PROJECT: PROPOSED CHILDCARE CENTRE

PLANSET: CONCEPT STORMWATER MANAGEMENT PLAN

CLIENT: RONNY ELZAHR

DRAWING LIST		
DWG NO.	REV	DWG TITLE
GENERAL		
PS01-A000	G	COVER SHEET
PS01-A050	F	SITE OVERVIEW PLAN
CONSTRUCTION MANAGEMENT WORKS		
PS01-B300	G	SEDIMENT & EROSION CONTROL PLAN - LAYOUT 01
PS01-B310	A	SEDIMENT & EROSION CONTROL DETAILS
DRAINAGE		
PS01-E100	G	DRAINAGE PLAN-GROUND FLOOR - LAYOUT 01
PS01-E200	D	DRAINAGE DETAILS - SHEET 1
PS01-E201	B	DRAINAGE DETAILS - SHEET 2
PS01-E600	F	OSD CATCHMENT PLANS AND MODEL LAYOUTS
PS01-E601	B	OSD CATCHMENT RESULTS

LOCALITY PLAN
NOT TO SCALE

LGA: FAIRFIELD CITY COUNCIL

157-161 WALWORTH ROAD, HORSLEY PARK

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
G	MINOR AMENDMENTS	25/05/2022	NN	TW	SL	SL
F	MINOR AMENDMENTS	23/05/2022	JS	TW	SL	JF
E	MINOR AMENDMENTS	19/05/2022	JS	TW	SL	JF
D	MINOR AMENDMENTS	17/05/2022	NN	TW	SL	JF
C	MINOR AMENDMENTS	16/05/2022	RK	TW	SL	JF
B	MINOR AMENDMENS	09/02/2022	NN	TW	SL	JF
A	INITIAL RELEASE	04/02/2022	NN	TW	SL	SL

SCALE

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A1 / A3 LANDSCAPE (A1LC_v02.0.0)

GRID: MGA | DATUM: mAHD | PROJECT MANAGER: JF

CLIENT: RONNY ELZAHR

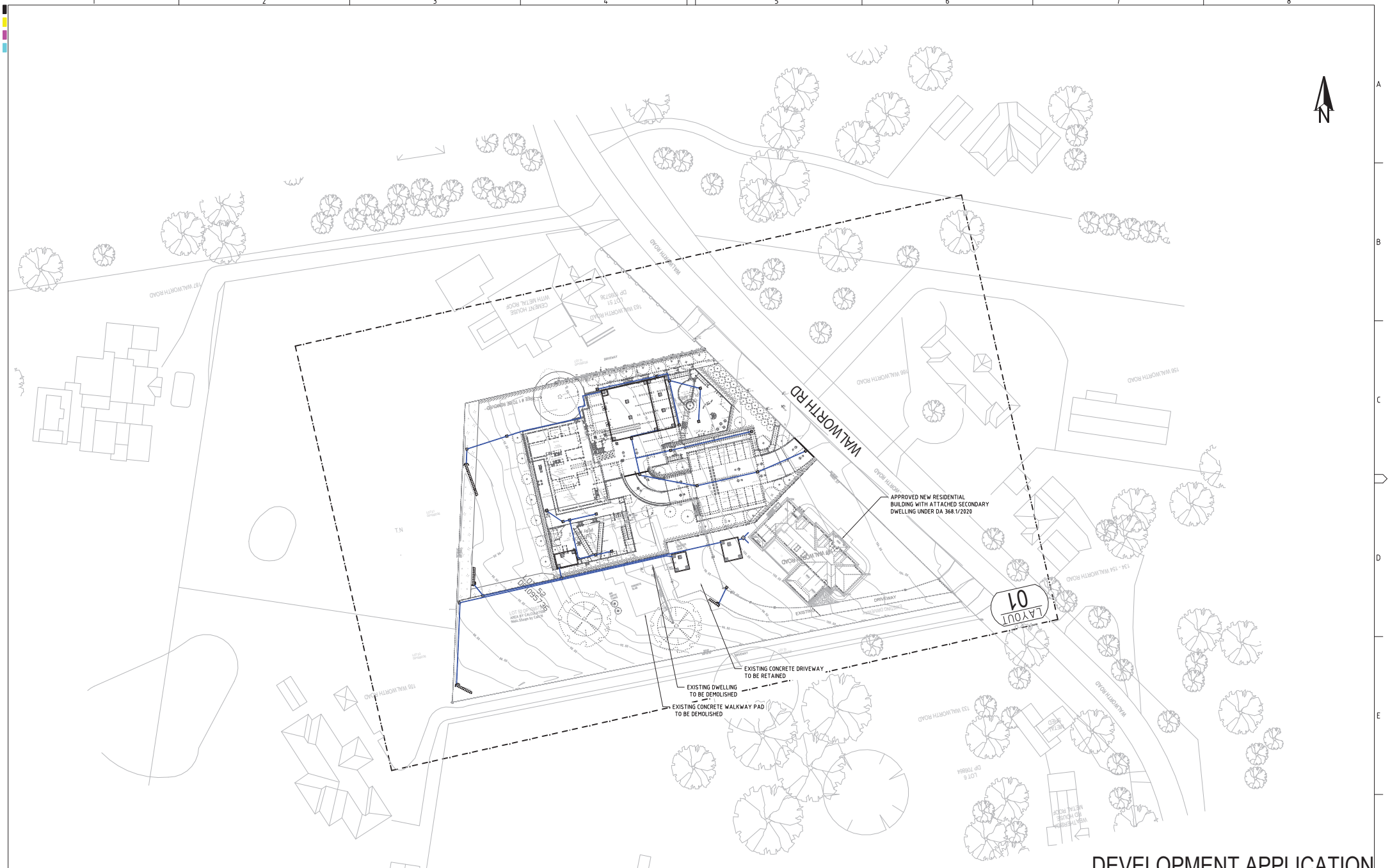
PROJECT NAME/PLANSET TITLE
PROPOSED CHILDCARE CENTRE
CONCEPT STORMWATER MANAGEMENT PLAN
157-161 WALWORTH ROAD, HORSLEY PARK

martens & Associates Pty Ltd
Consulting Engineers
Environment
Water
Geotechnical
Civil
Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767
Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE: COVER SHEET

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108601	PS01	R07	PS01-A000	G

DRAWING ID: P2108601-PS01-R07-A000



DEVELOPMENT APPLICATION

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B	MINOR AMENDMENS	09/02/2022	NN	TW	SL	JF
A	INITIAL RELEASE	04/02/2022	NN	TW	SL	SL

SCALE
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A1 (A3) 1:500 (1:1,000)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	JF

CLIENT
RONNY ELZAHR

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DRAWING TITLE
SITE OVERVIEW PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108601	PS01	R07	PS01-A050	F

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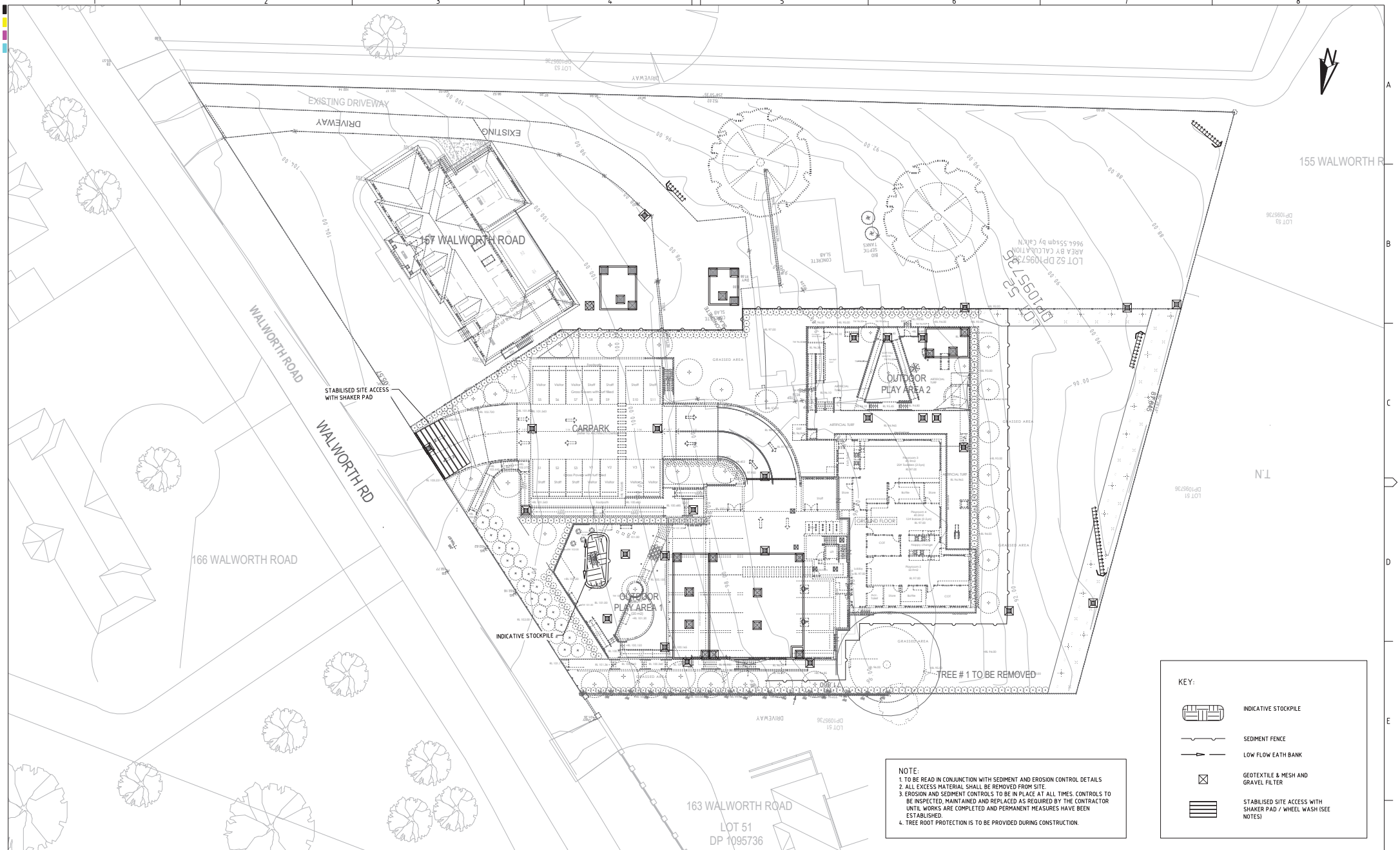
A1 / A3 LANDSCAPE (A1LC_v22.0.0)
DRAWING ID: P2108601-PS01-R07-A050



KEY:

- INDICATIVE STOCKPILE
- SEDIMENT FENCE
- LOW FLOW EATH BANK
- GEOTEXTILE & MESH AND GRAVEL FILTER
- STABILISED SITE ACCESS WITH SHAKER PAD / WHEEL WASH (SEE NOTES)

NOTE:
1. TO BE READ IN CONJUNCTION WITH SEDIMENT AND EROSION CONTROL DETAILS
2. ALL EXCESS MATERIAL SHALL BE REMOVED FROM SITE.
3. EROSION AND SEDIMENT CONTROLS TO BE IN PLACE AT ALL TIMES. CONTROLS TO BE INSPECTED, MAINTAINED AND REPLACED AS REQUIRED BY THE CONTRACTOR UNTIL WORKS ARE COMPLETED AND PERMANENT MEASURES HAVE BEEN ESTABLISHED.
4. TREE ROOT PROTECTION IS TO BE PROVIDED DURING CONSTRUCTION.

DEVELOPMENT APPLICATION

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B	MINOR AMENDMENS	09/02/2022	NN	TW	SL	JF
A	INITIAL RELEASE	04/02/2022	NN	TW	SL	SL

SCALE
0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 METRES
A1 (A3) 1:250 (1:500)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	JF

CLIENT
RONNY ELZAHR

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CONCEPT STORMWATER MANAGEMENT PLAN
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DRAWING TITLE
SEDIMENT & EROSION CONTROL PLAN
(LAYOUT 01)

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108601	PS01	R07	PS01-B300	G

DRAWING ID: P2108601-PS01-R07-B300

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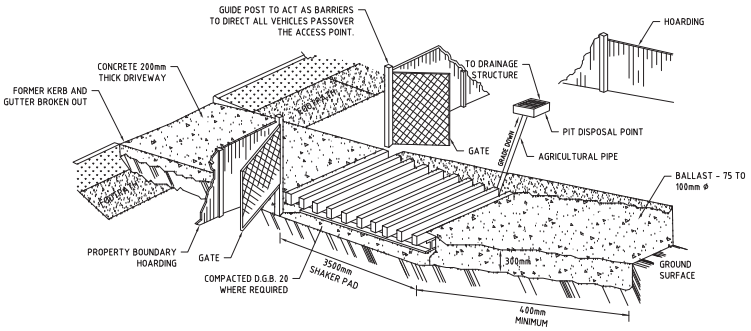
A1 / A3 LANDSCAPE (A1LC_v02.0.0)

STABILISED ACCESS POINT

TYPE II SAP

THE TYPE II SAP DESIGN IS MORE DEFINED IN THAT IT REQUIRES AN AREA OF BALLAST WITHIN THE SITE COMBINED WITH A SHAKER PAD; ADJACENT THE SHAKER PAD AND IN THE PUBLIC WAY IS A TEMPORARY (CONCRETE) VEHICULAR CROSSING. (SEE DIAGRAM)

STABILISED ACCESS POINT - TYPE 2



IN BOTH TYPE I AND TYPE II SAP'S, THE TEMPORARY VEHICULAR CROSSING MUST:

- CONNECT TO AN EXISTING GUTTER LAYBACK (WHERE THE KERB AND GUTTER EXIST) . IF A GUTTER LAYBACK DOES NOT EXIST THEN THE CONNECTION MUST BE MADE TO THE GUTTER BY REMOVING THE ADJCENT KERB SECTION ONLY.
- CONNECT TO A DISH CROSSING (WHERE KERB AND GUTTER DOES NOT EXIST). IF A DISH CROSSING DOES NOT EXIST, THEN IT MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS CONTAINED IN COUNCIL'S ISSUED FOOTPATH CROSSING LEVELS.

IT SHOULD BE NOTED THAT THESE TYPES OF SAPS ARE CONSIDERED TO BE APPLICABLE FOR THE MAJORITY OF ACTIVITIES HOWEVER SOME SITES MAY REQUIRE SPECIAL CONSIDERATION.

SHAKER PAD (CATTLE GRID)

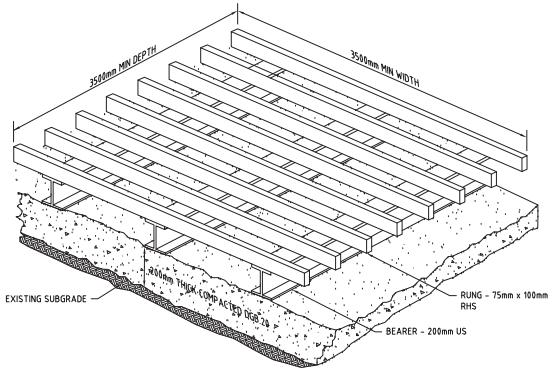
A CORRECTLY DESIGNED AND INSTALLED SHAKER PAD WILL ASSIST IN PREVENTING SEDIMENT TRANSFERE FROM A SITE. ANY STABILISED ACCESS POINT (SAP) CAN BE DESIGNED WITH A SHAKER PAD (COMPULSOPRY IN TYPE II SAP'S)

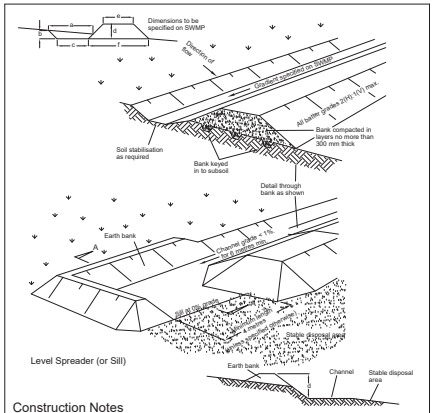
SHAKER PADS CAN BE DESIGNED AND CONSTRUCTED TO ENABLE RE-USE ON FUTURE PROJECTS.

THE SHAKER PAD:

- MUST BE DESIGNED AND CERTIFIED BY A PRACTICING STRUCTURAL ENGINEER. THE CERTIFIED DESIGN SHOULD BE SUBMITTED WITH THE RELEVENT APPLICATION.
- CAN BE CONSTRUCTED FROM ANY SUITABLE MATERIAL.
- MUST BE LOCATED ON A SUITABLY PREPARED AND COMPACTED SUB-GRADE/BASE MATERIAL.
- MUST BE SITUATED SUCH THAT THE RUNGS OF THE SHAKER PAD ARE LEVEL WITH THE ADJOINING NATURAL SURFACE.
- MUST BE A MINIMUM OF 3.5m IN LENGTH.
- MUST BE A MINIMUN OF 3.5m IN WIDTH.
- MUST HAVE CLEAR SPACING BETWEEN RUNGS OF 200 - 250mm.
- RUNGS MUST HAVE A MAXIMUM WIDTH (BEARING AREA) OF 75mm.
- MUST HAVE A MINIMUM CLEAR DEPTH OF 300mm IE FORM THE ROP OF THE RUNG TO THE FINISHED SUB-GRADE/BASE LEVEL.

THE SHAKER PAD MUST BE PROVIDED WITH SUITABLE BARRIERS AT THE SIDES TO ENSURE THAT ALL TYERS OF VEHICLES LEAVING THE SITE TRAVERSE THE DEVICE.

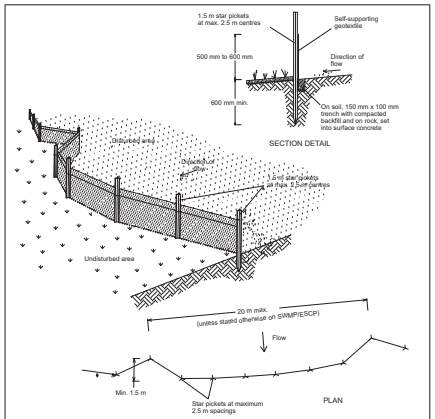




Construction Notes

1. Construct at the gradient specified on the ESCP or SWMP, normally between 1 and 5 percent
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped, at the dimensions shown on the SWMP.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction following Table 5.2 in Landcom (2004).
7. Where discharging to erodible lands, ensure they outlet through a properly constructed level spreader.
8. Construct the level spreader at the gradient specified on the ESCP or SWMP, normally less than 1 percent or level.
9. Where possible, ensure they discharge waters onto either stabilised or undisturbed disposal sites within the same subcatchment area from which the water originated. Approval might be required to discharge into other subcatchments.

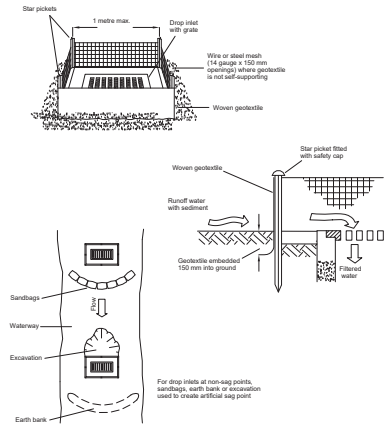
LEVEL SPREADER SD 5-6



Construction Notes

1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

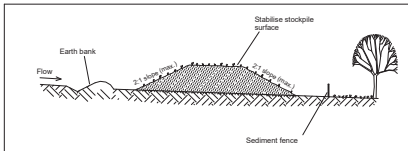
SEDIMENT FENCE SD 6-8



Construction Notes

1. Fabricate a sediment barrier made from geotextile or straw bales.
2. Follow Standard Drawing 6-7 and Standard Drawing 6-8 for installation procedures for the straw bales or geofabric. Reduce the picket spacing to 1 metre centres.
3. In waterways, artificial sag points can be created with sandbags or earth banks as shown in the drawing.
4. Do not cover the inlet with geotextile unless the design is adequate to allow for all waters to bypass it.

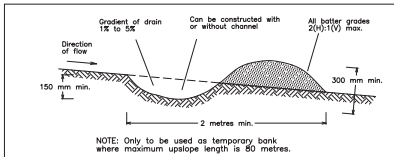
GEOTEXTILE INLET FILTER SD 6-12



Construction Notes

1. Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
2. Construct on the contour as low, flat, elongated mounds.
3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
4. Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
5. Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

STOCKPILES SD 4-1



NOTE: Only to be used as temporary bank where maximum upslope length is 80 metres.

Construction Notes

1. Build with gradients between 1 percent and 5 percent.
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V shaped.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction.

EARTH BANK (LOW FLOW) SD 5-5

DEVELOPMENT APPLICATION

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A	INITIAL RELEASE	04/02/2022	NN	TW	SL	SL

SCALE

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	JF

CLIENT: RONNY ELZAHR

PROJECT NAME/PLANSET TITLE: PROPOSED CHILDCARE CENTRE
CONCEPT STORMWATER MANAGEMENT PLAN
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DRAWING TITLE: SEDIMENT & EROSION CONTROL DETAILS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108601	PS01	R07	PS01-B310	A

DRAWING ID: P2108601-PS01-R07-B310

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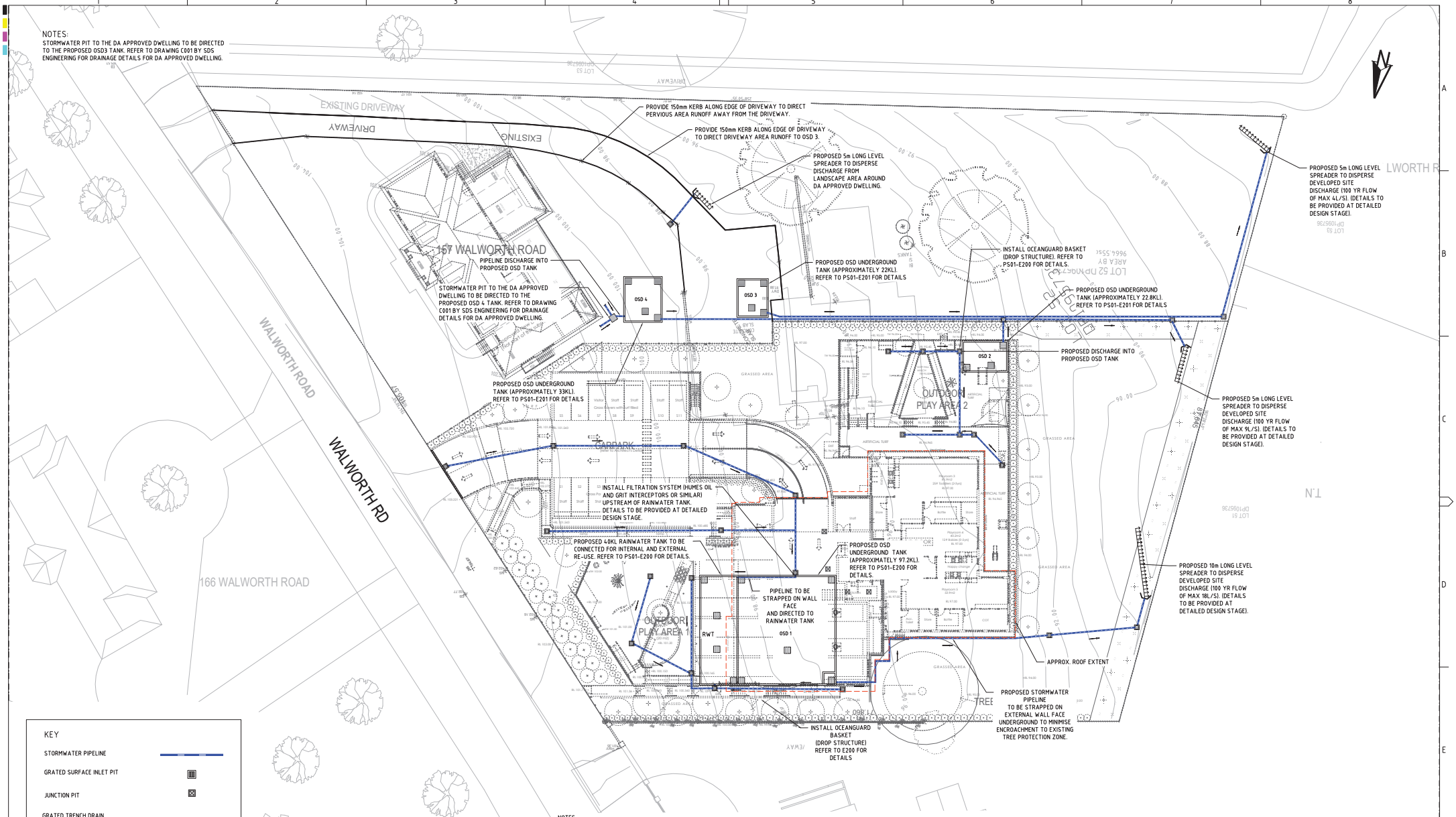
A1 / A3 LANDSCAPE (A1LC_v02.0.0)



NOTES:
1. ALL PROPOSED CHILDCARE CENTRE ROOF AREA TO BE CONNECTED TO RAINWATER TANK LOCATED BELOW CARPARK.
2. PROPOSED CHILDCARE CENTRE ROOF WATER TO BE CONVEYED BY A SEPARATE PIPELINE. DESIGN TO BE PROVIDED AT DETAILED DESIGN STAGE.
3. CONCEPT DESIGN ONLY FOR ALL AND PIT AND PIPE LOCATIONS. CONFIRMATION OF FINAL PIPE SIZES AND PIT LOCATIONS TO BE COMPLETED AT DETAILED DESIGN STAGE.
4. PROPOSED CHILDCARE CENTRE ROOF DRAINAGE DOWNPIPE DESIGN TO BE PROVIDED AT DETAILED DESIGN STAGE TO INCORPORATE WITH ALL OTHER BUILDING SERVICES.
5. REFER TO PROPOSED PRIMARY AND SECONDARY DWELLING PLAN BY SDS ENGINEERING, DRAWING NUMBER C001, DATED 10/11/2020 FOR ROOF DRAINAGE DETAILS FOR THE DA APPROVED DWELLING.

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SCALE
0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 METRES
A1 (A3) 1:250 (1:500)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	JF

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DRAWING TITLE
DRAINAGE PLAN-GROUND FLOOR
(LAYOUT 01)

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108601	PS01	R07	PS01-E100	G

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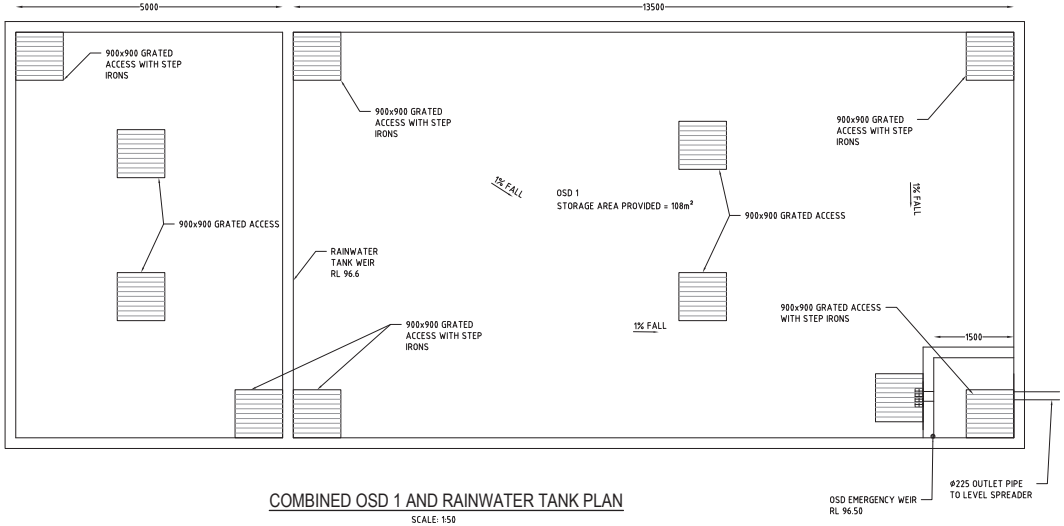
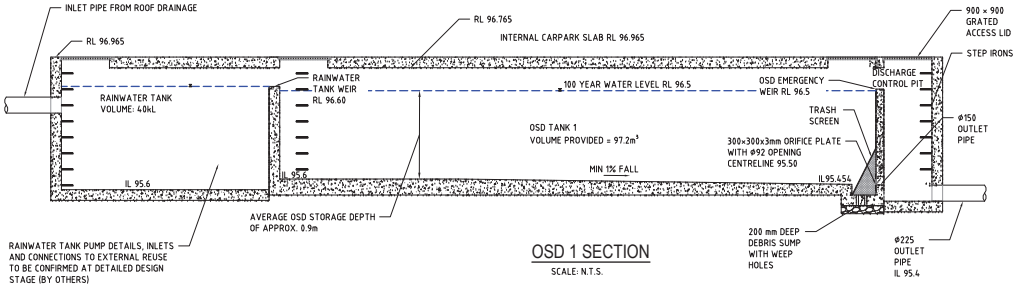
A1 / A3 LANDSCAPE (A1LC_v02.0.0)
DRAWING ID: P2108601-PS01-R07-E100



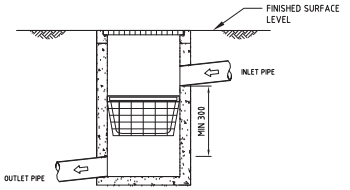
COMBINED OSD 1 AND RAINWATER TANK PLAN

SCALE: 1:50



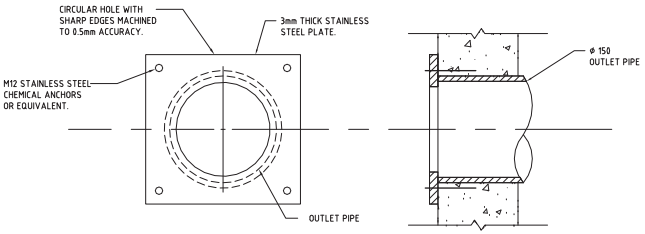
OSD 1 SECTION

SCALE: N.T.S.



OCEANGUARD TYPICAL DETAIL (DROP STRUCTURE)

NOT TO SCALE



ORIFICE PLATE DETAIL

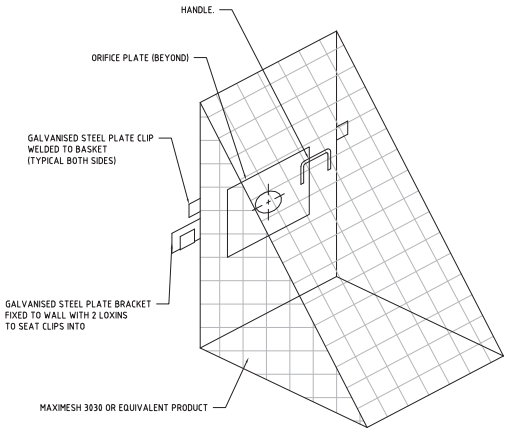
NOT TO SCALE

OSD WARNING SIGN

NOT TO SCALE

CONFINED SPACE WARNING SIGN

NOT TO SCALE



TRASH SCREEN DETAIL

NOT TO SCALE

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A	INITIAL RELEASE	04/02/2022	NN	TW	SL	SL

SCALE

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A1 / A3 LANDSCAPE (A1LC_v02.0.0)

GRID	DATUM	PROJECT MANAGER
	mAHD	JF

CLIENT: RONNY ELZAHR

PROJECT NAME/PLANSET TITLE

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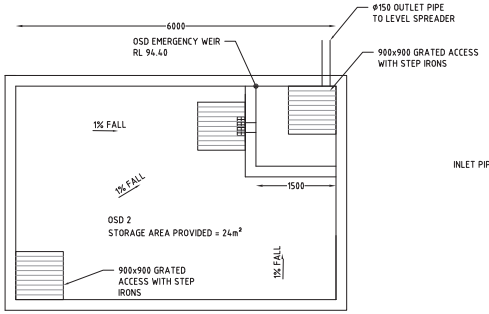
DRAWING TITLE: DRAINAGE DETAILS SHEET 1

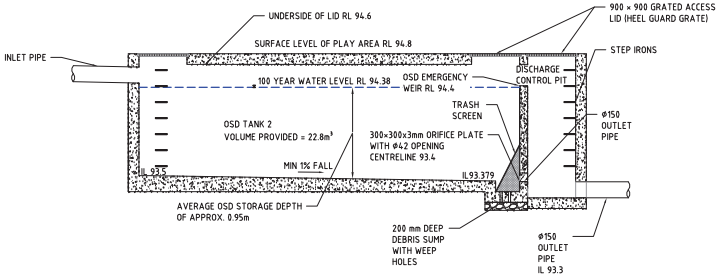
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108601	PS01	R07	PS01-E200	D

DRAWING ID: P2108601-PS01-R07-E200



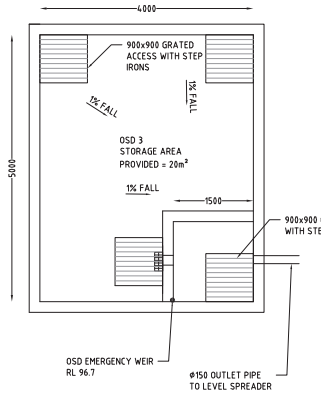
OSD 2 PLAN

SCALE: 1:50



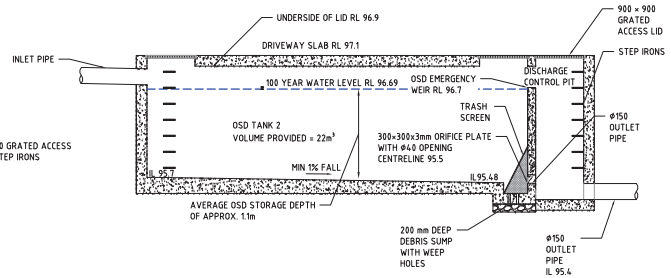
OSD 2 SECTION

SCALE: N.T.S.



OSD 3 PLAN

SCALE: 1:50



OSD 3 SECTION

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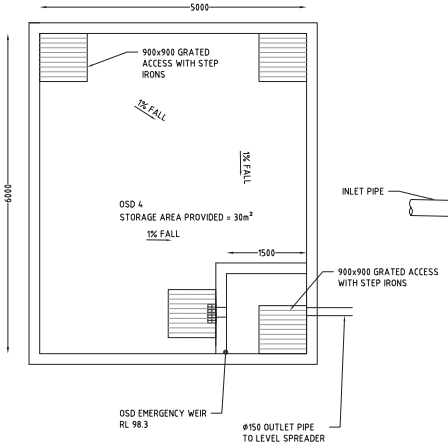
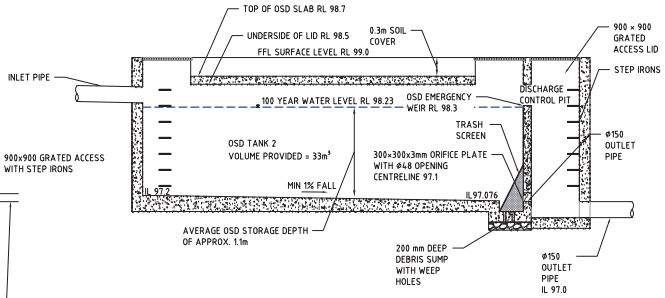


OSD 4 PLAN

SCALE: 1:50



OSD 4 SECTION

SCALE: N.T.S.

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
B	MINOR AMENDMENTS	25/05/2022	NN	TW	SL	SL
A	MINOR AMENDMENTS	16/05/2022	RK	TW	SL	JF

SCALE

GRID | DATUM: mAHD | PROJECT MANAGER: JF

CLIENT: RONNY ELZAHR

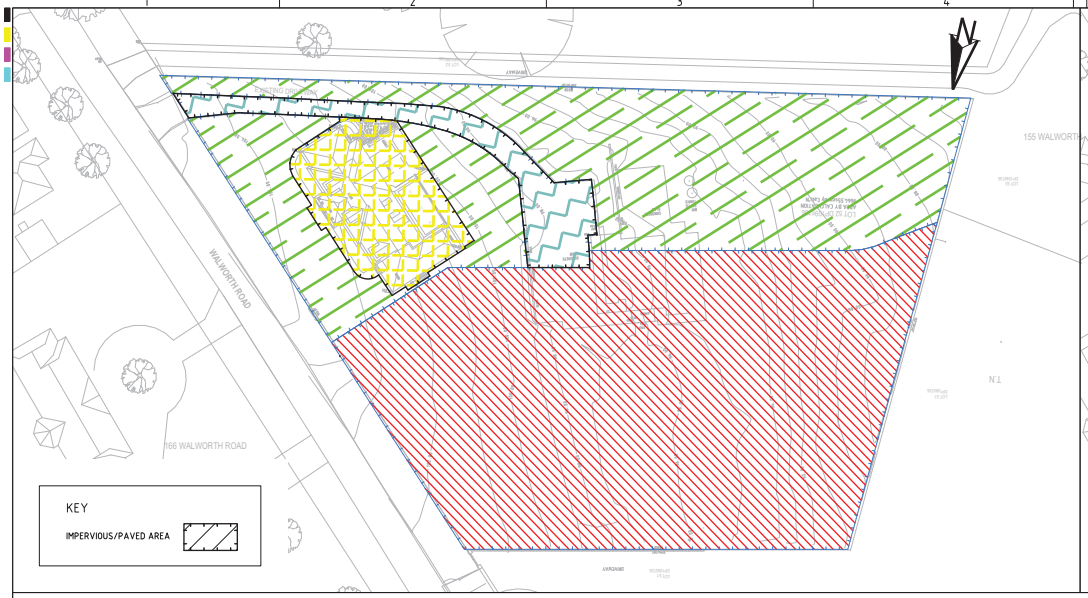
PROJECT NAME/PLANSET TITLE
PROPOSED CHILDCARE CENTRE
CONCEPT STORMWATER MANAGEMENT PLAN
157-161 WALWORTH ROAD, HORSLEY PARK

martens & Associates Pty Ltd
Consulting Engineers
Environment
Water
Geotechnical
Civil
Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767
Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE
DRAINAGE DETAILS
SHEET 2

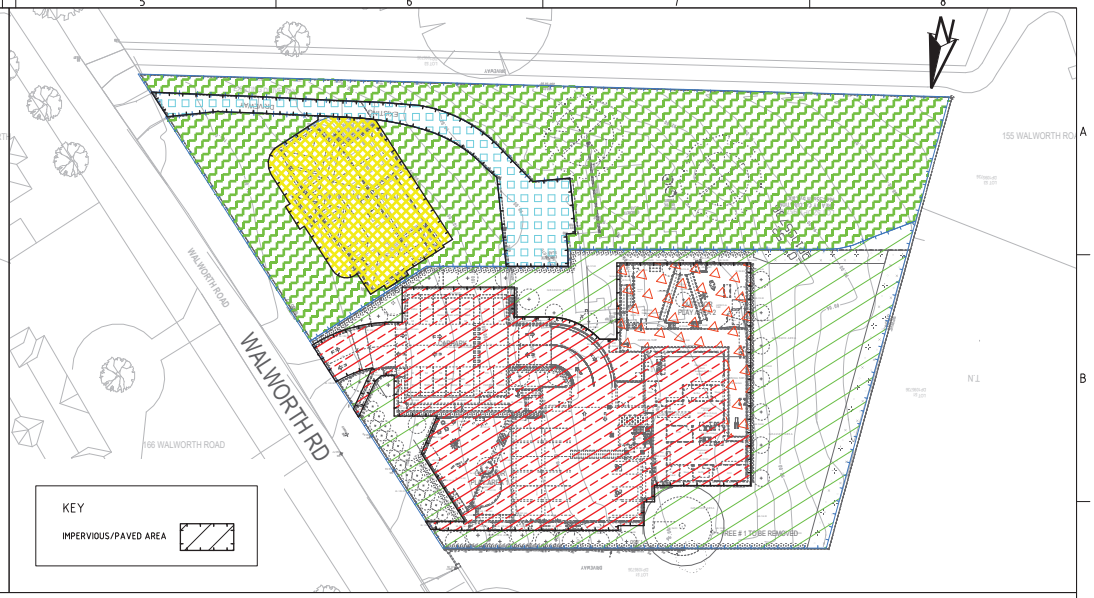
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108601	PS01	R07	PS01-E201	B

PRINTED ----- USER: SLEONG
A1 / A3 LANDSCAPE (A1LC_v02.0.0)
DRAWING ID: P2108601-PS01-R07-E201



PRE-DEVELOPMENT OSD CATCHMENT PLAN

SCALE 1:500



POST-DEVELOPMENT OSD CATCHMENT PLAN

SCALE 1:500

PSD AND SSR ASSESSMENT

OSD TANK	OSD CATCHMENT AREA (ha)	SITE STORAGE REQUIREMENT (m^3)	PSD REQUIREMENT (m^3/s)	OSD STORAGE AREA PROVIDED (m^2)	OSD AVERAGE DEPTH (m)	OSD STORAGE VOLUME PROVIDED (m^3)	DEPTH TO CENTRELINE OF ORIFICE OPENING, H (m)	ORIFICE SIZE, D (mm)	MAXIMUM DISCHARGE BASED ON ORIFICE EQUATION (m^3/s)
1	0.233	95.297	0.018	108	0.9	97.2	1	92.0	0.018
2	0.048	19.632	0.004	24	0.95	22.8	1	42.0	0.004
3	0.047	19.223	0.004	20	1.1	22	1.2	40.0	0.004
4	0.069	28.221	0.005	30	1.1	33	1.2	48.0	0.005

NOTES:

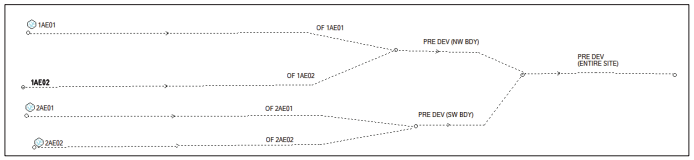
1. PSD AND SSR REQUIREMENTS HAVE BEEN CALCULATED BASED ON SECTION 4.5.1 OF FAIRFIELD CITY COUNCIL'S STORMWATER MANAGEMENT POLICY 2017.

PRE-DEVELOPMENT CATCHMENT AREAS (P2108601DRN01V07)

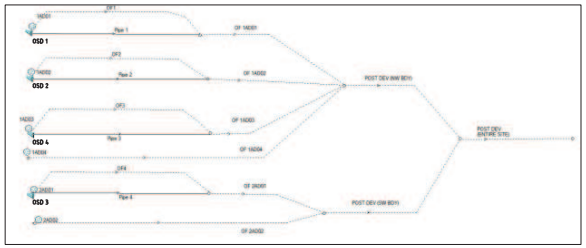
Discharge location	KEY	DRAINS CAT.	DESCRIPTION	AREA (HA)	% PAVED
North West boundary		1AE01	Existing northern landscape area	0.508	0%
		1AE02	DA approved house to OSD basin	0.069	100%
South West boundary		2AE01	Existing driveway	0.047	100%
		2AE02	Existing southern landscape area	0.342	0%
			TOTAL AREA	0.966	= 100% OF TOTAL AREA
			TOTAL IMPERVIOUS AREA	0.116	= 12% OF TOTAL AREA
			TOTAL PERVIOUS AREA	0.850	= 88% OF TOTAL AREA

POST-DEVELOPMENT CATCHMENT AREAS (P2108601DRN01V07)

	KEY	DRAINS CAT.	DESCRIPTION	AREA (ha)	% PAVED
North West boundary		1AD01	Proposed development to OSD 1	0.233	100%
		1AD02	Proposed development play area to OSD 2	0.048	100%
		1AD03	DA approved house to OSD 4	0.069	100%
		1AD04	Northern landscape area	0.228	0%
South West boundary		2AD01	Existing driveway to OSD 3	0.047	100%
		2AD02	Southern landscape area	0.342	0%
			TOTAL AREA	0.966	= 100% OF TOTAL AREA
			TOTAL IMPERVIOUS AREA	0.396	= 41% OF TOTAL AREA
			TOTAL PERVIOUS AREA	0.570	= 59% OF TOTAL AREA



PRE-DEVELOPMENT DRAIN'S MODEL LAYOUT



POST-DEVELOPMENT DRAIN'S MODEL LAYOUT

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
F	MINOR AMENDMENTS	25/05/2022	NN	TW	SL	SL
E	MINOR AMENDMENTS	23/05/2022	JS	TW	SL	JF
D	MINOR AMENDMENTS	19/05/2022	JS	TW	SL	JF
C	MINOR AMENDMENTS	16/05/2022	RK	TW	SL	JF
B	MINOR AMENDMENS	09/02/2022	NN	TW	SL	JF
A	INITIAL RELEASE	04/02/2022	NN	TW	SL	SL

PRINTED ---- USER: SLEONG

A1 / A3 LANDSCAPE (A1LC_v02.0.0)

SCALE
0 5 10 15 20 25 30 35 40 45 50 METRES
A1 (A3) 1:500 (1:1,000)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	JF

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All measurements in millimetres unless otherwise specified.

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CLIENT: RONNY ELZAHR

PROJECT NAME/PLANSET TITLE

PROPOSED CHILDCARE CENTRE
CONCEPT STORMWATER MANAGEMENT PLAN
157-161 WALWORTH ROAD, HORSLEY PARK

martens & Associates Pty Ltd
Consulting Engineers
Environment
Water
Geotechnical
Civil
Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767
Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE: OSD CATCHMENT PLANS AND MODEL LAYOUTS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108601	PS01	R07	PS01-E600	F

DRAWING ID: P2108601-PS01-R07-E600

DEVELOPMENT APPLICATION

DRAINS MODELLING RESULTS - POST V PRE ASSESSMENT (NORTH WESTERN BOUNDARY) (P2108601DRN01V07)

	5 Year ARI			10 Year ARI			20 Year ARI			50 Year ARI			100 Year ARI		
STORM DURATION	PRE DEVELOPMENT FLOW RATES (m^3/s)	POST DEVELOPMENT FLOW RATES (m^3/s)	POST ≤ PRE	PRE DEVELOPMENT FLOW RATES (m^3/s)	POST DEVELOPMENT FLOW RATES (m^3/s)	POST ≤ PRE	PRE DEVELOPMENT FLOW RATES (m^3/s)	POST DEVELOPMENT FLOW RATES (m^3/s)	POST ≤ PRE	PRE DEVELOPMENT FLOW RATES (m^3/s)	POST DEVELOPMENT FLOW RATES (m^3/s)	POST ≤ PRE	PRE DEVELOPMENT FLOW RATES (m^3/s)	POST DEVELOPMENT FLOW RATES (m^3/s)	POST ≤ PRE
5 MINUTES	0.054	0.038	YES	0.069	0.047	YES	0.086	0.058	YES	0.109	0.072	YES	0.128	0.083	YES
10 MINUTES	0.110	0.071	YES	0.135	0.087	YES	0.163	0.103	YES	0.200	0.123	YES	0.230	0.137	YES
15 MINUTES	0.126	0.073	YES	0.156	0.087	YES	0.183	0.101	YES	0.216	0.116	YES	0.244	0.129	YES
20 MINUTES	0.127	0.074	YES	0.148	0.083	YES	0.171	0.095	YES	0.208	0.111	YES	0.233	0.124	YES
25 MINUTES	0.124	0.068	YES	0.145	0.083	YES	0.169	0.096	YES	0.200	0.110	YES	0.224	0.123	YES
30 MINUTES	0.119	0.068	YES	0.137	0.074	YES	0.158	0.085	YES	0.187	0.101	YES	0.210	0.113	YES
45 MINUTES	0.115	0.066	YES	0.113	0.064	YES	0.130	0.073	YES	0.164	0.092	YES	0.184	0.103	YES
60 MINUTES	0.090	0.057	YES	0.119	0.073	YES	0.139	0.083	YES	0.133	0.080	YES	0.149	0.089	YES
90 MINUTES	0.076	0.051	YES	0.089	0.057	YES	0.104	0.065	YES	0.118	0.074	YES	0.133	0.083	YES
120 MINUTES	0.067	0.048	YES	0.086	0.058	YES	0.100	0.066	YES	0.120	0.073	YES	0.136	0.082	YES
180 MINUTES	0.054	0.039	YES	0.058	0.042	YES	0.067	0.048	YES	0.076	0.056	YES	0.086	0.064	YES
270 MINUTES	0.045	0.032	YES	0.042	0.035	YES	0.049	0.040	YES	0.084	0.054	YES	0.096	0.061	YES
360 MINUTES	0.042	0.031	YES	0.047	0.038	YES	0.055	0.043	YES	0.068	0.052	YES	0.077	0.058	YES
540 MINUTES	0.027	0.025	YES	0.033	0.030	YES	0.039	0.035	YES	0.048	0.040	YES	0.055	0.044	YES

DRAINS MODELLING RESULTS - POST V PRE ASSESSMENT (SOUTH WESTERN BOUNDARY) (P2108601DRN01V07)

	5 Year ARI			10 Year ARI			20 Year ARI			50 Year ARI			100 Year ARI		
STORM DURATION	PRE DEVELOPMENT FLOW RATES (m^3/s)	POST DEVELOPMENT FLOW RATES (m^3/s)	POST ≤ PRE	PRE DEVELOPMENT FLOW RATES (m^3/s)	POST DEVELOPMENT FLOW RATES (m^3/s)	POST ≤ PRE	PRE DEVELOPMENT FLOW RATES (m^3/s)	POST DEVELOPMENT FLOW RATES (m^3/s)	POST ≤ PRE	PRE DEVELOPMENT FLOW RATES (m^3/s)	POST DEVELOPMENT FLOW RATES (m^3/s)	POST ≤ PRE	PRE DEVELOPMENT FLOW RATES (m^3/s)	POST DEVELOPMENT FLOW RATES (m^3/s)	POST ≤ PRE
5 MINUTES	0.057	0.042	YES	0.072	0.055	YES	0.090	0.070	YES	0.113	0.089	YES	0.132	0.105	YES
10 MINUTES	0.102	0.09	YES	0.125	0.111	YES	0.152	0.135	YES	0.183	0.162	YES	0.205	0.183	YES
15 MINUTES	0.100	0.092	YES	0.125	0.111	YES	0.148	0.132	YES	0.170	0.151	YES	0.191	0.169	YES
20 MINUTES	0.103	0.093	YES	0.113	0.101	YES	0.135	0.120	YES	0.161	0.145	YES	0.181	0.162	YES
25 MINUTES	0.094	0.085	YES	0.118	0.106	YES	0.139	0.124	YES	0.158	0.141	YES	0.177	0.158	YES
30 MINUTES	0.088	0.079	YES	0.105	0.093	YES	0.122	0.108	YES	0.143	0.128	YES	0.162	0.144	YES
45 MINUTES	0.090	0.081	YES	0.086	0.077	YES	0.100	0.090	YES	0.129	0.116	YES	0.145	0.130	YES
60 MINUTES	0.067	0.062	YES	0.093	0.085	YES	0.108	0.099	YES	0.100	0.091	YES	0.113	0.102	YES
90 MINUTES	0.060	0.054	YES	0.070	0.064	YES	0.082	0.074	YES	0.094	0.087	YES	0.107	0.098	YES
120 MINUTES	0.055	0.05	YES	0.072	0.064	YES	0.084	0.075	YES	0.093	0.084	YES	0.105	0.095	YES
180 MINUTES	0.041	0.038	YES	0.045	0.041	YES	0.052	0.048	YES	0.058	0.054	YES	0.066	0.061	YES
270 MINUTES	0.035	0.032	YES	0.032	0.030	YES	0.038	0.036	YES	0.061	0.056	YES	0.070	0.063	YES
360 MINUTES	0.032	0.03	YES	0.036	0.034	YES	0.042	0.039	YES	0.052	0.048	YES	0.060	0.055	YES
540 MINUTES	0.021	0.02	YES	0.026	0.024	YES	0.030	0.029	YES	0.037	0.035	YES	0.043	0.040	YES

DRAINS MODELLING RESULTS - POST V PRE ASSESSMENT (ENTIRE SITE) (P2108601DRN01V07)

	5 Year ARI			10 Year ARI			20 Year ARI			50 Year ARI			100 Year ARI		
STORM DURATION	PRE DEVELOPMENT FLOW RATES (m^3/s)	POST DEVELOPMENT FLOW RATES (m^3/s)	POST ≤ PRE	PRE DEVELOPMENT FLOW RATES (m^3/s)	POST DEVELOPMENT FLOW RATES (m^3/s)	POST ≤ PRE	PRE DEVELOPMENT FLOW RATES (m^3/s)	POST DEVELOPMENT FLOW RATES (m^3/s)	POST ≤ PRE	PRE DEVELOPMENT FLOW RATES (m^3/s)	POST DEVELOPMENT FLOW RATES (m^3/s)	POST ≤ PRE	PRE DEVELOPMENT FLOW RATES (m^3/s)	POST DEVELOPMENT FLOW RATES (m^3/s)	POST ≤ PRE
5 MINUTES	0.111	0.079	YES	0.142	0.102	YES	0.176	0.126	YES	0.222	0.160	YES	0.260	0.187	YES
10 MINUTES	0.211	0.161	YES	0.260	0.198	YES	0.314	0.238	YES	0.383	0.285	YES	0.435	0.320	YES
15 MINUTES	0.222	0.165	YES	0.270	0.198	YES	0.319	0.232	YES	0.372	0.265	YES	0.420	0.297	YES
20 MINUTES	0.217	0.166	YES	0.261	0.183	YES	0.303	0.212	YES	0.356	0.256	YES	0.399	0.286	YES
25 MINUTES	0.213	0.152	YES	0.251	0.190	YES	0.297	0.220	YES	0.356	0.251	YES	0.400	0.280	YES
30 MINUTES	0.207	0.148	YES	0.236	0.167	YES	0.274	0.193	YES	0.325	0.229	YES	0.366	0.256	YES
45 MINUTES	0.198	0.146	YES	0.199	0.141	YES	0.230	0.162	YES	0.283	0.209	YES	0.319	0.235	YES
60 MINUTES	0.150	0.118	YES	0.209	0.157	YES	0.243	0.181	YES	0.229	0.170	YES	0.259	0.190	YES
90 MINUTES	0.135	0.106	YES	0.159	0.120	YES	0.186	0.139	YES	0.205	0.162	YES	0.232	0.182	YES
120 MINUTES	0.123	0.098	YES	0.154	0.122	YES	0.180	0.140	YES	0.211	0.156	YES	0.239	0.175	YES
180 MINUTES	0.095	0.078	YES	0.102	0.082	YES	0.120	0.095	YES	0.134	0.110	YES	0.153	0.124	YES
270 MINUTES	0.080	0.065	YES	0.074	0.065	YES	0.087	0.075	YES	0.146	0.110	YES	0.165	0.124	YES
360 MINUTES	0.075	0.061	YES	0.083	0.071	YES	0.097	0.083	YES	0.120	0.099	YES	0.137	0.112	YES
540 MINUTES	0.048	0.045	YES	0.058	0.054	YES	0.069	0.063	YES	0.085	0.075	YES	0.098	0.084	YES

NOTE:

1. OSD DESIGN WAS UNDERTAKEN TO ENSURE POST DEVELOPMENT FLOW RATES WERE LESS THAN OR EQUAL TO PRE DEVELOPMENT FLOW RATES FOR THE 5, 10, 20, 50 AND 100 YEAR ARI STORM EVENTS FOR ALL DURATIONS BETWEEN 5 AND 540 MINUTES

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	MINOR AMENDMENTS	16/05/2022	RK	TW	SL	JF

SCALE

GRID | DATUM | PROJECT MANAGER: JF

CLIENT: RONNY ELZAHR

PROJECT NAME/PLANSET TITLE: PROPOSED CHILDCARE CENTRE
CONCEPT STORMWATER MANAGEMENT PLAN
157-161 WALWORTH ROAD, HORSLEY PARK

martens & Associates Pty Ltd
Consulting Engineers
Environment
Water
Geotechnical
Civil
Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767
Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE: OSD CATCHMENT MODEL RESULTS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108601	PS01	R07	PS01-E601	A

DRAWING ID: P2108601-PS01-R07-E601

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A1 / A3 LANDSCAPE (A1LC_v02.0.01)