



Job Number: 190006  
Date: 23 July 2021

David Waghorn  
Planning Ingenuity  
Suite 510, 531 – 533 Kingsway  
Miranda NSW 2228

GRC Hydro  
Level 9, 233 Castlereagh Street  
Sydney NSW 2000

Tel: +61 2 9030 0342  
[www.grchydro.com.au](http://www.grchydro.com.au)

Dear David,

**Re: Flood Investigation for 187 Slade Road, Bexley North**

**1. Introduction**

Development is proposed for the subject Site located at 187 Slade Road, Bexley North. The development is located in an urban area with a 28-hectare upstream catchment. Under current conditions the Site is affected by minor flooding from the carpark to the South-West and from Sarsfield Circuit. The location of the Site is shown in Figure 1.

GRC Hydro have been engaged by Planning Ingenuity to investigate the existing flood liability in relation to Council's planning policies to assess the suitability of development for the Site and to identify flood mitigation measures.

**2. Previous Studies**

The Bardwell Creek 2D Flood Study Review was undertaken by WMAwater in 2018. The study used a hydrologic model (WBNM) and hydraulic model (TUFLOW) to model design flood behaviour for events ranging from the 20% Annual Exceedance Probability (AEP) to the Probable Maximum Flood (PMF). The modelling system was calibrated and validated to historic events. These models were found to adequately represent flood behaviour in the study area.

The TUFLOW model results were used as the basis for investigating flooding as part of this study. Some model amendments were made by GRC Hydro, in the vicinity of the Subject Site based on observations from Site visits and local knowledge of the area. The key model amendment was to facilitate the existing overland flow path through 232 Slade Road which had previously been blocked out of the model and exacerbated flood levels. Site visit revealed that the building basement is designed to allow flood water throughout the building and discharge into the railway line to the North (see Figure 2).

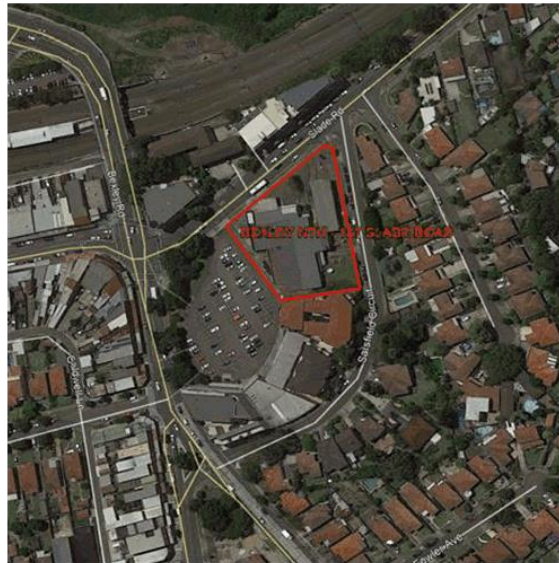


Figure 1: Project Site Location - 187 Slade Road - Bexley North



Figure 2: View of property in 232 Slade Road from Slade Road



### 3. Existing Flood Behaviour

The Site experiences flooding when rainfall in the catchment to the South exceeds system stormwater capacity and overland flow moves generally from South to North. Both the car park to the West and Sarsfield Circuit convey overland flow. The Site's upstream catchment is shown in Figure 3. Runoff from this catchment arrives at the intersection of Sarsfield Circuit and Bexley Road, flowing North. The flow is then split between Sarsfield Circuit and Bexley Road, with the latter flowing into the car park adjacent to the Site.

Figure 4 shows the 1% AEP flood depths in the vicinity of the Site. On the Site boundary, flood depths range from 0.1 to 0.2 m on Sarsfield Circuit while along the Western boundary there are depths of around 0.15m to 0.6 m (measured in the sag point into the car park area). On Slade Road depths range from 0.1m to 0.6m (measured in the Slade Road Sag point in front of building in 232 Slade Road). The figure also shows stormwater drainage in the vicinity of the Site, including a 900 mm diameter drain that runs underneath the existing building.



Figure 3: Subject Site upstream catchment (27.8ha)



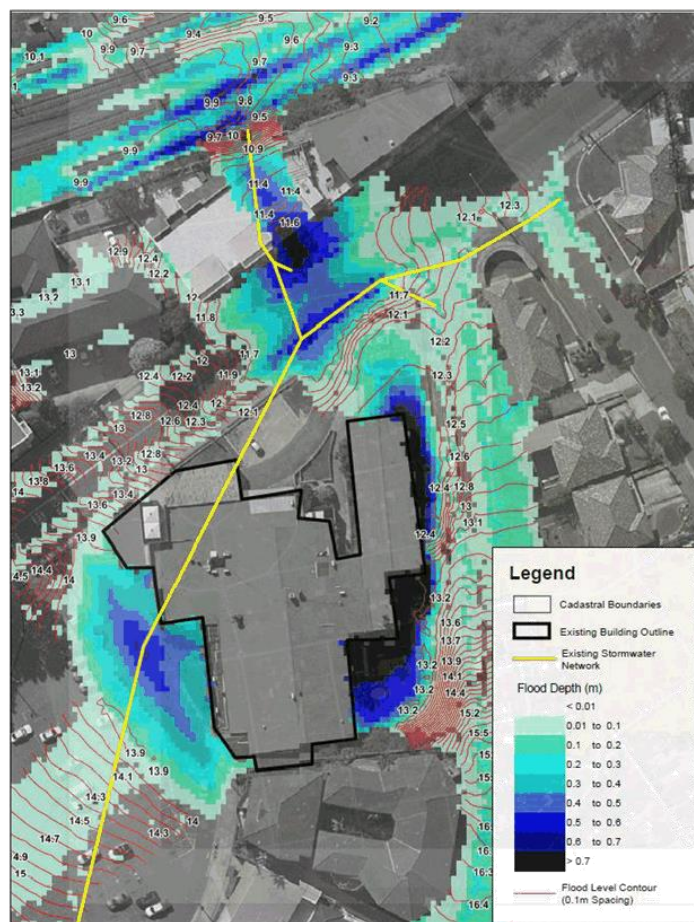


Figure 4: 1% AEP flood depth – existing case

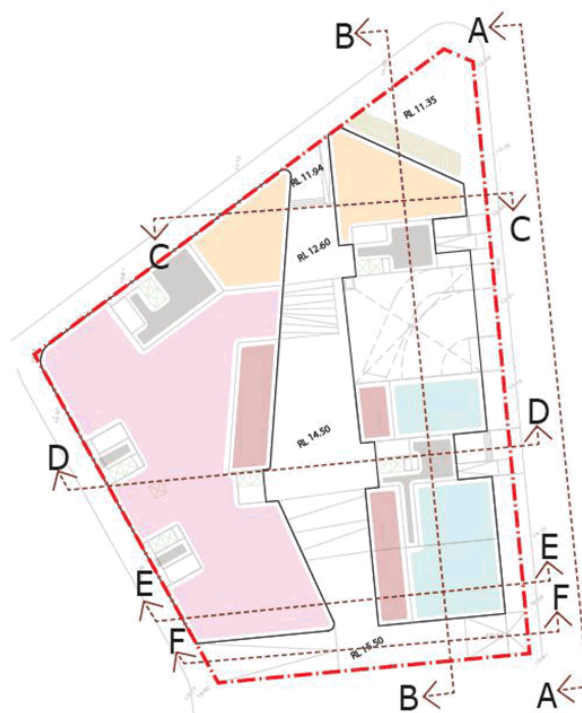
Model results indicate that the relatively new development at the corner of Sarsfield Circuit and Bexley Road (building at 2-6 Sarsfield Circuit) redirected flow on to Sarsfield Circuit that would have otherwise continued on Bexley Road. This has likely contributed to the flood risk at the subject Site.





#### 4. Flood Assessment of Proposed Development

The planning proposal is for an intensification of use of the subject Site whilst maintaining the existing use. The proposed construction consists of two new buildings. The area between the two buildings blocks (Laneway) is a publicly accessible open space. The proposed habitable surface is 2852 m<sup>2</sup>, around 600 m<sup>2</sup> higher than the existing. Three basement levels are proposed with car access from Sarsfield Circuit at location shown in Figure 5.



KEY MAP

KEY			
The entrance	Lobby	SOHOs	Ground line
The Plaza	Pub	Cafe	Outdoor landscape/seating
The laneway	Retail/Commercial	Outdoor cafe	

Figure 5: Proposed Development



The proposed development contains several features to replicate the existing flood behaviour and avoid flood level impacts. The features are shown in Figure 6 and are as follows:

- 1) **Pipe diversion and upgrade:** the existing 900 mm diameter pipe that traverses the Site will be demolished and replaced by a 1050 mm diameter pipe along Slade Road. The larger pipe will reduce friction losses and increase the pipe storage, reducing the hydraulic grade line and the potential impact in the car park area.
- 2) **Pipe upgrade:** The existing 900 mm pipe that crosses Slade Road will be upgraded to a 1200 mm diameter pipe or to an alternative drainage of similar cross-sectional area.
- 3) **Swale:** A swale will be included in the building landscaping on the East side of the development, to formalise the drainage path and improve drainage to the stormwater network. The proposed swale is 2m wide and 300-400 mm deep.
- 4) **Swale drainage:** The proposed swale will cross the proposed Car Park access ramp via a 2000mm x 700mm culvert. Swale profile will need to be adequately defined to allow sufficient cover above the crossing structure.  
At the downstream end of the proposed swale, a new pipe (500mm diameter) will join the swale to the existing stormwater network.
- 5) **Lowered ground:** At the end of the swale (North-East corner of the development), the ground is lowered from the existing level of 12.17 mAHD to 11.35 mAHD (tying into the swale) and then the ground is graded in the North-West direction towards the Slade Road footpath at level 11.23 mAHD.
- 6) **Connection Lane at South of development:** Following Council's request, a 6m wide lane has been allowed at the South end of the development for connection between the parking area at West and the Sarsfield Circuit. As per Council request, the lane must have a high point ("crest") at least 200mm higher than the 1% AEP water level in the Sarsfield Circuit gutter.

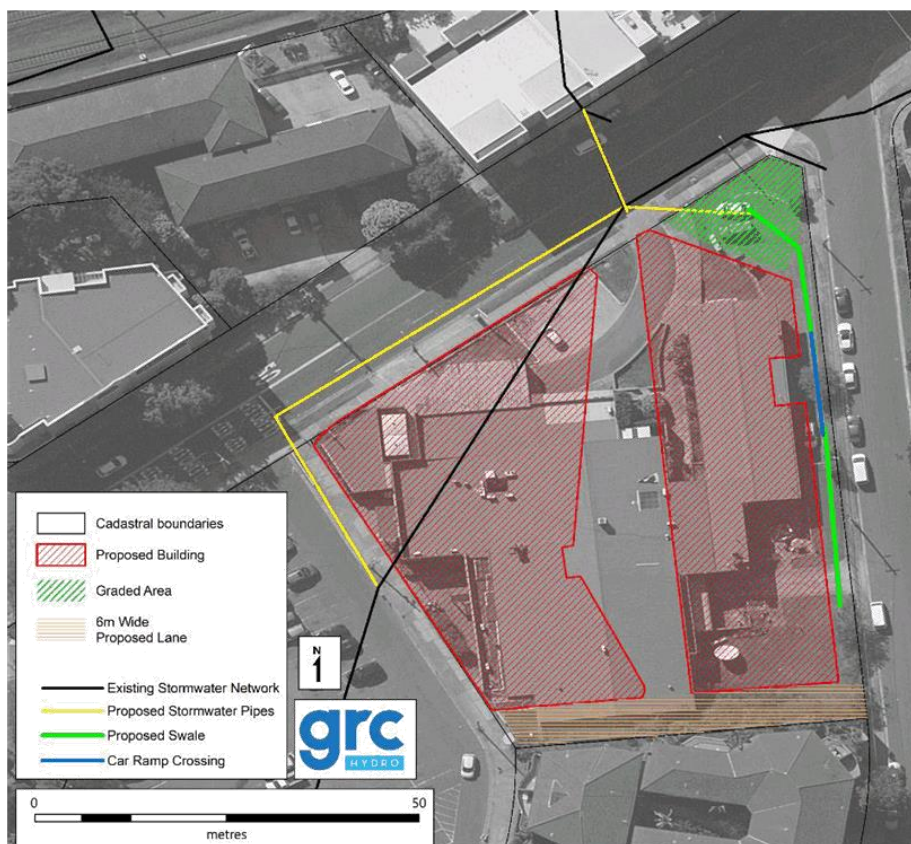


Figure 6: Proposed Flood Mitigation Measures

### 5. Relevant Planning Policy

#### Rockdale Development Control Plan

The Rockdale Council Development Control Plan (DCP) 2011 was adopted and is applicable for this development. Development control pertaining to Flood Risk Management can be found in Section 4.1.3 Water Management and are outlined below:

3. Development must comply with Council's – Flood Management Policy which provides guidelines of controlling developments in different flood risk areas. It should be read in conjunction with the NSW Government's 'Floodplain Development Manual 2005'.
4. The filling of land up to the 1:100 Average Recurrence Interval (ARI) flood level (or flood storage area if determined) is not permitted, unless specifically directed by Council in very special and limited locations. Filling of land above the 1:100 ARI up to the Probable Maximum Flood (PMF) (or in flood





fringe) is discouraged however it will be considered providing it does not adversely impact upon flood behaviour.

5. Development should not adversely increase the potential flood affectation on other development or properties, either individually or in combination with the cumulative impact of similar developments likely to occur within the same catchment.
6. The impact of flooding and flood liability is to be managed, to ensure the development does not divert the flood waters, nor interfere with flood water storage or the natural functions of waterways. It must not adversely impact upon flood behaviour.
7. A flood refuge may be required to provide an area for occupants to escape to for developments where occupants require a higher standard of care. Flood refuges may also be required where there is a large difference between the PMF and the 1 in 100-year flood level that may place occupants at severe risk if they remain within the building during large flood events.

#### Rockdale Local Environmental Plan 2011

Section 6.6 Flood Planning for the Rockdale Local Environmental Plan (LEP) outlines flood related controls relevant to the proposed development. These controls are provided below.

#### 6.6 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.*

*Flood Planning Map means the Rockdale Local Environmental Plan 2011 Flood Planning Map.*

The Flood Planning Map from the Rockdale LEP does not highlight the subject Site as within the Flood Planning Area. This map is shown in Figure 7.

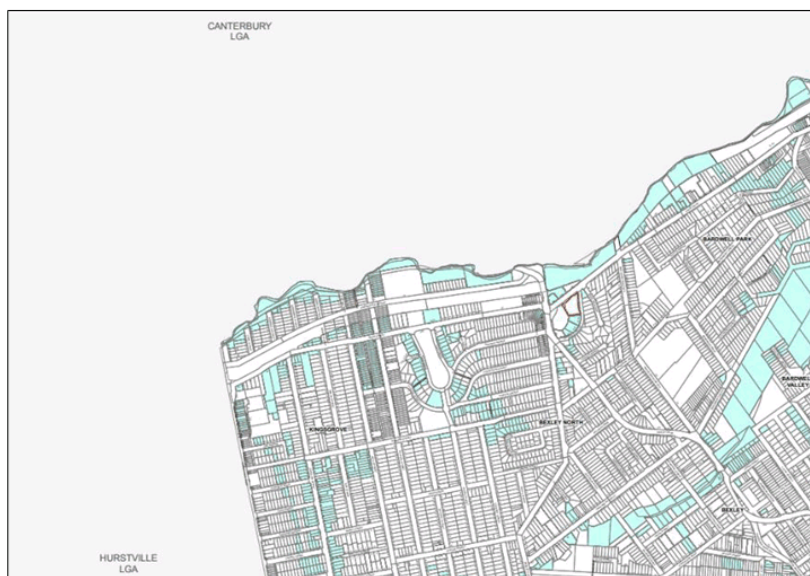


Figure 7: Rockdale LEP Flood Planning Area (subject Site outlined in red – not tagged)

#### 6. Impact of the Proposed Development

The proposed development was schematised in the hydraulic model (TUFLOW). The development was represented as a 'proposed' scenario that modified the building footprints and drainage features around the Site, as described in the previous section. The hydraulic model was then used to assess the impact of the development on existing flood behaviour. The impact maps for the 20%, 10% and 1% AEP events are shown in Appendix to this report in Figures 10 to 12.

The figures show that the building has a localised effect on the existing flood behaviour. On the West side of the building there is a slight decrease in flood level of less than 0.1 m. While there is a slight loss of flood storage (black area) this is offset by the increased stormwater capacity.

On Sarsfield Circuit there is also a loss of flood storage against the building, however it is offset by the swale and the level reduction at North-East of the development. The adverse impact is localised at the Southern-East end of the development and it is contained within the subject Site boundaries.



Overall, in regard to flood impact, the proposed development has minimal impacts on flood behaviour and does not result in flood impacts to other private properties or public roads. It will not result in increased requirement for government spending on flood mitigation measures.

#### **7. Minimum Floor Level Requirements**

Whilst the Site is flood liable in the 1% AEP event, flood risk itself is minimal. Flood depths are transitory (duration is limited), hazard is relatively minor owing to relative shallowness of flood waters. There is no expectation that flood waters cannot be managed such that risk to life can be managed. Far from being mainstream flooding which can pose a risk to life the flood affectation would more accurately be characterised as being overland flow (stormwater / flood fringe). Few depressed areas at South-East of the Site which are currently characterised as being flood storage will be blocked by the proposed development.



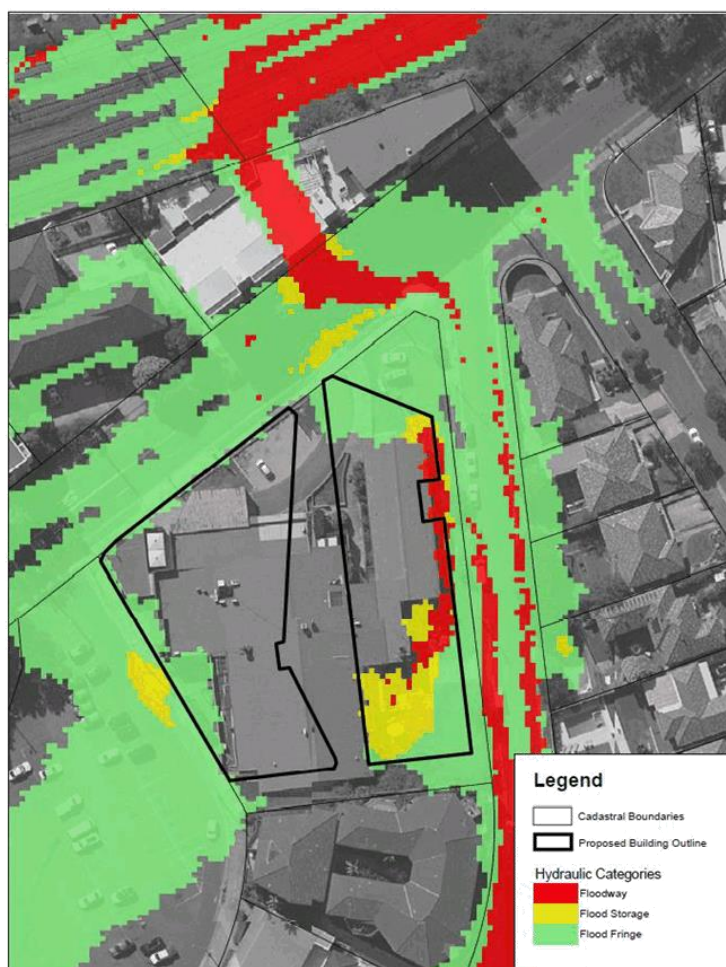


Figure 8: Flood Categories (1%AEP)

The main issue for any development will be achieving a complaint outcome in regard to flood impact. Other issues related to flood related development controls that seek to ensure appropriate development inclusive of levels etc. will be readily achieved. For example:

- Compliance with floor height controls;
- Compliance with controls relating to building resilience.



The PMF (Probable Max Flood) is a consideration in building design and risk management. The Floodplain Development Manual (2005), defines the PMF as “[...] the largest flood that could conceivably occur at a particular location, usually estimated from Probable Maximum Precipitation, and where applicable, snow melt, coupled with the worst flood producing catchment conditions. Generally, it is not physically or economically possible to provide complete protection against this event [...]”

The PMF provides an upper limit of flooding. As can be seen from results in Figure 9, the PMF does not scale excessively at the Site with PMF levels being generally 0.3 to 0.5 m higher than 1% AEP levels. At North instead the PMF level is more than 1m higher than the 1% AEP level due to the limited capacity of the overland flow throughout the building car park at 232 Slade Road.

Location	1%AEP Level [mAHD]	PMF Level [mAHD]	FPL [mAHD]
Building Entrance “A”	13.1	13.1	13.6
Building Entrance “B”	12.1	13.0	12.6
Building Entrance “C”	13.6	14.0	14.5
Vehicular Entrance “D”	12.9*	13.29	13.39
South end of pedestrian Laneway (Location “E”)	N/A	15.5	15.5
Gutter in Sarsfield Circuit at entrance to 6m wide access lane (Location “F”)	15.6	15.9	15.85**
Building Entrance “G”	13.9	14.5	14.5
Building Entrance “H”	13.9	14.5	14.5

\*= measured on Sarsfield Road

\*\*= crest level at the 6m wide access lane

*Table 1 : water levels and proposed FPL*

Table 1 provides the computed peak water levels for the 1% AEP event and PMF against the proposed FPLs.

A minimum freeboard of 500mm above the 1%AEP water levels is assured at all building entrances, in respect of Council DCP. Building Entrance “C” is also above the PMF level.

The Vehicular entrance “D” is more than 300mm above the 1%AEP water level and is also above the PMF level.

Following Council’s request, a crest at level 15.85m has been provided at the East entrance to the 6m wide lane at South of the subject development, approx. 250mm above the 1% water level in the Sarsfield Circuit gutter.

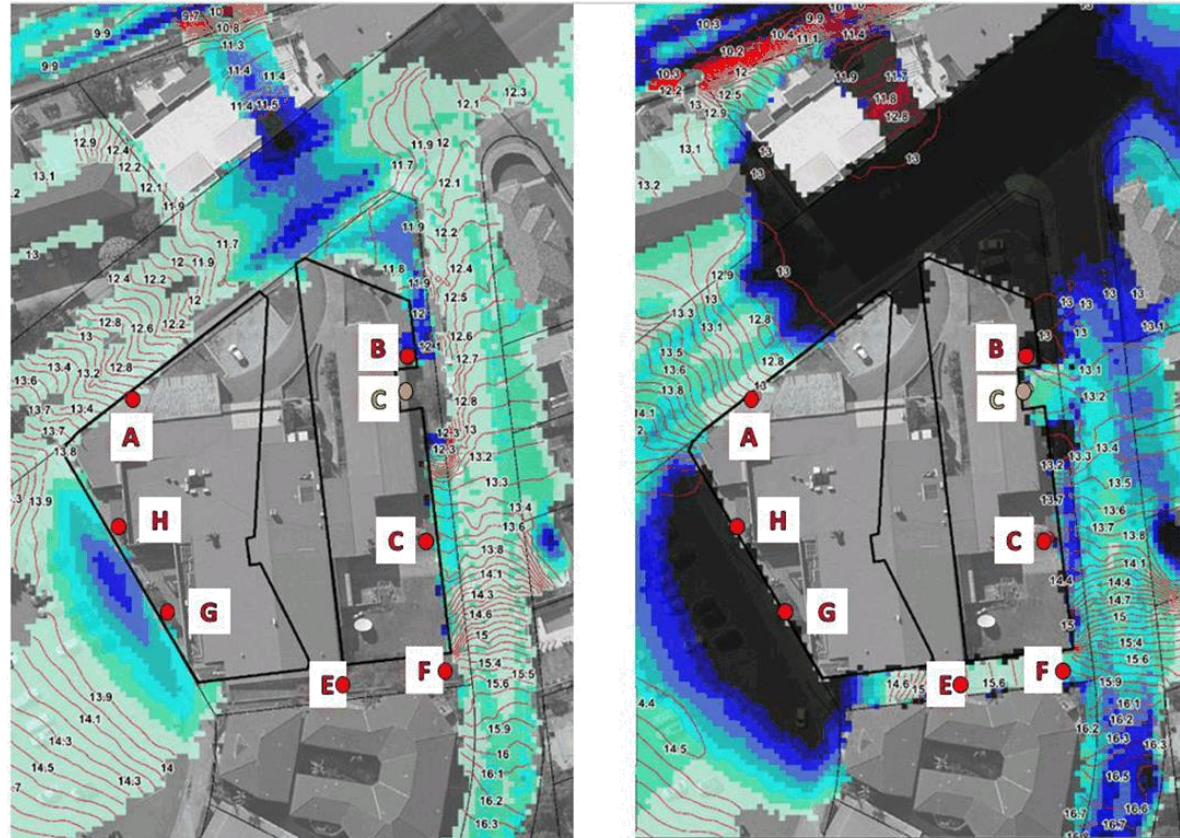


Figure 9: 1%AEP (Left) and PMF (Right) Flood depth Maps





## 8. Pipe Diversion

As mentioned in Section 4 of this report, the proposed development comprises diversion and upgrade of limited Council's stormwater pipes.

In the Existing Scenario in fact, a 900mm dia. pipe runs under the existing building in 187 Slade Road from the car park at West to a drainage pit on the Slade Road at North of the building (pipe "EXISTING (a)" in Figure 10 ).

From this pit, a 900mm dia. pipe crosses Slade Road and connects to a large pit located at the entrance of the car park of building in 232 Slade road (pipe "EXISTING (d)" in Figure 10 ) from where a 1200mm dia. pipe discharge to the railway line at North.

The new stormwater layout proposes to demolish the pipe "EXISTING (a)" and re-route it to North, along Slade Road, to avoid interferences with the new construction (pipes "PROPOSED (b)" and "PROPOSED (c)" in Figure 10). The proposed diversion will increase the length of the pipe by approximately 19m and will introduce some sharper deflection angles that might reduce the capacity of the existing system. To cater for the additional energy losses due to the extended length of the pipe (friction losses) and for the less efficient geometry of the network (minor losses), it is proposed to upsize the diversion pipes to 1050mm dia.

Additionally, it is proposed to upsize the 900mm dia. "EXISTING (d)" pipe to 1200mm dia. "PROPOSED (d)" pipe (or alternative drainage structure of equivalent cross-sectional area) to match the diameter of the pipe discharging to the railway line.

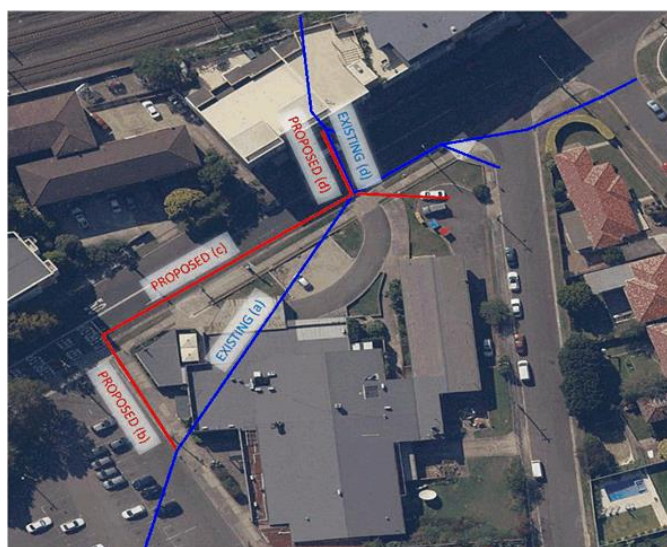


Figure 10: Pipe diversion scheme



TUFLOW simulations were run for events from the 20%AEP to the PMF event to test the new drainage scheme against the existing one.

In TUFLOW, the ENGELUND energy loss approach was used to calculate the minor losses due to the bends and change of direction. This approach calculates the loss coefficients at pipes junctions as sum of entry and exit head losses, losses due to the bend and drop in invert levels (further explanation can be found in Chapter 5.12.5.4 of TUFLOW manual).

Table 2 lists the computed losses coefficients at the peak flow time for the Existing and Proposed pipes in all events from the 20%AEP to PMF. The table reports:

- inlet loss coefficient i.e. the energy losses due to expansion of flow within the manhole at the outlet of the inlet culvert
- additional loss coefficient due to bend and change in invert levels and any manhole energy loss contribution
- outlet loss coefficient i.e. the energy losses due to contraction from the manhole and re-expansion of flow within the entrance of an outlet culvert

AEP	PEAK MINOR HEADLOSS COEFFICIENT (Inlet / Form / Outlet)				
	EXISTING		PROPOSED		
	(a)	(d)	(b)	(c)	(d)
20%	0.19/0.02/0.42	0.16/0.45/0.45	B	0.16/0.80/0.39	0.16/0.77/0.28
10%	0.19/0.02/0.42	0.16/0.45/0.46	0.17/0.16/0.39	0.16/0.80/0.41	0.16/0.77/0.29
1%	0.19/0.02/0.44	0.16/0.41/0.47	0.19/0.16/0.44	0.17/0.79/0.44	0.16/0.76/0.30
PMF	0.17/0.02/0.40	0.18/0.37/0.54	0.18/0.18/0.43	0.17/0.73/0.42	0.16/0.75/0.34

Table 2: TUFLOW minor losses coefficients

Table 2 shows that the total minor loss coefficient (sum of Inlet, Form and Outlet coefficients) increases from 0.65 to 0.79 at the first bend ("EXISTING (a)" and "PROPOSED (b)") and from 1.04 to 1.22 at the last one ("EXISTING (d)" and "PROPOSED (d)").

Additionally, in the proposed scheme, a 90-degree bend is introduced ("PROPOSED (c)") for which a total minor coefficient of around 1.4 is calculated.

Melbourne Water pit loss coefficient table (<https://www.melbournewater.com.au/building-and-works/developer-guides-and-resources/standards-and-specifications/loss-coefficient>) has been commonly referenced to by other Councils and Authorities. The table provides loss coefficients for a variety of junction pits configurations. A loss coefficient between 1.3 and 1.5 is recommended for pits at "L" bends which validates the coefficient calculated by TUFLOW.



Description	$Q_u$	$Q_L$	$Q_g$	$k$
Inlet pit with one outlet pipe:				
(a) side entry	-	-	$=Q_o$	10
(b) grated pit	-	-	$=Q_o$	5
Inlet pit on through pipe				
	$-0.9Q_o$	-	some	0.5
	$-0.7Q_o$	-	$-0.3Q_o$	1.3
	$-0.5Q_o$	-	$-0.5Q_o$	2.1
Junction pit on through pipe				
	$=Q_o$	-	-	-
Inlet pit on through pipe with laterals				
	$-0.9Q_o$	some	some	0.5
	$-0.7Q_o$	some	some	1.1
	$-0.5Q_o$	some	some	1.5
	$-0.3Q_o$	$0.7Q_o$	some	2.0
Junction pit on through pipe with laterals				
	$-0.9Q_o$	some	-	0.5
	$-0.5Q_o$	$-0.5Q_o$	-	1.5
	$-0.2Q_o$	$-0.8Q_o$	-	2.0
Inlet pit on L bend	-	$-Q_o$	some	1.5
Junction pit on L bend	-	$=Q_o$		1.3
Inlet bend on T junction with laterals				
	-	$-Q_o$	some	1.8
Junction pit on T junction with laterals				
	-	$=Q_o$		1.6
Drop pit				
(a) direction change less than 45 degrees	$-Q_o$	-	some	2.0
(b) direction change more than 45 degrees	$-Q_o$	-	some	2.5

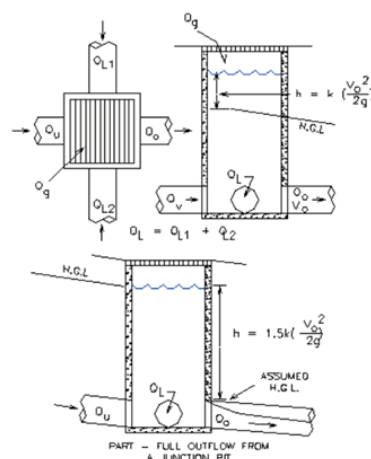


Table 3: Pit loss coefficients from Melbourne Water

TUFLOW also provides indication about the flow regime in the pipes at every simulation time step. All pipes at peak flow time are tailwater controlled with submerged entrance and exit (Flow regime type "F"). An exception is represented by the PROPOSED (b) pipe in the 20%AEP event where an inlet-controlled regime type B is calculated and for this reason TUFLOW does not provide minor loss coefficients results.

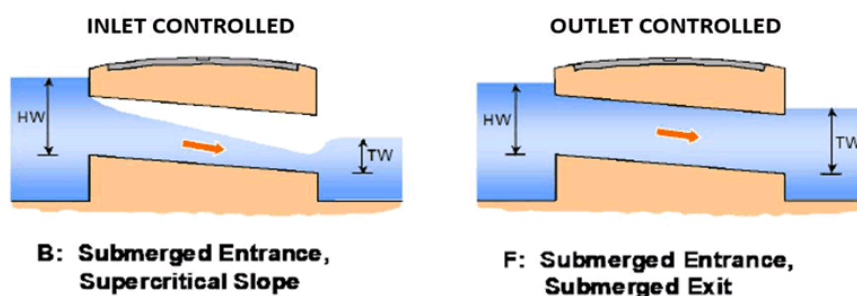


Figure 11: Flow regimes in diversion pipes

Table 4 are the peak flow rates in the existing and proposed network and the peak Hydraulic Grade Line (HGL) at the drainage pit in the car park at West of the Site (where the diversion pipe departs). Peak flow for all the simulated events increased by approximately 30% while the HGL at the pit in the car park ("U/S Peak HGL") reduces approx. by 150 to 200 mm for all events up to the 1% AEP and by 13mm in the PMF.

AEP	PEAK FLOW (m <sup>3</sup> /s)					U/S PEAK HGL (mAHD)	
	EXISTING		PROPOSED			EXISTING	PROPOSED
	(a)	(d)	(b)	(c)	(d)		
20%	1.6804	1.919	1.962	1.987	2.579	13.042	12.854
10%	1.961	1.951	2.036	2.063	2.625	13.176	12.955
1%	2.107	2.07	2.258	2.295	2.748	13.526	13.382
PMF	2.306	2.697	2.456	2.668	3.476	14.52	14.507

Table 4: Peak flow rates and HGL in the existing and proposed network

Hand calculation has also been done to compare the existing and proposed pipe configuration. The calculation is based on the Gauckler-Manning-Strickler resistance formula for the friction energy losses calculation and on the TUFLOW computed minor loss coefficients to calculate the losses at each change in direction.

In the table below, a constant inflow of 2m<sup>3</sup>/s was assumed for both the existing and proposed scheme and the total head loss (friction losses + minor head losses) was calculated under the assumption of uniform flow regime.





	EXISTING	PROPOSED	Comment
Q (m <sup>3</sup> /s)	2.000	2.000	constant inflow ~ equal to the 1% AEP flow
Ltot (m)	83.670	101.960	total length of pipe = L1+L2
L1 (m)	67.780	86.070	L is the pipe length. L1 refers to pipe (a) in the existing and pipe (b+c) in the proposed
L2 (m)	15.890	15.890	L is the pipe length. L2 refers to pipe (d) in both the existing and proposed
k	66.660	66.660	Gaulker Strickler coefficient, corresponding to a Manning coefficient = 0.015
dia 1 (m)	0.900	1.050	dia is the pipe diameter. dia1 refers to pipe (a) in the existing and pipe (b+c) in the proposed
dia 2 (m)	0.900	1.200	dia is the pipe diameter. dia2 refers to pipe (d) in both the existing and proposed
A1 (m <sup>2</sup> )	0.636	0.866	A is the pipe cross sectional area. A1 refers to pipe (a) in the existing and pipe (b+c) in the proposed
A2 (m <sup>2</sup> )	0.636	1.131	A is the pipe cross sectional area. A2 refers to pipe (d) in both the existing and proposed
R1 (m)	0.225	0.263	R is hydraulic radius. R1 refers to pipe (a) in the existing and pipe (b+c) in the proposed
R2 (m)	0.225	0.300	R is hydraulic radius. R2 refers to pipe (d) in both the existing and proposed
ΔHfr1 (m)	1.102	0.615	ΔHfr is head loss due to frictions. ΔHfr1 refers to pipe (a) in the existing and pipe (b+c) in the proposed
ΔHfr2 (m)	0.258	0.056	ΔHfr is head loss due to frictions. ΔHfr2 refers to pipe (d) in both the existing and proposed
ΔHfrtot (m)	1.360	0.670	ΔHfrtot is the sum of ΔHfr1+ΔHfr2
V1 (m/s)	3.144	2.310	V is the average pipe cross sectional velocity. V1 refers to pipe (a) in the existing and pipe (b+c) in the proposed
V2 (m/s)	3.144	1.768	V is the average pipe cross sectional velocity. V2 refers to pipe (d) in both the existing and proposed
φ1	0.650		minor head loss coeff of first bend in existing case
φ2	1.040		minor head loss coeff of second bend in existing case
φ3		0.790	minor head loss coeff of first bend in proposed case
φ4		1.400	minor head loss coeff of second bend in proposed case
φ5		1.220	minor head loss coeff of third bend in proposed case
ΔHBEND1 EXIST (m)	0.327		head loss (m) due to the first bend in the existing network. It is calculated with φ1 and the V <sup>2</sup> /2g, where V is the velocity of the D5 pipe
ΔHBEND2 EXIST (m)	0.524		head loss (m) due to the second bend in the existing network. It is calculated with φ2 and the V <sup>2</sup> /2g, where V is the velocity of the D5 pipe
ΔHBENDTOT EXIST (m)	0.851		total head loss due to bends in the existing network.
ΔHBEND1 PROP (m)		0.215	head loss (m) due to the first bend in the proposed network. It is calculated with φ3 and the V <sup>2</sup> /2g, where V is the velocity in the D5 pipe
ΔHBEND2 PROP (m)		0.381	head loss (m) due to the second bend in the proposed network. It is calculated with φ4 and the V <sup>2</sup> /2g, where V is the velocity in the D5 pipe
ΔHBEND3 PROP (m)		0.194	head loss (m) due to the third bend in the proposed network. It is calculated with φ5 and the V <sup>2</sup> /2g, where V is the velocity in the D5 pipe
ΔHBENDTOT PROP (m)		0.790	total head loss due to bends in the proposed network.
Δhtot exist (m)	2.211		sum of friction losses and bend losses in the existing network
Δhtot prop (m)		1.460	sum of friction losses and bend losses in the proposed network

Table 5: Head loss hand calculation – Existing VS Proposed network

Both TUFLOW and the hand calculation demonstrate that the new proposed scheme is hydraulically more efficient than the current one.

In TUFLOW, due to the increased pipe conveyance, peak flow in the diverted pipes is greater than in the existing ones while the peak Hydraulic Grade in the upstream pit (in the West car park) is reduced by approximately 150mm.

In the hand calculation, where same inflow is assumed in the pre and post development scheme, the total energy loss ("Δhtot") in the new scheme is significantly lower.



### 9. Flood Risk Assessment

The potential risk to life as a result of flooding can be ascertained by assessing the flood hazard. Flood hazard can be quantified by considering the flood depth and velocity in combination (AIDR, 2017).

The hazard categories based on the Australian Emergency Management Institute (2014) of Figure 12 were considered.

Available warning time for the Site is short due to the small size of the catchment upstream of the Site, leading to a “flash flood” classification. Review of the flood models found that the 1%AEP peak flood flow occurs approximately 10 minutes after the rainfall peak which leaves little time for flood evacuation and preparation. Evacuation of the buildings could potentially result in people entering hazardous floodwater areas. For flash flood catchments, the provision of an effective flood warning service is not available due to the difficulties with its prediction. A benefit of the flash flood setting is that the duration of flooding is typically short with hazardous flooding to typically last less than one hour.

Figures 13 and 14 in the Appendix, are the 1%AEP and PMF flood hazard maps for the Existing and Proposed Scenario. In the 1%AEP event, the flood hazard variations are negligible. In the PMF, a slight increase of the flood H5 hazard category is shown at the downstream end of the Sarsfield Circuit, which does not modify the overall hazard category of the area. Figures 15 and 16 in appendix highlights changes in flood hazard caused by the new development.

Hazard along the escape routes on Slade Road is generally low, being globally classified as H1 level. However, although significant flow path is only likely to occur in rare flood events, the type of potential flow presents a significant risk to people and vehicles. An analysis of the PMF event therefore yields the requirement that people are not moving around the Site once a certain threshold of depth is crossed. It is clear, however, that this threshold event will occur rarely (less often than once per one hundred years).

The Site access is limited by the trafficability of Slade Road, which is classified as H5 in the PMF as per flood hazard category. Therefore, shelter-in-place for Site occupants is recommended during flood event.

It shall be noted that, given the nature of public accessibility of the proposed Laneway, the proposed Site will represent a safe refuge for people caught by flash flooding.

### 10. Building Materials

All materials below PMF level in the proposed development shall be flood compatible.

No electrical equipment or wiring shall be installed below PMF level.

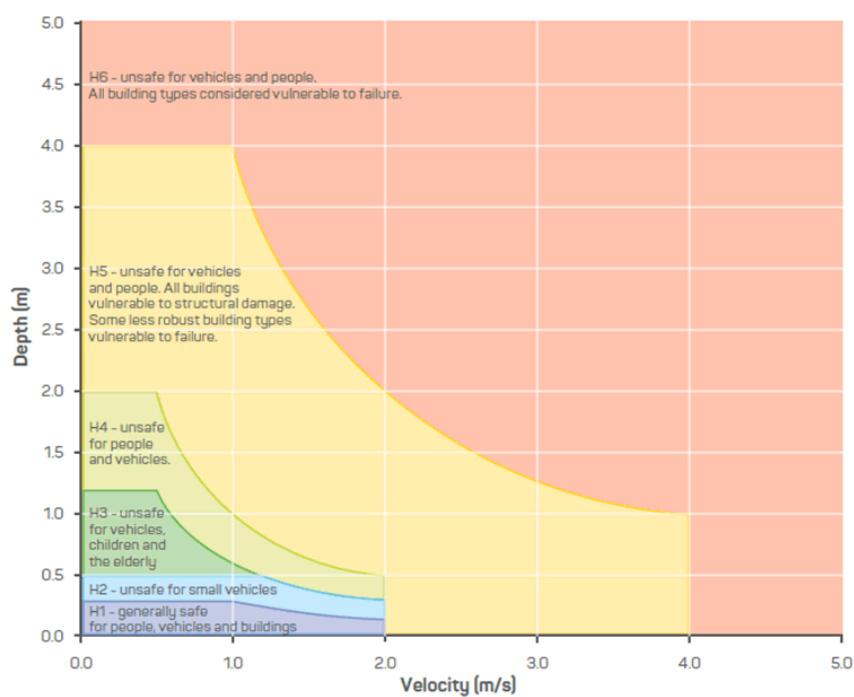


Figure 12: Flood Hazard Category by Australia Emergency Management Institute (2014)



### 11. Flood Management Plan

The Site is not subject to high level of flood risk and whilst in are events flow does occur, flood free areas in the PMF event are easily accessible on foot.

Hazard is relatively low for all but the rarest events. Flooding will be occurring simultaneously with the rainfall due to the small catchment, but flooding duration will be limited in time.

Due to the limited available warning time and the associated risk of people driving or walking through flood waters, it is not recommended that people evacuate the Site during times of flood and that shelter-in-place policy be adopted. This requires little management to achieve.

It is suggested signage be installed in the basement to advise that during rainfall or following rainfall, care should be taken as residents exit the carpark.

#### 11.1 Preparedness

Preparations for flooding are to be incorporated into the management of the Site. These measures shall be communicated to the staff of the stores and to all residents in the buildings to ensure that the Site is prepared for flooding when it occurs. The preparatory measures are as follows:

- Keep a hard copy and digital version of this Flood Management Plan;
- Brief relevant staff of its content on an annual basis, or more frequently if staff turnover is high. There should always be at least one employee familiar with the Plan on duty whilst the stores are open;
- Brief resident of the buildings with the content of the Plan;
- Design temporary warning signage to marshal Site occupants during a flood including warning signs to not let people leave the Site during flood or accessing the car park;
- Maintain a loudspeaker system inside the Site that can be used for announcements during a flood. A flood warning message should be prepared for disseminations to occupants during times of flood. The message should contain information about the dangers of flood waters and advising people remain within the Site until an all-clear message is announced.

#### 11.2 During a Flood

The main responsibility during a flood is to notify emergency services, to marshal Site occupants into safe areas and to assist those impacted by floodwaters.

The greatest risk is estimated to be to those leaving the Site and entering areas of high flood hazard.

The actions to be taken by the Site management, in chronological orders, are:

- 1) Call the State Emergency Service and advise that the Site is flooding and that assistance may be required;
- 2) Erect temporary warning signs at each Site exit stating to remain within the Site;
- 3) Turn off buildings power to reduce the risk of electrocution;
- 4) Announce (over the loudspeaker and in-person) to occupants of the Site that flooding is occurring outside and to remain calm and stay within the Site area until flooding passes. The Site should not be evacuated during flood event as the greatest flood risk is experienced in the car park and surrounding roads.
- 5) Ensure that no one is in the Basement areas;





- 6) Check outside if any vehicles or pedestrian have been caught in floodwaters or injured. Assist them if safe to do so (fast moving or deep floodwaters should be avoided) and if injuries are noted, call an ambulance;
- 7) Assist the elderly or those with children in finding a safe area to wait within the building.

### **11.3 Recovery**

Once the floodwater subsides, announce that it is safe to now leave the building and car park, and take down the signage. Attend the occupants that are injured or show symptoms of shock. Call emergency 000 for assistance if required. If electrical or gas services have been inundated do not turn these appliances on until they have been checked by a qualified electrician or gas fitter.

Following the flood event, the Site management should liaise with stores' staff to understand the consequence of the flood event, including where repairs are required. This plan should then be reviewed and updated, if necessary, with any lesson learned. Damages to building, car park or other assets will be dealt with following the flood and they are not the focus of this plan.



## 12. Overview of Compliance

The proposed development has been assessed in regard to flooding and Council's flood planning controls. Table 6 presents the Development Control Plan controls and our assessment of each for the development.

Relevant Control	GRC Hydro Assessment
<i>Development must comply with Council's – Flood Management Policy which provides guidelines of controlling developments in different flood risk areas. It should be read in conjunction with the NSW Government's 'Floodplain Development Manual 2005'.</i>	The development complies with Council's policy and also with the NSW government's Floodplain Development Manual. The Manual describes how flood-affected areas can be safely developed, by ensuring the development is protected against flooding, and that it does not result in adverse flooding. These are the subject of the remaining controls in this table.
<i>The filling of land up to the 1:100 Average Recurrence Interval (ARI) flood level (or flood storage area if determined) is not permitted, unless specifically directed by Council in very special and limited locations. Filling of land above the 1:100 ARI up to the Probable Maximum Flood (PMF) (or in flood fringe) is discouraged however it will be considered providing it does not adversely impact upon flood behaviour.</i>	The existing Site is fully developed but has small areas of land below the 1:100 ARI flood level. These are not significant flow paths but rather they are low areas where runoff accumulates during a flood. Some low areas will be filled by the proposed development so as to prevent this accumulation from occurring and reduce the flood risk. To ensure there is no significant loss of flood storage, flood impact assessment has been carried out that shows there are no adverse impacts on other properties, as a result of the development.
<i>Development should not adversely increase the potential flood affectation on other development or properties, either individually or in combination with the cumulative impact of similar developments likely to occur within the same catchment.</i>	The Site is located in an urban area with many nearby properties. Impact assessment shows that by upgrading stormwater drainage and inclusion of a swale, there is no adverse impact on properties' flood affectation. The area does not have potential for cumulative impacts due to such development as the catchment is already fully developed.
<i>The impact of flooding and flood liability is to be managed, to ensure the development does not divert the flood waters, nor interfere with flood water storage or the natural functions of waterways. It must not adversely impact upon flood behaviour.</i>	As described, a number of design features, including upgraded stormwater drainage and a swale, have been incorporated into the development, so as to ensure no diversion of flood waters or interference with flood storage. There are no adverse impacts resulting from the development. These conclusions are demonstrated by the modelling carried out.
<i>A flood refuge may be required to provide an area for occupants to escape to for developments where occupants require a higher standard of care. Flood refuges may also be required where there is a large difference between the PMF and the 1 in 100-year flood level that may place occupants at severe risk if they remain within the building during large flood events.</i>	There is not a large difference between the PMF and the 1 in 100-year flood level at the Site, with around 0.3-0.6 m difference. The new development will be protected from flooding and will allow any occupants to take refuge during a flood.

Table 6: DCP Controls



Further to the DCP controls in Table 6, Table 7 sets out the compliance of the proposed development with Local Planning Directions in Section 9.1(2) of the Environmental Planning and Assessment Act 1979, specifically Section 4.3 Flooding.

Relevant Control	GRC Hydro Assessment
<i>A planning proposal must include provisions that give effect to and are consistent with the NSW Flood Prone Land Policy, the NSW FDM 2005, Considering flooding in land use planning guideline 2021 and any local study adopted by Council.</i>	The development complies with the NSW government's Floodplain Development Manual and Flood Prone Land Policy. The Manual describes how flood-affected areas can be safely developed, by ensuring the development is protected against flooding, and that it does not result in adverse flooding. The new 2021 guideline uses the Flood Planning Area concept but also introduces Special Flood Considerations for land outside the FPA. The subject site is affected in the 1% AEP and so is not outside the FPA.
<i>A planning proposal must not rezone land within the flood planning area from Recreation, Rural, Special Purpose or Environmental Protection Zones to a Residential, Business, Industrial or Special Purpose Zones.</i>	Not applicable - the site is not zoned Recreation, Rural, Special Purpose or Environmental Protection Zone.
<i>A planning proposal must not contain provisions that apply to the flood planning area which:</i> <i>(a) permit development in floodway areas,</i> <i>(b) permit development that will result in significant flood impacts to other properties,</i> <i>(c) permit development for the purposes of residential accommodation in high hazard areas,</i> <i>(d) permit a significant increase in the development and/or dwelling density of that land,</i> <i>(e) permit development for the purpose of centre-based childcare facilities, hostels, boarding houses, group homes, hospitals, residential care facilities, respite day care centres and seniors housing in areas where the occupants of the development cannot effectively evacuate,</i> <i>(f) permit development to be carried out without development consent except for the purposes of exempt development or agriculture. Dams, drainage canals, levees, still require development consent,</i> <i>(g) are likely to result in a significantly increased requirement for government spending on emergency management services, flood mitigation and emergency response measures, which can include but are not limited to the provision of road</i>	In response to each: a) No development is proposed in areas of floodway. There are some areas of floodway on Sarsfield Road and also downstream of the site on Slade Road. b) Impact assessment shows that by upgrading stormwater drainage and inclusion of a swale, there is no adverse impact on properties' flood affectation c) The development does not locate residential or other development in high hazard areas. d) The development increases the site's dwelling density but does not increase the density in flood affected areas. The existing use of the site is a pub/hotel with significant development at ground level with multiple entrances at grade. The proposed development raises ground floor entrances, significantly reducing the site's flood-affectation. The proposed development will therefore reduce the intensity of use in flood-affected areas. e) Effective evacuation is straightforward at the site. Evacuation strategy would consist of a shelter-in-place approach as flooding will occur with little to no warning and be of short duration.

GRC Hydro



<p>infrastructure, flood mitigation infrastructure and utilities, or</p> <p>(h) permit hazardous industries or hazardous storage establishments where hazardous materials cannot be effectively contained during the occurrence of a flood event.</p>	<p>f) Not applicable</p> <p>g) The proposed design includes a number of stormwater drainage features to manage flooding and ensure building occupants are not placed at risk in the design flood. This ensures there is no increased requirement for government spending on mitigation or emergency management.</p> <p>h) Development does not include hazardous industries or hazardous storage establishments.</p>
<p>A planning proposal must not contain provisions that apply to areas between the flood planning area and probable maximum flood to which Special Flood Considerations apply which</p>	<p>Not applicable - the development is not outside the flood planning area.</p>

In summary then:

- GRC Hydro have done extensive work on flood modelling at the Site;
- Council have provided a TUFLOW model which is suitable for Site analysis;
- The Site is flood liable albeit to overland flows or what would tend to be called stormwater;
- Council stormwater assets on the Site currently lie under buildings – the re-development is an opportunity to put such assets in locations where they can be accessed should maintenance be required;
- Site's flood liability is very much affected by a re-distribution of flow that resulted from a 2010 development approved at the corner of Sarsfield Circuit and Bexley Road;
- Flood liability of the Site means that compliance with DCP controls is required to be achieved by any development;
- Compliance with risk management requirements (appropriate floor levels, building materials etc.) is straightforward;
- Compliance with impact consent conditions required the following mitigation measures:
  - Swale on the Eastern side of the development; and
  - Pipe diversion on Slade Road; and
  - Pipe upgrade across Slade Road.
- Flood risk can be effectively managed by an evacuation in place response which is the more "natural" or default response in any case.

In Conclusion, the proposed development is a better outcome than the existing as the Site is now protected from flooding. Moreover, the public accessible areas may provide safe refuge to those who are captured by floodwater around the Site.

This report demonstrates that the Site is capable to compliance with Council's requirements: management issues will be discussed as a part of a future Development Application.

---

GRC Hydro





Yours Sincerely,

A handwritten signature in blue ink, appearing to be 'SG', with a horizontal line extending to the right.

**Steve Gray**  
Director

Email: [gray@grchydro.com.au](mailto:gray@grchydro.com.au)  
Tel: +61 413 631 447

---

GRC Hydro

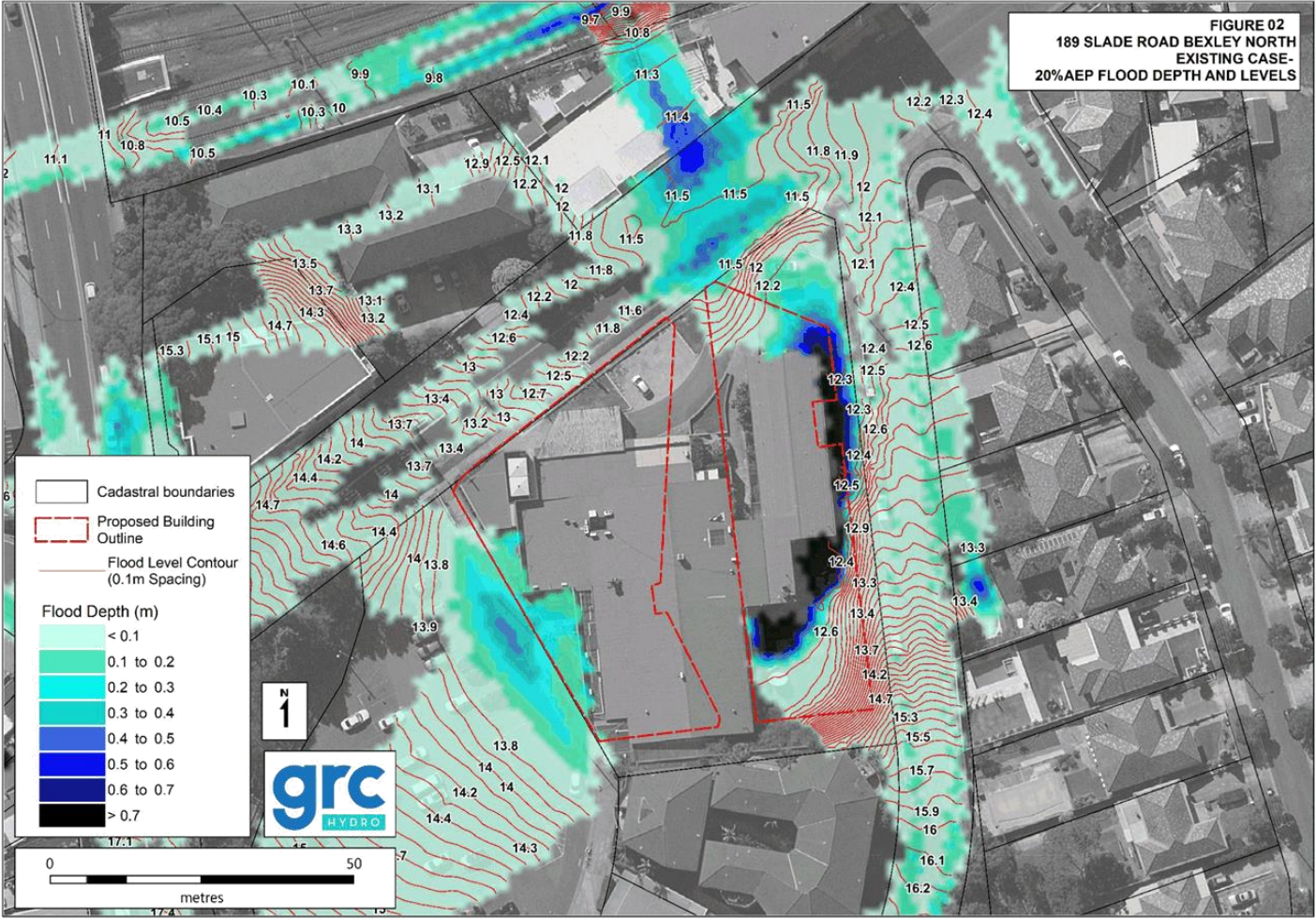


# APPENDIX

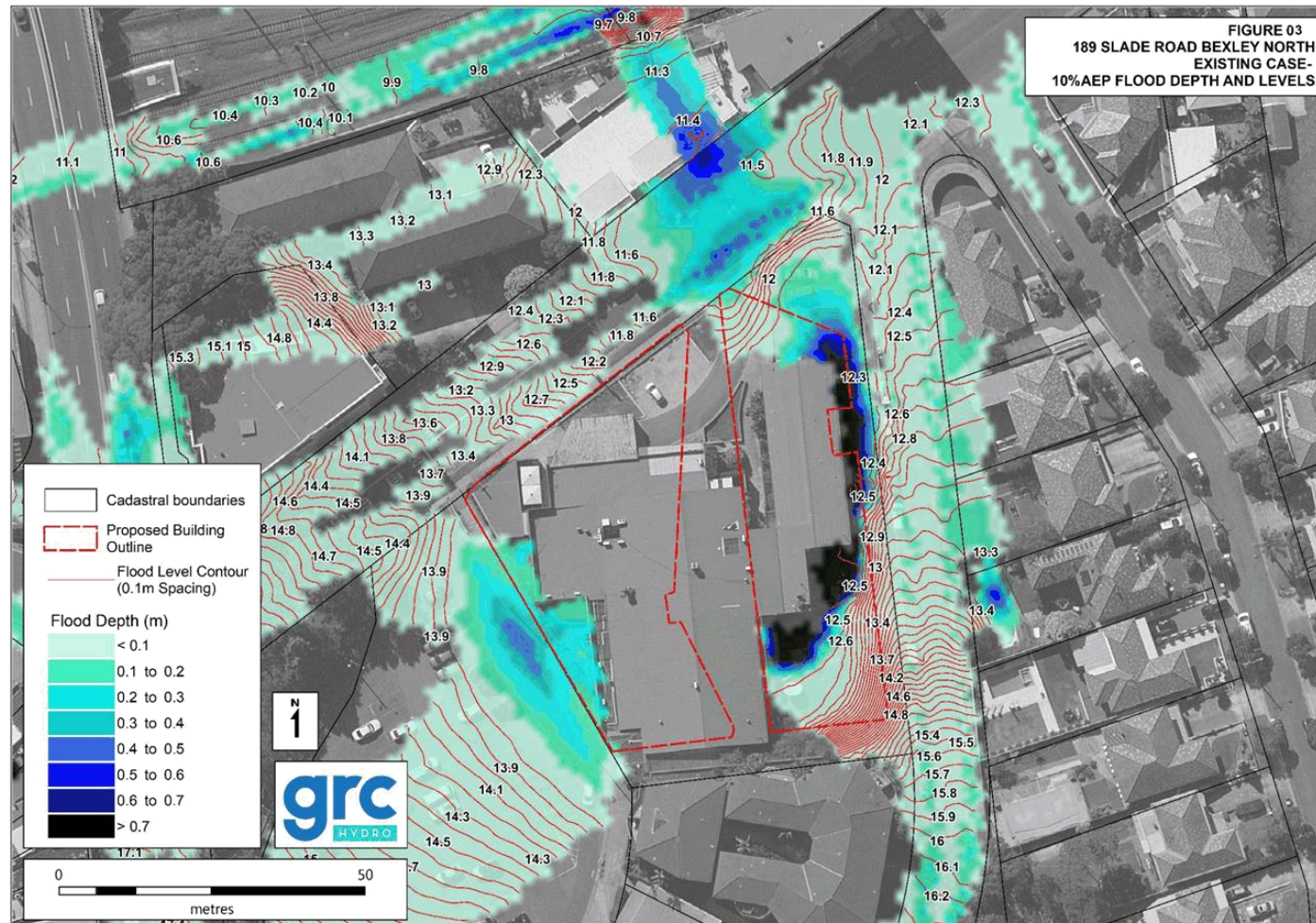
---

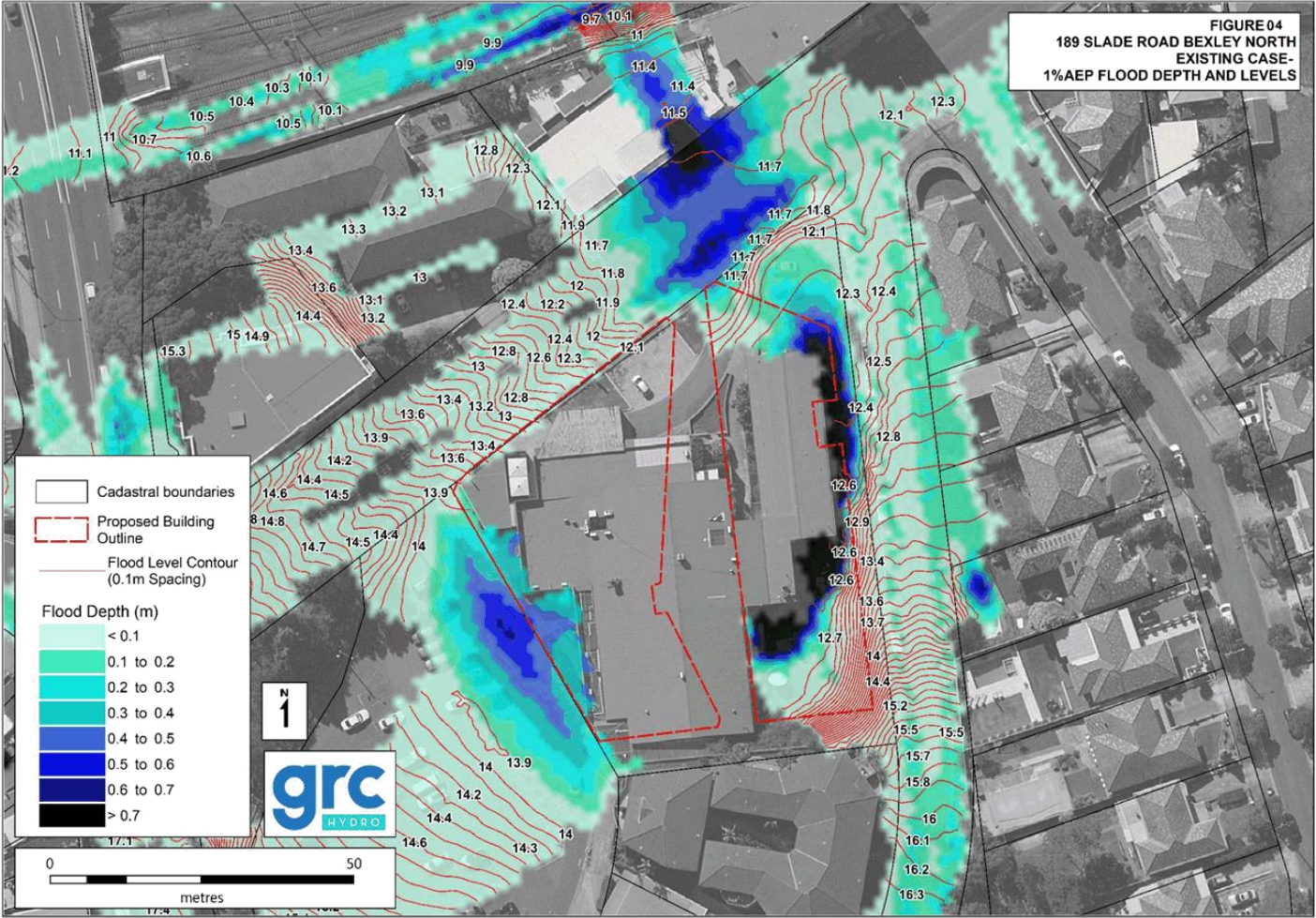
GRC Hydro



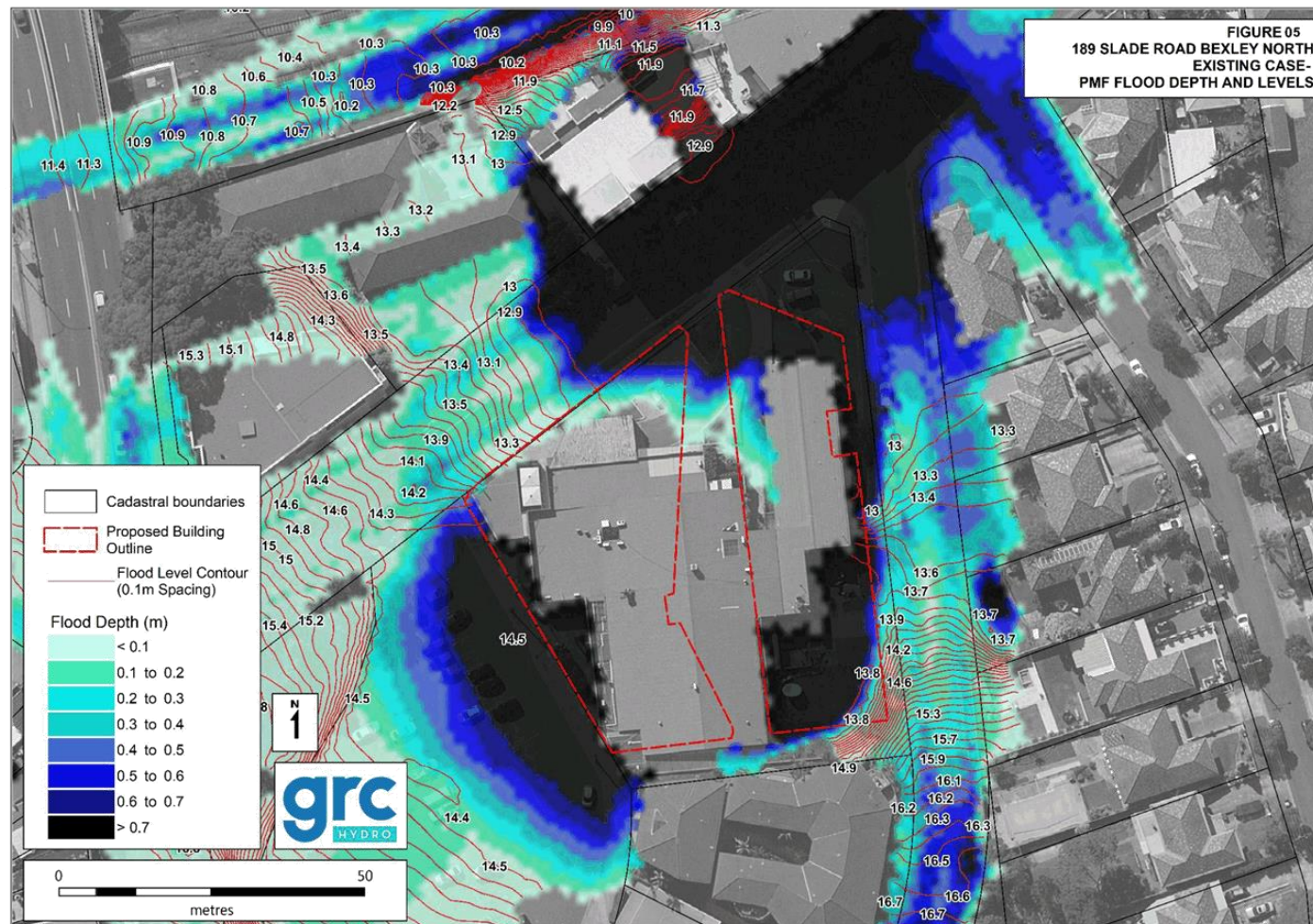




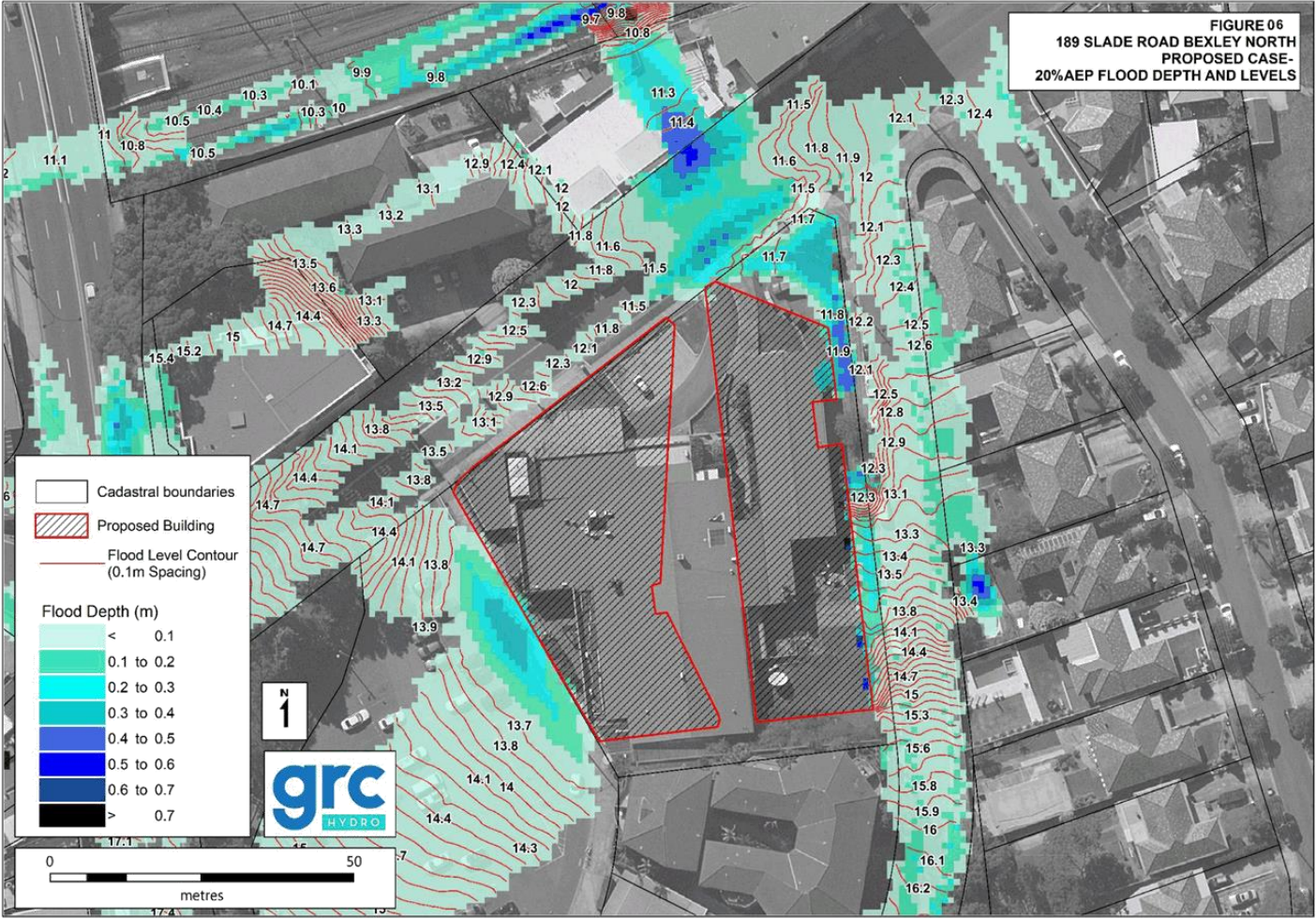




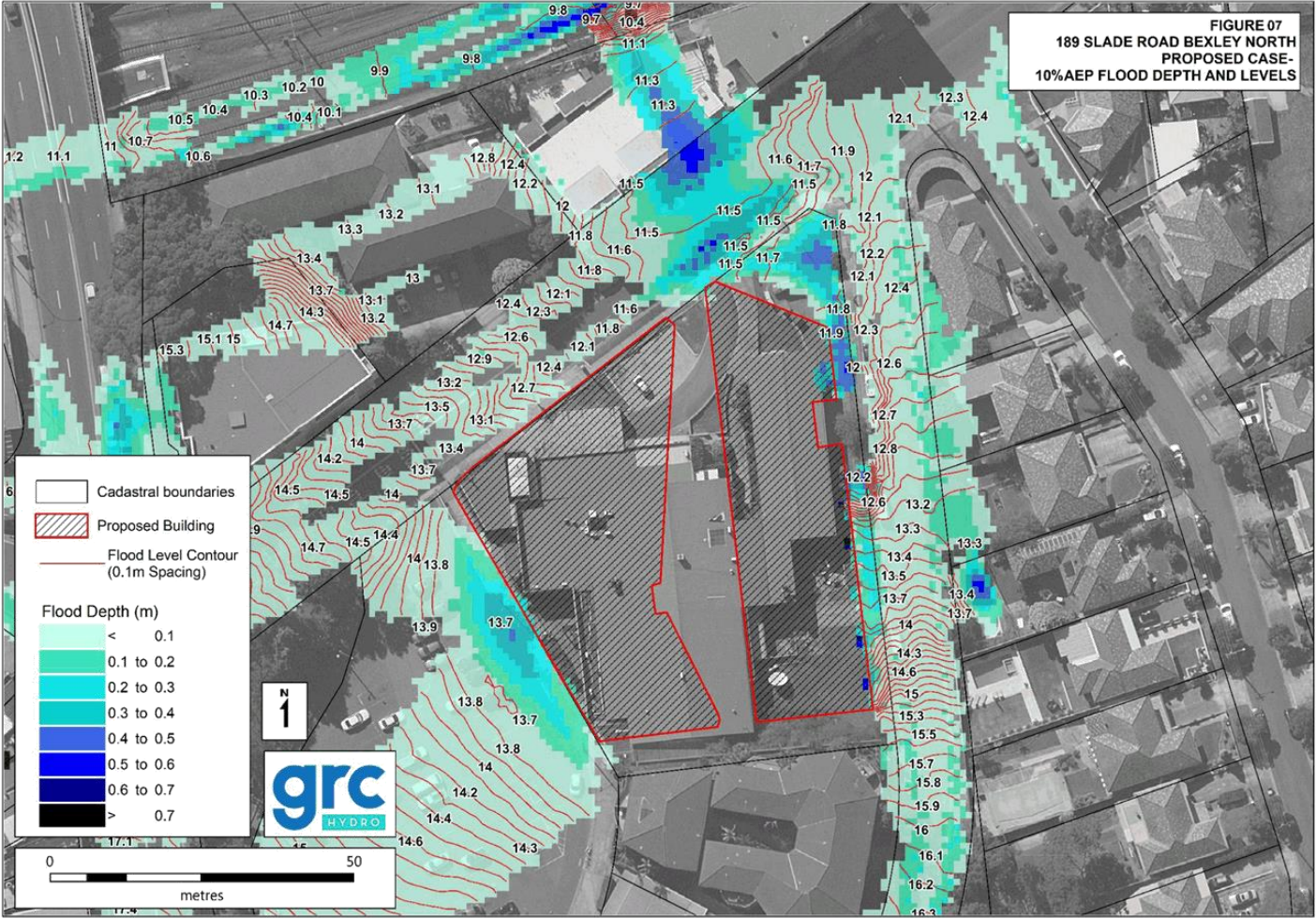




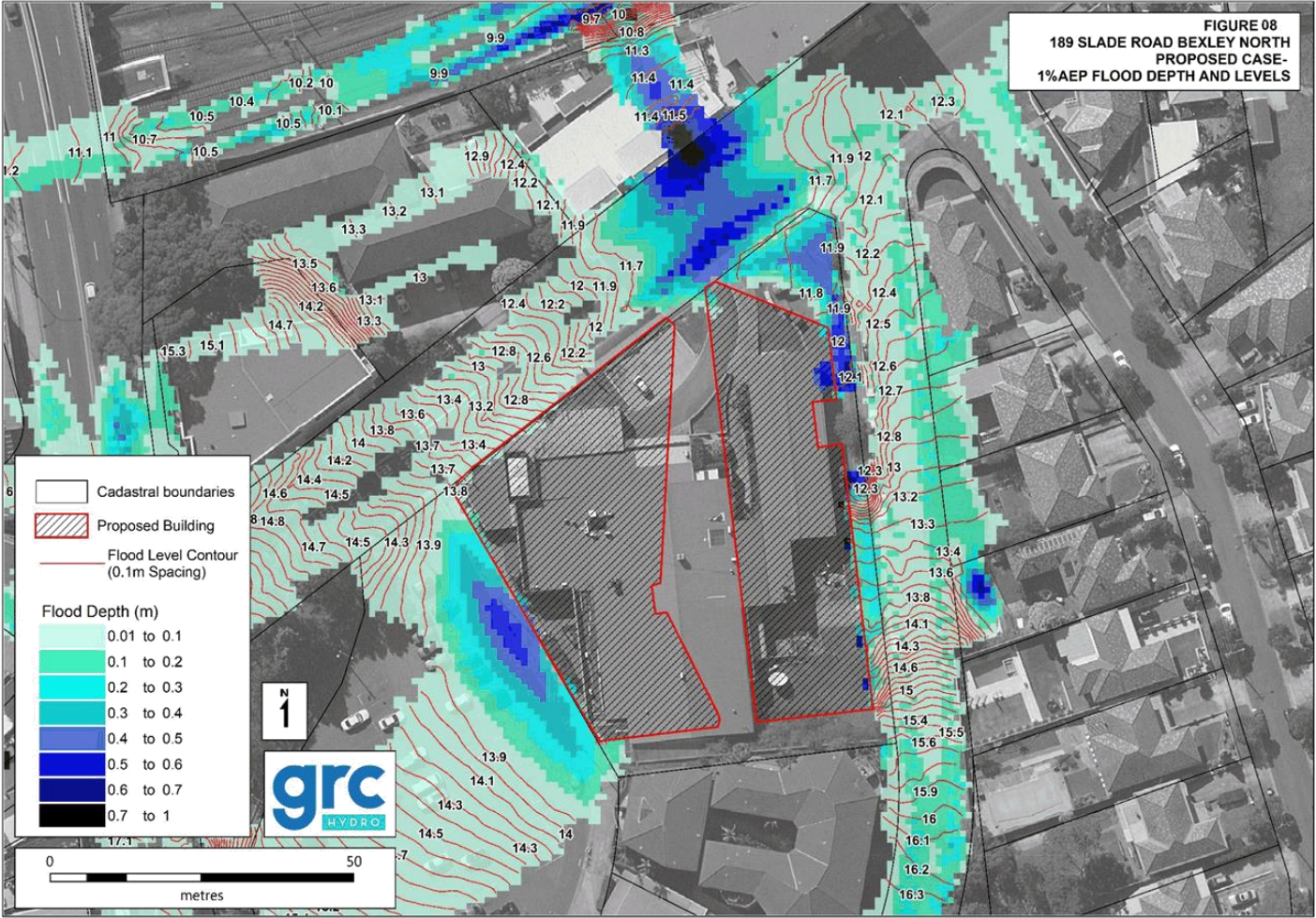




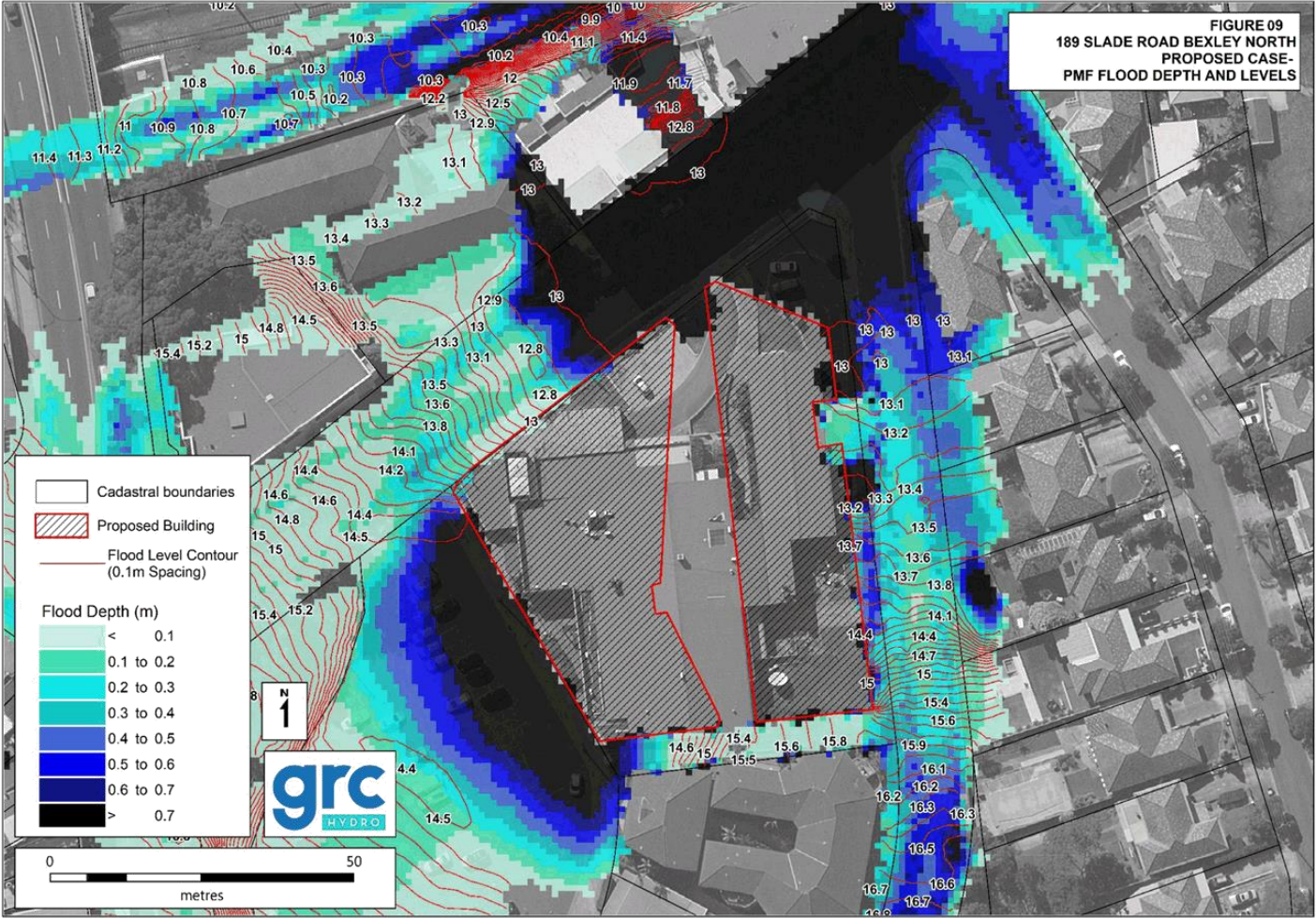


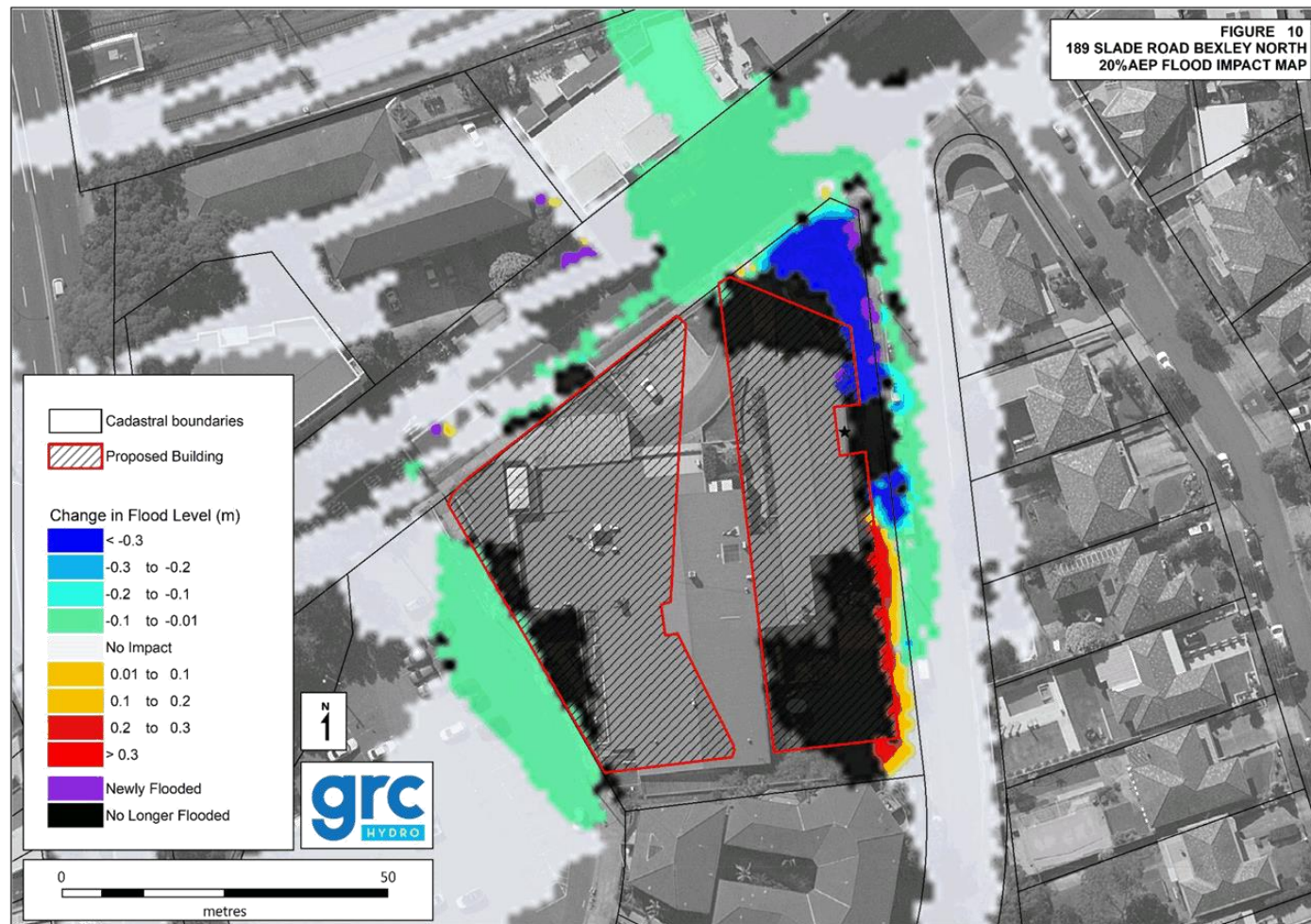




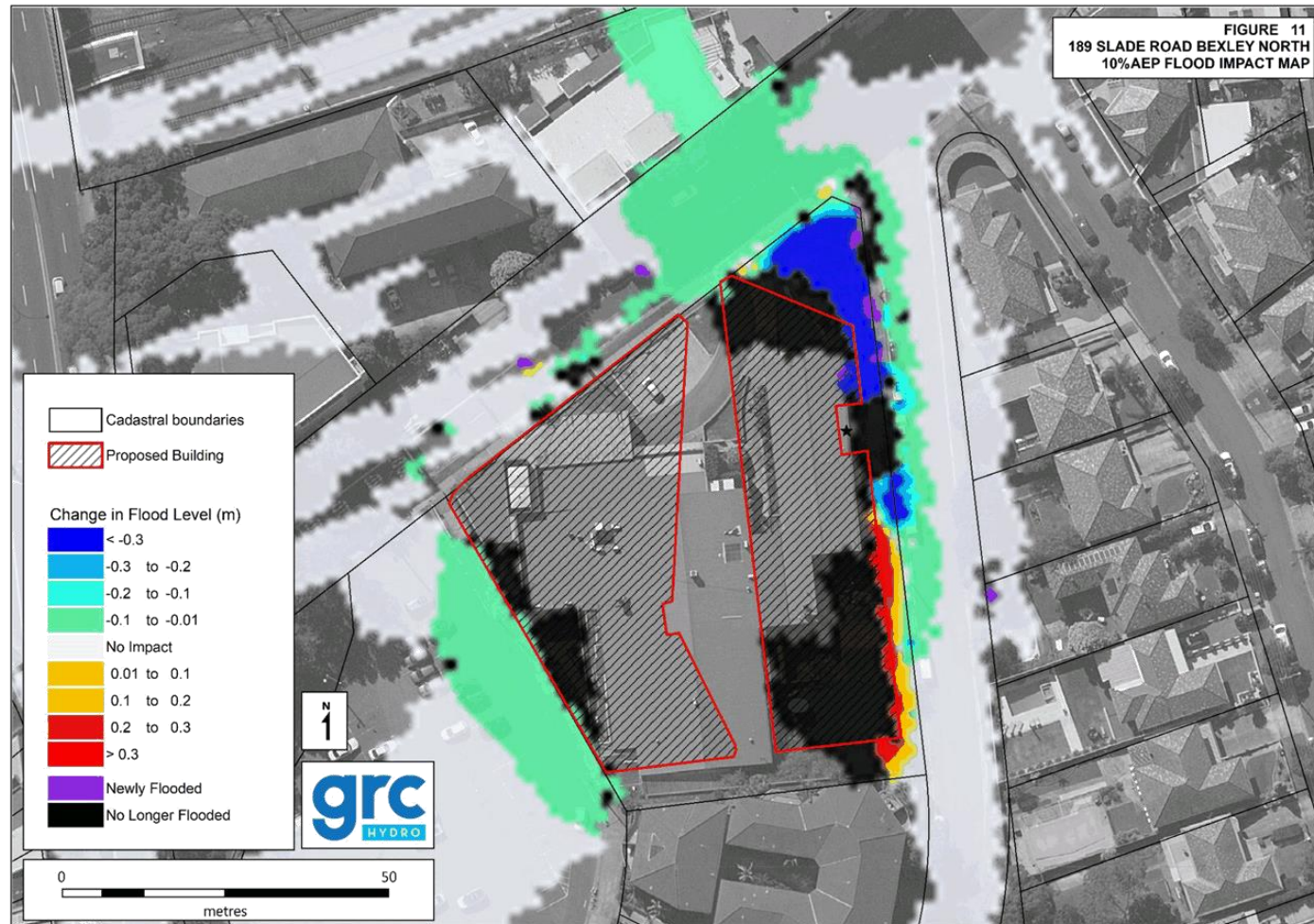


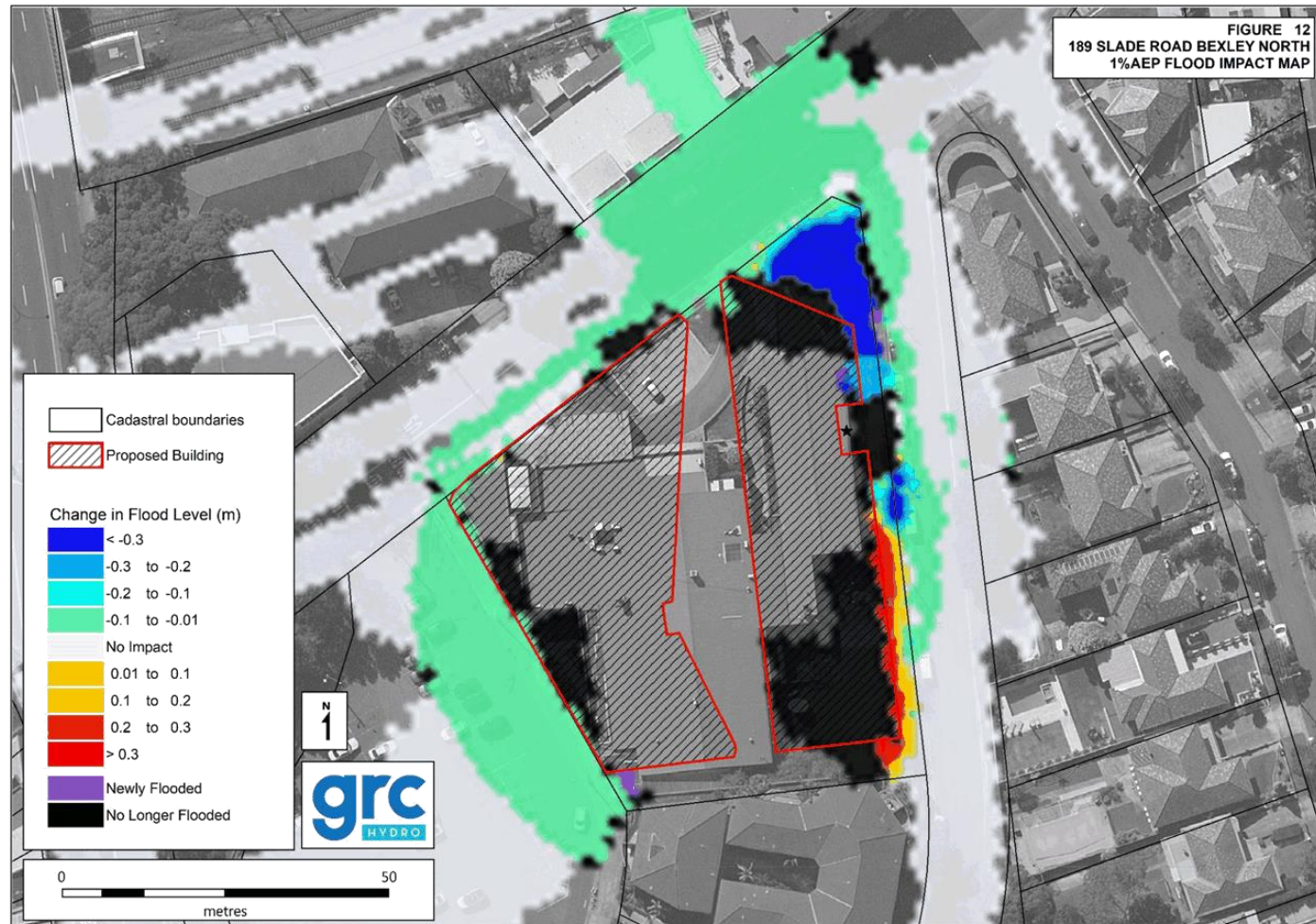




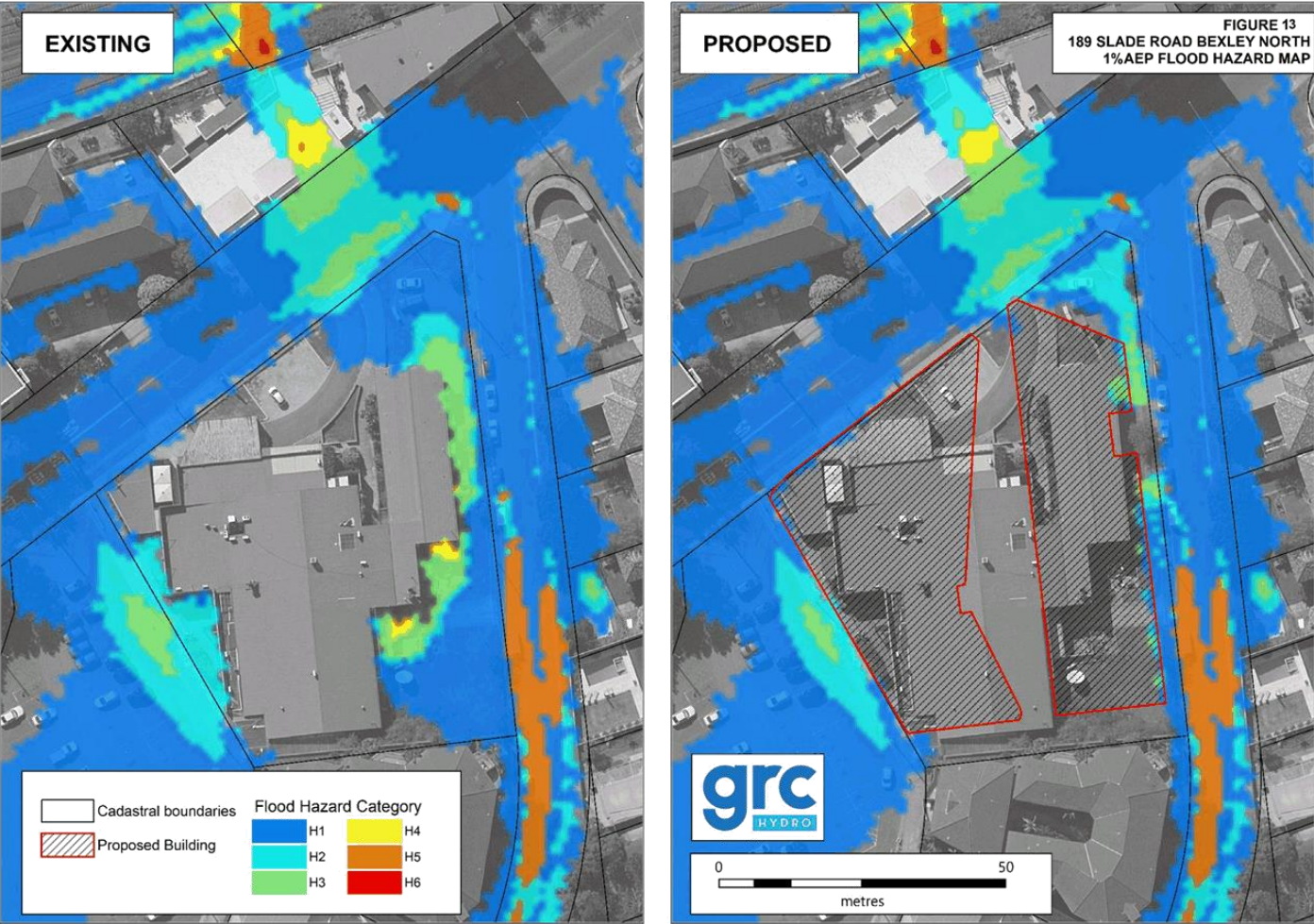


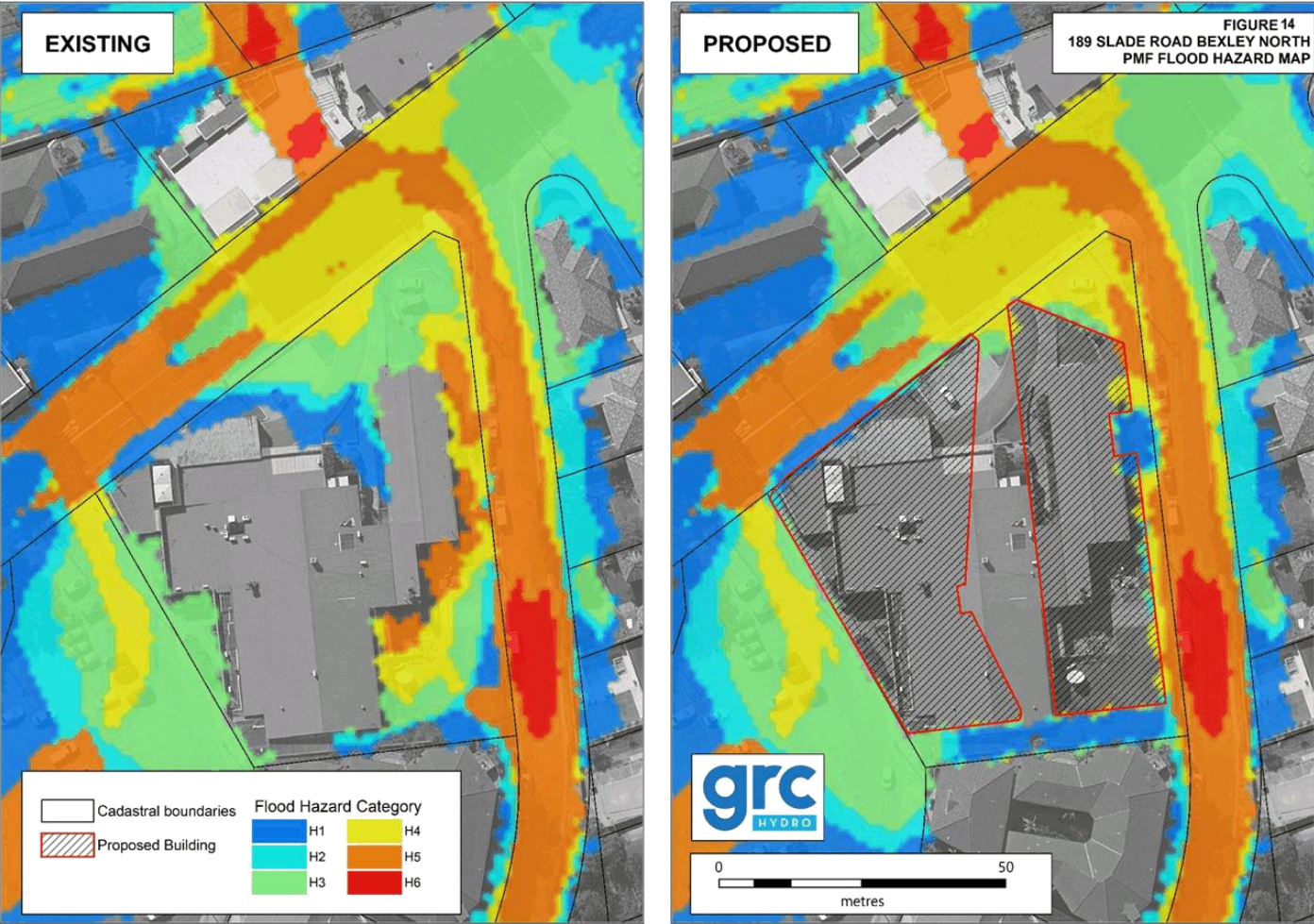




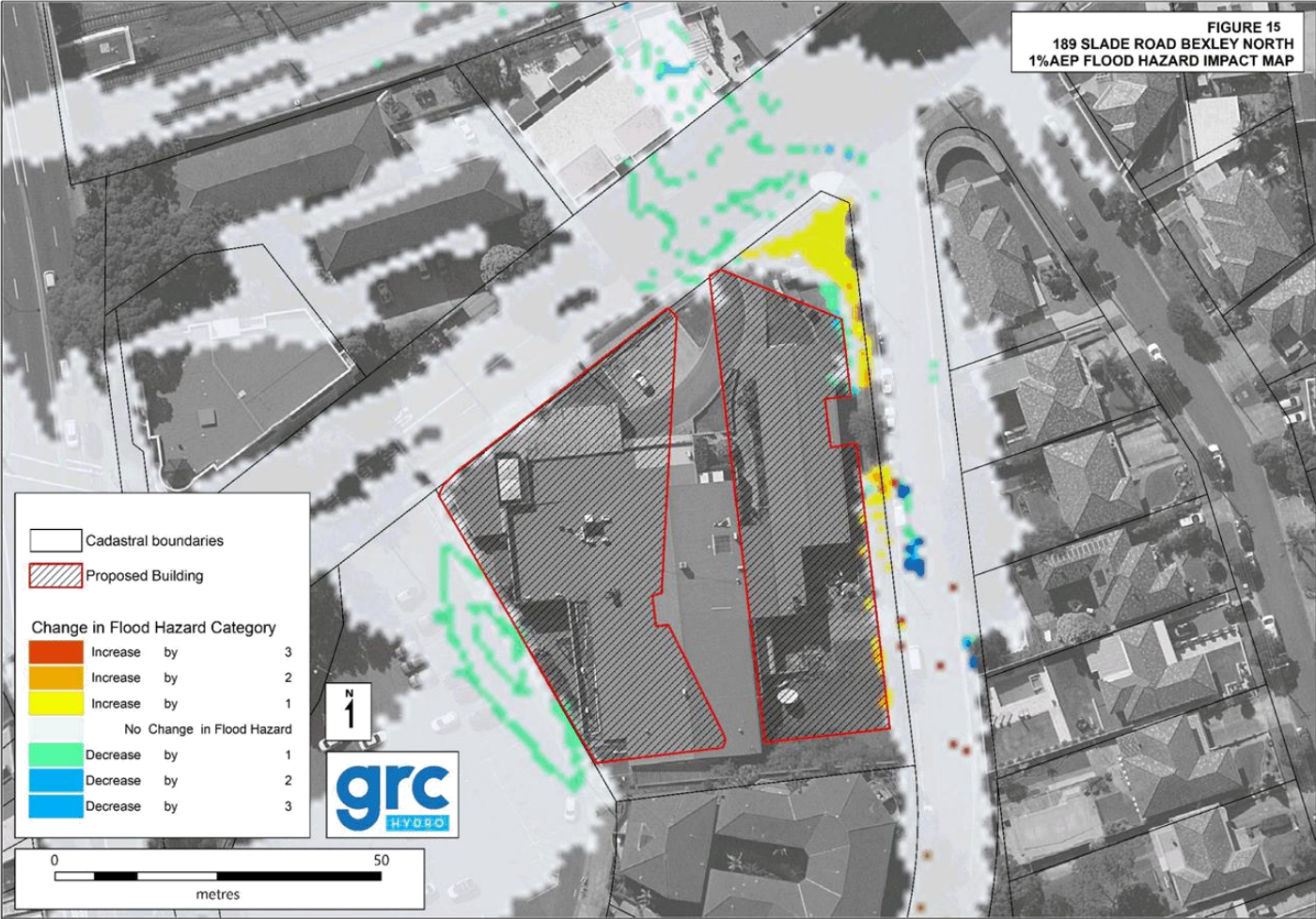















## 187 Slade Road, Bexley North – Urban Design Comments

AJ&C Comments – December 2020	Proponent Response – June 2021	AJ&C Response – August 2021
<p><b>Access:</b> Given the Council Car Park is a superlot without any internal public streets, residential lobbies facing only the car park are not ideal, as they effectively have no street address.</p>	<p>The existing commercial uses that form part of the crescent have access from the footpath of the car park site. These commercial uses assist in activating the area. Additionally, the RDCP 5.3 states that building uses fronting public domain at ground level are to be active uses wherever possible. We also note that Councils DCP requires residential uses to have access from a public space or street and not an internal public space as AJC suggest.</p> <p>It is our understanding that the Council car park may be redeveloped to contain a major public space based on the previous discussions held with Council which will include access to all the sites located in the crescent. Active frontages are a requirement of the Council controls to this site boundary so it must by definition retain in perpetuity a public access ability.</p> <p>The indicative layout intends access to any residential component from either the public edge of Councils carpark (as it is currently) and/or from within the publicly accessible lane/piazza.</p>	<p>The concern raised in AJ&amp;C's initial review referred to the lack of any residential street address for the western building, with the indicative design showing two residential lobbies which are both only accessible via the Council car park.</p>
<p><b>Staging:</b> There are some inconsistencies in the documentation: the upper-level unit (level 6) in Built Form B are only accessible via the core in Built Form C, which would not be delivered at the same time. Units in B also rely on a communal open space that will not be delivered until C is built and will need to use the core in C to access it.</p> <p>Similarly, the basement design is based on a vehicle turntable that crosses the stage boundary. The basement will, therefore, not be functional until the turntable is delivered in a subsequent stage.</p>	<p>Please note that these are indicative hand sketch plans not a DA. Their purpose is to provide some additional information to demonstrate one way a scheme could occur within the proposed envelope and amendments to the FSR and height. It is not a final and definite solution and has not been developed to the same detail as a DA would have to achieve. The staging plan and indicative core locations can easily be modified if desired to address the access to the top floor indicative apartments.</p> <p>The core shown to the floor below can be extended to continue through to level 6 or that apartment could be connected back to the core once the next stage is constructed.</p> <p>The turntable in the basement is part of the second stage. During the initial stage, loading will continue to occur through the pub lot as existing. Consequently, there is no issue with the location of the suggested turntable.</p>	
<p><b>Future Neighbourhood Character:</b> As the proponent has identified, the Council Car Park is a potential development site. The proponent should respond to the Car Park site as a standard shared property boundary rather than assume no future development of this adjoining site.</p>	<p>We disagree that this boundary operates as a shared boundary and therefore should be subject to the ADG separation distances in the manner proposed. It is a boundary to public land that currently provides public access to the existing developments and shopfronts. It also provides the major public car parking for the town centre.</p> <p>Given that the site has a significant role as part of the town centre and is required to provide active frontages to that boundary any redevelopment of the carpark will have to maintain public access to the site boundary (and to those other lots that currently benefit from access via the carpark).</p> <p>A redevelopment solution by Council for their land is highly likely to include a major public space as Bexley North does not have a key public open space or square. Given the existing active edges of this site and its neighbours the logical conclusion is that any development would be likely to be positioned to provide a built form edge to Slade Rd and Bexley Rd with a public space or at the very least a new internal street system between. To maintain the current uses and access a public street of some form will need to be provided to access the existing commercial uses.</p> <p>It should also be noted that all the existing new/old buildings edging the car park have treated the frontage to the car park site as an active and primary frontage as required by the controls. As per the RDCP 5.3, development is to define a coherent alignment to the public domain, accentuate street corners and have a zero setback with active uses to the ground level.</p> <p>The urban design concept behind the PP was to improve the pedestrian experience and connectivity in a manner that buffered pedestrians from the noise of the carpark initially and provided a positive and more intimate public space via the provision of a publicly accessible laneway and urban space through the site initially and have it link ultimately (via the midblock link to the south) to a redevelopment of the council carpark. The carpark area could create a vibrant local hub with a central urban piazza e.g. the Piazza in Sienna. The Piazza could be envisaged as a community meeting place with an urban built form edge that provides containment of the space and a wonderful retail precinct and place making element for Bexley North. The site contributes to that vision by introducing a finer grain of space and connectivity as part of the revitalisation of the centre that would provide a further public area that would provide more intimate proportions and more retail offerings. The exemplar is something such as The Piazza in Sienna – a generous space that is enclosed by continuous building form ranging from around 5-7 storeys as a street wall linked to the town beyond by a series of pedestrianised streets and lanes with smaller more intimate spaces.</p>	<p>AJ+C's concern is that the proponent has justified setbacks lower than either the ADG or DCP through a large public square identified on publicly owned property zoned B4-Mixed Use. We do agree any future development of the car park should be expected to maintain public access to the properties along its perimeter, and so setbacks may be reduced below ADG minimums. However, without the square a zero setback from ground level to the tenth storey is not an outcome that can be relied upon, and so should not be used for the purposes of setting an increased FSR for this site.</p> <p>To establish a more confidently-achievable setback, which affects FSR, we recommend that there needs to be either engagement by the proponent with Council or reference made to its existing planning framework – e.g. the Rockdale DCP currently only requires a 3m setback for the first 3-storeys above ground and then a 4.5m setback on the levels above, which is lower than the ADG but greater than that assumed by the proponent in the planning proposal.</p>



## 187 Slade Road, Bexley North – Urban Design Comments

AJ&C Comments – December 2020	Proponent Response – June 2021	AJ&C Response – August 2021
	<p>Whether future sites in the block redevelop to continue the laneway system or not the site (due to its links in both directions) can contribute to the vibrancy of Bexley town centre in its own right and provides a sense of place and urban space for Bexley.</p>  <p>Mud-map N. T. S.</p>	
<p><b>Bulk and Scale:</b> At the densities (FSRs of 3.2 and 3.6) proposed we would recommend tower-and-podium typologies, with multiple towers of between 10 and 12 storeys with podiums of 4-6 storeys. The proposal instead uses very deep footprints with long unbroken frontages to achieve similar densities at much lower building heights (although 10-storeys are shown in one corner, this represents very little of the floor space), which is a poor urban outcome.</p>	<p>The RDCP 5.3 states that on retail streets, the building articulation is to be a heavily modelled street wall building. The existing controls for mixed use centres in this LGA seek to encourage a development form of strong street edges and forms. Tower typologies are not evident anywhere in Bexley North or in the lower order centres in this area generally. Woll Creek does adopt a tower form typology but is not considered a positive precedent by Council or the project team.</p> <p>Given the sheer area of the car park and the distance across the square to the enclosing built form edges to the north and west, a strong street wall form provides an appropriate scale and sense of enclosure for the car park and eventually perhaps a future piazza. Such spaces historically were edged by abutting buildings in the order of 5-6 storeys – Sienna is higher, up to 7 storeys plus roof form.</p> <p>The current controls in fact encourage and require this strong form around the crescent through the 22m height controls, seeking nil setbacks to the road behind and only requiring a single connection through the block. The most recent building to the west sets up the framework for this development form with its nil setback blank side wall waiting for new development to abut to it.</p> <p>We consider that introducing a number of tower forms over 4/6 storey podiums will erode the role of the taller setback floors proposed which can reinforce both the corners of the block, consistent with a street wall building approach and also acknowledge the entry points into the centre from the south and east.</p> <p>Further a 6 storey podium with 10 or even 12 storey form overall is not tall enough to achieve a true tower typology and proportionally will not read as a tower. If a 4 storey street wall form was adopted with then a 6 or 8 storey component to the 'tower' the proportions would still not be ideal. It also creates a street wall that does not 'hold' the space of the car park particularly well, as can be seen from the existing building.</p> <p>The 10 storey element at the north-western corner was provided to enhance the corner, which is consistent with the RDCP 5.3 which states that the massing of a building on a corner site is to be distributed to enhance the street corner. The final shape of any form here can be regularised and an option illustrating that approach is provided at pgs 36 and 37.</p>	<p>AJ+C's reference to towers was not well worded, to clarify: this was not intended as a recommendation for an alternative built form outcome. It was intended as a comment of what built form we would expect to see for a site of this size to achieve the FSRs stated in the proposal, being taller building heights across multiple buildings with wide separations rather than the bulky mid-rises proposed. This indicates that the proposed FSR is mismatched to the proposed HOB control.</p>

## 187 Slade Road, Bexley North – Urban Design Comments

AJ&C Comments – December 2020	Proponent Response – June 2021	AJ&C Response – August 2021
<p><b>Building A</b></p> <p>The 80m length of the building and its 1530 GBA footprint is out of character with the adjacent residential properties. It is recommended that the indicative design for Building A be broken into two sections – 45m is a common limitation on apartment building length and it would be appropriate in this case. Breaking the building into two separate structures will also help offset the extensive length of blank street frontage shown for Building A.</p> <p>This length of blank frontage is not appropriate, particularly given the nature of the residential streets it fronts. It is not validated by the relatively gentle slope of the street. The problem could be addressed by requiring residential ground floor levels on Sarsfield Circuit to be within 1m of natural ground level. We would also refer you to Part 5.3 of the Rookdale DCP 2011 where it refers to ground level uses and ground floor articulation at the public domain interface.</p>	<p>A number of buildings along Sarsfield Circuit already create a continuous wall of development. In fact, the controls ask for a nil setback to the street and do not require breaks in the form. A nil setback at the side boundary is required for the street wall with no differentiation on where a residential zone occurs across the street. The existing more recent development sets up the relationship with a blank wall to Sarsfield Circuit waiting for the adjacent development to occur.</p> <p>A connection and break in the form is already required by the 'laneway' to the south of the subject site but other breaks are not indicated in the controls. The DCP also seems to encourage transition of form and density to occur by the treatment of the facades and articulation as well as materials e.g. a terrace typology in the building form by expressing the division between apartments or a proportion that responds to the width of existing dwellings. The intent of the PP is that these sort of mechanisms as well as indents into the facades for entries and lobbies would be used to moderate scale and form.</p> <p>A study of building length in the current context is provided for Councils consideration. It shows that the length of the proposed envelope is reasonably consistent with other town centre development to both the car park and also at the residential interface – see pg 19.</p> <p>AJC suggests a break in the building form to Sarsfield Circuit. We disagree that this is necessary or in fact desirable. A building break opens up the intended retail/commercial piazza to the residential street but there is no connectivity beyond that street ie no lanes or streets to link to and it opens up the activity of that internal street to residents beyond. We suspect that the residents would be less than happy with such a solution.</p> <p>A better way to manage building length is as we have suggested in the PP, entry points would be inset to create recesses in the building form, combined with balcony projections and strong vertical articulation. This will break up the building form and introduce a finer grain without having to fully break the massing apart. More detail of how the articulation might be resolved in a future DA is shown on pg 18 of this report. The way to manage this outcome is through the design guidelines that would go into Councils DCP in the future via objectives, controls and imagery. It is not necessary to enshrine a physical break in the reference design or building form envelope.</p> <p>It should also be noted that many of the houses on the other side of Sarsfield Circuit are raised above street level and present garages to the ground level. Details around modulation and depths of the inset to create a 'fine-grain' character will be the subject of detailed design at the DA stage. We consider that if desired we can further expand the suggested design guidelines in the package to include precedent imagery and more objectives around vertical and horizontal modulation.</p> <p>In relation to the levels of the residential floors along Sarsfield, this has been dictated by Councils requirements for flood levels and freeboard. There have been many discussions but the applicants flood engineer with Council. The site is actually shown as not flood affected but it appears that Council desires the applicant to provide a scheme that can manage issues with existing overland flow due to insufficient existing public infrastructure. This has required numerous changes in the levels of the scheme as Council and the applicant have investigated what the correct levels should be for a development. Council is also requiring the applicant to adopt levels that correspond to the PMF levels rather than the 1:100 levels which forces the floor levels higher.</p> <p>Since the PP was lodged further discussions have occurred on flooding and it is our understanding that levels have now finally been agreed. These new levels are shown on pg 23 of this report. The changes in the freeboard height have allows some further rationalisation of the Sarsfield and plaza levels so that the building can be entered closer to grade and movement through the site can be improved. Therefore there will be a reduction in the height of any retaining walls.</p> <p>This situation would occur in any event under the current controls and is not unique to the PP. We note that this outcome has to be managed in many areas of Sydney. The intent is that there would be bridge connections over the natural swale that would be created to manage water flow and that any level differences would be managed through landscaped terracing and use of high quality walling materials and planters with trailing planting to soften the edge. Ground level access will also be provided to each unit which will further break up any unavoidable walls along the street with entry gates and stairs. The basement cannot be lowered further due to the tunnel in the northern portion of the site. Indicative sections and images of how this would be likely to</p>	<p>AJ+C's concern on building length relates only to the eastern Building A, which is proposed to present a 6-storey 80m unbroken length along Smithfield Circuit facing a line of one- and two-storey single-family detached homes in a R2 Low Density Residential Zone.</p> <p>Any mid-block break in Eastern Building A would not need to continue through to Building B/C and so would not impact the continuity of the street wall surrounding the Council car park.</p> <p>Although architectural treatments and envelope sculpting may mitigate a long building length along Smithfield, in establishing a theoretical envelope in the Planning Proposal for the purposes of setting a maximum FSR, we recommend a real break in the building form be assumed. This is the more conservative outcome, and one we consider more likely to be approved at DA stage.</p> <p>More generally, a PP should not rely on architectural treatments to ameliorate conditions created by an envelope; the envelope itself should be reduced to avoid the problem. This does not prevent a future architectural scheme from pursuing a street wall scheme, but it provides the flexibility for it to be a design choice rather than a necessity to achieve the site's proposed FSR.</p> <p>The revised drawings provided in the proponent's "Urban Design Response" indicate reduced blank frontage is possible, and we expect AJ+C's concern with the percentage of blank frontage shown along Smithfield Circuit can be mitigated by DCP controls submitted with the Planning Proposal, as suggested here and in AJ+C's review.</p>

## 187 Slade Road, Bexley North – Urban Design Comments

AJ&C Comments – December 2020	Proponent Response – June 2021	AJ&C Response – August 2021
	<p>resolve are shown on pgs 26 and 27. The design guidelines can also be expanded to include a specific section on this relationship with imagery to ensure a quality outcome occurs in a DA.</p>	
<p><b>Building B/C</b></p> <p>The height is potentially supportable, but the massing is out of scale with its surroundings, primarily due to its oversized floor plates. Recommend that all levels above Level 1 (i.e. from the third storey, being all levels above the licensed venue) be significantly reduced to 1000GBA. The reduction could be achieved by narrowing the building and/or by breaking it into multiple buildings.</p> <p>The large floor plate is partly created due to a triangular plan with a &gt;30m depth in its centre (above Level 1). Typical floor plans provided with the proposal show the central area is used as empty lobby area on every hotel floor. This shows the depth is excessive for hotel uses.</p> <p>Concern that if future design development pursues a residential alternative, that depth is also unachievable for a residential building footprint. We therefore recommend that residential uses be limited as a separate Maximum Residential FSR based on the expected floor space distribution once the massing is reduced to a supportable level. This will ensure design quality is not reduced due to the pursuit of an FSR that is not sensibly achievable. Whilst we acknowledge the resistance to a site-specific DCP at this at this stage, this again places greater emphasis on the need to engage with Council on this matter.</p> <p>If changes to the HOB allowance are considered, they should be provided to a building that is otherwise slender in profile. It is not appropriate that a building so out of scale with its surroundings be provided additional height as well.</p> <p>The overall GFA gain shown across the top three levels provide a minor 0.25 FSR increase (+10%) that requires a disproportionate 3-storey / 9.3m increase (+40%) to the HOB control to accommodate them. However, the proposed HOB map applies this height increase to over 80% of the site, despite their footprints shown covering less than 15% of it. This may result in far more extensive building lengths at 10-storeys than shown in the indicative design provided, particularly if the floor space on lower levels is less than expected (as identified above).</p>	<p>We note the support for the height which is a positive conclusion. The deep footprints for the lower floors in the proposal are specifically for commercial uses only and the depths of the floor plates are not unusual for commercial uses. These uses are permissible and encouraged by Councils controls and the zoning. They reinforce the role of the site in the town centre and we would recommend against encouraging more residential at the expense of commercial uses. We do not support reducing the footprint as it would preclude larger commercial tenancies if the hotel did not proceed. However we note that it is the applicants intention to relocated the existing hotel use into the lower podium floors of any new development and it does require deeper floor plates.</p> <p>The envelope should allow the maximum flexibility for future uses – if a DA sought to have residential uses on these lower floors then it would have to comply with the ADG, and the footprint would be reduced to around 22m in any event. We also note that other uses such as student housing or boarding houses often have footprints in the order of around 29m so the floor plate depth would also suit these outcomes.</p> <p>Where the indicative layouts show residential units the floor plate is narrowed as required. Again, this is a PP and compliance with the ADG would have to be demonstrated for an actual scheme as part of any DA. We do not support reducing the maximum envelope at a PP stage to preclude commercial uses.</p> <p>We also note that the depth of the floorplates cannot be perceived from any part of the public domain as the envelope narrows to all its edges, so it is not clear how the depth creates visual impacts of bulk or is unacceptable.</p> <p>We disagree as discussed above that the building in the podium needs to be 'narrow in profile' assuming this infers a tower typology for the reasons discussed previously. We also note that as seen from the public domain the building form where the commercial uses are intended does narrow in any event.</p> <p>It is not clear if the height is supported, why GBA should be deleted from the limited extent of massing that achieves this height?</p> <p>The suggested LEP height map adopts an approach that is standard in the industry. The DCP indicates the number of storeys and the preferred location of height within that maximum but the Department of Planning usually will not support heavily fragmented height maps.</p> <p>The FSR control in concert with the height map and the design guidelines indicating where height should occur are sufficient to give Council the tools to manage any DA outcomes to ensure height is in the correct position to reinforce the corner. Reduction of the extent of the greater height reduces innovation and exploring options of detailed design in the final scheme.</p> <p>We also note the comment that more height may be appropriate for the western edge of the site. If this approach was adopted (and we have investigated a scheme that does this on pgs 36 and 37), if that approach was adopted then height across that part of the site as per the proposed map would be possible under the PP but would not be possible if the height map is fragmented map.</p> <p>The proposed heights for buildings B and C is based on the maximum height of the 10 storey element of building C. The first two levels have been assumed to have a floor to floor height of 4m, with 3.1m height for the levels above. This results in a total height of 32.8m and including the lift overrun, will take the total height to 34.3m. As part of the Planning Proposal, the suggested height is 35m which is consistent with the calculations.</p>	<p>AJ&amp;C's comment here referred to the hotel accommodation on upper levels. The suggestions of maintaining flexibility and allowing non-residential uses made here are well taken. However, the blanket 75% efficiency applied to oversized envelopes to calculate FSR does not only create flexibility in envelope, it establishes a GFA capacity that is difficult to sensibly achieve on site. If envelopes are made intentionally larger than intended, an additional 5-10% envelope reduction should be made before calculating GFA.</p> <p>Maintaining flexibility to support larger commercial/hospitality floor plates on the lower levels without worsening the risk of oversized residential envelopes is recommended to be addressed through setting a separate residential FSR.</p> <p>Maximum residential FSRs are currently used in both LEPs and SEPPs in NSW. They do not seek to constrain the extent of permissible uses, but rather recognise that a residential building is significantly larger than a non-residential building with the same FSR, due to increased requirements for daylight, building depth and building separation.</p> <p>AJ&amp;C's suggestion to set a separate maximum Residential FSR is in response to the envelopes proposed, which are considered oversized. Given they include a significant percentage of non-residential floor space, our concern is that without additional controls a future development application may ignore the PP yield distribution and instead choose to maximise residential within the FSR allowance – a likely outcome in a city where residential is invariably the highest and best use. This would make the proposed FSR even more mismatched to the proposed HOB limit, as the envelopes must expand up and out to accommodate the reduced lower-efficiency floor plates of residential uses.</p> <p>Given the flexible HOB map offered by the proponent, we expect the likeliest outcome is that the 10-storey section of building would be extended across the entire car park frontage rather than only the small three-storey section at the corner shown in the current massing. Building depths would also likely need to increase, creating pressure to reduce building separations further below ADG minimum guidance.</p> <p>Therefore, if this project is progressed as drawn, we recommend a maximum FSR be implemented, noting this would not prevent the outcome identified in the current planning proposal being delivered.</p> <p>AJ&amp;C's concern with the flexibility of the proposed height map is related to larger concerns about the viability and appropriateness of the proposed building envelopes. We believe a likely outcome is 'infilling' the entire height envelope to make up for FSR allowance assumed but not achievable elsewhere on site. Our preference is that the FSR be significantly reduced. Alternatively, or as well as, other controls such as the height map should be significantly tightened to avoid unexpected outcomes.</p>
<p><b>Yield:</b></p> <p>There are several inconsistencies between the GBA plans and the indicative concept design, which indicates more work needs to be undertaken to establish the appropriateness of the proposed FSR. In particular, the GBA plans for Levels 2 and 3 on Building B/C as well as Ground Level, Level 4 and Level 5 on Building A do not match the concept design. There is also an inconsistency between the Building A Level 1 residential plan, which shows a full level, and the indicative section, which shows the substation and one lobby extending double-height from Ground into Level 1. Depending on which is accurate, floor space may have been counted twice. Clarification of this is needed.</p>	<p>The GBA and FSR calculations undertaken are high level estimates only using the efficiency suggested in the ADG. It should also be noted that the concept or reference plans are hand sketches with varying line thickness.</p> <p>The sections provided are indicative hand sketches only. The section shown cuts through the lobby entry which would be a double height space to enable connection to the street and then to the residential level. The floor space has not been counted twice.</p> <p>This is an indicative scheme and therefore a floor by floor indicative GFA was not provided as there may be variations to the extent of uses subject to detailed design at the DA stage. The FSR has been based on a % allowance of the GBA.</p>	<p>Scale drawings and a level-by-level area breakdown identifying how the proponent has established the proposed FSR within the envelope is considered essential documentation for Council to ensure that the FSR listed in the planning proposal matches the drawings, and is sensibly achievable within the envelopes they show.</p>

## 187 Slade Road, Bexley North – Urban Design Comments

AJ&C Comments – December 2020	Proponent Response – June 2021	AJ&C Response – August 2021
	<p>It is not usual to constrain the extent of permissible uses on a site as part of a PP unless the proposition is for uses that would undermine the achievement of the zone objectives.</p> <p>The indicative scheme reinforces the role of the site in the town centre with predominantly commercial uses facing the car park and residential mainly in the form to Sarsfield Circuit. We don't think it is necessary or reasonable to tie down the overall FSR/ specific floor areas to particular uses as such constraints do not affect other sites in the town centre and there is no proposal to change the zoning. However, should further detailed breakdown be required by Council further information can be provided.</p>	
<p><b>Alignment with the NSW Apartment Design Guide:</b></p> <p><i>Building-by-building vs Site averages</i> A common language interpretation of the indicative design would define it as two buildings, as the eastern and western buildings are completely separated above ground.</p> <p>The Proponent instead bases ADG compliance on a site average, treating the two buildings as one. This aligns with the NCC which classifies structures that share a basement without fire separation as a single building.</p> <p>From an objective based standpoint, numeric targets can be considered met even when averaged over a site. However, as future construction stages are never guaranteed, targets can at most be averaged across each stage. While not strictly matching the language in the guide, measuring ADG solar and cross-ventilation on a stage-by-stage basis can still ensure the overall objectives are met even if all stages do not occur.</p> <p><i>Building Separation: Internal</i> The pinch point where 'Built Form C' sits opposite the northern part of 'Built Form A' is 5.5m for the first four storeys, setting back to at least 7.5m from the fifth. On the southern end, the pinch point between 'A' and 'B' is point is between 5.76m and 10m for the first four storeys and between 10m and 12m from the fifth floor.</p> <p><i>Building Separation: Setbacks</i> Based on the Gross Building Area diagrams provided as supplementary material by the applicant, the design is based on several inappropriate setbacks. These are noted in Table A below:</p>	<p>Noted, at the DA stage compliance with the ADG is required in any event however it is normal practice to average across a site with a number of buildings that will comprise a single development when completed.</p> <p>The narrowing of the space between the forms at the laneway/plaza entrances has been deliberately provided to create more intimate entries into the link. These entry points are fully open to the sky. The narrowing of the space is essential to create a sense of curiosity, the space then widens into the broader space and encourages pedestrians to enter and use the space as a public town centre space. If these entries were opened up to 12m with no variation that sense of discovery and interest is lost, and it becomes just another lane. The tightening of the throat of the entrance heightens the awareness of entering a public area and space. Creating a 'threshold' is a very important part of creating a successful neighbourhood square. The separation distances in the ADG should not be the guiding force in such a situation. Privacy impacts can be managed – the grain is more important in creating a context.</p> <p>We disagree that the ADG separation distances should be applied as minimum controls in this instance as the PP and indicative scheme seeks to achieve design outcomes that justify using narrower distances.</p> <p>As identified in the plans in the Planning Proposal report prepared by GMU, the minimum separation at the northern link entry is 7m and that of the southern is 6m. As per ADG 3F, for the buildings on the same site the minimum separation distance required from a habitable space to a blank wall is 6m. The windows for habitable spaces facing Slade Road could have angled or 'ear' windows and the commercial spaces would be designed to minimise outlook towards any habitable spaces in Building A. Any fenestration in the commercial uses could be frosted and fixed to ensure no visual or acoustic impacts. It is possible to design unit layouts that work with this sort of proximity and window positions are subject to detailed design at the DA stage. Additional objectives and imagery can be added to the design guidelines if Council is concerned to demonstrate how uses should relate across these narrower throats if desired.</p> <p>The separation distances in the ADG are never applied across normal public streets with full street reserve dimensions. Where laneways occur that are narrow and public the separation distance for each site is taken from the centre line but not for full public streets.</p> <p>Building form and setbacks from Slade St and any other public street are dictated by the front setback requirements and are not overlaid by ADG separation distances or that would detract from the ability to respond to a context and to town centre scale or to reinforce the boundary edge.</p> <p>It should be noted that the property to the north of Slade Road has already been developed at a height of building of 16m i.e., 4-5 storeys. Therefore, there will be no built form above 5 storeys and hence no issues relating to the separation given the existing street reserve width in any event. Additionally, Section 5.3 of the RDCP states that development is to be built to the street alignment with a zero setback. The uppermost level may be set back. It does not impose ADG separations to override context responses.</p>	<p>AJ&amp;C's view is that a building envelope established for the purposes of setting an FSR in the context of a PP should comply with ADG minimum separations in most cases. This would not prevent a designer from using architectural treatments to justify specific variances from the ADG at development application stage, as proposed in this response, but rather allows this to be a design choice rather than a necessity to achieve the site's new FSR.</p> <p>A PP should not rely on future architectural treatments to ameliorate problems themselves created by the PP.</p> <p>AJ&amp;C's understanding of industry practice is to measure to the centreline of a public road to ensure ADG minimums are met and shared equally. The nature of the street as 'normal public street' vs. 'laneway' is not relevant except that a wide enough public street will make zero setbacks possible while still meeting ADG separation controls. However, the ADG is silent on this issue and Bayside Council should apply an approach consistent with our applications in the LGA.</p> <p>AJ&amp;C also does not view the opposite building being 5-storeys (and so reducing building separation) as relevant in the context of the proposed spot rezoning, as the neighbour could make an equal argument for uplift in a similar Planning Proposal for their site. Again, the ADG is silent on this issue and Bayside Council should apply an approach consistent with other applications in the LGA.</p>

## 187 Slade Road, Bexley North – Urban Design Comments

AJ&C Comments – December 2020	Proponent Response – June 2021	AJ&C Response – August 2021																																													
<p><b>TABLE A. PLANNING PROPOSAL BUILDING SETBACKS</b></p> <table><tr><th>SETBACK TO</th><th>BUILT FORM A</th><th>BUILT FORM B/C</th><th>DC/LEP MINIMUMS</th><th>ADG MINIMUMS</th></tr><tr><td>North (Slade Rd)</td><td>1-4 storeys 6m 6th storey 4m</td><td>1-4 storeys 6m</td><td></td><td></td></tr><tr><td>20m road reserve</td><td>Ground 10m 2-5 storeys 10m 6th storey 14m</td><td>1-4 storeys 10m</td><td></td><td>3+ storeys 12m</td></tr><tr><td>South (Future Local Road)</td><td>1-4 storeys 6m 6th storey 10.5m</td><td>1-4 storeys 6m 5-7 storeys 6m 8-10 storeys 10.5m</td><td>6-10.5m to match LEP land reservation map</td><td></td></tr><tr><td>average 6.5m future road reserve</td><td>1-4 storeys 3.25m 6th storey 10.25m</td><td>1-4 storeys 3.25m 5-7 storeys 5.75m 8-10 storeys 10.4m</td><td></td><td>1-4 storeys 6m 5-8 storeys 9m 9+ storeys 12m</td></tr><tr><td>East (Sarsfield Ct)</td><td>1-4 storeys 10.5m 6th storey 12m</td><td>1-4m</td><td></td><td></td></tr><tr><td>20m road reserve</td><td>1-4 storeys 10.5m 6th storey 15.5m</td><td>1-4m</td><td></td><td>5-8 storeys 9m 9+ storeys 12m</td></tr><tr><td>West (Council Car Park)</td><td>1-4m</td><td>1-4 storeys 6m</td><td>1-3 storeys 3m 4+ storeys 4.5m</td><td>Without agreement by Council (see landowner) 1-4 storeys 6m 5-8 storeys 9m 9+ storeys 12m</td></tr><tr><td>assumed 10m future road reserve</td><td>1-4m</td><td>1-4 storeys 6m</td><td></td><td>With agreement by Council (see landowner) 1-4 storeys 6m 5-8 storeys 9m 9+ storeys 12m</td></tr></table> <p><sup>1</sup> labelled on a plan section, scaled (ADA drawings show 10.5m)</p>	SETBACK TO	BUILT FORM A	BUILT FORM B/C	DC/LEP MINIMUMS	ADG MINIMUMS	North (Slade Rd)	1-4 storeys 6m 6th storey 4m	1-4 storeys 6m			20m road reserve	Ground 10m 2-5 storeys 10m 6th storey 14m	1-4 storeys 10m		3+ storeys 12m	South (Future Local Road)	1-4 storeys 6m 6th storey 10.5m	1-4 storeys 6m 5-7 storeys 6m 8-10 storeys 10.5m	6-10.5m to match LEP land reservation map		average 6.5m future road reserve	1-4 storeys 3.25m 6th storey 10.25m	1-4 storeys 3.25m 5-7 storeys 5.75m 8-10 storeys 10.4m		1-4 storeys 6m 5-8 storeys 9m 9+ storeys 12m	East (Sarsfield Ct)	1-4 storeys 10.5m 6th storey 12m	1-4m			20m road reserve	1-4 storeys 10.5m 6th storey 15.5m	1-4m		5-8 storeys 9m 9+ storeys 12m	West (Council Car Park)	1-4m	1-4 storeys 6m	1-3 storeys 3m 4+ storeys 4.5m	Without agreement by Council (see landowner) 1-4 storeys 6m 5-8 storeys 9m 9+ storeys 12m	assumed 10m future road reserve	1-4m	1-4 storeys 6m		With agreement by Council (see landowner) 1-4 storeys 6m 5-8 storeys 9m 9+ storeys 12m	<p>Given that the proposal is for a mixed-use building, and the main retail frontage for the subject site is along Slade Road and Council's carpark. We consider that a nil frontage is appropriate to respond to the proposed and existing mixed use character of the area. As mentioned previously, the boundary to the car park site is a public boundary with a predominant active frontage facing the car park site and nil setbacks required by the controls.</p> <p>It should also be noted that Section 5.3 of the RDCP also states that for development on sites with rear access lane, development facing the lane should be built to the boundary.</p> <p>Regarding the comment in relation to the width of the future laneway connection to the south we note that the LEP shows a connection only— there are no set dimensions, and it is inappropriate to scale from an LEP map to arrive at a dimension. Laneways are traditionally 6m wide and this width has been adopted for the PP.</p> <p>We also note that the connection is totally on private land. It is not appropriate or reasonable to effectively gift half of the connection setback to an existing site to the west. The ADG is specific in stating that an existing development is not to require increased separation for an adjacent development that does not comply with current separation requirements. Instead, 50% of the required separation only is to be provided.</p> <p>Once a new connection is formed it will have the character of a public edge and therefore reinforcement of the street wall scale should occur. The indicative scheme shows a setback provision from the 5th level which increases the separation to 6m as measured from our site boundary which is compliant with the ADG.</p> <p>We are concerned that the AJC report seeks to apply the ADG separation as rules, ignoring contextual relationships and opportunities to create positive and interesting spaces with design solutions to deal with issues. It is also noted that the section on separation is about privacy primarily and there are completely different sections that deal with side setback conditions and these do relate to context and grain. No dimensions are given there as the final setbacks should be dictated by the character of the area and the location of the site.</p> <p>If separation distances are applied as suggested by AJC the result will be ziggurat form or 'wedding cake' appearance that delivers in our opinion a very poor built form outcome that cannot achieve design excellence.</p>	<p>The future laneway is identified as a local road in the LEP Land Reservation map, meaning the land will be purchased by Council to become a public local road. Its width has been confirmed by Council staff as 6.2m.</p> <p>To establishing an envelope for the purposes of proving an increased FSR, our recommendation is that the building setback from this boundary should be based on habitable separation distances measured from the centreline of the future local road.</p> <p>We also note that the lack of separation provided at this point is causing overshadowing of neighbouring habitable rooms beyond what the ADG considers acceptable, and greater-than-ADG setbacks are likely to be required along this boundary. This is discussed further below</p> <p>Refer to the Initial Peer Review for commentary on this point. An indicative design in the context of a PP does not create any need for stricter compliance with the ADG at DA stage, however compliance with key numeric controls that affect achievable yield is important to avoid mismatched FSR controls.</p> <p>AJ&amp;C's initial review did not intend to recommend ziggurat forms, the setback scale listed is repeated from the ADG. Generally a single upper-level setback should be assumed, the extent of which will be established by the upper levels. This setback would then be carried down through mid-levels to the street wall height, with the setback therefore exceeding ADG minimums on the intermediate storeys.</p>
SETBACK TO	BUILT FORM A	BUILT FORM B/C	DC/LEP MINIMUMS	ADG MINIMUMS																																											
North (Slade Rd)	1-4 storeys 6m 6th storey 4m	1-4 storeys 6m																																													
20m road reserve	Ground 10m 2-5 storeys 10m 6th storey 14m	1-4 storeys 10m		3+ storeys 12m																																											
South (Future Local Road)	1-4 storeys 6m 6th storey 10.5m	1-4 storeys 6m 5-7 storeys 6m 8-10 storeys 10.5m	6-10.5m to match LEP land reservation map																																												
average 6.5m future road reserve	1-4 storeys 3.25m 6th storey 10.25m	1-4 storeys 3.25m 5-7 storeys 5.75m 8-10 storeys 10.4m		1-4 storeys 6m 5-8 storeys 9m 9+ storeys 12m																																											
East (Sarsfield Ct)	1-4 storeys 10.5m 6th storey 12m	1-4m																																													
20m road reserve	1-4 storeys 10.5m 6th storey 15.5m	1-4m		5-8 storeys 9m 9+ storeys 12m																																											
West (Council Car Park)	1-4m	1-4 storeys 6m	1-3 storeys 3m 4+ storeys 4.5m	Without agreement by Council (see landowner) 1-4 storeys 6m 5-8 storeys 9m 9+ storeys 12m																																											
assumed 10m future road reserve	1-4m	1-4 storeys 6m		With agreement by Council (see landowner) 1-4 storeys 6m 5-8 storeys 9m 9+ storeys 12m																																											



## 187 Slade Road, Bexley North – Urban Design Comments

AJ&C Comments – December 2020	Proponent Response – June 2021	AJ&C Response – August 2021
<p>The acceptability of this solution and the expected width of this road reserve width should be confirmed with Council. It should be noted that even a development compliant with the existing statutory framework may reduce the solar access available for future residential development on the Council Car Park, should the car park site be considered for redevelopment in the future. In Table A we have shown the impact of a future 12m road reserve along the perimeter of the Car Park, an estimate based on the width of Sarsfield Circuit to the east. This would reduce required setbacks along the proponent's shared western boundary by 6m, requiring 0-6m depending on the floor. However, it could equally match the 0.3-0.8m future local road shown within the proponent's southern boundary, in which case setbacks would only be reduced by 3m to be within a 3-9m range.</p> <p>We recommend all residential levels be required to have at least some setback from the Car Park.</p> <p><u>Cross Ventilation:</u> The proponent states that 50 out of 83 units are cross-ventilated, calculating to 60.2% of the total unit count across both buildings. However, this figure includes 2 x units on the 10th storey (Level 9) of Building B/C which are not relevant to a tally of 'the first nine storeys'. It also shows two units in Building A (Level 1 and Level 4) relying on mid-building indentations that not typically classified as providing cross-ventilation. With these units removed the figure is 56.8%.</p> <p>AJ+C calculates the cross-ventilation of the indicative concept design on the basis below:</p> <p>A. Building-by-Building</p> <ul style="list-style-type: none"> <li>Building A - 25 of 52 units, 48.1%</li> <li>Building B/C - 21 of 29 units, 72.4%</li> </ul> <p>B. Stage-by-Stage</p> <ul style="list-style-type: none"> <li>Stage 1 ('Built Forms A &amp; B') - 38 of 70 units, 54.3%</li> <li>Stage 2 ('Built Form C') - 8 of 11 units, 72.7%</li> </ul> <p>C. Whole-of-site (first nine storeys only)</p> <ul style="list-style-type: none"> <li>46 of 81 units, 56.8%</li> </ul> <p>Note that two units shown in Stage 1 use a building core for access that will not be delivered until Stage 2.</p> <p>While it is not critical that detailed compliance with the ADG be provided at Planning Proposal stage, the design decisions that have caused the non-compliance with cross-ventilation objectives have resulted in increased building bulk and inferior presentation to public streets. We therefore recommend the indicative design, and corresponding yield, be updated to meet minimum compliance with the ADG cross-ventilation target.</p>	<p>We note that the units from level 9 have been included in the calculations and agree that according to the ADG the units of the first 9 storeys are to be included for calculation purposes. We have now further amended the unit layouts such that 50 out of 83 units are cross ventilated resulting in 60% compliance as seen on pg 32.</p>	<p>The amended scheme does not appear to comply with ADG cross-ventilation requirements.</p> <p>The units on the 10th storey have been removed from cross-ventilation and total apartment numbers, a row of unventilated units previously counted as cross-ventilated have been removed and 3 new through-units have been added to the upper level of the Eastern Building A through the expansion of its footprint, all of which has improved the percentage of cross-ventilation units. The urban design response lists 50 out of 83 units = 60% cross-ventilated.</p> <p>However, the revised design has created additional issues which means the scheme still does not comply with cross-ventilation requirements:</p> <ol style="list-style-type: none"> <li>New ground-floor units have been added that are identified as "residential part of SOHO". These would still be counted as units by the ADG, but have not been included in calculations. Their inclusion worsens the cross-ventilation non-compliance. Adding the 3x ground-floor SOHO units: 51 out of 86 units = 59%</li> <li>Two stacked rows of 2-storey 3-bedroom units are now shown in a relatively low-value location at the centre of the eastern floorplate. This is not considered a realistic outcome, as upper level 3-bedroom units in a residential flat building are typically single storey and placed on the highest value positions of the envelope. In this case, the use of these units may have been proposed to artificially reduce the number of units to meet ADG targets without reducing the building envelope. For the purposes of an indicative design in a PP, typical outcomes should be assumed unless there is a clear site-specific argument for an alternative.</li> </ol> <p>Changing the 6x two-storey 3-bed units on Levels 1 to 4 to more typical 12x single storey units worsens the cross-ventilation non-compliance: 51 out of 92 = 55%</p> <p>Note that these calculations use a whole-of-site measurement approach. Refer to AJ+C's initial review for commentary on building-by-building versus whole-of-site compliance, with Bayside Council encouraged to apply a consistent approach to other applications made in the LGA. The initial review found the eastern Building A at a significantly non-compliant 48% cross-ventilation when measured individually.</p>
<p><u>Communal Open Spaces:</u> No area information has been provided, but total communal open spaces appear to be less than the ADG's recommendation of 25% of site area, without the provision of an alternative strategy. Not all core locations are able to provide access to the communal open spaces on Building B/C, and the proposed staging means many apartments would be delivered without access to any communal open spaces.</p>	<p>Based on high level calculations of the amended concept layouts as seen on pages 28-31, the total area of communal open space (COS) is approximately 732 sqm which constitutes approximately 17% of the site area. However, the majority of Building B and C are commercial uses which do not require communal open space and the proposal includes a considerable area of publicly accessible space which provides recreational opportunities.</p> <p>The main residential building – building A, has communal space provided on its roof as does Building B and C, associated with the apartment levels. The balance of landscaped area and private versus communal space area at the roof level can easily be adjusted as part of a DA but we consider application of the ADG (without consideration of the actual extent of residential on the site versus commercial) and ignoring the publicly accessible ground level space is not an appropriate methodology.</p>	

## 187 Slade Road, Bexley North – Urban Design Comments

AJ&C Comments – December 2020	Proponent Response – June 2021	AJ&C Response – August 2021
	<p>A more appropriate approach would be to determine the site area of Building A and then apply the percentage to that area rather than using the entire site. Detailed design and calculations will be subject to detailed design and the DA stage. This is a town centre mixed use site and therefore COS provision is often balanced against the location and the provision of public space instead.</p> <p>It should also be noted that in the indicative layouts the residential units have been provided with generous private open spaces and as per the ADG 3D-1, where developments are unable to achieve the design criteria, they should provide large balconies or increased private open space for apartments.</p>	
<p><b>Solar Access: To Neighbours:</b></p> <p>The proposal notes the main impact is to the southern adjoining property at 22-40 Sarsfield Circuit. The ADG protects neighbouring developments to a 20% 'reduction' in solar amenity: "where an adjoining property does not currently receive the required hours of solar access, the proposed building ensures solar access to neighbouring properties is not reduced by more than 20%".</p> <p>This guideline is imprecise and can be interpreted in several ways. It is also frequently impractical to meet this objective where neighbouring buildings pre-date the ADG or have very few total units.</p> <p>In the case of a Planning Proposal to spot rezone a single site, we believe the hurdle should be that the increased HOB allowance proposed will not have a significantly greater effect than the likeliest 'Business-As-Usual' development using existing controls, unless the strategic benefit of the (usually wide) rezoning justifies the negative impact on certain properties.</p> <p>In the case of this Planning Proposal, which has not provided a compelling strategic merit argument, we expect the former hurdle is most appropriate. However, more information is required to fully analyse the impact on the southern property, and whether it is justifiable under the conditions outlined above.</p> <p>The analysis should identify the number of total units at 22-40 Sarsfield Circuit and estimate their existing level of solar amenity, locating living rooms and primary open spaces. Existing sun-eye views (that is, before the proponent's development) should be provided. The proposed development should be shown transparent, making each level clear, to understand the additional impact of the storeys proposed that are in excess of existing HOB limits.</p> <p>The report identifies the solar impact on 22-40 Sarsfield Circuit as largely being a result of the existing non-compliance with separation distance from the shared property boundary. The report states that "if the site were to be redeveloped and were to provide the required ADG separation, it would be able to receive 2hrs of sunlight to the majority of the facade facing the subject site."</p> <p>The neighbouring development is substantially in alignment with current ADG separation requirements, as typical practice would measure their separation burden from the centreline of the future Local Road rather than the shared property boundary. Based on the proponent's description, it may be that the overshadowing becomes acceptable if the setback is increased to the ADG minimum from that future road's centreline.</p> <p>The western face of 22-40 Sarsfield Circuit appears to have two units facing the Car Park on each level, rather than the single unit identified in the Planning Proposal, which means the overshadowing impact has been understated in the proposal.</p> <p>The Car Park Site is shown significantly overshadowed due to the zero setback and increased building height on the northwest corner, impacting its viability as a future development site. ADG compliant setbacks at 187 Slade will reduce this overshadowing as well.</p>	<p>Council has suggested various outcomes for the car park site and it is therefore unreasonable to restrict the scheme given that there is no confirmation of what design solution might occur. There are no overshadowing controls that apply to car parks and the site orientation will mean that any development on this site will have some shadow impact on the car park if built to the height of the current controls.</p> <p>Sun-eye diagrams with reduced opacity of the proposal are provided at pg 33 with sufficient translucency that 22-20 Sarsfield Circuit is visible. We also note that the apartment development is to the south of the site and therefore overshadowing is unavoidable.</p>	<p>ADG solar access analysis of the revised massing and unit layout has not been provided.</p> <p>The proponent has provided updated sun eye views that illustrate the envelopes in the urban design report result in significantly worse solar impact on the southern neighbour than would be expected under current controls.</p> <p>The reference scheme provided to show impacts that might be expected under existing planning controls has not been appropriately designed to be regarded as complying and so understates the impact. The sun eye views show that a relatively minor upper-level setback to its top floor would maintain solar access to an additional floor of units on the neighbouring property. This minor envelope reduction is likely to be required by ADG and DCP controls, and is expected to be able to be sustained while still meeting the sites existing FSR allowance.</p> <p>To reduce the indicative/reference scheme to an equivalent impact, however, will require much larger setbacks due to the proposed height increase on this site. Given the envelopes are already maximised, this is expected to result in further pressure to replace the 'lost' FSR elsewhere through increased height and bulk compared to what is currently shown.</p>

**187 Slade Road, Bexley North – Urban Design Comments**

AJ&C Comments – December 2020	Proponent Response – June 2021	AJ&C Response – August 2021
<p><b>Summary of Recommendations:</b>  Setbacks should be increased throughout to meet ADG and DCP minimums, including treating the Council Car Park as a standard shared property boundary rather than publicly-accessible space as currently shown.</p> <p>The Height-of-Buildings Map should be aligned with the proposed envelope, or the three small upper levels removed.</p> <p>Any FSR increase should include a maximum residential FSR, separate to the maximum non-residential FSR.</p> <p>All building uses should be provided with a street address, meaning residential and hotel lobbies should be reoriented to public streets.</p> <p>The southern through-site link should be redesigned as a Local Road, per the LEP Land Reservation Map. This will require reducing the basement and increasing ADG-imposed setbacks.</p> <p>Additional documentation is required to show that the proposed rezoning of 187 Slade will have no additional impact on the residential properties 22-40 Sarsfield Circuit when compared with the likely impact under existing LEP controls.</p>	<p>The project team have considered the comments by AJC and in the spirit of trying to move forward on the PP some additional options have been tested that work with or close to the current FSR proposed in the PP (which is necessary to justify redevelopment of the current hotel site).</p> <p>These options test some of the philosophies expounded by AJC. If Council's preference is for a building envelope that is consistent with one of these other approaches then the applicant would be amenable to Council adopting those envelopes instead.</p> <p>These options are –</p> <ul style="list-style-type: none"> <li>A. Greater height and massing on the car park western edge of the site as two forms</li> <li>B. A tower scheme with lower podium</li> <li>C. The current planning proposal with upper level form rationalised and greater articulation shown in the envelopes to address the building length issue and provide more certainty for Council (although the design guidelines proposed would have delivered this outcome).</li> </ul>	<p>The updated documentation provided still does not provide sufficient confidence that the residential envelopes proposed can meet the key numeric ADG controls that influence yield. We recommend the envelopes and corresponding FSR be reduced until they satisfy numeric compliance with those ADG controls that can have major yield implications.</p> <p>The ADG variations currently shown in the planning proposal are resulting in a higher hypothetical development yield at the cost of poorer urban design outcomes.</p> <p>As noted in the initial peer review, if the indicative design better complied with ADG controls it would result in greatly improved urban design outcomes - benefiting resident and neighbouring amenity as well as street quality. To meet cross-ventilation requirements the building forms would need to be broken up, and to maintain neighbouring amenity and satisfy building separation the overall envelope would need to be reduced in all directions.</p>