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50 ALEXANDRIA VIEW, MINDARIE

STORMWATER CONCEPT

JULY 2022

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50 ALEXANDRIA VIEW, MINDARIE
STORMWATER CONCEPT

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REV	DATE	DETAILS
A	22/07/2022	Stormwater Concept

	NAME	DATE	SIGNATURE
Prepared by:	Hector Salgado	22/07/2022	
Reviewed by:	Seamus Corrigan	22/07/2022	
Approved by:	Seamus Corrigan	25/07/2022	

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1 INTRODUCTION

WSP has been engaged by Edge Visionary Living to undertake the Civil design of the Stormwater drainage for the proposed project Lot 418, Mindarie Apartment project located at 50 Alexandria View, Mindarie, WA. This design is in accordance with the H - WD05 & WA-WD05 Stormwater drainage design standard, minimising environmental degradation and preserving the pre-development flow patterns.

The main aspect of the civil engineering work is to include for the expansion of this building's impervious area and accommodate the additional runoff.

The objectives are as follows:

- Estimate the necessary on-site detention storage volume to contain a major rainfall event at 1% AEP (100-year ARI)
- Stormwater layout including, advise an appropriate location for the stormwater detention tank.
- General recommendations for stormwater management.

1.1 PROPERTY SITE AND BUILDING DETAILS

The site falls within the jurisdiction of the City of Wanneroo. The existing site is cleared with no drainage offsite discharge point noted. However, overland flow from the cleared lot is likely being collected at the south of the site at Alexandria View.

Figure 1.1 Site Location

The site falls from a high of approximately RL 15.0m AHD towards the North of the site and grades down to approximately RL 12.0m AHD at the South-west corner of the site. The site is graded into a primary stormwater catchment which is grading toward a piped CoW existing stormwater network, towards the western corner of the site.

The property site details are provided in Table 1.1 below:

Table 1.1 Property Site Details

Building Name	TBC
Lot & Plan Number	Lot 418
Proposed Development	Residential
Local Authority	City of Wanneroo
WSP Ref	PP139922
Lot Area	3923 m^2

2 STORMWATER DETENTION

The CoW stormwater guidelines requires to manage stormwater flows resulting from development works to be similar to the pre-development flow, and to provide effective stormwater systems to adequately manage small, minor and major storm events.

From a review of the Perth Ground Water Mapping System, the ground conditions have a surface geology type of Safety Bay Sand and groundwater table and ground level. From a review of the Australian Rainfall Runoff hub, we can find the predicted storm loss values.

Base on the available information two high level stormwater detention options are proposed to manage the stormwater runoff from the site as follows:

- Option 1 On-site High-Level detention tank with infiltration capabilities.
- Option 2 High-Level Detention Tank with allowable discharge to local authorities' drainage

2.1 OPTION 1 ON-SITE HIGH-LEVEL DETENTION TANK WITH INFILTRATION CAPABILITIES

Option 1 drainage arrangement can be found in Appendix B. The anticipated lot's hydraulic conductivity allows for a concentration tank with infiltration capabilities, infiltration rates should be confirmed via geotechnical permeability tests. The City of Wanneroo accepts infiltration for stormwater management volumes.

Option 1 consists of the following internal stormwater management system for Lot 418:

- Stormwater is collected within Lot 418 (within the title boundary) and conveyed via downpipes to the Basement Level (see Appendix B markup) where the stormwater drains to an infiltration tank.
- The stormwater infiltration tank (with a storage capacity of 136 m3) is sized for the 1 in 100-year (1% AEP) storm of 2-hour duration. Refer to Appendix A for stormwater calculations.
- Using a product such as EcoBloc Maxx as the infiltration device offers a cost-effective solution for the project.

Table 2.1 Groundwater Separation

	DEPTH
Natural Surface	15m AHD
Water Table	1m AHD
Basement Level	9m AHD
Separation	6.7m AHD

Table 2.2 Mindarie Apartment anticipated infiltration and tank size

TYPE	**RATE**
Infiltration Rate	5 m/day
Infiltration Area	200.5 m^2
Total Infiltration	11.61 L/s
Total Tank Size	136 m^3

2.2 OPTION 2 DETENTION TANK WITH ALLOWABLE DISCHARGE

To determine the attenuation requirements for the increased stormwater runoff from the pre and post-developed site. WSP calculated the pre-development flows for the 5% AEP event to be 29.5l/s and used this value as an allowable discharge rate, we then calculated the 1% AEP storage attenuated volume for the post development site. A stormwater attenuation tank of 75m3 is proposed and modelled to confirm that the resultant post-development flows are no greater than the established pre-development flows for the 5% AEP event and meet the requirements of Stormwater Drainage Design for the City of Wanneroo WD5.

Using the site details listed within Table 2.3 gives us the following requirements for 50 Alexandria View, Mindarie:

Table 2.3 Mindarie Apartment Requirements

TYPE	RATE	STORM EVENT
Discharge Rate	29.5 L/s	5% AEP (Pre-Development)
Total Tank Size	75.15 m^3	100% AEP (Post-Development)

Furthermore, the discharge rate from the stormwater tank's base level outlet is proposed to be restricted via an orifice plate or similar flow restrictor to the required 29.5 L/s discharge.

Refer to Appendix A for stormwater calculations.

3 GENERAL RECOMMENDATIONS FOR STORMWATER MANAGEMENT

It is expected that the construction phase works will comprise of:

- Clearing
- Bulk Earthworks
- Trimming and Profiling
- Site Drainage & Services construction
- Landscaping and associated drainage

To prevent the infiltration of litter, sediments and other pollutants from entering the stormwater system, various sediment management measures can be utilised on site to provide drainage structure protection. As drainage is constructed on-site, any inlets into the system should be protected. The following measures are compatible with a development of this nature and may be implemented on-site during construction works to prevent polluting the stormwater system:

- Erosion controls such as silt fences surrounding stripped earth
- Drain Wardens – traps sediment on silt fence material, which is laid under and held in place by the grate, as runoff flows through it into the stormwater system
- Sediment fences surrounding stockpiles of soil and debris
- Construction of perimeter bunding at the toe and/or top of earthworks batters (gravel sausages and RockLogs)
- The containment of runoff from the site into a temporary sediment basin during the construction works

During the construction phase, the contractor's responsibility remains to maintain and monitor erosion and sediment control measures. If during the construction phase it is deemed required, monitoring will also be undertaken by qualified consultants to determine the impact of activities on the subject site.

Drainage assets should generally be inspected every three months, with higher maintenance levels required within the first two years after construction. Drainage assets should be inspected while stormwater flows through the system to identify and fix any observed problems. The maintenance schedule below is suggested as a guide:

Component	**Key Activities**	**Frequency**
Gutters	Will need cleaning as well as inspection. If the inspection finds large amounts of leaf material or other debris, then the inspection and cleaning frequency may need to be increased.	6 months
Roof	Check for the presence of accumulated debris, including leaf and other plant material. Accumulated material should be cleaned. If tree growth has lead to overhanging branches these should be pruned.	6 months
Tank Inlets, Insect-Proofing and Leaf Filters	If necessary, these should be cleaned and repaired.	6 months

Tank and Tank Roof	Check structural integrity of the tank including the roof and access cover. Any holes or gaps should be repaired.	6 months
Internal Inspection	Check for evidence of access by animals, birds or insects including the presence of mosquito larvae. If present, identify and close access points. If there is any evidence of algal growth (green growth or scum on or in the water), find and close points of light entry.	6 months
	In addition to 6 monthly inspections, tanks should be inspected every 2-3 years for the presence of accumulated sediments. If the bottom of the tank is covered with sediment the tanks should be cleaned.	2-3 Years
Pipework	Check for structural integrity. Sections of pipework that are not self-draining should be drained. Buried pipework, such as with 'wet systems', can be difficult to drain or flush. Where possible drainage points should be fitted.	6 months

APPENDIX A – RATIONAL METHOD CALCULATIONS

Hydrological Catchment Analysis - 2.0 Pre Develop EIA 20 Year

Catchment Characteristics				Calculation of Average Slope (Taylor-Schwarz Method)			
Area	A	km^2	0.00393	elevation (m)	distance (m)	slope (m/m)	li/Si^0.5
Direct length	L_d	km	0.50000				
Stream length	L	km	0.50000	10.5	0		
Average slope	S_a	m/m	0.04479	14.8	96	0.045	454
Height difference	H	m	4.30000				
Time of Concentration							
Ramser-Kirpich Eq.	Tc_1	min	7.72				
Bransby Williams Eq.	Tc_2	min	32.35				
U.S. Soil Con. Service.	Tc_3	min	14.56				
	Ave.	min	18.21				
	Use	min	18.21				
					Average slope (S_a)		0.0448
					S_a as %		4.48

Rational Method

Q=ciA

Design Event (ARI)	**20**	from ARR Northern and Western Region, arid to semi arid zone, vegetation assumed to be thin C value recommended for undulating steep slopes = 2% to 4% is between 0.6 and 0.8
Time of Concentration (Tc)	18.21	
Area (A)	0.0039	
Runoff Coefficent C	0.30	

Storm Duration (min)	Rainfall intensity (i in mm/hr)	Flow Rate (Q m^3/s)	Flow Rate (L/s)	Allowable Discharge Off-site (L/s)	Attenuated flow required to be stored (L/s)	Storage required (m3)
1	210	**0.07**	68.71		68.71	4.1223
2	178	**0.06**	58.24		58.24	6.98828
3	161	**0.05**	52.67		52.67	9.48129
4	147	**0.05**	48.09		48.09	11.54244
5	136	**0.04**	44.49		44.49	13.3484
10	101	**0.03**	33.04		33.04	19.8263
15	81.2	**0.03**	26.57		26.57	23.90934
20	68.8	**0.02**	22.51		22.51	27.01088
25	60.2	**0.02**	19.70		19.70	29.54315
30	53.8	**0.02**	17.60		17.60	31.68282
45	41.7	**0.01**	13.64		13.64	36.835695
60	34.7	**0.01**	11.35		11.35	40.86966
90	26.8	**0.01**	8.77		8.77	47.34756
120	22.3	**0.01**	7.30		7.30	52.52988
180	17.2	**0.01**	5.63		5.63	60.77448
270	13.3	**0.00**	4.35		4.35	70.49133
360	11	**0.00**	3.60		3.60	77.7348
540	8.4	**0.00**	2.75		2.75	89.04168
720	6.87	**0.00**	2.25		2.25	97.097832
1080	5.1	**0.00**	1.67		1.67	108.12204
1440	4.08	**0.00**	1.33		1.33	115.330176
1800	3.42	**0.00**	1.12		1.12	120.84228
2160	2.95	**0.00**	0.97		0.97	125.08236
2880	2.33	**0.00**	0.76		0.76	131.725152
4320	1.67	**0.00**	0.55		0.55	141.618672
5760	1.34	**0.00**	0.44		0.44	151.512192
7200	1.15	**0.00**	0.38		0.38	162.5364
8640	1.04	**0.00**	0.34		0.34	176.387328
10080	0.961	**0.00**	0.31		0.31	190.1534544

Hydrological Catchment Analysis - 3.0 Post Develop EIA 100 Year

Catchment Characteristics			
Area	A	km^2	0.00393
Direct length	L_d	km	0.50000
Stream length	L	km	0.50000
Average slope	S_a	m/m	0.04479
Height difference	H	m	4.30000
Time of Concentration			
Ramser-Kirpich Eq.	Tc_1	min	7.72
Bransby Williams Eq.	Tc_2	min	32.35
U.S. Soil Con. Service.	Tc_3	min	14.56
	Ave.	min	18.21
	Use	min	18.21

Calculation of Average Slope
(Taylor-Schwarz Method)

elevation (m)	distance (m)	slope (m/m)	li/Si^0.5
10.5	0		
14.8	96	0.045	454
	Average slope (S_a)		0.0448
	S_a as %		4.48

Rational Method

Q=ciA

Design Event (ARI)	**100**	from ARR Northern and Western Region, arid to semi arid zone, vegetation assumed to be thin C value recommended for undulating steep slopes = 2% to 4% is between 0.6 and 0.8
Time of Concentration (Tc)	18.21	
Area (A)	0.0039	
Runoff Coefficent C	0.90	

Storm Duration (min)	Rainfall intensity (i in mm/hr)	Flow Rate (Q m^3/s)	Flow Rate (L/s)	Allowable Discharge Off-site (L/s)	Attenuated flow required to be stored (L/s)	Storage required (m3)	
1	284	**0.28**	278.75	29.5	249.25	14.95476	
2	241	**0.24**	236.54	29.5	207.04	24.84498	
3	218	**0.21**	213.97	29.5	184.47	33.20406	
4	200	**0.20**	196.30	29.5	166.80	40.032	
5	185	**0.18**	181.58	29.5	152.08	45.62325	
10	136	**0.13**	133.48	29.5	103.98	62.3904	
15	109	**0.11**	106.98	29.5	77.48	69.73515	
20	92.7	**0.09**	90.99	29.5	61.49	73.78206	
25	81.1	**0.08**	79.60	29.5	50.10	75.149475	TC Discha
30	72.5	**0.07**	71.16	29.5	41.66	74.98575	
45	56.5	**0.06**	55.45	29.5	25.95	70.077825	
60	47.3	**0.05**	46.42	29.5	16.92	60.92982	
90	37	**0.04**	36.32	29.5	6.82	36.8037	
120	31.1	**0.03**	30.52	29.5	1.02	7.37748	
180	24.4	**0.02**	23.95	29.5	-5.55	-59.95512	
270	19.1	**0.02**	18.75	29.5	-10.75	-174.20427	
360	15.9	**0.02**	15.61	29.5	-13.89	-300.11364	
540	12.2	**0.01**	11.97	29.5	-17.53	-567.83268	
720	9.98	**0.01**	9.80	29.5	-19.70	-851.240016	
1080	7.34	**0.01**	7.20	29.5	-22.30	-1444.767192	
1440	5.8	**0.01**	5.69	29.5	-23.81	-2056.95072	
1800	4.78	**0.00**	4.69	29.5	-24.81	-2679.31044	
2160	4.07	**0.00**	3.99	29.5	-25.51	-3305.486232	
2880	3.13	**0.00**	3.07	29.5	-26.43	-4566.741984	
4320	2.17	**0.00**	2.13	29.5	-27.37	-7094.341584	
5760	1.71	**0.00**	1.68	29.5	-27.82	-9615.157056	
7200	1.45	**0.00**	1.42	29.5	-28.08	-12129.1884	
8640	1.3	**0.00**	1.28	29.5	-28.22	-14631.34752	
10080	1.21	**0.00**	1.19	30	-28.31	-17123.33045	

Hydrological Catchment Analysis - 4.0 Post Develop EIA 100 Year

Catchment Characteristics			
Area	A	km^2	0.00393
Direct length	L_d	km	0.50000
Stream length	L	km	0.50000
Average slope	S_a	m/m	0.04479
Height difference	H	m	4.30000
Time of Concentration			
Ramser-Kirpich Eq.	Tc_1	min	7.72
Bransby Williams Eq.	Tc_2	min	32.35
U.S. Soil Con. Service.	Tc_3	min	14.56
	Ave.	min	18.21
	Use	min	18.21

Calculation of Average Slope
(Taylor-Schwarz Method)

elevation (m)	distance (m)	slope (m/m)
10.5	0	
14.8	96	0.045

Average slope (S_a)
S_a as %

Rational Method

Q=ciA

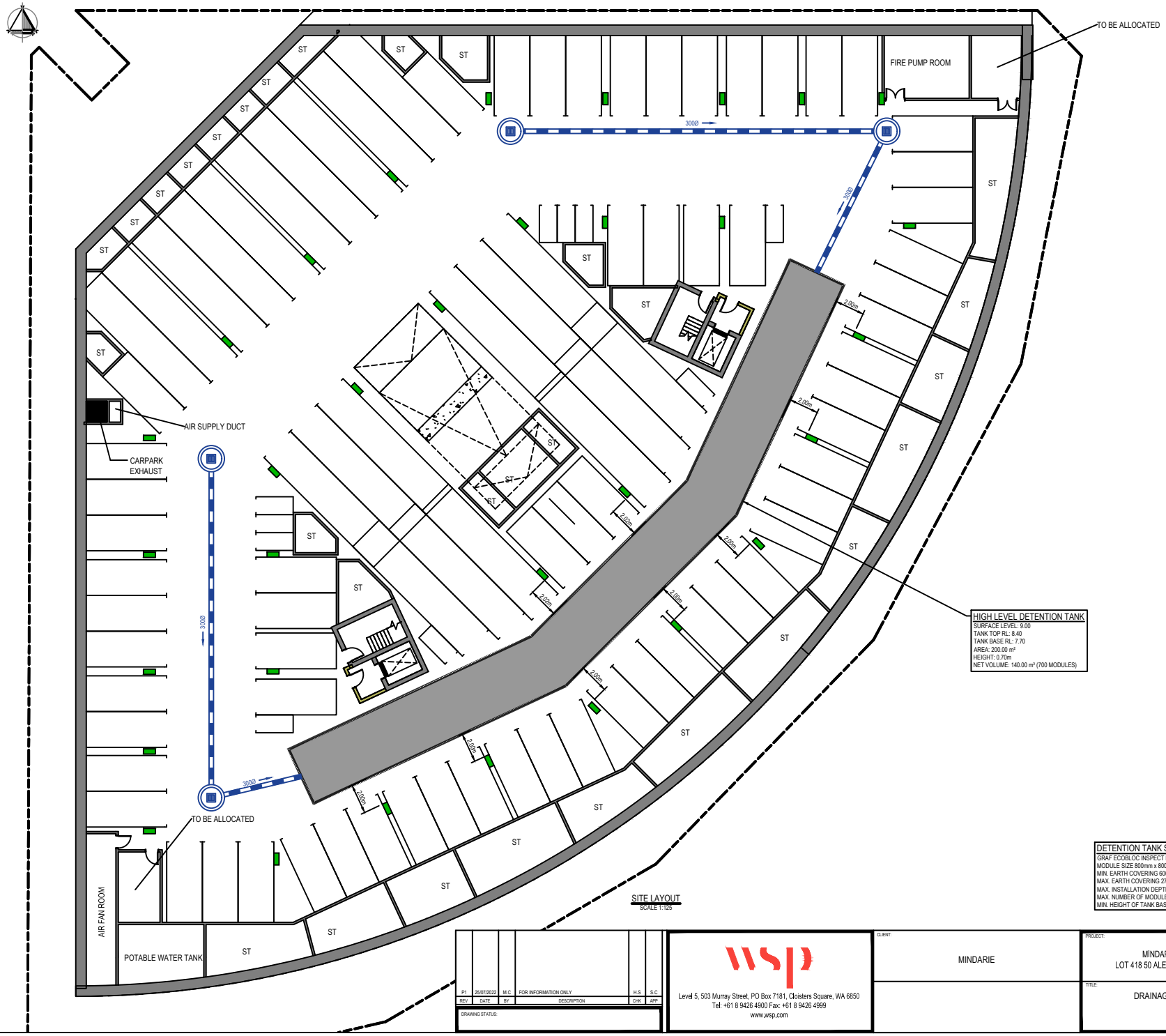
Design Event (ARI)	**100**	from ARR Northern and Western Region, arid to semi arid zone, vegetation assumed to be thin C value recommended for undulating steep slopes = 2% to 4% is between 0.6 and 0.8
Time of Concentration (Tc)	18.21	
Area (A)	0.0039	
Runoff Coefficent C	0.90	

Infiltration rate used

Infiltration Rate	5.78704E-05	Permeability rate of 3.8 x 10^-3m/s and 5.5 x 10^-4 m/s
Infiltration Area	200.5781916	
Total infiltration	11.60753423	

Storm Duration (min)	Rainfall intensity (i in mm/hr)	Flow Rate (Q m^3/s)	Flow Rate (L/s)	Allowable Discharge Off-site (L/s)	Attenuated flow required to be stored (L/s)	Storage required (m3)
1	284	**0.28**	278.75	11.61	267.14	16.02830795
2	241	**0.24**	236.54	11.61	224.93	26.99207589
3	218	**0.21**	213.97	11.61	202.36	36.42470384
4	200	**0.20**	196.30	11.61	184.69	44.32619178
5	185	**0.18**	181.58	11.61	169.97	50.99098973
10	136	**0.13**	133.48	11.61	121.88	73.12587946
15	109	**0.11**	106.98	11.61	95.38	85.83836919
20	92.7	**0.09**	90.99	11.61	79.38	95.25301892
25	81.1	**0.08**	79.60	11.61	67.99	101.9881736
30	72.5	**0.07**	71.16	11.61	59.55	107.1921884
45	56.5	**0.06**	55.45	11.61	43.85	118.3874826
60	47.3	**0.05**	46.42	11.61	34.82	125.3426968
90	37	**0.04**	36.32	11.61	24.71	133.4230151
120	31.1	**0.03**	30.52	11.61	18.92	136.2032335
180	24.4	**0.02**	23.95	11.61	12.34	133.2835103
270	19.1	**0.02**	18.75	11.61	7.14	115.6536754
360	15.9	**0.02**	15.61	11.61	4.00	86.36362055
540	12.2	**0.01**	11.97	11.61	0.37	11.88321083
720	9.98	**0.01**	9.80	11.61	-1.81	-78.28549489
1080	7.34	**0.01**	7.20	11.61	-4.40	-285.3354103
1440	5.8	**0.01**	5.69	11.61	-5.91	-511.0416778
1800	4.78	**0.00**	4.69	11.61	-6.92	-746.9241372
2160	4.07	**0.00**	3.99	11.61	-7.61	-986.6226687
2880	3.13	**0.00**	3.07	11.61	-8.54	-1474.9239
4320	2.17	**0.00**	2.13	11.61	-9.48	-2456.614457
5760	1.71	**0.00**	1.68	11.61	-9.93	-3431.520887
7200	1.45	**0.00**	1.42	11.61	-10.18	-4399.643189
8640	1.3	**0.00**	1.28	11.61	-10.33	-5355.893267
10080	1.21	**0.00**	1.19	11.61	-10.42	-6301.967153

APPENDIX B – OPTION 1 DRAINAGE ARRAGEMENT



SITE LAYOUT
SCALE 1:125

STORMWATER GENERAL NOTES:

1.1 DATUM IS LOCAL

1.2 ALL WORK TO BE IN ACCORDANCE WITH 'AB3600-2003 PLUMBING & DRAINAGE' THE 'BUILDING CODE OF AUSTRALIA' AND THE LOCAL AUTHORITY STANDARD SPECIFICATIONS.

1.3 LOT CONNECTION PIT TO LOCAL AUTHORITY SPECIFICATIONS

1.4 WHERE MANHOLES ARE LOCATED IN THE AREAS SUBJECT TO VEHICULAR LOADING, STANDARD TRAFFICABLE LIDS ARE TO BE INSTALLED & BASED TO BUILDER'S DETAIL

1.5 TRENCH BACKFILL SHALL BE CLEAN GRANULAR MATERIAL COMPACTED TO A LEVEL NOT LESS THAN OF THE SURROUNDING UNDISTURBED GROUND, FOR THE FULL DEPTH OF EXCAVATION. BACKFILL UNDER ROADS SHALL BE COMPACTED TO THE REQUIREMENTS OF THE LOCAL AUTHORITY.

1.6 WHEN INSTALLING A TANK SYSTEM IN A BASEMENT IT IS CRITICAL TO KEEP DISTANCE FROM FOOTINGS TO AVOID ANY DAMAGES TO THE SYSTEM. ALSO IT IS IMPORTANT THAT THE LOADS FROM THE BUILDING IS NOT TRANSFERRED IN ANY WAY TO THE SYSTEM.

ALL STATISTICS MUST BE CHECKED BY THE STRUCTURAL ENGINEER TO CONFIRM THAT THE BUILDING LOADS ARE NOT AFFECTING THE STORMWATER DEVICES NOMINATED.

LEGEND

- PROPOSED DRAINAGE PIPE
- RM PROPOSED RISING MAIN
- PROPOSED SOAKWELL
- PROPOSED PUMP STATION
- PROPOSED STORMWATER DETENTION TANK
- EXISTING SOAKWELL
- PROPERTY BOUNDARY

DETENTION TANK SPECIFICATIONS

GRAF ECOBLOC INSPECT FLEX MODULAR INFILTRATION UNITS
MODULE SIZE 800mm x 800mm x 320mm (NET VOLUME 195L)
MIN. EARTH COVERING 600mm
MAX. EARTH COVERING 2750mm
MAX. INSTALLATION DEPTH (TANK BASE) BELOW GROUND LEVEL 5m
MAX. NUMBER OF MODULE LAYERS 14
MIN. HEIGHT OF TANK BASE ABOVE GROUNDWATER LEVEL 1m

2.5 1.25 0 2.5 5 7.5m
1:125 @A1

REV	DATE	BY	DESCRIPTION	CHK	APP
P1	25/07/2022	M.C	FOR INFORMATION ONLY	H.S	S.C

DRAWING STATUS:

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www.wsp.com

CLIENT: MINDARIE

PROJECT: MINDARIE APARTMENTS
LOT 418 50 ALEXANDRIA VIEW MINDARIE

TITLE: DRAINAGE CONCEPT PLAN
OPTION 2

SCALE @ A1:	CHECKED:	APPROVED:
1:125	H.S	S.C
PROJECT NUMBER:	DRAWN:	DATE:
PP139922	M.C	25/07/2022

DRAWING No: PP139922-SK-C0002 REV: P1

APPENDIX C – OPTION 2 DRAINAGE ARRAGEMENT

SITE LAYOUT
SCALE 1:125

STORMWATER GENERAL NOTES:

1.1 DATUM IS LOCAL

1.2 ALL WORK TO BE IN ACCORDANCE WITH 'AB3600-2003 PLUMBING & DRAINAGE' THE 'BUILDING CODE OF AUSTRALIA' AND THE LOCAL AUTHORITY STANDARD SPECIFICATIONS.

1.3 LOT CONNECTION PIT TO LOCAL AUTHORITY SPECIFICATIONS

1.4 WHERE MANHOLES ARE LOCATED IN THE AREAS SUBJECT TO VEHICULAR LOADING, STANDARD TRAFFICABLE LIDS ARE TO BE INSTALLED & BASED TO BUILDER'S DETAIL

1.5 TRENCH BACKFILL SHALL BE CLEAN GRANULAR MATERIAL COMPACTED TO A LEVEL NOT LESS THAN OF THE SURROUNDING UNDISTURBED GROUND, FOR THE FULL DEPTH OF EXCAVATION. BACKFILL UNDER ROADS SHALL BE COMPACTED TO THE REQUIREMENTS OF THE LOCAL AUTHORITY.

1.6 WHEN INSTALLING A TANK SYSTEM IN A BASEMENT IT IS CRITICAL TO KEEP DISTANCE FROM FOOTINGS TO AVOID ANY DAMAGES TO THE SYSTEM. ALSO IT IS IMPORTANT THAT THE LOADS FROM THE BUILDING IS NOT TRANSFERRED IN ANY WAY TO THE SYSTEM.

ALL STATISTICS MUST BE CHECKED BY THE STRUCTURAL ENGINEER TO CONFIRM THAT THE BUILDING LOADS ARE NOT AFFECTING THE STORMWATER DEVICES NOMINATED.

LEGEND

- PROPOSED DRAINAGE PIPE
- RM PROPOSED RISING MAIN
- PROPOSED SOAKWELL
- PROPOSED PUMP STATION
- PROPOSED STORMWATER DETENTION TANK
- EXISTING SOAKWELL
- PROPERTY BOUNDARY

DETENTION TANK SPECIFICATIONS

GRAF ECOBLOC INSPECT FLEX MODULAR INFILTRATION UNITS
MODULE SIZE 800mm x 800mm x 320mm (NET VOLUME 195L)
MIN. EARTH COVERING 600mm
MAX. EARTH COVERING 2750mm
MAX. INSTALLATION DEPTH (TANK BASE) BELOW GROUND LEVEL 5m
MAX. NUMBER OF MODULE LAYERS 14
MIN. HEIGHT OF TANK BASE ABOVE GROUNDWATER LEVEL 1m

2.5 1.25 0 2.5 5 7.5m
1:125 @A1

REV	DATE	BY	DESCRIPTION	CHK	APP
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DRAWING STATUS:

wsp
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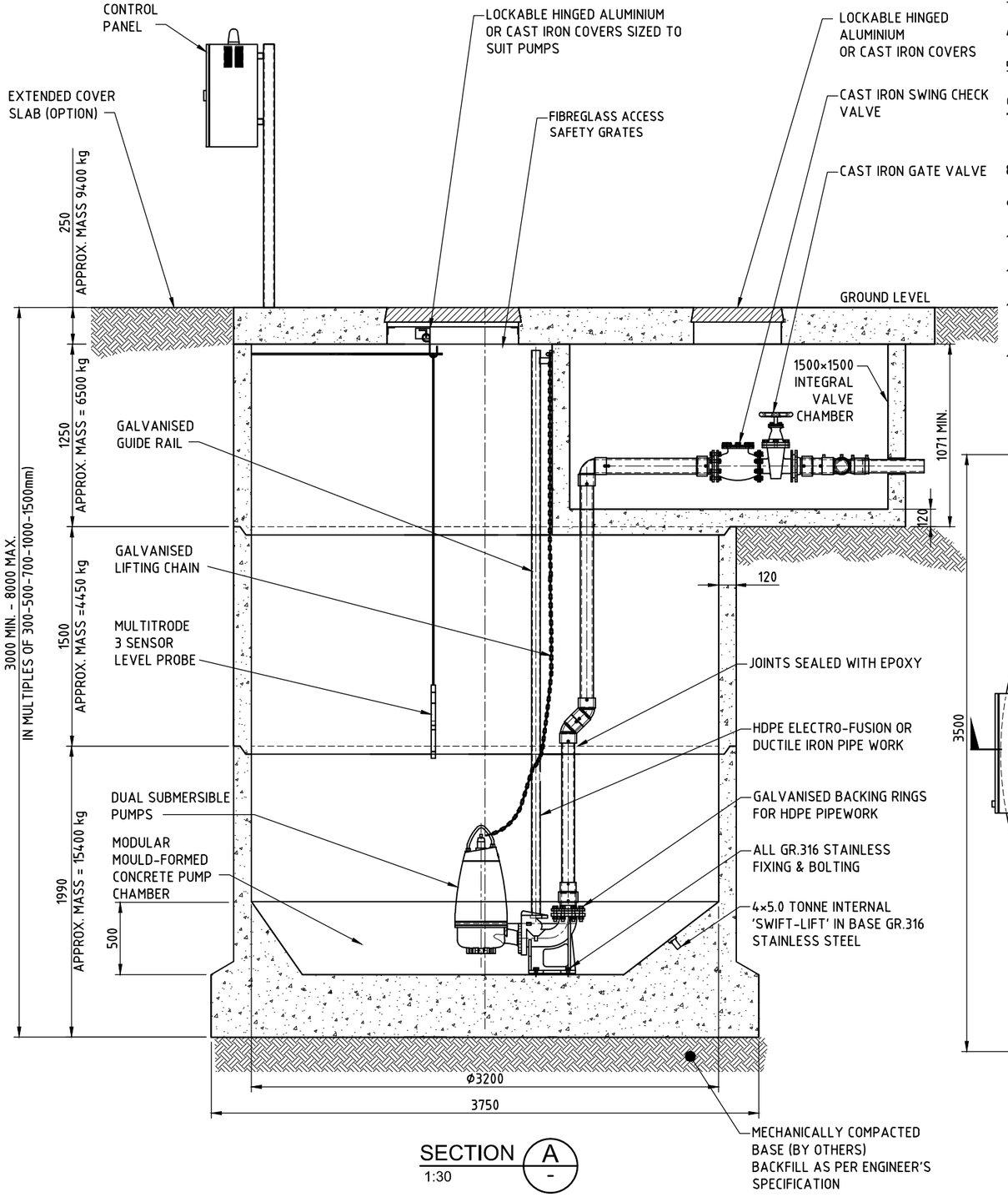
CLIENT: MINDARIE

PROJECT: MINDARIE APARTMENTS
LOT 418 50 ALEXANDRIA VIEW MINDARIE

TITLE: DRAINAGE CONCEPT PLAN
OPTION 1

SCALE @ A1:	CHECKED:	APPROVED:
1:125	H.S	S.C
PROJECT NUMBER:	DRAWN:	DATE:
PP139922	M.C	25/07/2022

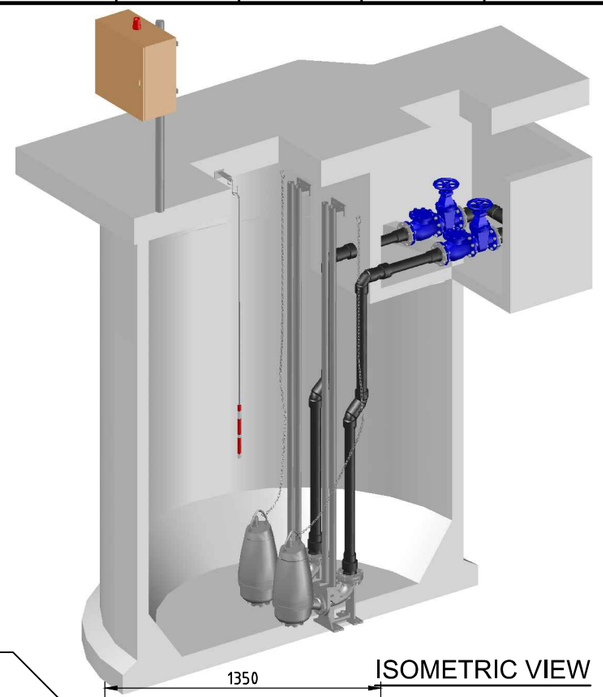
DRAWING No: PP139922-SK-C0001 REV: P1



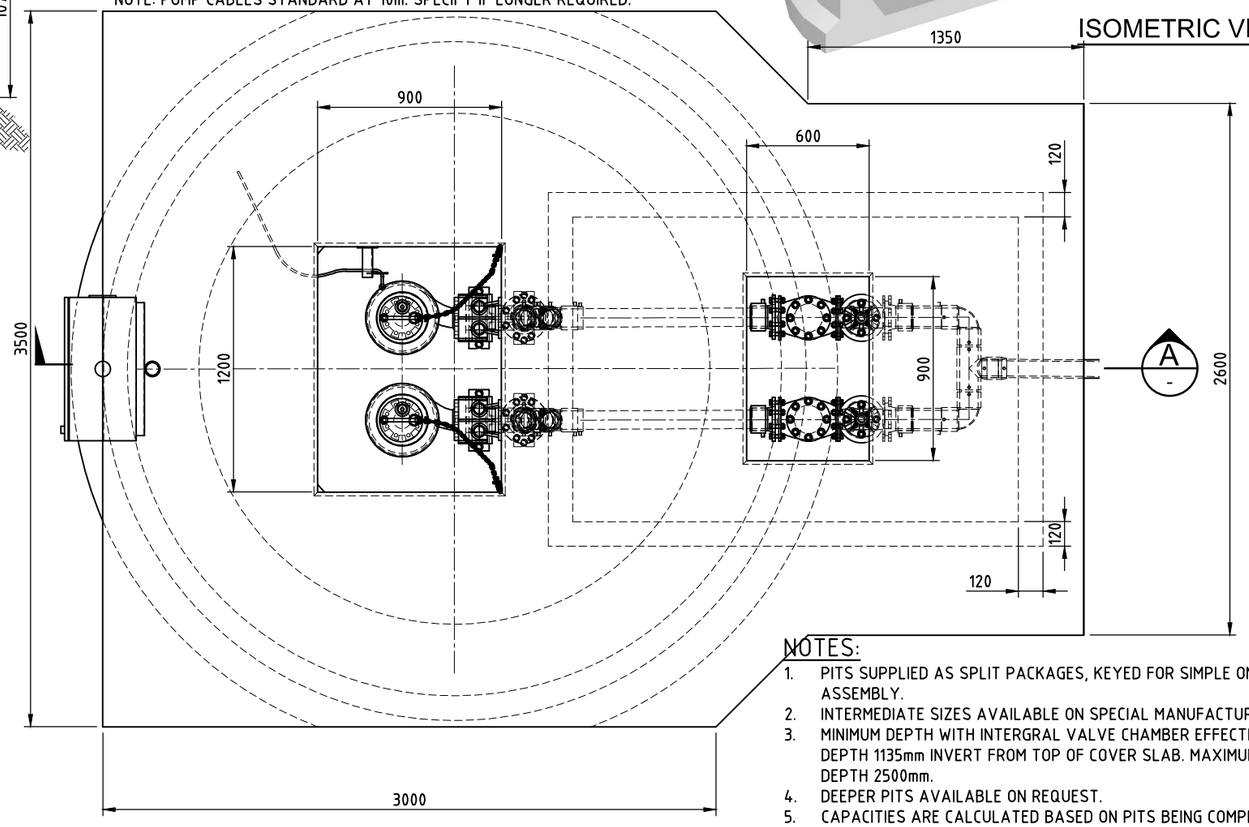
SECTION A
1:30

SPECIFICATIONS

1. INTERNAL DIAMETER - 3200mm NOMINAL.
2. METHOD OF MANUFACTURE - STEEL MOULD-FORMED WITH INTENSE MECHANICAL VIBRATON.
3. CONCRETE TYPE - SULPHATE RESISTANT (USE CALCAREOUS AGGREGATE FOR SEWAGE FOR OR EFFLUENT).
4. STRENGTH - 40MPa AT 28 DAYS. INTERNAL FINISH - SMOOTH TO MEET AS3610 CLASS 2X.
5. WALL THICKNESS - 120mm WITH 60mm INTERNAL COVER OVER REINFORCEMENT. DESIGN CONFORMS TO AS3735.
6. REINFORCEMENT - COMPLIES WITH AS4671.
7. INTERNAL VALVE CHAMBER - FULL SIZE (2200×1800) VALVE CHAMBER POURED AS ONE PIECE WITH 1500mm INCREMENT. EXTENSIONS AVAILABLE UP TO 3200mm INTERNAL DEPTH (DEEPER ON REQUEST).
8. VALVES - MOUNTED INSIDE INTEGRAL VALVE CHAMBER WITH Y-PIECE EXTERNAL (DUAL PUMPS ONLY).
9. PIPEWORK - HIGH DENSITY POLYETHYLENE (HDPE) WITH ELECTRO-FUSION JOINTS OR DUCTILE IRON.
10. LIFTING DETAILS - 4×5.0t ON INTREGRAL VALVE CHAMBER AND COVER SLAB, AND 4×5.0t ON INCREMENTS.
11. PUMPS - SINGLE OR DUAL SUBMERSIBLE PUMPS WITH GALVANISED GUIDE RAILS.
12. LEVEL CONTROL - ULTRASONIC LEVEL SENSOR, LEVEL PROBES OR MERCURY FLOAT SWITCHES, HUNG FROM STAINLESS STEEL SUPPORT AND ACCESSIBLE WITHOUT ENTERING CHAMBER.
13. PUMP CONTROLLER - 'KWIKSTART' CONTROL PANEL INCORPORATING DEDICATED 'LOGIKOS M7' PUMP CONTROLLER, CIRCUIT BREAKERS, CONTACTORS AND ALARM AND MONITORING EQUIPMENT, ALL IN LOCKABLE METAL ENCLOSURE WITH LIGHTS AND SWITCHES ON INTERNAL PANEL. FREE-STANDING OR MOUNTED ON GALVANISED STAND OR SUITABLE ADJACENT STRUCTURE. NOTE: PUMP CABLES STANDARD AT 10m. SPECIFY IF LONGER REQUIRED.



ISOMETRIC VIEW



PLAN VIEW

NOTES:

1. PITS SUPPLIED AS SPLIT PACKAGES, KEYED FOR SIMPLE ONSITE ASSEMBLY.
2. INTERMEDIATE SIZES AVAILABLE ON SPECIAL MANUFACTURE.
3. MINIMUM DEPTH WITH INTERGRAL VALVE CHAMBER EFFECTIVE DEPTH 1135mm INVERT FROM TOP OF COVER SLAB. MAXIMUM DEPTH 2500mm.
4. DEEPER PITS AVAILABLE ON REQUEST.
5. CAPACITIES ARE CALCULATED BASED ON PITS BEING COMPLETELY FULL.
6. ADD 3300kg TO WEIGHT IF STANDARD 1000mm INTEGRAL VALVE CHAMBER INCREMENT IS FITTED PLUS 220kg FOR EACH ADDITIONAL 100mm OF VALVE CHAMBER DEPTH.

REV.	DATE	DRN	CHK	APP	DESCRIPTION
A	07.02.13	RRO	LAS	LAS	INITIAL DRAWING & ANNOTATION

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CLIENT:

PROJECT:

TITLE: Ø3200 PUMP STATION AND INTERGRAL VALVE CHAMBER

SHEET No.: 1 OF 1

DRG No.:

REV.: A