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12 February 2014

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 CONDITON 11 OF CONCEPT APPROVAL
MP08-0195 (MOD6)

I refer to Council's letter dated 11 December 2013 in response to our request to modify the Concept Plan to make allowances for a drainage area to collect both upstream and localised flooding in a 1 in 20 year rainfall event, and allow pedestrian pathways through the approved open space area.

As we understand, Council is concerned with the following summarised issues raised in their letter of the 11 December 2013. A response to their issues is also provided below.

- *the amenity of the park will be diminished by introducing a drainage area and formal pathways through the open space.*

- *"Landscape plans integrating the drainage overland flow structure has not been provided to Council as part of the S75W application and in the absence of these details, the urban design implications of a combined open space/drainage reserve design are unknown."*

- *"Council is unclear as to the applicant's intent for the Central Open Space. The potential cumulative impacts of the two modifications will result in an open space area with limited amenity due to overshadowing impacts and potential conflicts between different functions within the space."*

- *"Council is concerned that the design requirements of the drainage reserves may impede the ability of the open space to provide good amenity to all users. The drainage design drawings show that the overland flow path design requires a channel to be created in the middle of the open space that is approximately 700mm below the levels of the surrounding pathways/landscaping."*

- *"The proposed S75W amendment introduces uncertainty about the integration of Water Sensitive Urban Design with active and passive landscaping opportunities, and this could significantly impact on the functionality of the open space and limit accessibility.*

Response

The introduction of the drainage area and formal pathways through the site has been designed to be consistent with Council's Water Sensitive Urban Design policy, which supports an integrated approach to sharing drainage with open space. I bring to your attention the policy objectives, which is attached to ***Annexure 1***, which promote the integration of "stormwater treatment into the landscape". The idea of using stormwater retention in open space is standard practice throughout the Sydney metropolitan where open space areas are provided for community use. We are seeking no different approach than currently prevails.

We have prepared an integrated plan that consolidates the drainage requirements and open space uses. This plan is attached to ***Annexure 2***. Importantly, the cross section shows the integration of seating, passive areas and paths to accommodate mixed uses within the open space that is typical of any open space area in Sydney. The maximum overland flow depth in will be approximately 400mm which is less than the 700mm estimated by Council. The amenity of the park is in no way compromised from this design.

A major underlying function of the open space is to facilitate access to the light rail station to comply with Condition 16 of the Concept Plan, which is provided below.

> "*Future Development Applications shall provide for new and/or upgraded pedestrian connections between the site and Lewisham railway station and the Lewisham West light rail stop in consultation with Council and RailCorp in accordance with the terms of the VPA*".

The pathways shown on the integrated landscape plan provide clear access ways from the Light Rail Station to towards the existing community towards the east. Therefore, as a primary function of the open space, the through-site links should be allowed in the calculation of the 3,000m2.

The use of the open space will barely be compromised by stormwater. Cardno Engineering has calculated that on average, water will only fill a section of the open space for 80 minutes once every 5 years and that the flows only represent a low risk (refer to ***Annexure 3***).

Based on this calculation, the open space cannot be used for 0.003% of total minutes every 5 years, which, sensibly is considered reasonable. In addition, it is realistic to assume that the community will not use the open space in any rainy conditions regardless of the drainage surcharge requirements. Outside of the 80 minutes every 5 years, the community will have high quality use of grassed areas, playground, barbeque facilities, seating and tables.

Importantly, Council's Engineer, Sydney Water and RailCorp have agreed in-principle to this stormwater system with Railcorp providing owners consent to carry out early works including the drainage system. Written correspondence supporting this statement can be found at (***Annexures 4, 5 and 6***).

Impact on the amenity of the proposed Central Open Space

Further to the above, the urban design implications of the pedestrian pathways and drainage reserve are only positive, which are detailed in the following list.

- Pedestrian pathways will provide formal access across the open space rather than creating a haphazard approach where people create their own travel paths over grassed

areas. This will only create future maintenance upgrades to the open space by Council, which is an unnecessary cost to rate payers.

- Formalised pedestrian paths will provide suitable access through the open space for elderly people and people with a disability.

- Pedestrian pathways through the open space are now placed in a way that is suitable to access the passive lawn area, playground, barbeque, seating and tables that takes into account relevant levels for the drainage system to work without comprising community safety.

- A slender gradient over the entire length of the open space area will be negligible in terms of open space useability. Relevant cross sections of the drainage swale are shown in ***Annexure 2*** and show depths of only 40cm of water remaining in a 1 in 5 year event for only 80 minutes.

- The flows are infrequent, of a low velocity and depth and are wholly contained within the landscape design. This is a much better than the existing situation which directs upstream local stormwater flows into other private land.

- Without any paths in open space, Council will become liable for any personal injuries from people trying to walk across.

Cumulative Impact of Drainage and Pathways of Condition 11

We recognise that Part B – Modification conditions of the Concept Approval reduces the maximum number of units and gross floor area that can be achieve on the site as stated in Conditions A6 and A8. However, Condition 11 that states through site links and drainage will have a dramatic impact on gross floor area and number of units, yet does not fall under Part B conditions.

The degree of impact on the extent of the open space is significant if the proposed amendment is not supported. If the area of overland flow and footpaths cannot be considered in calculating the 3,000m2 of open space, it would have to be located elsewhere which continues to erode the development capacity of the site that is already substantially reduced from the requirement to provide 2 hours of sunlight on 50% of the open space.

We are of the opinion that Condition 11 being outside of the Part B conditions was never envisaged as a mechanism to further reduce density. By taking out the drainage reserves and site links from the calculation of public open space, the developable land area must be reduced by 2,065sqm (***Annexure 7***), which is equivalent to approximately 50 units being lost in addition to the 35 already lost through the determination of MOD 4.

Condition 11 is therefore requested to be varied as follows:-

"Public Open Space

*11. Future Development Applications shall provide a minimum of 3,000m^2 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."*

Flooding Levels

As a consequence of the flood modelling for the open space, we have also identified that Condition 7 must also be amended. Condition 7 of the Concept Approval requires buildings to be set above two different flood levels. The condition states that buildings are to be above the 1:100 year flood level (plus 0.5m freeboard) that is stated in Council / State Government policies and be above the "probable maximum flood" (PMF) levels. The buildings cannot be set at both these levels as one is higher than the other.

Council's LEP 2011, DCP, Sydney Water and the Cardno Flood Management Report all refer to a flood planning level for the 1:100 year event plus a 0.5m freeboard. We are seeking to be consistent with the 1:100 year policy. In support of this statement, I refer to the following documents.

- Annexure 8 – Cardno Advice.
- Annexure 4 – Council email correspondence and drainage plans.
- Annexure 9 – Sydney Water Advice.
- Annexure 10 – Marrickville LEP 2011 flood level extract.
- Annexure 11 – Marrickville DCP flood level extract.

To remove the inconsistency of flood levels in Condition 7, the following amendment is sought.

7. *Future Development Applications shall comply with the Cardno Flood Management Report dated 30.11.11* ***and future flood studies by the applicant endorsed by Council*** ~~*and consider and any recommendations in any adopted Flood Study*~~ *and relevant state policies at the time of lodgement of the application to demonstrate the finished floor levels of the buildings will be* ***not less than 0.5 m above the 100 year ARI flood level*** ~~*above the probable maximum flood levels*~~ *for the site and that the development will not adversely impact on any surrounding property (including the light rail corridor) by the redirection of flood waters or loss of flood storage.*

The modified condition will remove the duplicated flood management policies that will link in with the proposed drainage system to be integrated into the proposed open space.

Conclusion

The proposed amendment to Condition 11 is rational and aligns with Council's policies for an integrated approach to WSUD in open space areas.

Pedestrian links are a fundamental component of the function of the open space and the integrated approach does not reduce the size, functionality or amenity of the open space for the local community. Given the additional information with regard to the degree of impact the condition has on calculating the 3,000m2, we are confident that the proposed modifications are reasonable and will not undermine the amenity or function of the space to deliver a substantial public asset for the local community in a location of historic deficiency.

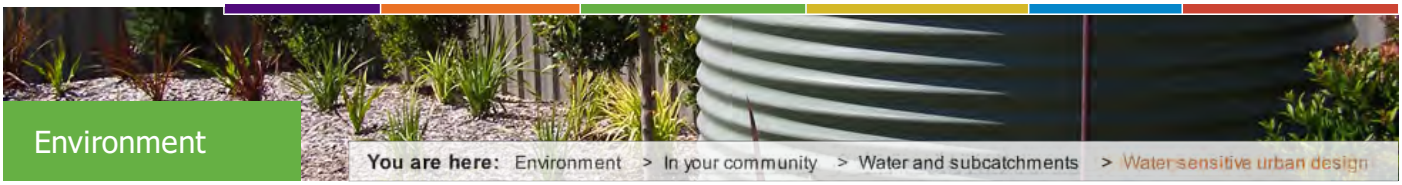
With regarding to the flooding condition, this is merely a correction to apply the correct policy of Council and the State Government.

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



Water sensitive urban design

Marrickville Council encourages residents to learn about and apply water sensitive urban design in the management of their properties.

Lynbrook, Victoria

Chullora, NSW

Hornsby, NSW

What is water sensitive urban design?

In the past, urban stormwater drainage systems have been designed primarily to prevent flooding with the view that rainwater should be transported as quickly as possible into the nearest natural waterway.

Unfortunately this water carries with it a range of pollutants including litter, sewer overflows, vehicle emissions, garden fertilizers, animal faeces, silt and vegetation. This puts great stress on the waterway resulting in algal blooms, ecosystem breakdown and polluted rivers and beaches. In addition, a vast quantity of potentially usable water is wasted.

Water sensitive urban design (WSUD) is most simply defined as the sustainable management of water within urban areas through intelligent and integrated design. It looks at the urban water cycle as a whole, taking into account all three urban water sources: potable water, wastewater, and stormwater.

The aims of water sensitive urban design are to:

- Reduce runoff flows while minimising on-site flood risk
- Reduce potable water use through the use of efficient fixtures and appliances and through rainwater, stormwater and greywater reuse
- Minimise wastewater generation, treating wastewater to a standard suitable for reuse and/or discharge to receiving waters
- Protect natural systems by treating stormwater before discharge to receiving waters
- Integrate stormwater treatment into the landscape to enhance the recreational and aesthetic quality of the urban environment

What can I do on my property?

- Capture water before it leaves your property from rooftops and hard surfaces using rainwater tanks, swales and rain gardens
- Slow the flow of stormwater through smart landscape design, placing garden beds on contour for passive irrigation
- Implement landscaping and drainage elements that ensure sediments, leaves, grass clippings and nutrients no longer leave your property. Barrier plantings are one way of achieving this
- Reduce or eliminate the use of water soluble fertilisers on your property as these cause algal blooms in waterways
- Plumb rainwater into toilet and laundry to reduce potable water use

Where paving is necessary choose permeable options

For more information on water sensitive urban design contact Council's Water and Catchments Coordinator or phone 9335 2104.

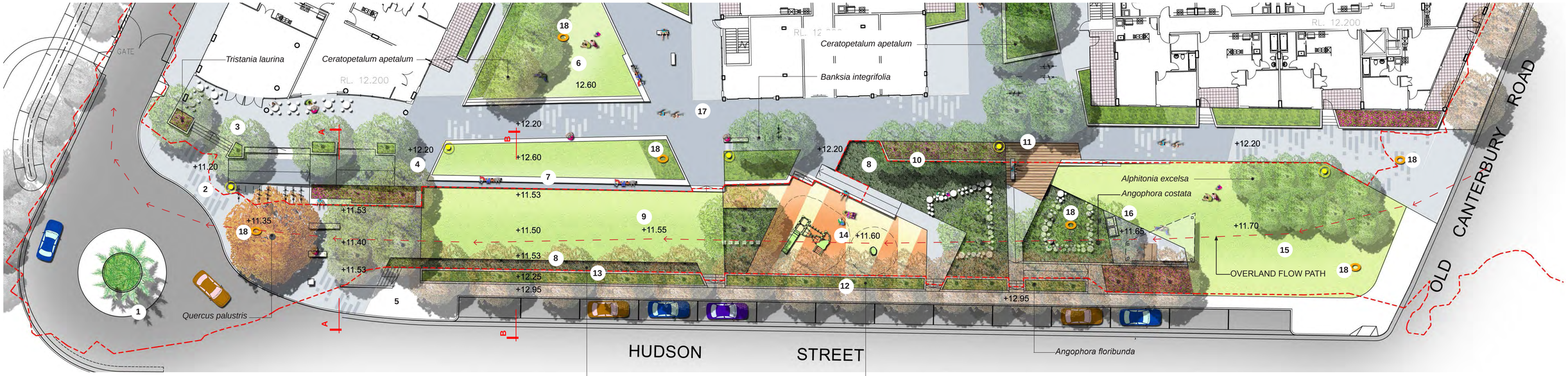
Related Sites

- Water sensitive homes
- Site planning
- Landscape measures
- Melbourne Water:
  The basics of WSUD
- CSIRO:

Detailed information on WSUD including great diagrams

- Australian Greenhouse Office: Stormwater fact sheet
- Your Home - Federal Government initiative providing advice, manuals and guides for environmentally sustainable homes.
- Your Development - Online resource for developers and urban planners to achieve environmentally sustainable neighbourhoods.

ANNEXURE 2



DETAIL LANDSCAPE PLAN

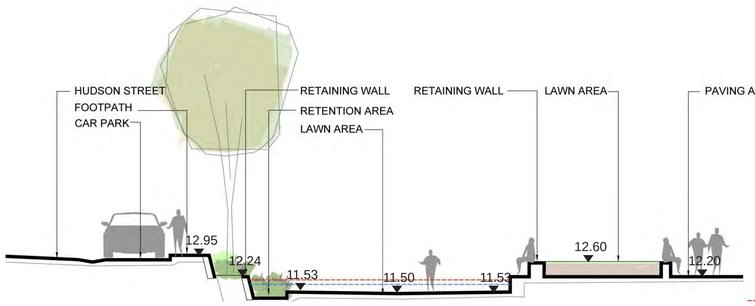
RAIN GARDEN EXAMPLES

Banksia robur
Carex appressa
Crinum pedunculatum
Helmholtzia glaberrima
Hymenocallis speciosa
Isolepis nodosa
Juncus usitatus

GARDEN BED EXAMPLES

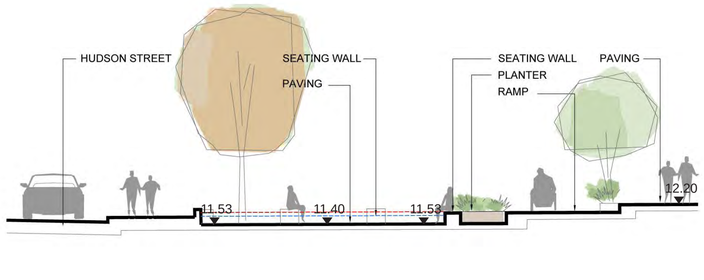
Alpinia caerulea
Aphanopetalum resinosum
Blechnum 'Silver Lady'
Calathea zebrina
Cordyline petiolaris
Cyathea cooperi
Dianella 'Silver Streak'
Hibbertia scandens
Kennedia prostrata
Lomandra 'Nyalla'
Macrozamia communis
Pennisetum alopecuroides 'Purple Lea'
Poa labillardieri var. labillardieri
Syzygium 'Tiny Trev'
Westringia fruticosa 'Zena'

SECTION A-A



100Year ARI Peak Depth - 0.400
20Year ARI Peak Depth - 0.257

SECTION B-B



100Year ARI Peak Depth - 0.350
20Year ARI Peak Depth - 0.227

NOTES

1. Roundabout planted with dense low endemic plant species and a stand of advanced native palms
2. Entry plaza acts as pedestrian commuter hub. A paved area with seating, public art, bicycle parking, shade tree and garden bed planting and access to Hudson Park and café and main pedestrian cross site thoroughfare.
3. Pedestrian stairway, seating stairs and 1:20 ramps lead to café landing overlooking park and corner activity. These elements are interplanted with native ground cover and trees providing summer shade.
4. Pedestrian bicycle share-way forms a link across the site in conjunction with other pedestrian site links.
5. Southern 1:20 ramp or stair access to Hudson street and parking areas.
6. Raised lawn and garden areas provide seating and passive recreation opportunities and define primary path access.
7. Seating ledge as extensive raised passive recreational element overlooking central lawn areas.
8. Set down stormwater detention garden beds connected through the length of the park to mitigate stormwater flows and generate interest and interactive play opportunities. WSUD beds capture surface flow from the park and low flows from Hudson Street and Old Canterbury Road. While also being laid out to carry overland flow and divert to pit intakes.
9. After the entry plaza a series of lawn areas and a play area are defined to provide a variety of destinations. All areas are serviced with seating elements and cross site access.
10. Terraced beds within in situ concrete walls define areas and provide planting beds with stormwater detention capacity from adjoining paved areas.
11. Primary north south through site link terminates at hardwood sleeper deck and seating area overlooking park and WSUD beds. Equal access is provided from here to Hudson Street parking via and raised platform and ramp.
12. In situ concrete walls are located to mitigate falls and avoid hand rails. These walls retain extensive linier planting of native ground covers and street trees defining the southern edge of the park.
13. In situ concrete wall faces are utilised for public art display, such as imprinting/ relief works, embedded coloured glazed or recycled brick.
14. Dedicated play area naturally bounded by planted terraces and accessed from multiple points including 1: 20 all access ramp. Includes dedicated play equipment and adventure/ nature play facilities.
15. Primary open lawn area and eastern access to Hudson Park with a single grove of small to medium sized native trees.
16. Dedicated BBQ and shelter facility adjoining nature play, planted terraces and main eastern lawn.
17. Darker paving defines route of pedestrian bicycle share-way.
18. Potential locations for independent public art installation are indicated across the site.

LEGEND

- Extent of 1:20 / 1:100 flood level
- Proposed trees — Refer to Indicative Plant Schedule
- Proposed shrubs & groundcovers — Refer to Indicative Plant Schedule
- WSUD planting — Refer to Indicative Plant Schedule
- Lawn
- Timber decking
- Feature paving
- Unit paving to courtyards — Refer to architects DWG
- Seating wall
- Stepping blocks
- Playground
- Public art installation
- Proposed lights, refer to lighting plan 5085-ES-1 / Shelmerdines

0 1 5 10m 20m
Scale 1:200@A1

INDICATIVE MATERIALS

Concrete access · *Blue glaze* · *Bright colour* · *Creative play* · *Creative play* · *Interactive WSUD* · *Rain garden* · *Recycled brick* · *Seating opportunities* · *Sleeper landing* · *Concrete hands* · *Concrete relief* · *Concrete wall art* · *Contrast paving* · *Play structure*

CLIENT: MERITON APARTMENTS PTY LTD

78-90 OLD CANTERBURY ROAD LEWISHAM

DETAIL CONCEPT PLAN

STURT ASSOCIATES
landscape architecture, urban design & environmental design
SUITE 91, 330 WATTLE STREET
ULTIMO NSW 2007
PH. (02) 9211 3744 FX. (02) 9211 9449

DATE: 23 JAN 2014
DRAWING: DA-1220-06 A
SCALE: 1:200@A1

ANNEXURE 3

Our Ref: 59914017[14-0002]

Contact: Matthew Zollinger

7 January 2014

Meriton Group

Level 11, Meriton Tower,

528 Kent Street,

SYDNEY NSW 2000

Attention: Matthew Lennartz

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LEWISHAM ESTATE OVERLAND FLOW BEHAVIOUR

This letter discusses the behaviour of overland flows through Lewisham Estate. The results discussed here have been extracted from the modelling presented in Cardno's letter dated 5 December 2013 (*Ref 59914007 [13-0310]).* Detailed description of the scheme that was modelled is presented in the above mentioned letter and should be referenced if further details are required.

Overland flow behaviour

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

Figure 1 - Existing Overland Flow

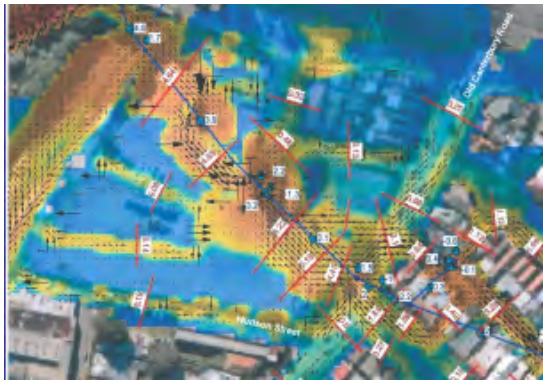


Figure 2 - Existing Overland Flow (WMAwater, 2013)

The proposed Lewisham Estate upgrades the trunk drainage system and provides a formalised overland flow path through the Estate (Figure 3).

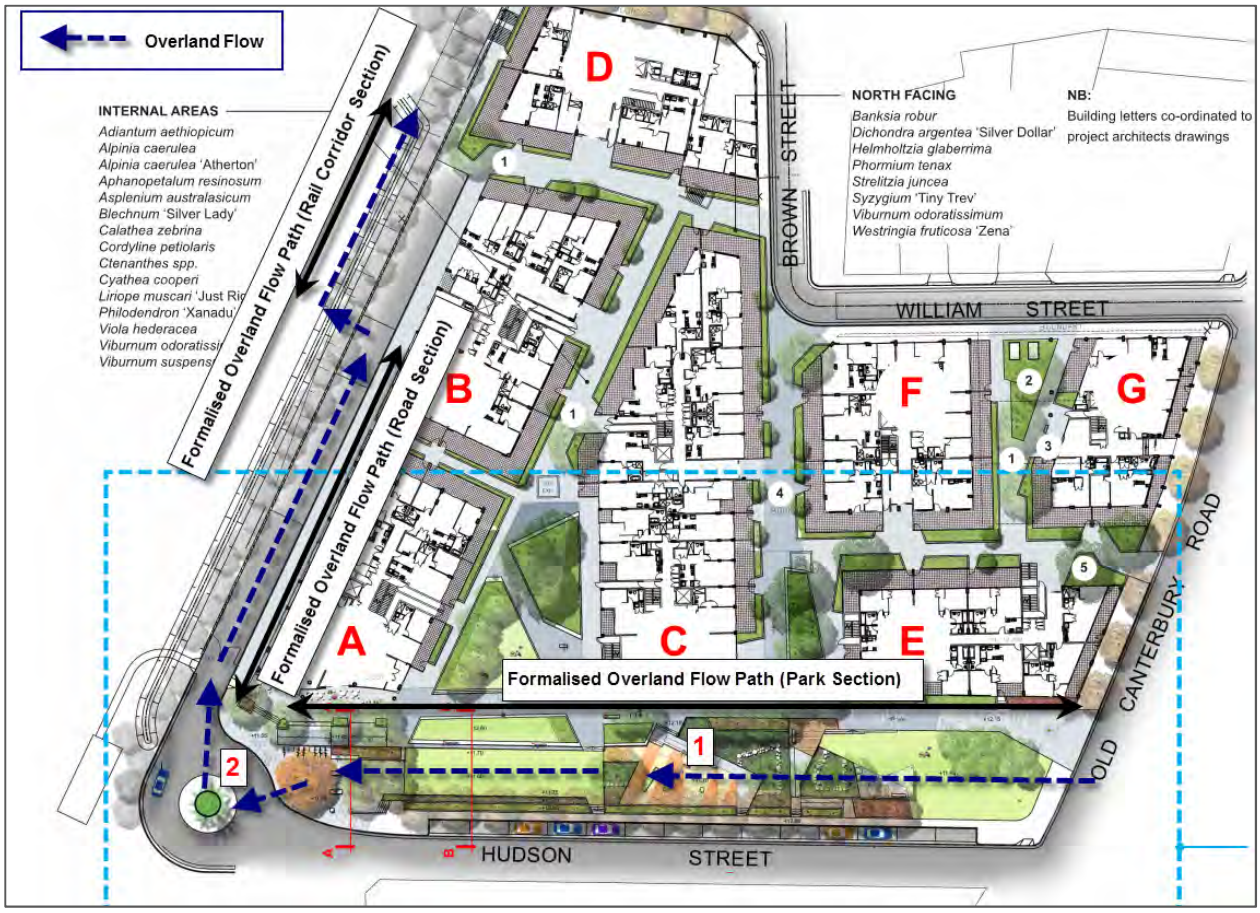


Figure 3 – Formalised Overland Flow Path (landscaping details subject to change)

The formalised overland flow path will carry water around Lewisham Estate during events larger than a 5 year ARI. Flood waters will reach a maximum depth of 0.5m at the roundabout on Hudson Street (Location 2 in Figure 3). The flow path will remain active for approximately 80 minutes during the 100 year ARI event (Figure 4 shows the depth and duration of flooding within the Park Section of the Overland Flow Path (location 1 on Figure 3). It is noted that the design storms used in our assessment produce the maximum flows for the specific ARI, there will be other storms which cause a longer duration of flooding (to a lesser depth and hazard).

Flows within the park section of the formalised overland flow path will be low hazard and have a VxD less than 0.4 as defined in the Floodplain Risk Management Manual (2005). Parts of the road section of the overland flow path develop a VxD greater than 0.4 during the 100 year ARI, however the hazard remains low.

Attachment A reproduces figures showing depth, hazard and VxD of flooding during the 20yr and 100yr ARI's as presented in the modelling report (5 Dec 2013).

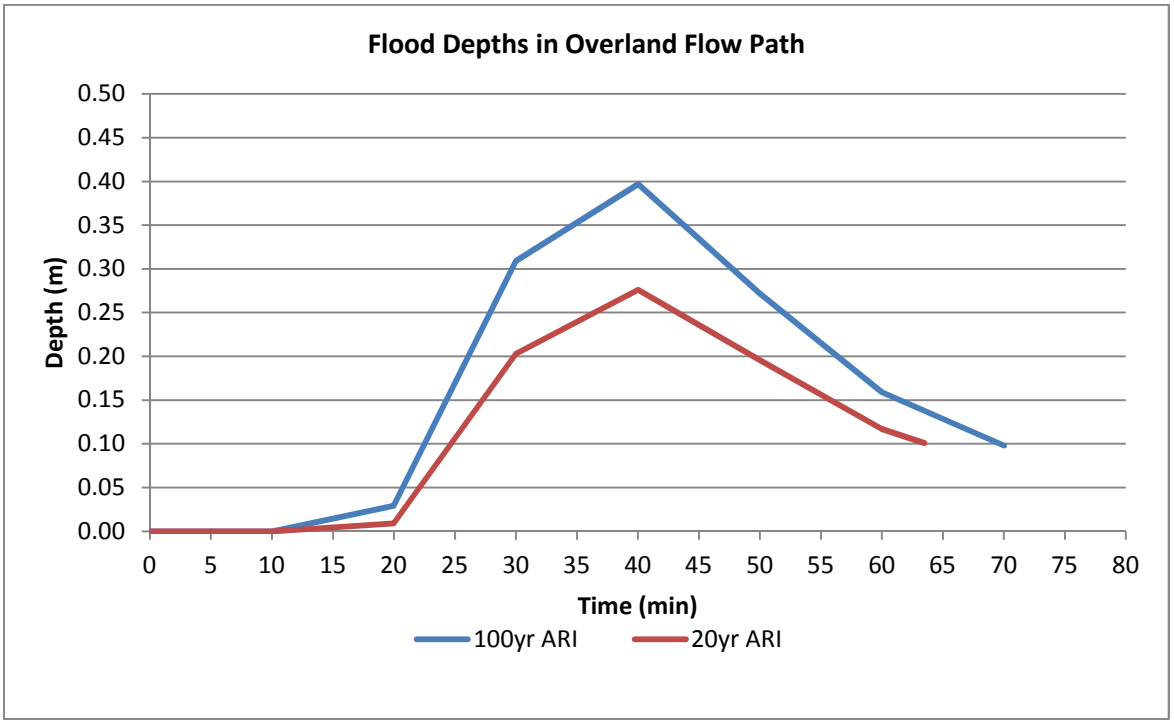


Figure 4 – Depth and Duration of Overland Flows

Conclusion

The formalised overland flow path for Lewisham Estate will be used to convey flood water from Old Canterbury Road around the Estate, discharging into the Light Rail Corridor approximately every 5 years. The duration of flooding will be for approximately 80 minutes during the critical design storm duration with the hazard will remain low through the shared park section of the floodway.

Should you have any questions please do not hesitate to contact myself or Dr Brett C Phillips.

Yours faithfully,

Matthew Zollinger

Senior Project Manager

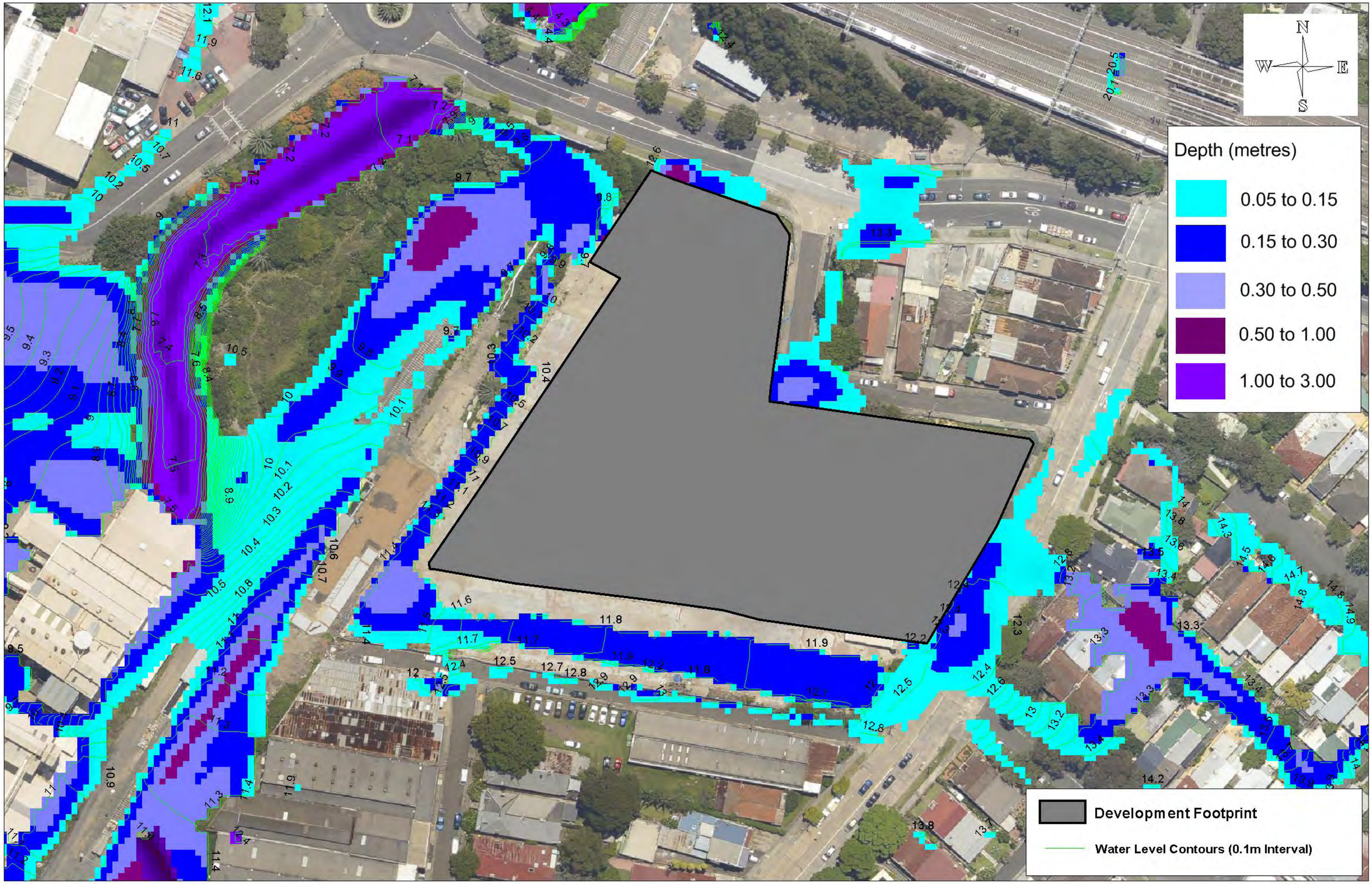
For Cardno

9024 7133

matthew.zollinger@cardno.com.au

Attachment A – Extracted Modelling Figures

Attachment A – Extracted Modelling Figures



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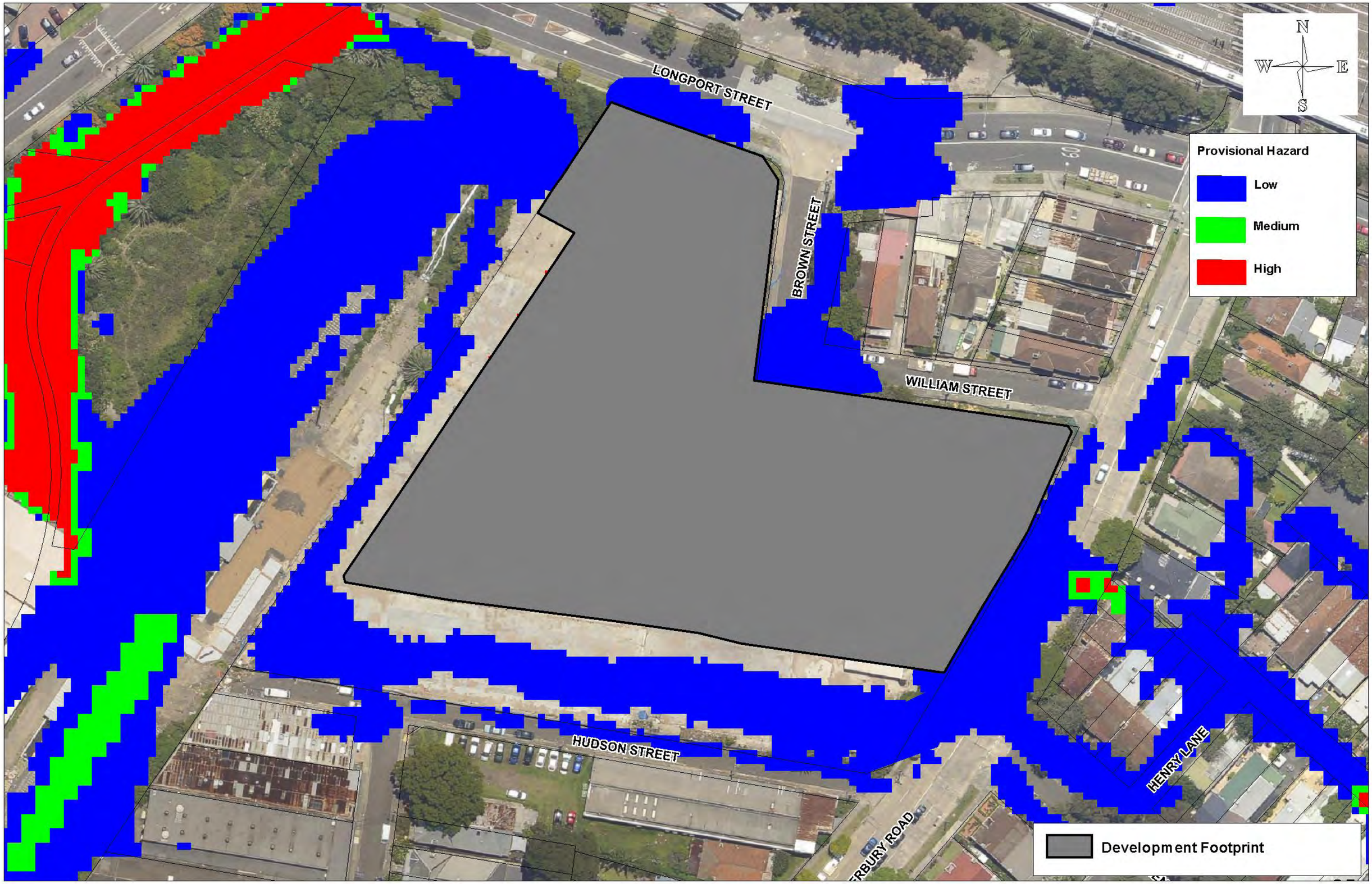
59914017
December 2013

FLOODING ADVICE LEWISHAM ESTATE

FIGURE B14
20 YEAR ARI PEAK DEPTH
SCHEME D1(Pit Blockage)



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December 2013

FLOODING ADVICE LEWISHAM ESTATE

FIGURE B16
20 YEAR ARI PROVISIONAL HAZARD
SCHEME D1

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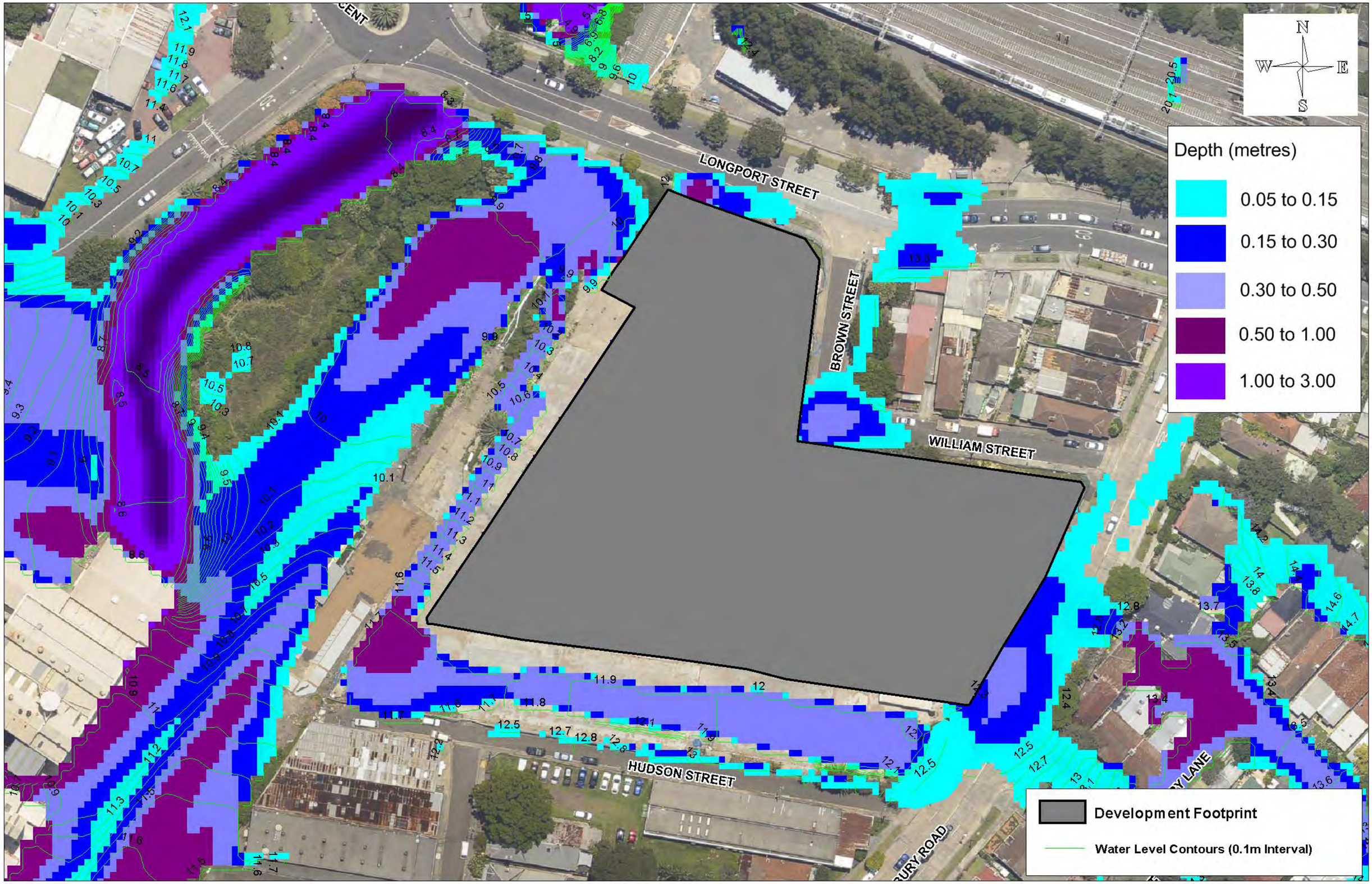
59914017
December 2013

FLOODING ADVICE LEWISHAM ESTATE

FIGURE B17
FLOOD VELOCITY x DEPTH -20 YEAR ARI
SCHEME D1(Pit Blockage)



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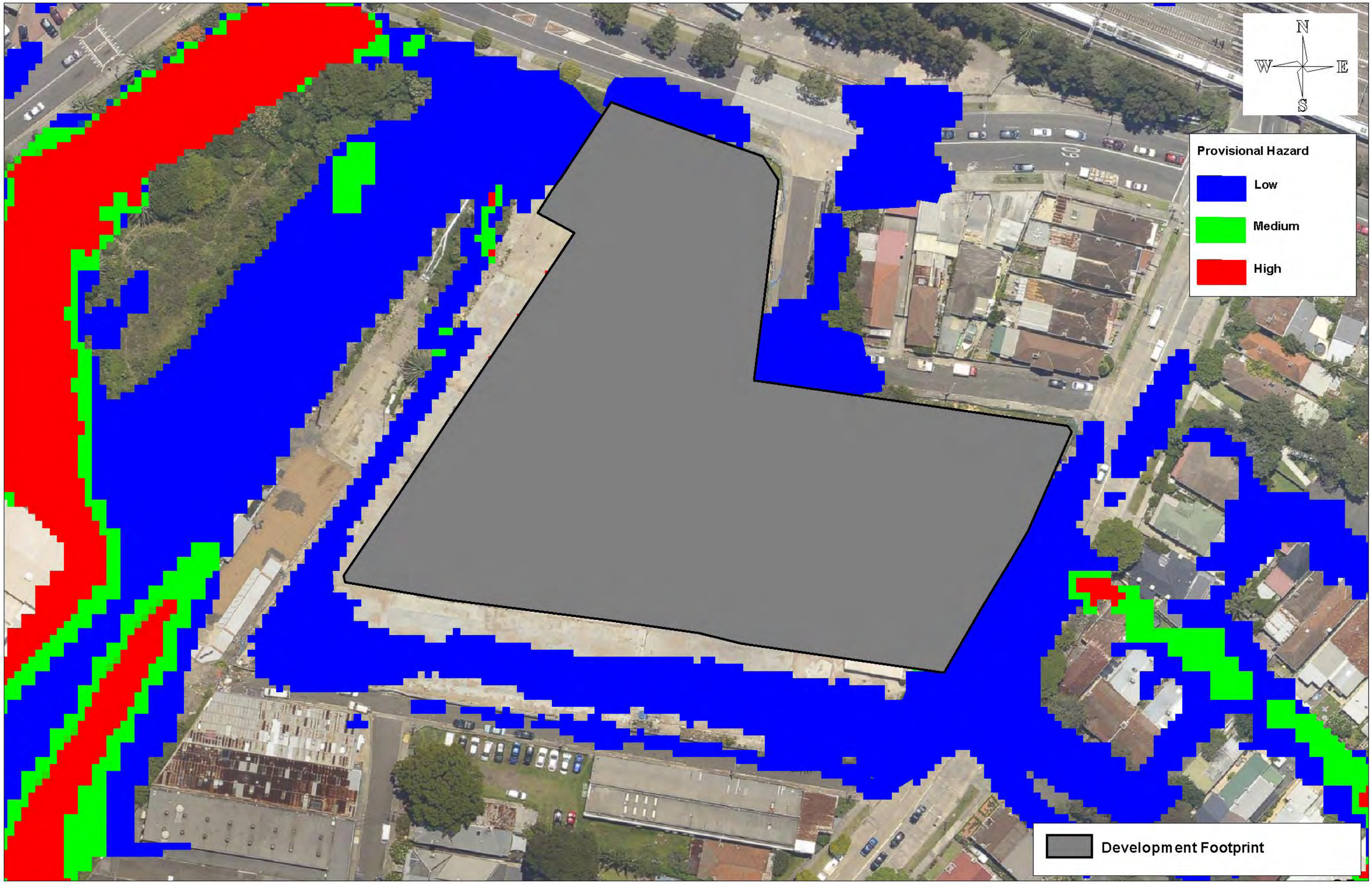
59914017
December 2013

FLOODING ADVICE LEWISHAM ESTATE

FIGURE B9
100 YEAR ARI PEAK DEPTH
SCHEME D1(Pit Blockage)



Cardno

59914017
December 2013

FLOODING ADVICE LEWISHAM ESTATE

FIGURE B11
100 YEAR ARI PROVISIONAL HAZARD
SCHEME D1

Cardno

59914017
December 2013

FLOODING ADVICE LEWISHAM ESTATE

FIGURE B12
FLOOD VELOCITY x DEPTH -100 YEAR ARI
SCHEME D1(Pit Blockage)

ANNEXURE 4

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

EXISTING RAIL CORRIDOR
LONGPORT ST
LIGHT RAIL CORRIDOR
NORTH-SOUTH ST
BROWN ST
WILLIAM ST
OLD CANTERBURY RD
BUILDING A
BUILDING B
BUILDING C
BUILDING D
BUILDING F
BUILDING G
TEMPORARY BATTER FOR CONSTRUCTION OF BASEMENT SUBJECT TO RAIL CORR. APPROVAL.
EXISTING ø900 PIPE
NEW SURCHARGE PIT BUILT ON EXISTING 900ø PIPE GRATE RL9.8 PIPE IL 4.56. CONSTRUCTION TO SYDNEY WATER APPROVAL.
STORMWATER PIT B/11 COVER LEVEL RL 12.2
IL4.60
RAMP LOCATION T.B.C
PIPEWORK UNDER BASEMENT SLAB
PIPEWORK UNDER BASEMENT SLAB
2 x ø525
2400W x 900 H BOX CULVERT
RETAINING WALL
EXISTING SEWER TO BE REMOVED.
EXISTING STORMWATER CHANNEL TO BE REMOVED
COVERED CHANNEL
EXISTING BROWN STREET AND WILLIAM STREET TO BE RE-GRADED.
PROPOSED DRIVEWAY ENTRANCE OFF WILLIAM TO PARKING LEVEL 1
REFER ARCHITECTURAL DRAWINGS FOR PROPOSED PEDESTRIAN ACCESS LEVELS
LEVELS OF DRIVEWAY T.B.C
BASEMENT EXTENT
SAWCUT
K&G
DP 1172726
DP 734142
DP 977044
DP 67926
DP 977044
5.30m
9.6m
1.8m
3.0m
3.0m
1.8m
9.2m
3.0m
3.0m
1.6m
1.6m
9.1m
5.5m
0.6m
0.3m
300ø
150ø
100ø
FOR CONTINUATION REFER SKC23

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

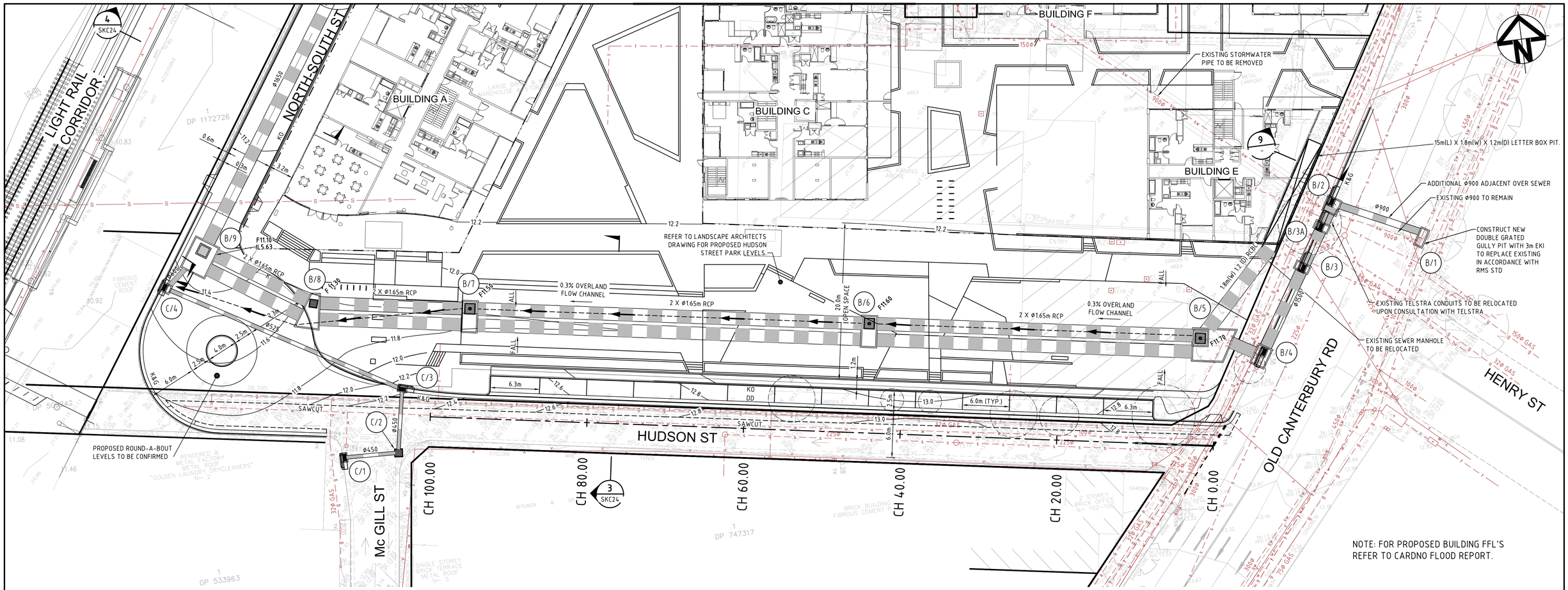
Status: PRELIMINARY ISSUE — NOT TO BE USED FOR CONSTRUCTION — A1

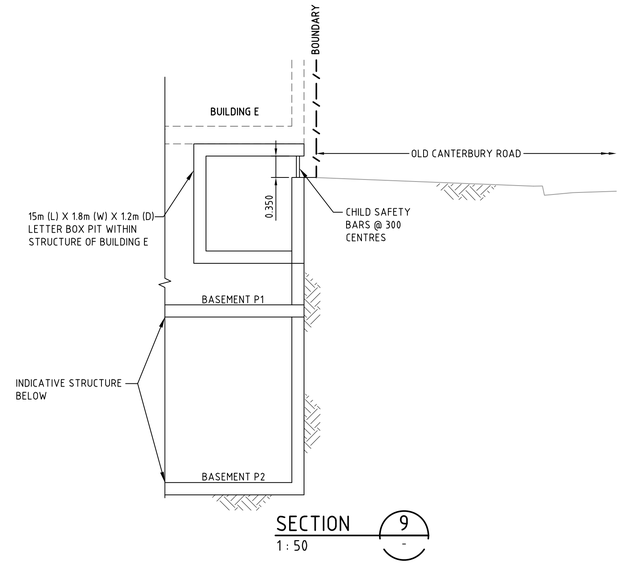
Drawing No.	Project No.	Issue
SKC22	12-100	P4

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

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
at&l
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
SKC23	12-100	P5

100mm on Original

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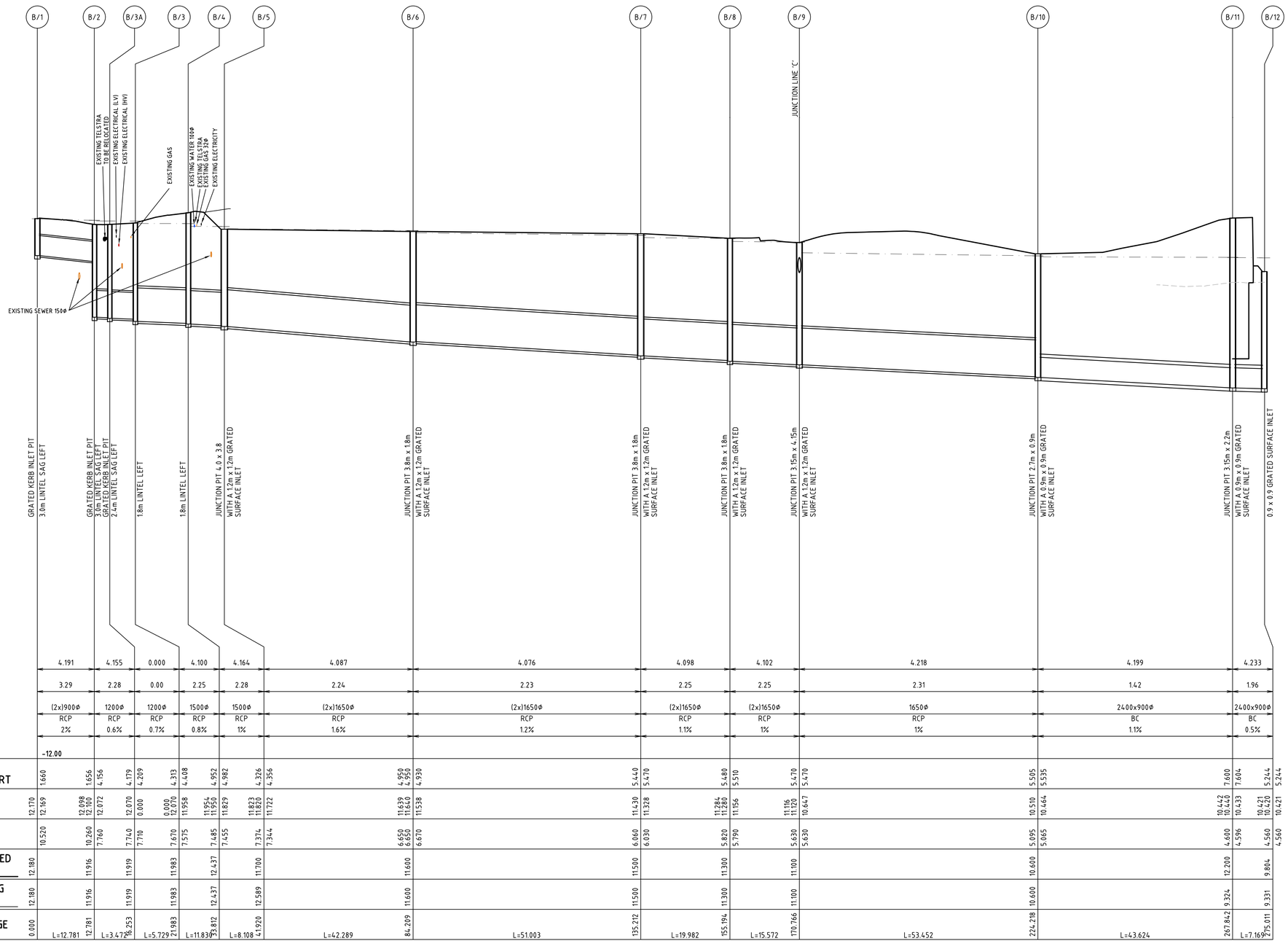

	B/1	B/2	B/3A	B/3	B/4	B/5	B/6	B/7	B/8	B/9	B/10	B/11	B/12
	E328511.308 N6248052.4	E328500.143 N6248058.621	E328498.361 N6248055.64	E328495.453 N6248050.704	E328489.103 N6248040.723	E328481.448 N6248043.393	E328439.794 N6248050.697	E328389.495 N6248059.142	E328369.774 N6248062.364	E328356.711 N6248070.84	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 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)1900ø 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	12.072	12.070	0.000	0.000	11.958	11.954	11.829	11.823	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	10.421
												10.440	10.420
												10.433	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

Civil Engineers and Project Managers
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info@atl.net.au

Status: PRELIMINARY ISSUE NOT TO BE USED FOR CONSTRUCTION
A1

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

F:\12-100 Lewisham\Drgs\Civil\Sketches\SKC25-SW Long-Sections - Sheet 1.dwg

ANNEXURE 5

By 2025, global demand for water will have grown by over 40%

Sydney WATER

18 December 2013

Shener Dursun
Meriton Group
Level 11
Meriton Tower
528 Kent Street
Sydney NSW 2000

Cardno Reference: 59914017[13-0310]

LEWISHAM ESTATE – PROPOSED DRAINAGE WORKS

Dear Shener

Thank you for sending through Cardno's letter dated 5 December 2013 referencing the flood report conducted and Plan Drawings SKC36/37 for the proposed Meriton Tower development at 78-9 Old Canterbury Road, Petersham.

Sydney Water's Land and Waterways has reviewed the report and are happy with the documentation provided. You have consulted key stakeholders as requested, particularly Marrickville Council and RailCorp to address the impacts caused by flooding from this development. Please ensure all new designs, reports and supporting documentation are submitted to Council before applying to Sydney Water for a Section 73. As per process Sydney Water will issue a NOR with key requirements before approving this works to ensure the development results in minor impacts (as indicated in these documents) to peak flood events, which do not adversely impact adjacent properties, roads and, railway property and infrastructure.

Sydney Water will commit to immediately reviewing your application.

If you need further information please do not hesitate to contact me.

Regards

Fernando Ortega
Senior Planner - Land and Waterways
Liveable City Solutions
0407 702 994
fernando.ortega@sydneywater.com.au

ANNEXURE 6

Transport NSW | RailCorp

RailCorp Property
PO Box 459
Burwood NSW 1805

19 December 2013

Mr Shener Dursun
Project Manager
Meriton Group
Level 11
528 Kent Street
SYDNEY NSW 2000

Dear Mr Dursun,

RE: OWNERS CONSENT TO LODGMENT FOR EARLY WORKS WITHIN THE LIGHT RAIL CORRIDOR ADJOINING 78-90 CANTERBURY ROAD, LEWISHAM.

I refer to your request for RailCorp's consent to lodge an application for early works within the rail corridor adjoining 78-90 Old Canterbury Road, Lewisham.

RailCorp has reviewed your development proposal and RailCorp is prepared to consent to the lodgment of an application for these early works only, subject to the conditions listed in Attachment A.

Please note that the submittal of this letter with an application to the Consent Authority will be considered as your acceptance of the conditions listed in Attachment A and your agreement to provide the required documentation at the intervals specified.

RailCorp advises that it reserves the right to review and comment on the application if and when it is placed on public exhibition and may request the attachment of certain conditions of consent on any approval.

In addition, this consent does not give you the right to commence work on RailCorp land without obtaining further approval from RailCorp.

Should you have any enquiries relating to RailCorp issues please do not hesitate to contact Jim Tsirimiagos on 8575 0780. Any enquiries regarding the Sydney Light Rail Inner West Extension should be directed to either Jeremy Kidd on 8202 3038 from Transport for NSW.

Yours sincerely,

Kevin Sykes
General Manager Property

Attachment A

General:

1. *Land owner's consent is provided for the early works (being the provision of a temporary batter and access ramp within RailCorp's light rail corridor land.*

2. *No amendments will be made to the proposed works without RailCorp's prior written consent which RailCorp may, in its absolute discretion, withhold or in respect of which RailCorp may impose conditions.*

3. *That a copy of this letter be included with your application to the Consent Authority.*

4. *The ability to undertake maintenance and emergency activities by RailCorp, Transport for NSW (TfNSW), or any entity authorised by RailCorp or TfNSW, shall not be hindered.*

5. *All works are to comply with the Building Code of Australia and/or Australian Standards.*

6. *No plant or vehicle is permitted to encroach on the ballast shoulder or track within the rail corridor without prior arrangements being made to certify the track for the effects of disturbance.*

7. *No infrastructure or equipment is to be placed or installed on the rail corridor without proper assessment by authorised persons to ensure no impact will occur to rail infrastructure. e.g. signal sighting, safety signage, emergency access.*

8. *During all stages of the development extreme care shall be taken to prevent any form of pollution entering the railway corridor. Any form of pollution that arises as a consequence of the development activities shall remain the full responsibility of the Applicant.*

9. *No work is permitted within the rail corridor at any time unless prior approval or an Agreement has been entered into with RailCorp.*

10. *Appropriate fencing shall be installed separating the work area from the rail corridor.*

11. *The proposed works shall be undertaken in accordance with the requirements of the Protection of the Environment Operations Act 1979, which requires that management controls are implemented to mitigate any risk of harm to the environment as a result of these works. Appropriate management procedures should be documented in a construction environmental management plan, and this plan shall be submitted to RailCorp for review.*

12. *Care to be taken not to damage new pathway and lighting infrastructure - Meriton to be responsible for any damage and rectification.*

13. *Meriton responsible for fencing for safety/security of the site.*

14. *Meriton's construction contractor will be required to coordinate the early works within the rail corridor with the SLRIWE construction contractor.*

15. *Meriton shall take the risk of removal of spoil and potential for contamination.*

16. *Meriton to be responsible for environmental management / controls.*

17. *Meriton to reinstate following completion of the works, including with suitable material, topsoil and stabilisation with suitable landscaping. Only clean soil is to be used to fill the batter area.*

Prior to the commencement of works:

1. *Meriton to enter into a formal agreement with Transport for NSW to occupy the required land.*

2. *Prior to the commencement of works and on completion of works a joint inspection with representatives of RailCorp of the rail infrastructure and property in the vicinity of the project is to be carried. These dilapidation surveys will establish the extent of any existing damage and enable any deterioration during construction to be observed. The submission of a detailed dilapidation report will be required unless otherwise notified by RailCorp.*

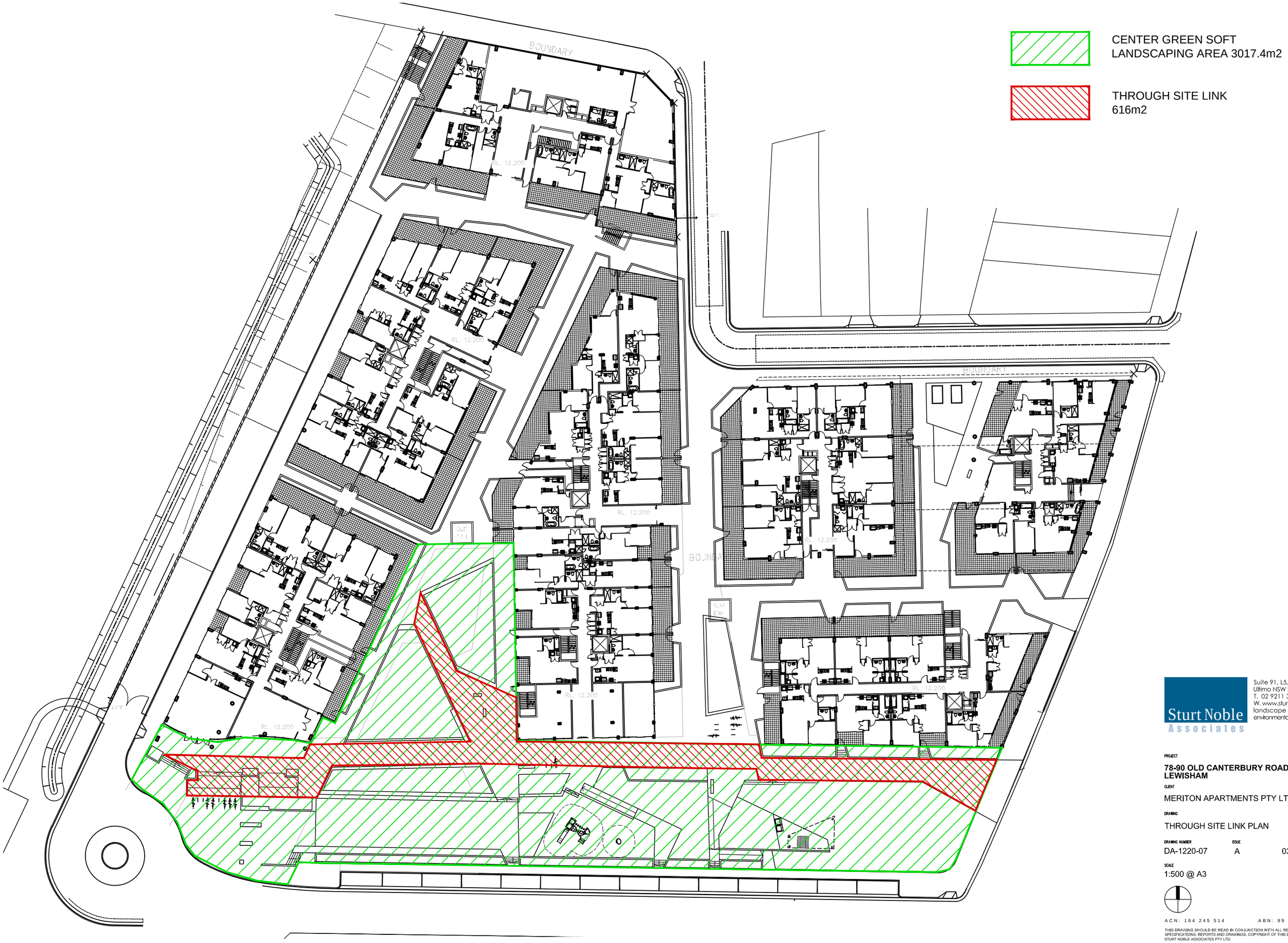
3. *A Risk Assessment/Management Plan and detailed Safe Work Method Statements (SWMS) for the proposed works are to be submitted to RailCorp for review and comment prior to the works commencing on site. It should be noted that RailCorp's representative may impose conditions on the methods to be used and require the provision of on-site Safe Working supervision for certain aspects of the works.*

On completion of works:

1. *That, if required by RailCorp or TfNSW, the Applicant will provide written evidence that the area occupied has not been contaminated, and if proven to be contaminated, to be remediated at the Applicants cost. The timing of any remediation to be determined by either RailCorp or TfNSW.*

--o0o--

ANNEXURE 7



Sturt Noble Associates

Suite 91, L5, 330 Watt
Ultimo NSW 2007
T. 02 9211 3744
W. www.sturtnoble.cor
landscape architec
environmental & urban

PROJECT

78-90 OLD CANTERBURY ROAD, LEWISHAM

CLIENT

MERITON APARTMENTS PTY LTD

DRAWING

THROUGH SITE LINK PLAN

DRAWING NUMBER	ISSUE	DATE
DA-1220-07	A	03.02.201

SCALE

1:500 @ A3

ACN: 164 245 514 ABN: 99 164 245

ANNEXURE 8

Our Ref: 59914017[13-0303i]
Contact: Matthew Zollinger

18 December 2013

Cardno (NSW/ACT) Pty Ltd
ABN 95 001 145 035

Level 9
The Forum
203 Pacific Highway
St. Leonards NSW 2065

P.O. Box 19
St Leonards NSW 1590
Australia

Phone: +61 2 9496 7700
Fax: +61 2 9439 5170

www.cardno.com.au

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

Attention: Shener Dursun

LEWISHAM ESTATE DRAINAGE WORKS

This letter is in response to a review of the Conditions of the Consent issued for the development of 78 - 90 Old Canterbury Road with regard to flooding issues. All current Council planning documents as well as modelling and reporting that has been undertaken to date has been based on flood planning levels being set to the 100 year ARI + 0.5m freeboard. Cardno recommend Meriton seek to modify Condition 7 of the Concept Approval pertaining to minimum (habitable) finished floor levels for the development.

1. FLOOD PLANNING REQUIREMENTS

The NSW State Governments Floodplain Development Manual is the guiding document for Council's managing and developing areas within floodplains. It recommends Councils use development controls such as setting minimum flood planning levels to manage flood risk. Marrickville Council's LEP (2011) sets the flood planning level as the 100 year ARI plus 0.5m freeboard. (extract provided in Attachment A), generic provisions are provided in Council's DCP 2.22 "Flood Management".

Marrickville Council's LEP (2011) Clause 6.3:

> *"Flood planning level" means the level of a 1:100 ARI (average recurrent interval) flood event plus 0.5 metre freeboard.*

Marrickville Council's DCP 2.22: ***Controls for new residential development - C5***

> *Floor levels of habitable rooms must be a minimum of 0.5m above the standard flood level at that location. For areas of minor overland flow (a depth of 300mm or less or overland flow of 2cum/sec or less) a lower freeboard of 300mm may be considered on its merits.*

2. DISCUSSIONS WITH COUNCIL

Cardno and Meriton have met with Marrickville Council twice to discuss flood management for the proposed Lewisham Estate. All discussions involving setting floor levels or assessing impacts of the development considered the 100 year ARI as is

consistent with Councils LEP and DCP. This is reflected in all current modelling/assessments. It was agreed that the PMF would be assessed for the purpose of evacuation only.

Following discussions with Council on 30 August, 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 0.1m but this needs to balance 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 [during the 100 year ARI] to determine if the impacts are significant; (*Agree this may result in a local increase of 0.1m 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%; - shown in **Figure 2** (*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 Schedule 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*.

During further discussions on 18th October, Council indicated that in principle they accepted the flood modelling results and reiterated that Council's DCP 2.22 was the appropriate policy to be addressing. Cardno are presently in the process of addressing Council's concerns (received via email 30 October, 2013) as detailed below:

> *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[stream] tail water level used.*

A report discussing the flooding and drainage works will be submitted to support the future Development Application for Lewisham Estate.

3. CONCEPT APPROVAL - 78-90 OLD CANTERBURY ROAD, LEWISHAM (MP08_0195)

Based on the above discussion, we recommend that Meriton seek to change Condition 7 of the Concept Approval as detailed in Section 2.1 below

2.1 SCHEDULE 3 – CONDITION 7 – FLOOD LEVELS

The current condition sets the floor levels of the development referenced to the Probable Maximum Flood level which is not consistent with either Marrickville Council's LEP (2011), DCP 2.22 nor is it consistent with the general principles of the NSW Government's 2005 Floodplain Development Manual. Council's planning documents nominate the 100 year ARI flood level plus 0.5m freeboard as the appropriate flood planning level for setting minimum habitable floor levels for dwellings. All current modelling has been undertaken on the basis of setting floor levels at the 100yr ARI plus 0.5m freeboard, as such, we believe it appropriate to change Condition 7 as detailed below:

Current condition

7. *Future Development Applications shall comply with the Cardno Flood Management Report dated 30.11.11 and consider and address any recommendations in any Council adopted Flood Study and relevant state policies at the time of lodgement of the application to demonstrate the finished floor levels of the buildings will be above the probable maximum flood levels for the site and that the development will not adversely impact on any surrounding property (including the light rail corridor) by the redirection of flood waters or loss of flood storage.*

Revised condition (proposed change in red)

7. *Future Development Applications shall comply with the Cardno Flood Management Report dated 30.11.11* and subsequent flood studies endorsed by Council *and relevant state policies at the time of lodgement of the application to demonstrate the finished floor levels of the buildings* will be not less than 0.5 m above the 100 year ARI flood levels *and that the development will not adversely impact on any surrounding property (including the light rail corridor) by the redirection of flood waters or loss of flood storage.*

Should you have any questions please do not hesitate to contact myself or Dr Brett C Phillips.

Yours faithfully,

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

Attachment A – Marrickville Council LEP Clause 6.3

Attachment A

MARRICKVILLE LOCAL ENVIRONMENTAL PLAN 2011 - REG 6.3

Flood planning

6.3 Flood planning

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

(a) to minimise the flood risk to life and property associated with the use of land,

(b) to allow development on land that is compatible with the land's flood hazard, taking into account projected changes as a result of climate change,

(c) to avoid significant adverse impacts on flood behaviour and the environment.

(2) This clause applies to:

(a) land that is shown as "Flood planning area" on the *Flood Planning Map* , and

(b) other land at or below the flood planning level.

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

(a) is compatible with the flood hazard of the land, and

(b) is not likely to significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and

(c) incorporates appropriate measures to manage risk to life from flood, and

(d) is not likely to significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses, and

(e) is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding.

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

(5) In this clause,
"flood planning level" means the level of a 1:100 ARI (average recurrent interval) flood event

plus 0.5 metre freeboard.

ANNEXURE 9

By 2025, global demand for water will have grown by over 40%

Sydney WATER

13 December 2013

Matthew Zollinger
Cardno
The Forum
203 Pacific Highway
St Leonards NSW 2065604

Cc: Shener Dursun - Meriton Group

Your Reference: 59914017[13-0275]

LEWISHAM ESTATE – DRAINAGE WORKS

Dear Matthew

The following is Sydney Water's response to your request dated 7 November 2013.

Sydney Water agrees that the finish floor levels of the proposed building should "not be less than 0.5m above the 100 year ARI flood level" rather than "above the probable maximum flood levels". This is consistent with Sydney Water requirements, Marrickville Council's DCP 2.22 and NSW Government 2005 Floodplain Development Manual. Schedule 3 – Condition 7 of the Concept Approval, Section 75O, NSW Environmental Planning and Assessment Act 1979, should be amended.

Sydney Water is aware this response will be submitted as part of the Section 96 Application to the NSW Department of Planning.

Please note that Condition 11 under Schedule 3 is not a condition set by Sydney Water.

If you need further information please do not hesitate to contact me.

Regards

Fernando Ortega
Senior Asset Planner - Land and Waterways
Liveable City Solutions
0407 702 994
fernando.ortega@sydneywater.com.au

ANNEXURE 10

2.22.5 Controls

General

C1 For proposed development, consideration must be given to such matters as the likely depth and nature of possible floodwaters, flood classification of the area (where applicable) and the risk posed to the development by floodwaters.

C2 The applicant must demonstrate:

i. That the development will not increase the flood hazard or risk to other properties and that details have been provided of the structural adequacy of any buildings works associated with the development with regard to the effects of possible floodwaters;

ii. That the proposed building materials are suitable;

iii. That the development is sited in the optimum position to avoid floodwaters and allow evacuation; and

iv. That all electrical services associated with the development are adequately flood proofed.

C3 All applications for development must be accompanied by a survey plan including relevant levels to AHD (Australian Height Datum). Consideration must be given to whether structures or filling are likely to affect flood behaviour and whether consultation with other authorities is necessary.

C4 Compliance with flood management controls must be balanced by the need to comply with other controls in this DCP.

Controls for new residential development

C5 Floor levels of habitable rooms must be a minimum of 0.5m above the standard flood level at that location. For areas of minor overland flow (a depth of 300mm or less or overland flow of 2cum/sec or less) a lower freeboard of 300mm may be considered on its merits.

C6 Any portion of buildings classified as being flood prone must be constructed from flood compatible materials (See Schedule 1).

C7 Flood free access must be provided where practicable.

Controls for residential development – minor additions

C8 Once-only additions with a habitable floor area of up to $30m^2$ may be approved with floor levels below the standard flood level at that location if the applicant can demonstrate that no practical alternatives exist for constructing the extension above the standard flood level.

C9 Additions greater than $30m^2$ will be considered against the requirements for new residential development (refer C5, C6, and C8).

C10 Any portion of buildings subject to inundation must be constructed from flood compatible materials.

Controls for non-habitable additions or alterations

C11 All flood sensitive equipment must be located above the standard flood level at that location.

C12 Any portion of buildings subject to inundation must be built from flood compatible materials.

ANNEXURE 11

Marrickville Local Environmental Plan 2011

6.3 Flood planning

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

(a) to minimise the flood risk to life and property associated with the use of land,

(b) to allow development on land that is compatible with the land's flood hazard, taking into account projected changes as a result of climate change,

(c) to avoid significant adverse impacts on flood behaviour and the environment.

(2) This clause applies to:

(a) land that is shown as "Flood planning area" on the Flood Planning Map, and

(b) other land at or below the flood planning level.

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

(a) is compatible with the flood hazard of the land, and

(b) is not likely to significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and

(c) incorporates appropriate measures to manage risk to life from flood, and

(d) is not likely to significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses, and

(e) is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding.

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

(5) In this clause, flood planning level means the level of a 1:100 ARI (average recurrent interval) flood event plus 0.5 metre freeboard.