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10 November 2016
Our ref: 5347

Touchstone Partners Pty Ltd
Suite 1, Level 8
9-13 Young Street
Sydney NSW 2000

Attention: Tracy Hoven

Dear Tracy,

1 Denison Street, North Sydney – Design Statement
Modification of Proposal relating to Drainage and Flooding Assessment
Determination of Major Project MP08_00238 (File S08/01859-3)
under Section 75W of the Environmental Planning & Assessment Act 1979

It is understood that the previous project approval obtained in February 2010 by Eastmark Holdings Pty Ltd has been subject to a number of modifications (including deletion of various conditions in March 2015), and the current developer Victoria Plaza Holdings Pty Ltd (c/o Winten Property Group) seeks further modification to the original approval.

Existing and Proposed Stormwater Culvert

The main existing stormwater asset traversing the development site is owned and managed by Sydney Water. Runoff from surrounding streets currently drains to Council pits and discharges into the Sydney Water culvert system. It is understood that a previously installed 1350mm diameter pipe has now been replaced with a 1200mm x 1200mm rectangular cross section formed by an unlined rock wall channel with a concrete base (refer to Figure 1 for authority plans). Sydney Water has been contacted regarding the development proposal and will review the proposed stormwater requirements for the development in relation to its impact on the existing culvert. An initial meeting to discuss culvert modification requirements was held at Sydney Water offices on 17 October 2016.

The preferred design intent is for a clear void space to be provided for the passage of unconstrained stormwater flows under the proposed building, being suitably aligned to accommodate the proposed structure. It is also desirable that the asset provide sufficient dimensions to accommodate practical safe man access and that the access cover locations be positioned outside the footprint of the building. Progressive staging of the works will be undertaken to ensure that stormwater flows continue to be accommodated as construction commences.

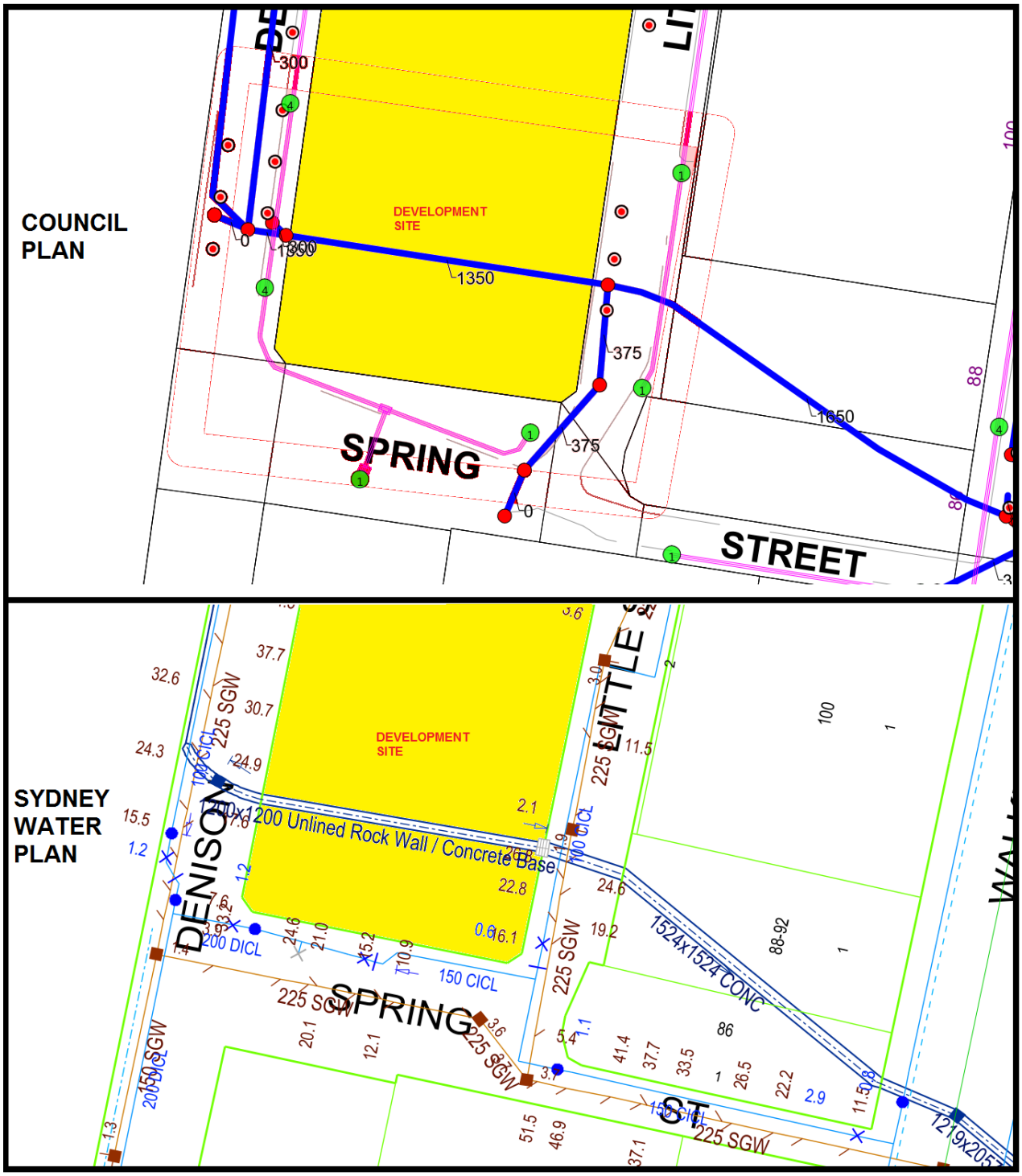

Figure 1: North Sydney Council and Sydney Water plans of existing stormwater asset

Flooding and Drainage

The previous application was supported by a Drainage and Flooding Assessment prepared by Aurecon (Connell Wagner) dated 20 March 2009 (reference number 29239, revision 03). The contents of that document provided a descriptive assessment of the requirements necessary for maintaining a functional stormwater drainage asset in the vicinity of the site and for the investigation of flood impacts associated with the development. The principles established in that report are still considered to remain applicable for the current development proposal, and the detailed design process is intended to continue following those principles. As previously outlined in the Aurecon report, the levels at the intersection of Denison/ Spring Street and Spring Street/ Little Spring Street will require adjusting to achieve overland flow paths away from the building and proposed driveway entrance. Review of flood modelling surrounding the development will also be required during detailed design to inform final floor and driveway levels.

The 2009 Aurecon report indicated that an estimated 100 year culvert flow of 11.3m3/s was calculated using a software program known as RAFTS (Runoff Analysis and Flow Training Simulation). Additional information was obtained from Sydney Water on 26 October 2016 which includes a flow capacity assessment dated from August 2002 indicating the existing culvert is able to convey an estimated 13.4m3/s, which is noted as adequate for 100 year storm runoff or greater (refer to Figures 2 and 3 for Sydney Water plan and tabular data).

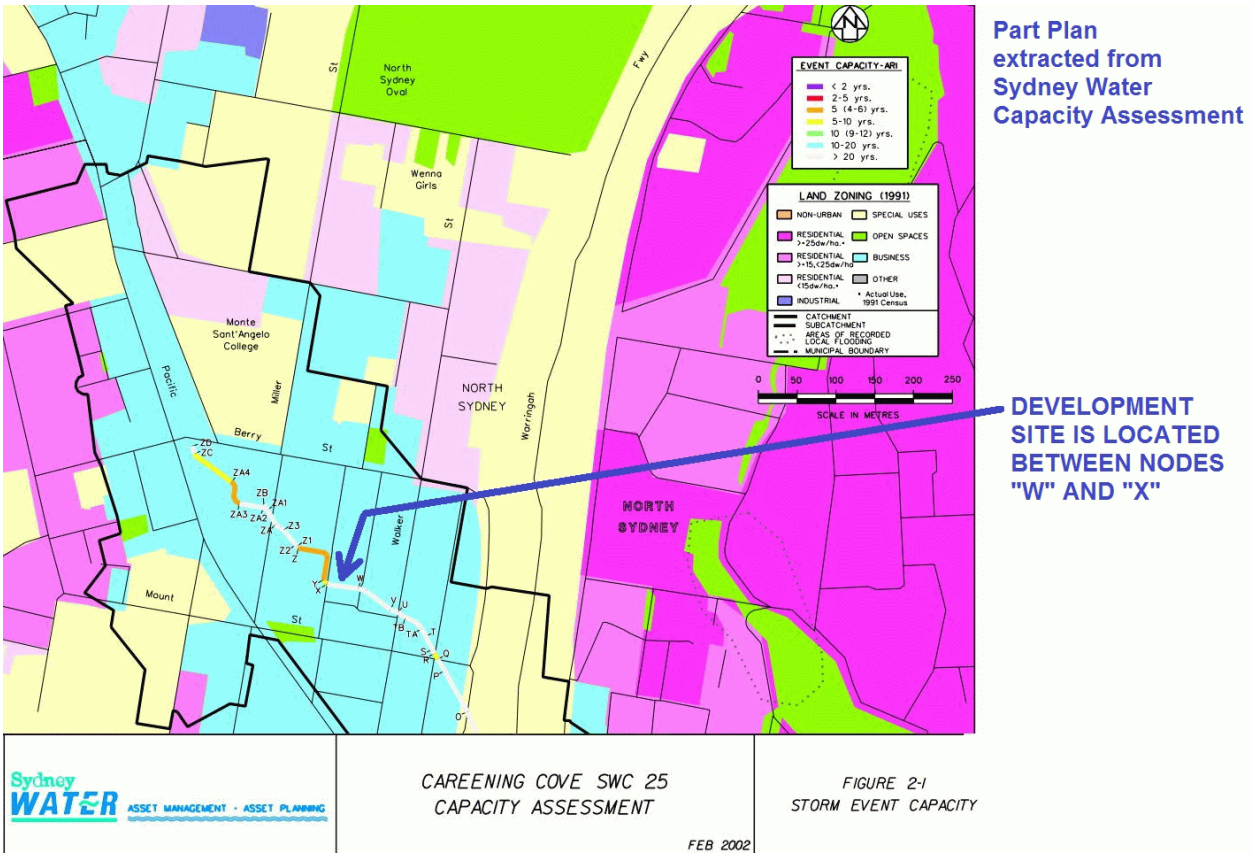

Figure 2: Sydney Water capacity assessment plan

Partial Data extracted from

TABLE 2-2. SUMMARY DETAILS FOR CAREENING COVE SWC 25

Stormwater Capacity Assessment

Section (or Reach)					Distance	Cross-Section						Hydraulic Capacity		Catchment	Runoff	Ratio	$K_y.F_y$	ARI Storm	Landuse	
	Length (m)				from	No. of	Width B	Height H	Dia. D	Type	Mtl			Area	10yr ARI Peak Flow	Capacity 10 yr Peak	Ratio x $F_x.I_x$ x	Event Capacity	Design ARI	See Note
This Model & Region	Section	System	Rated	Conduit (SW)	Outlet (m)		(mm)	(mm)	(mm)			Mannings "n_o"	Capacity (m^3/s)	(ha)	(m^3/s)		$(ToC+5)^{mv}$	(years)	(years)	
TOTALS	1348.25	1348.25	1348.25	1228.85																
A-B	180.59	180.59	180.59	180.59		1	2362	1067		OC	B	0.0140	6.27	50.63	13.67	0.459	328	1-2	10	
B-C	21.73	21.73	21.73	43.46	180.59	2	1829	1219		B	C	0.0140	24.40	44.03	12.00	2.034	1168	100 &>	10	
C-D	15.06	15.06	15.06	15.06	202.32	1	2362	1118		CC	B	0.0140	16.30	39.90	10.94	1.490	898	25-50	10	
D-E	59.44	59.44	59.44		217.38	1			1500	P	B	0.0140	12.70	39.29	10.78	1.178	725	12-15	10	
E-F	51.82	51.82	51.82		276.82	1			1200	P	C	0.0130	16.40	39.29	10.78	1.521	916	25-50	10	
F-G	29.87	29.87	29.87		328.64	1			1800	P	C	0.0130	13.60	38.72	10.63	1.279	777	15-20	10	
G-H	5.49	5.49	5.49	5.49	358.51	1	1800	1800		CT	C	0.0140	27.20	38.40	10.55	2.579	1480	100 &>	10	
H-J	40.23	40.23	40.23	40.23	364.00	1	1219	1168		B	C	0.0140	7.46	38.40	10.55	0.707	478	2-3	10	
J-JA	58.83	58.83	58.83	58.83	404.23	1	1219	1168		B	C	0.0140	6.70	38.00	10.44	0.642	447	2-3	10	
JA-K	2.74	2.74	2.74	2.74	463.06	1	1219	1168		B	C	0.0140	8.59	38.00	10.44	0.822	543	4-5	10	
K-L	41.15	41.15	41.15	41.15	465.80	1	1219	1575		B	C	0.0140	15.30	37.55	10.33	1.481	892	25-50	10	
L-LA	60.00	60.00	60.00	60.00	506.95	1	1219	1880		B	C	0.0140	19.20	33.91	9.30	2.063	1184	100 &>	10	
LA-MA	110.00	110.00	110.00	110.00	566.95	1	1830	1830		B	C	0.0140	28.40	33.91	9.30	3.052	1752	100 &>	10	
MA-N	75.00	75.00	75.00	75.00	676.95	1	1219	1575		B	C	0.0140	13.30	29.01	7.92	1.679	986	50-100	10	
N-O	33.53	33.53	33.53	33.53	751.95	1	1219	1575		B	C	0.0140	18.70	28.52	7.67	2.438	1399	100 &>	10	
O-P	59.53	59.53	59.53	59.53	785.48	1	1219	2135		B	C	0.0140	25.80	26.74	7.28	3.543	2034	100 &>	10	
P-Q	17.13	17.13	17.13	17.13	845.01	1	1219	1829		B	C	0.0140	25.20	25.16	6.84	3.684	2115	100 &>	10	
Q-R	5.46	5.46	5.46	5.46	862.14	1	1219	1295		B	C	0.0140	6.53	21.40	5.83	1.120	696	10-12	10	
R-S	8.14	8.14	8.14	8.14	867.60	1	1219	1295		B	C	0.0140	21.90	21.40	5.83	3.755	2155	100 &>	10	
S-T	15.79	15.79	15.79	15.79	875.74	1	1219	1524		B	C	0.0140	17.60	17.27	4.70	3.742	2148	100 &>	10	
T-TA	10.00	10.00	10.00	10.00	891.53	1	1219	2057		B	C	0.0140	23.40	17.27	4.70	4.976	2856	100 &>	10	
TA-TB	26.15	26.15	26.15	26.15	901.53	1	1219	2057		B	C	0.0140	10.50	17.27	4.70	2.233	1282	100 &>	10	
TB-U	6.95	6.95	6.95	6.95	927.68	1	1219	2057		B	C	0.0140	54.40	17.27	4.70	11.568	6640	100 &>	10	
U-V	23.59	23.59	23.59	23.59	934.63	1	1219	1524		B	C	0.0140	17.60	17.27	4.70	3.742	2148	100 &>	10	
V-W	49.26	49.26	49.26	49.26	958.22	1			1525	P	C	0.0130	17.40	17.67	4.65	3.743	2148	100 &>	10	
W-X	41.06	41.06	41.06	41.06	1007.48	1			1350	P	C	0.0130	13.40	14.72	4.01	3.339	1917	100 &>	10	
X-Y	7.00	7.00	7.00	7.00	1048.54	1	1067	1524		CT	C	0.0140	4.80	13.83	3.77	1.273	773	15-20	10	
Y-Z	74.25	74.25	74.25	74.25	1055.54	1			1200	P	C	0.0130	3.49	13.80	3.76	0.928	597	5-6	10	
Z-Z1	2.21	2.21	2.21	2.21	1129.79	1	1200	1200		CT	C	0.0140	11.90	13.11	3.57	3.331	1912	100 &>	10	
Z1-Z2	2.73	2.73	2.73	2.73	1132.00	1	900	1200		CC	C	0.0140	8.07	13.11	3.57	2.259	1297	100 &>	10	
Z2-Z3	33.56	33.56	33.56	33.56	1134.73	1	900	1200		CC	C	0.0140	8.07	13.11	3.57	2.259	1297	100 &>	10	
Z3-ZA	7.29	7.29	7.29	7.29	1168.29	1	900	1200		CC	C	0.0140	11.40	13.11	3.57	3.191	1832	100 &>	10	
ZA-ZA1	22.00	22.00	22.00	22.00	1175.58	1	915	1675		CC	C	0.0140	10.60	12.38	3.37	3.143	1804	100 &>	10	
ZA1-ZA2	3.78	3.78	3.78	3.78	1197.58	1	915	1675		CT	C	0.0140	11.30	7.53	2.06	5.491	3152	100 &>	10	
ZA2-ZA3	34.55	34.55	34.55	34.55	1201.36	1			900	P	C	0.0130	4.46	7.56	2.06	2.167	1244	100 &>	10	
ZA3-ZA4	30.99	30.99	30.99	30.99	1235.91	1			900	P	C	0.0130	2.03	7.55	2.06	0.986	621	7-8	10	
ZA4-ZC	70.00	70.00	70.00	70.00	1266.90	1			760	P	C	0.0130	2.46	7.53	2.06	1.195	735	12-15	10	
ZC-ZD	3.35	3.35	3.35	3.35	1336.90	1	915	915		B	C	0.0140	12.50	6.39	1.74	7.195	4130	100 &>	10	
ZA1-ZB	8.00	8.00	8.00	8.00	1197.58	1	915	1675		CC	C	0.0140	10.60	4.82	1.31	8.066	4630	100 &>	10	

SWC25 Careening Cove, Print Date 1/08/02

Figure 3: Sydney Water stormwater capacity assessment summary table

Since the anticipated capacity of 13.4m3/s exceeds the estimated 100 year flow of 11.3m3/s, the Sydney Water flow capacity assessment appears to be consistent with the preliminary Aurecon flow assessment.

Conclusion

Currently proposed modifications to the building and basement have been reviewed against the Aurecon Drainage and Flooding Assessment dated 20 March 2009 report. The proposed design has not significantly altered the flood management requirements and the principles established in that report are still considered relevant to the development proposal, provided the stipulated design principles are followed in the detailed design phase.

Yours Sincerely,

for
enstruct group pty ltd

Isaac Yip
Senior Engineer

enstruct

Victoria Plaza Holdings Pty Ltd

WINTEN PROPERTY GROUP

1 DENISON ST, NORTH SYDNEY

STORMWATER CULVERT OPTIONS REPORT

Prepared for: Winten Property Group

By: **en**struct group pty ltd

Revision: 1

November 2016

enstruct

1 DENISON ST, NORTH SYDNEY

STORMWATER CULVERT OPTIONS REPORT

ISSUE AUTHORISATION

Document Title:	1 Denison St, North Sydney
Document Number:	5347-CV-RP-0001
Project Reference:	5347
Prepared For:	Victoria Plaza Holdings Pty Ltd (c/o Winten Property Group)
Date:	November 2016
Author:	Isaac Yip
Reviewer:	Liam Delaney

Rev	Date	Purpose of Issue / Nature of Revision	Prepared by	Reviewed by	Issue Authorised by
1	07/11/16	Draft Issue	IY	LD	LD
2	10/11/16	Final	IY	LD	LD

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p: 02 8904 14444 **f:** 02 8904 1555 **w:** www.enstruct.com.au **e:** sydney@enstruct.com.au

Executive Summary

enstruct group have been engaged by Victoria Plaza Holdings Pty Ltd (c/o Winten Property Group) as Civil and Structural Consultant Engineers for the development of 1 Denison Street, North Sydney. The project includes commercial and retail facilities with a proposed tower structure rising more than 30 storeys above street level, and 3 levels of basement carparking.

The main existing stormwater asset currently traversing the development is owned and managed by the Sydney Water Corporation (SWC). The stormwater flows from surrounding streets currently drain to Council street pits and discharge into the SWC culvert system.

An initial conceptual proposal containing two options for modification of the stormwater culvert was submitted to SWC on 15 September 2016 and. A meeting was subsequently held with SWC on 17 October 2016 and concept strategies are currently being developed. These will be influenced by flood level assessment, modification of public domain surface levels, proposed building floor levels and the final approval of SWC. Verbal advice was obtained indicating agreement in principle for a clear void space to be provided for the passage of unconstrained stormwater under the building, with specific conditions to be addressed during design. Minutes of the meeting are included in Appendix A. a subsequent letter of conditions was obtained on 24 October 2016 (refer to Appendix C)

This report addresses the preliminary assessment of the existing stormwater infrastructure, the proposed solution to address the stormwater drain traversing the site and outlines our recent discussions with Sydney Water.

Contents

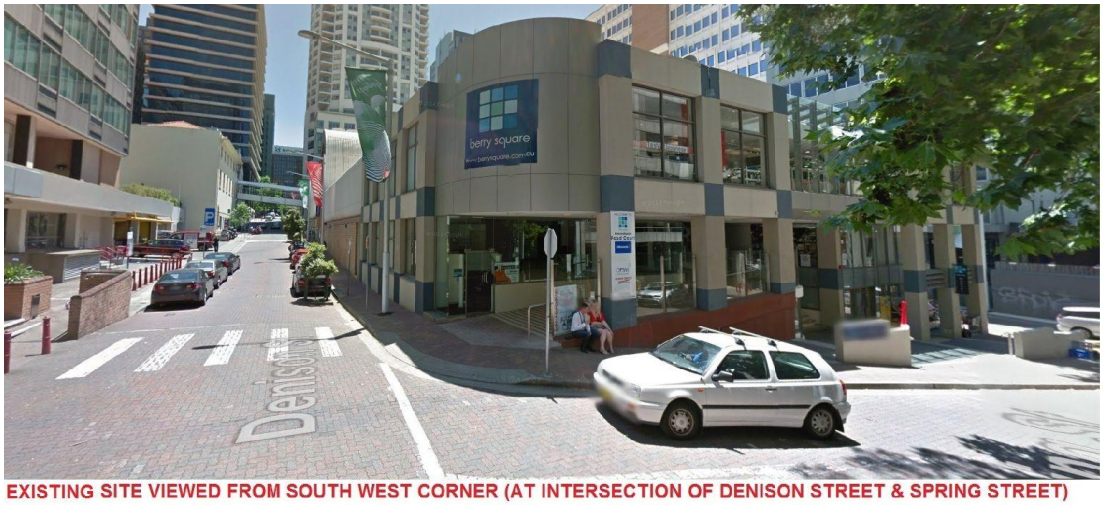
1 Stormwater Culvert Scope of Works

1.1 Existing Site

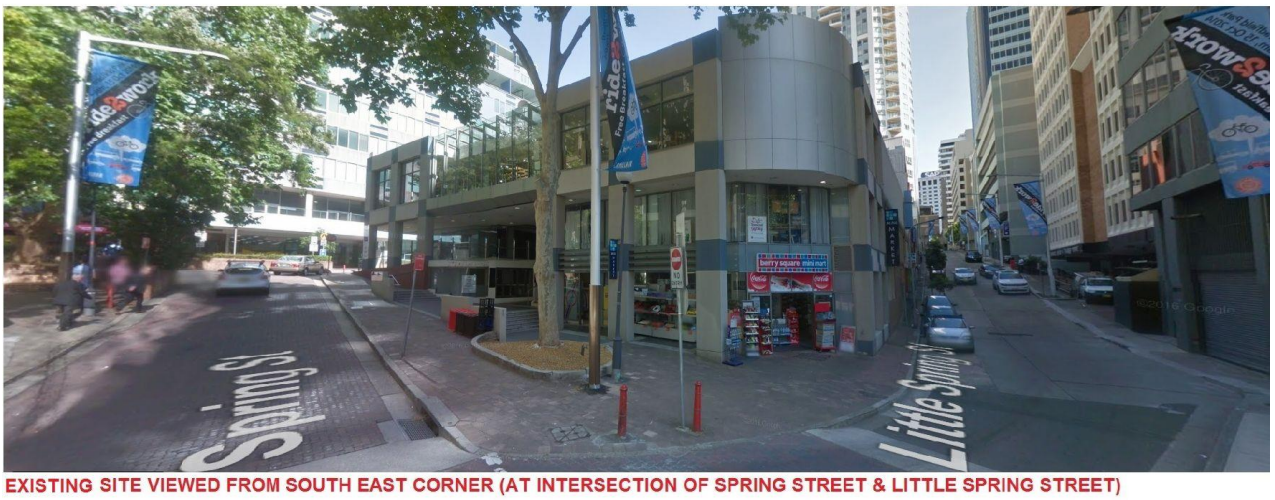
The development site is located within the central business district of North Sydney in the city block bounded by Denison Street on the west, Spring Street on the south, Little Spring Street on the east and Berry Street on the north.

The site currently contains a shopping centre retail development known as Berry Square (refer to Figure 1), which was formerly known as North Sydney Shopping World. The site is covered by impervious material consisting of paved or roof areas, and the adjacent public domain areas contain small garden beds and street trees.

The site is situated within a stormwater catchment draining towards Careening Cove and is part of the North Sydney Local Government Area (LGA).



EXISTING SITE VIEWED FROM SOUTH WEST CORNER (AT INTERSECTION OF DENISON STREET & SPRING STREET)



EXISTING SITE VIEWED FROM SOUTH EAST CORNER (AT INTERSECTION OF SPRING STREET & LITTLE SPRING STREET)

Figure 1: Existing street views from the southern corners of the site

The existing surface topography generally slopes from the northwest down to the southeast in the vicinity of the site. Denison Street has an approximate grade of 6% draining from north to south, Little Spring Street has an approximate grade of 9% draining from north to south, and Spring Street has an approximate grade of 7% draining from west to east.

The main existing stormwater asset currently traversing the development is owned and managed by SWC. Runoff from surrounding streets currently drains to Council pits and discharges into the SWC culvert system. Based on utility records, it is assumed that a former 1350mm diameter pipe has been replaced with a 1200mm x 1200mm rectangular cross section formed by an unlined rock wall channel with a concrete base (refer to Figure 2 for authority plans).

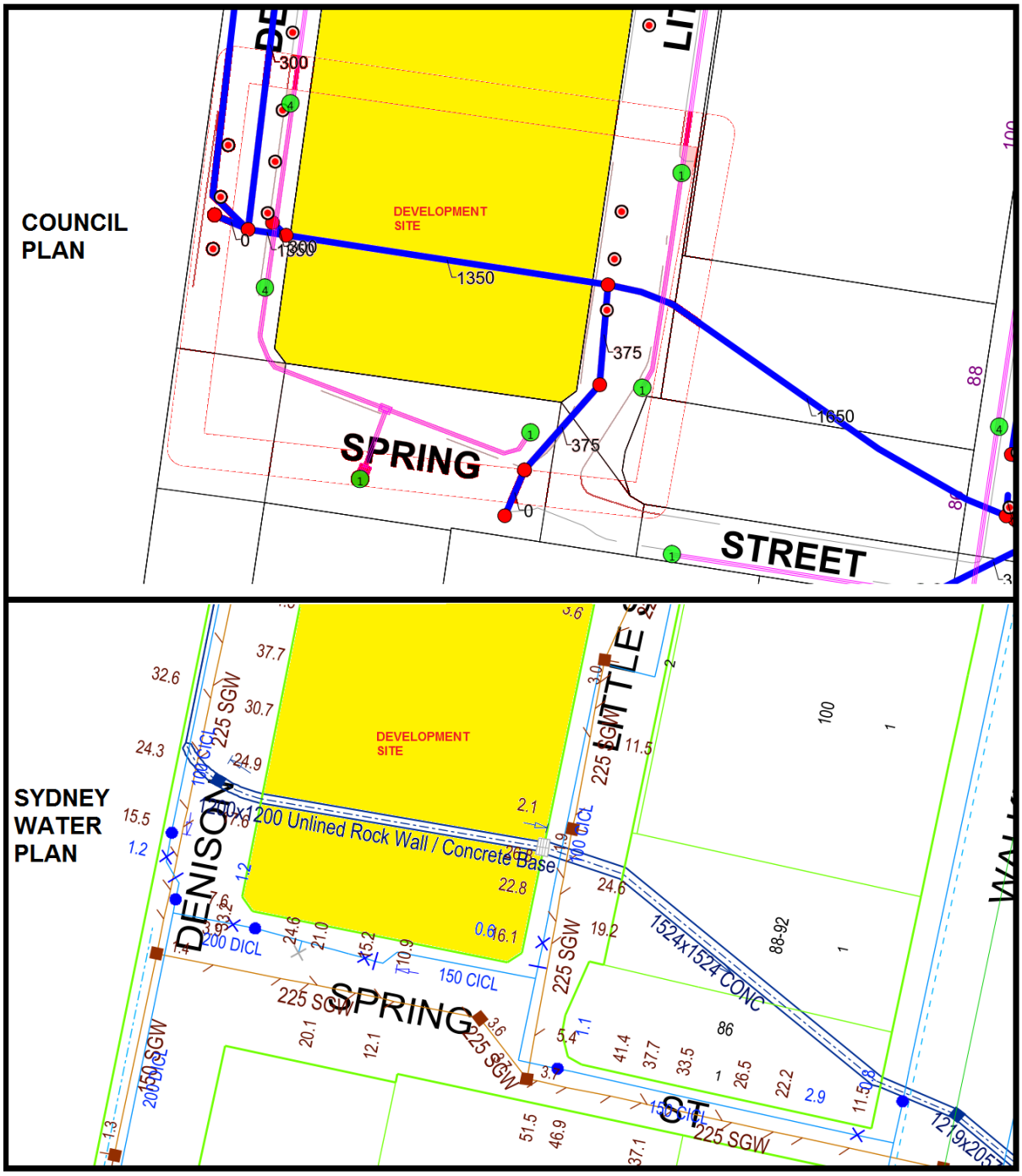


Figure 2: North Sydney Council and Sydney Water plans of existing stormwater asset

1.2 Previous Proposal

It is understood that a previous project approval for the development site was obtained from the Minister for Planning in February 2010 by Eastmark Holdings Pty Ltd and has been subject to a number of modifications (including deletion of various conditions in March 2015). The current developer Victoria Plaza Holdings Pty Ltd (c/o Winten Property Group) is proceeding with a modified project proposal.

The previous application was supported by a Drainage and Flooding Assessment prepared by Aurecon (Connell Wagner) dated 20 March 2009 (reference number 29239, revision 03). The contents of that document provided a descriptive assessment of the requirements necessary for maintaining a functional stormwater drainage asset in the vicinity of the site and for the investigation of flood impacts associated with the development. The principles established in that report are still considered to remain applicable for the current development proposal, and the detailed design process is intended to continue following those principles.

1.3 Culvert Capacity

The 2009 Aurecon report indicated that an estimated 100 year culvert flow of 11.3m3/s was calculated using a software program known as RAFTS (Runoff Analysis and Flow Training Simulation). Additional information was obtained from SWC on 26 October 2016 which includes a flow capacity assessment dated from August 2002 indicating the existing culvert is able to convey an estimated 13.4m3/s, which is noted as adequate for 100 year storm runoff or greater (refer to Figures 3 and 4 for SWC plan and tabular data).

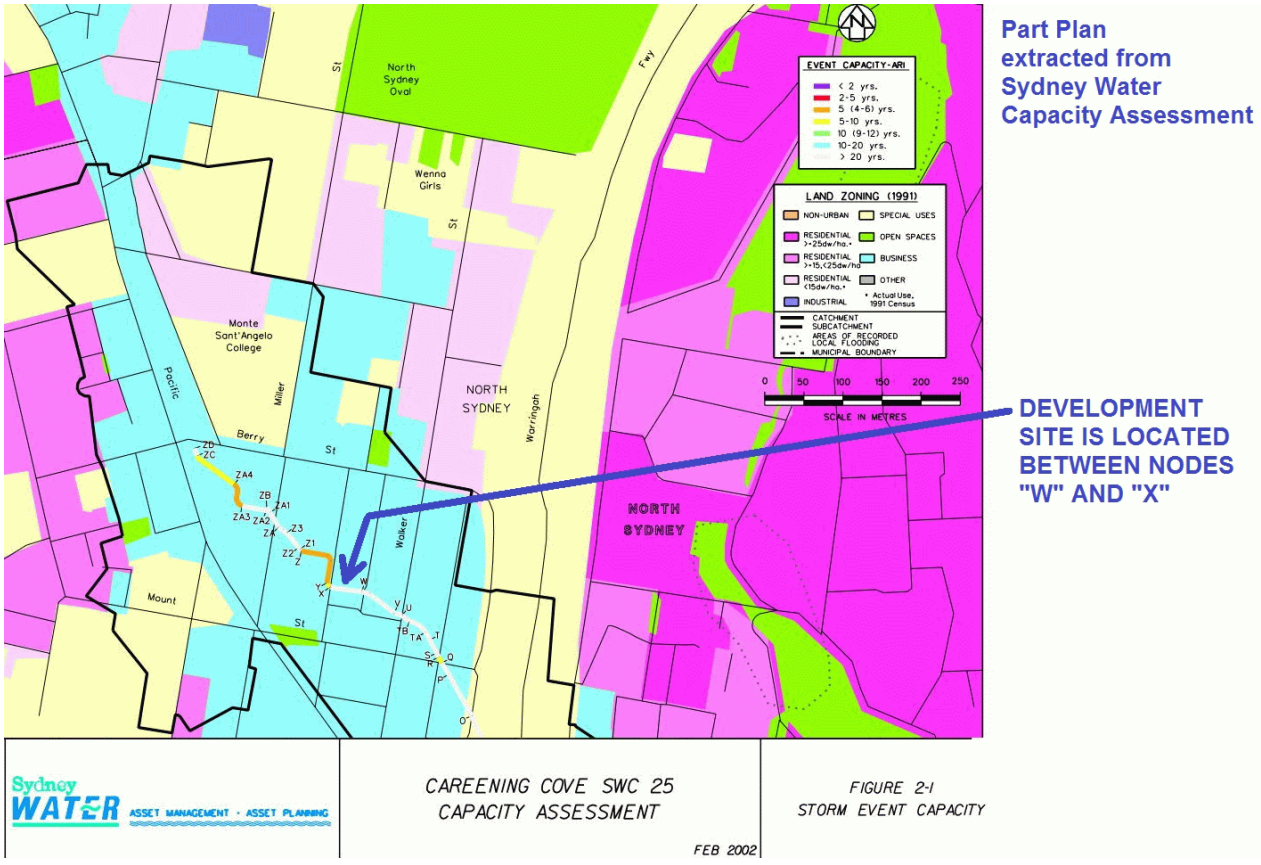


Figure 3: Sydney Water capacity assessment plan

Partial Data extracted from

TABLE 2-2. SUMMARY DETAILS FOR CAREENING COVE SWC 25 — **Stormwater Capacity Assessment**

Section (or Reach)					Distance	Cross-Section						Hydraulic Capacity		Catchment Area	Runoff 10yr ARI Peak Flow	Ratio Capacity 10 yr Peak	$K_y.F_y$ Ratio x $F_5.I_5$ x $(ToC+5)^{my}$	ARI Storm Event Capacity	Landuse Design ARI	See Note
	Length (m)				from	No. of	Width B	Height H	Dia. D	Type	Mtl									
This Model & Region	Section	System	Rated	Conduit (SW)	Outlet (m)		(mm)	(mm)	(mm)			Mannings "n_o"	Capacity (m^3/s)	(ha)	(m^3/s)			(years)	(years)	
TOTALS	1348.25	1348.25	1348.25	1228.85																
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C-D	15.06	15.06	15.06	15.06	202.32	1	2362	1118		CC	B	0.0140	16.30	39.90	10.94	1.490	898	25-50	10	
D-E	59.44	59.44	59.44		217.38	1			1500	P	B	0.0140	12.70	39.29	10.78	1.178	725	12-15	10	
E-F	51.82	51.82	51.82		276.82	1			1200	P	C	0.0130	16.40	39.29	10.78	1.521	916	25-50	10	
F-G	29.87	29.87	29.87		328.64	1			1800	P	C	0.0130	13.60	38.72	10.63	1.279	777	15-20	10	
G-H	5.49	5.49	5.49	5.49	358.51	1	1800	1800		CT	C	0.0140	27.20	38.40	10.55	2.579	1480	100 &>	10	
H-J	40.23	40.23	40.23	40.23	364.00	1	1219	1168		B	C	0.0140	7.46	38.40	10.55	0.707	478	2-3	10	
J-JA	58.83	58.83	58.83	58.83	404.23	1	1219	1168		B	C	0.0140	6.70	38.00	10.44	0.642	447	2-3	10	
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K-L	41.15	41.15	41.15	41.15	465.80	1	1219	1575		B	C	0.0140	15.30	37.55	10.33	1.481	892	25-50	10	
L-LA	60.00	60.00	60.00	60.00	506.95	1	1219	1880		B	C	0.0140	19.20	33.91	9.30	2.063	1184	100 &>	10	
LA-MA	110.00	110.00	110.00	110.00	566.95	1	1830	1830		B	C	0.0140	28.40	33.91	9.30	3.052	1752	100 &>	10	
MA-N	75.00	75.00	75.00	75.00	676.95	1	1219	1575		B	C	0.0140	13.30	29.01	7.92	1.679	986	50-100	10	
N-O	33.53	33.53	33.53	33.53	751.95	1	1219	1575		B	C	0.0140	18.70	28.12	7.67	2.438	1399	100 &>	10	
O-P	59.53	59.53	59.53	59.53	785.48	1	1219	2135		B	C	0.0140	25.80	26.74	7.28	3.543	2034	100 &>	10	
P-Q	17.13	17.13	17.13	17.13	845.01	1	1219	1829		B	C	0.0140	25.20	25.16	6.84	3.684	2115	100 &>	10	
Q-R	5.46	5.46	5.46	5.46	862.14	1	1219	1295		B	C	0.0140	6.53	21.40	5.83	1.120	696	10-12	10	
R-S	8.14	8.14	8.14	8.14	867.60	1	1219	1295		B	C	0.0140	21.90	21.40	5.83	3.755	2155	100 &>	10	
S-T	15.79	15.79	15.79	15.79	875.74	1	1219	1524		B	C	0.0140	17.60	17.27	4.70	3.742	2148	100 &>	10	
T-TA	10.00	10.00	10.00	10.00	891.53	1	1219	2057		B	C	0.0140	23.40	17.27	4.70	4.976	2856	100 &>	10	
TA-TB	26.15	26.15	26.15	26.15	901.53	1	1219	2057		B	C	0.0140	10.50	17.27	4.70	2.233	1282	100 &>	10	
TB-U	6.95	6.95	6.95	6.95	927.68	1	1219	2057		B	C	0.0140	54.40	17.27	4.70	11.568	6640	100 &>	10	
U-V	23.59	23.59	23.59	23.59	934.63	1	1219	1524		B	C	0.0140	17.60	17.27	4.70	3.742	2148	100 &>	10	
V-W	49.26	49.26	49.26	49.26	958.22	1			1525	P	C	0.0130	17.40	17.07	4.65	3.743	2148	100 &>	10	
W-X	41.06	41.06	41.06	41.06	1007.48	1			1350	P	C	0.0130	13.40	14.72	4.01	3.339	1917	100 &>	10	
X-Y	7.00	7.00	7.00	7.00	1048.54	1	1067	1524		CT	C	0.0140	4.80	13.83	3.77	1.273	773	15-20	10	
Y-Z	74.25	74.25	74.25	74.25	1055.54	1			1200	P	C	0.0130	3.49	13.80	3.76	0.928	597	5-6	10	
Z-Z1	2.21	2.21	2.21	2.21	1129.79	1	1200	1200		CT	C	0.0140	11.90	13.11	3.57	3.331	1912	100 &>	10	
Z1-Z2	2.73	2.73	2.73	2.73	1132.00	1	900	1200		CC	C	0.0140	8.07	13.11	3.57	2.259	1297	100 &>	10	
Z2-Z3	33.56	33.56	33.56	33.56	1134.73	1	900	1200		CC	C	0.0140	8.07	13.11	3.57	2.259	1297	100 &>	10	
Z3-ZA	7.29	7.29	7.29	7.29	1168.29	1	900	1200		CC	C	0.0140	11.40	13.11	3.57	3.191	1832	100 &>	10	
ZA-ZA1	22.00	22.00	22.00	22.00	1175.58	1	915	1675		CC	C	0.0140	10.60	12.38	3.37	3.143	1804	100 &>	10	
ZA1-ZA2	3.78	3.78	3.78	3.78	1197.58	1	915	1675		CT	C	0.0140	11.30	7.53	2.06	5.491	3152	100 &>	10	
ZA2-ZA3	34.55	34.55	34.55	34.55	1201.36	1			900	P	C	0.0130	4.46	7.56	2.06	2.167	1244	100 &>	10	
ZA3-ZA4	30.99	30.99	30.99	30.99	1235.91	1			900	P	C	0.0130	2.03	7.55	2.06	0.986	621	7-8	10	
ZA4-ZC	70.00	70.00	70.00	70.00	1266.90	1			760	P	C	0.0130	2.46	7.53	2.06	1.195	735	12-15	10	
ZC-ZD	3.35	3.35	3.35	3.35	1336.90	1	915	915		B	C	0.0140	12.50	6.39	1.74	7.195	4130	100 &>	10	
ZA1-ZB	8.00	8.00	8.00	8.00	1197.58	1	915	1675		CC	C	0.0140	10.60	4.82	1.31	8.066	4630	100 &>	10	

SWC25 Careening Cove, Print Date 1/08/02

Figure 4: Sydney Water stormwater capacity assessment summary table

Since the anticipated capacity of 13.4m3/s exceeds the estimated 100 year flow of 11.3m3/s, the SWC flow capacity assessment appears to be consistent with the preliminary Aurecon flow assessment and the Aurecon report is still considered to be relevant to the development proposal, provided the stipulated design principles are followed in the detailed design phase. The impact of flooding or tailwater effects should also be confirmed, particularly in relation to the effective hydraulic grade line characteristics of the culvert.

1.4 Proposed Stormwater Works

The preferred design intent is for a clear void space to be provided for the passage of unconstrained stormwater flows under the proposed building, being suitably aligned to accommodate the proposed structure. It is also desirable that the asset provide sufficient dimensions to accommodate practical safe man access and that the access cover locations be positioned outside the footprint of the building. Progressive staging of the works will be undertaken to ensure that stormwater flows continue to be accommodated as construction commences.

The structural provisions for ongoing building integrity and resilience shall be developed to the satisfaction of Sydney Water prior to the issue of a Construction Certificate.

APPENDIX **A**

Minutes of Meeting with Sydney Water

enstruct

Minutes

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Level 4, 2 Glen Street,
Milsons Point,
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Australia

Minutes Of		Meeting Number
Sydney Water Meeting		1
Project		Project Number
1 Denison Street, North Sydney		5347
Date	Venue	Time
17/10/2016	1 Smith Street, Parramatta	
Attendees	Of	Initial
Liam Delaney	enstruct	LD
Tim Boulton	Enstruct	TBB
Ray Parsell	Sydney Water	RP
Jeya Jeyadevan	Sydney Water	JJ
Steve Rimmer	Rose Atkins Rimmer	SR

Item	Description	Who	When	Status
1.0	Tim Boulton gave an overview of the project. It is preferred that SWC stormwater asset remain on the same alignment, but be lowered to accommodate the new proposed building slabs. There will be no excavation or void below the proposed repositioned stormwater pipe and it would be founded on rock.	TBB		
2.0	Ray explained that there is a new DRAFT policy currently being prepared by SWC to allow and guide building over SWC stormwater assets for buildings and sites of high commercial value, such as CBD areas. This building falls into this category and therefore, in principle, building over the asset can be considered. It was made clear that this is only applies to these high value areas and will not apply in other locations	RP		
3.0	Aim of the policy is to balance and reduce risk between Sydney water and the developer.			
4.0	The stormwater asset and the building must be structurally independent. That is, if the asset were to be removed in the future, or fail in some way in the future, there would be no impact on the building integrity or operation. The building must also be resilient to other impacts that could occur such as flooding or pollution from spills etc.			
5.0	Ideally the asset must be “man traversable”, with a vertical internal clearance height of 1.5m. If this is not achievable, further conversations about the proposed arrangement will be required with SWC.			
6.0	The design is to allow for a conduit/ void that can carry the Q100 year storm from the upstream catchment. The lower formed channel (maybe fibre reinforced channel) in the base of the asset will ideally be sized to convey the Q1 or Q2 year event.			
7.0	SWC prefer no access manholes to the asset inside the building. Access chambers either side of the building			

Item	Description	Who	When	Status
	would be sufficient in the adjacent streets, preferably not in trafficked areas.			
8.0	A “removal plug” in the building wall structure is to be incorporated for potential culvert upgrades in the future.			
9.0	SWC (Jeya) will forward a capacity assessment of the drainage system and the flow rates for this area to allow calculation of the Q100 flow rate.	JJ		
10.0	It is preferred that any overland flow paths are diverted around the outside of the building, rather than through the building. If overland flows go around the building, it is unlikely a flood study/ assessment will be required for approval of this proposed asset design.			
11.0	There needs to be clear delineation of ownership between SWC and developer around the asset. A bond breaker between the structures should be provided to allow easy removal in the future if necessary.			
12.0	SWC will forward Interim Operational Procedures (IOP) for review and consideration for staging considerations during construction.			
13.0	The asset needs to be registered and risk outlined in the building title.			
14.0	For approval, the above criteria and requirements need to be outlined in the DA conditions. The developer will draft these conditions and forward to SWC for review.			
15.0	The detailed design of the asset will need to be reviewed and approved by SWC prior to construction certificate. Details of the SWC owned asset need to be documented on SWC drawing sheets and to SWC standards. Surrounding structural details of the building around the culvert will also be provided, but on the developer construction drawings (therefore doesn’t require to be in SWC drawing format.)			
16.0	Title agreements and deeds will need to be agreed between the developer and SWC before			
17.0	Ray stated SWC will be happy to meet again to discuss design progress with sketches ahead of formal submission for review and to answer any queries we may have going forward.	RP		
18.0	All correspondence to go through the Sydney Water Coordinator, Steve Rimmer	SR		

Summary Actions

Item	Description	Who	When	Status
1.0	Jeya (SWC) to forward surrounding drainage system capacity assessment and flow rates and IOP docs.	JJ		
2.0	The developer is to prepare DA conditions associated with the asset and forward to SWC for review.			

APPENDIX **B**

On-Site Detention Advice from Sydney Water

From: JEYADEVAN, JEYA [mailto:JEYA.JEYADEVAN@sydneywater.com.au]
Sent: Monday, 24 October 2016 8:35 AM
To: Isaac Yip
Subject: RE: Case Number 157614 - Proposed Stormwater Adjustment at 1 Denison St North Sydney - Detention Requirements?

Isaac,

A meeting was held last week between proponent and Sydney Water regarding the specific stormwater requirements for the proposed development. As per these specific requirements, Sydney Water has agreed to waive the On Site Detention requirements for this site, if the development site make direct stormwater connection to Sydney Water's stormwater system.

However if the stormwater discharge from the development site is to kerb and gutter or any council stormwater system, then you need to liaise with council regarding the On Site Detention requirements if any.

Best regards,
Jeya Jeyadevan | **Senior Capability Assessor**
Customer Delivery | Sydney Water
Level 7, 1 Smith St Parramatta NSW 2150
PO Box 399 Parramatta NSW 2124
T 8849 6118 | **M** 0409 318 827
E jeya.jeyadevan@sydneywater.com.au
sydneywater.com.au

From: Isaac Yip [mailto:Isaac.Yip@enstruct.com.au]
Sent: Friday, 21 October 2016 4:19 PM
To: JEYADEVAN, JEYA <JEYA.JEYADEVAN@sydneywater.com.au>
Subject: Case Number 157614 - Proposed Stormwater Adjustment at 1 Denison St North Sydney - Detention Requirements?

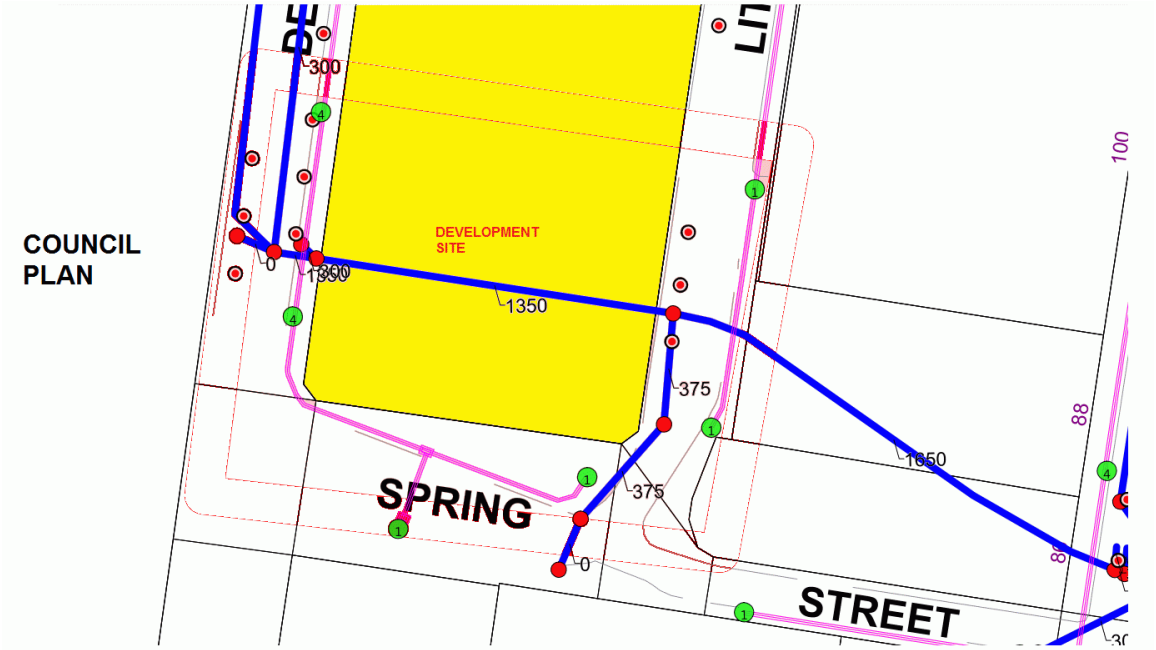
Hi Jeya

I believe you are already familiar with a proposal to adjust a Sydney Water culvert at 1 Denison St North Sydney (Case Number 157614).

Could you advise whether detention is required in this location for the following site characteristics?
Site area = 3400m2
Existing impervious proportion = 100%
Proposed impervious proportion = 100%

If we connect to the realigned culvert, do you know if Sydney Water requirements usually override any local Council detention requirements?
Or would we need to check with Council engineers as well?

Do you also have any relevant information on system flow and culvert capacity?



Regards
Isaac

Isaac Yip
Senior Engineer

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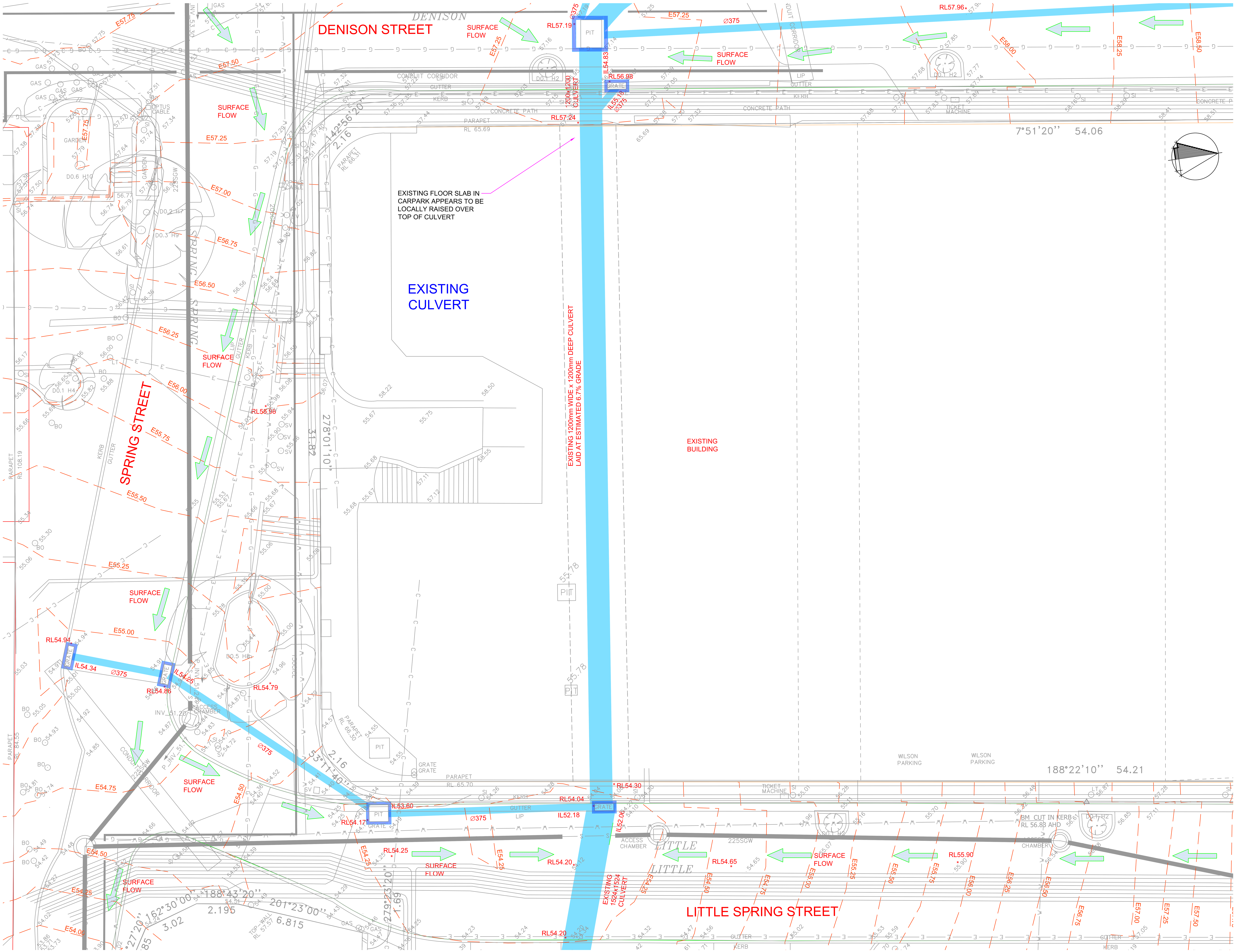
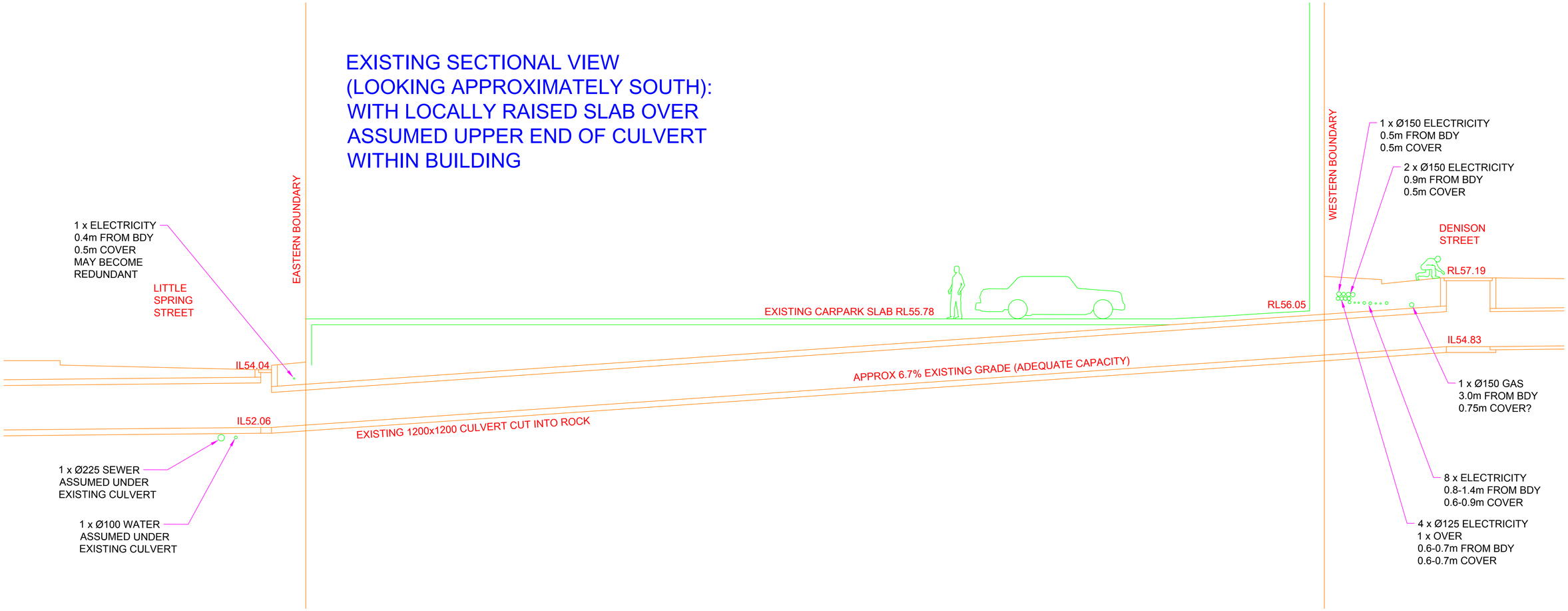
Fx: +61 2 8904 1555
Level 4, 2 Glen Street, Milsons Point, NSW Australia 2061
Isaac.Yip@enstruct.com.au

APPENDIX **C**

Sydney Water Concept Approval Advice


DENISON STREET
SURFACE FLOW
PIT
GRATE
EXISTING FLOOR SLAB IN CARPARK APPEARS TO BE LOCALLY RAISED OVER TOP OF CULVERT
EXISTING CULVERT
EXISTING 1200mm WIDE x 1200mm DEEP CULVERT LAID AT ESTIMATED 6.7% GRADE
EXISTING BUILDING
SPRING STREET
LITTLE SPRING STREET
EXISTING 1524x1524 CULVERT
CONDUIT CORRIDOR
CONCRETE PATH
PARAPET RL 65.69
TICKET MACHINE
WILSON PARKING
ACCESS CHAMBER
7°51'20" 54.06
188°22'10" 54.21
278°01'10" 31.82
RL57.19
RL56.98
RL57.24
IL54.83
RL54.94
IL54.34
RL54.86
IL54.25
RL54.79
IL53.60
RL54.17
RL54.04
IL52.18
RL54.30
RL54.25
RL54.20
RL54.65
RL55.90
RL57.96
Ø375

EXISTING SECTIONAL VIEW (LOOKING APPROXIMATELY SOUTH): WITH LOCALLY RAISED SLAB OVER ASSUMED UPPER END OF CULVERT WITHIN BUILDING



APPENDIX **E**

Conceptual Plan and Sectional Sketches for NOTIONAL PROPOSED CULVERT

DENISON STREET

LITTLE SPRING STREET

SPRING STREET

SITE BOUNDARY

SURFACE FLOW

REPLACE EXISTING STREET PIT WITH DEEPER WIDER PIT TO SUIT PROPOSED CULVERT LAIID AT REDUCED GRADE

POTENTIAL OPTION TO REDUCE CULVERT GRADE & MAINTAIN INTERNAL HEIGHT OF 1200mm

REPLACE EXISTING PIPE CONNECTION FROM STREET PIT TO NEW CULVERT

PROPOSED 2700mm WIDE x 1200mm DEEP CULVERT LAID AT 1% GRADE

REPLACE EXISTING STREET PIT WITH NEW CULVERT TRANSITION BELOW PROPOSED MAIN DRIVEWAY ENTRY

PROVIDE NEW COVERED STREET PIT FOR MAINTENANCE ACCESS TO CULVERT

EXISTING 1524x1524 CULVERT

STORMWATER PIPE (BELOW)

ACCESS TO WATER TANK (BELOW)

CAR SHARE

COURIER

RETAIL 310 m²

BOOM GATE

LIFT PIT

FCR

FBB

FP

46 BIKE SPACES

END OF TRIP 151 m²

30 CARSPACES INCLUDING 1 6 MOTORBIKE GBA = 390

FFL. 53.000

FFL. 54.500

FFL. 55.300

01

02

03

04

05

POSSIBLE OPTION - SECTIONAL VIEW
(LOOKING APPROXIMATELY SOUTH):
TO REDUCE CULVERT SLOPE & INCREASE CULVERT SIZE FROM 1200mm WIDE x 1200mm DEEP TO 2700mm WIDE x 1200mm DEEP