

2. Existing site

The existing site is currently undeveloped. The Hermitage Way has recently been constructed along the south-western boundary of the site, and the roads to the east and west of the school site are yet to be constructed.

The site falls to the east. Currently there is no stormwater drainage system on site. As part of the development of the precinct, three stormwater pits will be constructed along the eastern boundary by the precinct developer. These pits and the downstream pipe network have been sized to convey the flow from the site and will connect to the precinct drainage system in new road MC06, to the east of the site. The designer has adopted that the site will be 40% impervious.

A trunk stormwater main will be located on the northern boundary. This will carry flow from the Entertainment Precinct, located to the west of the site. This connects to the street drainage system in new road MC06 and then to a precinct wide drainage system.

An existing precinct wide detention / water quality basin is located to the east of the site. The engineer responsible for the design of the precinct drainage system advised that the basin has been designed for the following requirements:

- To provide stormwater detention for storms up to a 1 in 100 year storm event
- To provide stormwater treatment for a 1 in 3 month storm event.

From design drawings for the catchment, the basin has been sized to cater for the entire catchment, including the school site. The design assumed that the school site is 40% impervious.

3. Proposed development

The works proposed for the site consist of new public school, which will eventually cater for 1,000 students from kindergarten to Year 6. As such, the works on the site will include”

- General learning areas
- A library
- A hall and COLA
- Administration areas
- Games courts
- Parking for 75 vehicles in two parking areas.
- Grass and landscaped areas

4. Stormwater management

Drainage

The site developer has provided three connection points to the main stormwater system for the site, located along new road MC06, located on the eastern side of the site. All drain to the detention basin for the development. The design engineer for the precinct system allowed for the site to be 40% impervious. (Refer to design catchment plan in Appendix A) As the impervious area of the school will not exceed 40%, the precinct stormwater drainage system has capacity to carry the stormwater flow from the site.

Within the site a network of pits and pipes will be provided to capture stormwater and drain to the connection points provided by the developer. Pipe systems throughout the site will be designed for a 1 in 20 year ARI storm event. Overland flow paths will be provided to cater for the 1 in 100 year storm event. For details of the proposed drainage system for the site, refer to Drawings SW1 and SW2 in Appendix A.

A precinct wide detention and water treatment basin is located to the east of the site. The basin has been designed as a detention basin for storms up to a 1 in 100 year ARI storm event and as a water quality basin for a 1 in 3 month ARI storm. The design of the basin includes the catchment area of the school. Therefore, no additional treatment measures or detention are proposed for the school site, as the precinct wide basin meets Council's requirements for detention and treatment.

The site drainage system and the precinct wide basin also comply with the requirements of *Guidelines for developments adjoining land managed by the Office of Environment and Heritage* and Council's relevant policies.

Erosion and sediment control

During construction, erosion and sediment control measures will be provided in accordance with the "Blue Book" (*Managing Urban Stormwater – Soils and Construction*) and *Guidelines for developments adjoining land managed by the Office of Environment and Heritage*. Measures will include silt fences on the low side of the site, sediment basins, silt traps at existing and new pits and construction exits for vehicles and will comply with guidelines detailed above. Refer to Drawing SW3 in Appendix B for a plan detailing the measures proposed.

5. Flood risk

The site is located near the top of a hill, well above nearby drainage channels. Council's flood map for the area does not identify the site as flood affected. While the map does note that the site is in an area subject to development and flood conditions may change, the location of the site is such that even with changes in the precinct, it will not become flood affected.

6. Integrated water management

The following measures will be provided on the site, to minimise water usage and to reduce energy consumption:

- A rainwater tank will collect runoff from roofs. The collected water will be used to flush toilets and to provide irrigation water for nearby landscaped areas.
- All tapware will be AAA rated, to minimise flows. As per Schools Standards, taps on basin will be timed, to minimise water loss from taps
- Typically, all basins will have cold water only, unless hot or tempered water is required under the Educational Facilities Standards and Guidelines (EFSG)
- All toilets will be dual flush.
- Within landscaped areas, the selected plants will have low water requirements.

7. Conclusion

Stormwater drainage from the site will connect to the precinct wide drainage system, as allowed in the design of the stormwater system for the precinct. This drains to a major stormwater basin, which has been designed by the engineer for the precinct to provide stormwater detention for a 1 in 100 AEP storm event and water quality improvement for a 1 in 3 month AEP event. This is in compliance with Council's requirements for the precinct and the requirements of *Guidelines for developments adjoining land managed by the Office of Environment and Heritage*.

The site is located close to the top of a hill and is not flood affected.

























































Erosion and sediment control measures will be provided in accordance with the "Blue Book" (*Managing Urban Stormwater – Soils and Construction*) and *Guidelines for developments adjoining land managed by the Office of Environment and Heritage*

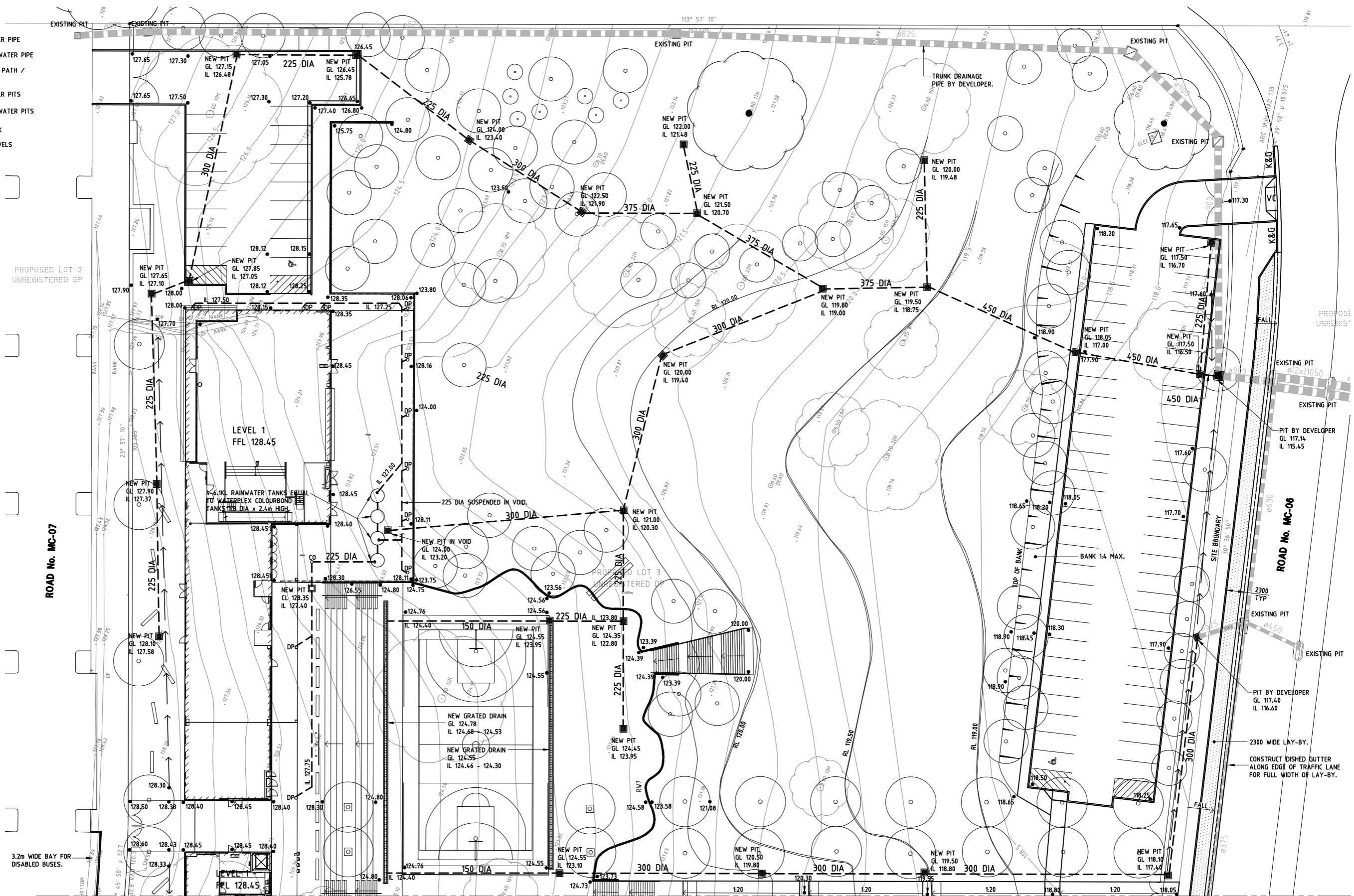
Within the development, water saving measures will be provided. Water collected by the rainwater tanks will be used for toilet flushing and irrigation, all toilets will be dual flush and taps will be timed operation.

Appendix A

Drawings

LEGEND

-  NEW STORMWATER PIPE
-  EXISTING STORMWATER PIPE
-  OVERLAND FLOW PATH / FORMED SWALE
-  NEW STORMWATER PITS
-  EXISTING STORMWATER PITS
-  RWT
-  127.25
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FOR CONTINUATION REFER TO DRAWING SW2

REFERENCE DRAWINGS:
FOR STANDARD NOTES REFER TO DRG. No. S1.

No.	Date	Description	Ver.	Appr.
A	17.08.17	UPDATED LAYOUT		
B	06.10.17	LAYBACK, BANK & KERB & GUTTERS ADDED		



Architect
PERUMAL PEDAVOLI
LVL 2, 458-468 WATTLE STREET
ULTIMO, NSW, 2007












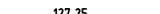
T +61 2 8241 9900 | www.woolacotts.com.au
Ground Floor, 12a Brown Street, Chatswood, NSW 2067

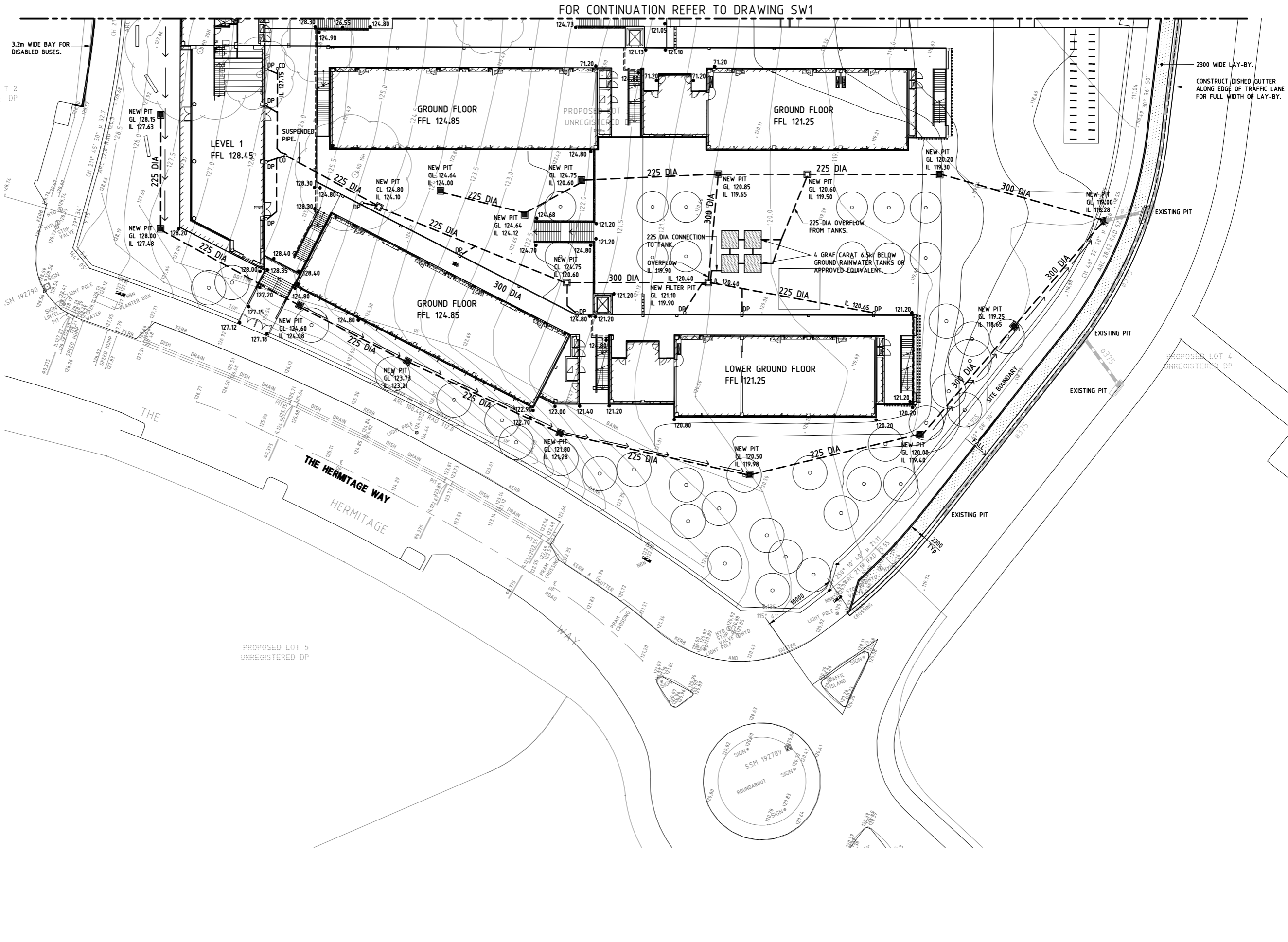
GLEDSDOOD HILLS
PUBLIC SCHOOL

STORMWATER MANAGEMENT
PLAN - SHEET 1

Date	Approved	Verified	Prepared
JUNE 2017	J.L.	J.L.	J.K.
Scale @ A1	1:250	09.08.17	09.08.17
Job number	Drawing number	Amendment	
16-238	SW1	C	

LEGEND

-  NEW STORMWATER PIPE
-  EXISTING STORMWATER PIPE
-  OVERLAND FLOW PATH / FORMED SWALE
-  NEW STORMWATER PITS
-  EXISTING STORMWATER PITS
-  RWT
-  127.25
-  CLEAR OUT
-  ODP
-  DOWNPIPE



No.	Date	Description	Ver.	Appr.
A	17.08.17	UPDATED LAYOUT		



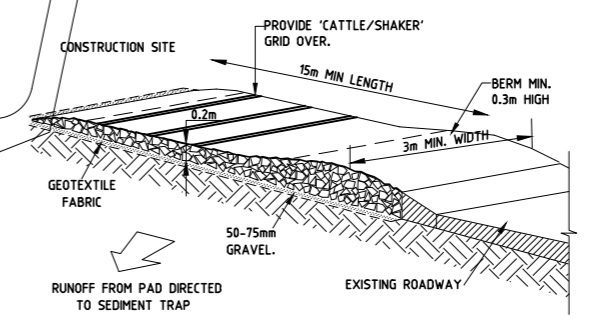
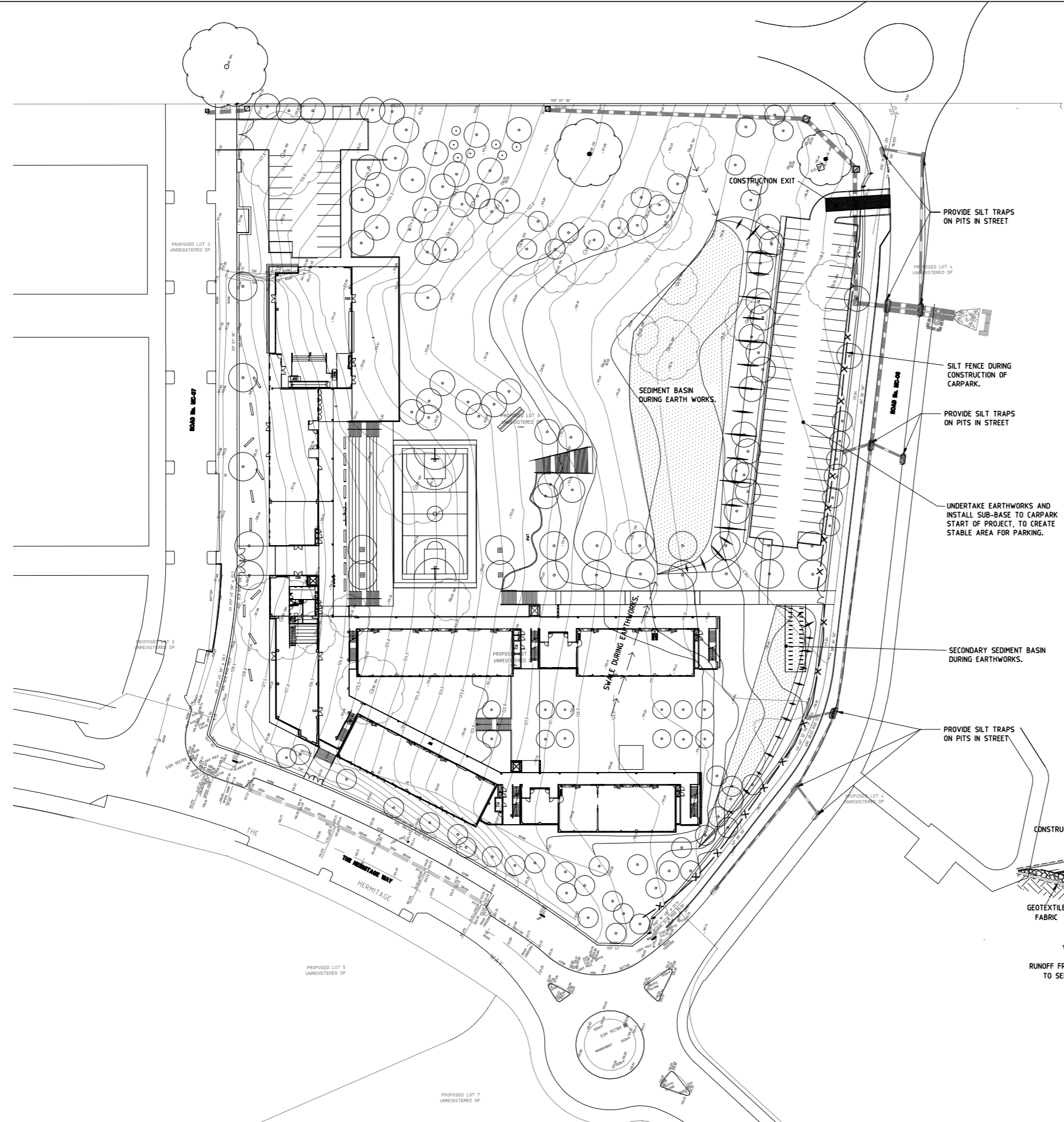
Architect
PERUMAL PEDAVOLI
 LVL 2, 458-468 WATTLE STREET
 ULTIMO, NSW, 2007



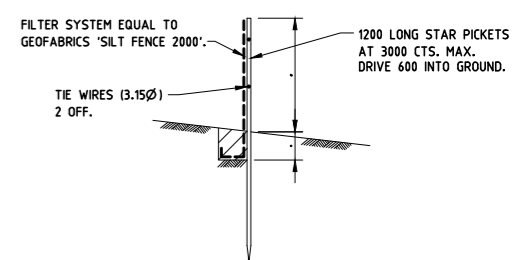
**GLEDSDOOD HILLS
 PUBLIC SCHOOL**
**STORMWATER MANAGEMENT
 PLAN - SHEET 2**

Date	JUNE 2017	Approved	Verified	Prepared
Scale @ A1	1:250		J.L. 09.08.17	J.K. 09.08.17
Job number	16-238	Drawing number	SW2	Amendment
				B

LEGEND	
	STORMWATER PIT
	STORMWATER PIPE
	SILT FENCE
	CONSTRUCTION EXIT
	HEADWALL



TEMPORARY CONSTRUCTION EXIT
TO BE PROVIDED WHERE CONSTRUCTION VEHICLES
LEAVE SITE.

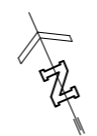


SILT FENCE DETAIL
TO BE PLACED AROUND LOW SIDE OF WORKS AND
AS REQUIRED TO PREVENT SOIL WASHING OFF SITE.

EROSION AND SEDIMENT CONTROL DETAILS

PROVIDE AS REQUIRED TO PREVENT SILT FROM LEAVING THE SITE.

No.	Date	Description	Ver.	Appr.
A	17.08.17	UPDATED LAYOUT		

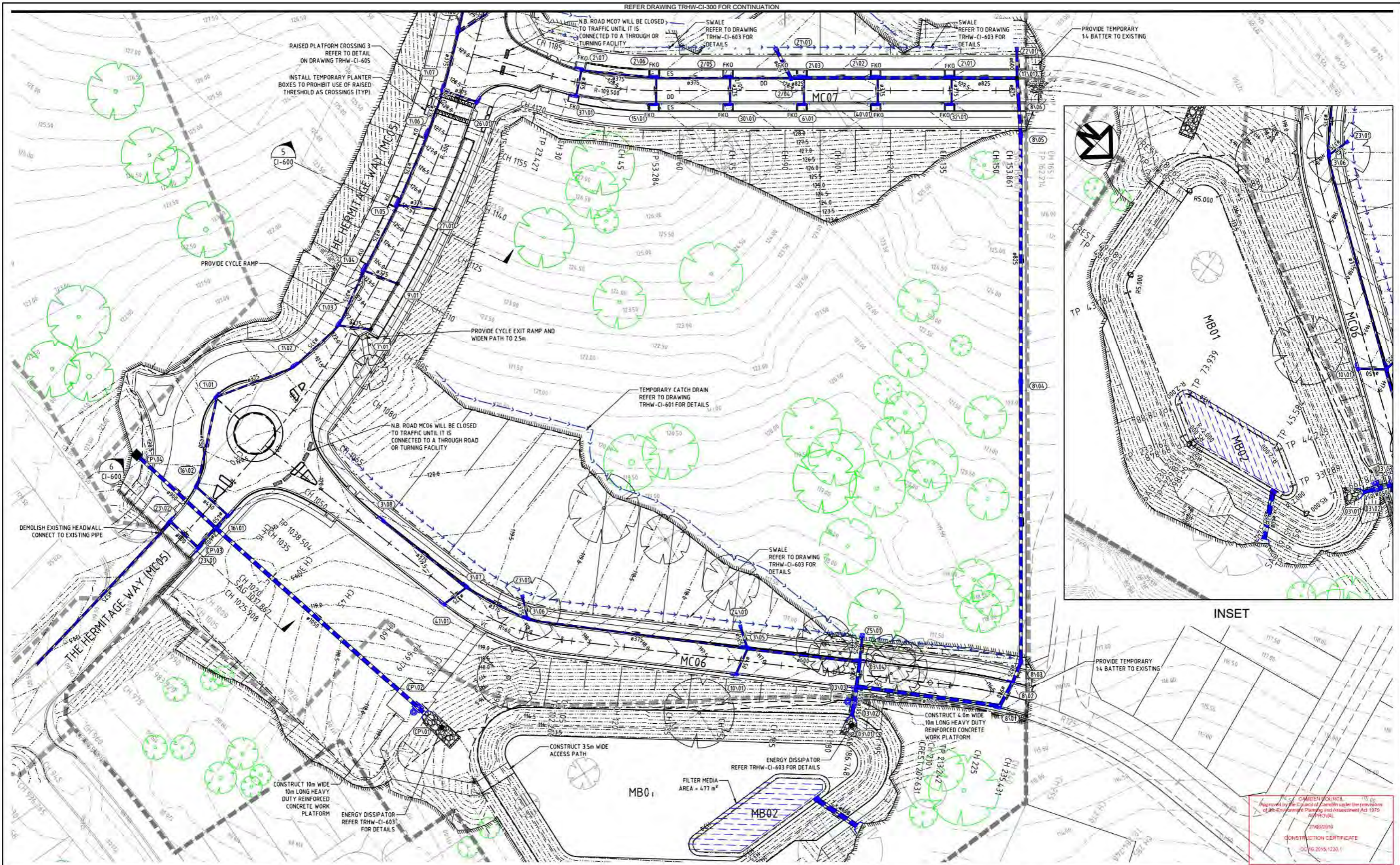


Architect
PERUMAL PEDAVOLI
LVL 2, 458-468 WATTLE STREET
ULTIMO, NSW, 2007

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**GLEDSDWOOD HILLS
PUBLIC SCHOOL**
EROSION AND SEDIMENT
CONTROL PLAN

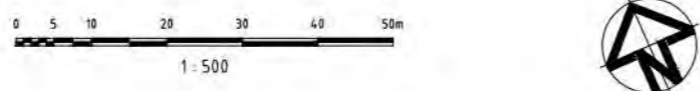
Date	JUNE 2017	Approved	Verified	Prepared
Scale @ A1	1:500		J.L. 09.08.07	J.K. 09.08.17
Job number	16-238	Drawing number	SW3	Amendment
				B



INSET

CAMDEN COUNCIL
 Approved by the Council of Camden under the provisions
 of the Environmental Planning and Assessment Act 1979
 APPROVAL
 27/05/2016
 CONSTRUCTION CERTIFICATE
 2016/2015/1230/1

Issue	Description	Date
07	ISSUE FOR CONSTRUCTION CERTIFICATE	13/06/16
06	ISSUE FOR CONSTRUCTION CERTIFICATE	09/06/16
05	ISSUE FOR CONSTRUCTION CERTIFICATE	02/06/16
04	ISSUE FOR CONSTRUCTION CERTIFICATE	23/05/16
03	ISSUE FOR CONSTRUCTION CERTIFICATE	11/04/16
02	ISSUE FOR CONSTRUCTION CERTIFICATE	07/04/16
01	ISSUE FOR CONSTRUCTION CERTIFICATE	26/02/16



Client

Status		CONSTRUCTION CERTIFICATE NOT TO BE USED FOR CONSTRUCTION	
Scales	1:500	Current Issue Signatures	
Original Size	A1	Drawn	J. VARGAS
Height	AHD	Designed	M. PEREZ
Datum	MGA	Checked	A. KALAJZICH
Grid		Approved	R. SMITH
Filename:			

Project

THE HERMITAGE HERMITAGE WAY

Title

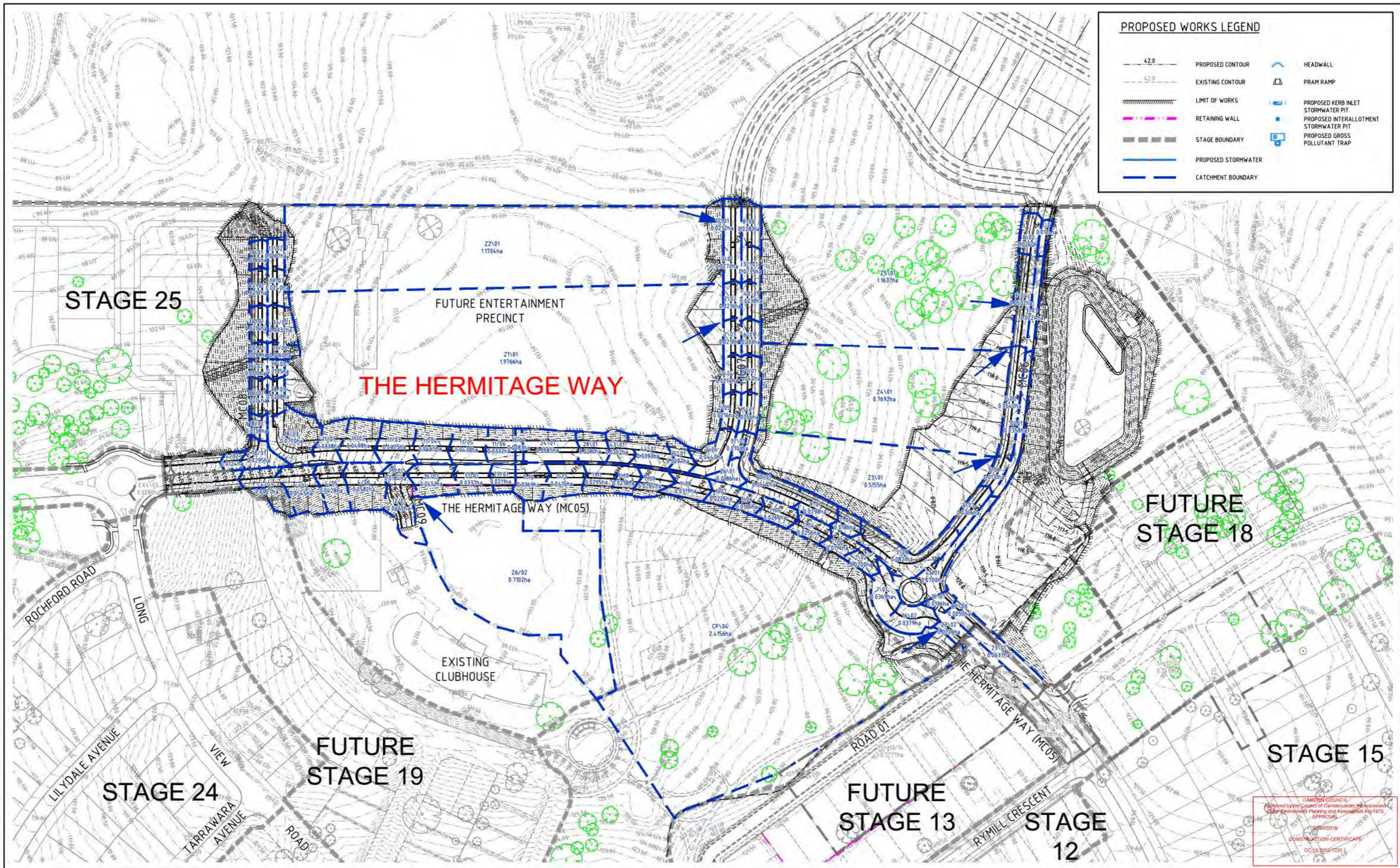
SITWORKS AND STORMWATER DRAINAGE PLAN SHEET 2

76 104 485 289
Level 5, 141 Walker St
North Sydney NSW 2060
Australia

Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001

Drawing No. Project No. Issue

TRHW-CI-301-AA007442CC-06



PROPOSED WORKS LEGEND

- 4.2.0 PROPOSED CONTOUR
- 4.2.0 EXISTING CONTOUR
- LIMIT OF WORKS
- RETAINING WALL
- STAGE BOUNDARY
- PROPOSED STORMWATER
- CATCHMENT BOUNDARY
- HEADWALL
- PRAM RAMP
- PROPOSED KERB INLET
- STORMWATER PIT
- PROPOSED INTERALLOTMENT STORMWATER PIT
- PROPOSED GROSS POLLUTANT TRAP

Issue	Description	Date
06	ISSUE FOR CONSTRUCTION CERTIFICATE	13/06/16
05	ISSUE FOR CONSTRUCTION CERTIFICATE	02/06/16
04	ISSUE FOR CONSTRUCTION CERTIFICATE	23/05/16
03	ISSUE FOR CONSTRUCTION CERTIFICATE	11/04/16
02	ISSUE FOR CONSTRUCTION CERTIFICATE	07/04/16
01	ISSUE FOR CONSTRUCTION CERTIFICATE	26/02/16

0 10 20 40 60 80 100m

1 : 1000

Client

Status
CONSTRUCTION CERTIFICATE
NOT TO BE USED FOR CONSTRUCTION

Scales
1:1000

Original Size
A1

Height Datum
AHD

Grid
MGA

Current Issue Signatures
 Drawn
J. VARGAS
 Designed
A. MALABUYOC
 Checked
A. KALAJZICH
 Approved
R. SMITH

Filename:

Project
THE HERMITAGE HERMITAGE WAY

Title
STORMWATER CATCHMENT PLAN

76 104 485 289
Level 5, 141 Walker St
North Sydney NSW 2060
Australia

Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001

Drawing No. TRHW-CI-305-AA007442CC-06
Project No.
Issue

CAMDENSHIRE COUNCIL
Approved by the Council of Camden Shire, the provisions of the Environmental Planning and Assessment Act 1979 APPROVAL
23/05/2016
CONSTRUCTION CERTIFICATE
CC 18 2015 1230 1

HYDROLOGY - MINOR 10 YEAR STORM EVENT

Pit Name	Pit Type	Catch ID	Time Tc	Intensity I	Runoff C	Area A	Full CA	Full Sum CA	Full Qc=CA	Partial CA	Partial Sum CA	Partial Qc=CA	Catchment Flow Qc	Approach Flow Qa	Flooded Depth	Flooded Width	Flooded Vel.Dep	Max Pond Depth	Inlet Flow Qg	Bypass Flow Qb	Bypass Pit
(-)	(-)	(-)	(min)	(mm/hr)	(-)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(L/s)	(m)	(m)	(sq.m/s)	(m)	(L/s)	(L/s)	(-)
1/13	1.8 m intel	IP	6.00	136.04	0.85	0.0037	0.0031	0.0330	12.5	0.0010	0.0309	11.7	12.5	12.5	0.035	0.35	0.01		12.5		1/12
1/12	1.8 m intel	IP	6.00	136.04	0.85	0.0041	0.0035	0.0371	14.0	0.0012	0.0347	13.1	14.0	14.0	0.028	1.34	0.02		14.0		1/11
1/11	1.8 m intel	IP	6.00	136.04	0.85	0.0030	0.0025	0.0264	10.0	0.0008	0.0248	9.4	10.0	10.0	0.025	0.60	0.01		10.0		1/10
1/10	Dish Drain Inlet	IP	6.00	136.04	0.85	0.0022	0.0018	0.0195	7.4	0.0006	0.0183	6.9	7.4	7.4	0.035	0.53	0.03		4.4	2.9	1/09
1/09	Dish Drain Inlet	IP	6.00	136.04	0.85	0.0028	0.0024	0.0254	9.6	0.0008	0.0238	9.0	9.6	12.6	0.047	1.27	0.03		7.0	5.5	1/08
1/08	1.8 m intel	IP	6.00	136.04	0.85	0.0032	0.0027	0.0285	10.8	0.0009	0.0267	10.1	10.8	16.3	0.058	1.06	0.05		16.3		1/07
1/07	1.8 m intel	IP	6.00	136.04	0.85	0.0022	0.0019	0.0201	7.6	0.0006	0.0188	7.1	7.6	7.6	0.042	0.34	0.05		7.6		1/06
1/06	1.8 m intel	IP	6.00	136.04	0.85	0.0017	0.0014	0.0148	5.6	0.0005	0.0139	5.3	5.6	5.6	0.025	0.45	0.02		5.6		1/05
1/05	1.8 m intel	IP	6.00	136.04	0.85	0.0027	0.0022	0.0238	9.0	0.0007	0.0223	8.4	9.0	9.0	0.018	1.12	0.02		9.0		1/04
1/04	1.8 m intel	IP	6.00	136.04	0.85	0.0026	0.0022	0.0229	8.7	0.0007	0.0215	8.1	8.7	8.7	0.018	1.15	0.02		8.7		1/03
1/03	1.8 m intel	IP	6.00	136.04	0.85	0.0020	0.0017	0.0175	6.6	0.0006	0.0164	6.2	6.6	6.6	0.033	0.35	0.04		6.6		1/02
1/02	1.8 m intel	IP	6.00	136.04	0.85	0.0020	0.0017	0.0179	6.8	0.0006	0.0167	6.3	6.8	6.8	0.006	0.38	0.00		6.8		1/01
1/01	1.8 m intel	IP	6.00	136.04	0.85	0.0037	0.0031	0.0330	12.5	0.0010	0.0310	11.7	12.5	12.5	0.063	1.89	0.02		12.5		16/02
2/07	1.8 m intel	IP	6.00	136.04	0.85	0.0044	0.0037	0.0394	14.9	0.0012	0.0369	13.9	14.9	21.8	0.055	0.46	0.03		21.4	0.4	2/06
2/06	1.8 m intel	IP	6.00	136.04	0.85	0.0022	0.0018	0.0193	7.3	0.0006	0.0181	6.8	7.3	7.6	0.040	1.15	0.02		7.6		2/05
2/05	1.8 m intel	IP	6.00	136.04	0.85	0.0021	0.0018	0.0191	7.2	0.0006	0.0179	6.8	7.2	7.2	0.040	1.11	0.02		7.2		2/03
2/04	Junction Pit 600x600	IP	6.00	136.04	0.85	0.0022	0.0018	0.0195	7.4	0.0006	0.0183	6.9	7.4	7.4	0.040	1.14	0.02		7.4		-
2/03	1.8 m intel	IP	6.00	136.04	0.85	0.0022	0.0018	0.0195	7.4	0.0006	0.0183	6.9	7.4	7.4	0.040	1.14	0.02		7.4		2/02
2/02	1.8 m intel	IP	6.00	136.04	0.85	0.0022	0.0018	0.0193	7.3	0.0006	0.0181	6.8	7.3	7.3	0.040	1.11	0.02		7.3		2/01
2/01	1.8 m intel	IP	6.00	136.04	0.85	0.0022	0.0018	0.0193	7.3	0.0006	0.0181	6.8	7.3	7.3	0.040	1.12	0.02		7.3		17/01
3/08	1.8 m intel	IP	6.00	136.04	0.85	0.0082	0.0069	0.0734	27.7	0.0023	0.0688	26.0	27.7	35.2	0.081	0.96	0.05		30.6	4.6	3/07
3/07	1.8 m intel	IP	6.00	136.04	0.85	0.0026	0.0022	0.0229	8.7	0.0007	0.0215	8.1	8.7	13.3	0.060	1.10	0.03		13.3		3/06
3/06	1.8 m intel	IP	6.00	136.04	0.85	0.0017	0.0014	0.0153	5.8	0.0005	0.0143	5.4	5.8	5.8	0.037	0.43	0.03		5.8		3/05
3/05	1.8 m intel	IP	6.00	136.04	0.85	0.0054	0.0046	0.0483	18.3	0.0015	0.0453	17.1	18.3	18.3	0.057	1.00	0.05		18.3		3/04
3/04	2.4 m intel sag	IP	6.00	136.04	0.85	0.0050	0.0042	0.0449	17.0	0.0014	0.0421	15.9	17.0	17.0	0.029			0.088	17.0		3/03
3/03	2.4 m intel sag	IP	6.00	136.04	0.85	0.0022	0.0019	0.0201	7.6	0.0006	0.0188	7.1	7.6	7.6	0.017			0.088	7.6		3/02
3/02	GPT													0.0					0.0		-
3/01	HW 1050																				-
4/06	1.8 m intel	IP	6.00	136.04	0.85	0.0058	0.0049	0.0520	19.7	0.0016	0.0488	18.4	19.7	19.7	0.027	1.59	0.02		19.7		4/05
4/05	1.8 m intel	IP	6.00	136.04	0.85	0.0043	0.0036	0.0383	14.5	0.0012	0.0359	13.6	14.5	14.5	0.028	1.02	0.03		14.5		4/04
4/04	1.8 m intel	IP	6.00	136.04	0.85	0.0054	0.0046	0.0487	18.4	0.0015	0.0457	17.3	18.4	18.4	0.020	1.56	0.02		18.4		4/03
4/03	1.8 m intel	IP	6.00	136.04	0.85	0.0043	0.0036	0.0382	14.4	0.0012	0.0358	13.5	14.4	14.4	0.042	0.48	0.06		14.4		EX4/02
4/02	1.8 m intel	IP	6.00	136.04	0.85	0.0012	0.0010	0.0111	4.2	0.0003	0.0104	3.9	4.2	4.2	0.027	0.27	0.03		4.2		EX4/01
4/01	HW 600																				-
5/01	Sfab Connection														0.0				0.0		-
6/01	1.8 m intel	IP	6.00	136.04	0.85	0.0023	0.0020	0.0208	7.9	0.0007	0.0195	7.4	7.9	7.9	0.041	1.17	0.02		7.9		4/0/01
7/01	Dish Drain Inlet	IP	6.00	136.04	0.85	0.0019	0.0016	0.0166	6.3	0.0005	0.0156	5.9	6.3	15.7	0.039	0.59	0.05		8.3	7.4	3/08
8/06	Dish Drain Inlet Sag	IP	6.00	136.04	0.85	0.0028	0.0024	0.0251	9.5	0.0008	0.0235	8.9	9.5	16.8	0.040			0.150	16.8		8/02
8/05	Junction Pit 900x900	IP	6.00	136.04	0.85	0.0026	0.0022	0.0233	8.8	0.0007	0.0218	8.2	8.8	8.8					8.8		-
8/04	Junction Pit 900x900	IP	6.00	136.04	0.85	0.0026	0.0022	0.0233	8.8	0.0007	0.0218	8.2	8.8	8.8					8.8		-
8/03	Junction Pit 900x900	IP	6.00	136.04	0.85	0.0026	0.0022	0.0233	8.8	0.0007	0.0218	8.2	8.8	8.8					8.8		-
8/02	1.8 m intel	IP	6.00	136.04	0.85	0.0026	0.0022	0.0233	8.8	0.0007	0.0218	8.2	8.8	8.8					8.8		-

GARDEN COUNCIL
Approved by the Council of Garden under the provisions
of the Environmental Planning and Assessment Act 1979
APPROVAL
27/06/2016
CONSTRUCTION CERTIFICATE
QC 16.2015.1230.1

Issue	Description	Date
06	ISSUE FOR CONSTRUCTION CERTIFICATE	13/06/16
05	ISSUE FOR CONSTRUCTION CERTIFICATE	02/06/16
04	ISSUE FOR CONSTRUCTION CERTIFICATE	23/05/16
03	ISSUE FOR CONSTRUCTION CERTIFICATE	11/04/16
02	ISSUE FOR CONSTRUCTION CERTIFICATE	07/04/16
01	ISSUE FOR CONSTRUCTION CERTIFICATE	26/02/16

Client	
Status	CONSTRUCTION CERTIFICATE NOT TO BE USED FOR CONSTRUCTION
Scales	N.T.S.
Original Size	A1
Height Datum	AHD
Grid	MGA
Filename	
Project	THE HERMITAGE HERMITAGE WAY
Title	STORMWATER DRAINAGE CALCULATION SHEET 1
Drawing No.	FRHW-CI-320-AA007442CC-06
Project No.	
Issue	

Current Issue Signatures

Drawn	J. VARGAS
Designed	A. MALABUYOC
Checked	A. KALAJZICH
Approved	R. SMITH

ARCADIS

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SEKISUI HOUSE

Date Plotted: 10 Jun 2016 - 04:26PM File Name: K:\MP\00909-The_Hermitage_BBSE-OurDrawings\Civil\0-Final\B-CC\TURNER ROAD\Hermitage Way\TRHW-CI-320-StormwaterDrainageCalculationSheet1.dwg

Edt By: JWH089

HYDROLOGY - MINOR 10 YEAR STORM EVENT

Pit Name	Pit Type	Catch ID	Time Tc (min)	Intensity I (mm/hr)	Runoff C (-)	Area A (ha)	Full CA (ha)	Full Sum CA (ha)	Full Qc=CA (L/s)	Partial CA (ha)	Partial Sum CA (ha)	Partial Qc=CA (L/s)	Catchment Flow Qc (L/s)	Approach Flow Qa (L/s)	Flooded Depth (m)	Flooded Width (m)	Flooded Vel.Dep (sq.m/s)	Max Pond Depth (m)	Inlet Flow Qg (L/s)	Bypass Flow Qb (L/s)	Bypass Pit (-)
8/01	1.8 m intel	IP	6.00	136.04	0.85	0.0234	0.0211	0.0098	3.7	0.0003	0.0092	3.5	3.7	3.7					3.7		-
9/01	Dish Drain Inlet	IP	6.00	136.04	0.85	0.0030	0.0025	0.0267	10.1	0.0008	0.0250	9.5	10.1	19.1	0.045	1.15	0.05		9.6	9.5	7/01
10/01	1.8 m intel	IP	6.00	136.04	0.85	0.0036	0.0030	0.0320	12.1	0.0010	0.0300	11.3	12.1	12.8	0.049	0.89	0.04		12.8		3/03
11/07	1.8 m intel	IP	6.00	136.04	0.85	0.0008	0.0007	0.0074	2.8	0.0002	0.0069	2.6	2.8	2.8	0.050	0.52	0.01		2.8		11/06
11/06	1.8 m intel	IP	6.00	136.04	0.85	0.0033	0.0028	0.0297	11.2	0.0009	0.0279	10.5	11.2	11.2	0.035	1.46	0.01		11.2		11/05
11/05	1.8 m intel	IP	6.00	136.04	0.85	0.0044	0.0037	0.0391	14.8	0.0012	0.0367	13.9	14.8	14.8	0.029	1.29	0.03		14.8		11/04
11/04	1.8 m intel	IP	6.00	136.04	0.85	0.0047	0.0039	0.0416	15.7	0.0013	0.0390	14.7	15.7	15.7	0.028	1.31	0.03		15.7		11/03
11/03	1.8 m intel	IP	6.00	136.04	0.85	0.0048	0.0040	0.0425	16.1	0.0013	0.0398	15.1	16.1	16.1	0.027	1.29	0.03		16.1		11/02
11/02	1.8 m intel	IP	6.00	136.04	0.85	0.0050	0.0042	0.0445	16.8	0.0014	0.0417	15.8	16.8	16.8	0.028	1.15	0.03		16.8		11/01
11/01	1.8 m intel	IP	6.00	136.04	0.85	0.0034	0.0029	0.0303	11.4	0.0010	0.0284	10.7	11.4	11.4	0.049	0.55	0.06		11.4		18/03
12/01	Grated Drain	IP	6.00	136.04	0.85	0.0046	0.0039	0.0411	15.5	0.0013	0.0385	14.6	15.5	15.5	0.030	0.95	0.13		15.5		25/01
13/06	1.8 m intel	IP	6.00	136.04	0.85	0.0016	0.0014	0.0144	5.4	0.0005	0.0135	5.1	5.4	5.4	0.039	0.59	0.02		5.4		13/04
13/05	Junction Pit 600x600	IP	6.00	136.04	0.85	0.0033	0.0028	0.0297	11.2	0.0009	0.0278	10.5	11.2	11.2	0.052	1.29	0.02				-
13/04	1.8 m intel	IP	6.00	136.04	0.85	0.0033	0.0028	0.0297	11.2	0.0009	0.0278	10.5	11.2	11.2	0.052	1.29	0.02		11.2		13/03
13/03	1.8 m intel	IP	6.00	136.04	0.85	0.0024	0.0020	0.0214	8.1	0.0007	0.0201	7.6	8.1	8.1	0.047	0.99	0.02		8.1		13/02
13/02	Dish Drain Inlet	IP	6.00	136.04	0.85	0.0017	0.0014	0.0149	5.6	0.0005	0.0140	5.3	5.6	7.0	0.016	0.74	0.02		4.8	2.2	-
13/01	HW 525	IP	6.00	136.04	0.85	0.0017	0.0014	0.0148	5.6	0.0005	0.0138	5.2	5.6	5.6	0.039	0.59	0.02		4.2	1.4	13/02
14/01	Interallotment Pit 600x600	IP	6.00	136.04	0.85	0.0354	0.0299	0.3167	119.7	0.0150	0.3017	114.0	119.7	119.7	0.114	2.37	0.07		119.7		22/01
15/01	1.8 m intel	IP	6.00	136.04	0.85	0.0026	0.0022	0.0229	8.7	0.0007	0.0215	8.1	8.7	8.7	0.029	1.55	0.01		8.7		30/01
16/02	1.8 m intel	IP	6.00	136.04	0.85	0.0038	0.0032	0.0339	12.8	0.0011	0.0318	12.0	12.8	12.8	0.029	0.89	0.01		12.8		23/02
16/01	1.8 m intel	IP	6.00	136.04	0.85	0.0014	0.0011	0.0121	4.6	0.0004	0.0114	4.3	4.6	4.6	0.043	0.59	0.02		4.6		CP/03
17/01	Dish Drain Inlet Sag	IP	6.00	136.04	0.85	0.0027	0.0023	0.0243	9.2	0.0008	0.0228	8.6	9.2	18.1	0.042			0.150	18.1		8/06
18/03	2.4 m intel sag	IP	6.00	136.04	0.85	0.0077	0.0065	0.0688	26.0	0.0022	0.0645	24.4	26.0	26.0	0.039			0.150	26.0		18/02
18/02	2.4 m intel	IP	6.00	136.04	0.85	0.0014	0.0012	0.0124	4.7	0.0004	0.0116	4.4	4.7	4.7	0.023	0.58	0.02		4.7		18/01
18/01	1.8 m intel	IP	6.00	136.04	0.85	0.0029	0.0025	0.0264	10.0	0.0008	0.0247	9.3	10.0	10.0	0.037	0.38	0.05		10.0		4/02
19/01	Dish Drain Inlet	IP	6.00	136.04	0.85	0.0017	0.0014	0.0148	5.6	0.0005	0.0138	5.2	5.6	5.6	0.039	0.59	0.02		4.2	1.4	13/02
20/01	1.8 m intel	IP	6.00	136.04	0.85	0.0010	0.0008	0.0089	3.4	0.0003	0.0083	3.1	3.4	3.4	0.033	0.50	0.01		3.4		34/01
22/01	Interallotment Pit 600x600	IP	6.00	136.04	0.85	0.0201	0.0170	0.1801	68.1	0.0085	0.1716	64.9	68.1	68.1	0.085	2.02	0.05		68.1		13/02
23/02	2.4 m intel sag	IP	6.00	136.04	0.85	0.0021	0.0017	0.0184	7.0	0.0006	0.0172	6.5	7.0	23.2	0.036			0.150	23.2		23/01
23/01	2.4 m intel sag	IP	6.00	136.04	0.85	0.0064	0.0054	0.0570	21.5	0.0018	0.0534	20.2	21.5	37.7	0.050			0.150	37.7		-
24/01	1.8 m intel	IP	6.00	136.04	0.85	0.0058	0.0049	0.0523	19.8	0.0016	0.0490	18.5	19.8	19.8	0.032	0.30	0.03		19.8		28/01
25/02	1.8 m intel	IP	6.00	136.04	0.85	0.0045	0.0038	0.0404	15.3	0.0013	0.0378	14.3	15.3	15.3	0.047	1.02	0.04		15.3		25/01
25/01	1.8 m intel	IP	6.00	136.04	0.85	0.0018	0.0016	0.0164	6.2	0.0005	0.0154	5.8	6.2	6.2	0.021	0.62	0.02		6.2		4/06
26/01	1.8 m intel	IP	6.00	136.04	0.85	0.0019	0.0016	0.0166	6.3	0.0005	0.0156	5.9	6.3	6.3					6.3		1/07
27/01	Dish Drain Inlet	IP	6.00	136.04	0.85	0.0054	0.0046	0.0486	18.4	0.0023	0.0463	17.5	18.4	18.4	0.045	1.08	0.05		9.4	9.0	9/01
28/01	1.8 m intel	IP	6.00	136.04	0.85	0.0029	0.0025	0.0261	9.9	0.0008	0.0244	9.2	9.9	9.9	0.025	1.44	0.01		9.9		43/01
29/01	1.8 m intel	IP	6.00	136.04	0.85	0.0021	0.0018	0.0189	7.1	0.0006	0.0177	6.7	7.1	7.1	0.029	0.95	0.02		7.1		31/01
30/01	1.8 m intel	IP	6.00	136.04	0.85	0.0024	0.0020	0.0215	8.1	0.0007	0.0201	7.6	8.1	8.1	0.041	1.19	0.02		8.1		6/01

GAMBIER COUNCIL
 Approving Body/ Council all Consents under the provisions
 of the Environment Planning and Assessment Act 1979
 APPROVAL
 27/06/2016
 CONSTRUCTION CERTIFICATE
 CC 16 2016 F2201


Issue	Description	Date
07	ISSUE FOR CONSTRUCTION CERTIFICATE	15/06/16
06	ISSUE FOR CONSTRUCTION CERTIFICATE	13/06/16
05	ISSUE FOR CONSTRUCTION CERTIFICATE	02/06/16
04	ISSUE FOR CONSTRUCTION CERTIFICATE	23/05/16
03	ISSUE FOR CONSTRUCTION CERTIFICATE	11/04/16
02	ISSUE FOR CONSTRUCTION CERTIFICATE	07/04/16
01	ISSUE FOR CONSTRUCTION CERTIFICATE	26/02/16

Client	Project
 SEKISUI HOUSE	THE HERMITAGE HERMITAGE WAY STORMWATER DRAINAGE CALCULATION SHEET 2

Status	Original Size	Height Datum	Grid	Filename
CONSTRUCTION CERTIFICATE NOT TO BE USED FOR CONSTRUCTION	A1	AHD	MGA	

Current Issue Signatures	Drawn	Designed	Checked	Approved
	J. VARGAS	A. MALABUYOC	A. KALAJZICH	R. SMITH

Project	Title
THE HERMITAGE HERMITAGE WAY	STORMWATER DRAINAGE CALCULATION SHEET 2



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Drawing No. Project No. Issue
TRHW-CI-321-AA007442CC-07

HYDROLOGY - MINOR 10 YEAR STORM EVENT

Pit Name	Pit Type	Catch ID	Time Tc (min)	Intensity I (mm/hr)	Runoff C (-)	Area A (ha)	Full CA (ha)	Full Sum CA (ha)	Full Qc=CA (L/s)	Partial CA (ha)	Partial Sum CA (ha)	Partial Qc=CA (L/s)	Catchment Flow Qc (L/s)	Approach Flow Qa (L/s)	Flooded Depth (m)	Flooded Width (m)	Flooded Vel.Dep (sq.m/s)	Max Pond Depth (m)	Inlet Flow Qg (L/s)	Bypass Flow Qb (L/s)	Bypass Pit (-)
31/01	1.8 m intel	IP	6.00	136.04	0.85	0.0034	0.0029	0.0302	11.4	0.0010	0.0283	10.7	11.4	11.4	0.026	1.20	0.02		11.4		25/02
32/01	1.8 m intel	IP	6.00	136.04	0.85	0.0024	0.0020	0.0210	7.9	0.0007	0.0197	7.4	7.9	7.9	0.041	1.17	0.02		7.9		8/06
34/01	1.8 m intel	IP	6.00	136.04	0.85	0.0022	0.0018	0.0194	7.3	0.0006	0.0181	6.9	7.3	7.3	0.046	0.90	0.02		7.3		42/01
35/01	Dish Drain Inlet	IP	6.00	136.04	0.85	0.0021	0.0017	0.0185	7.0	0.0006	0.0173	6.5	7.0	14.8	0.048	1.13	0.04		7.9	6.9	2/07
36/02	1.8 m intel	IP	6.00	136.04	0.85	0.0011	0.0009	0.0099	3.7	0.0003	0.0092	3.5	3.7	3.7	0.016	1.09	0.01		3.7		36/01
36/01	1.8 m intel	IP	6.00	136.04	0.85	0.0021	0.0018	0.0192	7.2	0.0006	0.0180	6.8	7.2	7.2	0.034	0.53	0.03		7.2		16/02
37/01	1.8 m intel	IP	6.00	136.04	0.85	0.0010	0.0009	0.0092	3.5	0.0003	0.0087	3.3	3.5	3.5	0.030	0.61	0.01		3.5		15/01
38/01	1.8 m intel	IP	6.00	136.04	0.85	0.0021	0.0018	0.0186	7.0	0.0006	0.0174	6.6	7.0	7.0	0.034	0.52	0.03		7.0		18/03
39/01	1.8 m intel	IP	6.00	136.04	0.85	0.0010	0.0009	0.0094	3.5	0.0003	0.0088	3.3	3.5	3.5	0.016	0.93	0.01		3.5		38/01
40/01	1.8 m intel	IP	6.00	136.04	0.85	0.0024	0.0020	0.0213	8.1	0.0007	0.0200	7.6	8.1	8.1	0.041	1.19	0.02		8.1		32/01
41/01	1.8 m intel	IP	6.00	136.04	0.85	0.0070	0.0059	0.0627	23.7	0.0020	0.0587	22.2	23.7	23.7	0.071	1.56	0.04		22.9	0.7	10/01
42/01	1.8 m intel	IP	6.00	136.04	0.85	0.0022	0.0018	0.0194	7.3	0.0006	0.0182	6.9	7.3	7.3	0.046	0.90	0.02		7.3		19/01
43/01	Dish Drain Inlet	IP	6.00	136.04	0.85	0.0025	0.0021	0.0225	8.5	0.0007	0.0211	8.0	8.5	8.5	0.038	0.56	0.03		5.4	3.1	44/01
44/01	Dish Drain Inlet	IP	6.00	136.04	0.85	0.0039	0.0033	0.0352	13.3	0.0011	0.0330	12.5	13.3	16.4	0.051	1.67	0.03		8.6	7.8	35/01
CP/04	Raised Grate Inlet 2400x2100	IP	10.00	111.11	0.57	144.94	0.8331	1.7027	525.5	0.5832	1.4528	518.0	525.5	525.5	0.150			0.150	525.5		23/02
CP/03	1.8 m intel	IP	6.00	136.04	0.85	0.0005	0.0004	0.0045	1.7	0.0001	0.0042	1.6	1.7	1.7	0.032	0.37	0.01		1.7		23/01
CP/02	GPT		2.00	136.04	0.90	0.0045	0.0041			0.0041									0.0		-
CP/01	HW 1050																				-
Z1/01	Interallotment Pit 900x900	IP	6.00	136.04	0.85	0.1977	0.1672	1.7682	668.2	0.1393	1.7404	657.7	668.2	668.2	0.263	4.16	0.26		668.2		22/01
Z2/01	Interallotment Pit 900x900	IP	6.00	136.04	0.85	0.1170	0.0990	1.0470	395.7	0.0825	1.0306	389.4	395.7	395.7	0.206	3.47	0.18		395.7		17/01
Z3/01	Interallotment Pit 900x900	IP	7.00	128.36	0.57	0.3093	0.1778	0.3633	129.6	0.1524	0.3379	127.7	129.6	129.6	0.119	2.43	0.08		129.6		24/01
Z4/01	Interallotment Pit 900x900	IP	7.00	128.36	0.57	0.4415	0.2653	0.5422	193.3	0.2274	0.5043	190.6	193.3	193.3	0.145	2.74	0.10		193.3		25/01
Z5/01	Interallotment Pit 600x600	IP	7.00	128.36	0.57	0.6982	0.4013	0.8202	292.5	0.3440	0.7629	288.3	292.5	292.5	0.178	3.14	0.14		292.5		3/04
Z6/02	Interallotment Pit 900x900	IP	6.00	136.04	0.85	0.0710	0.0601	0.6353	240.1	0.0501	0.6253	236.3	240.1	240.1	0.162	2.94	0.12		240.1		12/01
Z6/01	Junction Pit 600x600																				-

CAMDEN COUNCIL
Approved by the Council of Camden under the provisions
of the Environment Planning and Assessment Act 1978.
APPROVAL
CONSTRUCTION CERTIFICATE
CC-10-2015 (2301)

Issue	Description	Date
07	ISSUE FOR CONSTRUCTION CERTIFICATE	15/06/16
06	ISSUE FOR CONSTRUCTION CERTIFICATE	13/06/16
05	ISSUE FOR CONSTRUCTION CERTIFICATE	02/06/16
04	ISSUE FOR CONSTRUCTION CERTIFICATE	23/05/16
03	ISSUE FOR CONSTRUCTION CERTIFICATE	11/04/16
02	ISSUE FOR CONSTRUCTION CERTIFICATE	07/04/16
01	ISSUE FOR CONSTRUCTION CERTIFICATE	26/02/16

Client	
Status	CONSTRUCTION CERTIFICATE NOT TO BE USED FOR CONSTRUCTION
Scales	N.T.S.
Original Size	A1
Height/Datum	AHD
Grid	MGA
Filename	

Project	THE HERMITAGE HERMITAGE WAY
Title	STORMWATER DRAINAGE CALCULATION SHEET 3

Current Issue Signatures	Drawn J. VARGAS
Designed	A. MALABUYOC
Checked	A. KALAJZICH
Approved	R. SMITH

Drawing No.	Project No.	Issue
TRHW-CI-322-AA007442CC-07		

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HYDROLOGY - MAJOR 100 YEAR STORM EVENT

Pit Name	Pit Type	Catch ID	Time Tc	Intensity I	Runoff C	Area A	Full CA	Full Sum CA	Full Qc=CA	Partial CA	Partial Sum CA	Partial Qc=CA	Catchment Flow Qc	Approach Flow Qa	Flooded Depth	Flooded Width	Flooded Vel.Dep	Max Pond Depth	Inlet Flow Qg	Bypass Flow Qb	Bypass Pit
(-)	(-)	(-)	(min)	(mm/hr)	(-)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(L/s)	(m)	(m)	(sq.m/s)	(m)	(L/s)	(L/s)	(-)
1/13	1.8 m lintel	1P	6.00	204.98	1.00	0.0037	0.0037	0.0336	19.1	0.0012	0.0311	17.7	19.1	19.1	0.042	2.07	0.02		15.3	3.8	1/12
		1I	2.00	204.98	0.90	0.0332	0.0299			0.0299											
1/12	1.8 m lintel	1P	6.00	204.98	1.00	0.0041	0.0041	0.0377	21.5	0.0014	0.0350	19.9	21.5	25.3	0.034	1.74	0.03		19.4	5.9	1/11
		1I	2.00	204.98	0.90	0.0373	0.0336			0.0336											
1/11	1.8 m lintel	1P	6.00	204.98	1.00	0.0030	0.0030	0.0269	15.3	0.0010	0.0249	14.2	15.3	21.2	0.033	1.99	0.02		16.8	4.4	1/10
		1I	2.00	204.98	0.90	0.0266	0.0239			0.0239											
1/10	Dish Drain Inlet	1P	6.00	204.98	1.00	0.0022	0.0022	0.0198	11.3	0.0007	0.0184	10.5	11.3	15.7	0.050	1.59	0.03		6.6	9.1	1/09
		1I	2.00	204.98	0.90	0.0196	0.0177			0.0177											
1/09	Dish Drain Inlet	1P	6.00	204.98	1.00	0.0028	0.0028	0.0259	14.7	0.0009	0.0240	13.7	14.7	23.8	0.055	2.14	0.04		9.2	14.6	1/08
		1I	2.00	204.98	0.90	0.0256	0.0230			0.0230											
1/08	1.8 m lintel	1P	6.00	204.98	1.00	0.0032	0.0032	0.0290	16.5	0.0011	0.0269	15.3	16.5	31.1	0.067	1.49	0.07		22.9	8.3	1/07
		1I	2.00	204.98	0.90	0.0287	0.0258			0.0258											
1/07	1.8 m lintel	1P	6.00	204.98	1.00	0.0022	0.0022	0.0204	11.6	0.0007	0.0189	10.8	11.6	21.9	0.060	1.09	0.07		17.2	4.7	1/06
		1I	2.00	204.98	0.90	0.0202	0.0182			0.0182											
1/06	1.8 m lintel	1P	6.00	204.98	1.00	0.0017	0.0017	0.0151	8.6	0.0006	0.0140	8.0	8.6	13.3	0.033	0.55	0.04		10.6	2.7	1/05
		1I	2.00	204.98	0.90	0.0149	0.0134			0.0134											
1/05	1.8 m lintel	1P	6.00	204.98	1.00	0.0027	0.0027	0.0242	13.8	0.0009	0.0224	12.8	13.8	16.4	0.023	1.41	0.02		13.1	3.3	1/04
		1I	2.00	204.98	0.90	0.0239	0.0215			0.0215											
1/04	1.8 m lintel	1P	6.00	204.98	1.00	0.0026	0.0026	0.0233	13.3	0.0009	0.0216	12.3	13.3	16.6	0.023	1.46	0.02		13.3	3.3	1/03
		1I	2.00	204.98	0.90	0.0231	0.0208			0.0208											
1/03	1.8 m lintel	1P	6.00	204.98	1.00	0.0020	0.0020	0.0178	10.1	0.0007	0.0165	9.4	10.1	13.5	0.043	0.48	0.06		10.8	2.7	1/02
		1I	2.00	204.98	0.90	0.0176	0.0159			0.0159											
1/02	1.8 m lintel	1P	6.00	204.98	1.00	0.0020	0.0020	0.0182	10.4	0.0007	0.0169	9.6	10.4	13.0	0.009	3.70	0.00		10.4	2.6	1/01
		1I	2.00	204.98	0.90	0.0180	0.0162			0.0162											
1/01	1.8 m lintel	1P	6.00	204.98	1.00	0.0037	0.0037	0.0336	19.1	0.0012	0.0312	17.7	19.1	21.7	0.073	2.45	0.03		17.1	4.6	16/02
		1I	2.00	204.98	0.90	0.0332	0.0299			0.0299											
2/07	1.8 m lintel	1P	6.00	204.98	1.00	0.0044	0.0044	0.0400	22.8	0.0015	0.0371	21.1	22.8	41.8	0.068	2.56	0.04		26.8	15.0	2/06
		1I	2.00	204.98	0.90	0.0396	0.0356			0.0356											
2/06	1.8 m lintel	1P	6.00	204.98	1.00	0.0022	0.0022	0.0196	11.2	0.0007	0.0182	10.4	11.2	26.2	0.059	2.10	0.03		20.0	6.2	2/05
		1I	2.00	204.98	0.90	0.0194	0.0175			0.0175											
2/05	1.8 m lintel	1P	6.00	204.98	1.00	0.0021	0.0021	0.0195	11.1	0.0007	0.0181	10.3	11.1	17.3	0.052	1.74	0.03		13.9	3.5	2/03
		1I	2.00	204.98	0.90	0.0193	0.0173			0.0173											
2/04	Junction Pit 600x600																				
2/03	1.8 m lintel	1P	6.00	204.98	1.00	0.0022	0.0022	0.0199	11.3	0.0007	0.0184	10.5	11.3	14.8	0.050	1.63	0.02		11.8	3.0	2/02
		1I	2.00	204.98	0.90	0.0197	0.0177			0.0177											
2/02	1.8 m lintel	1P	6.00	204.98	1.00	0.0022	0.0022	0.0196	11.2	0.0007	0.0182	10.4	11.2	14.1	0.049	1.58	0.02		11.3	2.8	2/01
		1I	2.00	204.98	0.90	0.0194	0.0175			0.0175											
2/01	1.8 m lintel	1P	6.00	204.98	1.00	0.0022	0.0022	0.0196	11.2	0.0007	0.0182	10.4	11.2	14.0	0.049	1.58	0.02		11.2	2.8	17/01
		1I	2.00	204.98	0.90	0.0194	0.0175			0.0175											
3/08	1.8 m lintel	1P	6.00	204.98	1.00	0.0082	0.0082	0.0747	42.5	0.0027	0.0692	39.4	42.5	61.9	0.095	2.31	0.07		31.6	30.2	3/07
		1I	2.00	204.98	0.90	0.0739	0.0665			0.0665											
3/07	1.8 m lintel	1P	6.00	204.98	1.00	0.0026	0.0026	0.0233	13.3	0.0009	0.0216	12.3	13.3	4.35	0.085	1.92	0.06		27.2	16.3	3/06
		1I	2.00	204.98	0.90	0.0231	0.0207			0.0207											
3/06	1.8 m lintel	1P	6.00	204.98	1.00	0.0017	0.0017	0.0155	8.9	0.0006	0.0144	8.2	8.9	25.1	0.063	1.28	0.05		19.3	5.8	3/05
		1I	2.00	204.98	0.90	0.0154	0.0138			0.0138											
3/05	1.8 m lintel	1P	6.00	204.98	1.00	0.0054	0.0054	0.0491	28.0	0.0018	0.0455	25.9	28.0	33.8	0.068	1.38	0.07		23.9	9.9	3/04
		1I	2.00	204.98	0.90	0.0486	0.0437			0.0437											
3/04	2.4 m lintel sag	1P	6.00	204.98	1.00	0.0050	0.0050	0.0457	26.0	0.0017	0.0424	24.1	26.0	60.0	0.088			0.088	45.1	14.9	3/03
		1I	2.00	204.98	0.90	0.0452	0.0407			0.0407											
3/03	2.4 m lintel sag	1P	6.00	204.98	1.00	0.0022	0.0022	0.0204	11.6	0.0007	0.0189	10.8	11.6	34.0	0.074			0.088	34.0		3/02
		1I	2.00	204.98	0.90	0.0202	0.0182			0.0182											
3/02	GPT																		0.0		-
3/01	HW 1050																				-
4/06	1.8 m lintel	1P	6.00	204.98	1.00	0.0058	0.0058	0.0529	30.1	0.0019	0.0491	27.9	30.1	33.4	0.033	1.94	0.03		23.8	9.6	4/05
		1I	2.00	204.98	0.90	0.0524	0.0471			0.0471											
4/05	1.8 m lintel	1P	6.00	204.98	1.00	0.0043	0.0043	0.0389	22.2	0.0014	0.0361	20.5	22.2	31.8	0.037	1.37	0.05		23.1	8.7	4/04
		1I	2.00	204.98	0.90	0.0385	0.0347			0.0347											
4/04	1.8 m lintel	1P	6.00	204.98	1.00	0.0054	0.0054	0.0496	28.2	0.0018	0.0459	26.2	28.2	36.9	0.027	1.71	0.03		-178.9	215.8	4/03
		1I	2.00	204.98	0.90	0.0490	0.0441			0.0441											
4/03	1.8 m lintel	1P	6.00	204.98	1.00	0.0043	0.0043	0.0389	22.1	0.0014	0.0360	20.5	22.1	237.9	0.103	2.41	0.25		49.6	188.3	EX4/02
		1I	2.00	204.98	0.90	0.0384	0.0346			0.0346											
4/02	1.8 m lintel	1P	6.00	204.98	1.00	0.0012	0.0012	0.0113	6.4	0.0004	0.0104	5.9	6.4	9.8</							

HYDROLOGY - MAJOR 100 YEAR STORM EVENT

Pit Name	Pit Type	Catch ID	Time Tc	Intensity I	Runoff C	Area A	Full CA	Full Sum CA	Full Qc=CA	Partial CA	Partial Sum CA	Partial Qc=CA	Catchment Flow Qc	Approach Flow Qa	Flooded Depth	Flooded Width	Flooded Vel.Dep	Max Pond Depth	Inlet Flow Qg	Bypass Flow Qb	Bypass Pit
(-)	(-)	(-)	(min)	(mm/hr)	(-)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(L/s)	(m)	(m)	(sq.m/s)	(m)	(L/s)	(L/s)	(-)
8/01	1.8 m lintel	II	2.00	204.98	0.90	0.0234	0.0211														
		IP	6.00	204.98	1.00	0.0011	0.0011	0.0100	5.7		0.0093	5.3	5.7	5.7					5.7		-
		II	2.00	204.98	0.90	0.0099	0.0089														
9/01	Dish Drain Inlet	IP	6.00	204.98	1.00	0.0030	0.0030	0.0272	15.5		0.0252	14.3	15.5	33.0	0.053	1.92	0.06		11.9	21.1	7/01
		II	2.00	204.98	0.90	0.0269	0.0242														
10/01	1.8 m lintel	IP	6.00	204.98	1.00	0.0036	0.0036	0.0326	18.5		0.0302	17.2	18.5	29.9	0.064	1.44	0.06		22.3	7.6	3/03
		II	2.00	204.98	0.90	0.0322	0.0290														
11/07	1.8 m lintel	IP	6.00	204.98	1.00	0.0008	0.0008	0.0075	4.3		0.0070	4.0	4.3	4.3	0.061	0.70	0.01		3.4	0.9	11/06
		II	2.00	204.98	0.90	0.0074	0.0067														
11/06	1.8 m lintel	IP	6.00	204.98	1.00	0.0033	0.0033	0.0303	17.2		0.0280	16.0	17.2	18.1	0.042	2.50	0.02		14.5	3.6	11/05
		II	2.00	204.98	0.90	0.0299	0.0269														
11/05	1.8 m lintel	IP	6.00	204.98	1.00	0.0044	0.0044	0.0398	22.7		0.0369	21.0	22.7	26.3	0.034	1.72	0.04		20.0	6.3	11/04
		II	2.00	204.98	0.90	0.0394	0.0354														
11/04	1.8 m lintel	IP	6.00	204.98	1.00	0.0047	0.0047	0.0424	24.1		0.0393	22.3	24.1	30.4	0.035	1.79	0.04		22.6	7.8	11/03
		II	2.00	204.98	0.90	0.0419	0.0377														
11/03	1.8 m lintel	IP	6.00	204.98	1.00	0.0048	0.0048	0.0432	24.6		0.0401	22.8	24.6	32.5	0.034	1.68	0.04		23.4	9.1	11/02
		II	2.00	204.98	0.90	0.0428	0.0385														
11/02	1.8 m lintel	IP	6.00	204.98	1.00	0.0050	0.0050	0.0453	25.8		0.0420	23.9	25.8	34.9	0.036	1.53	0.05		24.3	10.5	11/01
		II	2.00	204.98	0.90	0.0448	0.0403														
11/01	1.8 m lintel	IP	6.00	204.98	1.00	0.0034	0.0034	0.0308	17.5		0.0285	16.3	17.5	28.0	0.064	1.04	0.08		21.1	6.9	18/03
		II	2.00	204.98	0.90	0.0305	0.0274														
12/01	Gated Drain	IP	6.00	204.98	1.00	0.0046	0.0046	0.0418	23.8		0.0388	22.1	23.8	98.6	0.063	0.60	0.38		98.6		25/01
		II	2.00	204.98	0.90	0.0414	0.0372														
13/06	1.8 m lintel	IP	6.00	204.98	1.00	0.0016	0.0016	0.0146	8.3		0.0135	7.7	8.3	8.3	0.048	1.01	0.02		6.7	1.7	13/04
		II	2.00	204.98	0.90	0.0144	0.0130														
13/05	Junction Pit 600x600																				
13/04	1.8 m lintel	IP	6.00	204.98	1.00	0.0033	0.0033	0.0302	17.2		0.0280	15.9	17.2	18.9	0.061	1.73	0.03		15.1	3.8	13/03
		II	2.00	204.98	0.90	0.0299	0.0269														
13/03	1.8 m lintel	IP	6.00	204.98	1.00	0.0024	0.0024	0.0218	12.4		0.0202	11.5	12.4	16.2	0.059	1.57	0.03		13.0	3.2	13/02
		II	2.00	204.98	0.90	0.0216	0.0194														
13/02	Dish Drain Inlet	IP	6.00	204.98	1.00	0.0017	0.0017	0.0152	8.6		0.0141	8.0	8.6	17.8	0.024	0.92	0.03		8.1	9.7	-
		II	2.00	204.98	0.90	0.0150	0.0135														
13/01	Hw 525																				
14/01	Interlotment Pit 600x600	IP	6.00	204.98	1.00	0.0354	0.0354	0.3222	183.4		0.3045	173.4	183.4	183.4	0.142	2.70	0.10		183.4		22/01
		II	3.00	204.98	0.90	0.3186	0.2868														
15/01	1.8 m lintel	IP	6.00	204.98	1.00	0.0026	0.0026	0.0233	13.3		0.0216	12.3	13.3	14.4	0.035	1.87	0.02		11.5	2.9	30/01
		II	2.00	204.98	0.90	0.0231	0.0208														
16/02	1.8 m lintel	IP	6.00	204.98	1.00	0.0038	0.0038	0.0345	19.6		0.0320	18.2	19.6	24.3	0.034	5.59	0.02		18.7	5.5	23/02
		II	2.00	204.98	0.90	0.0341	0.0307														
16/01	1.8 m lintel	IP	6.00	204.98	1.00	0.0014	0.0014	0.0123	7.0		0.0114	6.5	7.0	7.0	0.050	0.86	0.02		5.6	1.4	CP/03
		II	2.00	204.98	0.90	0.0122	0.0110														
17/01	Dish Drain Inlet Sag	IP	6.00	204.98	1.00	0.0027	0.0027	0.0247	14.1		0.0229	13.0	14.1	523.6	0.150			0.150	109.2	414.3	8/06
		II	2.00	204.98	0.90	0.0245	0.0220														
18/03	2.4 m lintel sag	IP	6.00	204.98	1.00	0.0077	0.0077	0.0700	39.9		0.0649	37.0	39.9	49.1	0.093			0.150	49.1		18/02
		II	2.00	204.98	0.90	0.0693	0.0623														
18/02	2.4 m lintel	IP	6.00	204.98	1.00	0.0014	0.0014	0.0126	7.2		0.0117	6.6	7.2	9.6	0.031	0.79	0.02		7.7	1.9	18/01
		II	2.00	204.98	0.90	0.0124	0.0112														
18/01	1.8 m lintel	IP	6.00	204.98	1.00	0.0029	0.0029	0.0268	15.3		0.0249	14.2	15.3	17.2	0.046	0.49	0.07		13.8	3.4	4/02
		II	2.00	204.98	0.90	0.0265	0.0239														
19/01	Dish Drain Inlet	IP	6.00	204.98	1.00	0.0017	0.0017	0.0150	8.6		0.0139	7.9	8.6	11.3	0.053	1.89	0.02		5.4	5.9	13/02
		II	2.00	204.98	0.90	0.0149	0.0134														
20/01	1.8 m lintel	IP	6.00	204.98	1.00	0.0010	0.0010	0.0090	5.1		0.0084	4.8	5.1	5.1	0.038	0.58	0.02		4.1	1.0	34/01
		II	2.00	204.98	0.90	0.0089	0.0080														
22/01	Interlotment Pit 600x600	IP	6.00	204.98	1.00	0.0201	0.0201	0.1833	104.3		0.1732	98.6	104.3	104.3	0.106	2.27	0.06		104.3		13/02
		II	3.00	204.98	0.90	0.1812	0.1631														
23/02	2.4 m lintel sag	IP	6.00	204.98	1.00	0.0021	0.0021	0.0187	10.7		0.0173	9.9	10.7	4.11	0.083			0.150	4.11		23/01
		II	2.00	204.98	0.90	0.0185	0.0167														
23/01	2.4 m lintel sag	IP	6.00	204.98	1.00	0.0064	0.0064	0.0580	33.0		0.0537	30.6	33.0	58.6	0.101			0.150	58.6		-
		II	2.00	204.98	0.90	0.0573	0.0516														
24/01	1.8 m lintel	IP	6.00	204.98	1.00	0.0058	0.0058	0.0532	30.3		0.0493	28.1	30.3	30.3	0.037	1.77	0.04		22.5	7.8	28/01
		II	2.00	204.98	0.90	0.0526	0.0474														
25/02	1.8 m lintel	IP	6.00	204.98	1.00	0.0045	0.0045	0.0411	23.4		0.0381	21.7	23.4	27.3	0.057	1.53	0.05		20.7	6.6	25/01
		II	2.00	204.98	0.90	0.0406	0.0366														
25/01	1.8 m lintel	IP	6.00	204.98	1.00	0.0018	0.0018	0.0167	9.5		0.0155	8.8	9.5	16.2	0.030	0.73	0.04		12.9	3.2	4/06
		II	2.00	2																	

HYDRAULICS - MINOR 10 YEAR STORM EVENT

Pipe ID	Pipe Length (m)	Pipe Size (mm)	Full Pipe Area Af (sq.m)	Pipe Grade (%)	Full-area Tct (min)	Full-area I (mm/hr)	Full-area Sum CA (ha)	Full-area Qc=CA (L/s)	Part-area Tct (min)	Part-area I (mm/hr)	Part-area Sum CA (ha)	Part-area Qc=CA (L/s)	Peak Flow Qrat (L/s)	Nef Bypass Flow Qb (L/s)	Pipe Flow Q (L/s)	Capacity Flow Qcap (L/s)	Full Pipe Vel Vf=Q/Af (m/s)	Norm Depth Vel Vn=Q/An (m/s)	Crit Depth Vel Vc=Q/Ac (m/s)	Capacity Vel Vcap=Qcap/Af (m/s)	US Pit Ku (-)	Colebrook k Roughness (mm)	F'board US (m)
1/13 to 1/12	20.89	375	0.110	1.00	6.00	136.04	0.0330	12.5	6.00	136.04	0.0330	12.5	12.5		12.5	216.4	0.11	1.09	0.74	1.96	4.50	0.6	0.71
1/12 to 1/11	17.64	375	0.110	1.62	6.32	133.43	0.1224	45.4	6.00	136.04	0.1221	46.1	46.1		46.1	275.9	0.42	1.88	1.07	2.50	2.00	0.6	0.74
1/11 to 1/10	16.11	375	0.110	3.43	6.48	132.21	0.1749	64.2	6.00	136.04	0.1742	65.8	65.8		65.8	403.3	0.60	2.73	1.20	3.65	1.25	0.6	0.66
1/10 to 1/09	19.92	375	0.110	2.56	6.56	131.55	0.2170	79.3	6.00	136.04	0.2159	81.6	81.6	-6.1	75.5	347.7	0.68	2.54	1.26	3.15	0.80	0.6	0.76
1/09 to 1/08	20.80	375	0.110	3.28	6.69	130.57	0.2776	100.7	6.00	136.04	0.2760	104.3	104.3	-13.4	90.9	394.4	0.82	2.93	1.34	3.57	0.90	0.6	0.67
1/08 to 1/07	16.99	375	0.110	5.29	6.81	129.70	0.3244	116.9	6.00	136.04	0.3224	121.8	121.8	-6.9	114.9	501.8	1.04	3.72	1.47	4.54	1.00	0.6	0.62
1/07 to 1/06	13.78	375	0.110	6.44	6.89	129.15	0.3613	129.6	6.00	136.04	0.3587	135.6	135.6	-6.9	128.7	554.0	1.16	4.12	1.55	5.02	0.70	0.6	0.73
1/06 to 1/05	21.38	375	0.110	8.06	6.94	128.75	0.3762	134.5	6.00	136.04	0.3732	141.0	141.0	-6.9	134.2	620.1	1.21	4.53	1.57	5.61	0.50	0.6	0.70
1/05 to 1/04	20.92	375	0.110	8.12	7.02	128.20	0.4486	159.7	6.00	136.04	0.4451	168.2	168.2	-15.9	152.3	622.4	1.38	4.70	1.68	5.64	0.70	0.6	0.66
1/04 to 1/03	17.19	375	0.110	7.89	7.10	127.68	0.4982	176.7	6.00	136.04	0.4941	186.7	186.7	-16.4	170.4	613.4	1.54	4.79	1.78	5.55	0.70	0.6	0.65
1/03 to 1/02	17.64	375	0.110	5.83	7.16	127.26	0.5323	188.2	6.00	136.04	0.5277	199.4	199.4	-14.3	185.1	527.1	1.68	4.37	1.87	4.77	1.70	0.6	0.52
1/02 to 1/01	23.57	375	0.110	1.83	7.22	126.80	0.5502	193.8	6.00	136.04	0.5451	206.0	206.0	-14.3	191.6	294.1	1.74	2.83	1.91	2.66	0.50	0.6	0.66
1/01 to 16/02	25.89	375	0.110	1.03	7.36	125.86	0.5832	203.9	6.00	136.04	0.5769	218.0	218.0	-14.3	203.7	219.5	1.84	2.24	1.99	1.99	0.80	0.6	0.46
2/07 to 2/06	21.40	375	0.110	1.00	6.16	134.71	0.0486	18.2	6.00	136.04	0.0486	18.4	18.4		24.9	216.4	0.23	1.32	0.89	1.96	2.50	0.6	0.74
2/06 to 2/05	21.00	375	0.110	1.00	6.43	132.57	0.0908	33.4	6.00	136.04	0.0906	34.2	34.2		4.11	216.4	0.37	1.52	1.03	1.96	1.45	0.6	0.62
2/05 to 2/04	17.33	375	0.110	1.00	6.66	130.82	0.1315	47.8	6.00	136.04	0.1308	49.4	49.4		6.9	56.3	0.51	1.66	1.14	1.96	1.30	0.6	0.43
2/04 to 2/03	3.67	825	0.535	1.00	6.83	129.54	1.8997	683.6	6.00	136.04	1.8978	717.1	717.1		6.9	724.0	1.35	3.07	2.07	3.19	1.17	0.6	0.28
2/03 to 2/02	21.00	825	0.535	1.00	6.85	129.40	1.9400	697.3	6.00	136.04	1.9375	732.2	732.2		6.9	739.1	1.38	3.09	2.09	3.19	2.00	0.6	0.36
2/02 to 2/01	21.00	825	0.535	1.00	6.97	128.59	1.9807	707.5	6.00	136.04	1.9746	746.2	746.2		6.9	753.1	1.41	3.10	2.10	3.19	0.50	0.6	0.39
2/01 to 17/01	18.62	825	0.535	1.00	7.08	127.79	2.0210	717.4	6.00	136.04	2.0113	760.1	760.1		6.9	767.0	1.43	3.11	2.12	3.19	0.50	0.6	0.27
3/08 to 3/07	30.25	375	0.110	1.22	6.00	136.04	0.0734	27.7	6.00	136.04	0.0734	27.7	27.7		2.9	30.6	0.28	1.51	0.95	2.17	4.50	0.6	0.67
3/07 to 3/06	19.79	375	0.110	1.14	6.33	133.33	0.1590	58.9	6.00	136.04	0.1585	59.9	59.9		6.7	66.6	0.20	1.82	1.20	2.09	1.70	0.6	0.72
3/06 to 3/05	63.04	375	0.110	2.93	7.03	128.16	0.5376	191.4	6.03	135.80	0.5114	192.9	192.9		6.7	199.6	0.37	3.43	1.97	3.37	1.70	0.6	0.43
3/05 to 3/04	32.12	600	0.283	1.24	7.33	126.06	1.1602	406.2	6.82	129.64	1.1394	410.3	410.3		7.4	417.7	0.51	2.94	1.96	2.93	2.00	0.6	0.54
3/04 to 3/03	7.16	900	0.636	1.00	7.52	124.85	2.0253	702.4	7.02	128.19	2.0059	714.2	714.2		7.4	721.7	1.13	3.06	1.99	3.37	1.25	0.6	0.56
3/03 to 3/02	4.65	1050	0.866	1.00	7.87	122.62	5.1947	1769.3	6.07	135.49	4.9851	1876.2	1876.2		30.6	1906.8	2.20	3.85	2.74	3.70	1.00	0.6	1.24
3/02 to 3/01	3.83	1050	0.866	1.66	7.89	122.49	5.1947	1767.5	6.09	135.32	4.9851	1873.9	1873.9		30.6	1904.5	2.20	4.68	2.74	4.79	0.20	0.6	1.07
4/06 to 4/05	17.02	375	0.110	5.43	6.00	136.04	0.0520	19.7	6.00	136.04	0.0520	19.7	19.7		19.7	508.6	0.18	2.28	0.83	4.60	4.50	0.6	0.79
4/05 to 4/04	21.39	375	0.110	7.90	6.12	135.01	0.0903	33.9	6.00	136.04	0.0902	34.1	34.1		34.1	613.7	0.31	3.06	0.98	5.56	1.60	0.6	0.71
4/04 to 4/03	21.02	375	0.110	7.39	6.24	134.07	0.1390	51.8	6.00	136.04	0.1388	52.4	52.4		52.4	619.4	0.39	3.06	0.98	5.56	1.60	0.6	0.86
4/03 to 4/02	16.18	375	0.110	6.44	6.32	133.47	0.1773	65.7	6.00	136.04	0.1768	66.8	66.8		66.8	553.8	0.49	3.06	0.98	5.56	1.60	0.6	0.55
4/02 to 4/01	13.43	600	0.283	1.00	7.40	125.65	1.3705	478.4	6.00	136.04	1.3613	514.4	514.4		631.4	745.0	2.23	2.93	2.45	2.63	1.85	0.6	0.40
5/01 to 4/04	14.22	450	0.159	1.00									117.0		117.0	349.2	0.74	1.99	1.37	2.20	0.50	0.6	2.76
6/01 to 2/03	7.20	375	0.110	1.00	6.00	136.04	0.0208	7.9	6.00	136.04	0.0208	7.9	7.9		7.9	216.4	0.07	0.95	0.65	1.96	4.50	0.6	0.36
7/01 to 1/03	9.11	375	0.110	2.85	6.00	136.04	0.0166	6.3	6.00	136.04	0.0166	6.3	6.3	2.0	8.3	367.6	0.08	1.40	0.66	3.33	4.50	0.6	0.67
8/06 to 8/05	9.35	825	0.535	1.00	7.21	126.87	3.1174	1098.6	6.00	136.04	3.1025	1172.4	1172.4		23.1	1195.6	2.24	3.44	2.61	3.19	0.50	0.6	0.68
8/05 to 8/04	70.09	825	0.535	6.48	7.26	126.56	3.1174	1095.9	6.00	136.04	3.1003	1171.6	1171.6		23.1	1194.7	2.23	3.44	2.61	3.19	0.50	0.6	1.14
8/04 to 8/03	79.61	825	0.535	6.85	7.43	125.45	3.1174	1086.3	6.00	136.04	3.0921	1168.5	1168.5		23.1	1191.6	2.23	3.44	2.60	3.19	0.50	0.6	0.54
8/03 to 8/02	6.71	825	0.535	6.98	7.61	124.24	3.1174	1075.9	6.00	136.04	3.0831	1165.1	1165.1		23.1	1188.2	2.22	3.44	2.60	3.19	0.50	0.6	0.72
8/02 to 8/01	7.10	900	0.636	1.00	7.63	124.14	3.1407	1083.0	6.00	136.04	3.1056	1173.6	1173.6		23.1	1196.7	2.23	3.44	2.44	3.37	0.50	0.6	0.28
8/01 to 3/03	42.93	1050	0.866	1.00	7.66	123.92	3.1493	1084.1	6.00	136.04	3.1124	1176.1	1176.1		23.1	1199.3	2.23	3.44	2.25	3.70	2.50	0.6	0.39
9/01 to 1/04	10.19	375	0.110	1.02	6.00	136.04	0.0267	10.1	6.00	136.04	0.0267	10.1	10.1	-0.4	9.6	219.1	0.09	1.02	0.69	1.98	4.50	0.6	0.65
10/01 to 3/05	7.47	450	0.159	1.00	6.00	136.04	0.0320	12.1	6.00	136.04	0.0320	12.1	12.1	0.7	12.8	349.2	0.08	1.07	0.72	2.20	4.50	0.6	0.60
11/07 to 11/06	22.20	375	0.110	1.00	6.00	136.04	0.0074	2.8	6.00	136.04	0.0074	2.8	2.8		2.8	216.4	0.03	0.70	0.50	1.96	4.50	0.6	0.71
11/06 to 11/05	20.98	375	0.110	1.00	6.53	131.80	0.0560	20.5	6.00	136.04	0.0559	21.1	21.1		21.1	216.4	0.19	1.26	0.85	1.96	2.00	0.6	0.84
11/05 to 11/04	20.98	375	0.110	1.88	6.81	129.73	0.1253	45.2	6.00	136.04	0.1249	47.2	47.2		47.2	298.2	0.43	2.00	1.08	2.70	1.80	0.6	0.80
11/04 to 11/03	21.00	375	0.110	3.60	6.98	128.48	0.1670	59.6	6.00	136.04	0.1662	62.8	62.8		62.8	413.3	0.57	2.74	1.18	3.74	1.10	0.6	0.72
11/03 to 11/02	21.23	450	0.159	2.63	7.11	127.58	0.9428	334.1	6.00	136.04	0.9393	354.9	354.9		354.9	568.7	2.23	3.76	2.35	3.58	2.00	0.6	0.73
11/02 to 11/01	14.75	450	0.159	6.22	7.21	126.93	0.9873	348.1	6.00	136.04	0.9824	371.2	371.2		371.2	878.1	2.33	5.30	2.44	5.52	0.50	0.6	0.57
11/01 to 18/01	40.51	450	0.159	8.40	7.25	126.61	1.0176	357.9	6.00	136.04	1.0119	382.4	382.4		382.4	1020.6	2.40	5.98	2.49	6.42	0.50	0.6	0.55
12/01 to 25/01	13.42	450	0.159	8.54	6.08	135.41	0.6765	254.4	6.00	136.04	0.6757	255.3	255.3		255.3	1029.5	1.61	5.42	1.90	6.47	0.50	0.6	0.74

ARCADIS
 Approved by the Council of the City of Sydney

HYDRAULICS - MINOR 10 YEAR STORM EVENT

Pipe ID	Pipe Length (m)	Pipe Size (mm)	Full Pipe Area Af (sq.m)	Pipe Grade (%)	Full-area Tct (min)	Full-area I (mm/hr)	Full-area Sum CA (ha)	Full-area Qc=CA (L/s)	Part-area Tct (min)	Part-area I (mm/hr)	Part-area Sum CA (ha)	Part-area Qc=CA (L/s)	Peak Flow Qrat (L/s)	Net Bypass Flow Qb (L/s)	Pipe Flow Q (L/s)	Capacity Flow Qcap (L/s)	Full Pipe Vel Vf=Q/Af (m/s)	Norm Depth Vel Vn=Q/An (m/s)	Crit Depth Vel Vc=Q/Ac (m/s)	Capacity Vel Vcap=Qcap/Af (m/s)	US Pit Ku (-)	Colebrook k Roughness (mm)	F'board US (m)
13/06 to 13/05	16.50	375	0.110	1.00	6.14	134.88	0.0232	8.7	6.00	136.04	0.0232	8.8	8.8		8.8	216.4	0.08	0.98	0.67	1.96	2.50	0.6	0.74
13/05 to 13/04	4.50	375	0.110	1.00	6.42	132.65	0.3399	125.3	6.00	136.04	0.3396	128.3	128.3		128.3	216.4	1.16	2.04	1.54	1.96	1.46	0.6	0.68
13/04 to 13/03	21.00	375	0.110	1.00	6.46	132.36	0.3890	143.0	6.00	136.04	0.3884	146.8	146.8		146.8	216.4	1.33	2.10	1.64	1.96	2.00	0.6	0.76
13/03 to 13/02	16.93	375	0.110	6.40	6.63	131.09	0.4298	156.5	6.00	136.04	0.4282	161.8	161.8		161.8	552.2	1.47	4.37	1.73	5.00	0.70	0.6	0.88
13/02 to 13/01	6.60	450	0.159	1.00	6.69	130.61	0.6397	232.1	6.00	136.04	0.6375	240.9	240.9	-2.2	238.7	350.5	1.50	2.35	1.83	2.20	0.39	0.6	1.77
14/01 to 13/05	9.55	375	0.110	6.93	6.00	136.04	0.3167	119.7	6.00	136.04	0.3167	119.7	119.7		119.7	574.5	1.08	4.15	1.50	5.20	4.50	0.6	0.69
15/01 to 2/06	7.20	375	0.110	1.00	6.00	136.04	0.0229	8.7	6.00	136.04	0.0229	8.7	8.7		8.7	216.4	0.08	0.98	0.67	1.96	4.50	0.6	0.62
16/02 to 16/01	11.54	450	0.159	1.00	7.56	124.60	0.6171	213.6	6.00	136.04	0.6090	230.1	230.1	-14.3	215.8	349.2	1.36	2.30	1.74	2.20	1.50	0.6	0.38
16/01 to CP/03	4.99	450	0.159	1.00	7.64	124.06	0.6293	216.9	6.00	136.04	0.6203	234.4	234.4	-14.3	220.1	349.2	1.38	2.31	1.76	2.20	2.50	0.6	0.48
17/01 to 8/06	7.02	825	0.535	1.00	7.18	127.10	3.0923	1091.8	6.00	136.04	3.0791	1163.6	1163.6	15.8	1179.4	1707.8	2.21	3.43	2.59	3.19	1.90	0.6	0.21
18/03 to 18/02	11.21	375	0.110	1.00	6.00	136.04	0.0688	26.0	6.00	136.04	0.0688	26.0	26.0		26.0	216.4	0.24	1.34	0.90	1.96	4.50	0.6	0.63
18/02 to 18/01	15.84	375	0.110	6.42	6.50	132.06	0.1382	50.7	6.00	136.04	0.1379	52.1	52.1		52.1	553.0	0.47	3.21	1.11	5.01	1.75	0.6	0.68
18/01 to 4/02	11.55	450	0.159	9.22	7.37	125.85	1.1822	413.3	6.00	136.04	1.1742	443.7	443.7		443.7	1069.6	2.79	6.43	2.84	6.72	0.80	0.6	0.38
19/01 to 13/02	6.08	375	0.110	20.33	6.00	136.04	0.0148	5.6	6.00	136.04	0.0148	5.6	5.6	-14	4.2	986.6	0.04	2.30	0.55	8.93	4.50	0.6	0.65
20/01 to 13/06	6.20	375	0.110	1.00	6.00	136.04	0.0089	3.4	6.00	136.04	0.0089	3.4	3.4		3.4	216.4	0.03	0.74	0.52	1.96	4.50	0.6	0.66
22/01 to 13/02	8.53	375	0.110	14.94	6.00	136.04	0.1801	68.1	6.00	136.04	0.1801	68.1	68.1		68.1	845.4	0.62	4.69	1.21	7.65	4.50	0.6	0.49
23/02 to 23/01	10.30	600	0.283	1.00	6.57	131.54	0.1043	38.1	6.00	136.04	0.1036	39.1	222.1	-16.2	205.9	742.4	0.73	2.26	1.50	2.63	2.50	0.6	1.40
23/01 to CP/03	7.50	600	0.283	1.00	6.64	130.97	0.1613	58.7	6.00	136.04	0.1604	60.6	243.6		243.6	742.4	0.86	2.36	1.59	2.63	2.50	0.6	1.49
24/01 to 1/12	12.55	375	0.110	1.00	6.00	136.04	0.0523	19.8	6.00	136.04	0.0523	19.8	19.8		19.8	216.4	0.18	1.24	0.84	1.96	4.50	0.6	0.65
25/02 to 25/01	14.59	375	0.110	3.79	6.00	136.04	0.0404	15.3	6.00	136.04	0.0404	15.3	15.3		15.3	424.0	0.14	1.86	0.78	3.84	4.50	0.6	0.69
25/01 to 11/03	13.66	450	0.159	1.00	6.13	134.96	0.7333	274.9	6.00	136.04	0.7320	276.6	276.6		276.6	349.2	1.74	2.42	1.98	2.20	1.75	0.6	0.56
26/01 to 1/07	9.69	375	0.110	1.00	6.00	136.04	0.0166	6.3	6.00	136.04	0.0166	6.3	6.3		6.3	216.4	0.06	0.89	0.61	1.96	4.50	0.6	0.63
27/01 to 1/05	10.66	375	0.110	2.48	6.00	136.04	0.0486	18.4	6.00	136.04	0.0486	18.4	18.4	-9.0	9.4	342.7	0.08	1.38	0.68	3.10	4.50	0.6	0.66
28/01 to 1/11	13.17	375	0.110	1.00	6.00	136.04	0.0261	9.9	6.00	136.04	0.0261	9.9	9.9		9.9	216.4	0.09	1.01	0.69	1.96	4.50	0.6	0.65
29/01 to 11/06	12.79	375	0.110	1.00	6.00	136.04	0.0189	7.1	6.00	136.04	0.0189	7.1	7.1		7.1	216.4	0.06	0.92	0.63	1.96	4.50	0.6	0.66
30/01 to 2/05	7.20	375	0.110	1.00	6.00	136.04	0.0215	8.1	6.00	136.04	0.0215	8.1	8.1		8.1	216.4	0.07	0.96	0.66	1.96	4.50	0.6	0.42
31/01 to 11/05	13.33	375	0.110	1.00	6.00	136.04	0.0302	11.4	6.00	136.04	0.0302	11.4	11.4		11.4	216.4	0.10	1.06	0.72	1.96	4.50	0.6	0.66
32/01 to 2/01	7.20	375	0.110	1.00	6.00	136.04	0.0210	7.9	6.00	136.04	0.0210	7.9	7.9		7.9	216.4	0.07	0.95	0.65	1.96	4.50	0.6	0.27
34/01 to 13/04	6.20	375	0.110	1.00	6.00	136.04	0.0194	7.3	6.00	136.04	0.0194	7.3	7.3		7.3	216.4	0.07	0.93	0.64	1.96	4.50	0.6	0.66
35/01 to 1/08	16.98	375	0.110	2.69	6.00	136.04	0.0185	7.0	6.00	136.04	0.0185	7.0	7.0	0.9	7.9	356.6	0.07	1.36	0.65	3.23	4.50	0.6	0.68
36/02 to 36/01	21.00	375	0.110	4.13	6.14	134.90	0.0192	7.2	6.00	136.04	0.0192	7.3	7.3		7.3	443.2	0.07	1.54	0.64	4.01	2.50	0.6	0.74
36/01 to 18/02	13.60	375	0.110	2.27	6.37	133.08	0.0570	21.1	6.00	136.04	0.0569	21.5	21.5		21.5	327.8	0.19	1.71	0.86	2.97	1.95	0.6	0.73
37/01 to 2/07	7.20	375	0.110	1.00	6.00	136.04	0.0092	3.5	6.00	136.04	0.0092	3.5	3.5		3.5	216.4	0.03	0.74	0.53	1.96	4.50	0.6	0.65
38/01 to 36/01	6.20	375	0.110	1.00	6.00	136.04	0.0186	7.0	6.00	136.04	0.0186	7.0	7.0		7.0	216.4	0.06	0.92	0.63	1.96	4.50	0.6	0.66
39/01 to 36/02	6.20	375	0.110	1.00	6.00	136.04	0.0094	3.5	6.00	136.04	0.0094	3.5	3.5		3.5	216.4	0.03	0.75	0.53	1.96	4.50	0.6	0.66
40/01 to 2/02	7.20	375	0.110	1.00	6.00	136.04	0.0213	8.1	6.00	136.04	0.0213	8.1	8.1		8.1	216.4	0.07	0.96	0.66	1.96	4.50	0.6	0.39
41/01 to 3/07	7.37	375	0.110	1.00	6.00	136.04	0.0627	23.7	6.00	136.04	0.0627	23.7	23.7	-0.7	22.9	216.4	0.21	1.29	0.87	1.96	4.50	0.6	0.63
42/01 to 13/03	6.20	375	0.110	1.00	6.00	136.04	0.0194	7.3	6.00	136.04	0.0194	7.3	7.3		7.3	216.4	0.07	0.93	0.64	1.96	4.50	0.6	0.66
43/01 to 1/10	12.80	375	0.110	1.00	6.00	136.04	0.0225	8.5	6.00	136.04	0.0225	8.5	8.5	-3.1	5.4	216.4	0.05	0.85	0.59	1.96	4.50	0.6	0.65
44/01 to 1/09	12.40	375	0.110	1.00	6.00	136.04	0.0352	13.3	6.00	136.04	0.0352	13.3	13.3	-4.7	8.6	216.4	0.08	0.97	0.67	1.96	4.50	0.6	0.65
CP/04 to CP/03	30.43	900	0.636	2.00	10.00	111.11	1.7027	525.5	7.00	128.36	1.4528	518.0	525.5		525.5	3039.4	0.73	3.52	1.72	4.78	4.50	0.6	0.74
CP/03 to CP/02	77.06	1050	0.866	2.00	10.14	110.44	2.4978	766.2	7.14	127.35	2.2469	794.9	777.9	-76.4	901.5	4544.9	1.04	4.15	2.03	5.25	2.00	0.6	1.62
CP/02 to CP/01	2.62	1050	0.866	2.93	10.45	109.03	2.4978	756.5	7.45	125.27	2.2469	781.8	964.8	-76.4	888.5	5524.8	1.03	4.76	2.02	6.38	0.21	0.6	0.66
Z1/01 to 2/04	9.17	825	0.535	3.22	6.00	136.04	1.7682	668.2	6.00	136.04	1.7682	668.2	668.2		668.2	3074.6	1.25	4.66	2.01	5.75	4.50	0.6	0.21
Z2/01 to 17/01	8.11	600	0.283	5.09	6.00	136.04	1.0470	395.7	6.00	136.04	1.0470	395.7	395.7		395.7	1685.6	1.40	4.92	1.91	5.96	4.50	0.6	0.24
Z3/01 to 3/06	6.78	375	0.110	5.84	7.00	128.36	0.3633	129.6	6.00	136.04	0.3379	127.7	129.6		129.6	527.2	1.17	3.98	1.55	4.77	4.50	0.6	0.36
Z4/01 to 3/05	6.67	525	0.216	5.85	7.00	128.36	0.5422	193.3	6.00	136.04	0.5043	190.6	193.3		193.3	1274.2	0.89	4.32	1.54	5.89	4.50	0.6	0.49
Z5/01 to 3/04	7.51	525	0.216	6.83	7.00	128.36	0.8202	292.5	6.00	136.04	0.7629	288.3	292.5		292.5	1377.0	1.35	5.11	1.81	6.36	4.50	0.6	0.26
Z6/02 to Z6/01	7.79	450	0.159	10.60	6.00	136.04	0.6353	240.1	6.00	136.04	0.6353	240.1	240.1		240.1	1147.4	1.51	5.77	1.84	7.21	4.50	0.6	0.26
Z6/01 to 12/01	7.62	450	0.159	1.00	6.02	135.85	0.6353	239.8	6.00	136.04	0.6351	240.0	240.0		240.0	349.2	1.51	2.36	1.83	2.20	0.50	0.6	2.05


Issue	Description	Date
06	ISSUE FOR CONSTRUCTION CERTIFICATE	13/06/16
05	ISSUE FOR CONSTRUCTION CERTIFICATE	02/06/16
04	ISSUE FOR CONSTRUCTION CERTIFICATE	23/05/16
03	ISSUE FOR CONSTRUCTION CERTIFICATE	11/04/16
02	ISSUE FOR CONSTRUCTION CERTIFICATE	07/04/16
01		

HYDRAULICS - MAJOR 100 YEAR STORM EVENT

Pipe ID	Pipe Length (m)	Pipe Size (mm)	Full Pipe Area Af (sq.m)	Pipe Grade (%)	Full-area Tct (min)	Full-area I (mm/hr)	Full-area Sum CA (ha)	Full-area Qc=CA (L/s)	Part-area Tct (min)	Part-area I (mm/hr)	Part-area Sum CA (ha)	Part-area Qc=CA (L/s)	Peak Flow Qrat (L/s)	Net Bypass Flow Qb (L/s)	Pipe Flow Q (L/s)	Capacity Flow Qcap (L/s)	Full Pipe Vel Vf=Q/Af (m/s)	Norm Depth Vel Vn=Q/An (m/s)	Crit Depth Vel Vc=Q/Ac (m/s)	Capacity Vel Vcap=Qcap/Af (m/s)	US Pit Ku (-)	Colebrook k Roughness (mm)	F'board US (m)
1/13 to 1/12	20.890	375.000	0.110	1.000	6.000	204.980	0.034	19.100	6.000	204.980	0.034	19.100	19.100	-3.800	15.300	216.400	0.140	1.150	0.780	1.960	4.500	0.600	0.710
1/12 to 1/11	17.640	375.000	0.110	1.560	8.510	178.910	0.125	61.900	6.000	204.980	0.122	69.500	69.500	-13.700	55.800	271.000	0.500	1.950	1.140	2.450	2.000	0.600	0.740
1/11 to 1/10	14.110	375.000	0.110	3.360	9.100	174.100	0.178	86.100	6.000	204.980	0.173	98.700	98.700	-9.500	89.300	399.100	0.810	2.940	1.330	3.610	1.250	0.600	0.650
1/10 to 1/09	19.920	375.000	0.110	2.510	9.390	171.830	0.221	105.300	6.000	204.980	0.214	121.800	121.800	-19.800	102.000	344.300	0.920	2.730	1.400	3.120	0.800	0.600	0.750
1/09 to 1/08	20.800	375.000	0.110	3.250	9.750	169.140	0.282	132.700	6.000	204.980	0.273	155.300	155.300	-34.200	121.100	392.400	1.100	3.150	1.500	3.550	0.900	0.600	0.650
1/08 to 1/07	16.990	375.000	0.110	5.260	10.060	166.860	0.330	153.000	6.060	204.190	0.318	180.600	180.600	-27.300	153.300	500.400	1.390	4.010	1.680	4.530	1.000	0.600	0.580
1/07 to 1/06	13.780	375.000	0.110	6.370	10.270	165.430	0.368	168.900	6.070	204.110	0.351	199.000	199.000	-23.700	175.300	550.900	1.590	4.450	1.810	4.990	0.700	0.600	0.690
1/06 to 1/05	21.380	375.000	0.110	8.060	10.410	164.440	0.383	174.800	6.210	202.330	0.366	205.700	205.700	-21.700	184.000	620.100	1.670	4.920	1.870	5.610	0.500	0.600	0.660
1/05 to 1/04	20.920	375.000	0.110	8.120	10.630	163.010	0.456	206.600	6.430	199.770	0.438	243.300	243.300	-39.900	203.400	622.400	1.840	5.070	1.990	5.640	0.700	0.600	0.610
1/04 to 1/03	17.190	375.000	0.110	7.890	10.810	161.770	0.507	227.700	6.620	197.590	0.488	268.100	268.100	-43.400	224.600	613.400	2.030	5.140	2.140	5.550	0.700	0.600	0.590
1/03 to 1/02	17.640	375.000	0.110	5.830	10.960	160.860	0.542	242.000	6.760	196.010	0.523	284.700	284.700	-41.100	243.600	527.100	2.210	4.680	2.290	4.770	1.700	0.600	0.340
1/02 to 1/01	23.570	375.000	0.110	1.830	11.090	160.010	0.560	248.800	6.890	194.540	0.541	292.400	292.400	-41.000	251.400	294.100	2.280	2.970	2.350	2.660	0.500	0.600	0.340
1/01 to 16/02	25.890	450.000	0.159	1.280	11.260	158.930	0.593	261.900	7.060	192.700	0.575	307.600	307.600	-43.000	264.600	395.600	1.660	2.650	1.930	2.490	0.800	0.600	0.320
2/07 to 2/06	21.400	375.000	0.110	1.000	9.100	174.090	0.049	23.900	6.000	204.980	0.049	27.800	27.800	3.000	30.800	216.400	0.280	1.410	0.950	1.960	2.500	0.600	0.750
2/06 to 2/05	21.000	375.000	0.110	1.000	10.380	164.680	0.092	42.300	6.380	200.380	0.091	50.500	50.500	9.900	60.400	216.400	0.550	1.690	1.170	1.960	1.450	0.600	0.560
2/05 to 2/04	17.330	375.000	0.110	1.000	11.020	160.470	0.134	59.600	6.000	204.980	0.126	71.600	71.600	12.500	84.100	216.400	0.760	1.840	1.300	1.960	1.300	0.600	0.390
2/04 to 2/03	3.670	825.000	0.535	1.000	11.390	158.110	1.932	848.700	6.000	204.980	1.918	1092.000	1092.000	-361.700	730.300	1707.800	1.370	3.080	2.080	3.190	1.080	0.600	0.270
2/03 to 2/02	21.000	825.000	0.535	1.000	11.440	157.840	1.974	865.300	6.000	204.980	1.957	1114.100	1114.100	-361.100	753.000	1707.800	1.410	3.100	2.100	3.190	2.000	0.600	0.350
2/02 to 2/01	21.000	825.000	0.535	1.000	11.690	156.350	2.015	875.000	6.000	204.980	1.988	1131.700	1131.700	-361.000	770.700	1707.800	1.440	3.120	2.120	3.190	0.500	0.600	0.390
2/01 to 17/01	18.620	825.000	0.535	1.000	11.930	154.930	2.056	884.700	6.000	204.980	2.018	1149.100	1149.100	-361.000	788.100	1707.800	1.470	3.130	2.140	3.190	0.500	0.600	0.270
3/08 to 3/07	30.250	375.000	0.110	1.220	6.000	204.980	0.075	42.500	6.000	204.980	0.075	42.500	42.500	-10.900	31.600	239.400	0.290	1.520	0.960	2.170	4.500	0.600	0.670
3/07 to 3/06	19.790	375.000	0.110	1.110	7.760	185.720	0.162	83.400	6.000	204.980	0.159	90.400	90.400	-8.300	82.100	227.900	0.740	1.900	1.290	2.060	1.700	0.600	0.500
3/06 to 3/05	63.040	375.000	0.110	2.930	8.200	181.630	0.576	290.700	7.070	192.580	0.575	307.400	307.400	-44.300	263.100	372.400	2.380	3.640	2.440	3.370	1.700	0.600	0.230
3/05 to 3/04	32.120	600.000	0.283	3.050	8.640	177.800	1.253	618.900	7.070	192.640	1.237	661.900	661.900	-16.900	645.000	1303.100	2.280	4.600	2.490	4.610	2.000	0.600	0.250
3/04 to 3/03	7.100	900.000	0.636	6.320	8.880	175.850	2.199	1074.400	7.060	192.710	2.164	1158.700	1158.700	-3.100	1155.600	5417.500	1.820	6.860	2.400	8.520	1.250	0.600	0.600
3/03 to 3/02	4.710	1050.000	0.866	1.000	13.690	145.570	5.425	2193.500	7.420	188.990	5.356	2811.600	2811.600	-323.000	2488.600	3206.400	2.870	4.060	3.180	3.700	1.000	0.600	0.830
3/02 to 3/01	3.830	1050.000	0.866	1.000	13.720	145.430	5.425	2191.500	7.450	188.720	5.356	2807.500	2807.500	-323.000	2484.500	3217.700	2.870	4.060	3.180	3.720	0.200	0.600	0.960
4/06 to 4/05	17.020	450.000	0.159	5.430	7.430	188.910	0.799	419.200	6.000	204.980	0.793	451.700	451.700	-5.700	446.000	820.100	2.800	5.260	2.850	5.160	0.500	0.600	0.570
4/05 to 4/04	21.390	450.000	0.159	7.850	7.530	187.910	0.838	437.300	6.000	204.980	0.831	473.000	473.000	-4.700	468.300	986.600	2.940	6.120	2.980	6.200	1.600	0.600	0.020
4/04 to 4/03	21.020	450.000	0.159	7.700	7.650	186.730	0.887	460.300	6.000	204.980	0.878	500.200	500.200	-21.900	478.300	977.000	3.190	6.200	3.220	6.140	2.000	0.600	0.000
4/03 to 4/02	14.180	450.000	0.159	6.440	7.760	185.680	0.926	477.700	6.000	204.980	0.916	521.300	521.300	-184.400	336.900	892.900	3.500	5.900	3.510	5.610	0.850	0.600	0.890
4/02 to 4/01	13.430	600.000	0.283	1.000	22.280	114.970	1.394	445.200	6.000	204.980	1.316	749.200	749.200	-223.200	526.000	745.000	2.630	2.630	2.630	2.630	1.850	0.600	0.210
5/01 to 4/04	14.220	450.000	0.159	1.000									219.000		219.000	349.200	1.380	2.310	1.750	2.200	0.500	0.600	1.830
6/01 to 2/03	7.200	375.000	0.110	1.000	6.000	204.980	0.021	12.100	6.000	204.980	0.021	12.100	12.100		12.100	216.400	0.110	1.070	0.730	1.960	4.500	0.600	0.350
7/01 to 1/03	9.110	375.000	0.110	2.850	6.000	204.980	0.017	9.600	6.000	204.980	0.017	9.600	9.600	1.800	11.400	367.600	0.100	1.540	0.720	3.330	4.500	0.600	0.630
8/06 to 8/05	9.350	825.000	0.535	4.300	12.190	153.470	3.171	1351.900	6.000	204.980	3.121	1777.200	1777.200	-289.900	1487.300	3558.000	2.780	6.370	2.990	6.660	0.500	0.600	0.890
8/05 to 8/04	70.090	825.000	0.535	4.300	12.240	153.160	3.171	1349.100	6.000	204.980	3.118	1775.300	1775.300	-289.900	1485.400	3558.000	2.780	6.370	2.990	6.660	0.500	0.600	2.570
8/04 to 8/03	79.610	825.000	0.535	4.300	12.660	150.850	3.171	1328.800	6.390	200.170	3.116	1732.900	1732.900	-289.900	1442.900	3558.000	2.700	6.330	2.930	6.660	0.500	0.600	2.930
8/03 to 8/02	6.710	825.000	0.535	4.300	13.150	148.270	3.171	1306.000	6.890	194.610	3.116	1684.700	1684.700	-289.900	1394.700	3558.000	2.610	6.270	2.870	6.660	0.500	0.600	0.390
8/02 to 8/01	7.250	900.000	0.636	1.000	13.200	148.050	3.195	1313.900	6.930	194.140	3.140	1693.400	1693.400	-342.400	1351.100	2143.900	2.120	3.550	2.590	3.370	0.500	0.600	0.000
8/01 to 3/03	41.090	1050.000	0.866	1.000	13.250	147.760	3.205	1315.400	6.990	193.530	3.150	1693.500	1693.500	-342.400	1351.100	3206.400	1.560	3.550	2.350	3.700	2.500	0.600	0.210
9/01 to 1/04	10.190	375.000	0.110	1.020	6.000	204.980	0.027	15.500	6.000	204.980	0.027	15.500	15.500	-3.500	11.900	219.100	0.110	1.080	0.730	1.980	4.500	0.600	0.650
10/01 to 3/05	7.470	450.000	0.159	1.000	6.000	204.980	0.033	18.500	6.000	204.980	0.033	18.500	18.500	3.800	22.300	349.200	0.140	1.260	0.840	2.200	4.500	0.600	0.320
11/07 to 11/06	22.200	375.000	0.110	1.000	6.000	204.980	0.008	4.300	6.000	204.980	0.008	4.300	4.300	-0.900	3.400	216.400	0.030	0.740	0.520	1.960	4.500	0.600	0.710
11/06 to 11/05	20.980	375.000	0.110	1.000	17.920	128.160	0.057	20.300	6.000	204.980	0.049	27.600	27.600	-5.800	21.800	216.400	0.200	1.280	0.860				

HYDRAULICS - MAJOR 100 YEAR STORM EVENT

Pipe ID	Pipe Length (m)	Pipe Size (mm)	Pipe Area Af (sq.m)	Pipe Grade (%)	Full-area Tct (min)	Full-area I (mm/hr)	Full-area Sum CA (ha)	Full-area Qc=ClA (L/s)	Part-area Tct (min)	Part-area I (mm/hr)	Part-area Sum CA (ha)	Part-area Qc=ClA (L/s)	Peak Flow Qrat (L/s)	Net Bypass Flow Qb (L/s)	Pipe Flow Q (L/s)	Capacity Flow Qcap (L/s)	Full Pipe Vel Vf=Q/Af (m/s)	Norm Depth Vel Vn=Q/An (m/s)	Crit Depth Vel Vc=Q/Ac (m/s)	Capacity Vel Vcap=Qcap/Af (m/s)	US Pit Ku (-)	Colebrook k Roughness (mm)	F'board US (m)
13/06 to 13/05	16.500	375.000	0.110	1.000	8.770	176.730	0.024	11.600	6.000	204.980	0.023	13.200	13.200	-2.700	10.500	216.400	0.100	1.030	0.700	1.960	2.500	0.600	0.440
13/05 to 13/04	4.500	375.000	0.110	1.000	11.660	156.500	0.346	150.300	6.000	204.980	0.337	191.800	191.800	-2.700	189.100	216.400	1.710	2.190	1.900	1.960	1.240	0.600	0.260
13/04 to 13/03	21.000	375.000	0.110	1.000	11.710	156.240	0.396	171.700	6.000	204.980	0.386	219.700	219.700	-6.200	213.500	216.400	1.930	2.210	2.060	1.960	2.000	0.600	0.450
13/03 to 13/02	16.930	450.000	0.159	1.000	11.890	155.180	0.437	188.500	6.000	204.980	0.425	242.000	242.000	-6.000	236.000	349.200	1.480	2.350	1.820	2.200	0.700	0.600	0.830
13/02 to 13/01	2.940	525.000	0.216	1.000	12.080	154.080	0.651	278.500	6.000	204.980	0.635	361.800	361.800	-9.700	352.100	525.100	1.630	2.580	1.980	2.430	0.410	0.600	0.820
14/01 to 13/05	9.550	375.000	0.110	6.930	6.000	204.980	0.322	183.400	6.000	204.980	0.322	183.400	183.400		183.400	574.500	1.660	4.650	1.860	5.200	4.500	0.600	0.290
15/01 to 2/06	7.200	375.000	0.110	1.000	6.000	204.980	0.023	13.300	6.000	204.980	0.023	13.300	13.300	-1.800	11.500	216.400	0.100	1.060	0.720	1.960	4.500	0.600	0.550
16/02 to 16/01	11.540	450.000	0.159	1.000	11.520	157.350	0.628	274.400	7.320	190.010	0.609	321.500	321.500	-43.900	277.600	349.200	1.750	2.420	1.990	2.200	1.500	0.600	0.140
16/01 to CP/03	4.990	450.000	0.159	1.000	11.630	156.690	0.640	278.600	7.430	188.900	0.622	326.100	326.100	-45.300	280.800	349.200	1.770	2.430	2.000	2.200	2.500	0.600	0.360
17/01 to 8/06	7.020	825.000	0.535	3.270	12.140	153.730	3.146	1343.200	6.000	204.980	3.098	1764.100	1764.100	-384.600	1379.500	3101.800	2.580	5.640	2.840	5.800	1.900	0.600	0.220
18/03 to 18/02	11.210	375.000	0.110	1.000	6.000	204.980	0.070	39.900	6.000	204.980	0.070	39.900	39.900		39.900	216.400	0.440	1.600	1.090	1.960	4.500	0.600	0.590
18/02 to 18/01	15.840	375.000	0.110	6.360	14.200	143.160	0.141	55.900	6.000	204.980	0.121	69.100	69.100	5.000	74.100	550.300	0.670	3.530	1.250	4.980	1.750	0.600	0.670
18/01 to 4/02	11.550	450.000	0.159	9.220	22.140	115.340	0.457	146.300	6.220	202.260	0.401	225.200	225.200	-7.400	217.800	1069.600	1.370	5.340	1.750	6.720	0.800	0.600	0.620
19/01 to 13/02	6.080	375.000	0.110	1.000	6.000	204.980	0.015	8.600	6.000	204.980	0.015	8.600	8.600	-3.100	5.400	216.400	0.050	0.850	0.590	1.960	4.500	0.600	0.650
20/01 to 13/06	6.200	375.000	0.110	1.000	6.000	204.980	0.009	5.100	6.000	204.980	0.009	5.100	5.100	-1.000	4.100	216.400	0.040	0.780	0.550	1.960	4.500	0.600	0.440
22/01 to 13/02	8.530	375.000	0.110	1.000	6.000	204.980	0.183	104.300	6.000	204.980	0.183	104.300	104.300		104.300	216.400	0.940	1.940	1.410	1.960	4.500	0.600	0.370
23/02 to 23/01	10.300	600.000	0.283	1.000	6.990	193.470	0.106	57.000	6.000	204.980	0.105	59.500	415.500	-19.300	396.200	742.400	1.400	2.670	1.910	2.630	2.500	0.600	0.970
23/01 to CP/03	7.500	600.000	0.283	1.000	7.110	192.180	0.164	87.600	6.000	204.980	0.162	92.400	448.400	6.300	454.800	742.400	1.610	2.750	2.040	2.630	2.500	0.600	1.250
24/01 to 1/12	12.550	375.000	0.110	1.000	6.000	204.980	0.053	30.300	6.000	204.980	0.053	30.300	30.300	-7.800	22.500	216.400	0.200	1.290	0.870	1.960	4.500	0.600	0.650
25/02 to 25/01	14.590	375.000	0.110	3.790	6.000	204.980	0.041	23.400	6.000	204.980	0.041	23.400	23.400	-2.700	20.700	424.000	0.190	2.030	0.850	3.840	4.500	0.600	0.680
25/01 to 4/06	21.350	450.000	0.159	2.290	7.300	190.260	0.746	394.200	6.000	204.980	0.742	422.600	422.600	0.700	423.300	530.600	2.660	3.680	2.720	3.340	1.750	0.600	0.640
26/01 to 1/07	9.690	375.000	0.110	1.000	6.000	204.980	0.017	9.600	6.000	204.980	0.017	9.600	9.600	-1.900	7.700	216.400	0.070	0.600	0.940	1.960	4.500	0.600	0.630
27/01 to 1/05	10.660	375.000	0.110	2.480	6.000	204.980	0.050	28.200	6.000	204.980	0.050	28.200	28.200	-17.600	10.600	342.700	0.100	1.440	0.710	3.100	4.500	0.600	0.660
28/01 to 1/11	13.170	375.000	0.110	1.000	6.000	204.980	0.027	15.100	6.000	204.980	0.027	15.100	15.100	2.700	17.800	216.400	0.160	1.200	0.810	1.960	4.500	0.600	0.650
29/01 to 11/06	12.790	375.000	0.110	1.000	6.000	204.980	0.019	10.900	6.000	204.980	0.019	10.900	10.900	-2.200	8.800	216.400	0.080	0.980	0.670	1.960	4.500	0.600	0.660
30/01 to 2/05	7.200	375.000	0.110	1.000	6.000	204.980	0.022	12.400	6.000	204.980	0.022	12.400	12.400	-0.200	12.200	216.400	0.110	1.080	0.730	1.960	4.500	0.600	0.380
31/01 to 11/05	13.330	375.000	0.110	1.000	6.000	204.980	0.031	17.500	6.000	204.980	0.031	17.500	17.500	-1.700	15.700	216.400	0.140	1.160	0.780	1.960	4.500	0.600	0.660
32/01 to 2/01	7.200	375.000	0.110	1.000	6.000	204.980	0.021	12.200	6.000	204.980	0.021	12.200	12.200		12.200	216.400	0.110	1.080	0.730	1.960	4.500	0.600	0.270
34/01 to 13/04	6.200	375.000	0.110	1.000	6.000	204.980	0.020	11.200	6.000	204.980	0.020	11.200	11.200	-1.400	9.800	216.400	0.090	1.010	0.690	1.960	4.500	0.600	0.450
35/01 to 1/08	16.980	375.000	0.110	2.690	6.000	204.980	0.019	10.700	6.000	204.980	0.019	10.700	10.700	0.600	11.300	356.600	0.100	1.510	0.720	3.230	4.500	0.600	0.680
36/02 to 36/01	21.000	375.000	0.110	3.860	8.630	177.940	0.020	9.700	6.000	204.980	0.019	10.900	10.900	-2.200	8.700	428.100	0.080	1.580	0.670	3.880	2.500	0.600	0.740
36/01 to 18/02	13.600	375.000	0.110	2.200	13.100	148.560	0.058	23.900	9.100	174.100	0.057	27.600	27.600	-4.800	22.800	322.400	0.210	1.720	0.870	2.920	1.950	0.600	0.740
37/01 to 2/07	7.200	375.000	0.110	1.000	6.000	204.980	0.009	5.300	6.000	204.980	0.009	5.300	5.300	-1.100	4.300	216.400	0.040	0.790	0.550	1.960	4.500	0.600	0.650
38/01 to 36/01	6.200	375.000	0.110	1.000	6.000	204.980	0.019	10.800	6.000	204.980	0.019	10.800	10.800	-1.300	9.500	216.400	0.090	1.000	0.680	1.960	4.500	0.600	0.650
39/01 to 36/02	6.200	375.000	0.110	1.000	6.000	204.980	0.010	5.400	6.000	204.980	0.010	5.400	5.400	-1.100	4.300	216.400	0.040	0.790	0.560	1.960	4.500	0.600	0.650
40/01 to 2/02	7.200	375.000	0.110	1.000	6.000	204.980	0.022	12.400	6.000	204.980	0.022	12.400	12.400	-0.100	12.300	216.400	0.110	1.080	0.730	1.960	4.500	0.600	0.380
41/01 to 3/07	7.370	375.000	0.110	1.000	6.000	204.980	0.064	36.300	6.000	204.980	0.064	36.300	36.300	-11.400	24.900	216.400	0.230	1.320	0.890	1.960	4.500	0.600	0.510
42/01 to 13/03	6.200	375.000	0.110	1.000	6.000	204.980	0.020	11.200	6.000	204.980	0.020	11.200	11.200	-0.300	10.900	216.400	0.100	1.050	0.710	1.960	4.500	0.600	0.650
43/01 to 1/10	12.800	375.000	0.110	1.000	6.000	204.980	0.023	13.100	6.000	204.980	0.023	13.100	13.100	-5.700	7.400	216.400	0.070	0.930	0.640	1.960	4.500	0.600	0.650
44/01 to 1/09	12.400	375.000	0.110	1.000	6.000	204.980	0.036	20.400	6.000	204.980	0.036	20.400	20.400	-8.900	11.500	216.400	0.100	1.060	0.720	1.960	4.500	0.600	0.650
CP/04 to CP/03	30.430	900.000	0.636	2.000	10.000	167.310	1.869	868.800	7.000	193.370	1.570	843.000	868.800	-637.000	231.800	3039.400	0.360	2.900	1.400	4.780	4.500	0.600	0.830
CP/03 to CP/02	77.060	1050.000	0.866	2.000	11.680	156.410	2.678	1163.600	8.390	179.960	2.369	1184.300	1540.300	-675.400	179.960	4544.900	1.000	4.100	2.010	5.250	2.000	0.600	1.620
CP/02 to CP/01	2.620	1050.000	0.866	2.930	12.960	149.250	2.678	1110.300	12.680	150.770	2.678	1121.500	1477.500	-675.400	802.100	5524.800	0.930	4.630	1.960	6.380	0.210	0.600	0.660
Z1/01 to 2/04	9.170	825.000	0.535	3.220	6.000	204.980	1.799	1024.200	6.000	204.980	1.799	1024.200	1024.200	-374.200	650.000	3074.600	1.220	4.620	1.990	5.750	4.500	0.600	0.220
Z2/01 to 17/01	8.110	600.000	0.283	5.090	6.000	204.980	1.065	606.500	6.000	204.980	1.065	606.500	606.500	-118.800	487.600	1685.600	1.720	5.200	2.110	5.960	4.500	0.600	0.010
Z3/01 to 3/06	6.780																						

	Construction Environmental Management Plan – 626 – Gledswood Hills Public School – Stage 2	E5
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8.4 Appendix D – Council Consultation

Post Approval Consultation Record

Identified Party to Consult:	Camden Council
Consultation type:	Email Correspondence
When is consultation required?	Prior to Construction Commencement
Why	SSD 8378 Condition - B19: The Applicant must prepare a Construction Soil and Water Management Plan (CSWMSP) and the plan must address, but not be limited to the following: (a) be prepared by a suitably qualified expert, in consultation with Council; (b) be submitted to the approval of the Certifier prior to the commencement of construction; (c) describe all erosion and sediment controls to be implemented during construction; (d) provide a plan of how all construction works will be managed in a wet-weather events (i.e. storage of equipment, stabilisation of the Site); (e) detail all off-Site flows from the Site; and (f) describe the measures that must be implemented to manage stormwater and flood flows for small and large sized events,
When was consultation scheduled/held	Initial plan submission to council mailbox on 30/03/2023, with follow up email for feedback/acknowledgement of plans submission by relevant council officer on 17/04/2023
When was consultation held	30/03/2023, 17/04/2023
Identify persons and positions who were involved	Relevant Officer from the Environmental or Development Planning Team - TBC
Provide the details of the consultation	Initial revision of the Construction Soil and Water Management Plan (CSWMSP) developed by PBG issued to Camden Council on 30/03/23 for review and feedback by the relevant council officer. Follow up email sent on 17/04/23 to Camden Council to see if any feedback will be provided.
What specific matters were discussed?	Nil – Awaiting feedback.
What matters were resolved?	Nil
What matters are unresolved?	Nil
Any remaining points of disagreement?	N/A
How will SINSW address matters not resolved?	N/A

From: [Council Mailbox](#)
To: [Chris Sposito](#)
Subject: Camden Council Automatic Response
Date: Monday, 17 April 2023 3:10:31 PM

Thank you for contacting Camden Council.

Council has received your email and the appropriate officer will be in contact.



70 Central Avenue, Oran Park, 2570

(02) 4654 7777

www.camden.nsw.gov.au



PO Box 183, Camden NSW 2570



mail@camden.nsw.gov.au



From: [Chris Sposito](#)
To: mail@camden.nsw.gov.au
Cc: [Kurt Lanner](#); [Tim Baldwin](#); [Alex Warner](#)
Subject: RE: Gledswood Public School Stage 2 - CEMP, CSWMSP & CTPMSP Consultation
Date: Monday, 17 April 2023 3:07:00 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[TLTMP-219117 REV B Gledswood Hills Public School.pdf](#)
[TLTGS-219072 REV B Gledswood Hills Public School Site Access Stage 1.pdf](#)
[TLTGS-219094 REV B Gledswood Hills Public School Site Access Stage 2.pdf](#)
[PBG001 - Site Management Plan.pdf](#)

Good Afternoon,

Just following up on the below submission of documents and if there is any feedback from council for incorporation into our environmental management plans?

I have also attached the recently completed Construction Traffic and Pedestrian Management Plan (CTPMSP) for review and comment as necessary in accordance with *SSD-8378 - New Gledswood Hills Public School* conditions.

Thank you for your assistance.

Regards,

Chris Sposito

HSEQ Manager

Mobile: 0408 625 030



Sydney
Suite 2, Level 5
189 O'Riordan Street
Mascot NSW 2020
PO Box 1136 Mascot NSW 1460
t 02 9662 6522 f 02 9662 6533

Wollongong
10 Belmore Street
Wollongong NSW 2500
PO Box 82 Fairy Meadow NSW 2519
t 02 4283 3044 f 02 4283 5122

Newcastle
Suite 3
161 Lambton Road
Broadmeadow NSW 2292
t 02 8197 6039

www.pattersonbuild.com.au



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From: [Council Mailbox](#)
To: [Chris Sposito](#)
Subject: Camden Council Automatic Response
Date: Thursday, 30 March 2023 7:17:17 PM

Thank you for contacting Camden Council.

Council has received your email and the appropriate officer will be in contact.



70 Central Avenue, Oran Park, 2570

(02) 4654 7777

www.camden.nsw.gov.au



PO Box 183, Camden NSW 2570



mail@camden.nsw.gov.au



From: Chris Sposito
Sent: Thursday, March 30, 2023 7:14 PM
To: 'mail@camden.nsw.gov.au' <mail@camden.nsw.gov.au>
Cc: Kurt Lanner <kurtl@pattersonbuild.com.au>; Tim Baldwin <timb@pattersonbuild.com.au>; Alex Warner <alexw@pattersonbuild.com.au>
Subject: Gledswood Public School Stage 2 - CEMP & Consultation

Good Evening,

Patterson Building Group have been recently appointed as the head contractor for construction of Gledswood Public School Stage 2.

We have commenced preparing the respective management plans required under the and in accordance with the SSD compliance conditions require consultation for the Construction Environmental Management Plan (CEMP) & Construction Soil and Water Management Plan (CSWMSP)

Could you please forward on the attached to the relevant representative within council for review and comments as necessary?

Thank you for your assistance.

Regards,

Chris Sposito
HSEQ Manager
Mobile: 0408 625 030



Sydney
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Alex Warner

From: Alex Warner
Sent: Thursday, 27 April 2023 12:11 PM
To: Council.Mailbox@camden.nsw.gov.au
Cc: Chris Sposito; Alex Warner
Subject: (SSD 8378) Glenswood Hills Public School Stage 2 works - Management plans Review.

Hi Camden Council,

PBG request comments on the previously submitted reports by Chris Sposito chriss@pattersonbuild.com.au and Alex Warner alexw@pattersonbuild.com.au as part of the (SSD 8378) Glenswood Hills Public School Stage 2 works. This is a final request for comment from Camden Council. Should we not receive your comments CoB Friday 28 April 2023, we consider you to have no comments and we will proceed with finalising this document to the consent authority.

thanks

Kind Regards,

Alex Warner

Contracts Administrator

Mobile: 0449 870 233

Direct: 02 8960 7612

Email: alexw@pattersonbuild.com.au

All invoices must be issued to Accounts Payable (accountspayable@pattersonbuild.com.au)



Sydney

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	Construction Environmental Management Plan – 626 – Gledswood Hills Public School – Stage 2	E5
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8.5 Appendix E – Certifier Submission

Nick Aitchison
GROUP DLA

Re: CC1 - Submission No.1
RESPONSE TO RFI

14/04/2023
GROUPDLA-RTRFI-000010

Kenny Lim
TSA MANAGEMENT

Re: CC1 - Submission No.1
RESPONSE TO RFI

1:47 PM
TSA-RTRFI-000003

Kenny Lim
TSA MANAGEMENT

Fwd: CC1 - Submission No.1
RESPONSE TO RFI

1:51 PM
TSA-RTRFI-000004

Nick Aitchison
GROUP DLA

Re: CC1 - Submission No.1
RESPONSE TO RFI

3:38 PM
GROUPDLA-RTRFI-000013

Kurt Lanner
PATTERSON BUILDING GROUP PTY LIMITED

Re: CC1 - Submission No.1
RESPONSE TO RFI

4:00 PM
PBG1-RTRFI-000012

Nick Aitchison
GROUP DLA

Re: CC1 - Submission No.1
RESPONSE TO RFI

4:37 PM
GROUPDLA-RTRFI-000014

Gledswood Hills Public School - Stage 2

Hermitage Way,
Gledswood Hills
NSW Australia



MAIL TYPE

Response to RFI

MAIL NUMBER

PBG1-RTRFI-000006

REFERENCE NUMBER

PBG1-GCOR-000030

CC1 - Submission No.1 (3-4-23)

From Mr Kurt Lanner - Patterson Building Group Pty Limited

To Mr Nick Aitchison - Group DLA







Cc (7) Mr Chris Sposito - Patterson Building Group Pty Limited (+6 more...)

Sent Monday, 3 April 2023 10:28:48 PM AEST (GMT +10:00)

Status N/A

FILE ATTACHMENTS (11)

File Name
3. Long service levy.zip
8. Structural design certification.zip
B14.B15. Construction environment management plan (CEMP).zip
B16. Construction traffic pedestrian management sub-plan.zip
B18. Construction & Demolition waste management.zip

File Name
 B19. Construcion soil & water management.zip
 B24. Construction & Demolition waste management.zip
 B37. Sydney water compliance.zip
 B5. Protection of public infrastructure.zip
 B6. Unexpected contamination proceedure.zip
 CC1 Checklist - Rev B (Submission 1 - Updated comments).pdf

MESSAGE

Hi Nick,

Please find attached (CC1 - Submission No.1).

There are a few items yet to satisfy, however as we are aiming for a CC before Good Friday, I have decided to issue you what we have to commence review. The remainder will come on Wednesday.

I have made comment on the outstanding items in the PDF checklist.

Please contact me if you have any queries,

Regards,

Kurt Lanner

Project Manager

Direct Line: 02 8960 7670

Mobile: 0423 939 580



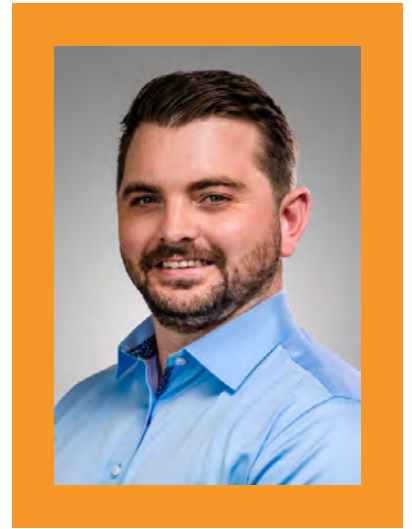
8.6 Appendix F – CVs

Chris Sposito

HSEQ Manager

Chris has approximately 7 years' experience in the construction industry. During this time, he has worked on commercial, industrial and retail projects as Cadet, Site Foreman and Site Manager.

In recent years, Chris' expertise has focussed on workplace safety. He is a qualified workplace trainer and auditor. Chris is PBG's HSEQ Manager and is responsible for the implementation and adherence of workplace systems, processes and programs



AREAS OF EXPERTISE

- Occupational Workplace Safety
- HSE Programs
- HSEQ Management
- Auditing
- Training
- Risk Mitigation
- Policy & Systems Development
- Construction Standards and Codes of Practice
- Site Management & Coordination

QUALIFICATIONS

- Certified Auditor
- Certificate IV in Work Health and Safety
- Certificate II General Construction
- Senior First Aid Officer
- OHS Site Safety Induction
- WorkCover Occupational First Aid Certificate
- First Aid Certification
- First Awareness & Extinguisher Course
- Fire Warden Workplace Evacuation
- Risk Management for Managers & Supervisors
- Duty of Care for Managers & Supervisors
- Asbestos in the Workplace
- Telescopic Handler
- Working at Heights

ROLE & RESPONSIBILITY

- Establish relevant training needs, in consultation with the management team, for all personnel in the implementation of Safety, Environmental & Quality
- Oversee the development of system procedures
- Performing the function of originator of the Management Systems
- Assisting Management personnel in meeting their obligations under the relevant states Legislation
- Informing management personnel of changes in the relevant WHS Legislation, Codes of Practice and AS/NZS Standards
- Monitor the implementation of procedures & project management plans in the work place to ensure they reflect the duties performed
- Monitor the application of established procedures to seek continual improvement
- Acquiring and distributing information to all company personnel regarding changes to legislation
- Ensuring that the Injury Management Coordinator is notified of all injured employees
- Ensuring that Site Inspections are carried out to check that Safe Working Practice is being adhered to
- Ensuring that any serious accidents or incidents are investigated and that relevant steps are taken under the company WHS System and the relevant states regulators requirements
- Representing the company on Work, Health and Safety issues with authorities

Environmental

- Ensuring that the PBG Management system is compliant to the latest editions of all Environmental Legislation, Regulations, Standard and Codes of Practice
- Acquiring and distributing information to all company personnel regarding changes to Legislation
- Ensuring that Site Inspections are carried out to check that Environmental Management Plans (EMP) are being adhered to

Quality Management

- Ensuring that the PBG Management system is compliant to the latest editions of all Quality Legislation, Regulations, Standards and Codes of Practice
- Acquiring and distributing information to all company personnel regarding changes to Legislation
- Ensuring that Site Inspections are carried out to check that Quality Management Plans (GMP) are being adhered to
- Monitor and provide recommendations for continual improvement of inspection & test plans when required
- Ensure project teams comply with Head Contracts requirements for Quality Assurance
- Undertake inspections in-conjunction with the Site Manager of key quality issues identified by Senior Management of the company
- Attend and prepare for all external audits

WHS

- Ensuring that the PBG Management System is compliant to the latest editions of all Work, Health and Safety Legislation, Regulations, Standards and Codes of practice

SPECIFIC PROJECT INVOLVEMENT

Patterson Building Group Pty Limited

HSEQ Manager

PROJECT	VALUE	ROLE
UNSW E10 Hilmer Level 5 PC2 Lab Upgrade - Construct & Refurbishment	\$377,289	HSEQ Manager
Shellharbour & Shoalhaven Hospital Compliance Project - Construct & Refurbishment	\$1.2 million	HSEQ Manager
The Parklands, Red Hill - New Build	\$2.8 million	HSEQ Manager
Gledswood Hills Public School - Stage 2 - Design & Construct	\$16.6 million	HSEQ Manager
SIA Oran Park - ECI Works - Design	\$430,641	HSEQ Manager
Levande Waratah Highlands Stages 8/9 - Design & Construct	\$16.1 million	HSEQ Manager
Parkes Hospital - Design & Construct	\$259,249	HSEQ Manager
Wollongong Hospital Paediatric Ward Upgrade Stage 4 - Construct	\$1million	HSEQ Manager
Blayney MPS-Early Works Carpark - Design & Construct	\$335,929	HSEQ Manager
Frank Baxter Nurrunga Unit Upgrade	\$1.3 million	HSEQ Manager
Stratford Gardens Club House & Heritage House - Construct	\$6.1 million	HSEQ Manager
Willowdale Medium Density 1K - Design & Construct	\$19.4 million	HSEQ Manager
UTS CB01 Amenities Upgrade	\$3.7 million	HSEQ Manager
Gaden Trout Hatchery Upgrade Works - Construct	\$7.6 million	HSEQ Manager
Coffs Harbour Sportz Central - Design & Construct	\$7.1 million	HSEQ Manager
Kennards Self Storage Waterloo - Fit Out	\$82,500	HSEQ Manager
OTG Mt Hutton - Early Works	\$125,825	HSEQ Manager
KRG Newcastle Warehouse Development - Design & Construct	\$1.5 million	HSEQ Manager
Blueheath Medowie Stage 5 - Design & Construct	\$5.7 million	HSEQ Manager
Storage King Pymble - Defect Rectification	\$165,000	HSEQ Manager
RSL LifeCare Lift Upgrade - John Goodlet Manor, Picton - Design & Construct	\$943,649	HSEQ Manager
RCC Arthur Byrne Reserve Amenities - Construct	\$2.3 million	HSEQ Manager
Kennards Self Storage Waterloo - Fit Out	\$82,500	HSEQ Manager
62 Bradley Street, Glenmore Park -Townhouse Subdivision - Design & Construct	\$14 million	HSEQ Manager
Storage King Vineyard - Design & Construct	\$9.4 million	HSEQ Manager
RSL LifeCare - Lift Upgrade - Jonathan Rogers House Nowra	\$1 million	HSEQ Manager
UTS CB01 Domestic Cold Water Upgrade Works - Construct & Refurbishment	\$494,549	HSEQ Manager
HI RAIR Woy Woy Ambulance Station Stage 2 - Design & Construct	\$4.7 million	HSEQ Manager
UTS CB11.03 Apple Foundation	\$641,399	HSEQ Manager
Kahibah Public School - Construct	\$3.1 million	HSEQ Manager
NSW E8 & E10 RNAI Labs & Nanoparticle Lab - Construct	\$4.7 million	HSEQ Manager
Storage King Granville- Design & Construct	\$16.9 million	HSEQ Manager
Oak Tree Village Hamilton - Design & Construct	\$1 million	HSEQ Manager
Oak Tree Village Mudgee, Stage 3 - Construct	\$5.8 million	HSEQ Manager

PROJECT	VALUE	ROLE
Kennards Self Storage Pymble - Design & Construct	\$4.1 million	HSEQ Manager
Rent A Space Oran Park - Design & Construct	\$11.9 million	HSEQ Manager
BGIS Sustainable Critical Infrastructure Programme - Refurbishment	\$1 million	HSEQ Manager
Bunnings Maitland - Alteration Works	\$1 million	HSEQ Manager
Tamworth Hub - Construct	\$7.9 million	HSEQ Manager
RAIR 2 Blayney - Design & Construct	\$1.1 million	HSEQ Manager
RAIR 2 Mudgee - Design & Construct	\$1.9 million	HSEQ Manager
Dumaresq Village Nowra, Stage 3-5 - Design & Construct	\$12 million	HSEQ Manager
PLC Sky Path - Construct	\$5.2 million	HSEQ Manager
RAIR 2 Macksville - Design & Construct	\$1.1 million	HSEQ Manager
RAIR 2 Coffs Harbour - Design & Construct	\$5.2 million	HSEQ Manager
Condobolin Visitor Information Centre - Construct	\$3.7 million	HSEQ Manager
Jindabyne National Snowsports Facility - Construct	\$5.9 million	HSEQ Manager
Trumen Self Storage Revesby - Design & Construct	\$10.5 million	HSEQ Manager
SIA Wetherill Park - Design & Construct	\$431,103	HSEQ Manager
Oak Tree Village Mudgee Civil Works BOS - Design & Construct	\$1 million	HSEQ Manager
Oak Tee Village Dubbo, Stage 3 - Design & Construct	\$5.1 million	HSEQ Manager
Kennards Self Storage Fyshwick - Design & Construct	\$1.6 million	HSEQ Manager
Nowra Veteran's Wellbeing Centre	\$3 million	HSEQ Manager
Hannas Arc Lane Cove	\$24 million	HSEQ Manager
Wollongong Hospital Covid Works-Outdoor Staff - Design & Construct	\$221,101	HSEQ Manager
St Mary Cathedral College Admin Office - Construct	\$222,035	HSEQ Manager
Wollongong Hospital Paediatric Ward - Upgrade Stage 3	\$1 million	HSEQ Manager
Aveo Retirement Homes – Stage 4a	\$12 million	HSEQ Manager
Kennards Self Storage Moorebank - Design & Construct	\$16 million	HSEQ Manager
Kennards Self Storage Camperdown - Design & Construct	\$11 million	HSEQ Manager
815 Pacific Highway Lobby Renovation - Construct	\$166,148	HSEQ Manager
Wollongong Hospital MHU COVID AHU - Construct	\$350,332	HSEQ Manager
Rent A Space Marsden Park Building B - Design & Construct	\$4.3 million	HSEQ Manager
UNSW Goldestein Fire Upgrade	\$224,402	HSEQ Manager
Wellington CC BGIS Stage 2a - Refurbishment	\$3.1 million	HSEQ Manager
Kennards Moore Park - Remediation Works	\$343,800	HSEQ Manager
Wollondilly Shire Council Childcare Centre Bldg A - Construct	\$4.4 million	HSEQ Manager
Rent A Space Marsden Park Bldg B - Design & Construct	\$3.8 million	HSEQ Manager
Rent A Space Queanbeyan - Construct	\$11.8 million	HSEQ Manager
Oak Tree Tamworth Landscape And Lock-Ups - Construct	\$338,364	HSEQ Manager
Blueheath Medowie Retirement Village, Stage 2 - Design & Construct	\$5.2 million	HSEQ Manager
Willoughby City Council Ground Floor Works - Refurbishment	\$1 million	HSEQ Manager

PROJECT	VALUE	ROLE
Oak Tree Village Gunnedah Stage 4-5 - Construct	\$4.2 million	HSEQ Manager
Oak Flats Depot - Construct	\$3.6 million	HSEQ Manager
Wollongong Hospital A2 COVID Ward - Upgrade	\$74,500	HSEQ Manager
Mumbulla Kindergarten Bega - Construct	\$1.4 million	HSEQ Manager
Wollongong Covid-19 Vaccination Centre - Construct & Refurbishment	\$4 million	HSEQ Manager
Kennards Self Storage Belmont - Design & Construct	\$1.3 million	HSEQ Manager
Crookwell District Hospital Emergency Department - Construct	\$2 million	HSEQ Manager
Storage King Prestons - Design & Construct	\$12.5 million	HSEQ Manager
Rockdale Administration Building - HVAC & Roofing Works - Refurbishment	\$2.3 million	HSEQ Manager
Aquatopia Wave Pool, Fairfield - Construct	\$3.4 million	HSEQ Manager
Cardinal Gilroy Village, Merrylands West - Design & Construct - 17 ILU's & Community Centre	\$12.2 million	HSEQ Manager
Oak Tree Village, Mudgee - Construct - 16 ILU's	\$3.9 million	HSEQ Manager
Armory Cafe Outdoor Roofing - Refurbishment	\$179,146	HSEQ Manager
Stockland Willowdale Stage 9/10ACD- Design & Construct - 37 ILU's	\$10.5 million	HSEQ Manager
Queen's Club Goods Lift - Construct	\$1.5 million	HSEQ Manager
UTS Building 4 Passive Fire Compliance - Upgrade	\$1 million	HSEQ Manager
Oak Tree Village Orange - Construct - 11 ILU's	\$2.7 million	HSEQ Manager
Stockland Elara MD 6.1 - Design & Construct - 21 ILU's	\$5.8 million	HSEQ Manager
Port Stephens Fisheries Institute - Construct	\$4.2 million	HSEQ Manager
Storage King Smithfield - Design & Construct	\$10.5 million	HSEQ Manager
USYD Medical Facility, Dubbo - Design & Construct	\$5 million	HSEQ Manager
Stockland Willowdale Clubhouse - Design & Construct	\$440,155	HSEQ Manager
Presbyterian Ladies College - Construct	\$1.5 million	HSEQ Manager
Dapto Public School - Design & Construct	\$15 million	HSEQ Manager
Bankstown North Public School - Design & Construct	\$22.4 million	HSEQ Manager
Oak Tree Village Dubbo - Construct - 6 ILU's	\$1.6 million	HSEQ Manager
UTS Fire Dampers Code Compliance CB01 L1-L3 - Upgrade	\$603,820	HSEQ Manager
Kogarah Dental Clinic - Construct	\$1.9 million	HSEQ Manager
Elara Medium Density 5 - 2C	\$2.1 million	HSEQ Manager
Fairfield Library	\$2.9 million	HSEQ Manager
Elara Medium Density Stage 5.3	\$12.1 million	HSEQ Manager
DPI Trangie Facilities Upgrade	\$660,114	HSEQ Manager
Elara MD 5-2C	\$2.1 million	HSEQ Manager
Frank Baxter YJC Construction Works	\$3.9 million	HSEQ Manager
Wollongong Hospital Pediatric Ward Upgrade Stage 2	\$1.8 million	HSEQ Manager
Haberfield Centre Library Upgrade	\$3.2 million	HSEQ Manager
Blueheath Seniors Living Stage 1 Medowie	\$5.5 million	HSEQ Manager

PROJECT	VALUE	ROLE
St Ives High School	\$4.4 million	HSEQ Manager
Willowdale Lot 1766	\$3.9 million	HSEQ Manager
Rent A Space, Marsden Park	\$6.6 million	HSEQ Manager
TAFE Brookvale Building A \$ V ACP Replacement	\$905,015	HSEQ Manager
Frank Baxter Building Hardening Upgrade Works	\$2.6 million	HSEQ Manager
RAIR - Solar Panels	\$200,000	HSEQ Manager
RAIR - Cootamundra	\$2.7 million	HSEQ Manager
Cessnock Police Station	\$12.2 million	HSEQ Manager
UTS CB04 L3 & 4 Accessible Toilets	\$437,506	HSEQ Manager
Wollongong Hospital Birthing Unit Upgrade	\$1.7 million	HSEQ Manager
Kennards Guildford Building A	\$6.8 million	HSEQ Manager
Willowdale Stage 8-10	\$19.4 million	HSEQ Manager
Gosford Police Station	\$2.7 million	HSEQ Manager
Inverell Temporary Police Station	\$1.7 million	HSEQ Manager
Kennards Warrawong Buildings C, E & F	\$3.4 million	HSEQ Manager
Young High School	\$2.8 million	HSEQ Manager
Willowdale MD Precinct 8	\$12.8 million	HSEQ Manager
UNSW K15 Lower Ground Fleet Material Characterisation Lab	\$745,801	HSEQ Manager
Kippax Oval Amenities, Moore Park	\$1.3 million	HSEQ Manager
St Patrick's Primary School, Lochinvar - Stage 2	\$5 million	HSEQ Manager
UTS Fire Dampers B01 & B10	\$1.4 million	HSEQ Manager
Kennards Self Storage - Wollongong	\$7.6 million	HSEQ Manager
Minnamurra Visitor Centre	\$2.2 million	HSEQ Manager
Master Builders Excellence in Construction Awards Winner 2020		
St Clare's Catholic High School - Hassell Grove	\$13.3 million	HSEQ Manager
Taree Police Station - New Build	\$13.5 million	HSEQ Manager
RAIR Goulburn	\$3.8 million	HSEQ Manager
RAIR Bungendore	\$2.6 million	HSEQ Manager
RSL LifeCare Nowra	\$6 million	HSEQ Manager
Expansion of Riverbank Public School	\$17 million	HSEQ Manager
Master Builders Excellence in Construction Awards Winner 2020		
Kintyre Stage 8	\$4.1 million	HSEQ Manager

PREVIOUS PROJECT EXPERIENCE

PROJECT	VALUE	ROLE
Randwick Public School - Upgrade	\$12.4 million	Site Manager
Master Builders Excellence in Construction Awards Winner 2019		
Randwick & Petersham AS Works	\$1.6 million	Site Manager
Sydney Opera House, Lift 36 - New Build	\$4.6 million	Site Manager

PREVIOUS PROJECT EXPERIENCE

SOH - Function Centre **Master Builders Excellence in Construction Awards Winner 2019**	\$15 million	Site Manager
UNSW E15 Quadrangle Building Teaching Precinct - Stage 1 **Master Builders Excellence in Construction Awards Winner 2011**	\$2.4 million	Site Manager
SSRP - Cheltenham School Refurbishment	\$1.6 million	Site Manager
Cobham Juvenile Justice Centre	\$1.65 million	Site Manager
Minto Malt Factory - Office Extension	\$320,000	Site Manager
Bowral Public School - Construction of New Homebases	\$3.5 million	Site Manager
Durham Green Retirement Village - Design and Construction of Stage 3D	\$6.5 million	Site Manager
Durham Green Retirement Village - Construction of Stage 3C	\$4.6 million	Site Manager
Durham Green Retirement Village - Construction of Memory Care Lodge & Stage 8	\$14.3 million	Site Manager

	Construction Environmental Management Plan – 626 - Gledswood Hills Public School – Stage 2	E1
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25.6 Appendix E6 – SINSW Community Communication Strategy

School Infrastructure NSW

Community Communication Strategy

Gledswood Hills Public School – Stage 2

SSD-8378

Version	Date of Review
0.1	12/3/2023
0.2	24/3/2023
1	4/4/2023
2	13/4/2023

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Document purpose

School Infrastructure NSW (SINSW) consults and engages with communities and stakeholders throughout the development of a school project. This engagement helps to inform the design of the school project and provides an opportunity to share and address potential constraints and impacts during construction.

The Gledswood Hills Public School stage 2 upgrade has been approved as a modification to the existing state significant development application (SSD) and has been assessed by the Department of Planning and Environment (DPE). Consent for SSD-8378 was provided on 21/09/2018.

For more information visit the [DPE web page](#) on the SSD.

This CCS has been developed to comply with condition B9

Community Communication Strategy

B9 A Community Communication Strategy must be prepared to provide mechanisms to facilitate communication between the Applicant, the relevant Council and the community (including adjoining affected landowners and businesses, and others directly impacted by the development), during the design and construction of the development and for a minimum of 12 months following the completion of construction.

The Community Communication Strategy must:

- (a) identify people to be consulted during the design and construction phases;*
- (b) set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the development;*
- (c) provide for the formation of community-based forums, if required, that focus on key environmental management issues for the development;*
- (d) set out procedures and mechanisms:*
 - (i) through which the community can discuss or provide feedback to the Applicant;*
 - (ii) through which the Applicant will respond to enquiries or feedback from the community; and*
 - (iii) to resolve any issues and mediate any disputes that may arise in relation to construction and operation of the development, including disputes regarding rectification or compensation.*

The Community Communication Strategy must be submitted to the Planning Secretary for approval no later than two weeks before the commencement of any work.

Work for the purposes of the development must not commence until the Community Communication Strategy has been approved by the Planning Secretary, or within another timeframe agreed with the Planning Secretary.

This CCS outlines SINSW's commitment to:

- Consider and manage stakeholder and community expectations as integral to the successful delivery of the project.
- Inform affected stakeholders, such as the local community or road users about construction activities.
- Enable the open and proactive management of issues and communications.

This CCS will be implemented through the construction phase of the project, and for 12 months following construction completion.

Plan review

The CCS will be revised as required to address any changes in stakeholders or the project management or complaints handling process. This will be done in close consultation with the SINSW Senior Project Director, appointed Project Management company and/or contractor and SINSW Community Engagement Manager.

Approval

The CCS is reviewed and approved by the SINSW Senior Project Director, in close consultation with School Performance, with final endorsement from the SINSW Community Engagement Senior Manager.

Table 1: List of SSD requirements and where they are addressed in this CCS

SSD-8378 B9	The Community Communications Strategy addresses this in section
a) <i>identify people to be consulted during the design and construction phases;</i>	▪ Section 3
b) <i>set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the development;</i>	▪ Section 4.2
c) <i>provide for the formation of community-based forums, if required, that focus on key environmental management issues for the development;</i>	▪ Section 5
d) set out procedures and mechanisms: <ul style="list-style-type: none"> i. <i>through which the community can discuss or provide feedback to the Applicant;</i> ii. <i>through which the Applicant will respond to enquiries or feedback from the community;</i> iii. <i>to resolve any issues and mediate any disputes that may arise in relation to construction and operation of the development, including disputes regarding rectification or compensation.</i> 	▪ Section 6

1. Context

The first stage of the Gledswood Hills Public School project was delivered and handed over in 2020 including:

- 24 flexible learning spaces catering for up to 600 students.
- a new and upgraded hall.
- a library.
- special programs rooms.

The Gledswood Hills Public School Stage 2 works will deliver:

- 20 new innovative and flexible learning spaces
- Extension to the existing car park

For more information on the project, visit the [project web page](#) on the School Infrastructure NSW website.

2. Community engagement objectives

SINSW's goal is that our school infrastructure meets the needs of a growing population and enables flexible learning and teaching. This CCS has been developed to achieve the following community engagement objectives:

- a) Promote the benefits of the project.
- b) Build key school community stakeholder relationships and maintain goodwill with impacted communities.
- c) Manage community expectations and build trust by delivering on our commitments.
- d) Provide timely information to impacted stakeholders, schools and broader communities.
- e) Address and correct misinformation in the public domain.
- f) Reduce the risk of project delays caused by negative third party intervention.
- g) Leave a positive legacy in each community.

3. Stakeholders

The stakeholder list below summarises who will be informed and consulted during the construction phase via ongoing face to face meetings, communications collateral and digital engagement methods.

Table 2: Stakeholders

Stakeholders	Interest and involvement
School community a) Principal b) Teachers c) Students d) Staff e) Parents and carers	a) Safe pedestrian and traffic access to the temporary school during construction. b) Construction impacts and how these will be minimised. c) Quality of infrastructure and resources upon project completion. d) How to access the new school once completed. e) Increase play space at the school once project is complete by removing demountables.
Local community	a) Noise and truck movements during construction. b) Increased traffic and congestion on nearby streets including:

Stakeholders	Interest and involvement
	<ul style="list-style-type: none"> a. The Hermitage Way b. Paramoor St c. Providence Dr d. Seville CCT c) Local traffic and pedestrian safety. d) Changed traffic conditions during pick-up and drop-off. e) Shared use of school facilities and amenities.
<p>Adjoining affected landowners and businesses</p> <ul style="list-style-type: none"> • Country Club Gledswood Hills • Sekusui house – local developer • Neighbours along Paramoor St, Providence Dr, Seville Cct and The Hermitage way. 	<ul style="list-style-type: none"> a) Noise and truck movements during construction. b) Increased traffic and congestion on nearby streets. c) Local traffic and pedestrian safety. d) Changed traffic conditions during pick-up and drop-off. e) Shared use of school facilities and amenities . f) Environmental impacts during construction.
<p>Local Members of Parliament:</p> <ul style="list-style-type: none"> a) State – Sally Quinell Member for Camden b) Federal - Dr Mike Freeland Member for Macarthur 	<ul style="list-style-type: none"> a) Meeting the economic, social and environmental objectives of state and federal governments. b) Delivering increased public education capacity on time. c) Delivering infrastructure which meets expectations. d) Addressing local issues such as traffic, congestion and public transport solutions.
<p>Government agencies and peak bodies:</p> <ul style="list-style-type: none"> a) Transport for NSW b) Fire and Rescue NSW c) NSW Department of Education d) NSW Department of Planning and Environment e) NSW Environmental Protection Authority f) NSW Rural Fire Service g) Sydney Water h) NSW Heritage Council i) NSW Office of Environment and Heritage j) NSW Department of Premier and Cabinet 	<ul style="list-style-type: none"> a) Traffic and congestion on the local road system. b) Adequate public transport options and access. c) Ensuring new infrastructure meets standard requirements for safety and fire evacuation. d) Ensuring the development is compliant. e) Ensuring the development does not impact heritage items. f) Easing overcrowding in local schools.
<p>Local Council – Camden Council</p> <ul style="list-style-type: none"> ▪ Mayor Cr Theresa Fedeli ▪ Deputy Mayor, Cr Paul Farrow ▪ CEO/ General Manager Ron Moore ▪ Councillors 	<ul style="list-style-type: none"> a) Schedule for construction and opening of school. b) Plans for enrolled students during the operation of the temporary school. c) Impacts to the local community including noise, congestion and traffic.

Stakeholders	Interest and involvement
<ul style="list-style-type: none"> • Ashleigh Cagney • Peter McLean • Eva Campbell • Russell Zammit • Cindy Cagney • Usha Dommaraju • Lara Symkowiak 	<ul style="list-style-type: none"> d) Shared use of community spaces. e) Providing amenities to meet increase population density. f) Copies of information distributed to local residents. g) Processes and protocols in place to manage interactions with local residents.
<p>Nearby public schools</p> <ul style="list-style-type: none"> • Barramurra Public School • Camden Public School • Camden South Public School • Cobbity Public School • Currans Hill Public School • Elderslie Public School • Harrington Park Public School • Leppington Public School • Mawarra Public School • Mt Annan Public School • Narellan Public School • Narellan Vale Public School • Oran Park Public School • New primary school in Gregory Hills (temp school now open as Gregory Hills Public School) • Rossmore Public School • Spring Farm Public School 	<ul style="list-style-type: none"> a) Potential impact on school resources. b) Potential impact on current students. c) Implications for teaching staff. d) Possible impacts on enrolments. e) Opportunities to view the new facilities.
<p>Community groups</p> <ul style="list-style-type: none"> • Facebook group run by local parents – “Gledswood Hills / Gregory Hills Needs A High School!!!!” • Local childcare and preschool centres 	<ul style="list-style-type: none"> • Impacts on the surrounding community including roads, facilities, playing fields etc. • Shared use of school facilities and amenities. • Potential for economic opportunities. • Interest in project timing and how well the project caters to needs of the community.
<p>Project Reference Group (names not disclosed)</p> <ul style="list-style-type: none"> • Project members • Principal of high school and public school • Director Educational Leadership <p>Parent/Community representative</p>	<ul style="list-style-type: none"> • Schedule for construction, progress and opening of school. • Inform plans for the operation of the temporary school. • Impacts to the local community including noise, congestion and traffic.
<p>Interested Aboriginal Parties</p>	<ul style="list-style-type: none"> • Recognition and respect for Aboriginal heritage

Stakeholders	Interest and involvement
<p>Gledswood Hills Public School shares a boundary with three Local Aboriginal Land Councils (LALC)</p> <ul style="list-style-type: none"> • Thawaral Local Aboriginal Land Council (TLALC – Dharawal people) • Gandangarra Local Aboriginal Land Council (GLALC – Dharawal people) • Deerubbin Local Aboriginal Land Council (DLALC – Dharug people) 	<p>and culture.</p> <ul style="list-style-type: none"> • Protection of culturally significant objects or sites. • Considering educational and support needs of ATSI students. • Relationships between the Aboriginal Community and the project. • Compliance with statutory requirements in relation to Aboriginal heritage protection.

4. Engagement approach

The key consideration in delivering successful outcomes for this project is to make it as easy as possible for anyone with an interest to find out what is going on. In practice, the communications approach across all levels of engagement will involve:

- a) Using uncomplicated language.
- b) Taking an energetic approach to engagement.
- c) Encouraging and educating whenever necessary.
- d) Engaging broadly including with individuals and groups that fall into harder to reach categories.
- e) Providing a range of opportunities and methods for engagement.
- f) Being transparent.
- g) Explaining the objectives and outcomes of planning and engagement processes.

In addition to engagement with Government departments and agencies and local council, community engagement will continue for the project during construction in two streams:

- a) School-centric involvement from school communities (including students, parents/caregivers, teachers, admin staff) unencumbered by broader community issues, and
- b) Broad community involvement unencumbered by school community wants and needs. Broad community stakeholders include local residents, neighbours and local action groups.

4.1. General community input

Members of the general public impacted by the construction phase are able to enquire, provide feedback and complain about environmental impacts via the following channels:

- a) School Infrastructure NSW 1300 community information line 1300 482 651 published on all communications material, including project site signage
- b) School Infrastructure NSW email address schoolinfrastructure@det.nsw.edu.au published on all communications material, including project site signage
- c) Project webpage 'contact us' form
- d) During information booths and information sessions held at the school or local community meeting place, and advertised on our website and via letterbox drops.

Refer to Section 6.5 of this document for detail on our enquiries and complaints process. The contractor contact details for afterhours complaints and enquiries are available on the Project Webpage at Page 7 of the Construction Environmental Management Plan:

https://www.schoolinfrastructure.nsw.gov.au/content/dam/infrastructure/projects/g/gledswood-hills-new-primary-school/2023/april/B14_Construction_Environmental_Management_Plan_Gledswood_Hills_PS_-_Revision_1_27.03.23.pdf

A number of tools and techniques will be used to keep stakeholders and the local community involved as summarised in Table 3 below.

For reference, project high level milestones during the delivery phase include:

- a) Site establishment/early works (may be complete prior to this CCS being implemented as part of SSD conditions of approval)
- b) Commencement of main works construction.
- c) School Term before project is completed.
- d) Project completion.
- e) First day of school following project completion / official opening.

Table 3: School Infrastructure NSW Communications Tools

Communications Tool	Description of Activity	Frequency
1300 community information line	<p>The free call 1300 482 651 number is published on all communication materials and is manned by SINSW.</p> <p>All enquiries that are received are referred to the appointed Community Engagement Manager and/or Senior Project Director as required and logged in our CRM.</p> <p>Once resolved, a summary of the conversation is updated in the CRM.</p>	Throughout the life of the project and accessible for 12 months post completion
Advertising (print)	Advertising in local newspapers may be undertaken prior to significant construction activities, major disruptions and opportunities to meet the project team or find out more at a face to face event.	At project milestones
Call centre scripts	High level, project overview information may be provided to external organisations who may receive telephone calls enquiring about the project, most namely stakeholder councils.	Throughout the project when specific events occur or issues are raised by stakeholders
Community contact cards	<p>These are business card size with all the SINSW contact information.</p> <p>The project team/ contractors are instructed to hand out contact cards to stakeholders and community members enquiring about the project. Cards are offered to school administration offices as appropriate.</p> <p>Directs all enquiries, comments and complaints through to our 1300 number and School Infrastructure NSW email address.</p>	Throughout the life of the project and available 12 months post completion
CRM database	<p>All projects are created in SINSW's Customer Relationship Management system at project inception.</p> <p>Interactions, decisions and feedback from stakeholders are captured, and monthly reports generated.</p> <p>Any enquiries and complaints are to be raised in the CRM and immediately notified to the Senior Project Director, Project Director and Community Engagement Manager.</p>	Throughout the life of the project and updated for 12 months post completion
Display boards	A0/A1 size full colour information boards to use at info sessions or to be permanently displayed in appropriate places (school admin office for example).	As required
Door knocks	<p>Provide timely notification to nearby residents of upcoming construction works, major impacts such as changes to pedestrian movements, temporary bus stops, expected impacts and proposed mitigation.</p> <p>Provide written information of construction activity and contact details.</p>	As required prior to periods of significant construction impacts
FAQs	Set of internally approved answers provided in response to frequently asked questions. Used as part of relevant stakeholder	Throughout the life of the project

Communications Tool	Description of Activity	Frequency
	and community communication tools. These are updated as required, and included on the website if appropriate.	
Information booths	<p>Information booths are held locally and staffed by a project team member to answer any questions, concerns or complaints on the project.</p> <p>Information booths may be held both at the school/ neighbouring school, as well as the broader community:</p> <ul style="list-style-type: none"> a) School information booths are held at school locations at times that suit parents and caregivers, with frequency to be aligned with project milestones and as required. b) Community information booths are usually held at local shopping centres, community centres and places that are easily accessed by the community. They are held at convenient times, such as out of work hours on weekdays and Saturday's. <p>Collateral to be provided include community contact cards, latest project notification or update, with internal FAQs prepared.</p> <p>All liaison to be summarised and loaded in the CRM.</p>	At project milestones and as required
Community information sessions	<p>Information sessions are a bigger event than an info booth, held at a key milestone or contentious period. We have more information on the project available on display boards/ screens and an information pack handout – including project scope, planning approvals, any impacts on the school community or residents, project timeline, FAQs.</p> <p>Members from the project and communications team will be available to answer questions about the project.</p> <p>These events occur after school hours on a week day.</p> <p>All liaison summarised and loaded on the CRM.</p>	As required
Information pack	<p>A 4-page A4 colour, fold out flyer that can include information about the project scope, progress, FAQs, timeline and next steps.</p> <p>To be distributed at info sessions or at other bigger events/ milestones in hard copy and also made available electronically.</p>	As required
Media releases/events	<p>Media releases are distributed upon media milestones. They promote major project milestones and activities and generate broader community awareness.</p>	<p>Media milestones during construction period may include:</p> <ul style="list-style-type: none"> a) Planning approval granted b) Construction contract tendered c) Construction contract awarded d) Sod turning opportunity e) Handover /

Communications Tool	Description of Activity	Frequency
		Official opening
Notifications and updates	<p>A4 printed in colour that can include FAQs if required</p> <p>Notifications are distributed under varying templates with different headings to suit different purposes:</p> <p>a) Works notification are used to communicate specific information/ impacts about works, impacts and mitigations.</p> <p>b) Project update is used when communicating milestones and higher level information to the wider community i.e. project announcement, concept design/DA lodgement, construction award, completion. Includes the project summary, information booths/ sessions if scheduled, progress summary and contact info.</p>	<p>As required according to the construction program.</p> <p>Distributed (refer construction works notification distribution methodology in Section 6.4 via letterbox drop to local residents and via the school community prior to construction activities or other milestones throughout the life of the project. Specific timings indicated in table 5 – Section 6.</p>
Photography and videography	<p>Images may be used in notifications, on the website, at information sessions and in presentations.</p> <p>Once the project is complete, SINSW will organise photography of external and internal spaces to be used for a range of communications purposes.</p>	<p>Project completion (actual photography and video of completed project)</p> <p>Prior to project completion - artist impressions, flythrough, site plans and construction progress images may be used.</p>
Presentations	Details project information for presentations to stakeholder and community groups.	As required
Priority correspondence	Ministerial (and other) correspondence that is subject to strict response timeframes. Includes correspondence to the Premier, Minister, SINSW and other key stakeholders. SINSW is responsible for drafting responses as requested within the required timeframes.	As required
Project Reference Group	SINSW facilitated Project Reference Group sessions providing information on the design, construction activities, project timeframes, key issues and communication and engagement strategies.	Meets every month or as required. PRG during the delivery phase is generally reduced or retired.
Project signage	<p>A0 sized, durable aluminium signage has been installed at Gledswood Hills Public School.</p> <p>Provides high level information including project scope, project image and SINSW contact information.</p>	Throughout the life of the project and installed for 12 months post completion

Communications Tool	Description of Activity	Frequency
	Fixed to external fencing/ entrances etc. that are visible and is updated if any damage occurs.	
Site visits	Demonstrate project works and progress and facilitate a maintained level of interest in the project. Includes media visits to promote the reporting of construction progress.	As required
School Infrastructure NSW email address	Provide stakeholders and the community an email address linking direct to the Community Engagement team. Email address (schoolinfrastructure@det.nsw.edu.au) is published on all communications materials.	Throughout the life of the project
School Infrastructure NSW website	A dedicated project page for Gledswood Hills Public School stage 2 is located on the SINSW website - https://www.schoolinfrastructure.nsw.gov.au/projects/g/gledswood-hills-new-primary-school1.html	Updated at least monthly and is live for at least 12 months post completion of the project
Welcome pack/ thank you pack	At project completion the following flyers are utilised: <ul style="list-style-type: none"> ▪ Welcome pack – project completion for school community provided on the first day/week they are returning to school when new facilities are opening, or attending a new school. Includes project overview, map outlining access to the school and key locations, FAQs, contact information. ▪ Thank you pack – tailored to the local residents to thank them for their patience and support of the project. 	Project completion only

4.2. Construction works notification distribution methodology

Construction works notifications will be distributed to targeted properties in the vicinity of the project. These properties have been identified as part of the technical studies and plans submitted as part of the planning and assessment approval pathway and post approval requirements. Specifically, the notification distribution map at **Figure 1** below has been prepared through an analysis of the potential project impacts and requirements identified in:

- the acoustic assessment supporting the SSD application - *Appendix D_ Acoustic Report _Rev C_*
- the transport assessment supporting the SSD application, including
 - *Appendix 16_ Construction Traffic Plan*
 - *Appendix 17_ Traffic Report*
 - *Appendix 18_ Memo on Estimated Traffic Volumes*
 - *Appendix D_ Traffic Report _Rev G*
- the Construction Environmental Management Plan, including the:
 - Construction Noise and Vibration Management Sub Plan
 - Construction Traffic and Pedestrian Management Sub Plan.

This methodology has been used to identify the anticipated construction impacts identified for this project. It does not include an arbitrary distribution area due to the robust impact analysis that has been carried out during planning and assessment phase of the project.

The distribution area may be altered:

- to address specific construction activities where the impact/s affect fewer or greater properties, depending on the nature of the work
- where ongoing monitoring shows more widespread impacts to that predicted in the environmental impact assessment
- if complaints are received outside of the distribution area
- if there is an approved project modification in the future that results in more widespread impacts

- at the discretion of School Infrastructure NSW.

Additional project updates and notifications will also be distributed when communicating milestones and higher-level information to the wider community such as construction contract award and project completion. Such updates and notifications may not detail construction impacts and may be distributed to a greater number of addresses to widely publicise the project's achievements.

Figure 1: Map of construction works notification distribution area



The below details the showing nearest sensitive receivers that may be impacted by construction, including noise. These stakeholders will receive notifications for unplanned out of hours works before undertaking the activities or as soon as is practical afterwards. This will also consider residents that may be impacted by heavy vehicle movements and other non-site-specific impacts (e.g. truck movements).

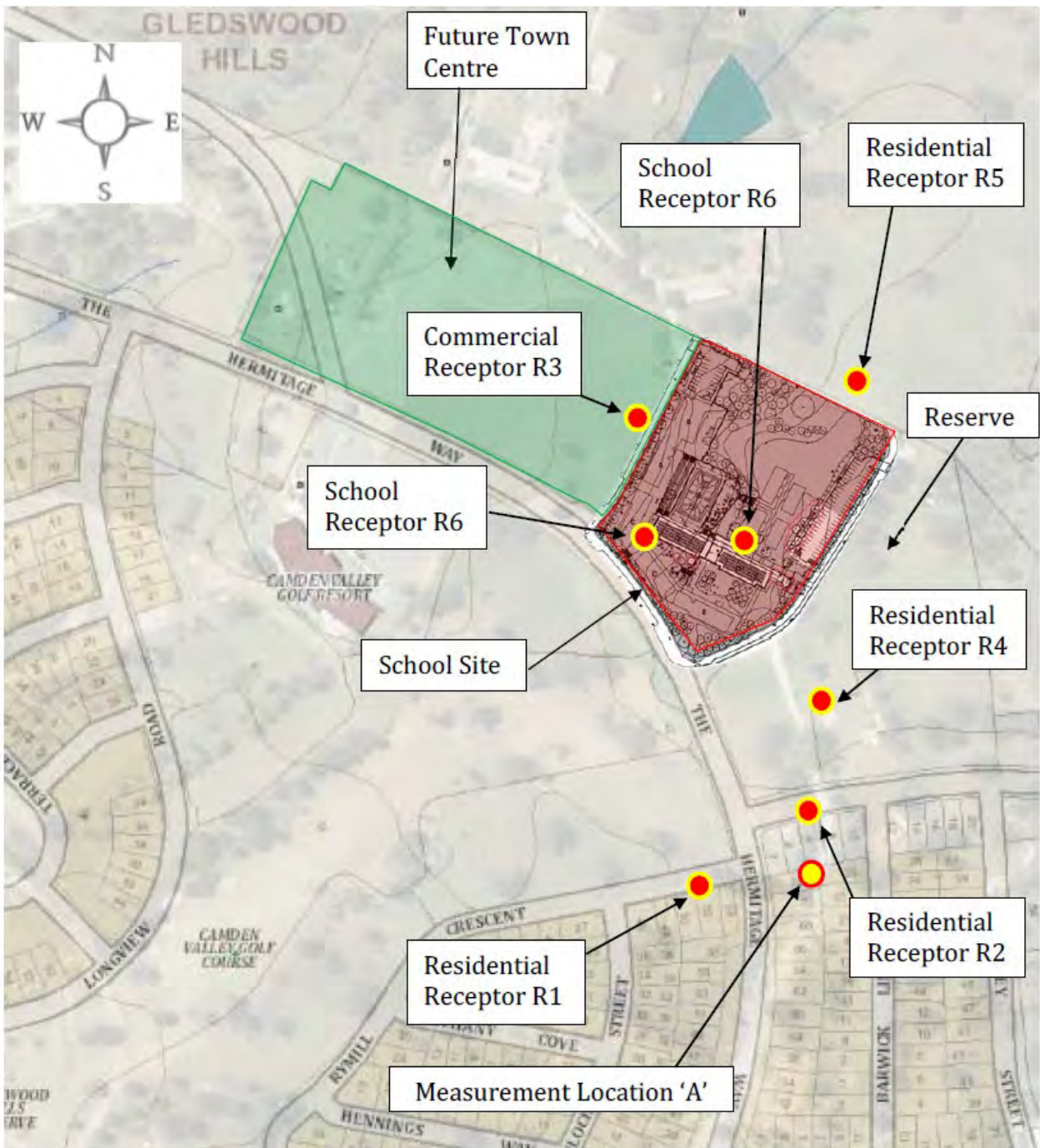


Figure 2: Location Plan Gledswood Hills Public school

5. Engagement Delivery Timeline

The following engagement delivery timeline maps tailored communications tools and activities by key milestone.

Table 4: Engagement timeline

Project Phase / milestone	Target Audiences	Proposed communication tools / activities / purpose as per Table 3	Timing / implementation
Prior to SSD approval – consultation during planning and design development	Local community School community, including principal, teachers, staff, and P&C Adjoining property owners Camden Council Local Member Aboriginal Elders	Planning updates and project updates	Completed 2018
SSD approval – consult community on construction mitigation measures	Local residents	Project Update Distributed through letter box drop	Mid-April 2023
Site Establishment	Local community School community, including principal, teachers, staff, and P&C Adjoining property owners Camden Council Local Member Aboriginal Elder	Project Update, Works Notifications, and Project signage. Distributed through letter box drop, school newsletter and social media. Onsite sod turn event, smoking ceremony	Site establishment to begin mid-late April 2023
Main Construction works, including but not limited to: a) Remediation b) Works commenced c) Key impact periods – noise, dust, traffic, vibration	Local community School community, including principal, teachers, staff, and P&C Adjoining property owners	Project Update, Works Notifications, and Project signage. Distributed through letter box drop, school newsletter and social media. Info Booth – mid 2023	Late April - Early May 2023 (at key construction events as required, as per our notification process in Table 5)
Term prior to project completion	Local community School community, including principal, teachers, staff, and P&C Adjoining property owners	Site tours and activities to support familiarisation	Early 2024
Handover and welcome to upgraded school	Local community		Mid 2024

Project Phase / milestone	Target Audiences	Proposed communication tools / activities / purpose as per Table 3	Timing / implementation
	School community, including principal, teachers, staff, and P&C Adjoining property owners		
Opening	Local community School community, including principal, teachers, staff, and P&C Adjoining property owners	Official opening ceremony	Mid -Late 2024
Post-opening, for 12 months following operation	All	Website remains live Project signage remains installed 1300 phone and email still active, and CRM still maintained for complaints and enquiries.	Mid 2025

6. Protocols

6.1. Media engagement

SINSW manages all media relations activities, and is responsible for:

- a) Responding to all media enquiries and instigating all proactive media contact.
- b) Media interviews and delegation to SINSW media spokespeople who are authorised to speak to the media on behalf of the project
- c) Informing the Minister's Office and SINSW project team members and communications representatives of all media relations activities in advance and providing the opportunity to participate in events where possible.

6.2. Site visits

SINSW, in partnership with the Department of Education Schools Performance, organises and hosts guided project site tours and media briefings as required by the Minister's Office. The Project Team will ensure the required visitor site inductions are undertaken and that all required Personal Protective Equipment (PPE) is worn.

For media site visits and events, SINSW creates, or contributes to, the production of an event pack. This will include an event brief, media release, speaking notes and Q&As.

6.3. Social, online and digital media

SINSW initiates and maintains all social and online media channels. These channels may include the Department's Facebook and Twitter, and SINSW's LinkedIn and website.

6.4. Stakeholder and community notification process

Notification letters or project updates will be distributed to the community and stakeholders in advance of any activity with the potential to cause impacts.

Depending on the work activity and stakeholder, notifications are primarily distributed via letterbox drop, via the school, electronically via email, as well as uploaded to the SINSW project webpage. If appropriate, notification may also be delivered in person via door knocks, or via phone call or text message, or one-on-one briefings.

Notifications will be written in plain English and will:

- outline the reason that the work is required
- outline the location, nature, and duration of the proposed works
- outline date/s of work, where practicable
- outline work hours
- include a diagram that clearly indicates the location of the works, where required
- include a 1300 community contact number, project email address and website details
- Provide details for a translation service, where required.

Table 5 below outlines minimum notification periods that will be targeted for work activities with the potential to impact sensitive receivers. All notification periods prescribed within development approvals or by approving bodies will be adhered to.

Regular construction updates regarding the general work program and significant milestones will also be provided to the school community and neighbouring properties throughout construction.

The contractor will provide SINSW with the information necessary to meet the notification requirements and target timeframes contained, where practicable.

Table 5: Target community notification periods

Notification period	Work activity
Same day (or as soon as practical)	Major incident, emergency works/unforeseen events
	Unplanned out of hours work (notification provided to affected residents by the contractor before undertaking the works or as soon as practical)
	Unexpected hazardous material find or incident (e.g. asbestos, lead, chemical spill or other harmful material)
7 days	Start of works or site establishment
	Works outside of the site boundary
	Planned out of hours work or change to approved work hours
	Planned investigation and remediation of hazardous materials including asbestos
	Phase of high noise generating works including demolition, tree removal, rock breaking, rock hammering, piling or similar
	Major traffic or pedestrian access changes including parking impacts, detours, and road diversions/closures
	Operational changes for the school community including to school drop-off points, entry and exit points, bus stops, and play space
3 months	Major impacts to school community, including relocation to temporary school, changes to student intake area or similar

6.5. Enquiries and complaints management

SINSW manages enquiries (*called interactions in our Customer Relationship Management (CRM) software, Darzin*), and complaints in a timely and responsive manner.

Prior to project delivery, a complaint could be related to lack of community consultation, design of the project, lack of project progress, etc.

During project delivery (construction), a complaint is defined as in regards to construction impacts – *such as* – safety, dust, noise, traffic, congestion, loss of parking, contamination, loss of amenity, hours of work, property damage, property access, service disruption, conduct or behaviour of construction workers, other environmental impacts, unplanned or uncommunicated disruption to the school.

If a phone call, email or face-to-face complaint is received during construction, it will be acknowledged within 2 working days and logged in our CRM, actively managed, closed out and resolved by SINSW within 10 days, where practicable. Where complaints are unable to be resolved within this timeframe the complainant will be provided with regular updates regarding the complaint resolution process.

A 24-hour contact number for the project site manager will be displayed at the site and can be shared with the community as necessary for any urgent issues that need to be addressed on site, outside of business hours.

As per our planning approval conditions, a complaints register is updated monthly, or as required by the planning authority, and is publicly available on the project's webpage on the SINSW website.

If the complainant is not satisfied with SINSW's response, and they approach SINSW for rectification, the process will involve a secondary review of their complaint as per the outlined process.

Complaints will be escalated when:

- An activity generates three complaints within a 24-hour period (separate complainants).
- Any construction site receives three different complaints within a 24-hour period.
- A single complainant reports three or more complaints within a three-day period.
- A complainant threatens to escalate their issue to the media or government representative.
- The complaint was avoidable.
- The complaint relates to a compliance matter.
- The complaint relates to a community safety matter.
- The complaint relates to a property damage claim.

Complaints will be first escalated to the Senior Manager, Community and Engagement or Director of Communications for SINSW as the designated complaints handling management representatives for our projects. Further escalation will be made to the Executive Director, Office of the Chief Executive to mediate if required.

If a complaint still cannot be resolved by SINSW to the satisfaction of the complainant, we will advise them to contact the NSW Ombudsman - <https://www.ombo.nsw.gov.au/complaints>.

Table 6 below outlines target timeframes for responding to enquiries and complaints, through each correspondence method:

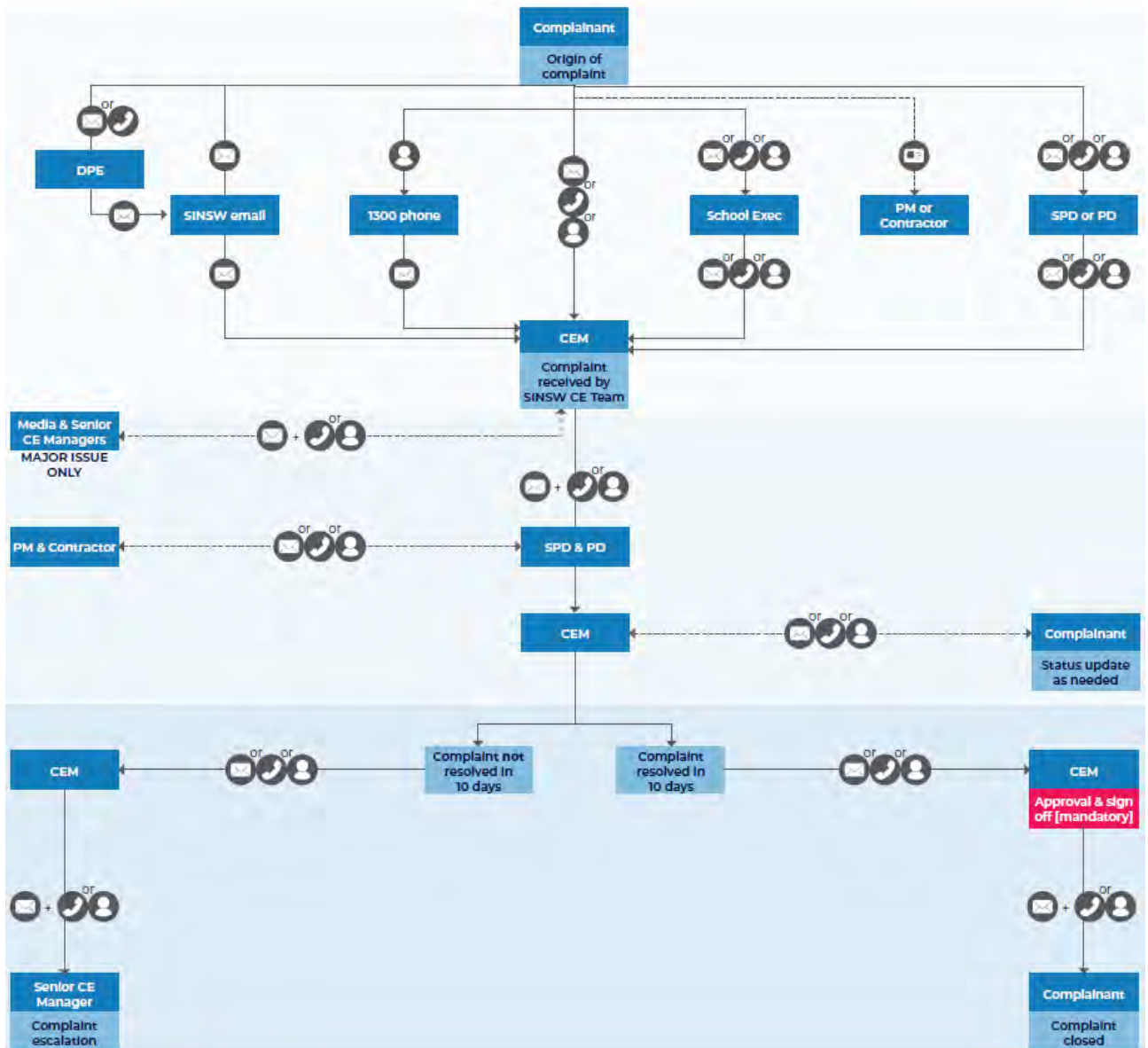
Table 6: Complaint and enquiry response time

Complaint	Acknowledgement times	Response times
Phone call during business hours	At time of call.	Complaint to be closed out within 10 days, where practicable. If not possible, continue contact, escalate internally as required, and provide the complainant with regular updates until resolved.
Phone call after hours*	Within two (2) hours of receiving message upon returning to office.	Complaint to be closed out within 10 days, where practicable. If not possible, continue contact, escalate internally as required, and provide the complainant with regular updates until resolved.
Email during business hours	At time of email (automatic response)	Complaint to be closed out within 10 days, where practicable. If not possible, continue contact, escalate internally as required, and provide the complainant with regular updates until resolved.
Email outside of business hours	At time of email (automatic response)	Complaint to be closed out within 10 days, where practicable. If not possible, continue contact, escalate internally as required, and provide the complainant with regular updates until resolved.
Interaction/ Enquiry		
Phone call during business hours	At time of call.	Interaction to be logged and closed out within 10 days, where practicable.
Phone call after hours	Within two (2) hours of receiving message upon returning to office.	Interaction to be logged and closed out within 10 days, where practicable.

Complaint	Acknowledgement times	Response times
Email during business hours	At time of email (automatic response)	Interaction to be logged and closed out within 10 days, where practicable.
Email outside of business hours	At time of email (automatic response)	Interaction to be logged and closed out within 10 days, where practicable.
Letter	N/A	Interaction to be logged and closed out within 10 days following receipt, where practicable.

The below diagram outlines our internal process for managing complaints.

Figure 2 - Internal Complaints Process



6.5.1. Disputes involving compensation and rectification

School Infrastructure NSW is committed to working with the school and broader community to address concerns as they arise. Where disputes arise that involve compensation or rectification, the process for resolving community enquiries and complaints will be followed to investigate the dispute. Depending upon the results of the investigation, School Infrastructure NSW may seek legal advice before proceeding.

6.6. Incident management

An incident is an occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance. Material harm is harm that:

- (a) involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial; or
- (b) results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).

6.6.1. Roles and responsibilities following an incident

In the event of an incident, once emergency services are contacted, the incident must be immediately reported to the SINSW Senior Project Director who will inform:

- a) SINSW Executive Director
- b) SINSW Community Engagement Manager
- c) SINSW Senior Manager, Community Engagement
- d) SINSW Communications Director

SINSW Communications Director will:

- a) Lead and manage all communications with the Minister's office in the event of an incident, with assistance as required
- b) Direct all communications with media to the SINSW Media Manager in the first instance for management
- c) Notify all other key project stakeholders of an incident.

The school and local community will be notified within 24 hours in the event of an incident, as per our notification timelines in Table 5.

The SINSW Senior Project Director will issue a written incident notification to Department of Planning & Environment (DPE) and Local Council (if required) immediately following the incident to set out the location and nature of the incident.

This must be followed within seven days following the incident of a written notification to the Department of Planning and Environment that:

- (a) identifies the development and application number;
- (b) provides details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
- (c) identifies how the incident was detected;
- (d) identifies when SINSW became aware of the incident;
- (e) identify any actual or potential non-compliance with conditions of consent;
- (f) describes what immediate steps were taken in relation to the incident;
- (g) identifies further action(s) that will be taken in relation to the incident; and
- (h) provides the contact information for further communication regarding the incident (the Senior Project Director).

Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Planning Secretary, SINSW will provide the Planning Secretary and any relevant public authorities (as determined by the Planning Secretary) with a detailed report on the incident addressing all requirements below:

- (a) a summary of the incident;
- (b) outcomes of an incident investigation, including identification of the cause of the incident;
- (c) details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
- (d) details of any communication with other stakeholders regarding the incident.

6.7. Reporting process

Throughout the project, data will be recorded on participation levels both face to face and online, a record of engagement tools and activities carried out in addition to queries received and feedback against emerging themes.

Stakeholder and community sentiment will be evaluated throughout to ensure effectiveness of the engagement strategy and to inform future activities.

A monthly report is prepared for all SINSW projects, which includes but is not limited to:

- a) Stakeholder engagement reporting – numbers of forums, participation levels and a summary of the outcomes
Community sentiment reporting – outputs of all community engagement activities, including numbers in attendance at events, participation levels and feedback received against broad themes
- b) Online activity – through the project website.