traverses the site under the central open space with a corresponding emergency overland flow path. The details are provided in the attached Flood Report by Cardno (***Annexure 3***) which will be integrated into the future Development Application. This approach is consistent with commonly adopted water sensitive urban design principals to utilise public open space as part of local drainage systems. Accordingly, we seek a change in the condition to allow "drainage reserves" in the proposed central open space provision.

Proposed amendments to Condition 11

We are seeking the following amendment to condition 11 of Schedule 3:

"Public Open Space

11. *Future Development Applications shall provide a minimum of 3,000m² of publicly accessible open space. Through site links and drainage reserves ~~should not~~* ***shall*** *be included as open space provision. All public and private open spaces shall be clearly defined and functions identified."*

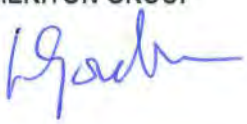
Conclusion

The changes to condition 11 will facilitate the intended purpose of the COS to provide a thoroughfare to the future light rail station as per Council's DCP and to achieve an agreed outcome in terms of the drainage design. The proposed changes are also consistent with current approaches to public open space as multi-function spaces that can be more than just areas for recreation, but also provide permeability in the local neighbourhood and are part of local drainage systems.

Importantly, the proposed changes will provide clarity and allow Meriton to prepare and submit subsequent Development Applications to deliver this strategically important development.

Should you have any queries, please do not hesitate to contact me in the first instance.

Yours faithfully
MERITON GROUP



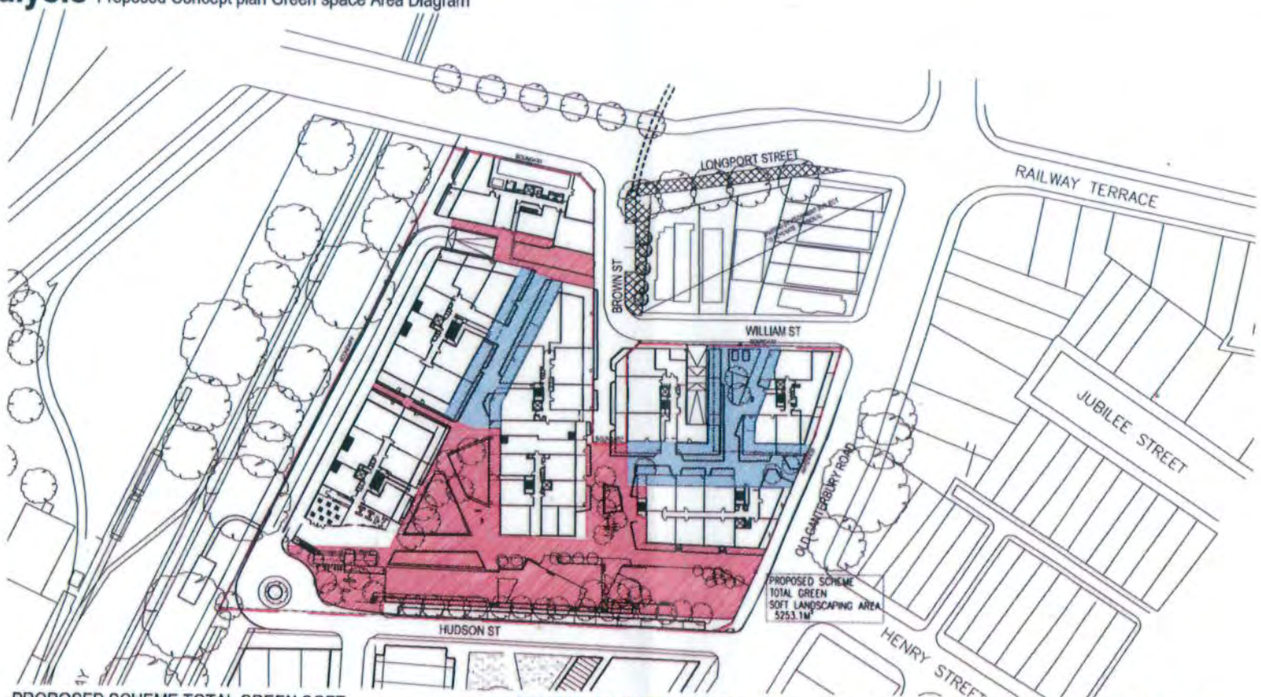
Walter Gordon
Director of Planning and Development

ANNEXURE 1

22.1_Green Space Calculation Analysis

Proposed Concept plan Green space Area Diagram

NOTES:
- ALL OPENINGS WITHIN 3m OF THE SIDE BOUNDARY ARE TO BE PROTECTED IN ACCORDANCE TO BCA CLAUSE C3.4.

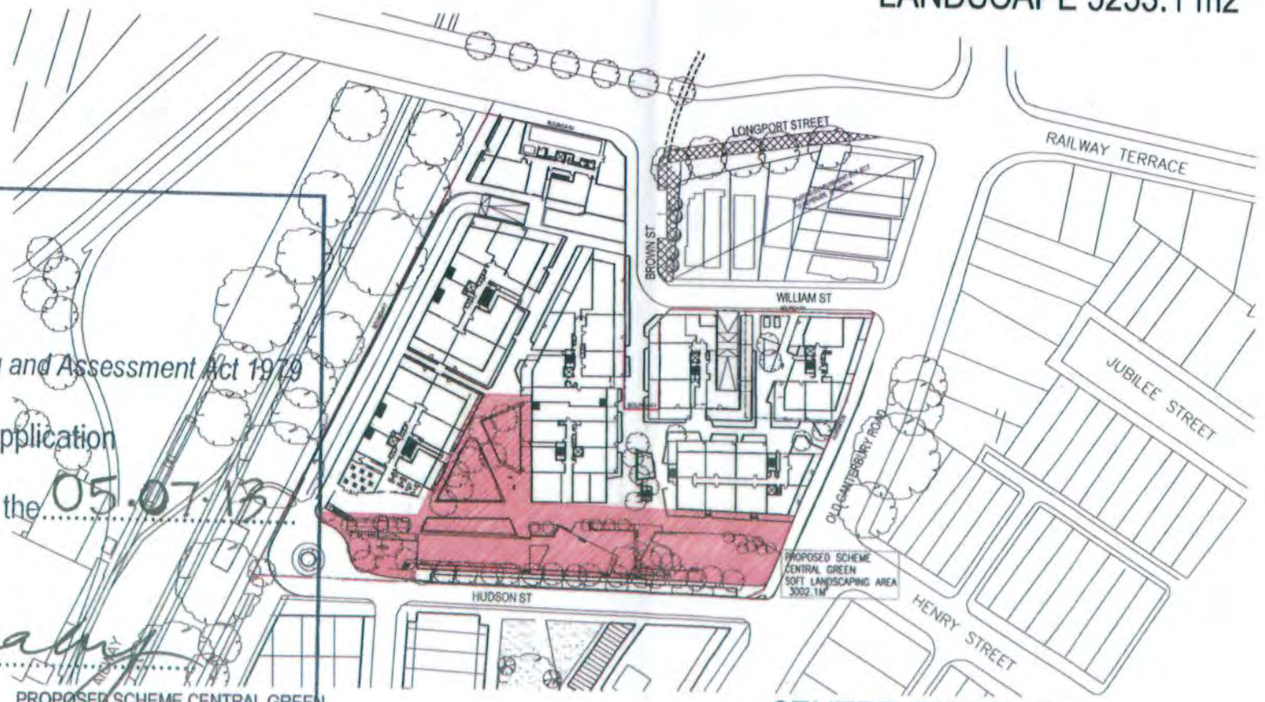


PROPOSED SCHEME TOTAL GREEN SOFT LANDSCAPING AREA DIAGRAM

PRIVATE OPEN SPACE 1565.9.2M2

PUBLIC OPEN SPACE 3687.2M2

TOTAL GREEN SOFT LANDSCAPE 5253.1 m2



PROPOSED SCHEME CENTRAL GREEN SOFT LANDSCAPING AREA DIAGRAM

CENTER GREEN SOFT LANDSCAPING AREA 3002.1m2

NSW GOVERNMENT
Planning

Issued under the Environmental Planning and Assessment Act 1979

Approved Section 75W Modification Application

No. MOD 1 granted on the 05.07.13

in respect to MP 08_0195

Signed.....

Sheet No. 5 of 5

Rev.	Description	Date
A	CONCEPTUAL PLAN SUBMISSION	13/11/12
B	REVISED PLANS	02/12/12
C	REVISED PLANS	10/05/13
D	REVISED PLANS	20/11/13
E	REVISED PLANS	13/12/13
F	REVISED PLANS	19/04/13

Disclaimer

Notes

Legend

Consultants

Client
LEWISHAM ESTATE PTY LTD

Architects
tony owen ptnrs

Project
LEWISHAM INDICATIVE CONCEPTUAL PLAN

Project address
McGILL STREET PRECINCT

Key plan

Drawing title PROPOSED SCHEME GREEN LANDSCAPE AREA DIAGRAM

Project no. 810 | Drawing no. 800 | Rev. F

Drawn -

Drawing status
CONCEPT PLAN

ANNEXURE 2

Shener Dursun

From: Joe Bertacco <joe.bertacco@marrickville.nsw.gov.au>
Sent: Wednesday, 30 October 2013 3:36 PM
To: shenerd@meriton.com.au
Subject: Lewisham Estate Drainage Works

Hi Shener,

The proposed Lewisham Estate Drainage Works (report dated 18/10/13 and plans SK22, SK23 and SK25) are acceptable to Council in concept.

With any proposed future DA please ensure that a Flood Report is submitted including the following items;

- For background the discussion paper and addendum dated 14 August 2013 should be discussed and included in an appendix;
- For Clarity please ensure that Table 1 (from the discussion report dated 14 August 2013) or similar is reproduced with the final scheme included in the table;
- Check to see if there is a change in flood risk to surrounding properties
- Assess the overland flow paths for safety i.e. VxD relationship; and
- Tabulated HGL calculation which detail the pit loss coefficients used at each pit and the down tail water level used.

Regards

Joseph Bertacco
Development Engineer
Ph: 9335 2225 Fax: 9335 2029
Email: endc@marrickville.nsw.gov.au

ANNEXURE 3

Our Ref: 59914007[13-0257]

Contact: Matthew Zollinger

18th October 2013

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Meriton Group
Level 11, Meriton Tower,
528 Kent Street, Sydney NSW 2000

Attention: Shener Dursun

Dear Shener

LEWISHAM ESTATE DRAINAGE WORKS

This letter is to discuss the upgrade to Council's and Sydney Water's drainage infrastructure by the proposed Lewisham Estate development. The process and the results of the flood modelling that has been undertaken is discussed.

1. BACKGROUND

Under existing conditions a Sydney Water channel has been covered and piped with no allowance for a formalised overland flow path for flows which exceed the capacity of the conduit. The proposed development seeks to provide a formalised overland flowpath to convey the 100 year ARI flows from the local catchment east of Old Canterbury Road to the Light Rail corridor and Hawthorne Canal.

In 2011 Cardno undertook flood modelling to assess the development of the conceptual design for the site. The flood assessment was subsequently approved by the Department of Planning and Infrastructure (2012) with conditions to ensure the development of the site will not adversely impact on any surrounding property (including the Light Rail corridor) due to the redirection of floodwaters or loss of flood storage.

This letter discusses the results of additional modelling that has been undertaken to further develop the design for this site to inform a Development Application.

Cardno and Meriton have met with Sydney Water and Marrickville Council to discuss the options for managing floodwaters from both the Hawthorne Canal and from the local catchment upstream of the site to enable the progression of this development.

It was agreed with Sydney Water that it would be best if a copy of the Sydney Water model be supplied to Cardno to ensure consistency with the benchmark conditions. What is to be considered acceptable changes to peak 100 year ARI water levels as a result of the proposed development was also discussed.

To facilitate the timely assessment of the options a request for clarification and/or confirmation of the following was forwarded to Sydney Water on 31 July 2013:

1. Acceptable changes in peak 100 year water levels within the Hawthorne Canal corridor;
2. Blockages assessment – We are proposing to block the culverts by 50% and run the 100 year ARI event. We suggest applying a blockage to either location A or B in **Figure 1** below, Sydney Water's preference is requested. This assessment is for consideration of the scale of potential impacts to the proposed development and will not to be used for setting floor levels for the development or for assessing impacts on surrounding properties;
3. A Flood Risk Management Plan is to be submitted with the development application (not the early works DA). This will assess the risk to the site from higher order floods such as the PMF;
4. Sydney Water will provide a copy of the WMAwater model to Cardno to ensure that our benchmark modelling is consistent with the Sydney Water results; and
5. Only the 20 and 100 year ARIs need be assessed for this site.

Sydney Water provided the following responses to the request for clarification and/or confirmation

1. *The changes in water level may not be just confined to the canal but more likely to impact surrounding land, which is privately owned. Until the 1 in 100 year ARI models are executed for both options it is difficult to indicate at this stage what the acceptable changes in water levels are within the Hawthorne Canal.*

Figure 1 - Downstream Blockage Options

2. *Both 50 and 100% blockage should be modelled for both options at Hawthorn Canal culvert on Longport Street.*
3. *We are comfortable with the Flood Risk Management Plan (FRMP) to be submitted together with the development application. The plan should comply with Marrickville Council's FRMP requirements.*
4. *Sydney Water will provide you with a contact for access to the WMAwater model for consistency.*
5. *To meet all stakeholder requirements we require that the 5, 20 and 100 year ARIs be assessed for both options.*

Following discussions with Council the following clarifications were sought – Council's responses are in brackets;

1. In principle Council considers changes to peak flood levels for the 100 year ARI of less of 0.1m not to be significant; (*Council's DCP allows a change of .1m but this needs to balanced against the 2 following points below*);
2. We will need to assess the floor levels of properties that are affected by changes in peak flood levels to determine if the impacts are significant; (*agree this may result in 0.1m change being significant*);
3. We will need to consider the change in flood risk on surrounding properties as a result of the development (*agree*);
4. We need to consider blockage of the sag pits proposed in Old Canterbury Road by 50%. It is proposed to block pits B/2 and B/1 by 50% and pits B3/A, B3, B4 and the 15m long letter box pit by 20%; (*agree however Council reserves the right to increased inlet capacity as a factor of safety against blockage if it deems it necessary upon assessment of the DA and final drainage plans*);
5. All basement access will have a freeboard of 500mm above the 100 year flood levels; (*Agree with regard to the overland flow from Old Canterbury Road*);
6. The development must be consistent with Councils DCP 2.22 (flood management);(*confirmed*);
7. RMS will need to accept the increase in peak flood levels on Old Canterbury Road, Council will refer the DA to RMS for comment; (*Agree*);
8. There may be conflicting conditions in the consent regarding the trunk drainage pipe being located under the park - Council to confirm; and (*See Schedulue 3 of part 3A concept approval Condition 11 - Public Open space*);
9. Meriton are going to consider their options for an "early works DA" to enable the construction of the trunk drainage system. (*noted*); and
10. *Council is not in favour of a drainage pipe or culvert being built over the basement carpark*.

2. EXISTING DRAINAGE SYSTEM

The existing drainage network consists of a covered Sydney Water channel flowing through the Lewisham Estate with no formal provision for overland flow. Presently flows exceed the capacity of the conduit in approximately a 1 - 2 year ARI storm event. Water ponds on Old Canterbury Road before overtopping and flowing through the site as shown in **Figure 2 and 3**. Buildings were constructed across the natural overland flow path resulting in damage to buildings and risk to life from high hazard flow through the site during flood events. Flows cross the Light Rail corridor before entering Hawthorne Canal.

Figure 2 - Existing Overland Flow

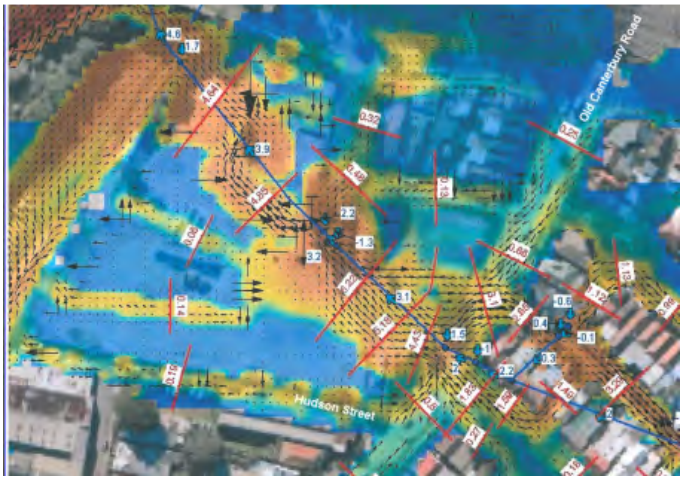

Figure 3 - Existing Overland Flow

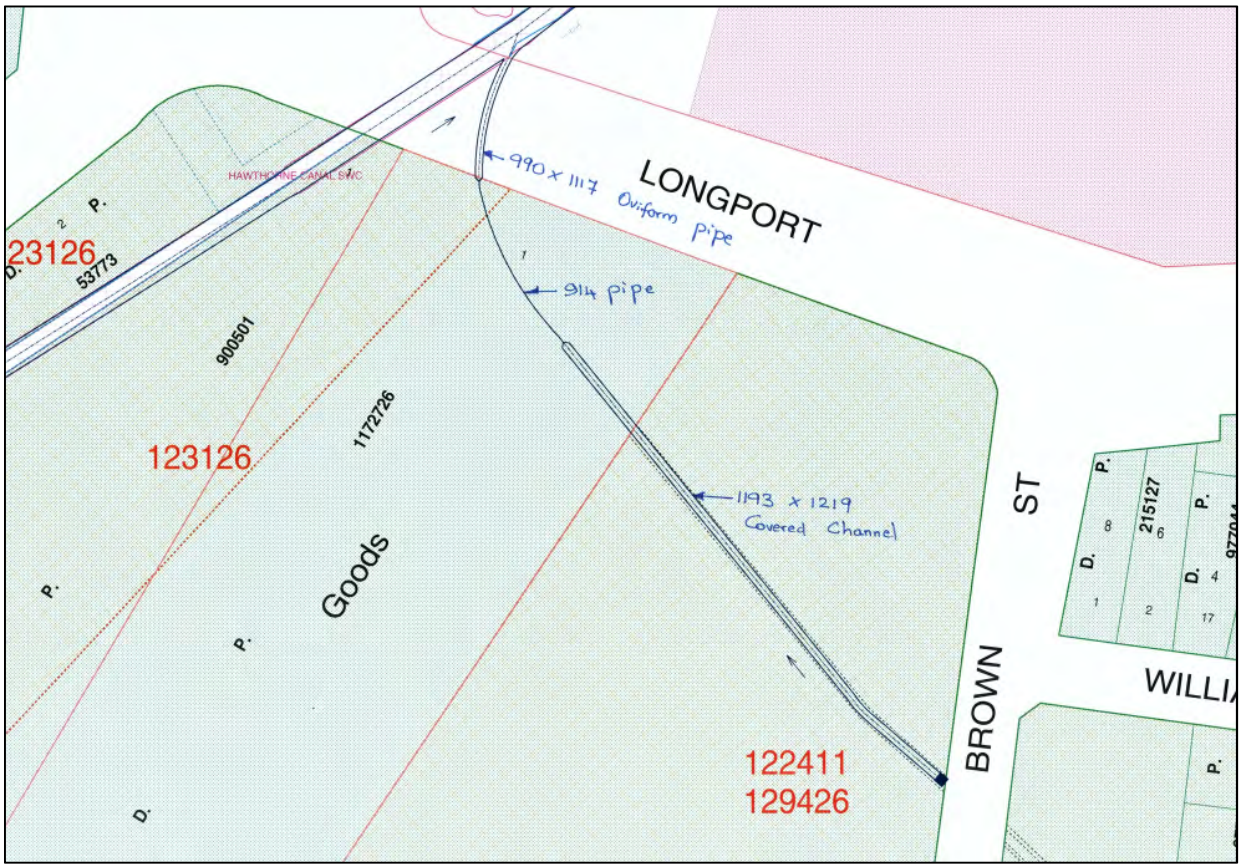

Figure 4 - Sydney Water Infrastructure

The existing trunk drainage infrastructure (covered channel and oviform pipe) traversing the site is owned by Sydney Water (**Figure 4**). Council owns the drainage system in Old Canterbury Road which drains into the Sydney Water system, surface water on Old Canterbury Road enters the system through four pits located on Old Canterbury Road (**Figure 5**). Flows that exceed the capacity of these pits travel overland through the site.

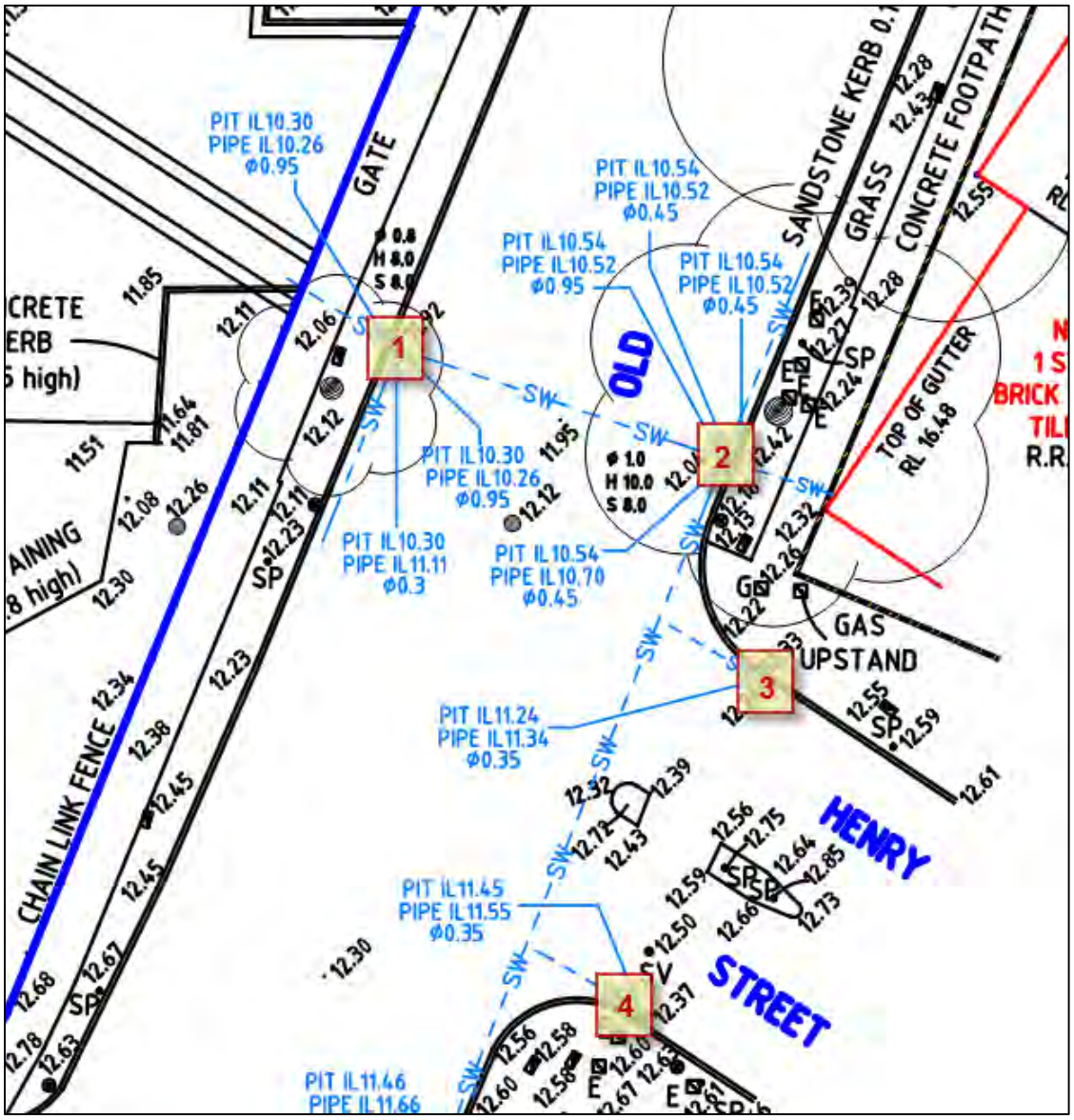

Figure 5 – Existing Inlet pits on Old Canterbury Road

3. PROPOSED DRAINAGE SYSTEM

The proposed development of Lewisham Estate seeks to upgrade the trunk drainage system that presently flows through the site and provide a formal overland flow path which will minimise the risk of damage to property and risk to people (**Figure 6**). The proposed upgrade of the system is consistent with the intent of the 2005 Floodplain Development Manual and Council's DCP 2.22 and will provide a benefit to the present and future community.

The development of Lewisham Estate provides an additional two stormwater pits in Old Canterbury Road enabling water that previously ponded on Old Canterbury Road to access the upgraded trunk drainage system. The existing pipes that flow under buildings will be replaced by larger pipes that will be located under the proposed open space/overland flow path area parallel to Hudson Street (**Figure 6),** detailed drawings of the upgraded stormwater network are provided in Appendix A).

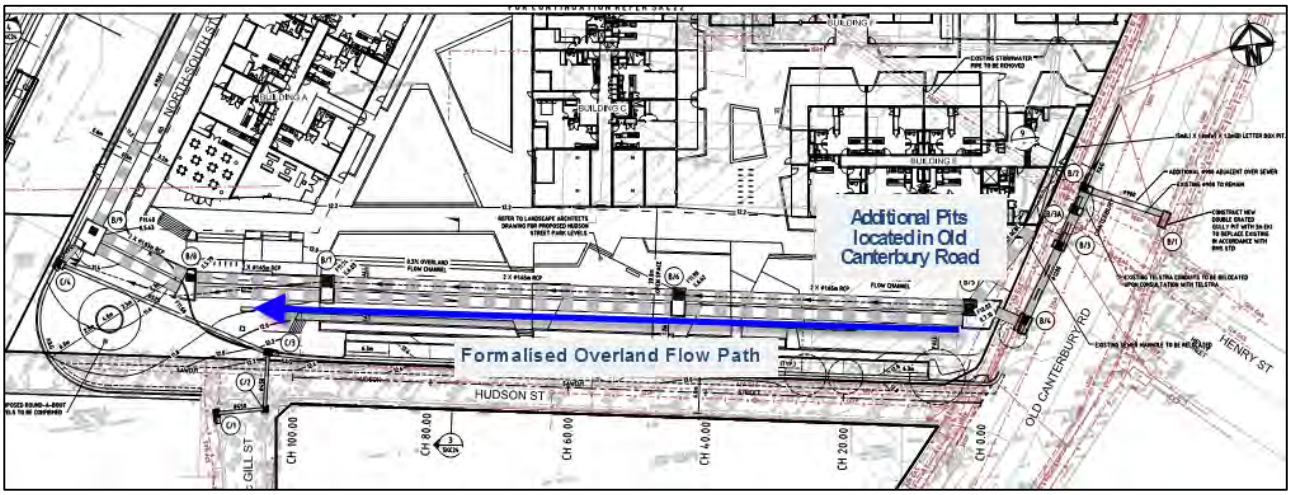

Figure 6 - Upgraded Drainage Network

4. FLOOD MODELLING

The approach that was adopted was to utilise the supplied copy of the WMAwater TUFLOW model of Hawthorne Canal and its tributaries to establish benchmark flooding and to then modify this model to represent the planned development, then run the model and assess the impacts of planned development on flooding.

The inputs to the assessment comprised:

1. A copy of the WMA benchmark model and/or model results for the agreed events supplied by Sydney Water and WMAwater;
2. Information on drainage assets already held;
3. An electronic copy of site drawings and site survey provided by Meriton;
4. Copies of models assembled previously by Cardno and/or others; and
5. Information on the proposed drainage system works provided by Meriton and/or AT&L.

4.1 Existing Conditions

The TUFLOW model supplied by WMAwater/Sydney Water is a 1D/2D model with conduits and narrow channels represented as 1D elements in combination with the terrain which is represented using a 3m x 3m grid. Inflows are input as local hydrographs generated by a hydrological model.

The location of previous development on the site is given in **Figure B1** (Figures supplied in Appendix B) and detailed in the 2003 site survey given in **Figure B2**.

The inflow hydrographs are assigned to a zone where the model automatically inputs the flows at the lowest level within the zone. The local sub catchment boundaries and inflow zones are identified in **Figure B3**.

The effective location of inflows within the site under Existing Conditions is problematic in comparison with the buildings previously located on the site. The northern local inflow is located downstream of a building which would be expected to pond overland flows from the upstream areas of the local sub catchment. The southern local inflow assumes that all runoff west of Brown Street is directed back onto Brown Street.

To overcome these assumptions two local inflows were deleted and they replaced with a "rainfall-on-grid" representation of rainfall/runoff in this area.

The adopted roughness values under Existing Conditions are given in **Figure B4**.

The estimated 100 year ARI flood extents and depths are given in **Figure B5**. The estimated 100 year ARI flood velocities are given in **Figure B6**.

A feature of the WMAwater model and the results in **Figures B5** and **B6** is the major assumed flow path through a former building. This appears to have been based on a driveway off Brown Street and a driveway ramp on the side of the building (refer **Figure B2**).

4.2 Future Conditions

The Future Conditions model is based on the drainage re-alignment and augmentations shown in **Appendix A.** . Overland flows from the formalised overland flow path are directed down the access road along the western boundary of the site to the location where the existing system discharges into the rail corridor well downstream of the proposed light rail station.

Key hydraulic features of proposed system:

1. Two additional kerb inlet pits located in Old Canterbury Road;
2. A 15 metre long letterbox inlet located within the proposed development parallel to Old Canterbury Road (under Building E);
3. Twin 1650 mm pipes located under the proposed open space/overland flow path area parallel to Hudson Street;
4. A surcharge pit located at the corner of the overland flow path and North-South Street (B/9);
5. Lowering of the overland flow path by 0.3m (eastern end RL 11.7 m, western end RL 11.3 m);
6. A wall between the site and the Light Rail corridor to a minimum height of 1.0 m until the outlet of the overland flow path located at the low point in the driveway adjacent to Building B;
7. A gap in the boundary wall to allow overland flow to discharge into the Light Rail corridor;
8. A surcharge pit located at the connection to the Sydney Water trunk drainage pipe downstream of the site;
9. A surcharge pit located at entry to overland flow path (B/5).

As per Council's request the inlet pits on Old Canterbury Road were blocked for the developed scenario (50% for the sag pits and 20% for the other pits). A marked up sketch detailing the hydraulic controls modelled is provided in **Figure B7.**

4.3 Results

The estimated 100 year ARI flood extents and depths are shown in **Figure B8**. Flood level differences in comparison with the 100 year ARI flood levels are given in **Figures B9**, the 20 year results are shown in **Figure B10** and **B11.** The results show:

- The proposed scheme results in a local increase in the peak 100 year ARI flood level in Old Canterbury Road of 0.1 m ie. from 12.4 m AHD under Existing Conditions to 12.5 m AHD under Future Conditions. This impact does not extend to any buildings and does not result in any additional over floor flooding;
- The proposed scheme results in a local increase in flood levels at the corner of Brown Street and William Street. There are some uncertainties regarding the existing flood levels at this location due to complexity of flow behaviour through buildings that had been constructed over the overland flow path. Notwithstanding this, there are differences to Existing Conditions within the road corridor of up to 0.24 m. The impact on properties is less than 0.2 m and additional floor level survey was undertaken to confirm that there was no existing buildings will be impacted by these changes. Buildings in this vicinity have a freeboard above the peak 100 year level greater than 0.77m under Future Conditions;
- There are some minor increases to peak depth of flooding on Old Canterbury Road adjacent to the site during the 20 year ARI. event This location is already experiences inundation on a regular basis and this minor increase is not considered significant;
- While **Figure B9** shows some local increases in peak flood levels within the Light Rail corridor at the end of Hudson Street this appears to be associated with the representation of the flood wall in the model and will be adjusted in future modelling.

The proposed schemes results in approximately 6.8 m^3/s being conveyed in the upgraded pipe network and 2.2$m^{3/}s$ flowing across the kerbline into the formalised overland flow path. **Table 1** summarises the flows developing from Lewisham Estate as well as those affecting the site from upstream.

Table 1 - Flow Summary

ARI	Current Site Discharge* (m^3/s)	Post Development Site Discharge* (m^3/s)	Upgraded trunk drainage flow capacity (m^3/s)	Overland flow (m^3/s)	Total Catchment flows (m^3/s)	percentage contribution of site to total catchment flows
20	0.56	0.43	5.7	0.8	6.5	7%
100	0.69	0.51	6.8	2.2	9.0	6%

*Site discharges reported by Browns (Dec 2012)

+ Trunk drainage capacity is measured as the flow within pipes that flow into pit B/5 within the site. This pit may surcharge and transfer some of this flow into the formalised overland flow path.

5. BENEFITS TO THE COMMUNITY

The upgrading of the trunk drainage network will benefit the surrounding community as follows:

1. Flooding on Old Canterbury Road – The existing pipe network has a limited capacity and only conveys the 1-2 year ARI storm event with additional flows ponding on Old Canterbury Road before flowing overland. The proposed upgrade to the drainage system will convey the 5-10 year ARI flood event;
2. Light Rail Corridor - The proposed development will not significantly impact flooding in the Light Rail corridor. Additional modelling and works have been undertaken and civil works will be undertaken to ensure the new station adjacent to the site is not adversely affected by overland flow from the catchment upstream of Lewisham Estate;
3. Reduction in runoff - While runoff from the site only represents around 6% of flows during the 100 year ARI event and less than 7% of flows during the 20 year ARI event the development of Lewisham Estate includes on-site detention sufficient to return the discharge of stormwater from the site to that of a completely undeveloped site which will reduce the peak discharge into the Light Rail corridor;
4. Relocation of Council / Sydney Water assets - The relocation of the upgraded trunk drainage system from below existing privately owned buildings to Council owned public open space allows for easier access for maintenance and facilitates any future improvements to the upstream drainage system; and
5. Development south of Hudson Street – Presently stormwater from south of the site flows along Hudson Street and discharges into the Light Rail corridor in the vicinity of the new station. The proposed upgrade to the drainage system includes the installation of pits and pipes in McGill Street to manage the drainage of the area south of Hudson Street. This benefits the community by reducing the flooding of the Light Rail station and accommodating future development of the area immediately south of Hudson Street.

6. CONCLUSIONS

The development of Lewisham Estate is located at the downstream end of a highly urbanised local catchment with an drainage system with very limited capacity and with no provision for overland flows. The proposed upgrade of the drainage system through the site increases the capacity of the trunk drainage system from approximately a 1-2 year to 5-10 year ARI capacity. In addition to the increased pipe capacity the development provides a formal overland flow path to convey flows in excess of the augmented drainage system capacity. The proposed development considers future development of adjacent sites and provides upgraded street drainage on both McGill Street and Old Canterbury Road.

Development of the site results in some minor impacts to peak flood levels adjacent to the site. These minor impacts do not adversely impact on any existing properties and should be considered not significant.

The behaviour of floodwaters at this site is complex and there are further opportunities to optimise the drainage infrastructure at this location in future design work.

The upgrade of the trunk drainage system and installation of OSD as part of the development of Lewisham Estate benefits the wider community by increasing the drainage system capacity, providing a formal overland flow path, reducing peak flows generated by the site and facilitating future development south of Hudson Street.

A report addressing all flooding issues in accordance with Council's DCP will be submitted with the Development application for the site.

Should you have any questions please do not hesitate to contact the undersigned.

Yours faithfully,

Matthew Zollinger
Senior Project Manager
For Cardno
9024 7133
matthew.zollinger@cardno.com.au

Appendix A – Civil Drainage Plans (AT&L)
Appendix B – Flood Model Results

Appendix A – Civil Plans

EXISTING RAIL CORRIDOR

LONGPORT ST

TEMPORARY BATTER FOR CONSTRUCTION OF BASEMENT SUBJECT TO RAIL CORP. APPROVAL.

EXISTING Ø900 PIPE

6 SKC24

5.30m

BUILDING D

NEW SURCHARGE PIT BUILT ON EXISTING 900Ø PIPE
GRATE RL9.8
PIPE IL/ 4.56.
CONSTRUCTION TO SYDNEY WATER APPROVAL.

B/11 8 SKC23

STORMWATER PIT B/11 COVER LEVEL RL 12.2

IL4.60

RAMP LOCATION T.B.C

PIPEWORK UNDER BASEMENT SLAB

PIPEWORK UNDER BASEMENT SLAB

LIGHT RAIL CORRIDOR

3 x Ø525

RETAINING WALL

EXISTING SEWER TO BE REMOVED.

EXISTING STORMWATER CHANNEL TO BE REMOVED

2400W x 800 H BOX CULVERT

BUILDING B

5 SKC24

NORTH-SOUTH ST

LEVELS OF DRIVEWAY T.B.C

B/10

BUILDING C

BUILDING A

BASEMENT EXTENT

0.6m 5.5m 0.3m

BROWN ST

K&G

SAWCUT

9.6m

1.8m 3.0m 3.0m 1.8m

A/2 500Ø

2 SKC24

1 SKC24

EXISTING BROWN STREET AND WILLIAM STREET TO BE RE-GRADED.

PROPOSED DRIVEWAY ENTRANCE OFF WILLIAM TO PARKING LEVEL 1

WILLIAM ST

K&G

9.2m 3.0m 3.0m 1.6m 1.6m

A/3

A/1

RETAINING WALL

9.1m

BUILDING F

BUILDING G

REFER ARCHITECTURAL DRAWINGS FOR PROPOSED PEDESTRIAN ACCESS LEVELS

OLD CANTERBURY RD

FOR CONTINUATION REFER SKC23

DP 734142 DP 67926 DP 977044 DP 1172726

Issue	Description	Date
P4	ISSUED FOR INFORMATION	23-10-13
P3	ISSUED FOR INFORMATION	29-08-13
P2	ISSUED FOR INFORMATION	19-07-13
P1	ISSUED FOR INFORMATION	18-06-13

Bar Scales

0 5 10 15 20 25m

1 : 250 @ A1 1 : 500 @ A3

Client

MERITON

Scales	1 : 250 @ A1	Drawn	TS
		Designed	GB
Grid	MGA	Checked	AT
Height Datum	AHD	Approved	

Project

LEWISHAM ESTATE

Title

SITEWORKS AND STORMWATER DRAINAGE PLAN - SHEET 1

Civil Engineers and Project Managers
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Suite 702, 154 Pacific Hwy
St Leonards NSW 2065
ABN 96 130 882 405
Tel: 02 9439 1777
Fax: 02 9460 8413
www.atl.net.au
info@atl.net.au

Status: PRELIMINARY ISSUE
NOT TO BE USED FOR CONSTRUCTION

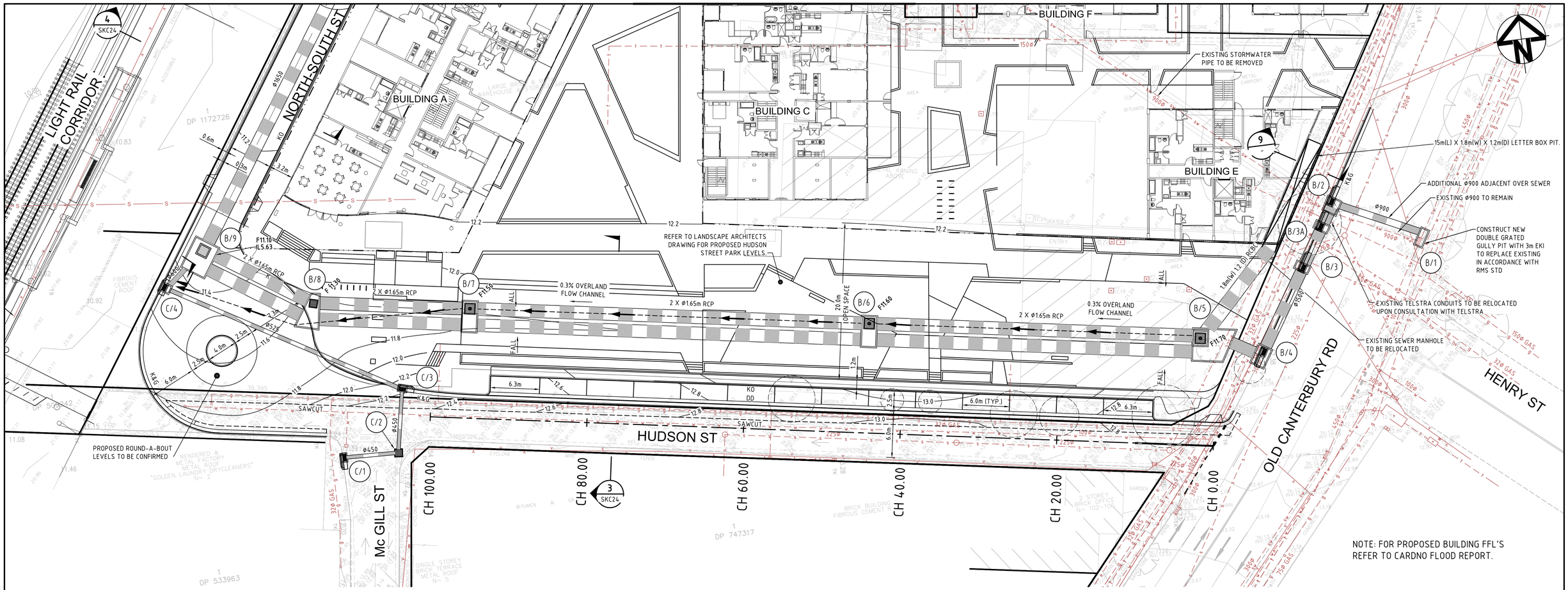
A1

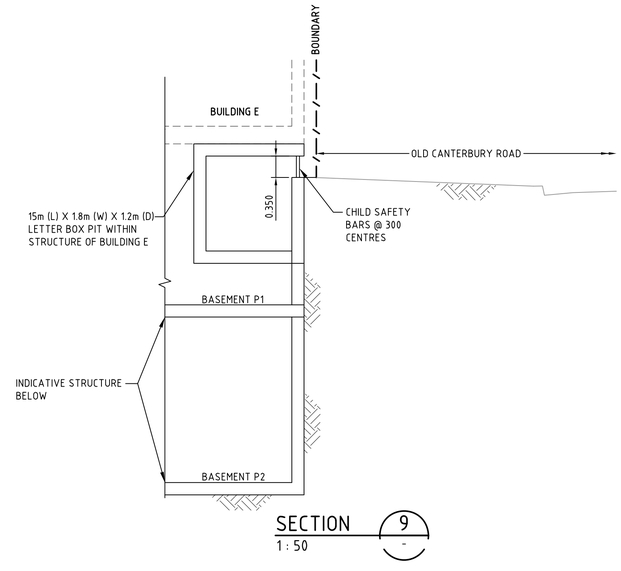
Drawing No.	Project No.	Issue
SKC22	12-100	P4

100mm on Original

F:\12-100 Lewisham\Drgs\Civil\Sketches\SKC22-Siteworks & Stormwater Plan-Sheet 1.dwg

FOR CONTINUATION REFER SKC22





SECTION 9
1 : 50

Issue	Description	Date
P5	ISSUED FOR INFORMATION	23-10-13
P4	ISSUED FOR INFORMATION	29-08-13
P3	RE-ISSUED FOR INFORMATION	13-08-13
P2	ISSUED FOR INFORMATION	19-07-13
P1	ISSUED FOR INFORMATION	18-06-13

100mm on Original

Bar Scales
0 5 10 15 20 25m
1 : 250 @ A1 1 : 500 @ A3

Client: MERITON

Scales: 1 : 250 @ A1
Grid: MGA
Height Datum: AHD

Drawn	TS
Designed	GB
Checked	AT
Approved	

Project: LEWISHAM ESTATE

Title: SITEWORKS AND STORMWATER DRAINAGE PLAN - SHEET 2

Civil Engineers and Project Managers
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Status: PRELIMINARY ISSUE
NOT TO BE USED FOR CONSTRUCTION

A1

Drawing No.	Project No.	Issue
SKC23	12-100	P5

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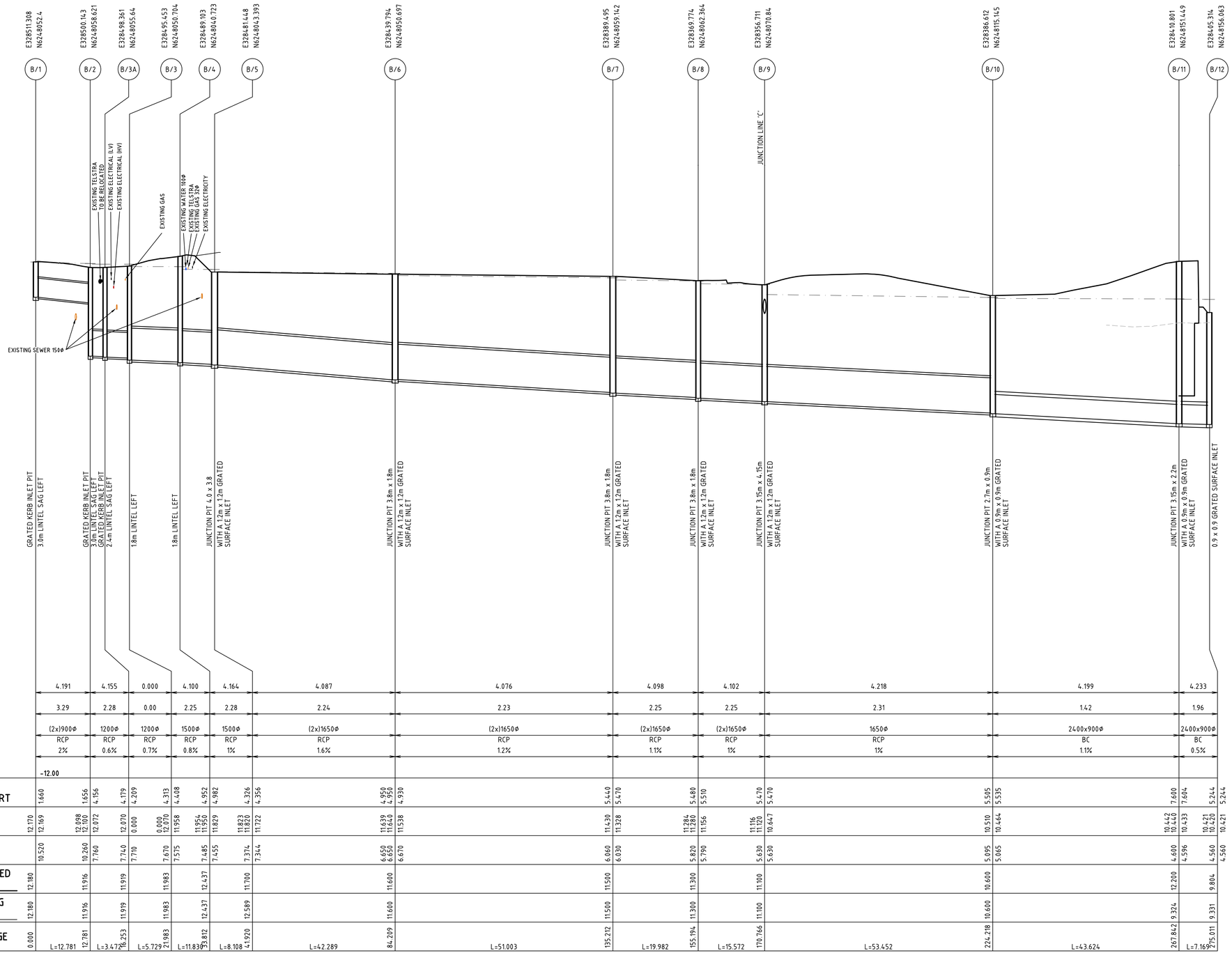

	B/1	B/2	B/3A	B/3	B/4	B/5	B/6	B/7	B/8	B/9	B/10	B/11	B/12
	E328511.308 N6248052.4	E328500.143 N6248058.621	E328498.361 N6248055.64	E328495.453 N6248050.704	E328489.103 N6248040.723	E328481.448 N6248043.393	E328439.794 N6248050.697	E328389.495 N6248059.142	E328369.774 N6248062.364	E328356.711 N6248070.84	E328386.612 N6248115.145	E328410.801 N6248151.449	E328405.314 N6248156.063
	GRATED KERB INLET PIT 3.0m LINTEL SAG LEFT	GRATED KERB INLET PIT 3.0m LINTEL SAG LEFT (COMBINED WITH JUNCTION PIT)	2.4m LINTEL SAG LEFT	18m LINTEL LEFT	18m LINTEL LEFT	JUNCTION PIT 4.0 x 3.8 WITH A 1.2m x 1.2m GRATED SURFACE INLET	JUNCTION PIT 3.8m x 18m WITH A 1.2m x 1.2m GRATED SURFACE INLET	JUNCTION PIT 3.8m x 18m WITH A 1.2m x 1.2m GRATED SURFACE INLET	JUNCTION PIT 3.8m x 18m WITH A 1.2m x 1.2m GRATED SURFACE INLET	JUNCTION PIT 3.15m x 4.15m WITH A 1.2m x 1.2m GRATED SURFACE INLET	JUNCTION PIT 2.7m x 0.9m WITH A 0.9m x 0.9m GRATED SURFACE INLET	JUNCTION PIT 3.15m x 2.2m WITH A 0.9m x 0.9m GRATED SURFACE INLET	0.9 x 0.9 GRATED SURFACE INLET
	4.191	4.155	0.000	4.100	4.164	4.087	4.076	4.098	4.102	4.218	4.199	4.233	
	3.29	2.28	0.00	2.25	2.28	2.24	2.23	2.25	2.25	2.31	1.42	1.96	
	(2x)900ø RCP 2%	1200ø RCP 0.6%	1200ø RCP 0.7%	1500ø RCP 0.8%	1500ø RCP 1%	(2x)1650ø RCP 1.6%	(2x)1650ø RCP 1.2%	(2x)1650ø RCP 1.1%	(2x)1650ø RCP 1%	1650ø RCP 1%	2400x900ø BC 1.1%	2400x900ø BC 0.5%	
Datum R.L	-12.00												
DEPTH TO INVERT	1.660	1.656	4.156	4.179	4.209	4.313	4.408	4.952	4.982	4.326	4.356	4.950 4.950	4.930
													5.440
													5.470
													5.480
													5.510
													5.470
													5.470
													5.505
													5.535
												7.600	7.604
													5.244
													5.244
H.G.L. LEVEL	12.170	12.098 12.100	12.072	12.070	0.000	0.000 12.070	11.958	11.954 11.950	11.829	11.820	11.722	11.639 11.640	11.538
													11.430
													11.328
													11.284 11.280
													11.156
													11.116 11.120
													10.647
													10.510
													10.464
												10.442 10.440	10.433
													10.421 10.420
													10.421
INVERT LEVEL	10.520	10.260	7.760	7.740	7.710	7.670	7.575	7.485	7.455	7.374	7.344	6.650 6.650	6.670
													6.060
													6.030
													5.820
													5.790
													5.630
													5.630
													5.095
													5.065
												4.600	4.596
													4.560
													4.560
PROPOSED LEVEL	12.180	11.916	11.919	11.983	12.437	11.700	11.600	11.500	11.300	11.100	10.600	12.200	9.804
EXISTING LEVEL	12.180	11.916	11.919	11.983	12.437	12.589	11.600	11.500	11.300	11.100	10.600	9.324	9.331
CHAINAGE	0.000	L=12.781 12.781	L=3.472 16.253	L=5.729 21.983	L=11.830 33.812	L=8.108 41.920	L=42.289 84.209	L=51.003 135.212	L=19.982 155.194	L=15.572 170.766	L=53.452 224.218	L=43.624 267.842	L=7.169 275.011

LINE B

Issue	Description	Date
P4	ISSUED FOR INFORMATION	23-10-13
P3	ISSUED FOR INFORMATION	19-07-13
P2	ISSUED FOR INFORMATION	24-06-13
P1	ISSUED FOR INFORMATION	18-06-13

100mm on Original

Bar Scales

0 2 4 6 8 10m

1 : 100

0 10 20 30 40 50m

1 : 500

Client: MERITON

Scales: 1 : 100 (V), 1 : 500 (H)

Grid:

Height Datum: AHD

Drawn	TS
Designed	GB
Checked	AT
Approved	

Project: LEWISHAM ESTATE

Title: STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 1

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A1

Drawing No.	Project No.	Issue
SKC25	12-100	P4

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Appendix B – Figures

Figure B1 Existing Buildings

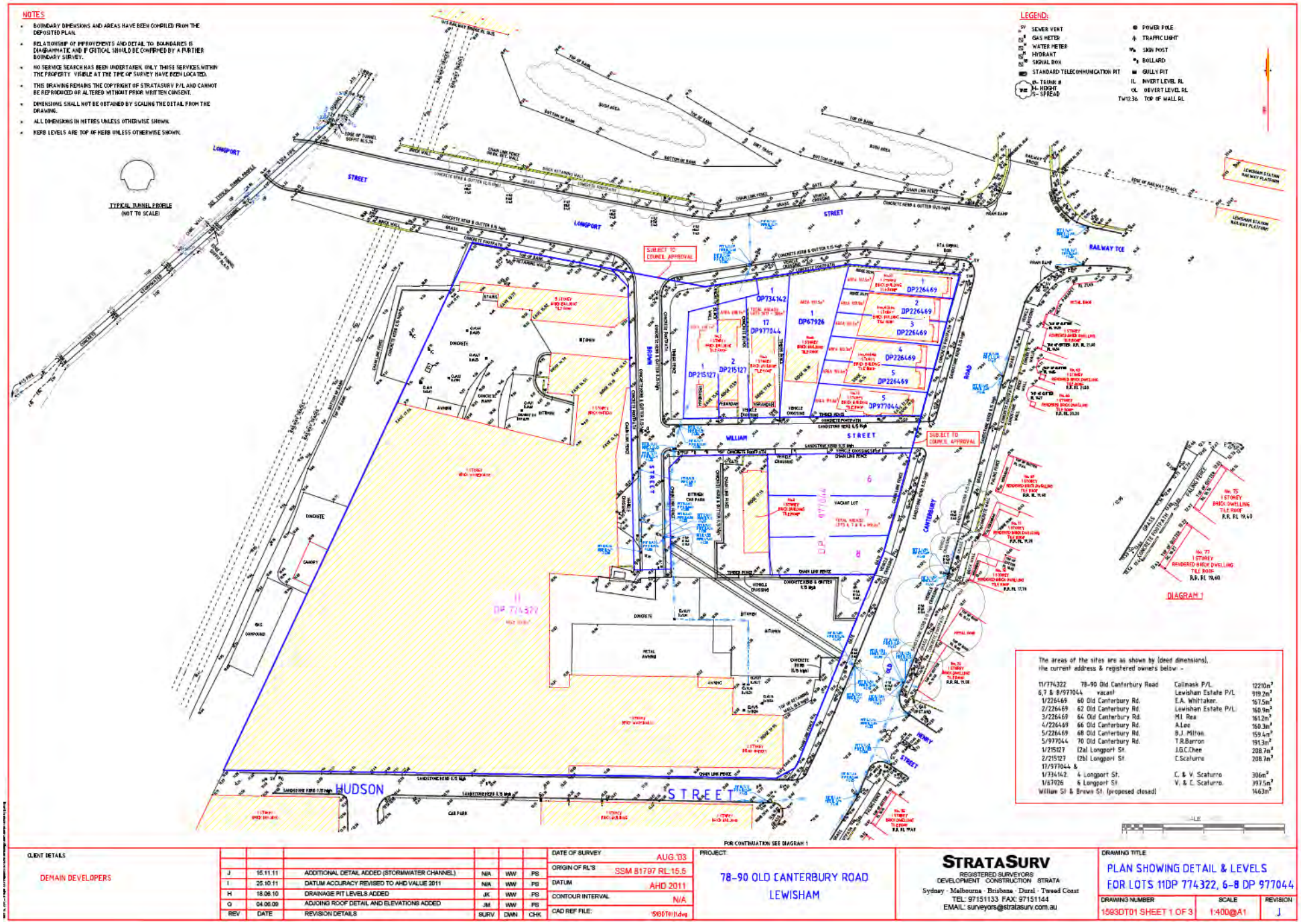

Figure B2 2003 Survey of Development Site

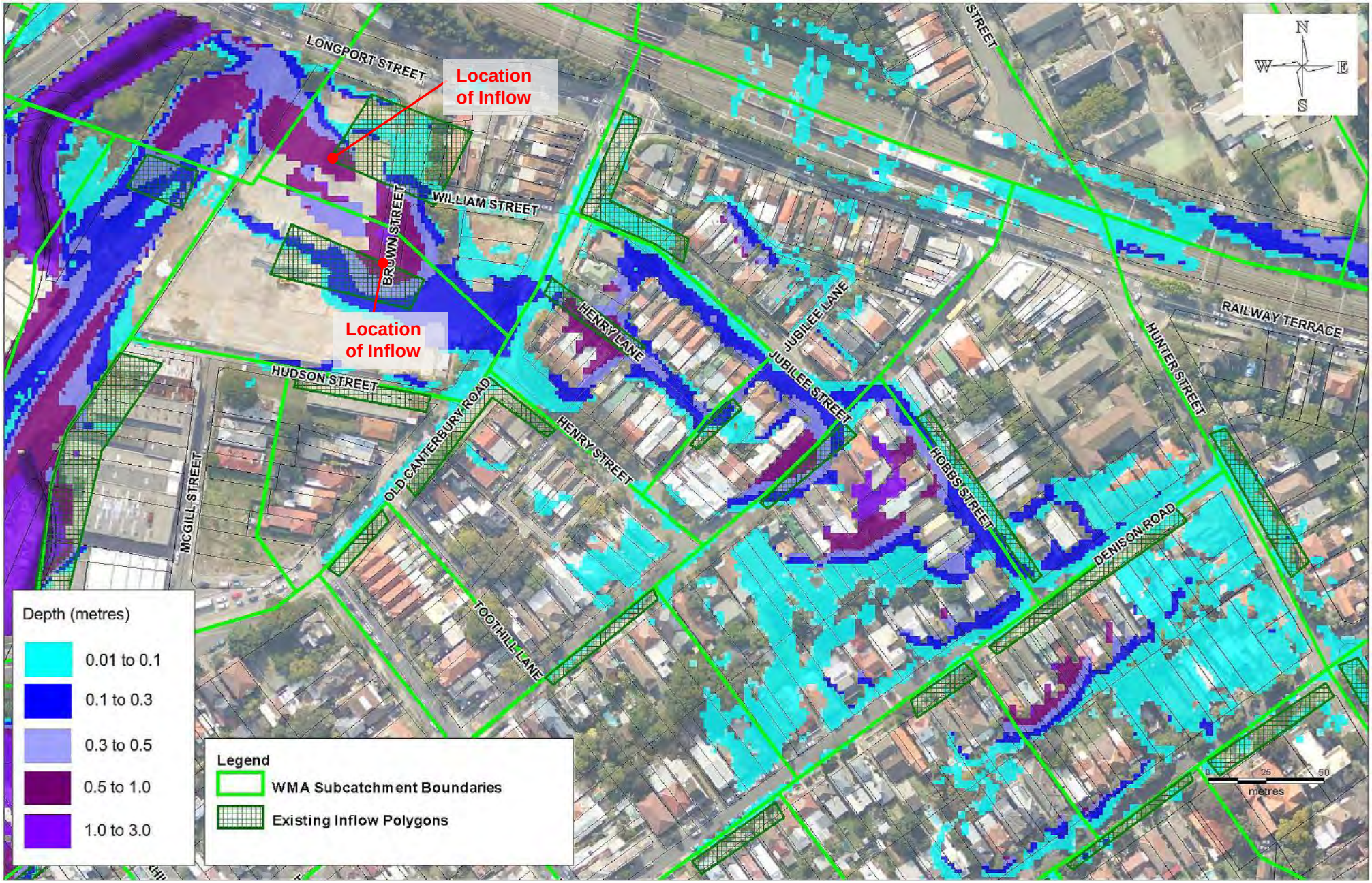

Figure B3 Local subcatchment Boundaries and Inflow Zones under Existing Conditions

Figure B4 Hydraulic Roughness under Existing Conditions

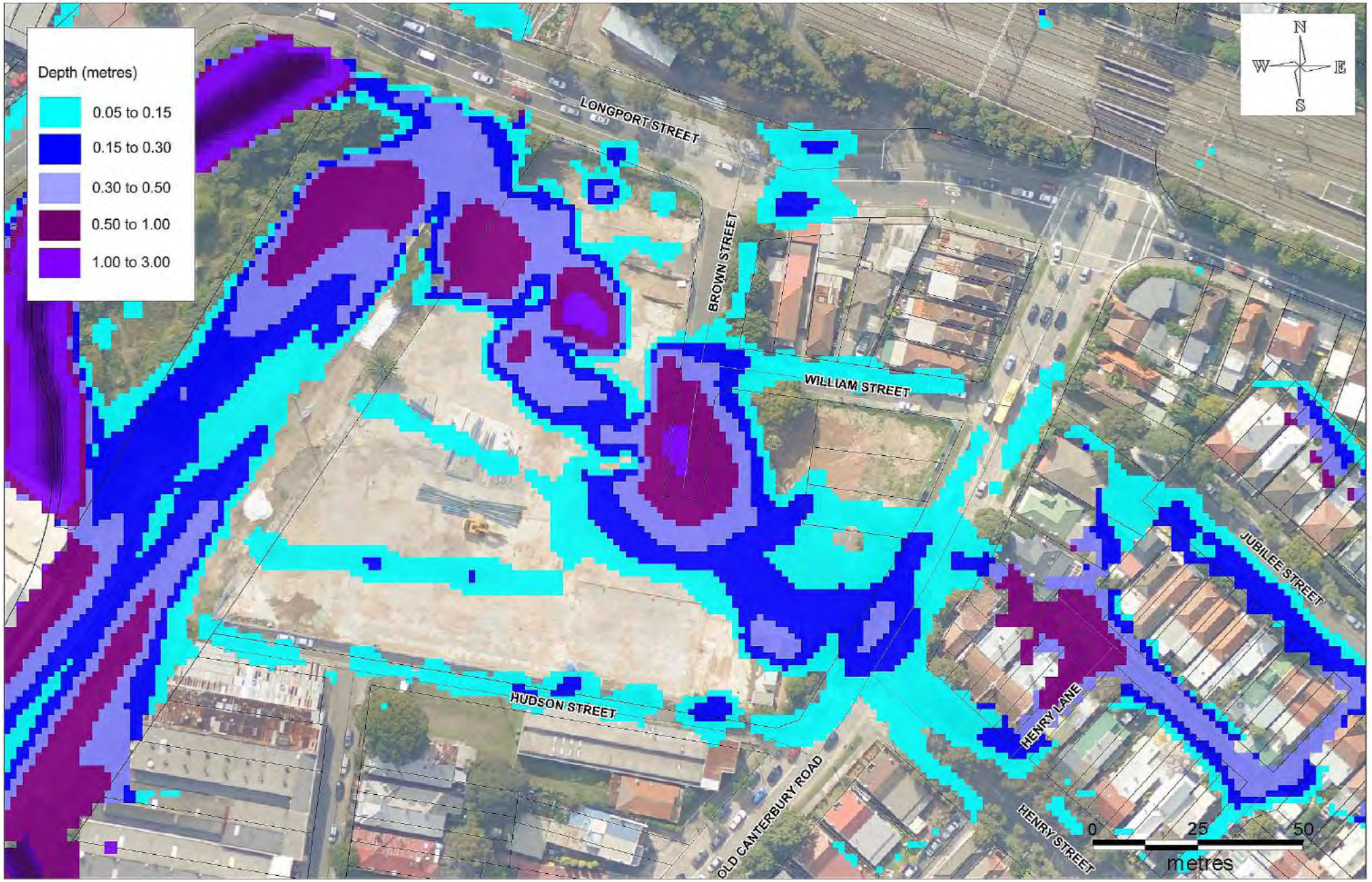

Figure B5 100 yr ARI Flood Extents and Depths – Existing Conditions

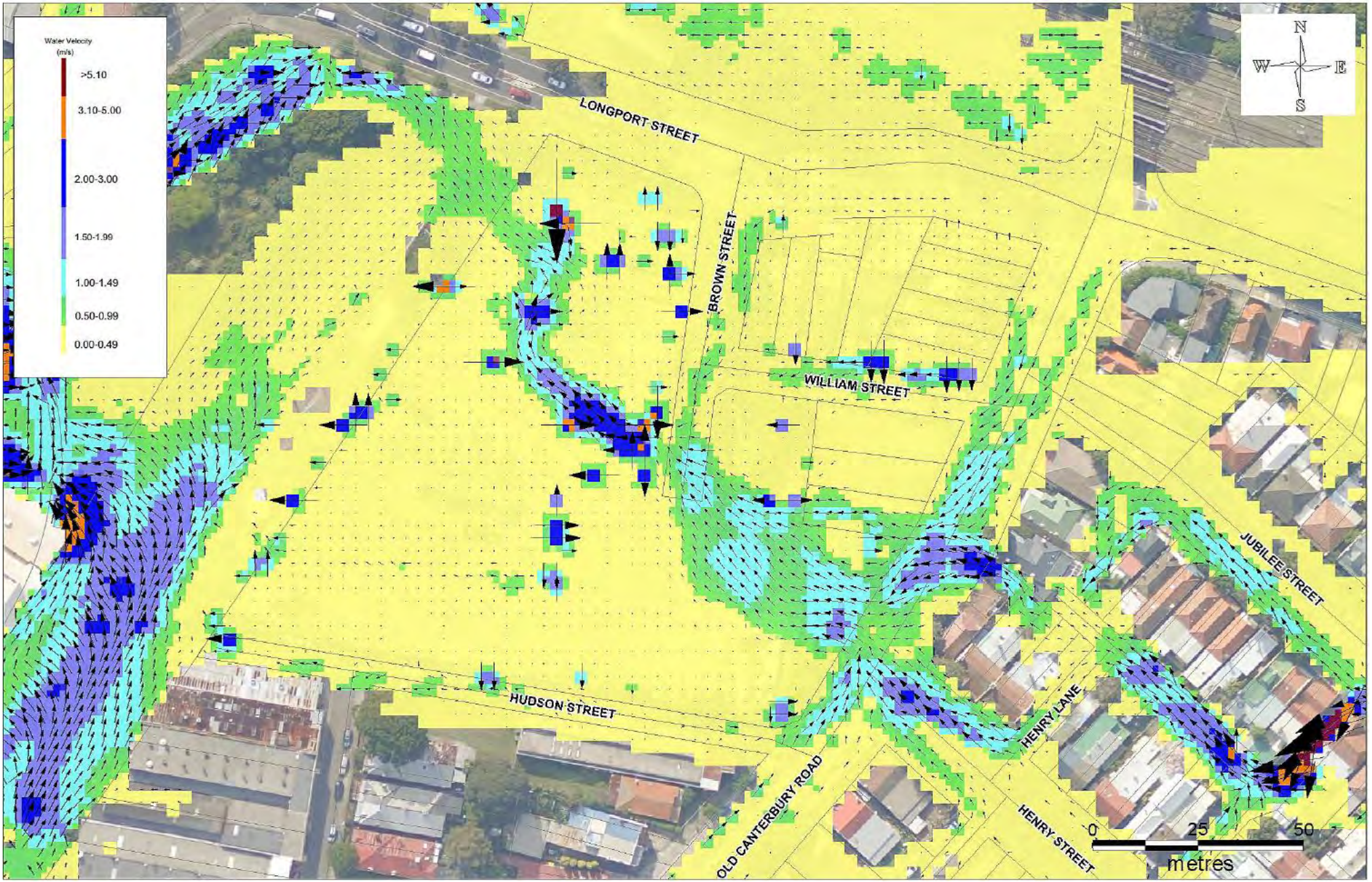

Figure B6 100 yr ARI Flood Velocities – Existing Conditions

EXISTING RAIL CORRIDOR

LONGPORT ST

BUILDING D

BROWN ST

LIGHT RAIL CORRIDOR

no wall/fence required

overland flow outlet min width 6m RL RL 10.6

min RL 12.2

NORTH-SOUTH ST

BUILDING B

BUILDING A

BUILDING C

BUILDING F

BUILDING G

BUILDING E

WILLIAM ST

OLD CANTERBURY RD

HENRY ST

HUDSON ST

Mc GILL ST

CH 100.00

CH 80.00

CH 60.00

CH 40.00

CH 20.00

CH 0.00

surface at 1.1m/property

11.1

11.3

11.5

11.6

3m

1.5mØ

inv 11.7

loadyr level 12.5

inv 12.15

SECTION 8 1:200

SECTION 9 1:50

P4	ISSUED FOR INFORMATION	29-06-12
P3	RE-ISSUED FOR INFORMATION	25-04-12
P2	ISSUED FOR INFORMATION	29-03-12
P1	ISSUED FOR INFORMATION	28-06-11
ISSUE	Description	Date

Bar Scales: 1:250 @ A1 1:500 @ A3

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Client: MERITON

Scales: 1:250 @ A1 | Grid: MGA | Height Datum: AHD

Drawn: TB | Designed: UR | Checked: AT | Approved:

Project: LEWISHAM ESTATE

Title: SITEWORKS AND STORMWATER DRAINAGE PLAN - SHEET 2

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Drawing No.: SKC23 | Project No.: 12-100 | Issue: P4

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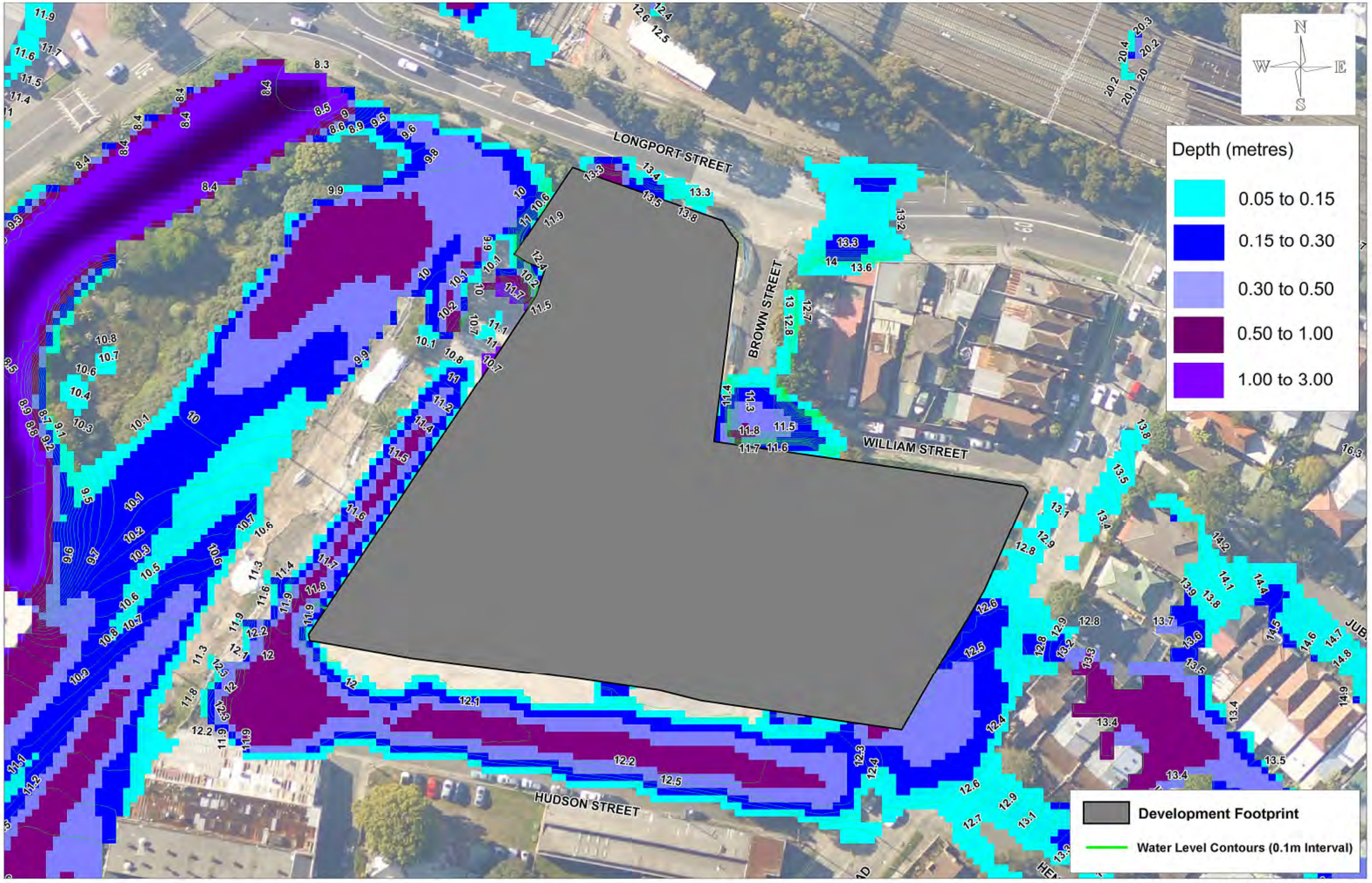
Figure B7 Hydraulic Controls



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October 2013

FLOODING ADVICE LEWISHAM ESTATE

Figure B8 100 YEAR ARI PEAK DEPTH SCHEME D1(Pit Blockage)

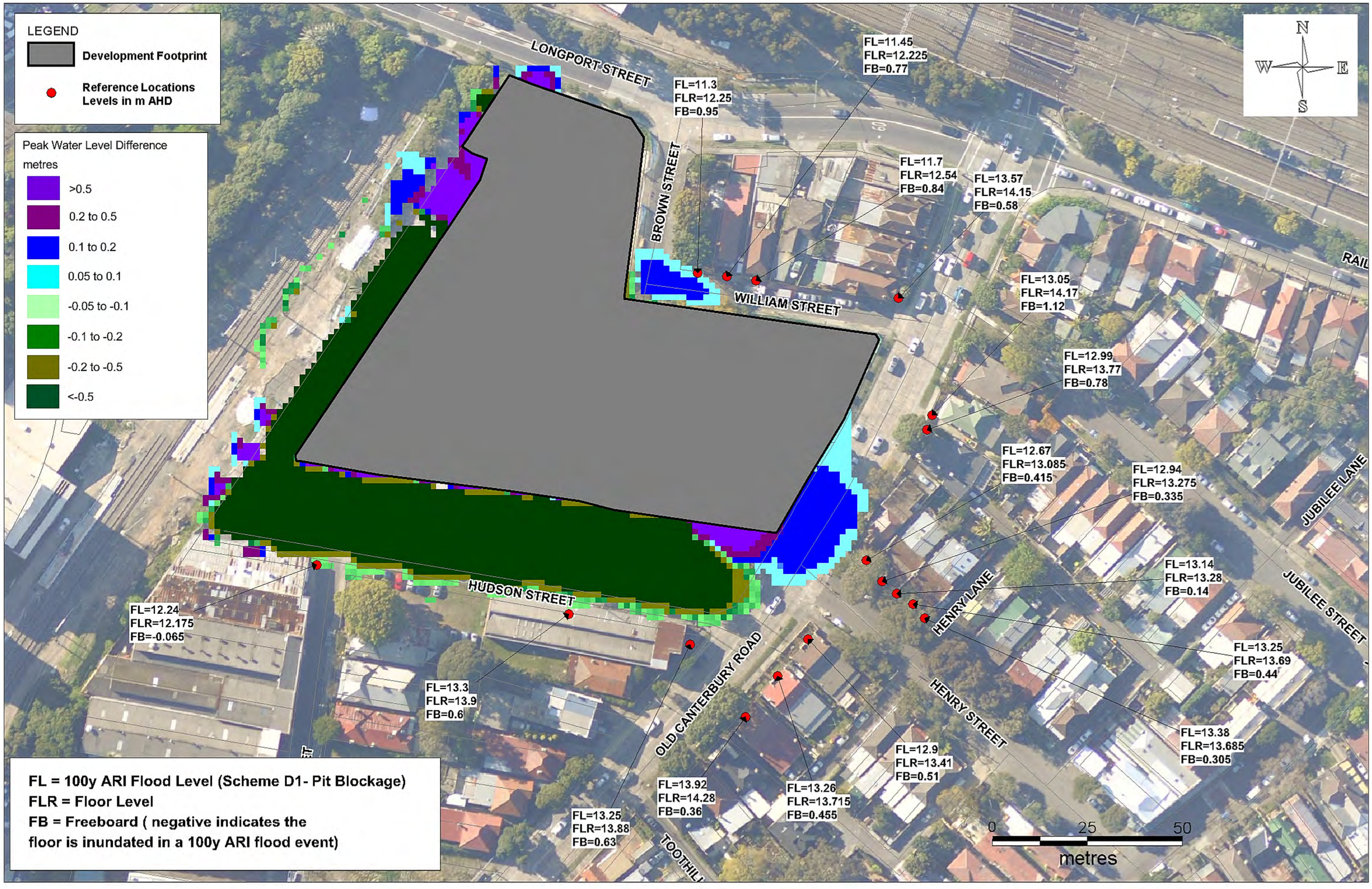

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Figure B9 100 YEAR ARI PEAK WATER LEVEL DIFFERENCES SCHEME D1 LESS EXISTING (BLOCKED)

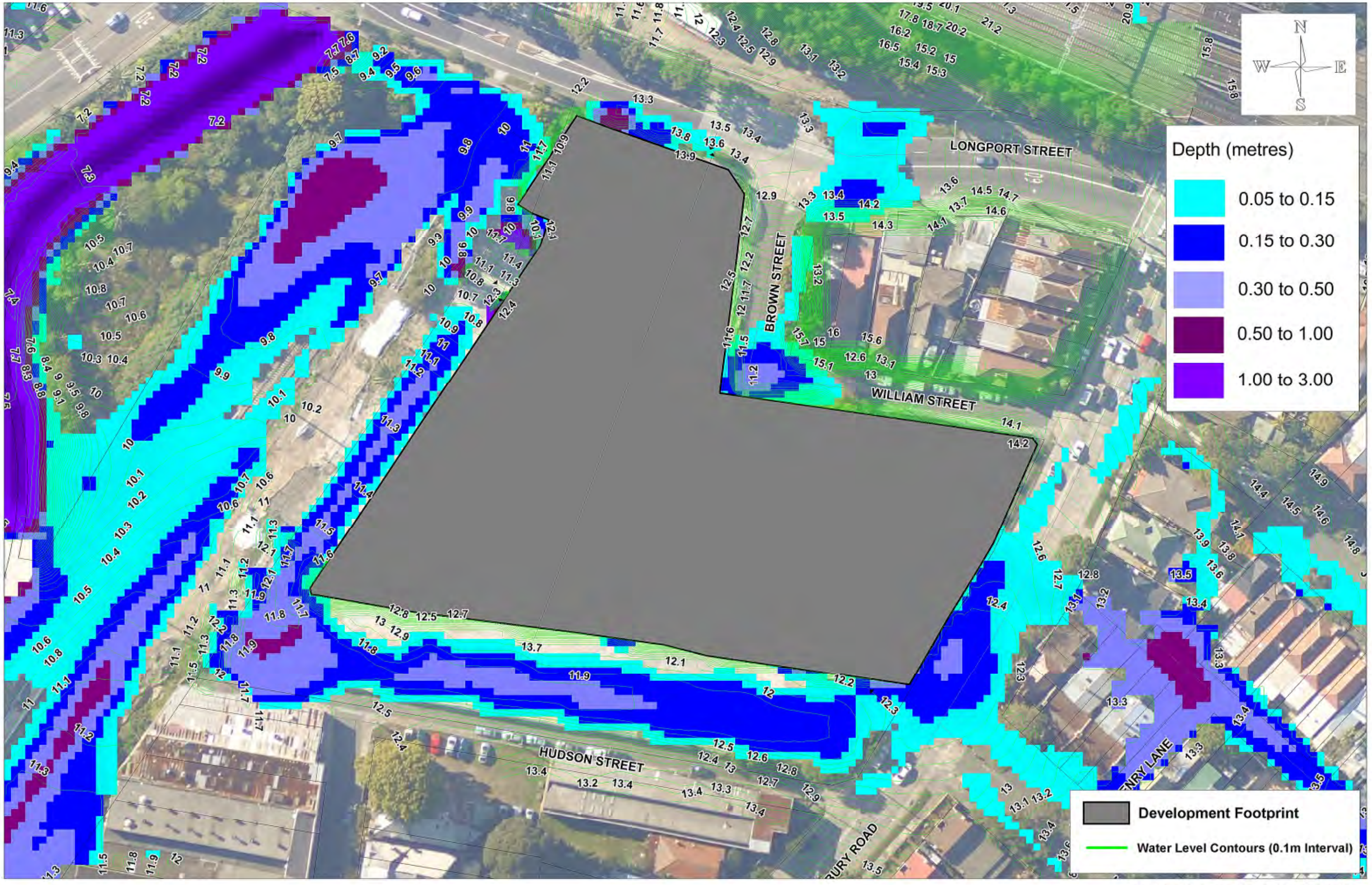

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Figure B10 20 YEAR ARI PEAK DEPTH SCHEME D1(UNBLOCKED)

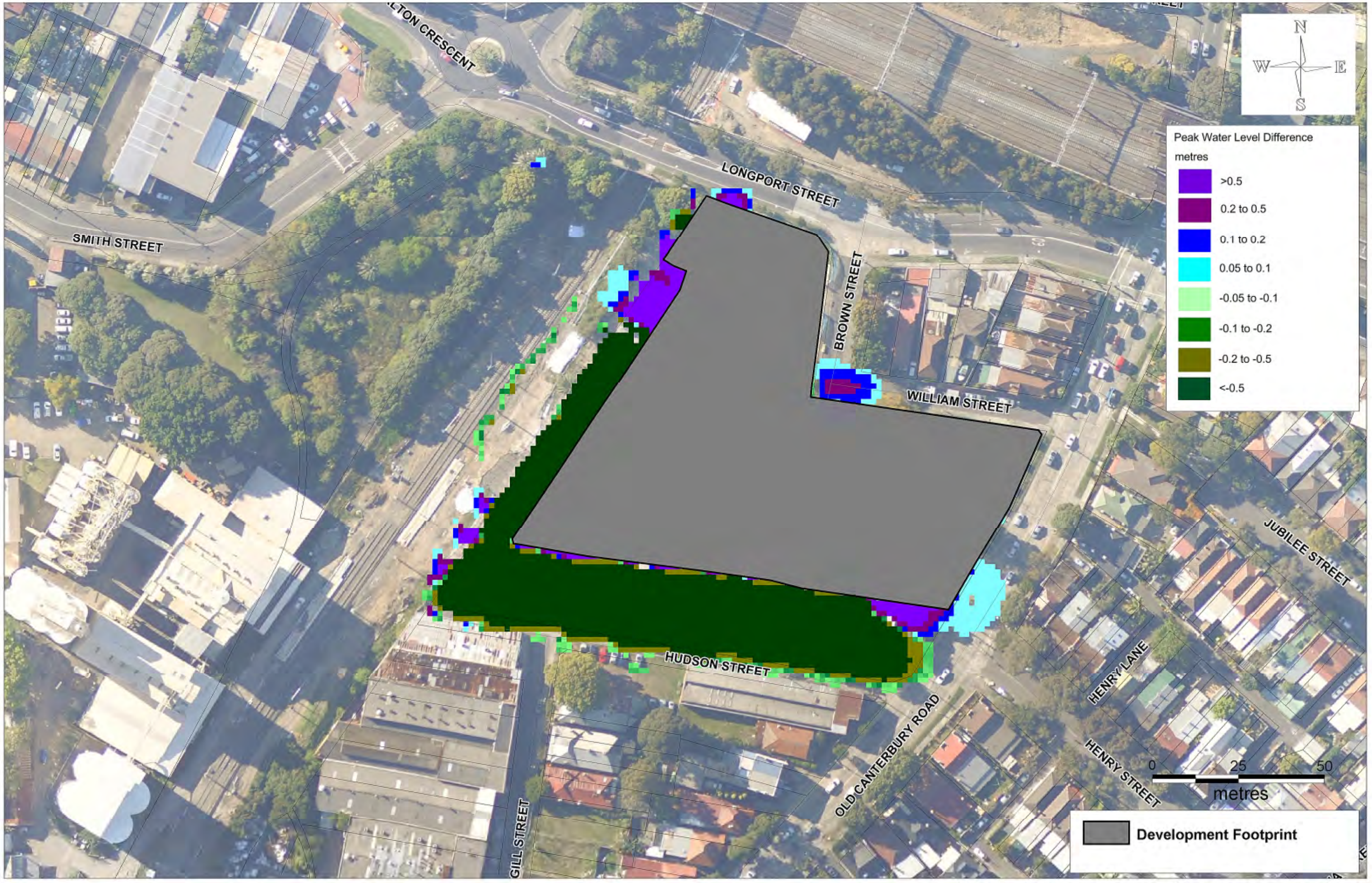

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Figure B11 20 YEAR ARI PEAK WATER LEVEL DIFFERENCES SCHEME D1_LESS_EXISTING (UNBLOCKED)