PROPOSED UNIT DEVELOPMENT AT
26-30 HOPE STREET, PENRITH NSW 2046
CONCEPT STORMWATER DRAINAGE PLAN

LEGEND

DP ●	DOWNPIPE
>>>	STORMWATER LINE
>>>	STORMWATER LINE DRAINING TO RWT
OF	OVER FLOW PIPE
SSD	SUBSOIL LINE
SWRM	STORMWATER RISING MAIN
e	EXISTING STORMWATER LINE
SW SW	AUTHORITY STORMWATER LINE
HL HL	HIGH LEVEL STORMWATER LINE
S	AUTHORITY SEWER LINE
W	AUTHORITY WATER LINE
G G	AUTHORITY GAS LINE
E	AUTHORITY ELECTRICITY LINE
FO FO FO	AUTHORITY FIBRE OPTIC LINE
TEL	AUTHORITY COMMS LINE
	FENCE LINE
	GRATED SURFACE INLET PIT
	GRATED SURFACE INLET PIT WITH ENVIROPOD INSERT
	JUNCTION PIT
	KERB INLET PIT
	EXISTING GRATED SURFACE INLET PIT
	GRATED TRENCH DRAIN
	EXISTING JUNCTION PIT
	EXISTING KERB INLET PIT
eTEL	EXISTING TELSTRA PIT
eHYD	EXISTING HYDRANT
eSV	EXISTING STOP VALVE
eGAS	EXISTING GAS VALVE
ePP	EXISTING POWER POLE
eBT	EXISTING BOUNDARY TRAP

LEGEND

FF	FIRST FLUSH
eSMH	EXISTING SEWER MANHOLE
OFP	OVERLAND FLOW PATH
RWO	RAINWATER OUTLET
PS	PIPE STAND
CO	CLEAR OUT POINT
DDO	DISH DRAIN OUTLET
PD	PLANTER DRAIN
	CAPPING
1.01	PIT TAG/NUMBER
RH	RAINHEAD
	DOWNPIPE DROP
	NON RETURN VALVE
	WALL PENETRATION
DP	DOWNPIPE SPREADER
	WARNING LIGHT
0.00	SPOT LEVELS
	BENCHMARK

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DIAL 1100 BEFORE YOU DIG

DIAL BEFORE YOU DIG SHOULD BE CONTACTED PRIOR TO ANY EXCAVATION ON SITE

TM: TRADE MARK OF THE ASSOCIATION OF DIAL BEFORE YOU DIG SERVICES LTD. USED UNDER LICENSE.

SERVICES SHOWN ON PLAN ARE INDICATIVE, EXACT DEPTH AND LOCATION TO BE CONFIRMED ONSITE. CONTRACTOR TO CARRY OUT DIAL BEFORE YOU DIG APPLICATION AND ENGAGE A REGISTERED SURVEYOR TO PEG OUT ALL EXISTING SERVICES PRIOR TO ANY WORK COMMENCING ONSITE.

DRAWING REGISTER

NUMBER	NAME	REVISION
SWDP01	COVER SHEET	E
SWDP02	LEVEL 2 BASEMENT PLAN	E
SWDP03	LEVEL 1 BASEMENT PLAN	E
SWDP04	SITE STORMWATER PLAN	E
SWDP05	LEVEL 1 FLOOR PLAN	E
SWDP06	LEVEL 2 FLOOR PLAN	E
SWDP07	LEVEL 3 FLOOR PLAN	E
SWDP08	LEVEL 4 FLOOR PLAN	E
SWDP09	LEVEL 5 FLOOR PLAN	E
SWDP10	ROOF PLAN	E
SWDP11	MUSIC MODEL CATCHMENT PLAN	E
SWDP12	MUSICLINK REPORT	E
SWDP13	DETAILS SHEET	E
SWDP14	KIP DESIGN + DETAILS	E
SWDP15	COUNCIL STANDARD DETAILS	E

DRAINAGE NOTES:

ALL PIPES TO BE LAID ON 75mm SAND BED WITH THE BARRELS FULLY SUPPORTED

100mm AND 150mm DIAMETER PIPES TO BE LAID ON MINIMUM 1% GRADE

MINIMUM DEPTH OF COVER FOR PIPES NOT SUBJECT TO VEHICULAR LOADING TO BE 300mm

ALL DRAINAGE PIPES LAID UNDER PAVEMENT SHALL BE REINFORCED CONCRETE WITH RUBBER RING JOINTS

BACKFILL TRENCHES WITH COMPACTED SAND OR APPROVED AGGREGATE MATERIAL

ALL PITS TO HAVE 600x600mm INTERNAL DIMENSIONS (U.N.O.)

SILT ARRESTORS TO HAVE 900x900mm INTERNAL DIMENSIONS

HEAVY DUTY GRATES AND COVERS ARE TO BE PROVIDED IN TRAFFICABLE AREAS

PIT GRATE TO BE TYPE WELDLOK OR APPROVED EQUIVALENT

ALL PITS SHALL BE PROVIDED WITH A LOCKING CLIP

ALL PITS SHALL BE MAINTAINED REGULARLY

TOP OF BENCHING SHALL BE TO THE HALF OF THE OUTLET PIPE DIAMETER

MAXIMUM FRONT ENTRY PIPE:–
STRAIGHT ENTRY – ø750
SKEW ENTRY 45° – ø525

ø100 SUBSOIL DRAINAGE PIPE 3000mm LONG WRAPPED IN FABRIC SOCK TO BE PROVIDED ADJACENT TO INLET PIPES

COMPRESSIVE STRENGTH f'c FOR CAST IN SITU CONCRETE TO BE A MINIMUM OF 20MPa AT 28 DAYS

PROVIDE CLEANING EYES TO ALL DOWNPIPES NOT DIRECTLY CONNECTED TO PITS

ISOLATED JOINTS TO BE PROVIDED TO ISOLATE CONCRETE PAVEMENTS FROM PITS

ALL TRENCH GRATES PROVIDED SHALL HAVE A MINIMUM CLEAR WIDTH OF 200mm

STORMWATER DRAINAGE CONNECTIONS TO THE MAIN SYSTEM SHALL BE TO THE REQUIREMENTS AND THE SATISFACTION OF LOCAL COUNCIL

ABBREVIATIONS:

ø or DIA	DIAMETER
CBR	CALIFORNIA BEARING RATIO
CH	CHAINAGE
CL	CENTER LINE
CO	CLEAR OUT
DD	DISH DRAIN
DDO	DISH DRAIN OUTLET
DEJ	DOWELLED EXPANSION JOINT
DGB	DENSE GRADED BASECOURSE
DGS	DENSE GRADED SUB–BASE
DP	DOWNPIPE
e	EXISTING
FFL	FINISHED FLOOR LEVEL
GTD	GRATED TRENCH DRAIN
GSIP	GRATED SURFACE INLET PIT
HYD	HYDRANT
IJ	ISOLATING JOINT
IK	INTEGRAL KERB
IL	INVERT LEVEL
IP	INTERSECTION POINT
KIP	KERB INLET PIT
KO	KERB ONLY
K&G	KERB & GUTTER
KR	KERB RETURN
LS	LONGITUDINAL SECTION
NGL	NATURAL GROUND LEVEL
OFP	OVERLAND FLOW PATH
OSD	ON–SITE DETENTION
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RK	ROLL KERB & GUTTER
RL	REDUCED LEVEL
RW	RETAINING WALL
RWT	RAINWATER TANK
SJ	SAWN CONTROL JOINT
SMH	SEWER MAN HOLE
SW	STORMWATER
SWP	STORMWATER PIT
SWRM	STORMWATER RISING MAIN
SWS	STORMWATER SUMP
SV	STOP VALVE
TOK	TOP OF KERB
TOW	TOP OF WALL
TWL	TOP WATER LEVEL
TP	TANGENT POINT
UPVC	UNPLASTICISED POLYVINYL CHLORIDE
UNO	UNLESS NOTED OTHERWISE
WPJ	WEAKENED PLANE JOINT
FF	FIRST FLUSH DEVICE
TYP	TYPICAL
BM	BENCH MARK

STORMWATER PIPE BEDDING/PAVING NOTES:

WHERE TRENCH BASE IS ROCK A MINIMUM OF 75mm BEDDING TO BE PROVIDED UNDER PIPE COLLARS.

STORMWATER PIPE BEDDING DETAIL TO BE IN ACCORDANCE WITH LOCAL COUNCIL REQUIREMENTS. BEDDING DETAILS TO BE CONFIRMED UPON EXCAVATION & PRIOR TO INSTALLATION OF PIPEWORK.

FOOTPATH REINSTATEMENT NOTES:

REMOVE ALL SAND FILL WITHIN THE FOOTPATH AREA TO THE EXISTING SUBGRADE.

SUPPORT ALL AUTHORITY SERVICES TO STRUCTURAL ENGINEERS DETAILS DURING EXCAVATION.

REINSTATE FOOTPATH SUBGRADE.

THE CONTRACTOR SHALL PROVIDE CERTIFICATION OF COMPACTION FROM A NATA REGISTERED TESTING AUTHORITY. MINIMUM THREE TESTS PER LAYER AS FOLLOWS:

SELECT FILL	95% MODIFIED
SELECT FILL (LESS THAN 300mm BELOW BASE COURSE)	98% MODIFIED
BASE COURSE	100% MODIFIED

EROSION & SEDIMENT CONTROL NOTES:

PROVIDE SILT FENCE/HAY BAIL BARRIERS TO THE LOW SIDE OF ALL EXPOSED EARTH EXCAVATIONS (TYPICAL).

ISOLATE EXISTING STORMWATER PITS WITH HAY BALES TO FILTER ALL INCOMING FLOWS.

DO NOT STOCK PILE EXCAVATED MATERIAL ON THE ROAD WAY.

SURVEY

THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN INVESTIGATED BY ASHER SILCOCK CONSULTING P/L, BEING REGISTERED SURVEYORS. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. CAPITAL ENGINEERING CONSULTANTS DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAW.

SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT CAPITAL ENGINEERING CONSULTANTS.

ADOPT DATUM PM 12084 RL:40.843 (A.H.D) AS PER ASHER SILCOCK CONSULTING P/L. REFERENCE–14160.

IT IS THE BUILDERS RESPONSIBILITY TO MAKE SURE ALL SURVEY MARKS TO BE PRESERVED AT ALL COST.

DEVELOPMENT APPLICATION (DA)

FOR APPROVAL

Rev.	Description	By.	Chk.	App.	Date
G	FOR APPROVAL	M.W.	R.F.	P.E.	05.06.2020
F	FOR APPROVAL	M.W.	R.F.	P.E.	28.05.2020
E	FOR APPROVAL	S.C.H	SCH	P.E.	22.03.2019
D	FOR APPROVAL	A.A.	SCH	P.E.	18.12.2018
C	FOR APPROVAL	A.A.	SCH	P.E.	31.10.2018
B	FOR APPROVAL	A.A.	SCH	P.E.	23.10.2018

cec capital engineering consultants
8 Buller Street,
North Parramatta 2151
Ph: (02) 9630 0121
Fax: (02) 9630 0132
info@capitalengineering.com.au
www.capitalengineering.com.au

Client
BUILDING DESIGN & TECHNOLOGY

Project
26-30 HOPE STREET, PENRITH

Title
COVER SHEET

N

Date 05.06.2020	Design S.C.H.		Approved P.E. PAUL EL–BAYEH B.E.,M.E.(struct/foundation),M.I.E. Aust
Scale 1:100 @ A1 (original size) 1:200 @ A3	Drawn M.W.	Checked R.F.	
	Project Number SW18025	Drawing Number SWDP01	Revision G

A1 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

INSTALL 2x SUBMERSIBLE PUMPS EACH WITH A PUMP CAPACITY OF 5L/s @ 12.0m HEAD IN ACCORDANCE WITH AS/NZS 3500.3 (TYP).

INSTALL 900SQ HEAVY DUTY STEEL GRATED LID FOR ACCESS AND MAINTENANCE PURPOSES (TYP).

PUMP OUT PIT:
RL: 37.15
IL: 35.9
EFFECTIVE HEIGHT: 1.0m
TWL: 36.95
DIM: 2.5m(W) x 2.0m(L) x 1.0m(D)
AREA: 5.0m²
VOLUME REQ: 4.97m³
VOLUME PROV: 5m³

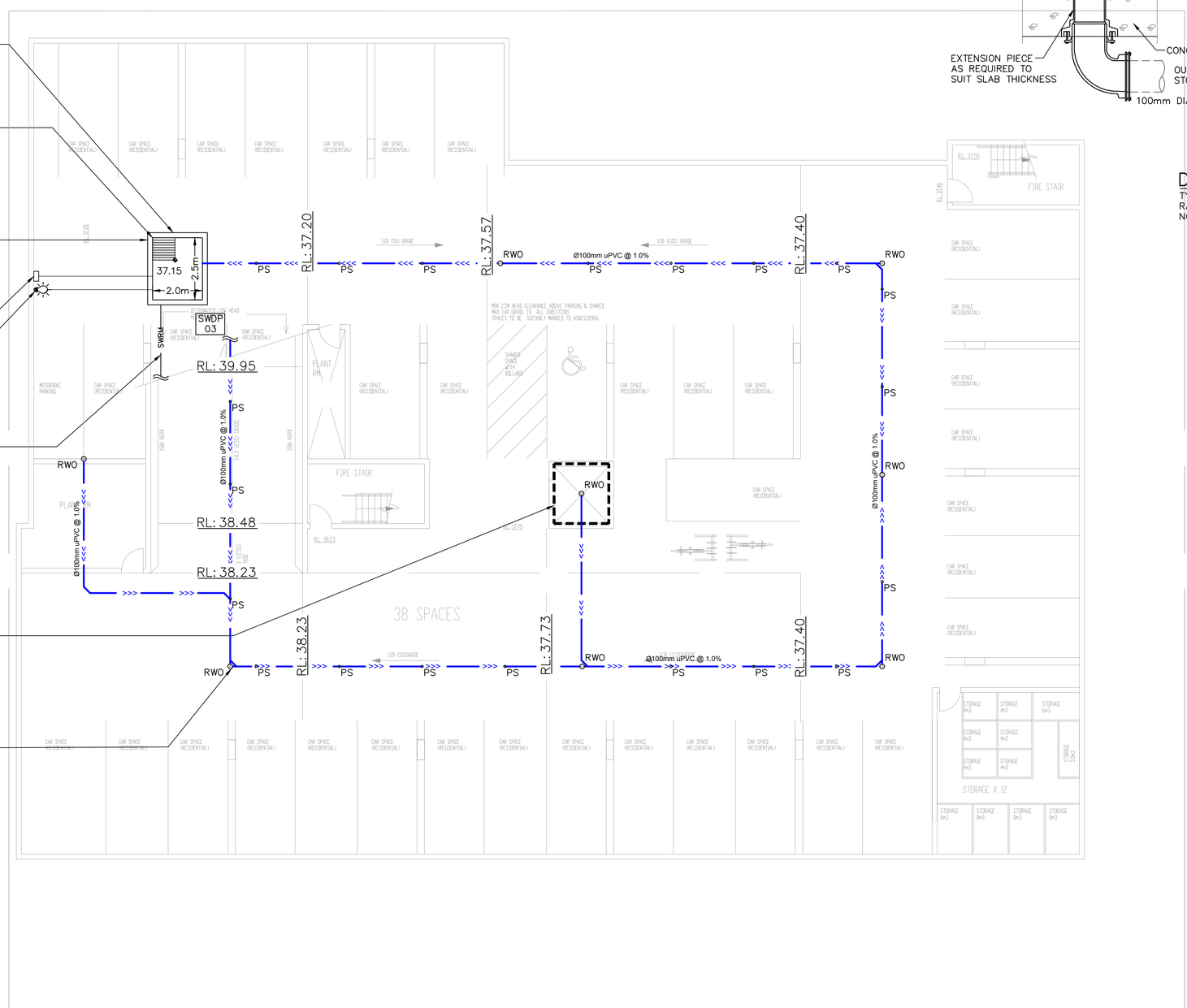
PUMP OUT PIT CONTROL BOX (TYP).

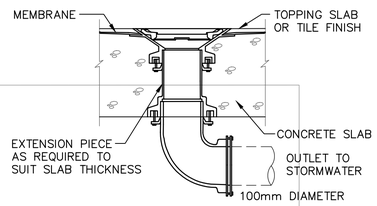
INSTALL FLASHING WARNING LIGHT FOR INDICATION OF PUMP FAILURE DURING OR AFTER HEAVY STORMS (TYP).

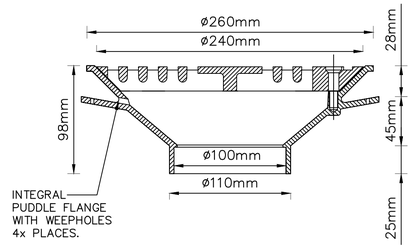
INSTALL 2x CLASS 12 50mm uPVC STORMWATER RISING MAINS AS SHOWN. CONNECT TO OSD BASIN ON GROUND FLOOR.

LIFT TO BE FULLY TANKED TO STRUCTURAL ENGINEERS DETAIL.

INSTALL ø100mm RAINWATER OUTLETS TYPE "SPS" OR SIMILAR (TYP).







DETAIL 1/-

TYPE SPS
RAINWATER OUTLET
NOT TO SCALE

KEY NOTES:

INSTALL STEP IRONS FOR EASE OF ACCESS DURING MAINTENANCE OF PUMP OUT CONTROL PIT TO COUNCIL SATISFACTION.

INSTALL CONFINED SPACE SIGN ABOVE PUMP OUT PIT FOR PUBLIC AWARENESS AND WARNING.

ALL STORMWATER PIPES ARE ø100mm uPVC AND SLOPING @ 1.0% U.N.O (TYP).

ALL BUILDING AND HYDRAULIC SERVICES TO BE PROPERLY CO-ORDINATED WITH STORMWATER PIPES AND ENSURE NO CLASHES ARE PRESENT DURING CONSTRUCTION (TYP).

STORMWATER PIPE ARRANGEMENT TO BE CO-ORDINTED WITH STRUCTURAL SLAB AND BEAMS WHERE REQUIRED (TYP).

PROVIDE CLEAR OUT POINTS FOR INSPECTION & MAINTENANCE PURPOSES WHERE REQUIRED (TYP).

PROVIDE SUBSOIL DRAINAGE WITHIN LANDSCAPED AREAS, PLANTER BEDS & BEHIND RETAINING WALLS TO PREVENT LONG TERM SATURATION DURING PROLONGED WET WEATHER (TYP).

FOR THE BASEMENT AREA BELOW THE GROUNDWATER TABLE, NO SUBSOIL DRAINAGE SYSTEM SHALL BE PROVIDED AND THE UNDERGROUND STRUCTURE SHALL BE PROTECTED BY WATERPROOFING. SUBJECT TO GEOTECHNICAL REPORT AT LATER STAGES

BASEMENT CALCS:

PUMP OUT PIT WAS DESIGNED FOR A 100yr 2hr STORM EVENT FOR A MORE CONSERVATIVE STORAGE VOLUME.

100yr 2hr ARI STORM= 44.4mm/hr
ARIx2=88.8mm
AREA OF DRIVEWAY
RAMP UNCOVERED= 56.07m²

V=Axd
=56.07x(88.8/1000)
=56.07x0.0888
=4.97m³

DEVELOPMENT APPLICATION (DA)

FOR APPROVAL

LEVEL 2 BASEMENT PLAN

SCALE 1:100

Rev.	Description	By.	Chk.	App.	Date
G	FOR APPROVAL	M.W.	R.F.	P.E.	05.06.2020
F	FOR APPROVAL	M.W.	R.F.	P.E.	28.05.2020
E	FOR APPROVAL	S.C.H	SCH	P.E.	22.03.2019
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cec capital engineering consultants
8 Buller Street,
North Parramatta 2151
Ph: (02) 9630 0121
Fax: (02) 9630 0132
info@capitalengineering.com.au
www.capitalengineering.com.au

Client: BUILDING DESIGN & TECHNOLOGY

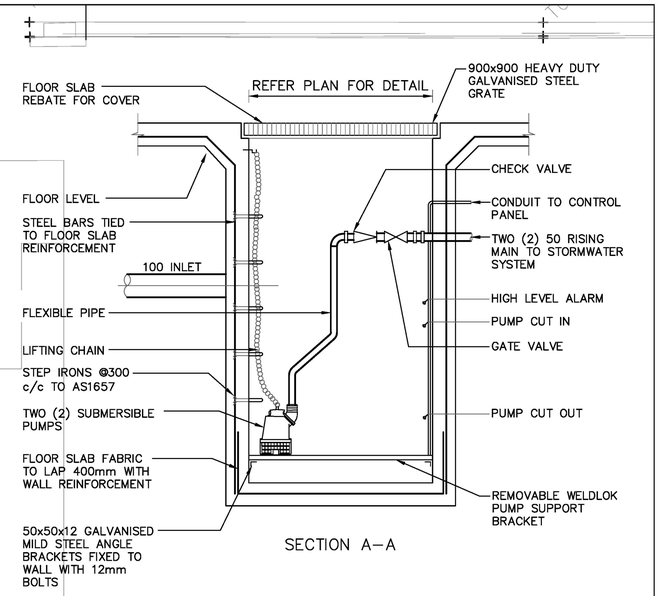
Project: 26-30 HOPE STREET, PENRITH

Title: LEVEL 2 BASEMENT PLAN

Date: 05.06.2020
Design: S.C.H.
Approved: P.E.
PAUL EL-BAYEH
B.E.,M.E.(struct/foundation),M.I.E. Aust
Scale: 1:100 @ A1 (original size) 1:200 @ A3
Drawn: M.W.
Checked: R.F.
Project Number: SW18025
Drawing Number: SWDP02
Revision: G

A1 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

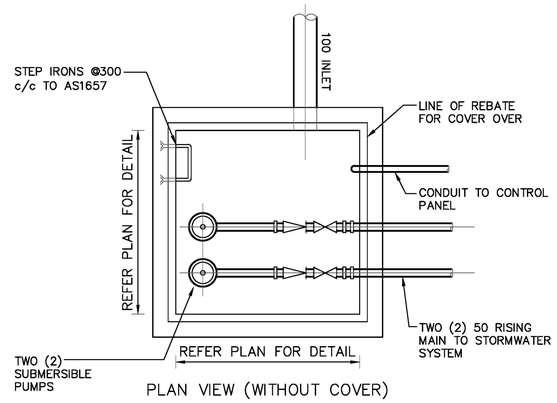
LEVEL 1 BASEMENT PLAN
SCALE 1:100



SECTION A–A

PUMP OUT TANK

HEIGHT: 1.0m
WIDTH: 2.5m
LENGTH: 2.0m
VOLUME PROVIDED: 5.0m³



PLAN VIEW (WITHOUT COVER)

DETAIL 2
SUBSOIL PUMP OUT PIT
SCALE 1:20

DEVELOPMENT APPLICATION (DA)

FOR APPROVAL

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cec capital engineering consultants
8 Buller Street,
North Parramatta 2151
Ph: (02) 9630 0121
Fax: (02) 9630 0132
info@capitalengineering.com.au
www.capitalengineering.com.au

Client
BUILDING DESIGN & TECHNOLOGY

Project
26-30 HOPE STREET, PENRITH

Title
LEVEL 1 BASEMENT PLAN

Date 05.06.2020
Design S.C.H.
Approved P.E.
PAUL EL–BAYEH
B.E.,M.E.(struct/foundation),M.I.E. Aust
Scale 1:100 @ A1 (original size) 1:200 @ A3
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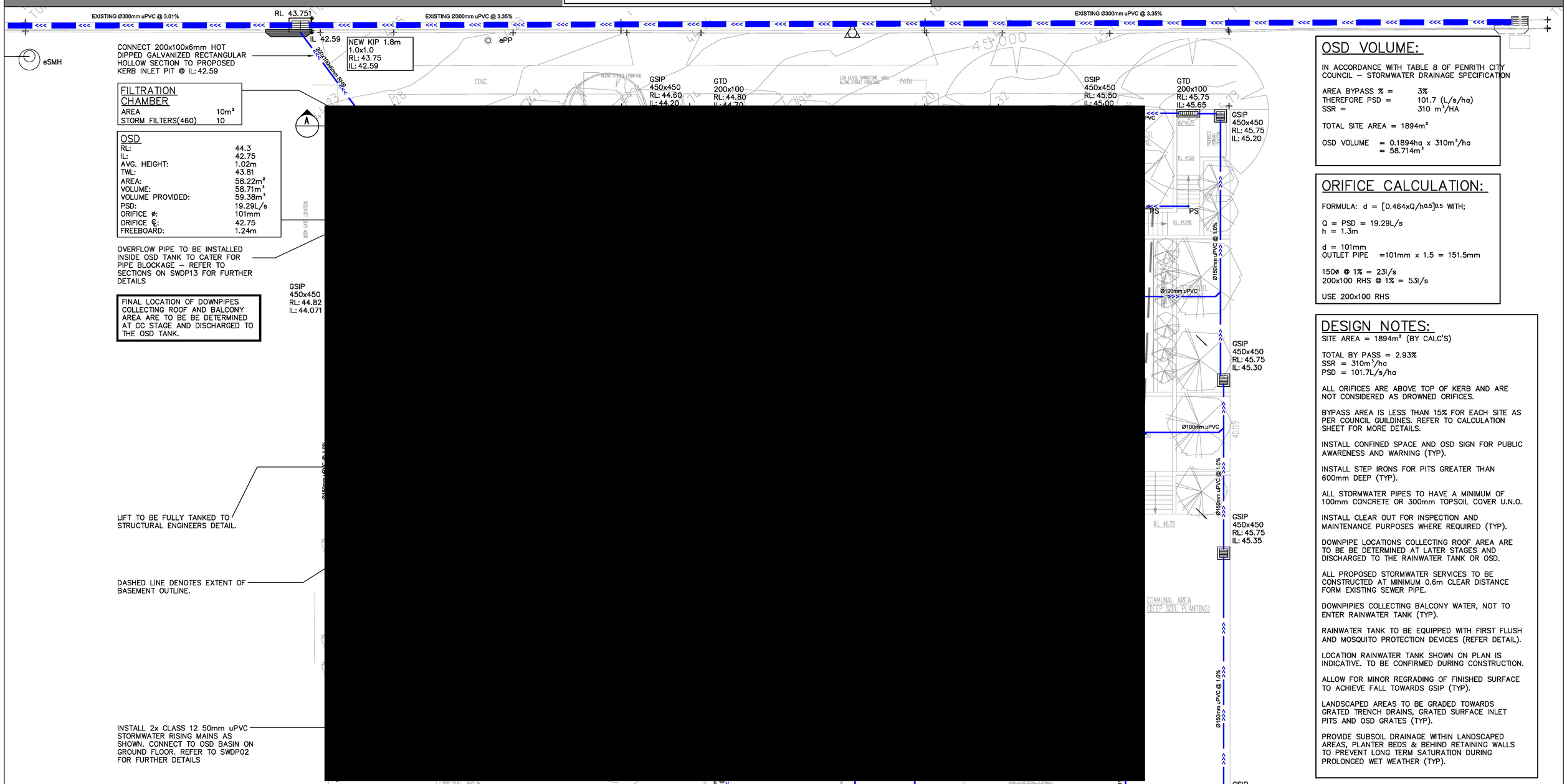
Checked R.F.
Project Number SW18025
Drawing Number SWDP03
Revision G

A1 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

ATTACHED TO SWDP14



FILTRATION CHAMBER

AREA	10m²
STORM FILTERS(460)	10

OSD

RL:	44.3
IL:	42.75
AVG. HEIGHT:	1.02m
TWL:	43.81
AREA:	58.22m²
VOLUME:	58.71m³
VOLUME PROVIDED:	59.38m³
PSD:	19.29L/s
ORIFICE ø:	101mm
ORIFICE ℄:	42.75
FREEBOARD:	1.24m

OVERFLOW PIPE TO BE INSTALLED INSIDE OSD TANK TO CATER FOR PIPE BLOCKAGE – REFER TO SECTIONS ON SWDP13 FOR FURTHER DETAILS

FINAL LOCATION OF DOWNPIPES COLLECTING ROOF AND BALCONY AREA ARE TO BE BE DETERMINED AT CC STAGE AND DISCHARGED TO THE OSD TANK.

LIFT TO BE FULLY TANKED TO STRUCTURAL ENGINEERS DETAIL.

DASHED LINE DENOTES EXTENT OF BASEMENT OUTLINE.

INSTALL 2x CLASS 12 50mm uPVC STORMWATER RISING MAINS AS SHOWN. CONNECT TO OSD BASIN ON GROUND FLOOR. REFER TO SWDP02 FOR FURTHER DETAILS

OSD VOLUME:

IN ACCORDANCE WITH TABLE 8 OF PENRITH CITY COUNCIL – STORMWATER DRAINAGE SPECIFICATION

AREA BYPASS % = 3%
THEREFORE PSD = 101.7 (L/s/ha)
SSR = 310 m³/HA

TOTAL SITE AREA = 1894m²

OSD VOLUME = 0.1894ha x 310m³/ha
= 58.714m³

ORIFICE CALCULATION:

FORMULA: $d = [0.464xQ/h^{0.5}]^{0.5}$ WITH;

Q = PSD = 19.29L/s
h = 1.3m

d = 101mm
OUTLET PIPE =101mm x 1.5 = 151.5mm

150ø @ 1% = 23l/s
200x100 RHS @ 1% = 53l/s

USE 200x100 RHS

DESIGN NOTES:

SITE AREA = 1894m² (BY CALC'S)

TOTAL BY PASS = 2.93%
SSR = 310m³/ha
PSD = 101.7L/s/ha

ALL ORIFICES ARE ABOVE TOP OF KERB AND ARE NOT CONSIDERED AS DROWNED ORIFICES.

BYPASS AREA IS LESS THAN 15% FOR EACH SITE AS PER COUNCIL GUILDINES. REFER TO CALCULATION SHEET FOR MORE DETAILS.

INSTALL CONFINED SPACE AND OSD SIGN FOR PUBLIC AWARENESS AND WARNING (TYP).

INSTALL STEP IRONS FOR PITS GREATER THAN 600mm DEEP (TYP).

ALL STORMWATER PIPES TO HAVE A MINIMUM OF 100mm CONCRETE OR 300mm TOPSOIL COVER U.N.O.

INSTALL CLEAR OUT FOR INSPECTION AND MAINTENANCE PURPOSES WHERE REQUIRED (TYP).

DOWNPIPE LOCATIONS COLLECTING ROOF AREA ARE TO BE BE DETERMINED AT LATER STAGES AND DISCHARGED TO THE RAINWATER TANK OR OSD.

ALL PROPOSED STORMWATER SERVICES TO BE CONSTRUCTED AT MINIMUM 0.6m CLEAR DISTANCE FORM EXISTING SEWER PIPE.

DOWNPIPIES COLLECTING BALCONY WATER, NOT TO ENTER RAINWATER TANK (TYP).

RAINWATER TANK TO BE EQUIPPED WITH FIRST FLUSH AND MOSQUITO PROTECTION DEVICES (REFER DETAIL).

LOCATION RAINWATER TANK SHOWN ON PLAN IS INDICATIVE. TO BE CONFIRMED DURING CONSTRUCTION.

ALLOW FOR MINOR REGRADING OF FINISHED SURFACE TO ACHIEVE FALL TOWARDS GSIP (TYP).

LANDSCAPED AREAS TO BE GRADED TOWARDS GRATED TRENCH DRAINS, GRATED SURFACE INLET PITS AND OSD GRATES (TYP).

PROVIDE SUBSOIL DRAINAGE WITHIN LANDSCAPED AREAS, PLANTER BEDS & BEHIND RETAINING WALLS TO PREVENT LONG TERM SATURATION DURING PROLONGED WET WEATHER (TYP).

GROUND FLOOR PLAN

SCALE 1:100

DEVELOPMENT APPLICATION (DA)

FOR APPROVAL

Rev.	Description	By.	Chk.	App.	Date
G	FOR APPROVAL	M.W.	R.F.	P.E.	05.06.2020
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cec
capital engineering consultants
8 Buller Street,
North Parramatta 2151
Ph: (02) 9630 0121
Fax: (02) 9630 0132
info@capitalengineering.com.au
www.capitalengineering.com.au

Client
BUILDING DESIGN & TECHNOLOGY

Project
26-30 HOPE STREET, PENRITH

Title
SITE STORMWATER PLAN

Date 05.06.2020
Design S.C.H.
Approved P.E.
PAUL EL–BAYEH
B.E.,M.E.(struct/foundation),M.I.E. Aust
Scale 1:100 @ A1 (original size) 1:200 @ A3
Drawn M.W.
Checked R.F.
Project Number SW18025
Drawing Number SWDP04
Revision G

A1 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

HOPE STREET

DEVELOPMENT APPLICATION (DA)

FOR APPROVAL

LEVEL 1 FLOOR PLAN

SCALE 1:100

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G	FOR APPROVAL	M.W.	R.F.	P.E.	05.06.2020
F	FOR APPROVAL	M.W.	R.F.	P.E.	28.05.2020
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C	FOR APPROVAL	A.A.	SCH	P.E.	31.10.2018
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North Parramatta 2151
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Fax: (02) 9630 0132
info@capitalengineering.com.au
www.capitalengineering.com.au

Client
BUILDING DESIGN & TECHNOLOGY

Project
26-30 HOPE STREET, PENRITH

Title
LEVEL 1 FLOOR PLAN

Date 05.06.2020
Design S.C.H.
Approved P.E.
PAUL EL-BAYEH
B.E.,M.E.(struct/foundation),M.I.E. Aust
Scale 1:100 @ A1 (original size) 1:200 @ A3
Drawn M.W.
Checked R.F.
Project Number SW18025
Drawing Number SWDP05
Revision G

A1 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

HOPE STREET

DEVELOPMENT APPLICATION (DA)

FOR APPROVAL

LEVEL 2 FLOOR PLAN
SCALE 1:100

Rev.	Description	By.	Chk.	App.	Date
G	FOR APPROVAL	M.W.	R.F.	P.E.	05.06.2020
F	FOR APPROVAL	M.W.	R.F.	P.E.	28.05.2020
E	FOR APPROVAL	S.C.H	SCH	P.E.	22.03.2019
D	FOR APPROVAL	A.A.	SCH	P.E.	18.12.2018
C	FOR APPROVAL	A.A.	SCH	P.E.	31.10.2018
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Fax: (02) 9630 0132
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Client
BUILDING DESIGN & TECHNOLOGY

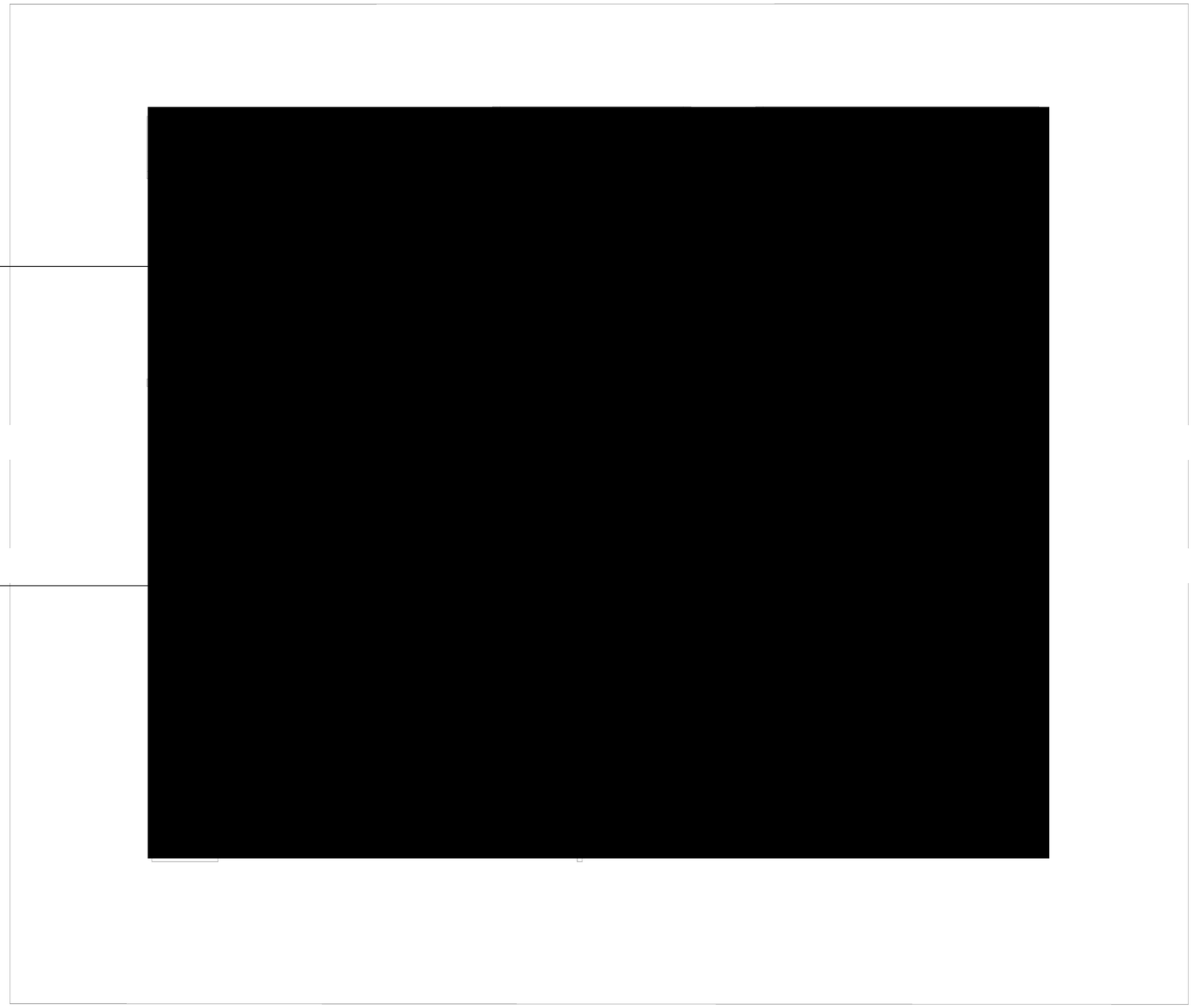
Project
26-30 HOPE STREET, PENRITH

Title
LEVEL 2 FLOOR PLAN

Date 05.06.2020
Design S.C.H.
Approved P.E.
PAUL EL-BAYEH
B.E.,M.E.(struct/foundation),M.I.E. Aust
Scale 1:100 @ A1 (original size) 1:200 @ A3
Drawn M.W.
Checked R.F.
Project Number SW18025
Drawing Number SWDP06
Revision G

A1 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

HOPE STREET



FINAL LOCATION OF DOWNPIPES COLLECTING ROOF AND BALCONY AREA ARE TO BE BE DETERMINED AT CC STAGE AND DISCHARGED TO THE OSD TANK.

LIFT TO BE FULLY TANKED TO STRUCTURAL ENGINEERS DETAIL.

DENOTES DONWPIPE DROP TO FLOOR BELOW (TYP).

LEVEL 3 FLOOR PLAN
SCALE 1:100

DEVELOPMENT APPLICATION (DA)

FOR APPROVAL

Rev.	Description	By.	Chk.	App.	Date
G	FOR APPROVAL	M.W.	R.F.	P.E.	05.06.2020
F	FOR APPROVAL	M.W.	R.F.	P.E.	28.05.2020
E	FOR APPROVAL	S.C.H	SCH	P.E.	22.03.2019
D	FOR APPROVAL	A.A.	SCH	P.E.	18.12.2018
C	FOR APPROVAL	A.A.	SCH	P.E.	31.10.2018
B	FOR APPROVAL	A.A.	SCH	P.E.	23.10.2018

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capital engineering consultants
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North Parramatta 2151
Ph: (02) 9630 0121
Fax: (02) 9630 0132
info@capitalengineering.com.au
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Client
BUILDING DESIGN & TECHNOLOGY

Project
26-30 HOPE STREET, PENRITH

Title
LEVEL 3 FLOOR PLAN

Date 05.06.2020
Design S.C.H.
Approved P.E.
PAUL EL-BAYEH
B.E.,M.E.(struct/foundation),M.I.E. Aust
Scale 1:100 @ A1 (original size) 1:200 @ A3
Drawn M.W.
Checked R.F.
Project Number SW18025
Drawn Number SWDP07
Revision G

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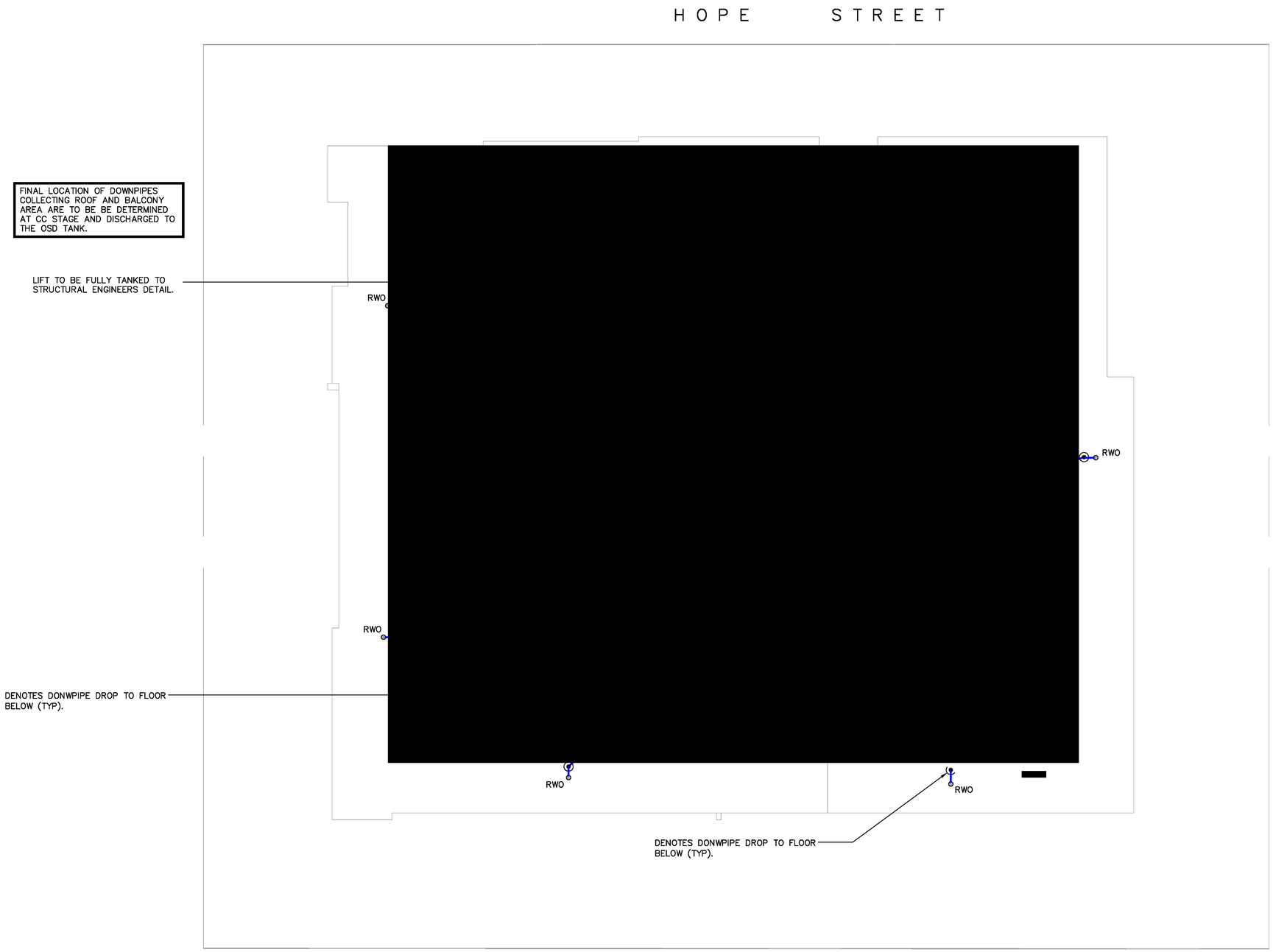

DEVELOPMENT APPLICATION (DA)

FOR APPROVAL

LEVEL 4 FLOOR PLAN
SCALE 1:100

Rev.	Description	By.	Chk.	App.	Date
G	FOR APPROVAL	M.W.	R.F.	P.E.	05.06.2020
F	FOR APPROVAL	M.W.	R.F.	P.E.	28.05.2020
E	FOR APPROVAL	S.C.H	SCH	P.E.	22.03.2019
D	FOR APPROVAL	A.A.	SCH	P.E.	18.12.2018
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B	FOR APPROVAL	A.A.	SCH	P.E.	23.10.2018

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Client
BUILDING DESIGN & TECHNOLOGY

Project
26-30 HOPE STREET, PENRITH

Title
LEVEL 4 FLOOR PLAN

Date 05.06.2020
Design S.C.H.
Approved P.E.
PAUL EL-BAYEH
B.E.,M.E.(struct/foundation),M.I.E. Aust
Scale 1:100 @ A1 (original size) 1:200 @ A3
Drawn M.W.
Checked R.F.
Project Number SW18025
Drawing Number SWDP08
Revision G

A1 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

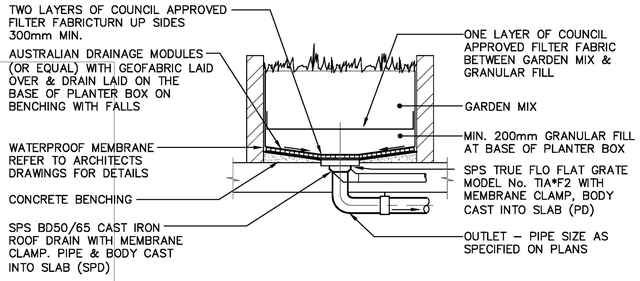
HOPE STREET

FINAL LOCATION OF DOWNPIPES COLLECTING ROOF AND BALCONY AREA ARE TO BE BE DETERMINED AT CC STAGE AND DISCHARGED TO THE OSD TANK.

LIFT TO BE FULLY TANKED TO STRUCTURAL ENGINEERS DETAIL.

DENOTES DONWPIPE DROP TO FLOOR BELOW (TYP).

[redacted]



DETAIL 3 / -
PLANTER DRAIN
SCALE 1:20

DEVELOPMENT APPLICATION (DA)

FOR APPROVAL

LEVEL 5 FLOOR PLAN
SCALE 1:100

Rev.	Description	By.	Chk.	App.	Date
G	FOR APPROVAL	M.W.	R.F.	P.E.	05.06.2020
F	FOR APPROVAL	M.W.	R.F.	P.E.	28.05.2020
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Client
BUILDING DESIGN & TECHNOLOGY

Project
26-30 HOPE STREET, PENRITH

Title
LEVEL 5 FLOOR PLAN

Date 05.06.2020
Design S.C.H.
Approved P.E.
PAUL EL–BAYEH
B.E.,M.E.(struct/foundation),M.I.E. Aust
Scale 1:100 @ A1 (original size) 1:200 @ A3
Drawn M.W.
Checked R.F.
Project Number SW18025
Drawing Number SWDP09
Revision G

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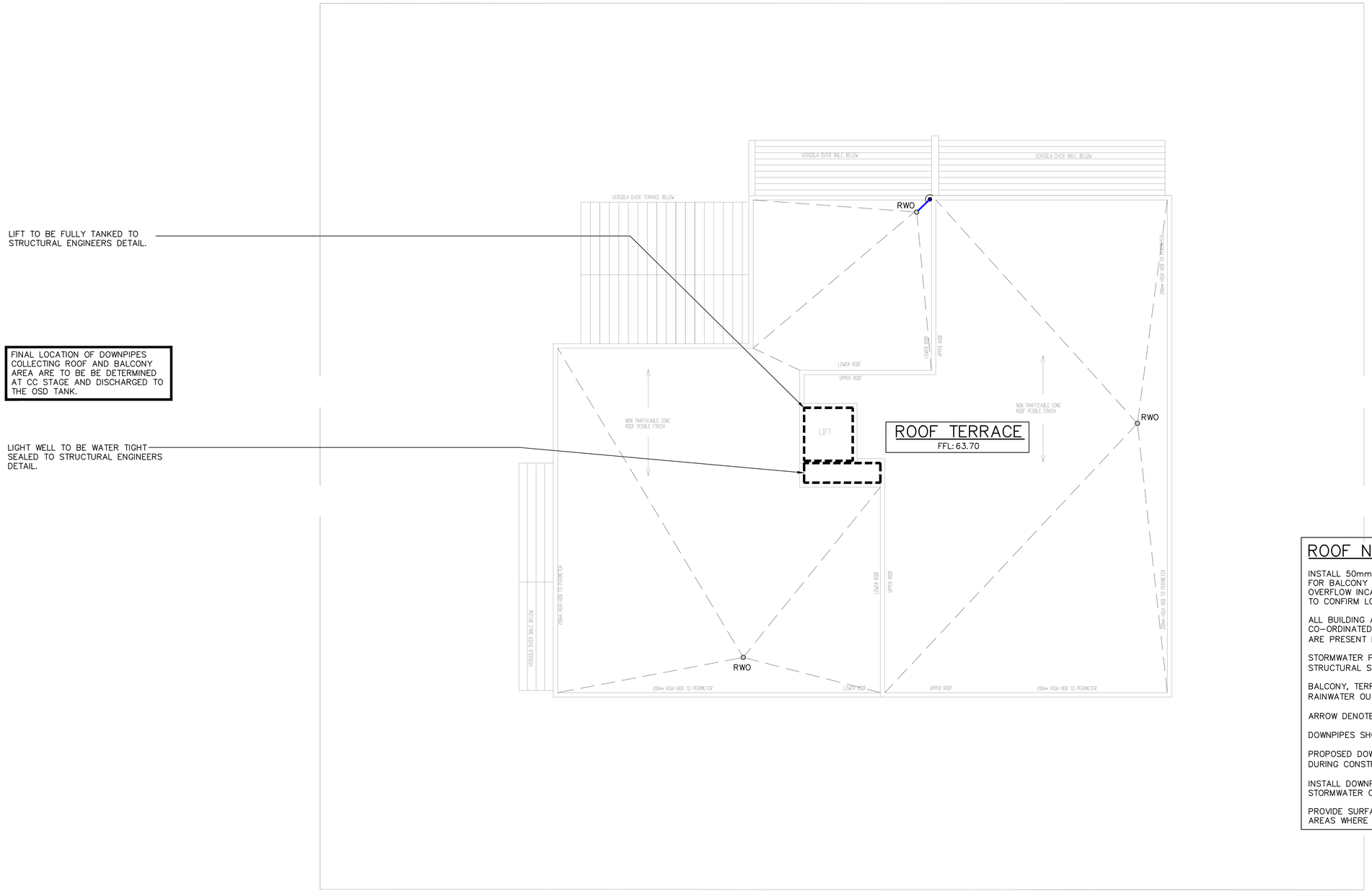
HOPE STREET



ROOF NOTES:

INSTALL 50mm uPVC SPITTER PIPES 20mm ABOVE SURFACE LEVEL FOR BALCONY AND CONCRETE ROOF AREAS TO ALLOW FOR EMERGENCY OVERFLOW INCASE OF BLOCKAGES DURING HEAVY STORMS. PLUMBER TO CONFIRM LOCATION DURING CONSTRUCTION.

ALL BUILDING AND HYDRAULIC SERVICES TO BE PROPERLY CO-ORDINATED WITH STORMWATER PIPES AND ENSURE NO CLASHES ARE PRESENT DURING CONSTRUCTION (TYP).

STORMWATER PIPE ARRANGEMENT TO BE CO-ORDINTED WITH STRUCTURAL SLAB AND BEAMS WHERE REQUIRED (TYP).

BALCONY, TERRACE & CONCRETE ROOF AREAS TO SLOPE TOWARDS RAINWATER OUTLETS WHERE REQUIRED (TYP).

ARROW DENOTES THE SLOPE OF FINISHED SURFACE LEVEL (TYP).

DOWNPIPES SHOWN ON PLAN ARE TO BE ø100mm uPVC U.N.O. (TYP).

PROPOSED DOWNPIPE LOCATIONS ARE NOMINAL AND TO BE CONFIRMED DURING CONSTRUCTION (TYP).

INSTALL DOWNPIPE WITH SPREADER (IF REQUIRED) TO DISPERSE STORMWATER ONTO LOWER ROOF AREAS EFFECTIVELY.

PROVIDE SURFACE DRAINAGE FOR ALL CONCRETE AND BALCONY ROOF AREAS WHERE REQUIRED.

DEVELOPMENT APPLICATION (DA)

FOR APPROVAL

ROOF PLAN
SCALE 1:100

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G	FOR APPROVAL	M.W.	R.F.	P.E.	05.06.2020
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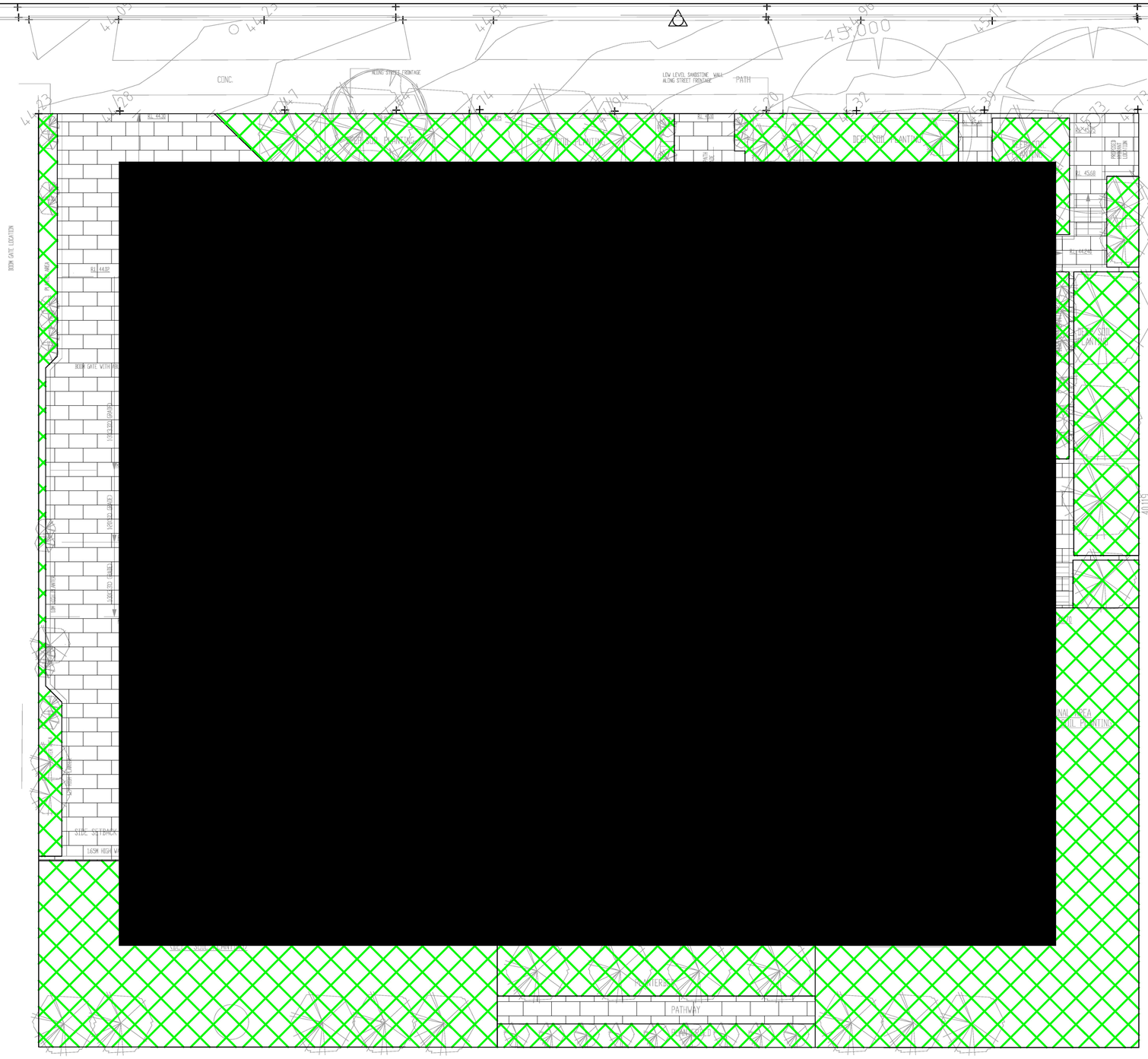
26-30 HOPE STREET, PENRITH

Title
ROOF PLAN

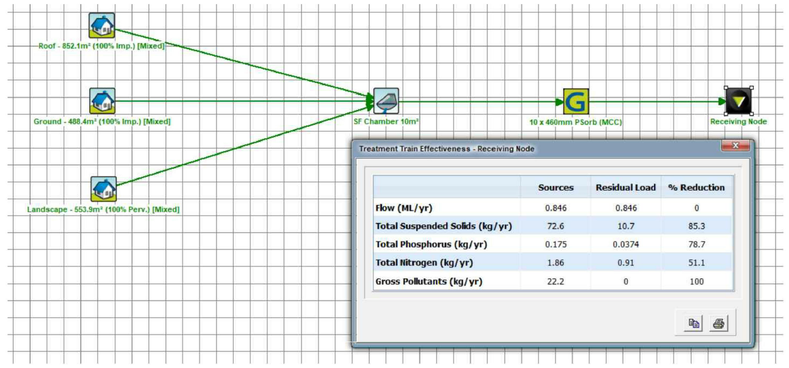
Date 05.06.2020
Design S.C.H.
Approved P.E.
PAUL EL-BAYEH
B.E.,M.E.(struct/foundation),M.I.E. Aust
Scale 1:100 @ A1 (original size) 1:200 @ A3
Drawn M.W.
Checked R.F.
Project Number SW18025
Drawing Number SWDP10
Revision G

A1 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300



MUSIC MODEL CATCHMENT PLAN
SCALE 1:100

LEGEND		
	LANDSCAPE	553.9m²
	HARDSURFACE	488.4m²
	ROOF	852.1m²
	BYPASS	0.0m²



	Sources	Residual Load	% Reduction
Flow (ML/yr)	0.846	0.846	0
Total Suspended Solids (kg/yr)	72.6	10.7	85.3
Total Phosphorus (kg/yr)	0.175	0.0374	78.7
Total Nitrogen (kg/yr)	1.86	0.91	51.1
Gross Pollutants (kg/yr)	22.2	0	100

MUSIC MODEL TREATMENT TRAIN SCREENSHOT
SCALE 1:100

DEVELOPMENT APPLICATION (DA)

FOR APPROVAL

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Project
26-30 HOPE STREET, PENRITH

Title
MUSIC MODEL CATCHMENT PLAN

Date
05.06.2020

Design
S.C.H.

Approved
P.E.
PAUL EL–BAYEH
B.E.,M.E.(struct/foundation),M.I.E. Aust

Scale
1:100 @ A1 (original size)
1:200 @ A3

Drawn
M.W.

Checked
R.F.

Project Number
SW18025

Drawing Number
SWDP11

Revision
G

A1 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

PENRITH
CITY COUNCIL

music*link*

MUSIC-*link* Report

Project Details		Company Details	
Project:	26-30 Hope St Penrith	**Company:**	CEC Engineers
Report Export Date:	4/06/2020	**Contact:**	Mathew Wahbe
Catchment Name:	10575 - 26-30 Hope Street	**Address:**	8 Buller Street, North Parramatta, NSW 2151
Catchment Area:	0.189ha	**Phone:**	02 9630 0121
Impervious Area*:	70.89%	**Email:**	mathew@capitalengineering.com.au
Rainfall Station:	67113 PENRITH		
Modelling Time-step:	6 Minutes		
Modelling Period:	1/01/1999 - 31/12/2008 11:54:00 PM		
Mean Annual Rainfall:	691mm		
Evapotranspiration:	1158mm		
MUSIC Version:	6.3.0		
MUSIC-link data Version:	6.31		
Study Area:	Penrith		
Scenario:	Penrith Development		

* takes into account area from all source nodes that link to the chosen reporting node, excluding Import Data Nodes

Treatment Train Effectiveness		Treatment Nodes		Source Nodes	
Node: Receiving Node	**Reduction**	**Node Type**	**Number**	**Node Type**	**Number**
Flow	0.00169%	Sedimentation Basin Node	1	Urban Source Node	3
TSS	85.3%	Generic Node	1		
TP	78.7%				
TN	51.1%				
GP	100%				

Comments

- Roof node base flow values are as per the Penrith MUSIC modelling guidelines which indicate base flow has no effect for impervious areas and therefore no value is needed.

- The 'SF Chamber' node has been modified to represent the below ground filtration chamber. Default 'K' values have been manually adjusted to 1 in order to eliminate any performance from the actual tank, which would already be accounted for in the Filter Generic Node Target Elements. Not doing this would represent a duplication of the chamber attenuation effect. (For any questions, please Contact Ocean Protect on 1300 354 722).

NOTE: A successful self-validation check of your model does not constitute an approved model by Penrith City Council
MUSIC-*link* now in MUSIC by eWater – leading software for modelling stormwater solutions

PENRITH
CITY COUNCIL

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Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Receiving	Receiving Node	% Load Reduction	None	None	0.00169
Receiving	Receiving Node	GP % Load Reduction	90	None	100
Receiving	Receiving Node	TN % Load Reduction	45	None	51.1
Receiving	Receiving Node	TP % Load Reduction	60	None	78.7
Receiving	Receiving Node	TSS % Load Reduction	85	None	85.3
Sedimentation	SF Chamber 10m$	High Flow Bypass Out (ML/yr)	None	None	0
Urban	Ground - 488.4m$ (100% Imp.)	Area Impervious (ha)	None	None	0.049
Urban	Ground - 488.4m$ (100% Imp.)	Area Pervious (ha)	None	None	0
Urban	Ground - 488.4m$ (100% Imp.)	Total Area (ha)	None	None	0.049
Urban	Landscape - 553.9m$ (100% Perv.)	Area Impervious (ha)	None	None	0
Urban	Landscape - 553.9m$ (100% Perv.)	Area Pervious (ha)	None	None	0.055
Urban	Landscape - 553.9m$ (100% Perv.)	Total Area (ha)	None	None	0.055
Urban	Roof - 852.1m$ (100% Imp.)	Area Impervious (ha)	None	None	0.085
Urban	Roof - 852.1m$ (100% Imp.)	Area Pervious (ha)	None	None	0
Urban	Roof - 852.1m$ (100% Imp.)	Total Area (ha)	None	None	0.085

Only certain parameters are reported when they pass validation

NOTE: A successful self-validation check of your model does not constitute an approved model by Penrith City Council
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Failing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Sedimentation	SF Chamber 10m$	Notional Detention Time (hrs)	8	12	0.255
Sedimentation	SF Chamber 10m$	Total Nitrogen - k (m/yr)	500	500	1
Sedimentation	SF Chamber 10m$	Total Phosphorus - k (m/yr)	6000	6000	1
Sedimentation	SF Chamber 10m$	Total Suspended Solids - k (m/yr)	8000	8000	1
Urban	Roof - 852.1m$ (100% Imp.)	Baseflow Total Nitrogen Mean (log mg/L)	0.11	0.11	0
Urban	Roof - 852.1m$ (100% Imp.)	Baseflow Total Nitrogen Standard Deviation (log mg/L)	0.12	0.12	0
Urban	Roof - 852.1m$ (100% Imp.)	Baseflow Total Phosphorus Mean (log mg/L)	-0.85	-0.85	0
Urban	Roof - 852.1m$ (100% Imp.)	Baseflow Total Phosphorus Standard Deviation (log mg/L)	0.19	0.19	0
Urban	Roof - 852.1m$ (100% Imp.)	Baseflow Total Suspended Solids Mean (log mg/L)	1.2	1.2	0
Urban	Roof - 852.1m$ (100% Imp.)	Baseflow Total Suspended Solids Standard Deviation (log mg/L)	0.17	0.17	0

Only certain parameters are reported when they pass validation

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MUSICLINK REPORT

DEVELOPMENT APPLICATION (DA)

FOR APPROVAL

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G	FOR APPROVAL	M.W.	R.F.	P.E.	05.06.2020
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Client
BUILDING DESIGN & TECHNOLOGY

Project
26-30 HOPE STREET, PENRITH

Title
MUSICLINK REPORT

Date 05.06.2020
Design S.C.H.
Approved P.E.
PAUL EL-BAYEH
B.E.,M.E.(struct/foundation),M.I.E. Aust
Scale 1:100 @ A1 (original size) 1:200 @ A3
Drawn M.W.
Checked R.F.
Project Number SW18025
Drawing Number SWDP12
Revision G

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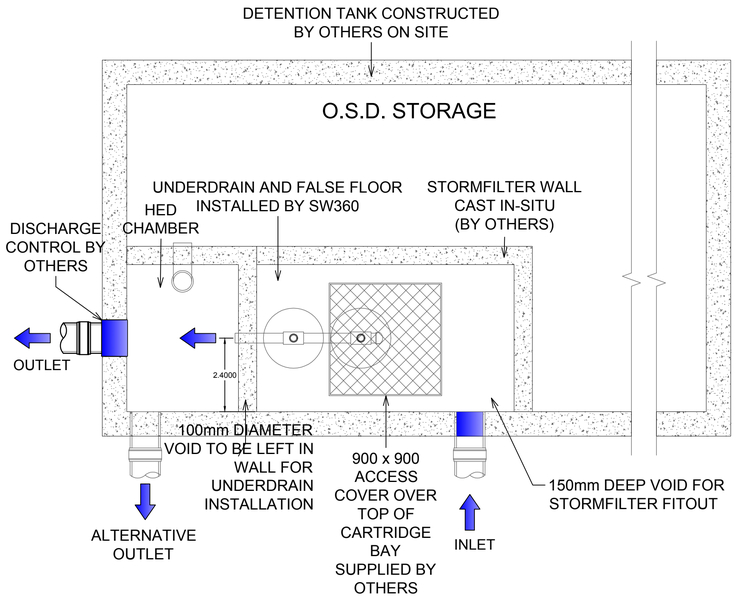
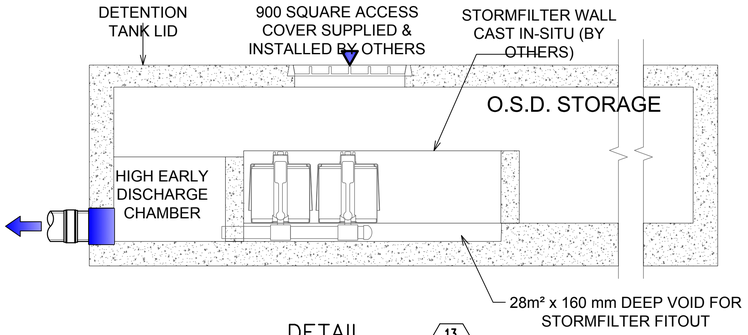
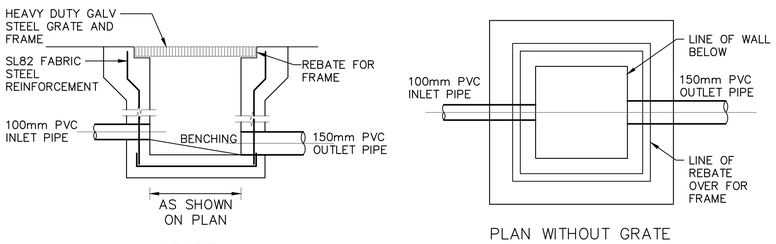


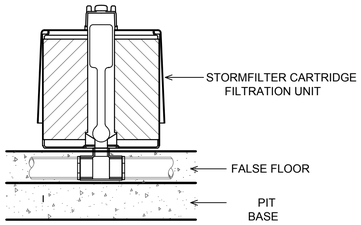
PLAN LAYOUT



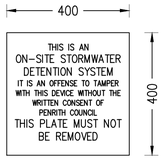
DETAIL 13
TYPICAL SW360 DETENTION TANK WITH HIGH EARLY DISCHARGE
NOT TO SCALE



DETAIL 14
STORMWATER PIT
SCALE 1:20

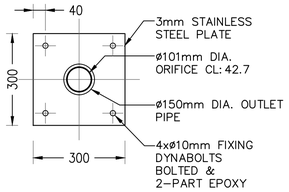


DETAIL 4
STORMFILTER CARTRIDGE (460)
NOT TO SCALE

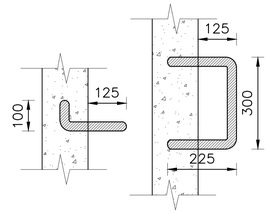


DETAIL 5
OSD SIGN
SCALE 1:10

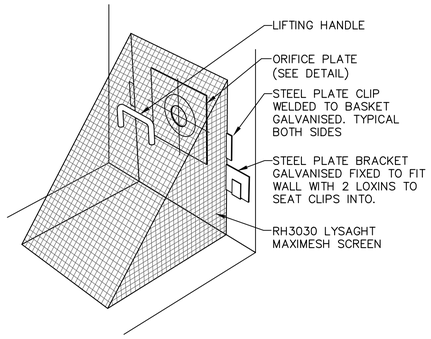
DETAIL 6
CONFINED SPACE SIGN
SCALE 1:10



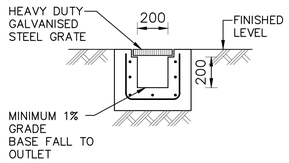
DETAIL 7
ORIFICE PLATE
SCALE 1:20



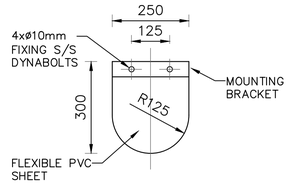
DETAIL 8
STEP IRON
SCALE 1:10



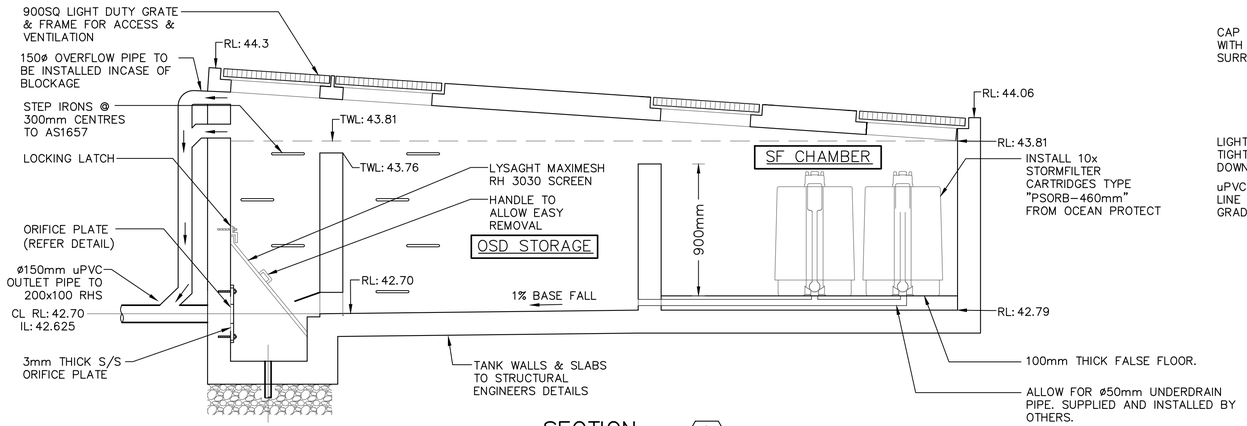
DETAIL 10
DEBRIS SCREEN
NOT TO SCALE



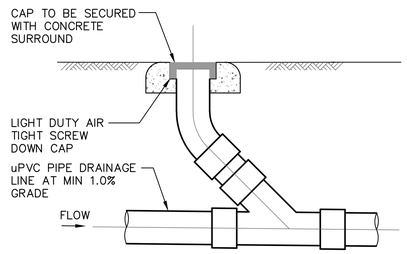
DETAIL 11
GRATED TRENCH DRAIN
SCALE 1:20



DETAIL 12
FLAP VALVE
SCALE 1:10



SECTION A
OSD/SF CHAMBER
NOT TO SCALE



DETAIL 15
CLEANING EYE
SCALE 1:20

DEVELOPMENT APPLICATION (DA)

FOR APPROVAL

Rev.	Description	By.	Chk.	App.	Date
G	FOR APPROVAL	M.W.	R.F.	P.E.	05.06.2020
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BUILDING DESIGN & TECHNOLOGY

Project
26-30 HOPE STREET, PENRITH

Title
DETAILS SHEET

Date 05.06.2020
Design S.C.H.
Approved P.E.
PAUL EL-BAYEH
B.E.,M.E.(struct/foundation),M.I.E. Aust
Scale 1:100 @ A1 (original size) 1:200 @ A3
Drawn M.W.
Checked R.F.
Project Number SW18025
Drawing Number SWDP13
Revision G

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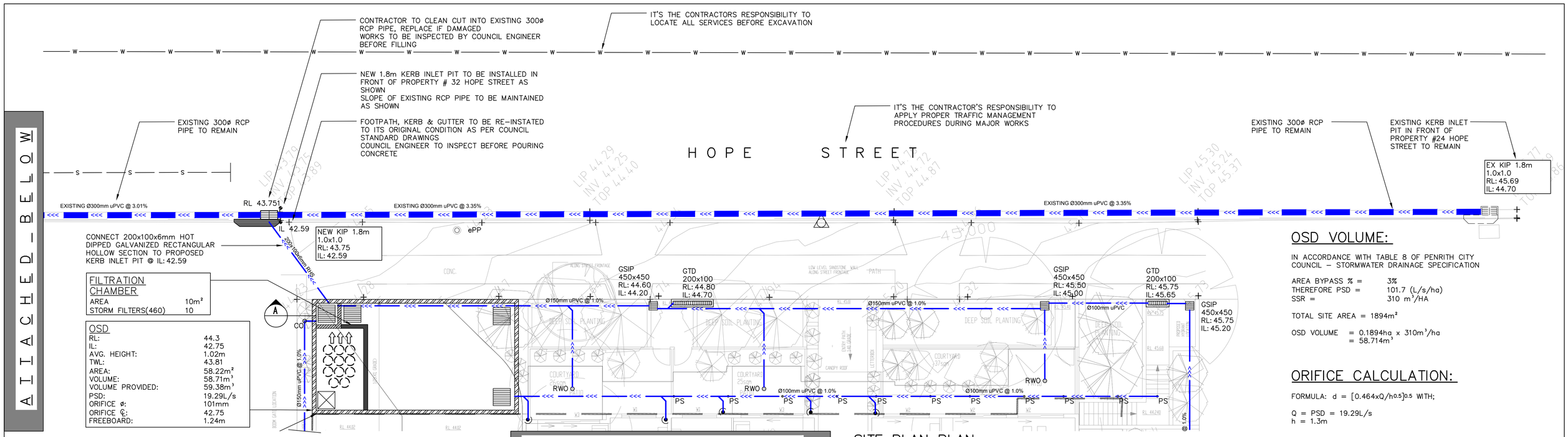


SITE PLAN PLAN
SCALE 1:100

OSD VOLUME:

IN ACCORDANCE WITH TABLE 8 OF PENRITH CITY COUNCIL – STORMWATER DRAINAGE SPECIFICATION

AREA BYPASS % = 3%
THEREFORE PSD = 101.7 (L/s/ha)
SSR = 310 m³/HA

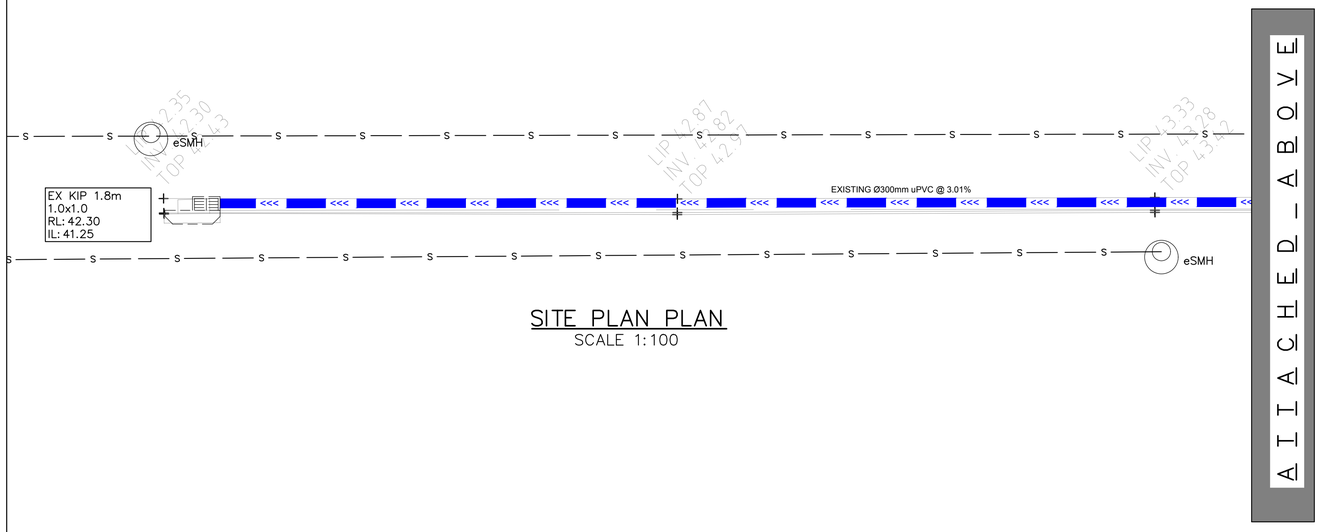
TOTAL SITE AREA = 1894m²

OSD VOLUME = 0.1894ha x 310m³/ha
= 58.714m³

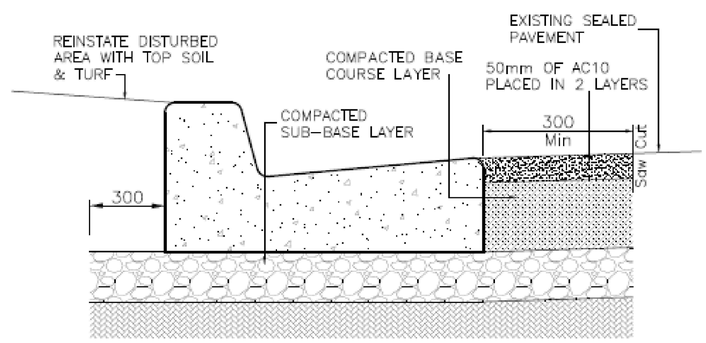
ORIFICE CALCULATION:

FORMULA: $d = [0.464xQ/h^{0.5}]^{0.5}$ WITH;

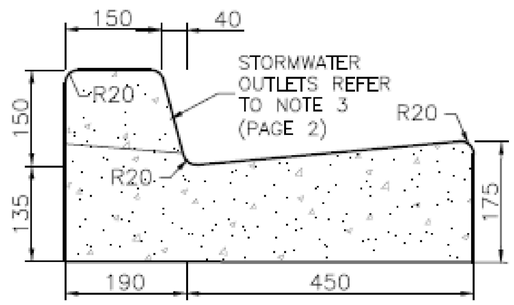
Q = PSD = 19.29L/s
h = 1.3m



SITE PLAN PLAN
SCALE 1:100



TYPICAL KERB & GUTTER RECONSTRUCTION
REFER NOTE 6 (PAGE 2)



KERB & GUTTER

DEVELOPMENT APPLICATION (DA)

FOR APPROVAL

Rev.	Description	By.	Chk.	App.	Date
G	FOR APPROVAL	M.W.	R.F.	P.E.	05.06.2020
F	FOR APPROVAL	M.W.	R.F.	P.E.	28.05.2020
E	FOR APPROVAL	S.C.H	SCH	P.E.	22.03.2019
D	FOR APPROVAL	A.A.	SCH	P.E.	18.12.2018
C	FOR APPROVAL	A.A.	SCH	P.E.	31.10.2018
B	FOR APPROVAL	A.A.	SCH	P.E.	23.10.2018

cec
capital engineering consultants
8 Buller Street,
North Parramatta 2151
Ph: (02) 9630 0121
Fax: (02) 9630 0132
info@capitalengineering.com.au
www.capitalengineering.com.au

Client
BUILDING DESIGN & TECHNOLOGY

Project
26-30 HOPE STREET, PENRITH

Title
KIP DESIGN + DETAILS

Date 05.06.2020
Design S.C.H.
Approved P.E.
PAUL EL-BAYEH
B.E.,M.E.(struct/foundation),M.I.E. Aust
Scale 1:100 @ A1 (original size)
1:200 @ A3
Drawn M.W.
Checked R.F.
Project Number SW18025
Drawing Number SWDP14
Revision G

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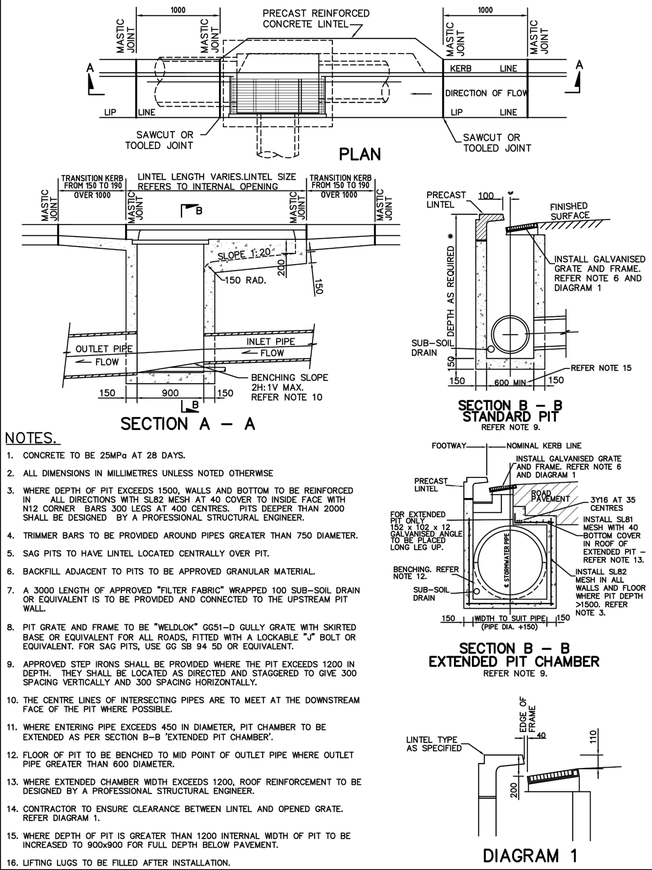
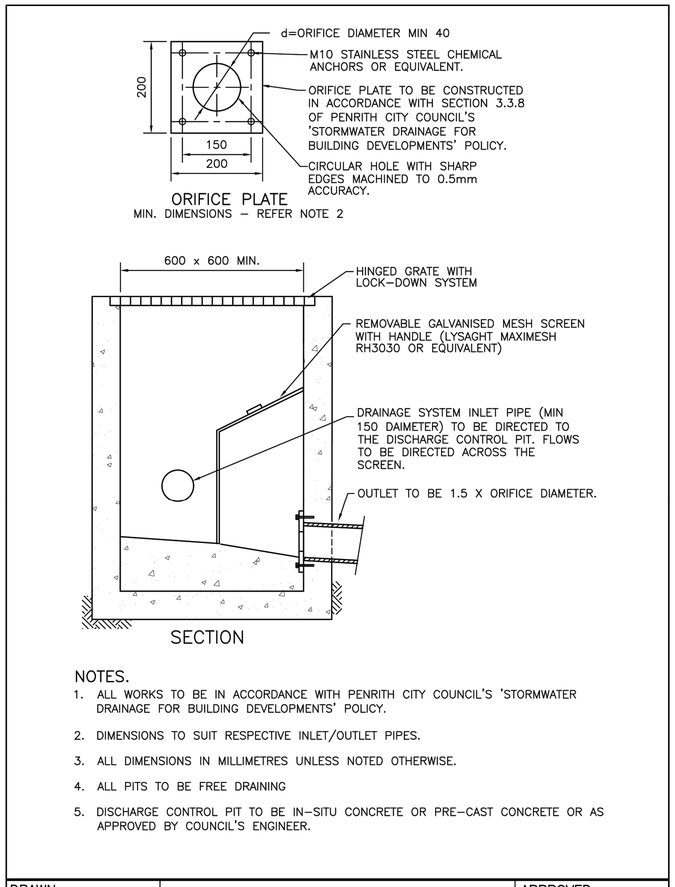


NOTES.

1. CONCRETE TO BE 25MPa AT 28 DAYS.
2. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE
3. WHERE DEPTH OF PIT EXCEEDS 1500, WALLS AND BOTTOM TO BE REINFORCED IN ALL DIRECTIONS WITH SL82 MESH AT 40 COVER TO INSIDE FACE WITH N12 CORNER BARS 300 LEGS AT 400 CENTRES. PITS DEEPER THAN 2000 SHALL BE DESIGNED BY A PROFESSIONAL STRUCTURAL ENGINEER.
4. TRIMMER BARS TO BE PROVIDED AROUND PIPES GREATER THAN 750 DIAMETER.
5. SAG PITS TO HAVE LINTEL LOCATED CENTRALLY OVER PIT.
6. BACKFILL ADJACENT TO PITS TO BE APPROVED GRANULAR MATERIAL.
7. A 3000 LENGTH OF APPROVED "FILTER FABRIC" WRAPPED 100 SUB-SOIL DRAIN OR EQUIVALENT IS TO BE PROVIDED AND CONNECTED TO THE UPSTREAM PIT WALL.
8. PIT GRATE AND FRAME TO BE "WELDLOK" GG51-D GULLY GRATE WITH SKIRTED BASE OR EQUIVALENT FOR ALL ROADS, FITTED WITH A LOCKABLE "J" BOLT OR EQUIVALENT. FOR SAG PITS, USE GG SB 94 5D OR EQUIVALENT.
9. APPROVED STEP IRONS SHALL BE PROVIDED WHERE THE PIT EXCEEDS 1200 IN DEPTH. THEY SHALL BE LOCATED AS DIRECTED AND STAGGERED TO GIVE 300 SPACING VERTICALLY AND 300 SPACING HORIZONTALLY.
10. THE CENTRE LINES OF INTERSECTING PIPES ARE TO MEET AT THE DOWNSTREAM FACE OF THE PIT WHERE POSSIBLE.
11. WHERE ENTERING PIPE EXCEEDS 450 IN DIAMETER, PIT CHAMBER TO BE EXTENDED AS PER SECTION B–B 'EXTENDED PIT CHAMBER'.
12. FLOOR OF PIT TO BE BENCHED TO MID POINT OF OUTLET PIPE WHERE OUTLET PIPE GREATER THAN 600 DIAMETER.
13. WHERE EXTENDED CHAMBER WIDTH EXCEEDS 1200, ROOF REINFORCEMENT TO BE DESIGNED BY A PROFESSIONAL STRUCTURAL ENGINEER.
14. CONTRACTOR TO ENSURE CLEARANCE BETWEEN LINTEL AND OPENED GRATE. REFER DIAGRAM 1.
15. WHERE DEPTH OF PIT IS GREATER THAN 1200 INTERNAL WIDTH OF PIT TO BE INCREASED TO 900x900 FOR FULL DEPTH BELOW PAVEMENT.
16. LIFTING LUGS TO BE FILLED AFTER INSTALLATION.

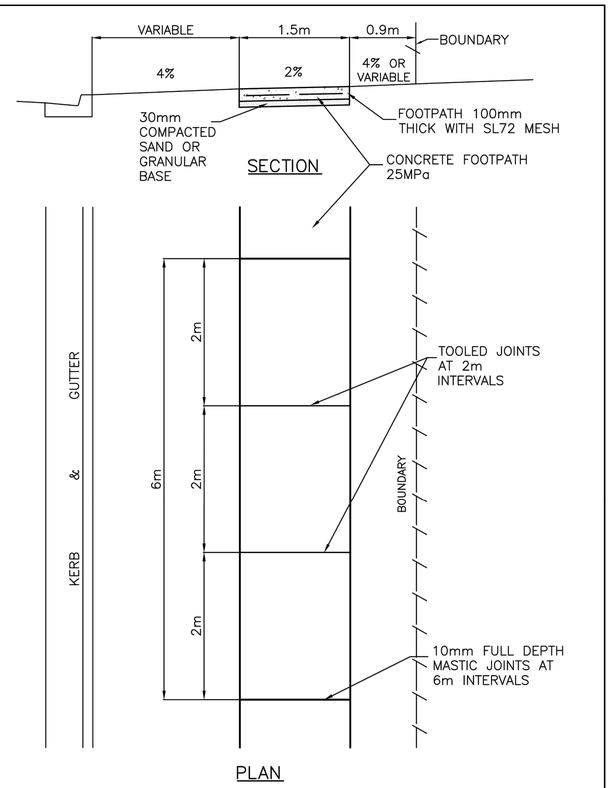
DRAWN: E. LAWTON	KERB INLET PIT	APPROVED:
PENRITH CITY COUNCIL		PLAN No: SD2001



NOTES.

1. ALL WORKS TO BE IN ACCORDANCE WITH PENRITH CITY COUNCIL'S 'STORMWATER DRAINAGE FOR BUILDING DEVELOPMENTS' POLICY.
2. DIMENSIONS TO SUIT RESPECTIVE INLET/OUTLET PIPES.
3. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
4. ALL PITS TO BE FREE DRAINING
5. DISCHARGE CONTROL PIT TO BE IN-SITU CONCRETE OR PRE-CAST CONCRETE OR AS APPROVED BY COUNCIL'S ENGINEER.

DRAWN: E. LAWTON	TYPICAL OSD DISCHARGE CONTROL PIT	APPROVED:
PENRITH CITY COUNCIL		PLAN No: SD3001



NOTES

1. LONGITUDINAL EDGING IS REQUIRED ON FOOTPATHS. ALL EXPANSION JOINTS SHALL ALSO BE EDGED.
2. THE FOOTPATH SHALL BE FINISHED WITH A BROOM FINISH PERPENDICULAR TO THE DIRECTION OF TRAVEL.
3. FOR MACHINE LAID FOOTPATHS, REFER TO COUNCIL'S CONSTRUCTION SPECIFICATION.
4. FOR CYCLEWAYS, REFER TO COUNCIL'S CONSTRUCTION SPECIFICATION.

DRAWN: E. LAWTON	STANDARD FOOTPATH DETAILS	APPROVED:
PENRITH CITY COUNCIL		PLAN No: SD1001

DEVELOPMENT APPLICATION (DA)

FOR APPROVAL

Rev.	Description	By.	Chk.	App.	Date
G	FOR APPROVAL	M.W.	R.F.	P.E.	05.06.2020
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Client: BUILDING DESIGN & TECHNOLOGY

Project: 26-30 HOPE STREET, PENRITH

Title: COUNCIL STANDARD DETAILS

Date	Design	Approved
05.06.2020	S.C.H.	P.E. PAUL EL-BAYEH B.E.,M.E.(struct/foundation),M.I.E. Aust

Scale	Drawn	Checked
1:100 @ A1 (original size) 1:200 @ A3	M.W.	R.F.

Project Number	Drawing Number	Revision
SW18025	SWDP15	G

A1 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300