

# PROJECT: DRAINAGE DESIGN - STORAGE YARD

## ADDRESS: 47 GRIFFITHS STREET, MADINGLEY VIC

### WB CIVIL STRUCTURAL ENGINEERS

ABN: 84119322438


**PRIYAN WIJEYERATNE, PE 2448**

6 TENDULKAR DRIVE,  
ROCKBANK 3335

MOBILE: 0401023328

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DRAWING SET CONTENTS		SHT NO:
1	COVER SHEET	1 OF 6
2	PLAN - DRAINAGE & LAYOUT	2 OF 6
3	DETENTION PIT DETAIL	3 OF 6
4	DRAINAGE SECTION	4 OF 6
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6	RAINGARDEN SPECIFICATION	6 OF 6
RELATED DOCUMENTS		
1	PP APPLICATION NO: <b>PA2022207</b>	
2	DRAINAGE COMPUTATIONS (WB CIVIL STRUCTURAL ENGINEERS)	
3	MELBOURNE WATER STORM REPORT	

MOORABOOL SHIRE COUNCIL - APPROVED	
PA2022207	
	Date
Sani Jehar	20 July 2023
Acting Coordinator Development Infrastructure	

**NOTE:**  
MOORABOOL SHIRE COUNCIL IS USING  
INFRASTRUCTURE DESIGN MANUAL  
(IDM) AS THEIR STANDARD



**WARNING**  
ALL SERVICES SHOWN ON THESE DRAWINGS ARE  
APPROXIMATE ONLY AND EXACT LOCATION IS  
TO BE CONFIRMED ON SITE BY CONTRACTOR  
PRIOR TO COMMENCEMENT OF ANY WORKS.

**NOTE:**

1. CIVIL CONTRACTOR/DEVELOPER TO TAKE PRE-CONSTRUCTION PHOTOS OF COUNCIL ASSETS AND SUBMIT TO COUNCIL FOR RECORD PRIOR TO COMMENCEMENT OF WORKS.
2. FOR SETTING OUT OF WORKS, CONTACT SURVEYOR IMAN FOROUZADE ON: 0455 322 501.

**CLIENT:**  
RUFFO & RUFFO PTY LTD

JOB NO: RR/SY/2023

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VICTORIA

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M.Eng(Struct), M.Tech.(Mgt.), BSc(Civil)

**PROJECT:**  
STORAGE YARD DRAINAGE  
DESIGN  
**PROJECT ADDRESS:**  
47 GRIFFITH STREET,  
MADDINGLEY 3340

SHEET NO: **1/5**

SCALE: AS SHOWN

DATE: 20/05/2023



REV.	REMARKS/COMMENTS	DATE	APRV.
C	REVISIONS DONE AS PER EMAIL DATED 19/07/2023 FROM MSC	19/07/2023	PW
B	REVISIONS DONE AS PER EMAIL DATED 18/07/2023 FROM MSC	18/07/2023	PW
A	SHT. NO: 5 - PP CONDITION 22 - STORMWATER BEST PRACTICE ADDED	29/06/2023	PW

GDA2020

NORTH

No: 47A  
EX. STORAGE YARD

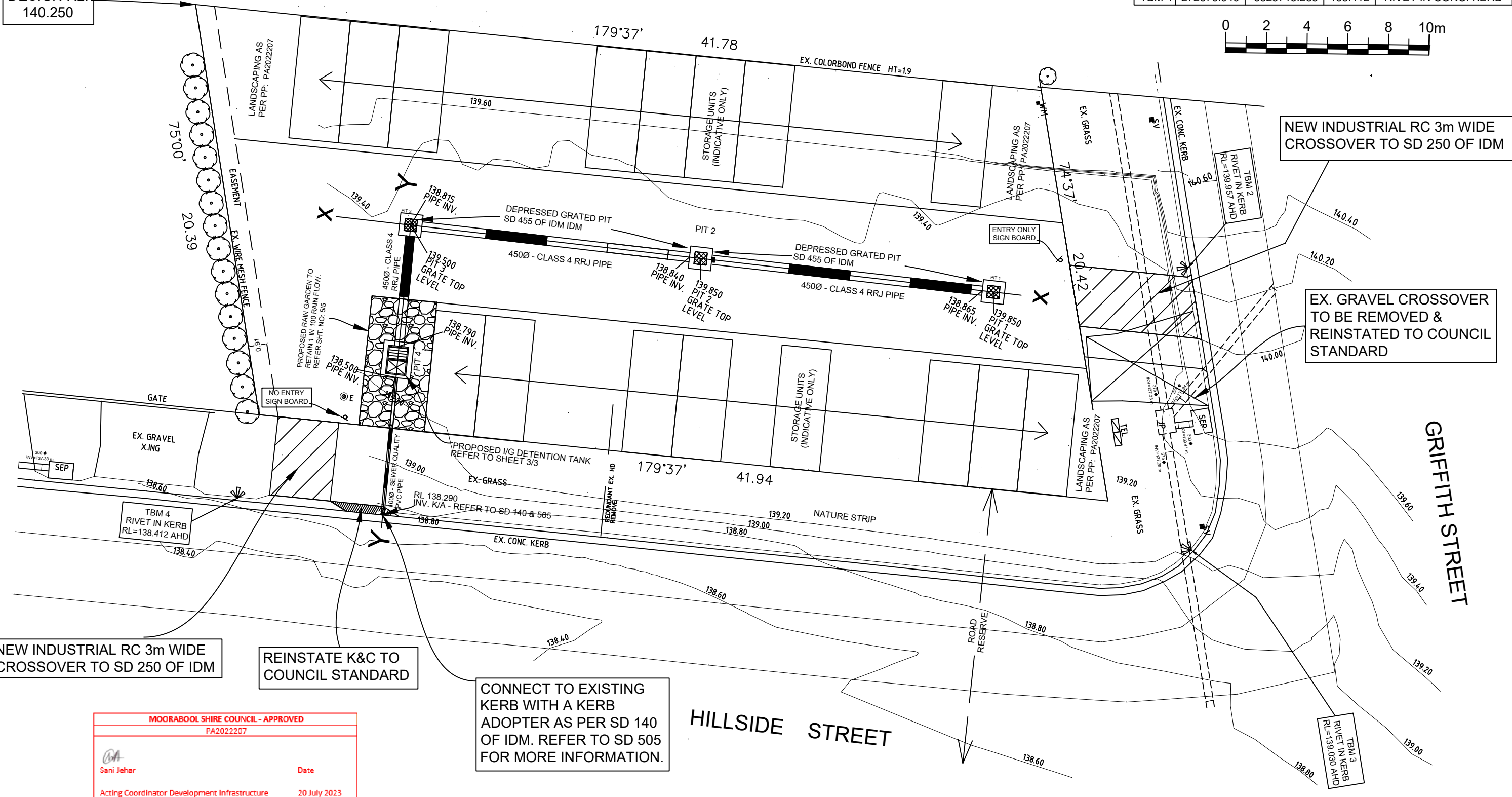
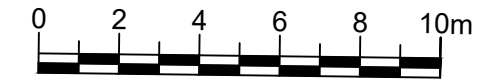
SETTING OUT OF YARD TO BE DONE  
BY SURVEYOR: IMAN FOROUZANDE  
MOBILE: 0455 322 501

BDY. EDGE  
DESIGN RL.  
140.250

EXPLANATORY NOTES:

- LEVEL DATUM IS AUSTRALIAN HEIGHT DATUM BASE ON PARWAN PM 81 (RL 138.69).
- THIS PLAN IS BASED ON THE GDA2020 COORDINATE SYSTEM.
- LENGTHS ARE IN METERS

PT	EASTING	NORTHING	R.L.	DESCRIPTION
TBM 1	272635.349	5825757.166	141.881	NOT SHOWN
TBM 2	272665.638	5825762.017	139.957	RIVET IN CONC. KERB
TBM 3	272679.513	5825762.185	139.030	RIVET IN CONC. KERB
TBM 4	272676.949	5825715.285	138.412	RIVET IN CONC. KERB



NEW INDUSTRIAL RC 3m WIDE  
CROSSOVER TO SD 250 OF IDM

REINSTATE K&C TO  
COUNCIL STANDARD

CONNECT TO EXISTING  
KERB WITH A KERB  
ADAPTER AS PER SD 140  
OF IDM. REFER TO SD 505  
FOR MORE INFORMATION.

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*Sani Jehar* Date  
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**SHEET NO:** 2/5

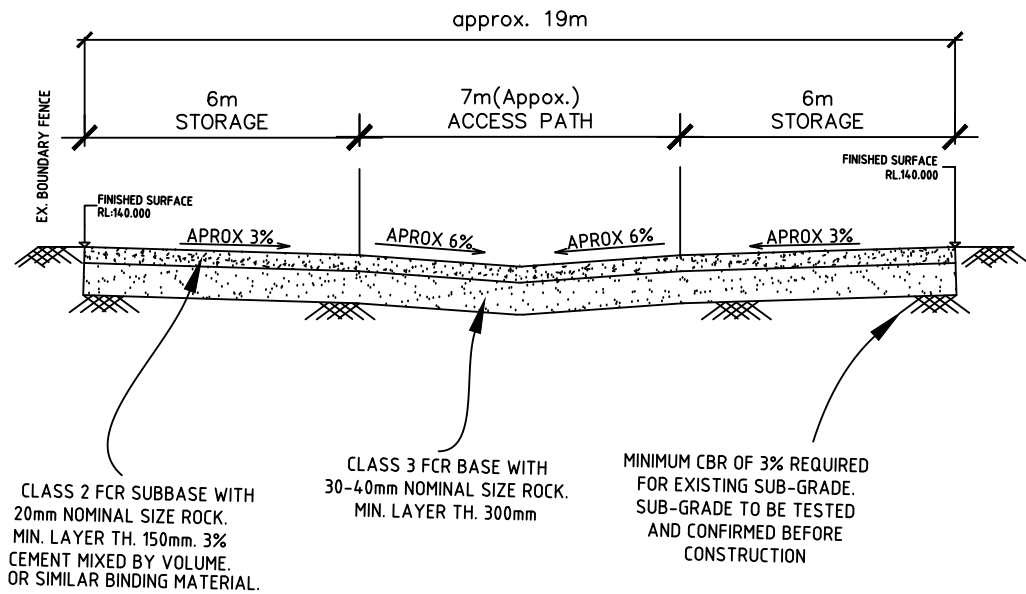
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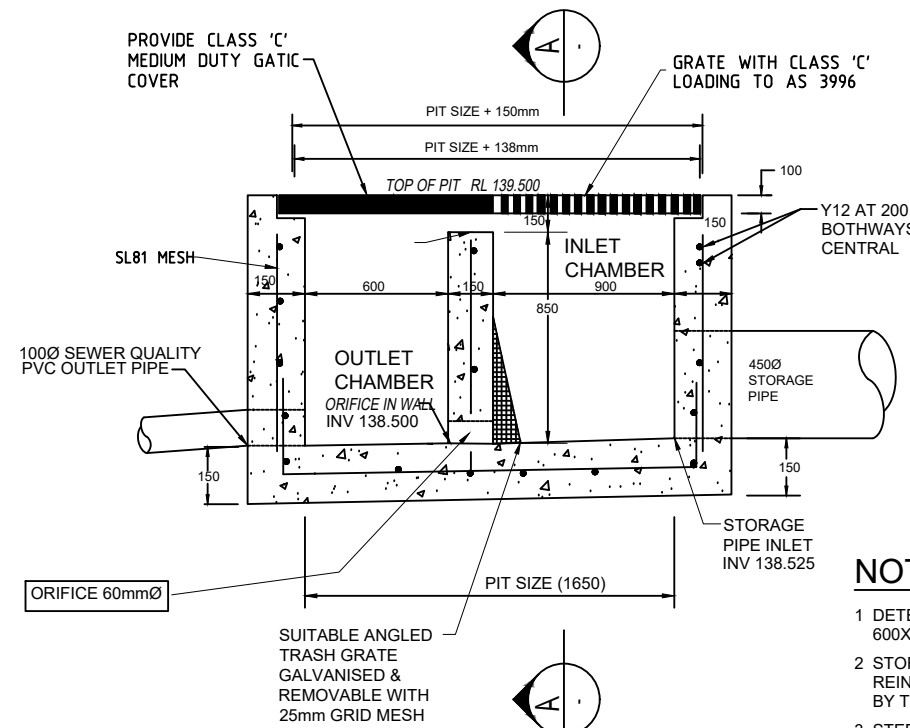


GRIFFITH STREET

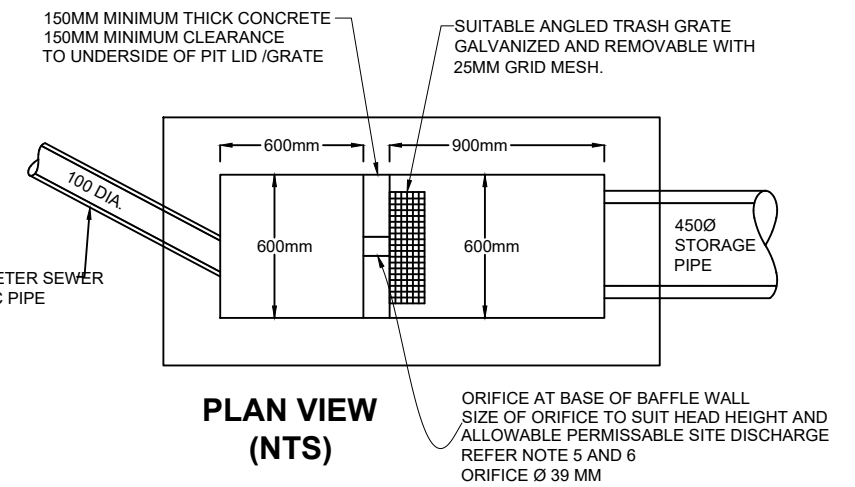
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**TYPICAL CROSS SECTION FOR YARD PAVEMENT (NTS)**



**ORIFICE PIT SECTIONAL ELEVATION (NTS)**



**PLAN VIEW (NTS)**

**NOTES**

- 1 DETENTION CHAMBER / OUTLET CHAMBER WILL VARY ACCORDING TO PIPE SIZE/S USED FOR STORAGE. MINIMUM SIZE IS 600X600, UNLESS BAFFLE WALL HEIGHT IS < 700, THEN MINIMUM OUTLET CHAMBER CAN BE REDUCED TO 450 X 450.
- 2 STORAGE PIPE SIZE WILL VARY ACCORDING TO THE VOLUME REQUIREMENTS OF THE SITE. IF REINFORCED CONCRETE OR FIBER REINFORCED CONCRETE PIPES ARE USED, THEY SHALL BE RUBBER RING JOINTED. OTHER PIPE TYPES MUST BE APPROVED BY THE COUNCIL ENGINEER
- 3 STEP IRONS (MP219) SHALL BE FITTED TO PITS GREATER THAN 1000MM IN DEPTH AT 300MM C/C
- 4 PITS GREATER THAN 1000MM IN DEPTH ARE TO BE REINFORCED WITH SL81 SQUARE MESH, PLACED CENTRALLY IN PIT WALLS
- 5 MINIMUM ALLOWABLE ORIFICE DIAMETER SHALL BE 40MM
- 6 A MULTI-CELL DISCHARGE CONTROL UNIT MAY BE USED AS AN ALTERNATIVE TO THE ORIFICE/BAFFLE WALL DISCHARGE PIT AS DETAILED ABOVE. REFER TO S.V.C PHILLIPS MULTI-CELL HANDBOOK FOR SPECIFICATIONS
- 7 MEDIUM DUTY CAST IRON COVERS ARE TO BE USED IN TRAFFICABLE AREAS. ALTERNATIVE GRATE AND FRAME TOP MAY BE USED IN CERTAIN CIRCUMSTANCES AND MUST BE APPROVED BY COUNCIL ENGINEER
- 8 IF TWO OR MORE ROWS OF PIPES ARE USED FOR STORAGE, THEN MINIMUM GAP OF 150MM IS REQUIRED BETWEEN THE PIPES.

**MOORABOOL SHIRE COUNCIL - APPROVED**

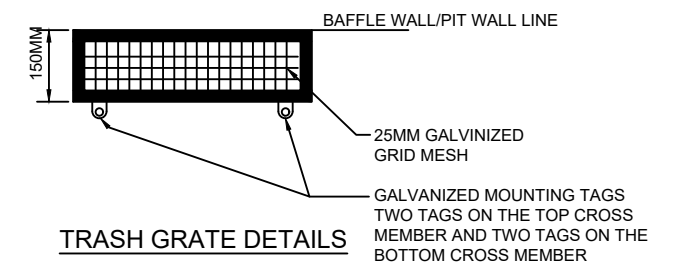
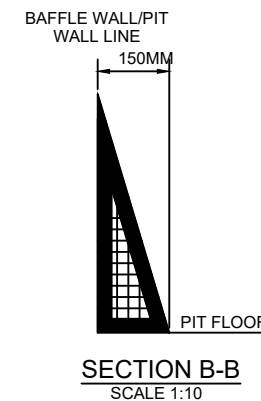
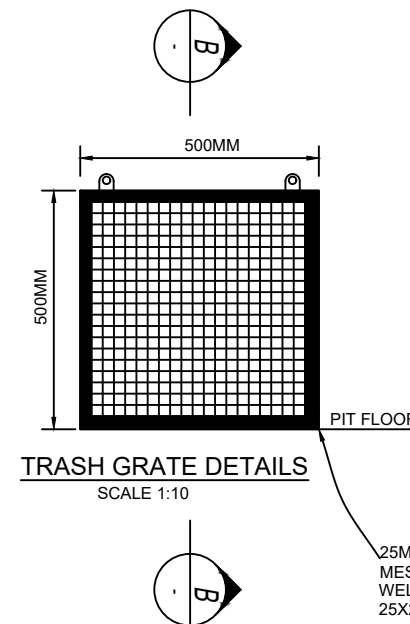
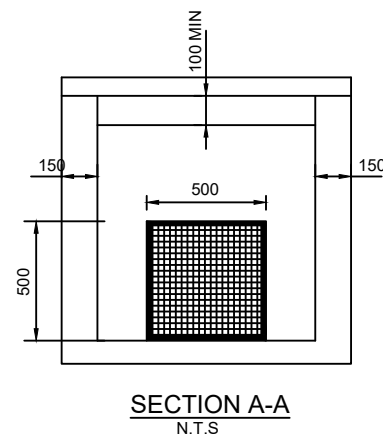
PA2022207

*SA*

Sani Jehar Date

Acting Coordinator Development Infrastructure 20 July 2023

- NOTES:**
1. EXCAVATE GROUND (SUBGRADE) TO REQUIRED DEPTH.
  2. WHEN SUBGRADE EXCAVATED TO DEPTH, IT MUST BE TESTED FOR CBR TO HAVE A MINI. VALUE OF 2%. IF NOT ACHIEVED, CONTACT ENGINEER FOR INSPECTION AND ADVISE.
  3. PLACE AND SPREAD FRC IN BASE & SUB-BASE IN MAX. LAYERS OF 150mm TH. & COMPACT.
  4. COMPACTION TO MIN. ACHIEVE 95%.
  5. CONTRACTOR/DEVELOPER TO ENGAGE NATA ACCREDITED TESTER FOR TESTING COMPACTION.
  6. FINISHED SURFACE TO HAVE GRADES SPECIFIED ON CROSS SECTION..
  7. COMPLETED SURFACE TO BE PROOF ROLLED AND WITNESSED BY ENGINEER.
  8. MIN. GRADE OF CONCRETE 25 MPa.
  9. USE IDM STANDARD DRAWINGS: SD455, 250 & 140



**NOTES**

- 1 TRASH GRATE IS TO BE FIXED TO THE BAFFLE WALL, AT THE FOUR MOUNTING TAGS, BEFORE THE ORIFICE (OR FIXED TO THE WALL OF PIT, AT THE OUTLET, BEFORE DISCHARGING TO THE MULTICELL) USING GALVANISED MASONRY ANCHORS.
- 2 ENTIRE TRASH GRATE ARRANGEMENT IS TO BE HOT DIP GALVANISED (AS/NZS 4680) AFTER MANUFACTURE.
- 3 TRASH GRATE ARRANGEMENT SHALL FIT FLUSH WITH THE BOTTOM OF THE PIT FLOOR AND BAFFLE WALL / PIT WALL.
- 4 THIS STANDARD DETAIL SHALL BE USED IN CONJUNCTION WITH THE MORNINGTON PENINSULA SHIRE ON SITE DETENTION GUIDE.

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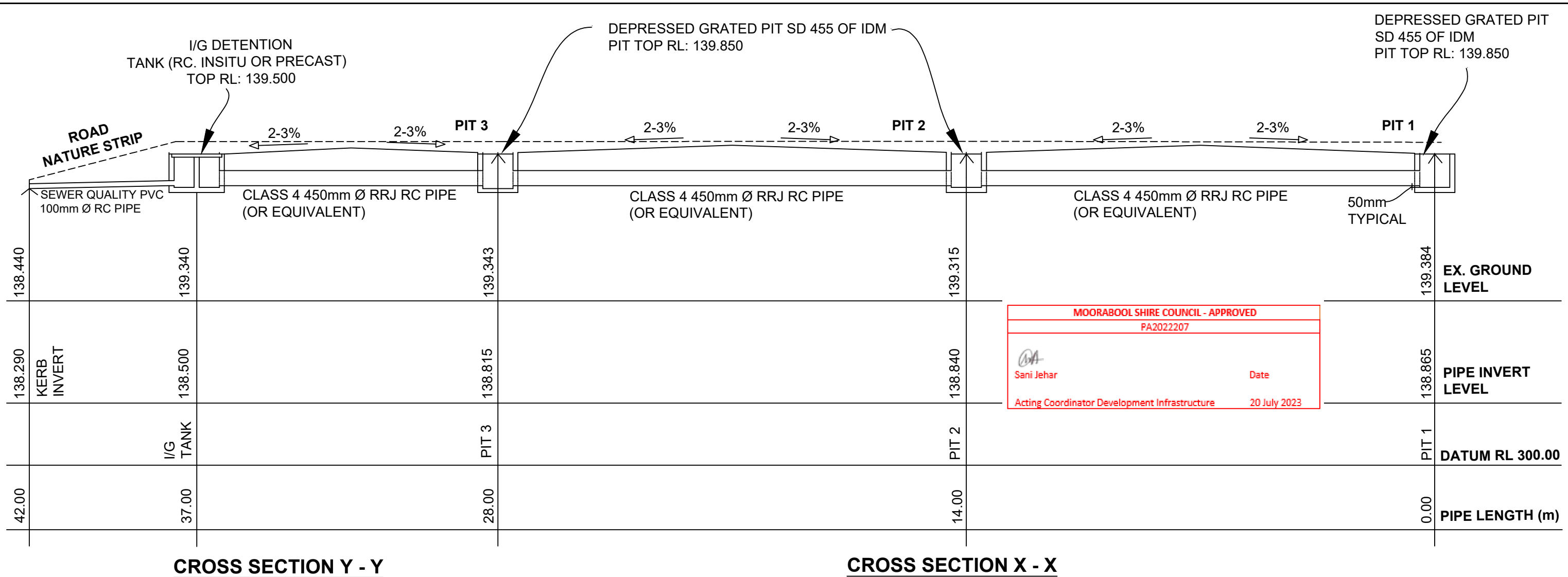
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SHEET NO: 3/5

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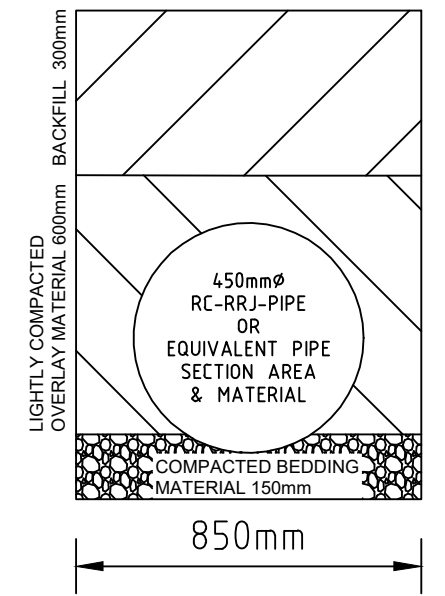
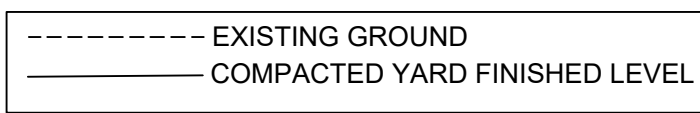
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 PA2022207  
  
 Sani Jehar  
 Acting Coordinator Development Infrastructure  
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## SECTION ALONG S/W DRAIN PIPE ALIGNMENT (1:125)

- NOTES:**
1. DETENTION TANK DIMENSION AS SHOWN ON SHT.NO: 3.
  2. ORIFICE TO BE 60mm Ø.
  3. HEAD ABOVE ORIFICE 1000.00 mm.
  4. STORAGE CAPACITY REQUIRED = 5.52 CU.m.
  5. PROVIDED STORAGE = 6.20 cu.m.(Tank+ U/G PIPES)
  6. RC PIPES TO BE CLASS 4 AND MIN. 500mm GROUND COVER.
  7. PITS TO COMPLY WITH SD455 OF IDM.
  8. MIN. GRADE OF CONCRETE 25MPa.
  9. KERB ADOPTER SD140 OF IDM.
  10. PIPE INLET & OUTLET INVERT LEVELS TO BE SAME.
  11. I/G DETENTION TANK: INV. LEVELS: 138.790 INLET & 138.500 OUTLET

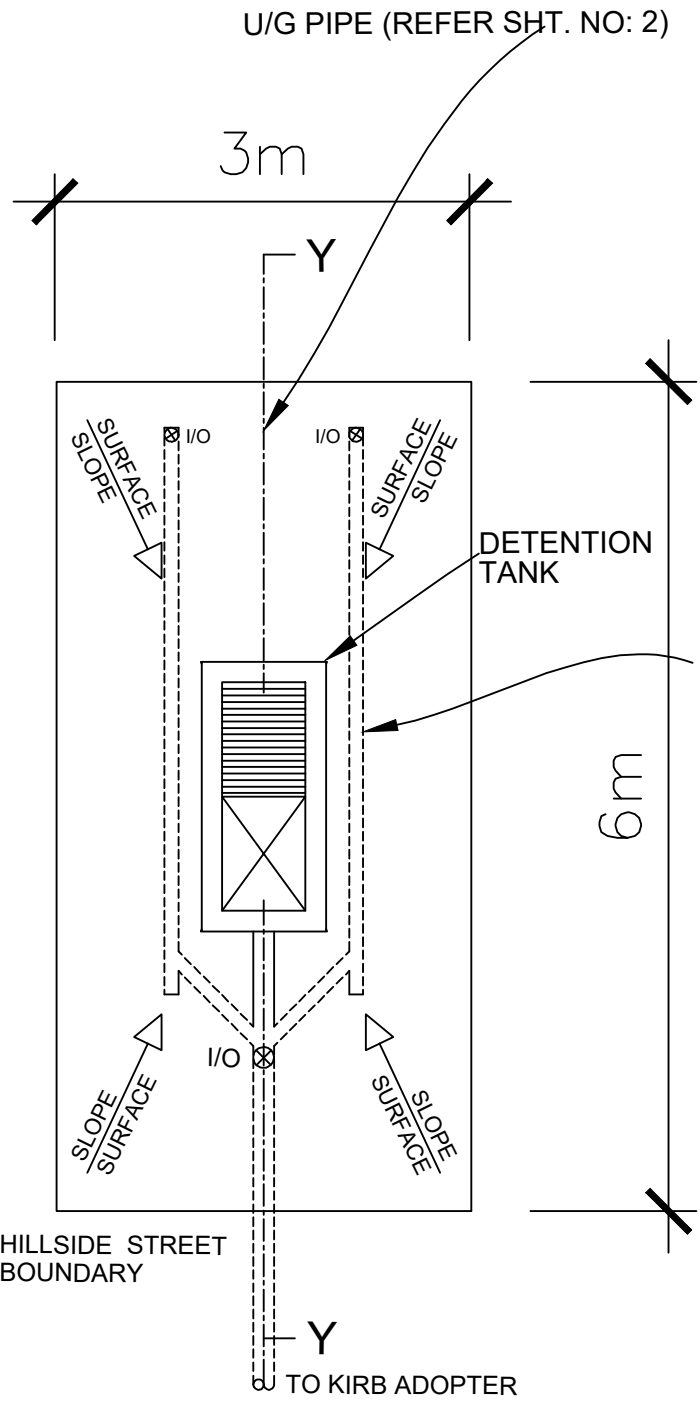
**PIT SCHEDULE**

PIT NO	INT.DIM.	STANDARD	TOP RL	APPROX. DEPTH (m)
1	600X600	DM - SD 455	139.850	0.99
2	600X600	DM - SD 455	139.850	1.01
3	600X600	DM - SD 455	139.850	1.04
TANK (PIT 4)	REF. SHT.3		139.500	1.00

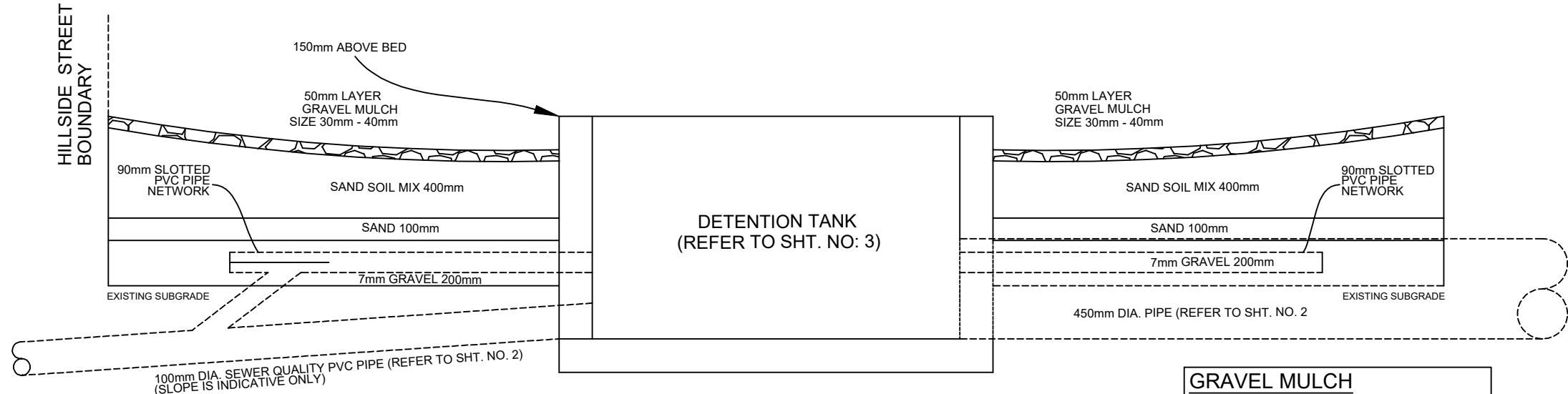


**TYPICAL SECTION PIPE TRENCH**

<b>CLIENT:</b> RUFFO & RUFFO PTY LTD  <div style="border: 1px solid black; padding: 2px; text-align: center;">JOB NO: RR/SY/2023</div>	<b>WB CIVIL STRUCTURAL ENGINEERS</b> ABN: 84119322436  <small>OFFICE:          NO: 6 TENDULKAR DRIVE, VIC 3335          Mobile: 0401023328 / Ph: 03 9746 0089          Email: priyan@wbce.com.au</small>	<small>REGISTERED ENGINEER          BUSINESS LICENSING AUTHORITY,          VICTORIA</small>  <b>PRIYAN WIJEYERATNE</b> <small>PE 2448, F.I.E.(AUST), C.P.ENG.          M.Eng(Struct), M.Tech.(Mgt.), BSc(Civil)</small>	<b>PROJECT:</b> STORAGE YARD DRAINAGE DESIGN <b>PROJECT ADDRESS:</b> 47 GRIFFITH STREET, MADDINGLEY 3340	SHEET NO: <b>4/5</b>  SCALE: AS SHOWN  DATE: 20/05/2023	
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**PLAN - RAINGARDEN & DETENTION TANK (NTS)**



**DETAIL SECTION Y - Y (NTS)**

GRAVEL MULCH	
1.	PEA GRAVEL
2.	RIVER ROCK
3.	DECOMPOSED GRANITE
SIZE 30mm-50mm	

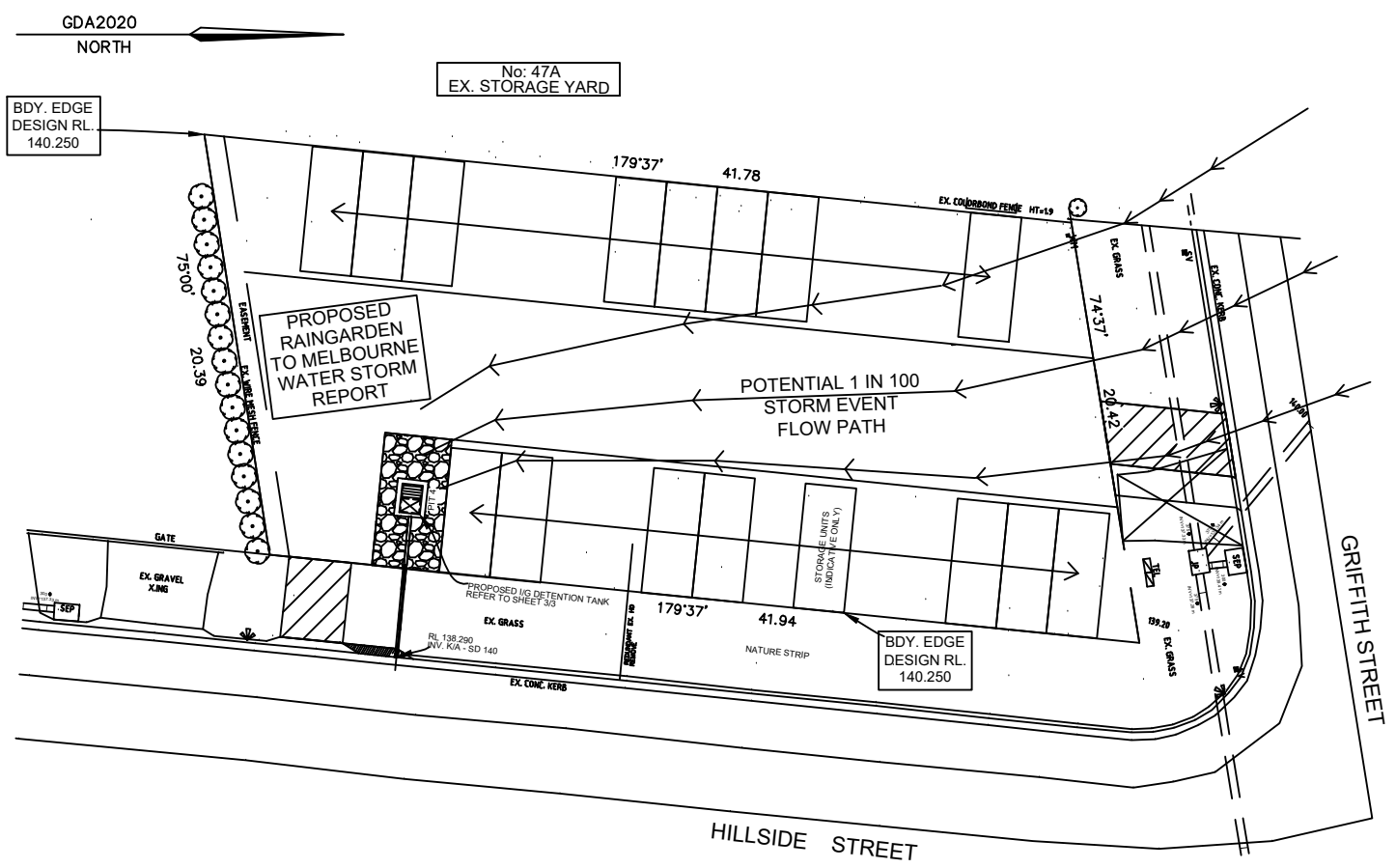
90 mm DIA. PVC SLOTTED PIPE NETWORK ON GRAVEL SCREENING

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**NOTES:**  
 CONSULT LOCAL NUSERY FOR RIGHT PLATS FOR RAINGARDEN.  
 SUGGESTED PLANTS:

- CAREX APPRESSA.
- LOMANDRA LONGIFOLIA.
- JANCUS FLAVIDUS.
- MELALEUCA ERICIFOLIA.
- GOODENIA OVATE.

MIN. 50% OF THE AREA TO BE ABOVE PLANTS. DENSITY: 6 PLANTS PER M<sup>2</sup>.



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## RAINGARDEN SPECIFICATIONS

A PLUMBER REGISTERED WITH VICTORIAN BUILDING AUTHORITY IS TO CARRYOUT INSTALLATION OF PIPES. PLANTS SELECTED TO BE TOLERANT TO PERIODS OF DRY WEATHER. IT IS RECOMMENDED TO USE AN EXPERIENCED RAINGARDEN INSTALLER. REFER TO SHEET NO: 3 FOR LAYER INFORMATION AND THICKNESS

### STEP 1

FOLLOW APPROVED PLANS FOR SETTING OUT OF RAINGARDEN. WASTE DISCHARGE PIPE IS TO BE CONNECTED TO PROPERTY LEGAL POINT OF DISCHARGE AS SHOWN ON DRAWINGS THROUGH A KERB ADOPTER.

### STEP 2

EXCAVATE WITH A GENTLE SLOPE TOWARDS STORMWATER OUTLET. LINE BASE & SIDES OF EXCAVATION WITH PVC SHEET, OVERLAP SHEETS BY 200mm AND SEAL JOINTS WITH PVC TAPE. PLACE SCREENING GRAVEL TO A DEPTH OF 50mm. LAY SLOTTED PIPES. ENSURE SCREENING IS FREE OF FOREIGN MATTER AND WASHED. INSTALL A FRAME AROUND RAINGARDEN PERIMETER VERTICAL FACE USING HARDWOOD (MIN. 50mm THICK) OR CONCRETE SLEEPERS. ENSURE THAT PVC LINER IS BETWEEN VERTICAL FRAME AND SOIL FACE.

### STEP 3


ADD 150mm, 7mm SCREENING OVER, 50mm LAYER ALREADY DONE FOR SITTING PIPES. TOTAL DEPTH OF 7mm SCREENING TO BE 200mm. PLACE 100mm OF WASHED SAND OVER SCREENING LAYER ALREADY DONE. MIX 4 PARTS WHITE WASHED SAND WITH 1 PART OF APPROVED TOP SOIL LAY THIS MIX ON TO SAND LAYER ALREADY DONE, TO A DEPTH OF 400mm. LIGHT COMPACTION IS RECOMMENDED FOR EACH LAYER TO AVOID QUICK SETTLEMENT.

### STEP 4

AVOID USING 90° BENDS. RECOMMENDED 45°. ALL PIPES Ø90. PVC SLOTTED PIPES. RECOMMENDED PLANTS LISTED ON SHEET NO: 5. USE THESE SPECIES TO COVER 50% WITH THE BALANCE WITH PLANTS TOLERANT TO PERIODS OF DRY WEATHER. ON THE AVERAGE 6 PLANTS TO COVER EACH sq.m. ROUGHLY 108 PLANTS REQUIRED FOR THIS REGARD TO COMPLETE. PLACE 50mm OF GRAVEL MULCH OVER THE BED AND AROUND PLANTS.

### MAINTENANCE OF RAINGARDEN

1. KEEP WEED FREE AS MUCH AS POSSIBLE
2. ENSURE PIPES ARE NOT BLOCKED
3. CARRYOUT REGULAR INSPECTION FOR ANY WEEDS, BLOCKAGES & EROSION.
4. NO VEHICLE SHOULD DRIVE OVER IT. A FENCE AROUND IT IS RECOMMENDED
5. WATER UNTIL THE PLANTS HAVE ROOTED WELL

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