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Project Number GP06-2023-1159

PROVISION OF THE DESIGNS, DEVELOPMENT OF BILL OF QUANTITY AND SUPERVISION SERVICE OF THE BULK WATER SUPPLY AT BLYDE RIVER CANYON NATURE RESERVE - POTHOLES

DETAILED DESIGN ISSUED DECEMBER 2023



Mpumalanga Tourism and Parks Agency
Hall's Gateway on the N4 National Highway
Mbombela
Mpumalanga, 1200
Tel No. (013) 065 0865

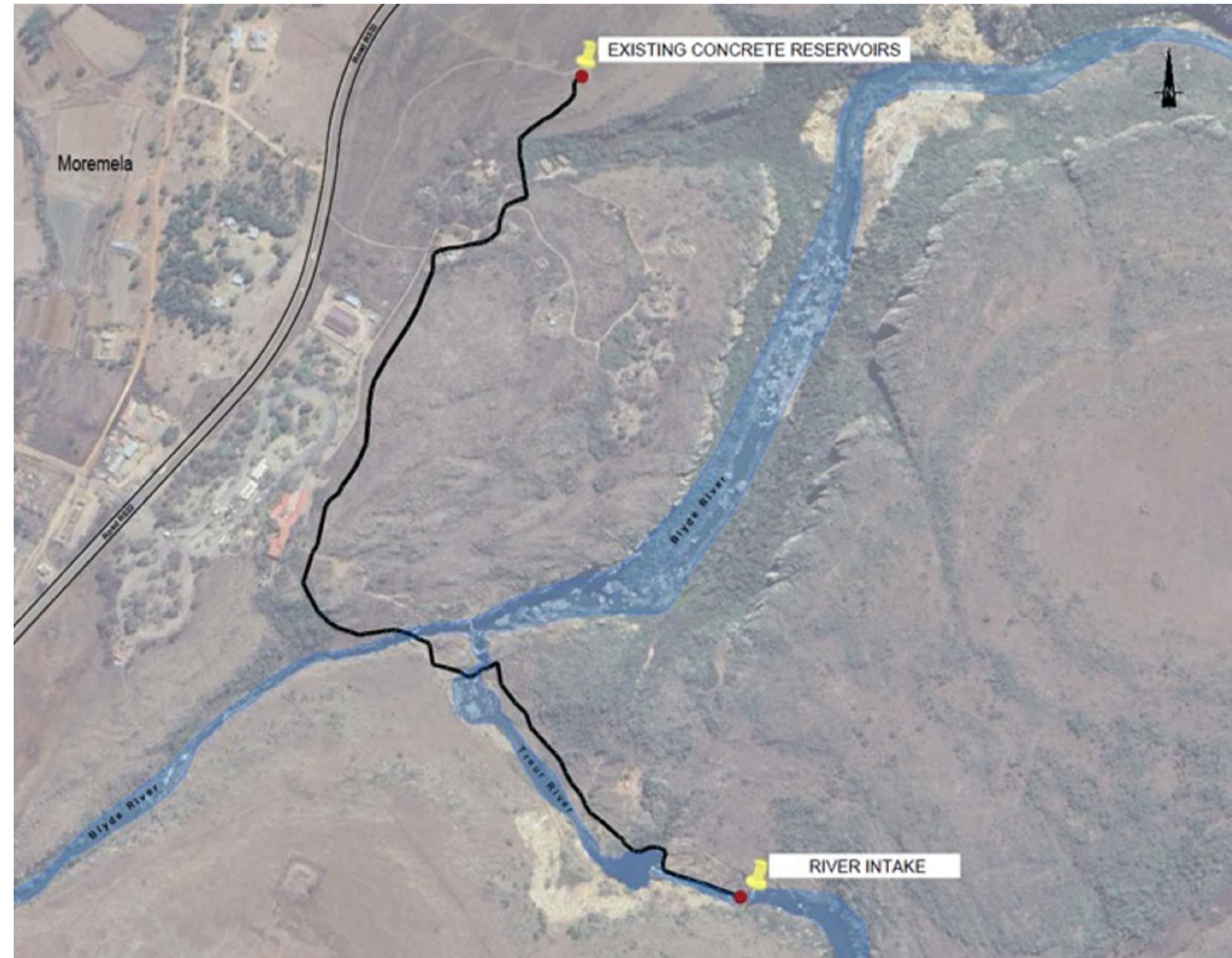


CIVIL WORKS DRAWINGS





LOCALITY PLAN



SITE LAYOUT PLAN

	DRAWING NUMBER	DRAWING DESCRIPTION
1	NT-2023-1159-100-001	Project Front Sheet
2	NT-2023-1159-101-001	Locality Plan and List of Drawings
3	NT-2023-1159-102-001	Bulk Water Pipeline Key Plan
4	NT-2023-1159-103-001	Bulk Water Pipeline Level Control Valve Details
5	NT-2023-1159-104-001	Bulk Water Pipeline Typical Details: HDPE Pipe and Steel Pipe Connection
6	NT-2023-1159-105-001	Valve Chambers Key Plan
7	NT-2023-1159-106-001	Water Pipeline Air Valve Chambers at Nodes W7, W21, W45 & W48
8	NT-2023-1159-107-001	Water Pipeline Scour Valve Chambers at Nodes W15 and W51
9	NT-2023-1159-108-001	Typical Details: Ditch Crossings
10	NT-2023-1159-110-001	Typical Details: Bedding, Thrust Blocks and Pipeline Markers
11	NT-2023-1159-111-001	Typical Details: River Intake Arrangement
12	NT-2023-1159-112-001	Intake Tank arrangement and Details
13	NT-2023-1159-113-001	Reservoirs Arrangement and Details
14	NT-2023-1159-114-001	Typical Detail: Section - HDPE Pipe Anchor Arrangement

LIST OF DRAWINGS

GENERAL NOTES:

REVISION INFORMATION

No:	DATE	DESCRIPTION:	BY
0	2023-11-07	ISSUED FOR CONCEPT	MT
1	2023-12-04	DETAILED DESIGN	MT

CLIENT



Mpumalanga
TOURISM AND PARKS AGENCY

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DISCIPLINE

CIVIL ENGINEERING

DRAWING DESCRIPTION

SITE LOCALITY PLAN & DRAWING LIST

DESIGNED BY:
M. MOFOKENG

SIGNATURE AND DATE:
10 November 2023

DRAWN BY:
R. KELSEY

SIGNATURE AND DATE:
10 November 2023

APPROVED BY:
M. TSOAI
Pr Eng.:20160198

SIGNATURE AND DATE:
10 November 2023

PROJECT NO
1159

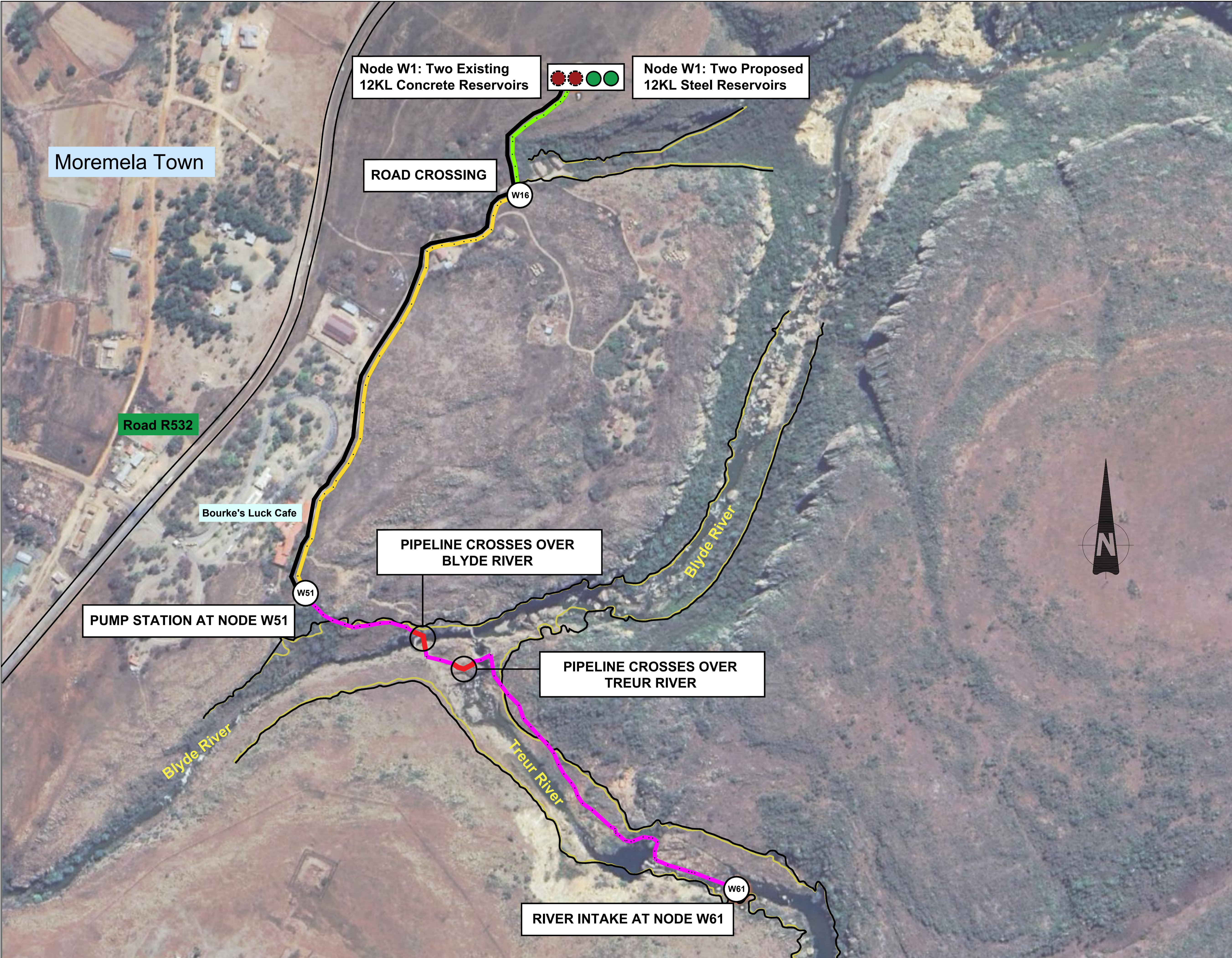
DATE
10 November 2023

DRAWING NO
NT-2023-1159-101-001

SCALE
NTS

SHEET SIZE
A1

REVISION
1



PIPE LEGEND

- Existing 50mm Dia Galvanised Steel Pipe from Reservoirs to Pump Station at Node W51
- New 125mm Dia Galvanised Steel Pipe from Reservoirs to Node W16
- New 125mm Dia HDPE Pipe from Node W16 to Pump Station at Node W51
- New 110mm Dia HDPE Pipe from Pump Station at Node W51 to River Intake at Node W61

FLOOD LINE LEGEND

- Blyde River 100 year Flood Line
- Blyde River 50 year Flood Line

For List of Reference Drawings, see Drawing Number: NT-2023-1159-101

REVISION INFORMATION

No:	DATE	DESCRIPTION:	BY
0	2023-12-04	DETAILED DESIGN	MT

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DISCIPLINE

CIVIL ENGINEERING

DRAWING DESCRIPTION

BULK WATER PIPELINE
KEY PLAN

DESIGNED BY: **M. MOFOKENG** SIGNATURE AND DATE: 4 December 2023

DRAWN BY: **R. KELSEY** SIGNATURE AND DATE: 4 December 2023

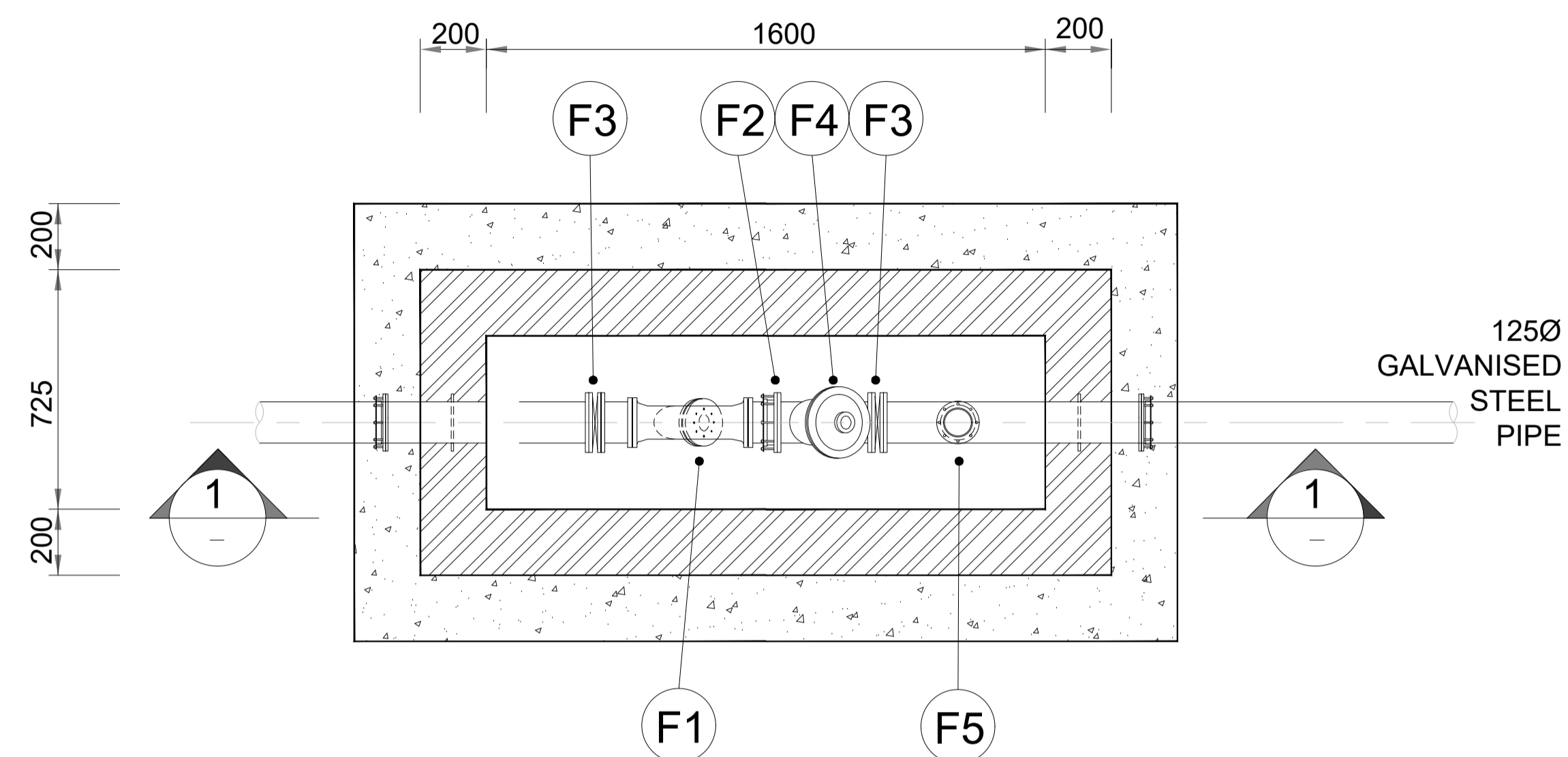
APPROVED BY: **M. TSOAI** SIGNATURE AND DATE: 4 December 2023
Pr Eng.:20160198

PROJECT NO: **1159** DATE: 4 December 2023

DRAWING NO
NT-2023-1159-102-001

SCALE	SHEET SIZE	REVISION
NTS	A1	0

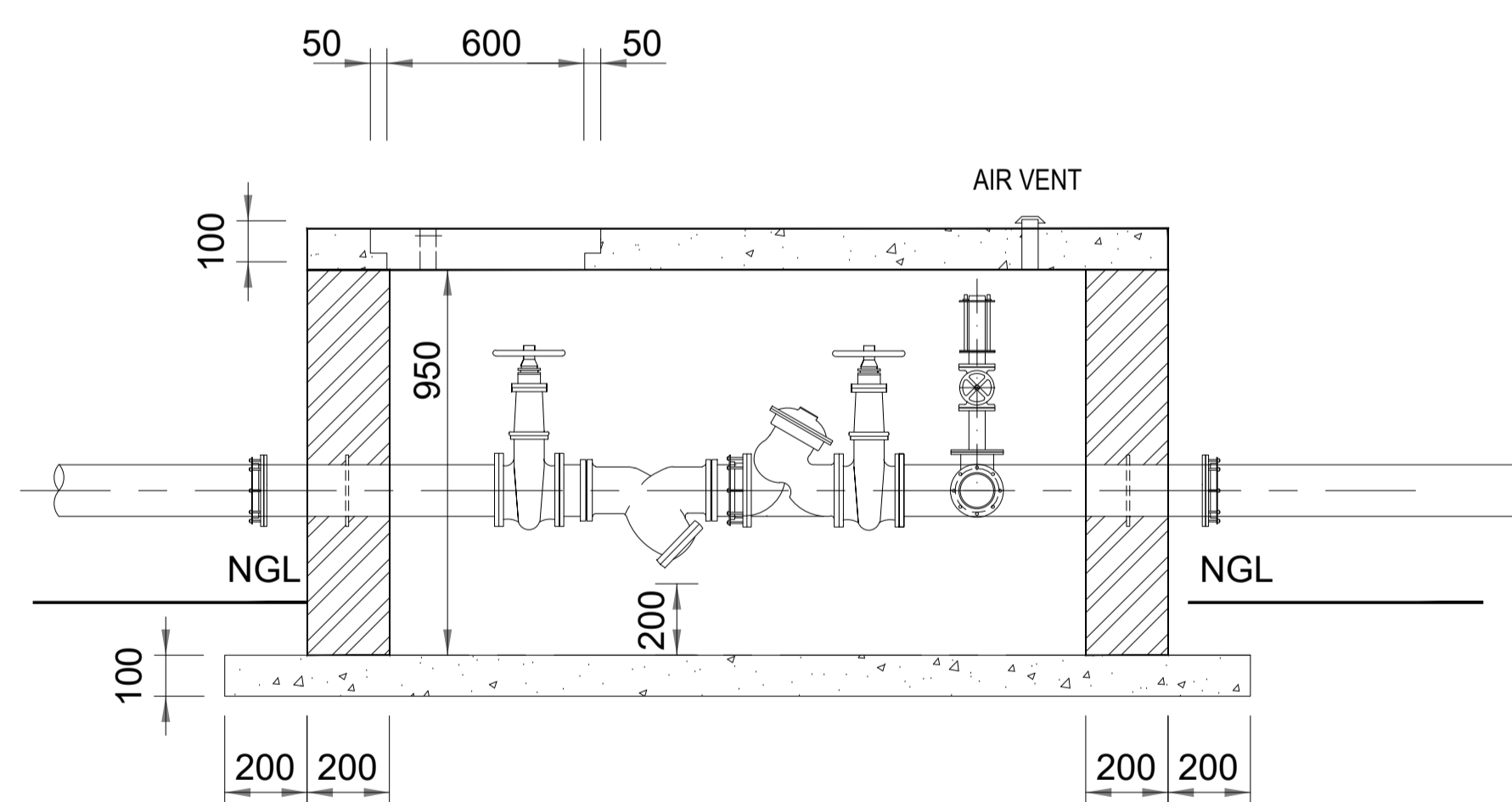




**LEVEL CONTROL CHAMBER
PLAN VIEW**

- F1 - STRAINER
- F2 - 125mm DIA DISMANTLING JOINT
- F3 - 125mm DIA ISOLATION VALVE
- F4 - 125mm DIA LEVEL CONTROL VALVE
- F5 - AIR VALVE

NOTE: FOR AIR VALVE DETAILS SEE
DRAWING NT-2023-1159-106-001



**LEVEL CONTROL CHAMBER
SECTION 1-1**

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Drawing Number: NT-2023-1159-101

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DISCIPLINE

CIVIL ENGINEERING

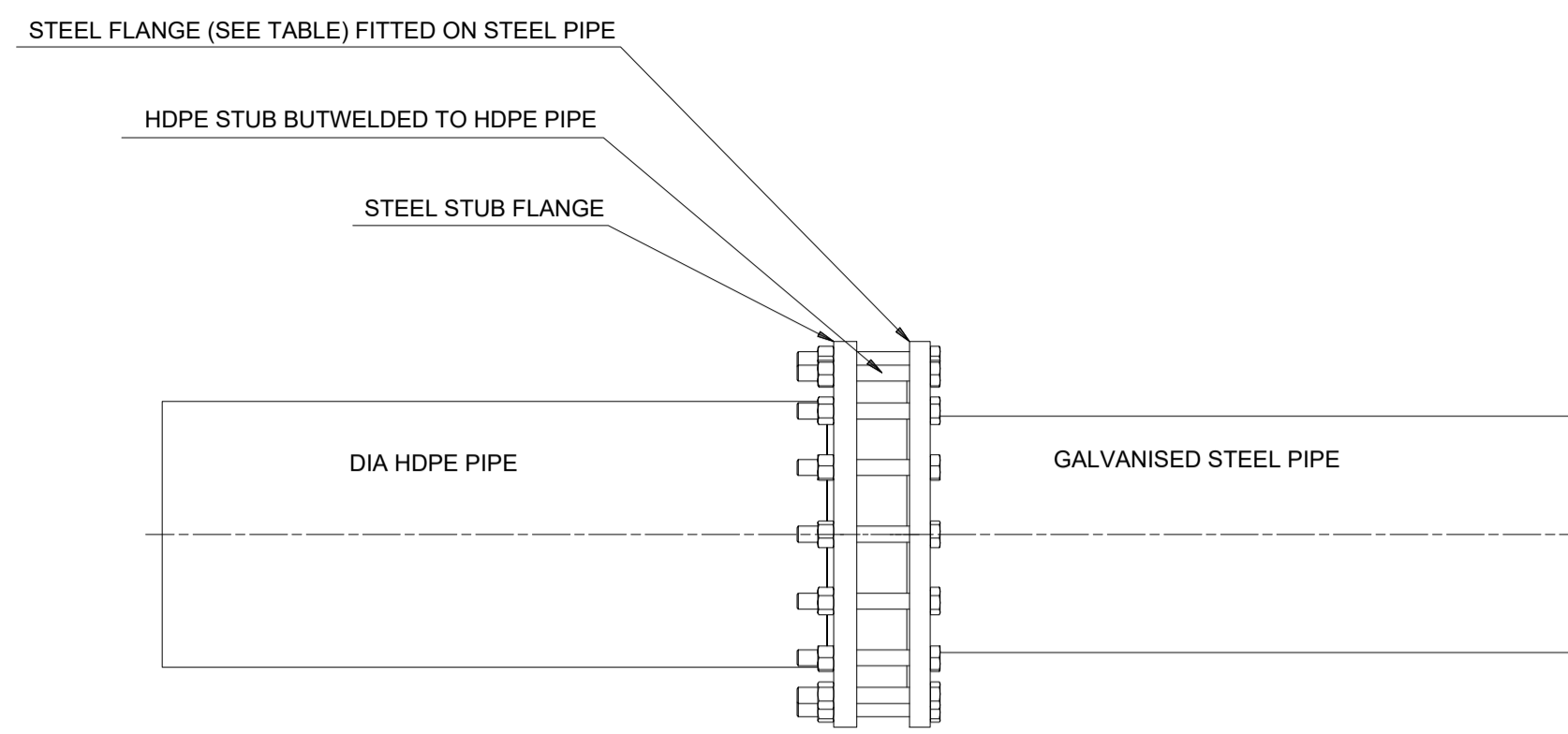
DRAWING DESCRIPTION

WATER PIPELINE LEVEL CONTROL VALVE DETAILS

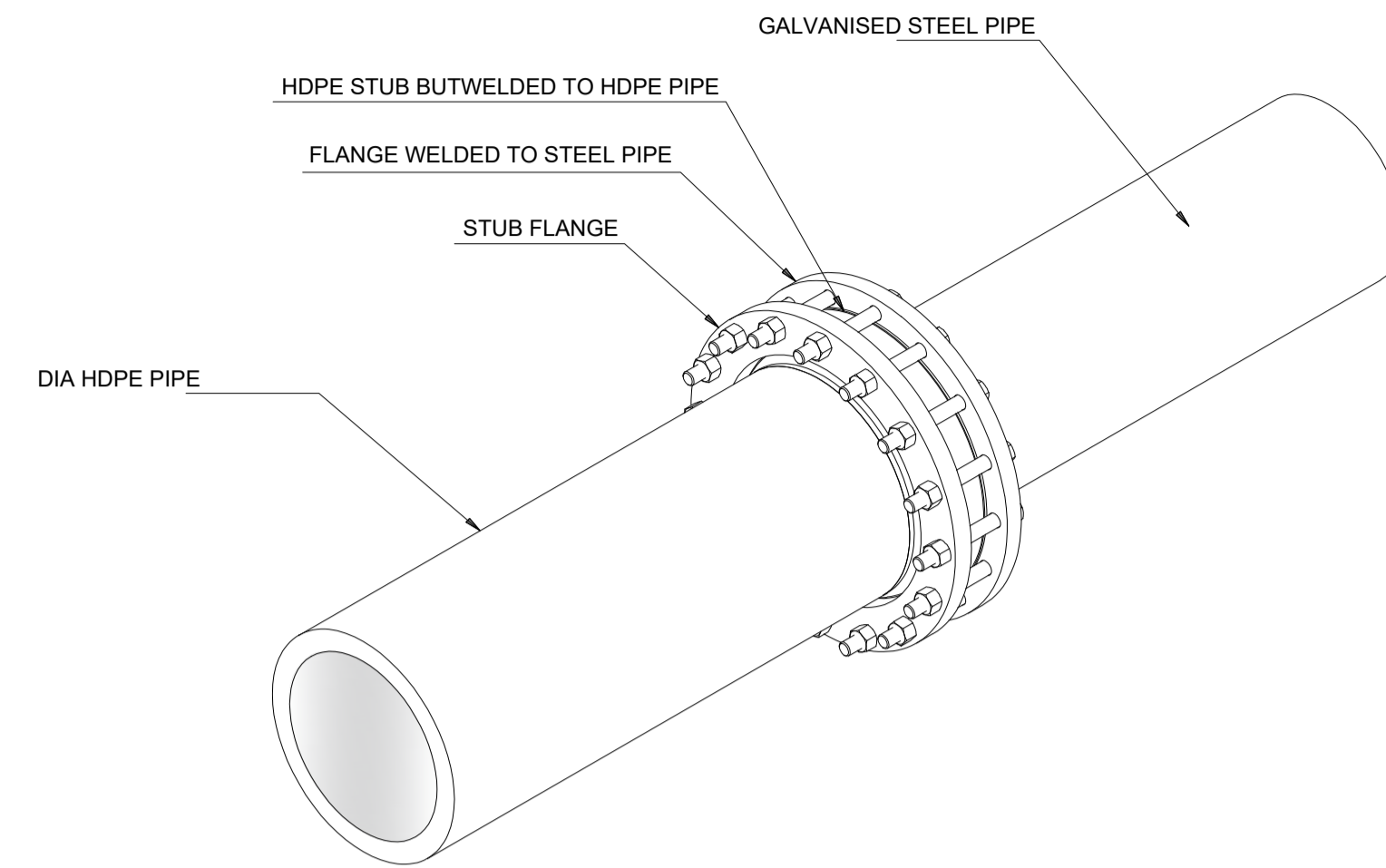
DESIGNED BY: M. MOFOKENG	SIGNATURE AND DATE:
DRAWN BY: R. KELSEY	SIGNATURE AND DATE:
APPROVED BY: M. TSOAI Pr Eng.:20160198	SIGNATURE AND DATE:
PROJECT NO 1159	DATE

DRAWING NO
NT-2023-1159-103-001

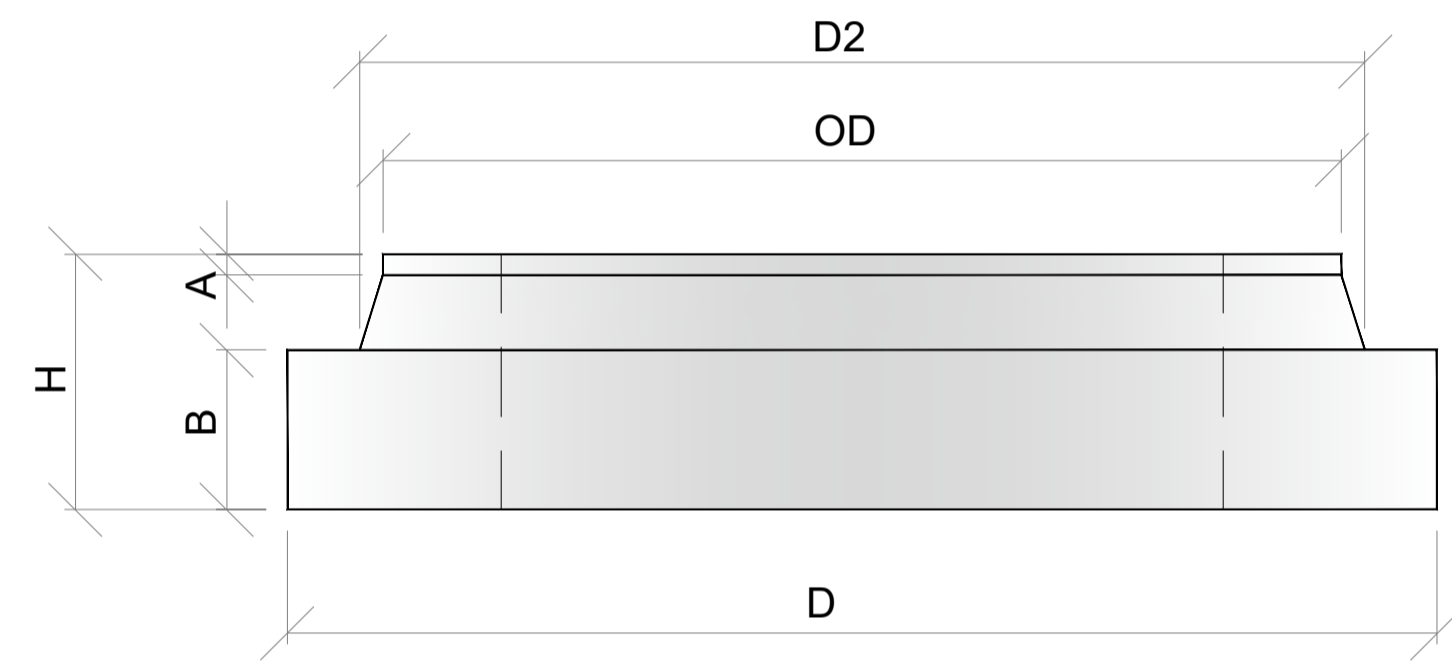
NTS	SHEET SIZE	REVISION
	A1	0



HDPE - STEEL CONNECTION PLAN VIEW
Not to Scale - Schematic Representation



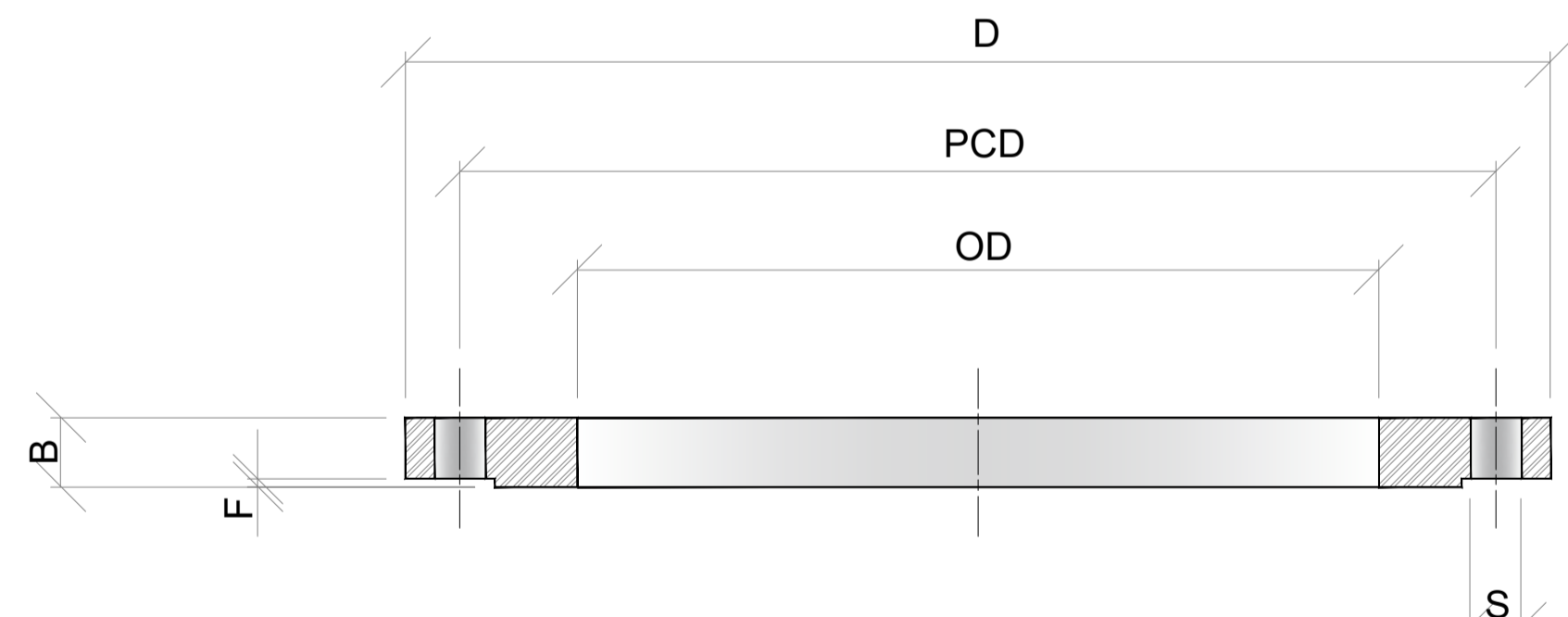
ISOMETRIC VIEW OF HDPE - STEEL CONNECTION
Not to Scale - Schematic Representation



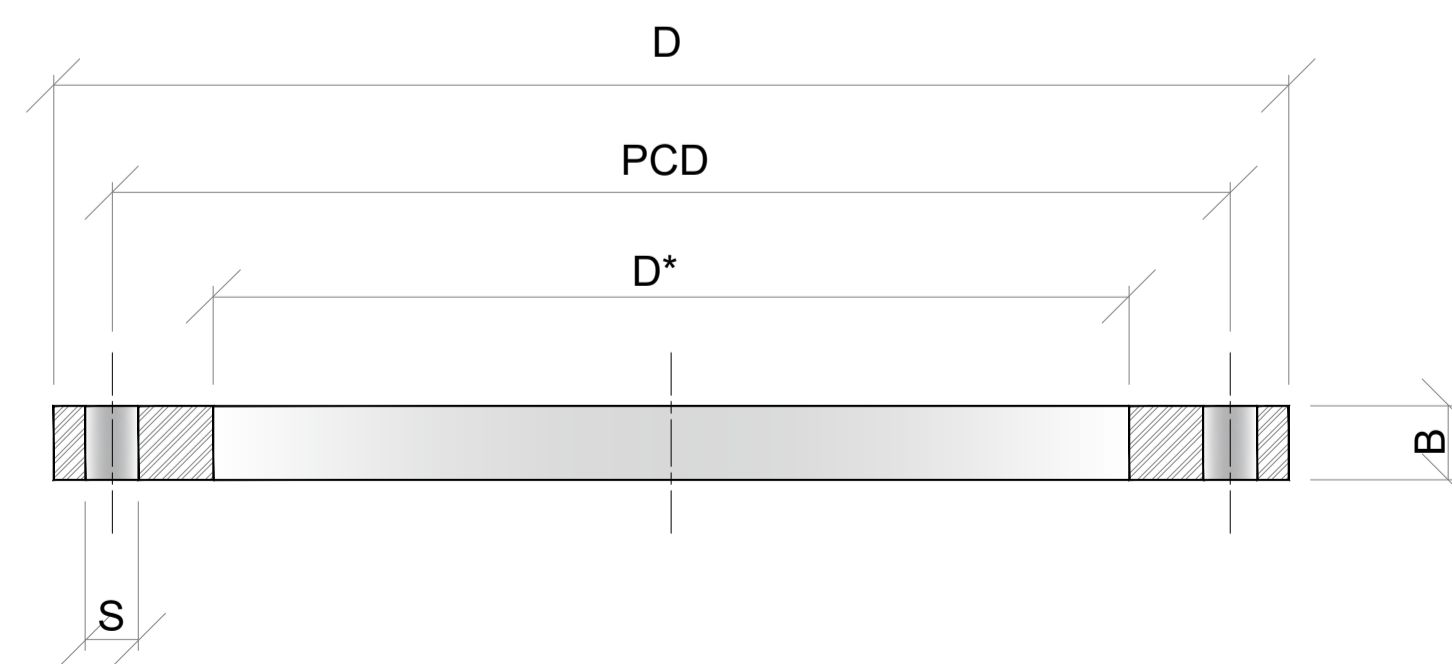
HDPE STUB END

HDPE STUB FLANGE DETAIL PN 12-20					
PIPE OD	D	A	D2	B	H
110	158	10	125	35	75
125	160	10	133	35	75
140	188	10	155	35	75
160	217	10	187	55	100
180	217	10	187	55	100
200	270	10	234	55	100
225	270	10	234	55	100
250	310	10	275	75	120
280	325	10	289	75	120
315	375	10	327	75	120
355	430	10	373	75	120
400	486	10	426	75	120
450	540	10	472	75	120
500	585	10	526	-	-
560	645	10	588	-	-

SANS 1123 FLANGE DIMENSIONS														
FLANGE	SANS 1123:2007 1600/3				SANS 1123:2007 1000/3				SANS 1123:2007 1000/3					
	D	OD	B	F	PCD	BOLT SIZE (S)	BOLT HOLE SIZE (S)	D	OD	B	F	PCD	BOLT SIZE (S)	BOLT HOLE SIZE (S)
15	95	21.3	10	2	65	M12	M14	95	21.3	10	2	65	M12	M14
20	105	26.9	10	2	75	M12	M14	105	26.9	10	2	75	M12	M14
25	115	33.7	10	2	85	M12	M14	115	33.7	10	2	85	M12	M14
32	140	42.4	10	2	100	M16	M18	140	42.4	10	2	100	M16	M18
40	150	48.3	10	3	110	M16	M18	150	48.3	10	3	110	M16	M18
50	165	60.3	12	3	125	M16	M18	165	60.3	10	3	125	M16	M18
65	185	76.1	12	3	145	M16	M18	185	76.1	12	3	145	M16	M18
80	200	88.9	14	3	160	M16	M18	200	88.9	12	3	160	M16	M18
100	220	114.3	14	3	180	M16	M18	220	114.3	12	3	180	M16	M18
125	250	139.7	16	3	210	M16	M18	250	139.7	14	3	210	M16	M18
150	285	168.1	18	3	240	M20	M22	285	168.1	16	3	240	M20	M22
200	340	219.1	22	3	295	M20	M22	340	219.1	18	3	295	M20	M22
250	405	273	25	3	355	M24	M26	395	273	20	3	350	M20	M22
300	460	323.9	28	4	410	M24	M26	445	323.9	22	4	400	M20	M22
350	520	355.6	30	4	460	M24	M26	505	355.6	25	4	470	M20	M22
400	580	406.4	35	4	525	M24	M26	565	406.4	25	4	515	M24	M26
450	640	457.2	40	4	585	M24	M26	615	457.2	30	4	565	M24	M26
500	715	508	40	4	650	M30	M32	670	508	32	4	620	M24	M26
600	840	609.6	50	5	770	M30	M32	780	609.6	38	5	725	M24	M26
700	910	711.2	55	5	840	M30	M32	895	711.2	45	5	840	M24	M26



STANDARD SANS 1123 FLANGE



STANDARD STUB FLANGE

STUB FLANGE DIMENSIONS AND DRILLING TABLE													
HDPE PIPE SIZE	SANS 1123:2007 1600/3				SANS 1123:2007 1000/3				SANS 1123:2007 1000/3				
	D	D*	B	PCD	BOLT SIZE (S)	BOLT HOLE SIZE (S)	D	D*	B	PCD	BOLT SIZE (S)	BOLT HOLE SIZE (S)	
20	95	30	10	65	M12	M14	95	30	10	65	M12	M14	
25	105	38	10	75	M12	M14	105	38	10	75	M12	M14	
32	115	45	10	85	M12	M14	115	45	10	85	M12	M14	
40	140	52	10	100	M16	M18	140	52	10	100	M16	M18	
50	150	63	10	110	M16	M18	150	63	10	110	M16	M18	
63	165	74	12	125	M16	M18	165	74	12	125	M16	M18	
75	185	86	12	145	M16	M18	185	86	12	145	M16	M18	
90	200	103	14	160	M16	M18	200	103	12	160	M16	M18	
110	220	136	14	180	M16	M18	220	136	12	180	M16	M18	
125	220	136	14	180	M16	M18	220	136	12	180	M16	M18	
140	250	158	16	210	M16	M18	250	158	14	210	M16	M18	
160	285	190	18	240	M20	M22	285	190	16	240	M20	M22	
180	285	190	18	240	M20	M22	285	190	16	240	M20	M22	
200	340	236	22	295	M20	M22	340	236	18	295	M20	M22	
225	340	236	22	295	M20	M22	340	236	18	295	M20	M22	
250	405	279	25	355	M24	M26	395	279	20	350	M20	M22	
280	405	292	25	355	M24	M26	395	292	20	350	M20	M22	
315	460	330	28	410	M24	M26	445	330	22	400	M20	M22	
355	520	376	30	470	M24	M26	506	376	25	460	M20	M22	
400	580	430	35	525	M24	M26	565	430	25	515	M24	M26	
450	640	476	40	585	M24	M26	615	476	30	565	M24	M26	
500	715	533	40	650	M30	M32	670	533	32	620	M24	M26	
560	775	592	40	710	M30	M32	730	592	35	675	M24	M26	
630	840	662	50	770	M30	M32	780	662	40	725	M24	M26	

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IMPORTANT:
ALL STEEL COUPLINGS TO BE COVERED BY STOPAQ AND WRAPPED WITH PVC TAPE

For List of Reference Drawings, see Drawing Number: NT-2023-1159-101

REVISION INFORMATION

No:	DATE	DESCRIPTION:	BY
0	2023-12-04	DETAILED DESIGN	MT

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DISCIPLINE

CIVIL ENGINEERING

DRAWING DESCRIPTION

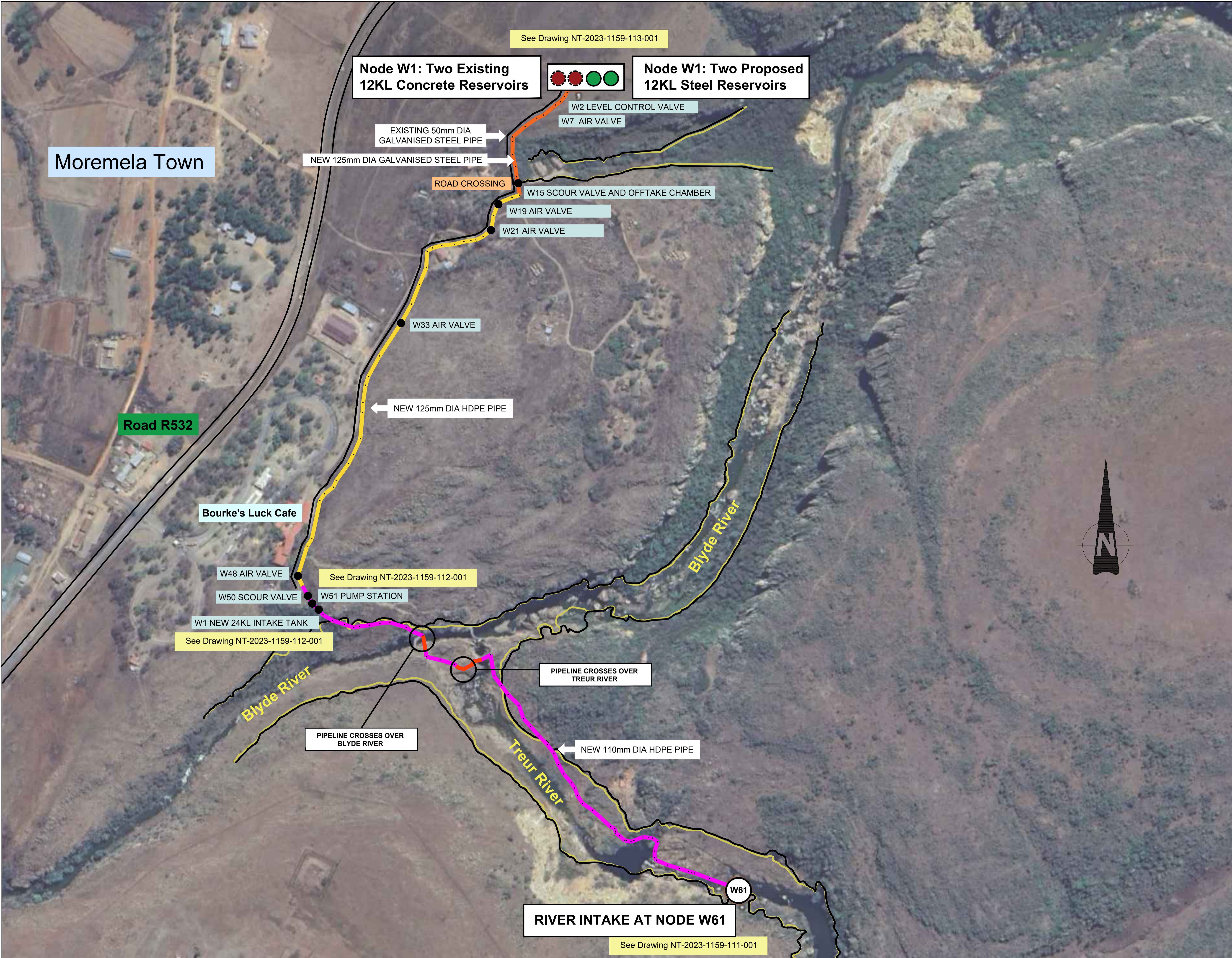
BULK WATER PIPELINE CONNECTION TYPICAL DETAILS

DESIGNED BY: M. MOFOKENG	SIGNATURE AND DATE: 4 December 2023
DRAWN BY: R. KELSEY	SIGNATURE AND DATE: 4 December 2023
APPROVED BY: M. TSOAI Pr Eng.:20160198	SIGNATURE AND DATE: 4 December 2023
PROJECT NO 1159	DATE 4 December 2023

DRAWING NO

NT-2023-1159-104-001

SCALE	SHEET SIZE	REVISION
NTS	A1	0



PIPE LEGEND

- Existing 50mm Dia Galvanised Steel Pipe from Reservoirs to Pump Station at Node W51
- New 125mm Dia Galvanised Steel Pipe from Reservoirs to Node W16
- New 125mm Dia HDPE Pipe from Node W16 to Pump Station at Node W51
- New 110mm Dia HDPE Pipe from Pump Station at Node W51 to River Intake at Node W61

FLOOD LINE LEGEND

- Blyde River 100 year Flood Line
- Blyde River 50 year Flood Line

For List of Reference Drawings, see Drawing Number: NT-2023-1159-101

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DISCIPLINE

CIVIL ENGINEERING

DRAWING DESCRIPTION

VALVE CHAMBERS KEY PLAN

DESIGNED BY: **M. MOFOKENG** SIGNATURE AND DATE: 10 November 2023

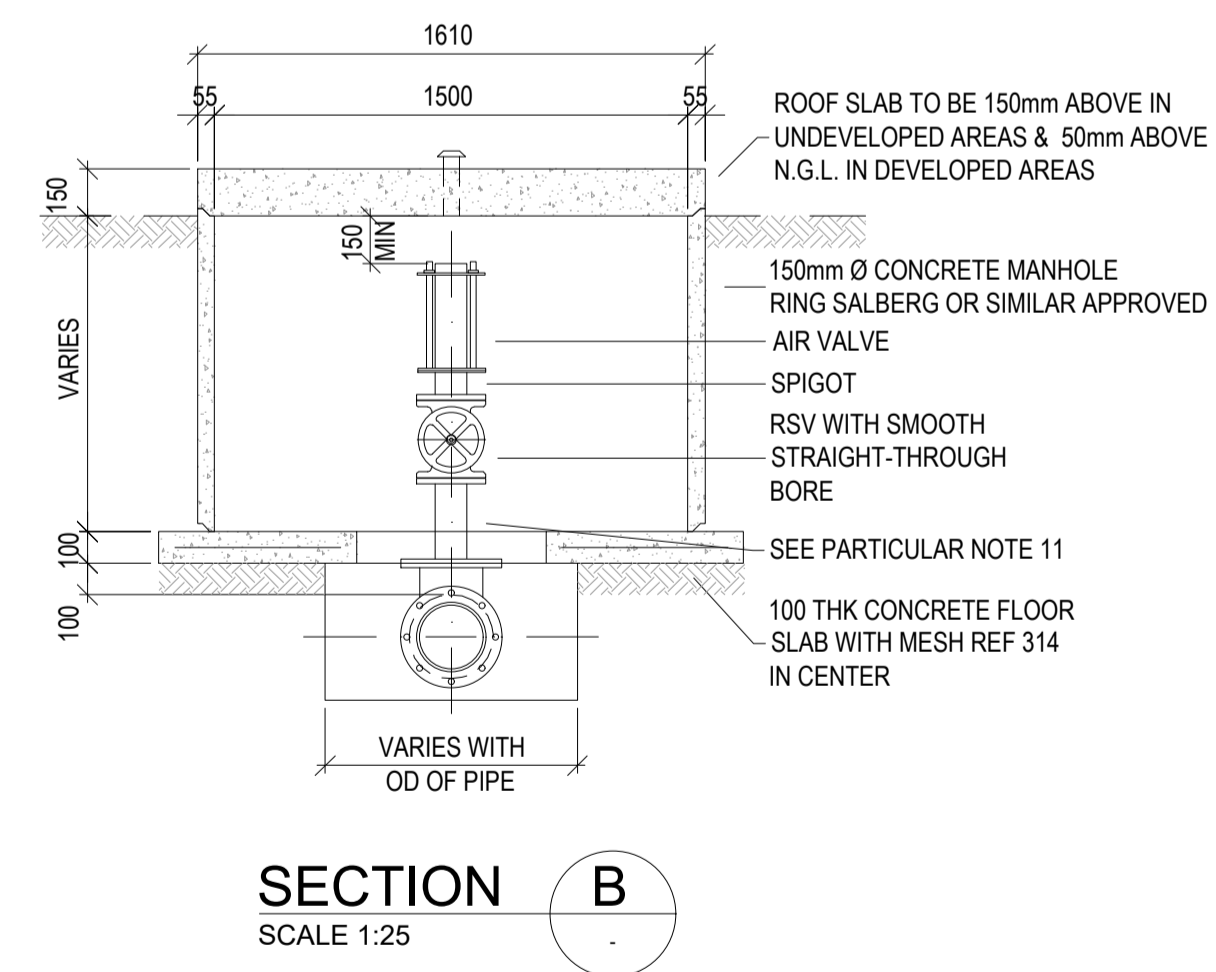
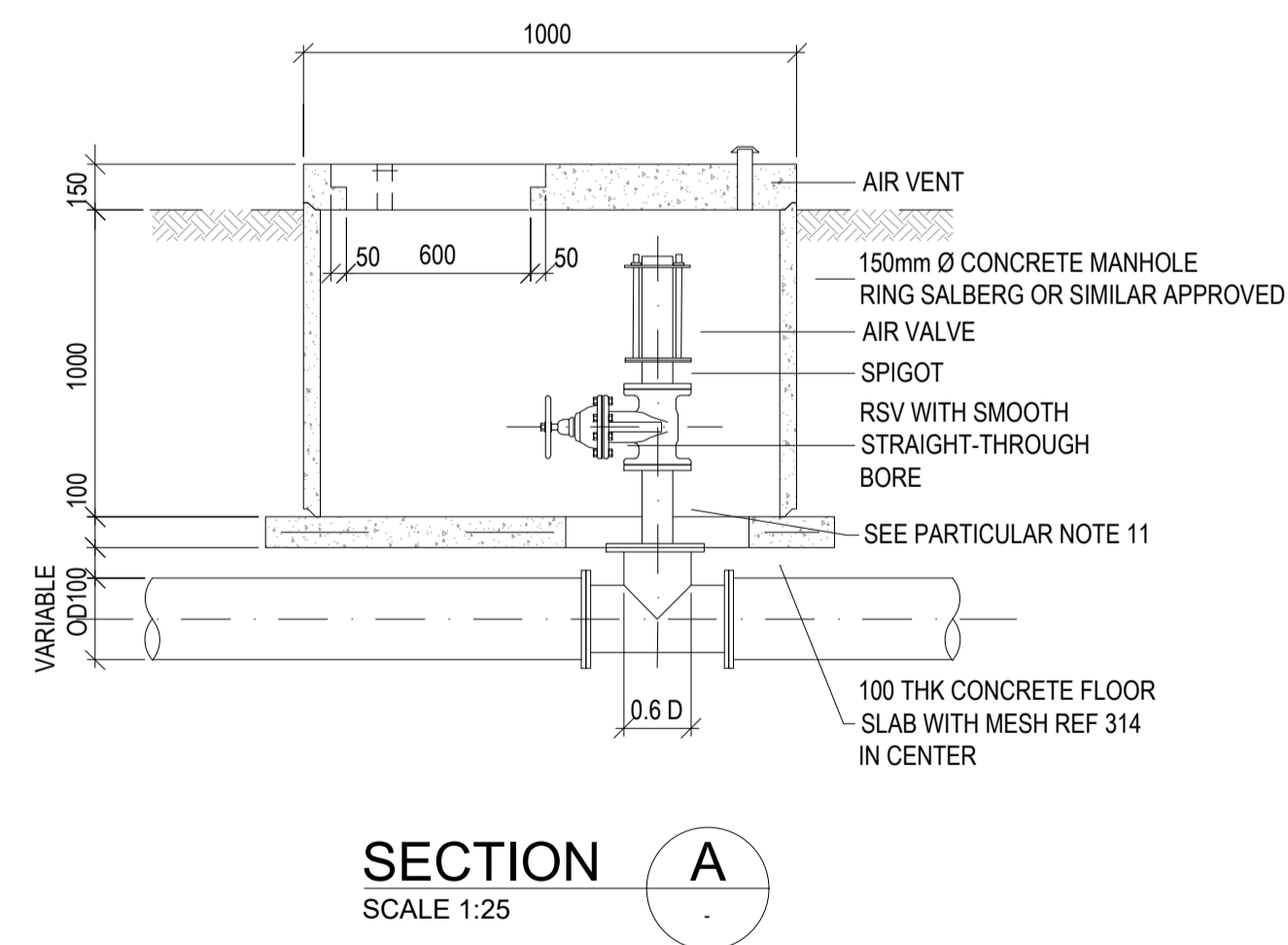
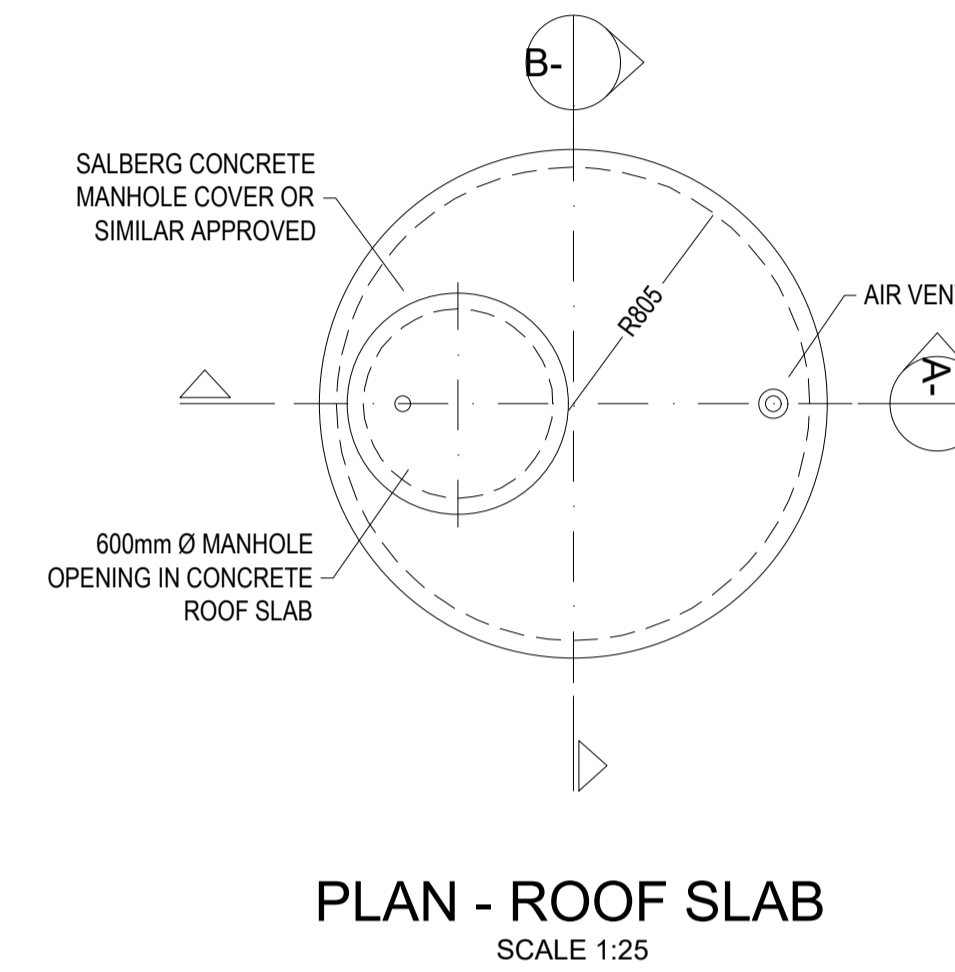
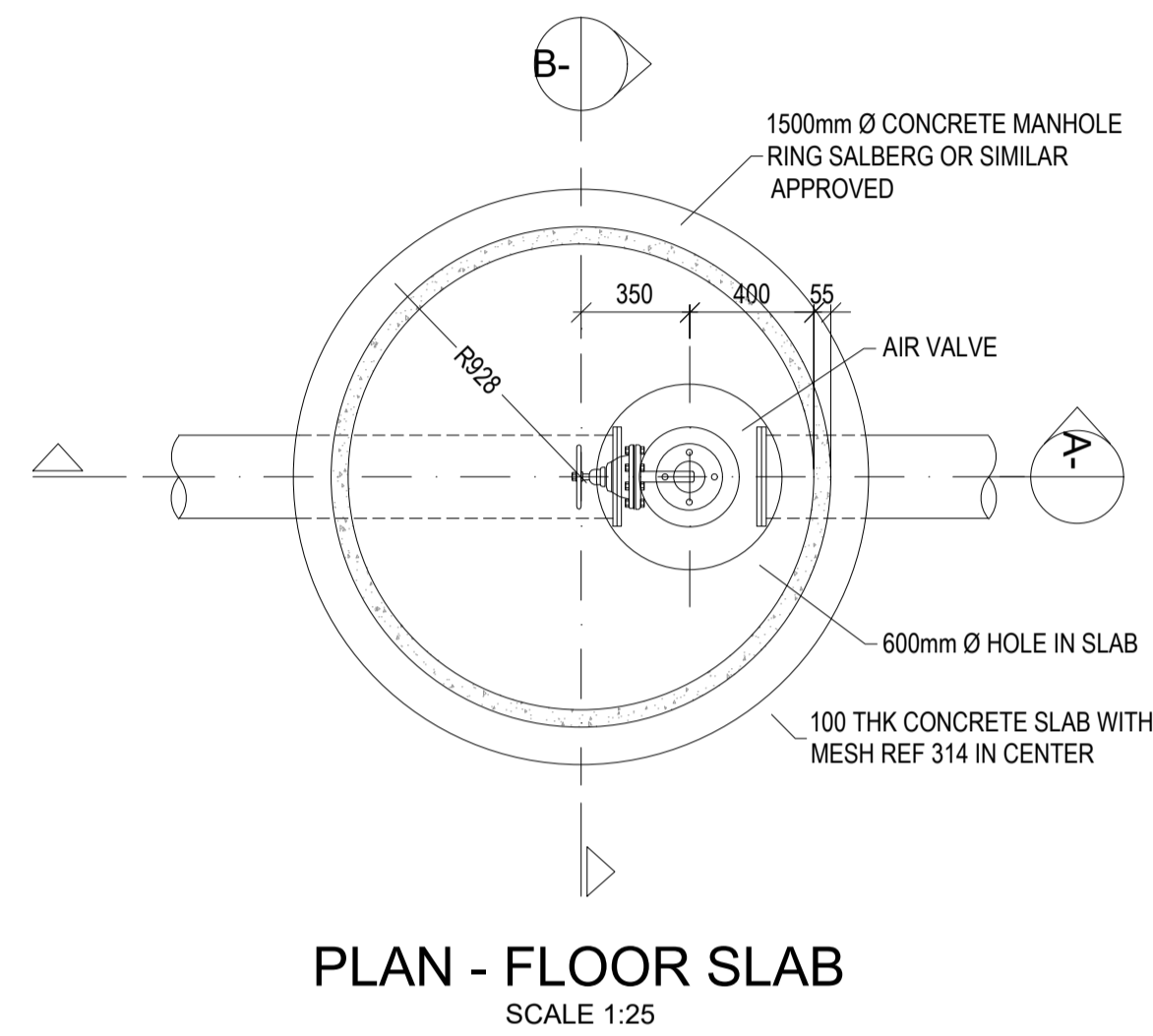
DRAWN BY: **R. KELSEY** SIGNATURE AND DATE: 10 November 2023

APPROVED BY: **M. TSOAI** SIGNATURE AND DATE: 10 November 2023
Pr Eng.:20160198

PROJECT NO: **1159** DATE: 10 November 2023

DRAWING NO: **NT-2023-1159-105-001**

SCALE	SHEET SIZE	REVISION
NTS	A1	1



FOR ALL NEW AIR VALVE CHAMBERS

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DRAWING DESCRIPTION

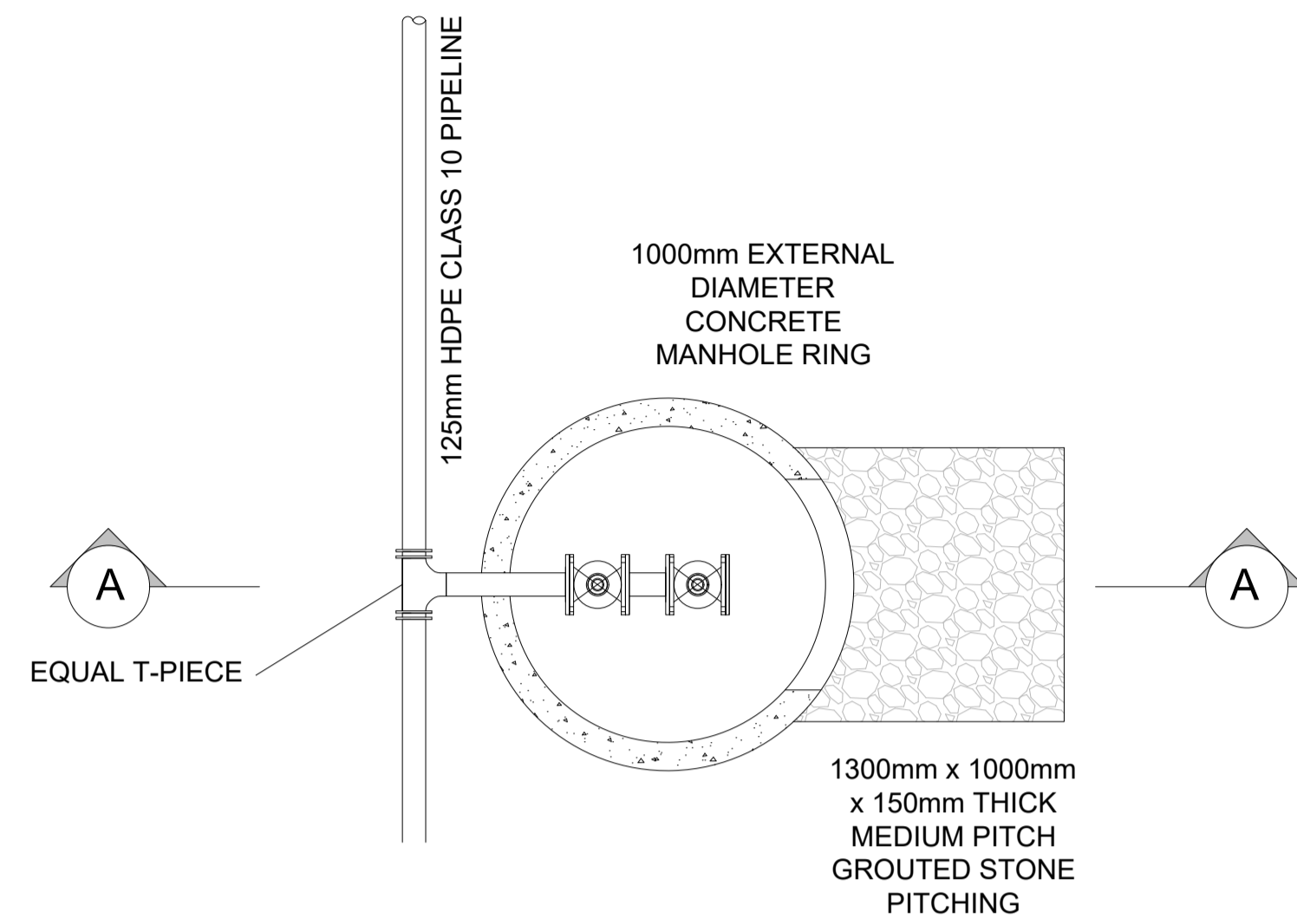
INTAKE TANK ARRANGEMENT AND DETAILS

DESIGNED BY: M. MOFOKENG	SIGNATURE AND DATE: 4 Decemberr 2023
DRAWN BY: R. KELSEY	SIGNATURE AND DATE: 4 Decemberr 2023
APPROVED BY: M. TSOAI Pr Eng.:20160198	SIGNATURE AND DATE: 4 Decemberr 2023
PROJECT NO 1159	DATE 4 Decemberr 2023

DRAWING NO

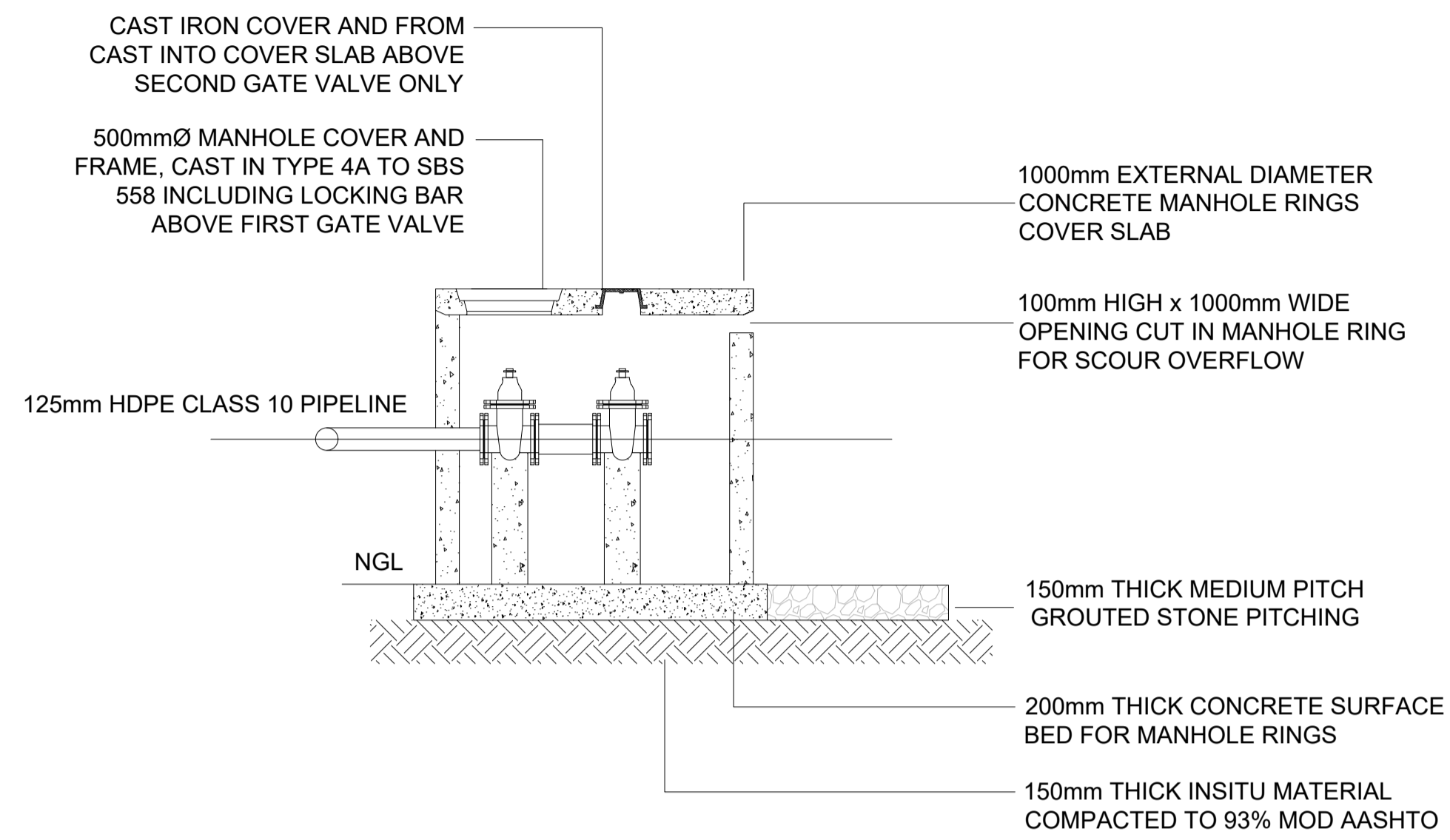
NT-2023-1159-106-001

SCALE	SHEET SIZE	REVISION
NTS	A1	0



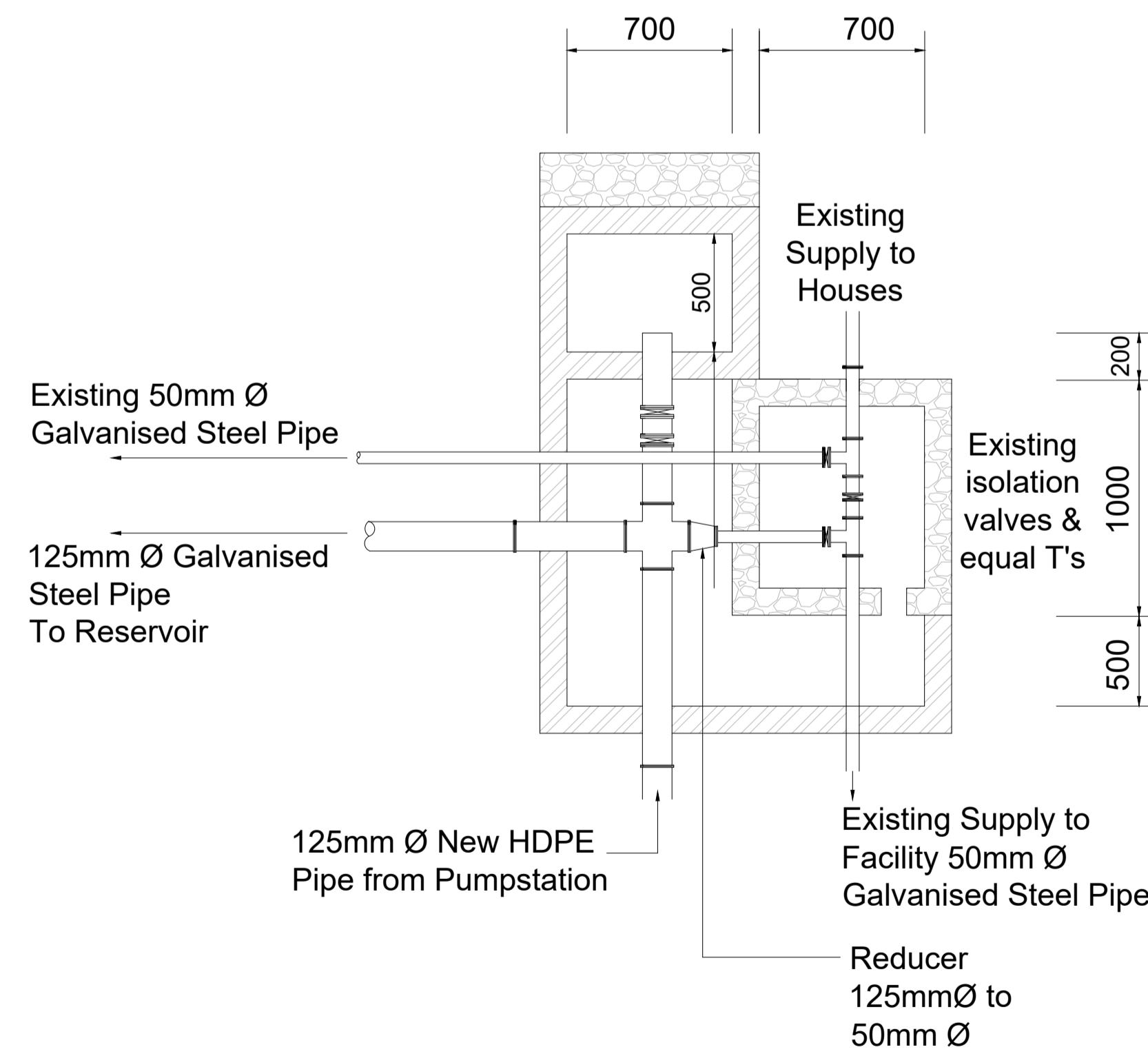
SCOUR CHAMBER PLAN

Not to Scale - Schematic Representation



SCOUR CHAMBER SECTION A-A

Not to Scale - Schematic Representation



EXISTING CHAMBER CONNECTION AT W15 WITH PROPOSED EXTENSION PLAN

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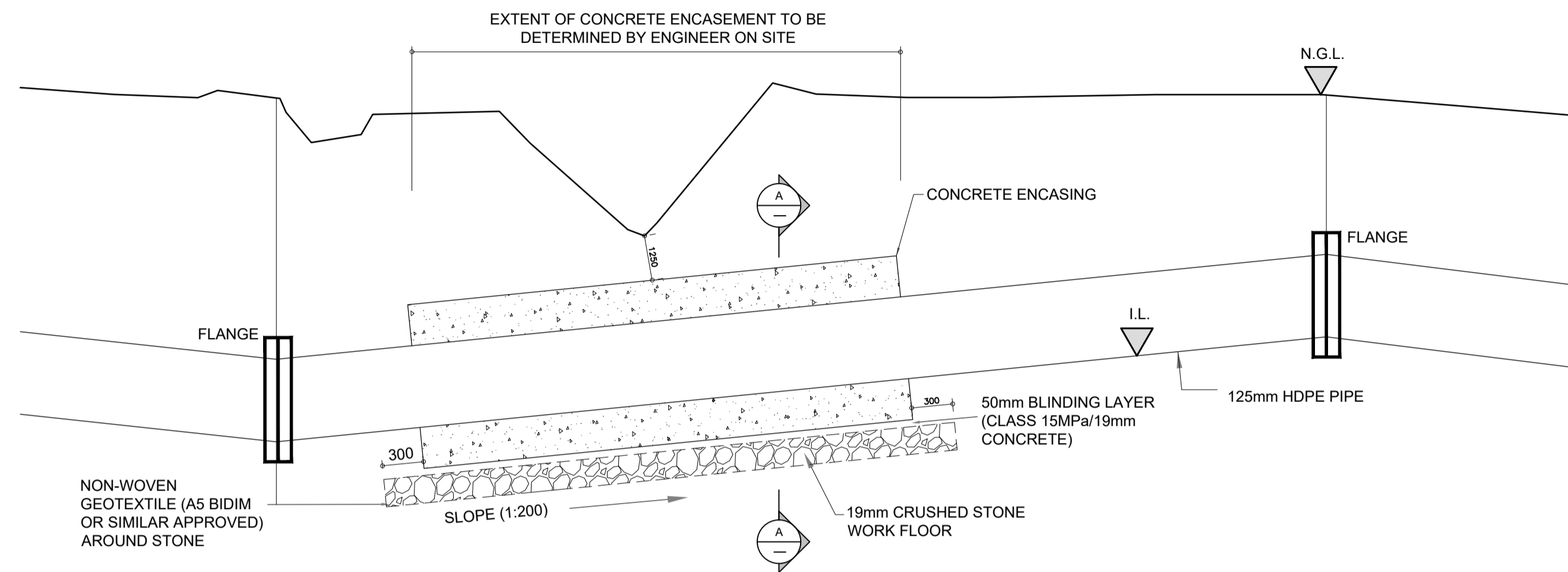
**WATER PIPELINE
 SCOUR VALVE CHAMBER DETAIL**

DESIGNED BY: M. MOFOKENG	SIGNATURE AND DATE: 4 December 2023
DRAWN BY: R. KELSEY	SIGNATURE AND DATE: 4 December 2023
APPROVED BY: M. TSOAI Pr Eng.:20160198	SIGNATURE AND DATE: 4 December 2023
PROJECT NO 1159	DATE 4 December 2023

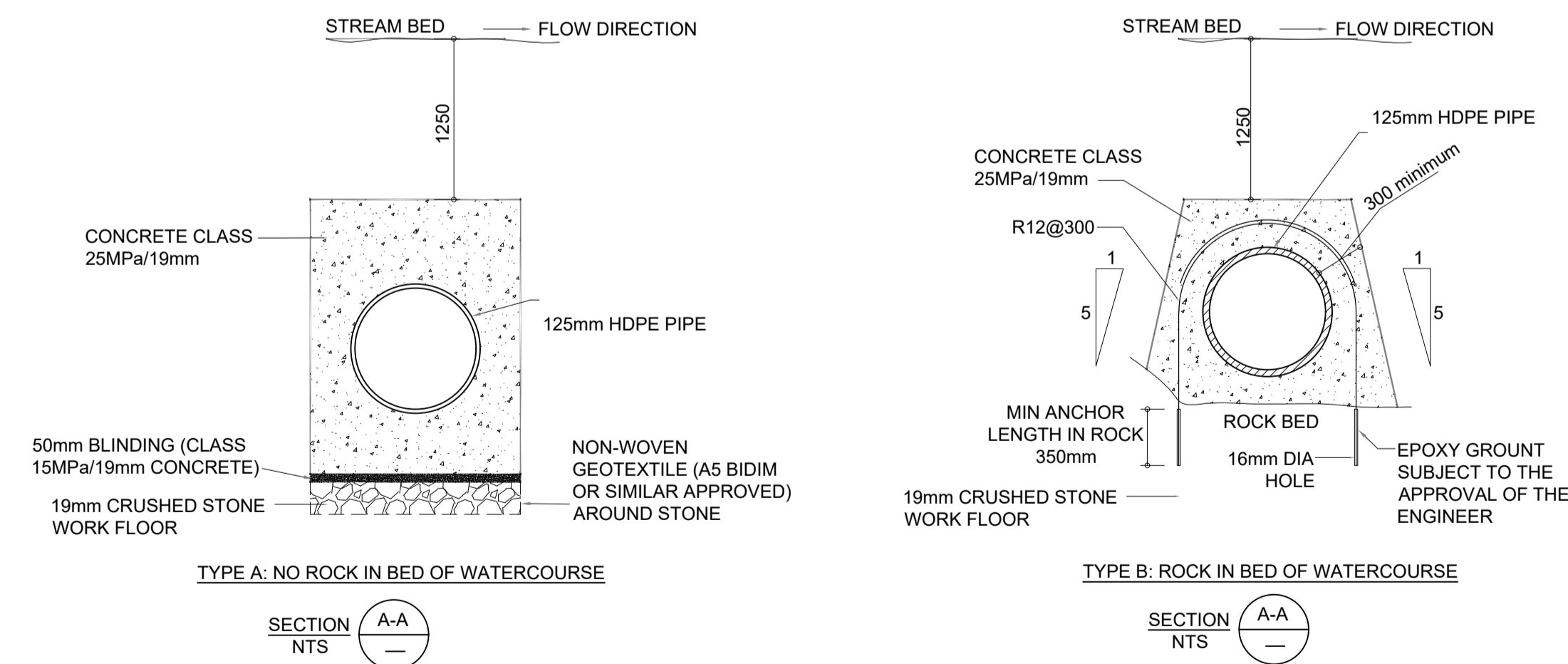
DRAWING NO

NT-2023-1159-107-001

SCALE	SHEET SIZE	REVISION
NTS	A1	0



SECTION THROUGH DITCH CROSSING
NTS



TYPICAL DITCH CROSSING DETAILS

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For List of Reference Drawings, see Drawing Number: NT-2023-1159-101

REVISION INFORMATION

No.	DATE	DESCRIPTION:	BY
0	2023-12-04	DETAILED DESIGN	MT

CLIENT



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PROJECT DESCRIPTION

PROVISION OF THE DESIGNS, DEVELOPMENT OF BILL OF QUANTITY AND SUPERVISION SERVICE OF THE BULK WATER SUPPLY AT BLYDE RIVER CANYON NATURE RESERVE - POTHOLES

DISCIPLINE

CIVIL ENGINEERING

DRAWING DESCRIPTION

PIPELINE DITCH CROSSING

DESIGNED BY: SIGNATURE AND DATE:

M. MOFOKENG

DRAWN BY: SIGNATURE AND DATE:

R. KELSEY

APPROVED BY: SIGNATURE AND DATE:

M. TSOAI
Pr Eng.:20160198

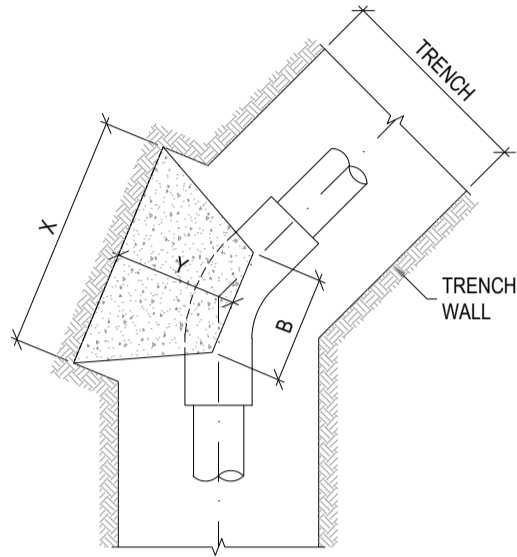
PROJECT NO: DATE:

1159

DRAWING NO:

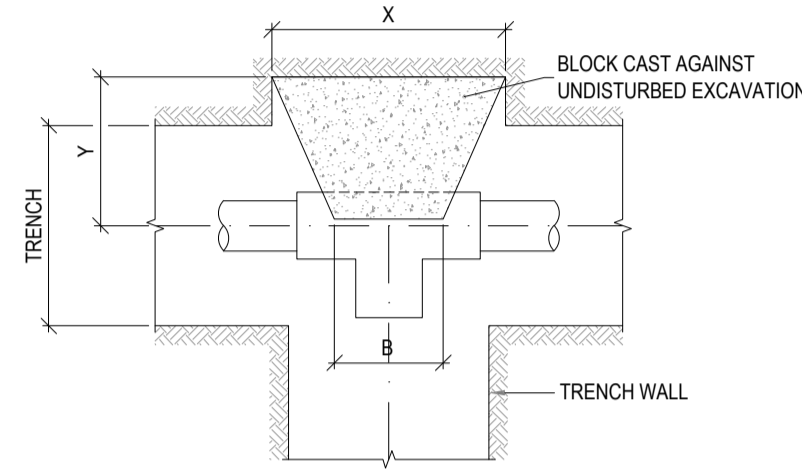
NT-2023-1159-108-001

SCALE	SHEET SIZE	REVISION
NTS	A1	0



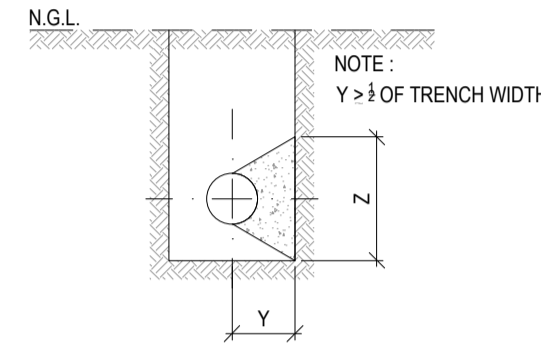
THRUST BLOCK FOR 45° BEND

NOMINAL PIPE DIAMETER Ø (mm)	AREA REQUIRED (m²)	DIMENSIONS (m)				AREA PROVIDED (m²)	VOL (m³)	
		B	Z	X	Y			
75	0.061	0.300	0.400	0.400	0.350	0.160	0.049	
110	0.109	0.300	0.500	0.500	0.375	0.250	0.075	
160	0.245	0.300	0.500	0.500	0.400	0.250	0.080	
200	0.435	0.300	0.600	0.800	0.400	0.480	0.132	
250	0.680	0.350	0.650	1.100	0.450	0.715	0.212	
300	0.979	0.400	0.700	1.400	0.500	0.980	0.315	
> 300		SEE PARTICULAR NOTE 5						

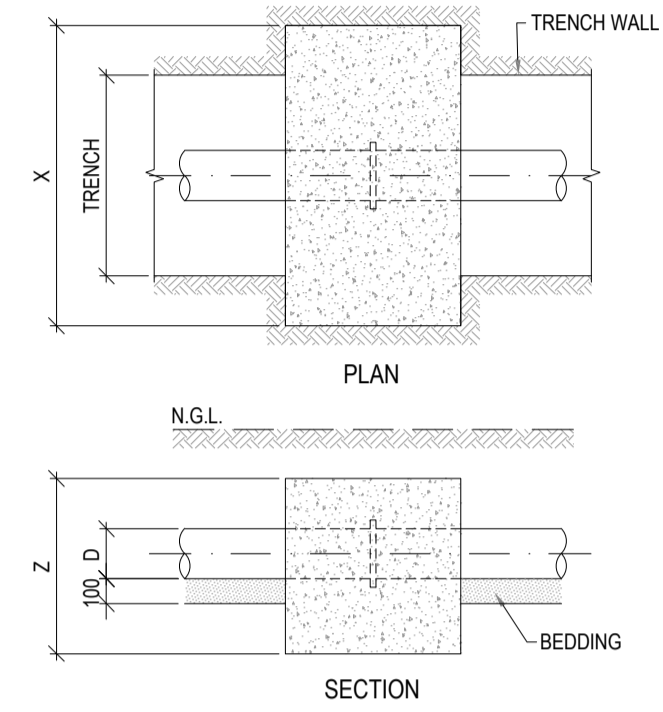


THRUST BLOCK FOR TEE-PIECE

NOMINAL PIPE DIAMETER Ø (mm)	AREA REQUIRED (m²)	DIMENSIONS (m)				AREA PROVIDED (m²)	VOL (m³)	
		B	Z	X	Y			
75	0.079	0.150	0.400	0.400	0.350	0.160	0.039	
110	0.141	0.200	0.500	0.500	0.375	0.250	0.066	
160	0.318	0.300	0.500	0.700	0.400	0.350	0.100	
200	0.565	0.300	0.600	1.000	0.400	0.600	0.156	
250	0.833	0.350	0.650	1.400	0.450	0.910	0.256	
300	1.272	0.400	0.700	1.900	0.500	1.330	0.403	
> 300		SEE PARTICULAR NOTE 5						

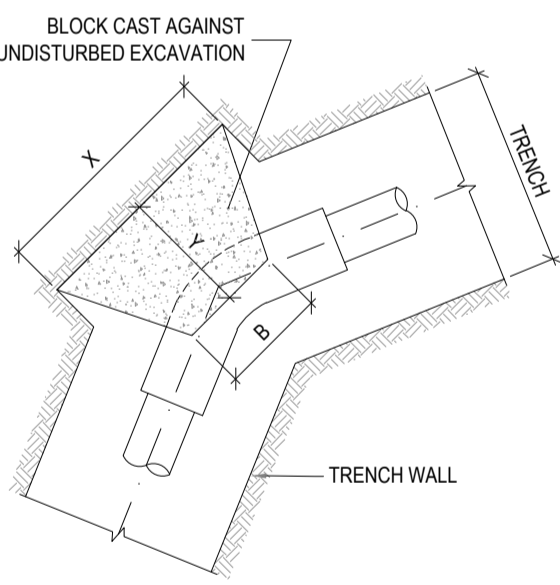


TYPICAL SECTION FOR 22.5° & 45° BEND



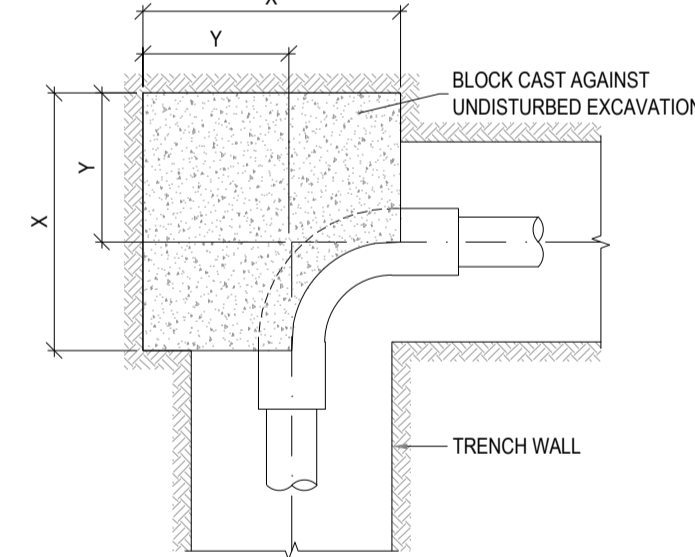
THRUST BLOCK FOR PUDDLE FLANGE

NOMINAL PIPE DIAMETER Ø (mm)	AREA REQUIRED (m²)	TRENCH WIDTH (m)	DIMENSIONS (m)			AREA PROVIDED (m²)	VOL (m³)	
			X	Y	Z			
75	0.078	0.475	0.875	0.500	0.575	0.410	0.250	
110	0.139	0.500	0.900	0.500	0.600	0.420	0.270	
160	0.312	0.550	0.950	0.700	0.650	0.450	0.420	
200	0.555	0.600	1.000	0.700	0.900	0.740	0.610	
250	0.867	0.650	1.250	1.000	0.950	0.950	1.140	
300	1.250	0.700	1.500	1.000	1.000	1.250	1.430	
> 300		SEE PARTICULAR NOTE 5						



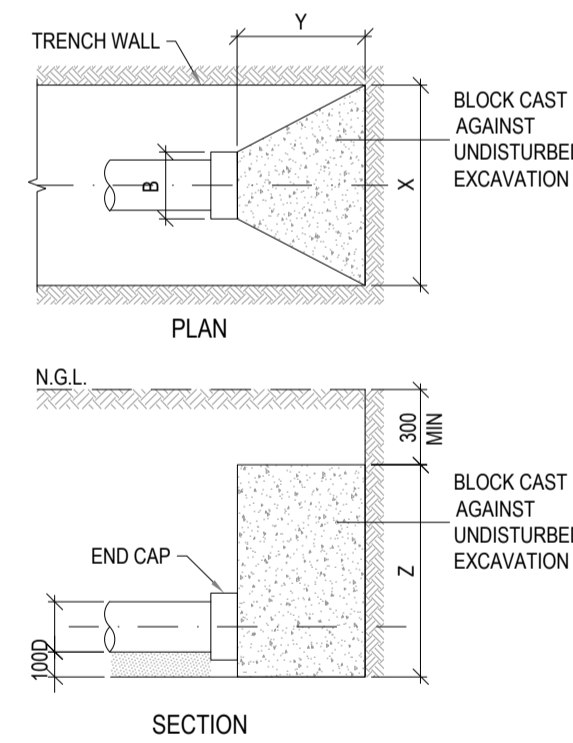
THRUST BLOCK FOR 22.5° BEND

NOMINAL PIPE DIAMETER Ø (mm)	AREA REQUIRED (m²)	DIMENSIONS (m)				AREA PROVIDED (m²)	VOL (m³)	
		B	Z	X	Y			
75	0.031	0.300	0.400	0.400	0.350	0.160	0.049	
110	0.055	0.300	0.500	0.500	0.375	0.250	0.075	
160	0.124	0.300	0.500	0.500	0.400	0.250	0.080	
200	0.220	0.300	0.600	0.600	0.400	0.360	0.108	
250	0.344	0.350	0.650	0.650	0.450	0.423	0.146	
300	0.496	0.400	0.700	0.800	0.500	0.560	0.210	
> 300		SEE PARTICULAR NOTE 5						



THRUST BLOCK FOR 90° BEND

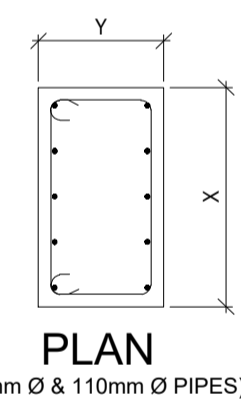
NOMINAL PIPE DIAMETER Ø (mm)	AREA REQUIRED (m²)	DIMENSIONS (m)			AREA PROVIDED (m²)	VOL (m³)	
		Z	X	Y			
75	0.078	0.400	0.350	0.350	0.140	0.049	
110	0.139	0.500	0.380	0.375	0.190	0.072	
160	0.314	0.500	0.650	0.400	0.330	0.211	
200	0.576	0.600	1.000	0.400	0.600	0.600	
250	0.871	0.650	1.400	0.450	0.910	1.274	
300	1.225	0.700	1.800	0.500	1.260	2.268	
> 300		SEE PARTICULAR NOTE 5					



THRUST BLOCK FOR DEAD END

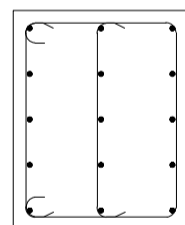
NOMINAL PIPE DIAMETER Ø (mm)	AREA REQUIRED (m²)	DIMENSIONS (m)				AREA PROVIDED (m²)	VOL (m³)
		B	Z	X	Y		
75	0.078	0.075	0.300	0.475*	0.200	0.140	0.017
110	0.139	0.100	0.300	0.500*	0.200	0.150	0.018
160	0.312	0.150	0.600	0.550*	0.200	0.330	0.063
200	0.555	0.200	0.650	0.600*	0.200	0.570	0.076
250	0.867	0.250	0.700	1.250	0.500	0.880	0.263
300	1.248	0.300	0.750	1.700	0.700	1.280	0.525
> 300		SEE PARTICULAR NOTE 5					

THRUST BLOCK THICKNESS = 500mm
CONCRETE CLASS = 25MPa
HORIZONTAL REBAR = Y10 @ 200
VERTICAL REBAR = 2 LAYERS Y10 @ 200
75mm COVER OVER REINFORCEMENT



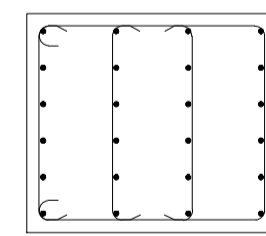
PLAN (75mm Ø & 110mm Ø PIPES)

THRUST BLOCK THICKNESS = 700mm
CONCRETE CLASS = 25MPa
HORIZONTAL REBAR = Y12 @ 200
VERTICAL REBAR = 3 LAYERS Y12 @ 200
75mm COVER OVER REINFORCEMENT



PLAN (160mm Ø & 200mm Ø PIPES)

THRUST BLOCK THICKNESS = 1000mm
CONCRETE CLASS = 25MPa
HORIZONTAL REBAR = Y12 @ 150
VERTICAL REBAR = 4 LAYERS Y12 @ 150
75mm COVER OVER REINFORCEMENT



PLAN (250mm Ø & 300mm Ø PIPES)

REINFORCEMENT DETAILS FOR PUDDLE FLANGE THRUST BLOCKS

PARTICULAR

CONCRETE THRUST BLOCKS:

- THRUST BLOCK DIMENSIONS ON THIS DRAWING ARE ONLY APPLICABLE UNDER THE FOLLOWING CONDITIONS: UNDISTURBED SAND-GROUND MIXTURES OR DENSE UNIFORM SAND WITH A BEARING CAPACITY OF AT LEAST 150 kPa UNSUBMERGED CONDITIONS MAXIMUM INTERNAL PIPE PRESSURE OF 18 BAR IF THE CONTRACTOR IS NOT IN A POSITION TO IDENTIFY THE ABOVE CONDITIONS, AN ENGINEERING GEOLOGIST OR AN ENGINEER MUST BE CONSULTED. IN ALL OTHER CONDITIONS THE ACTUAL IN-SITU BEARING PRESSURE SHALL BE CALCULATED AND THE THRUST BLOCK DESIGNED BY THE ENGINEER.
- CONCRETE PUDDLE FLANGES - 25 / 19 OTHER - 15 / 19
- HALF THE DEPTH OF THE THRUST BLOCK TO BE PLACED BELOW THE PIPE AXIS
- KEEP CONCRETE AWAY FROM THE COUPLINGS & THE PIPE JOINTS
- THRUST BLOCKS FOR PIPE Ø LARGER THAN 300mm Ø & HIGHER TEST PRESSURE THAN 18 BAR SHALL BE DESIGNED BY THE ENGINEER

NOTES AND SPECIFICATIONS

GENERAL

- ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SANS STANDARD
- ALL DIMENSIONS ARE IN mm (UNLESS OTHERWISE SPECIFIED)
- DO NOT SCALE FROM THESE DRAWINGS
- ALL DIMENSIONS TO BE CHECKED AND APPROVED ON SITE
- ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD COT DETAIL DRAWINGS
- THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD DRAWINGS (IF APPLICABLE)
- THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4
- THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY DIRECTOR OF THE WATER AND SANITATION DEPARTMENT, IN NO WAY, REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT
- THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES, STANDARD DRAWINGS, STANDARDS AND SPECIFICATIONS OF THE WATER AND SANITATION DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH
- FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE

For List of Reference Drawings, see Drawing Number: NT-2023-1159-101

REVISION INFORMATION

No.	DATE	DESCRIPTION:	BY
0	2023-12-04	DETAILED DESIGN	MT

CLIENT



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PROJECT DESCRIPTION

PROVISION OF THE DESIGNS, DEVELOPMENT OF BILL OF QUANTITY AND SUPERVISION SERVICE OF THE BULK WATER SUPPLY AT BLYDE RIVER CANYON NATURE RESERVE - POTHLES

DISCIPLINE

CIVIL ENGINEERING

DRAWING DESCRIPTION

BEDDING, THRUST BLOCKS AND PIPELINE MARKERS: Typical Details

DESIGNED BY: M. MOFOKENG	SIGNATURE AND DATE: 4 December 2023
DRAWN BY: R. KELSEY	SIGNATURE AND DATE: 4 December 2023
APPROVED BY: M. TSOAI Pr Eng.:20160198	SIGNATURE AND DATE: 4 December 2023
PROJECT NO 1159	DATE 4 December 2023

DRAWING NO

NT-2023-1159-110-001

SCALE	SHEET SIZE	REVISION
NTS	A1	0

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For List of Reference Drawings, see Drawing Number: NT-2023-1159-101

REVISION INFORMATION

No:	DATE	DESCRIPTION:	BY
0	2023-12-04	DETAILED DESIGN	MT

CLIENT



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 Mpumalanga, 1200
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PROJECT DESCRIPTION

PROVISION OF THE DESIGNS, DEVELOPMENT OF BILL OF QUANTITY AND SUPERVISION SERVICE OF THE BULK WATER SUPPLY AT BLYDE RIVER CANYON NATURE RESERVE - POTHOLES

DISCIPLINE

CIVIL ENGINEERING

DRAWING DESCRIPTION

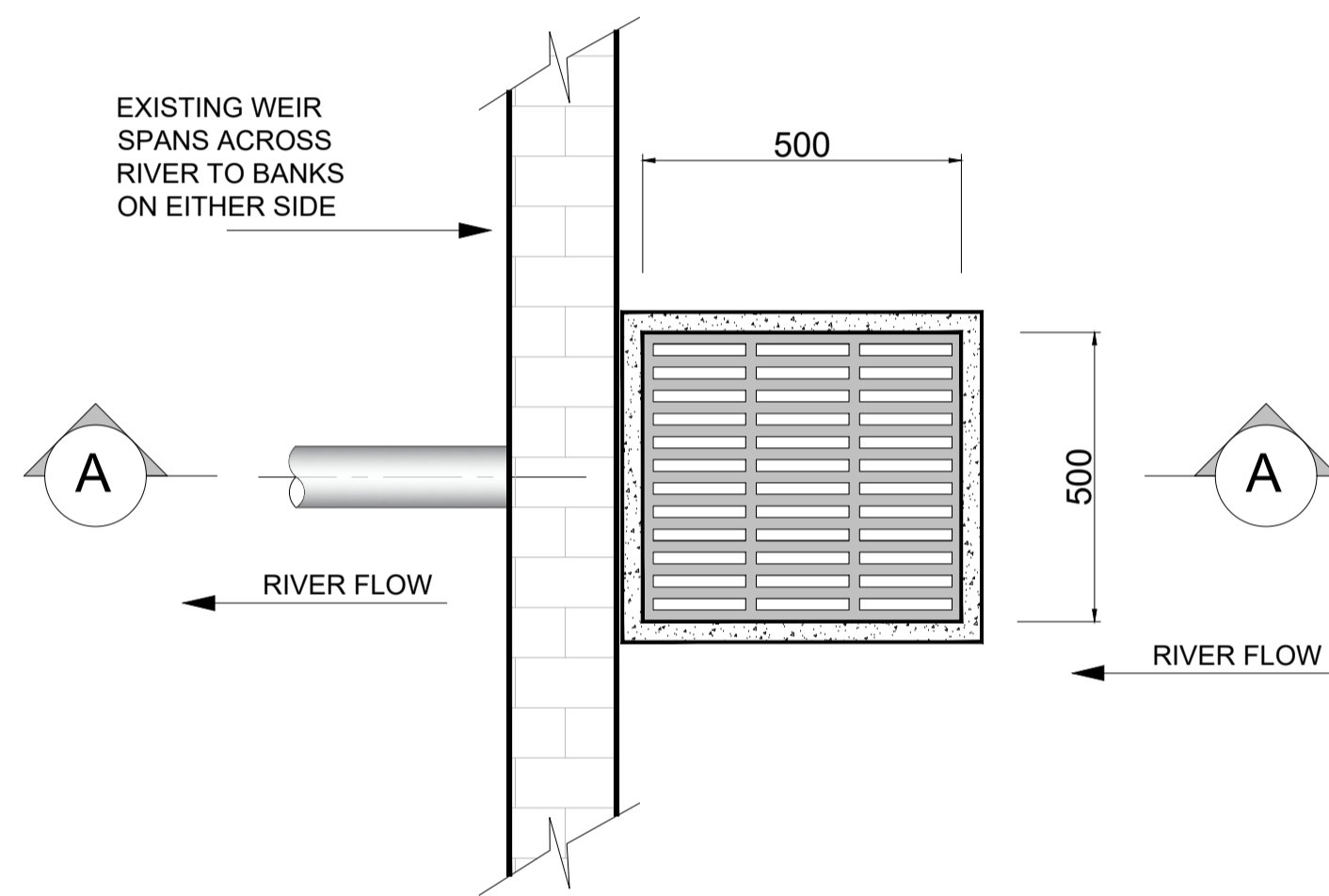
**TYPICAL DETAIL:
 RIVER INTAKE AT NODE W61**

DESIGNED BY: M. MOFOKENG	SIGNATURE AND DATE: 4 December 2023
DRAWN BY: R. KELSEY	SIGNATURE AND DATE: 4 December 2023
APPROVED BY: M. TSOAI Pr Eng.:20160198	SIGNATURE AND DATE: 4 December 2023
PROJECT NO 1159	DATE 4 December 2023

DRAWING NO

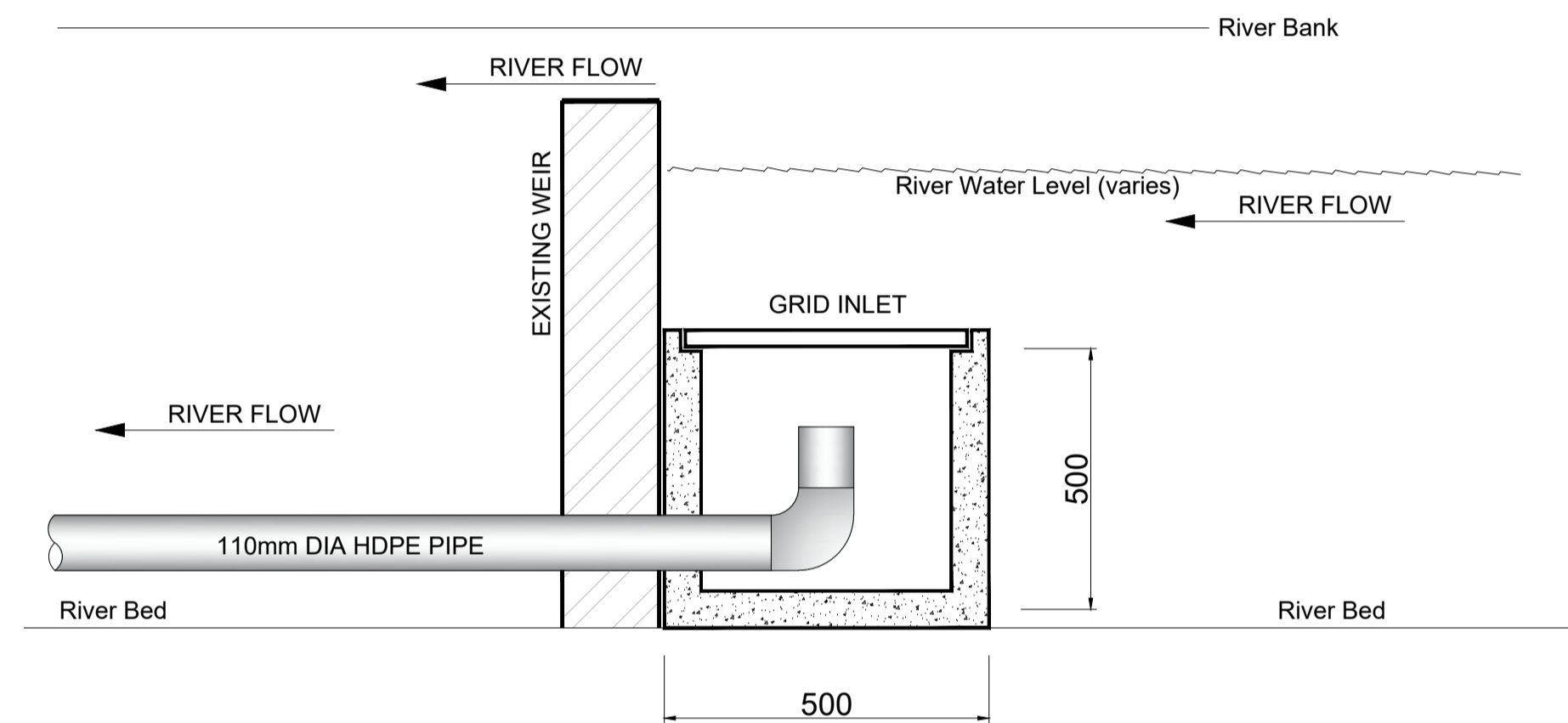
NT-2023-1159-111-001

SCALE	SHEET SIZE	REVISION
NTS	A1	0



**CONCRETE GRID INLET
 at Node W61
 PLAN VIEW**

Not to Scale - Schematic Representation



SECTION A-A

Not to Scale - Schematic Representation

GENERAL NOTES:

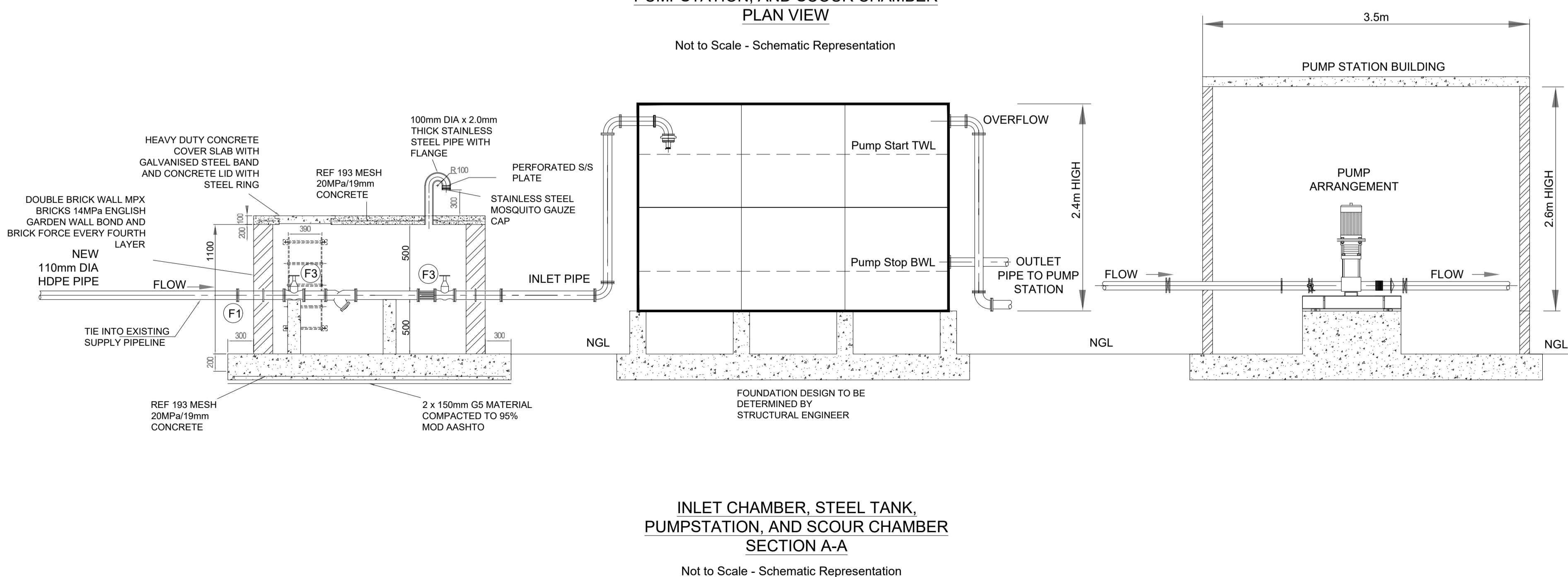
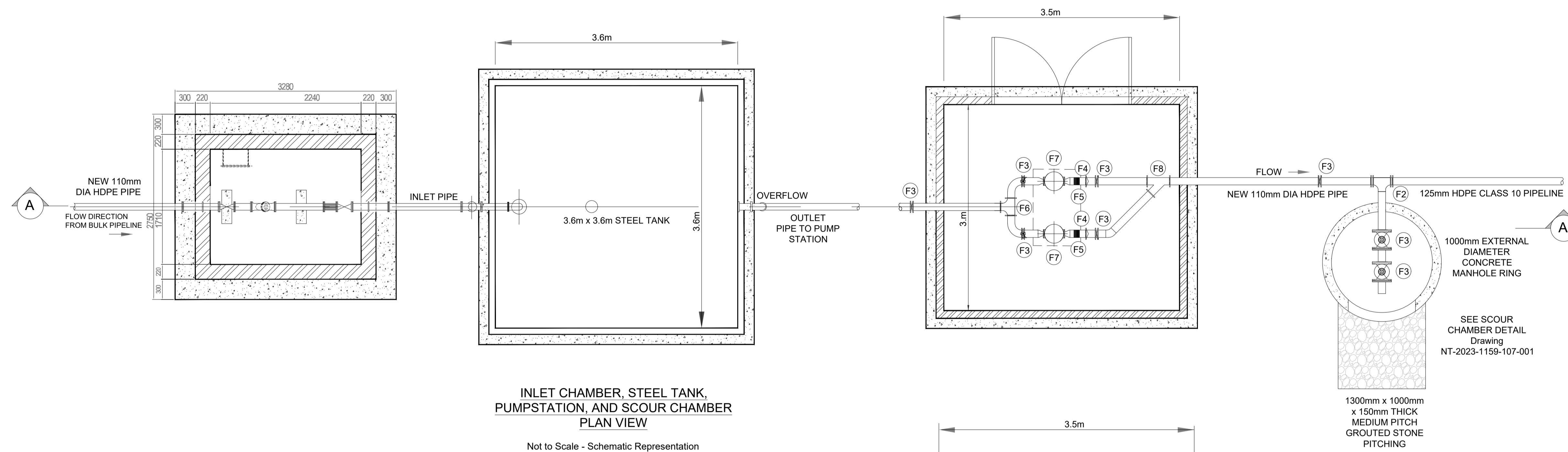
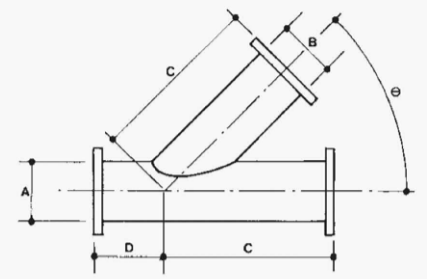
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ITEM	EQUIPMENT TYPE	MATERIAL	NOMINAL DIAMETER
F1	HDPE TO MILD STEEL FLANGE ADAPTOR	MILD STEEL EPOXY COATED	125mm
F2	SPECIAL T-PIECE, FLANGED ON FLANGED ACCORDING TO SANS 1123 TABLE 1000/3 WITH 50mm SPOOL PIECE WELDED TO BOTTOM	MILD STEEL EPOXY COATED	125mm
F3	ISOLATING VALVE (AVK OR SIMILAR APPROVED), NON RISING SPINDLE CAP TOP ANTI CLOCKWISE CLOSING. SANS 665 FLANGED BOTH ENDS ACCORDING TO SANS 1123 TABLE 1600/3	MILD STEEL EPOXY COATED	125mm
F4	NON-RETURN VALVE		125mm
F5	DISMANTLING JOINT		125mm
F6	FLANGED T-PIECE		125mm
F7	IN-LINE PUMP		125mm
F8	PIPE LATERAL JOIN		125mm

PIPE LATERAL JOIN

Item	Nominal diameter mm	Outside diameter mm	ANGLE 60° TO 90°		ANGLE 45° TO 59°		ANGLE 30° TO 44°	
			C	D	C	D	C	D
F8	125	139.7	290	200	400	150	600	150

LATERALS



For List of Reference Drawings, see Drawing Number: NT-2023-1159-101

REVISION INFORMATION

No.	DATE	DESCRIPTION:	BY
0	2023-11-07	ISSUED FOR CONCEPT	MT
1	2023-12-04	DETAILED DESIGN	MT

CLIENT



Mpumalanga Tourism and Parks Agency
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PROJECT DESCRIPTION

PROVISION OF THE DESIGNS, DEVELOPMENT OF BILL OF QUANTITY AND SUPERVISION SERVICE OF THE BULK WATER SUPPLY AT BLYDE RIVER CANYON NATURE RESERVE - POTHOLES

DISCIPLINE

CIVIL ENGINEERING

DRAWING DESCRIPTION

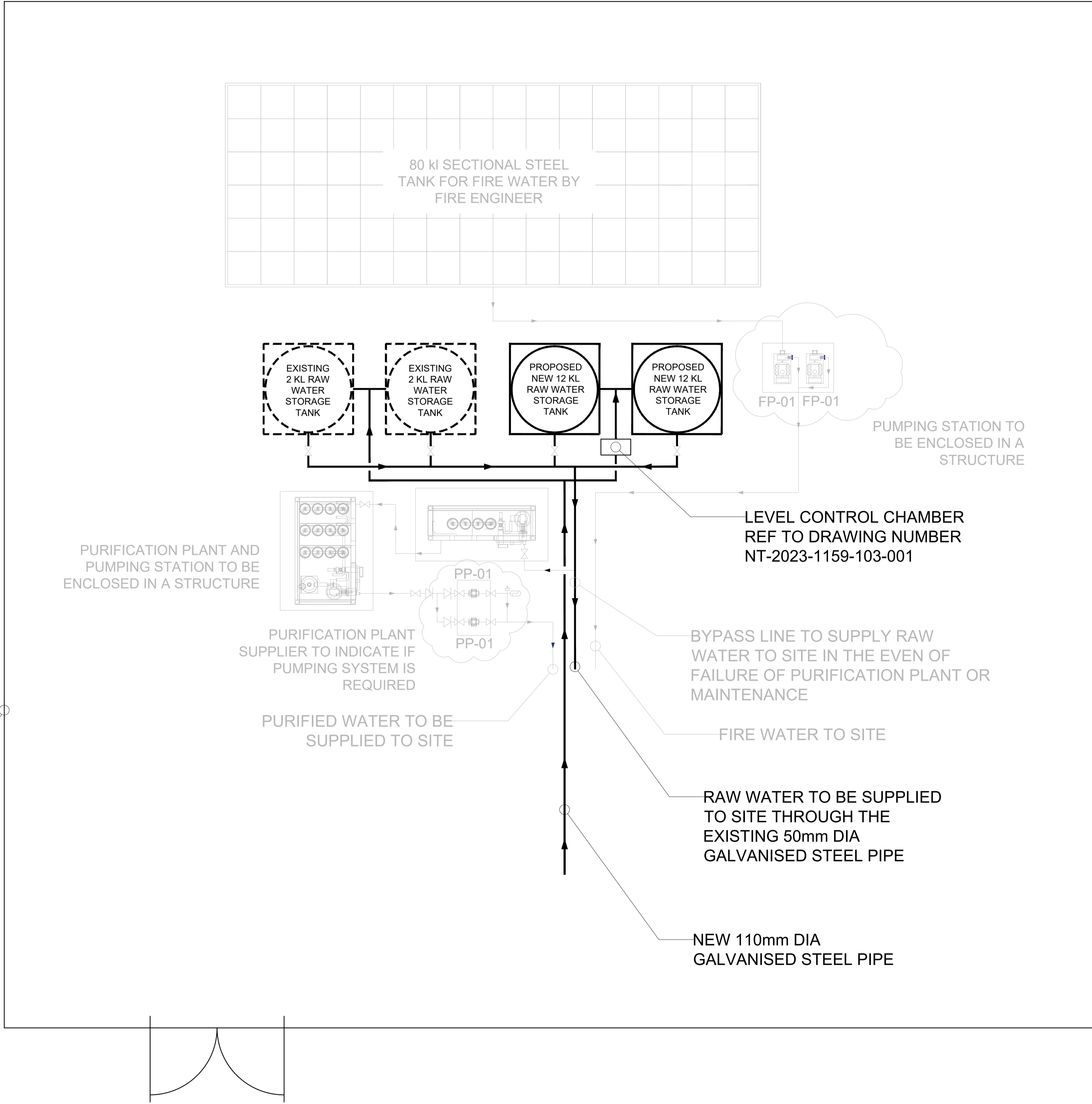
INTAKE TANK ARRANGEMENT AND DETAILS

DESIGNED BY: M. MOFOKENG	SIGNATURE AND DATE: 4 December 2023
DRAWN BY: R. KELSEY	SIGNATURE AND DATE: 4 December 2023
APPROVED BY: M. TSOAI Pr Eng.:20160198	SIGNATURE AND DATE: 4 December 2023
PROJECT NO 1159	DATE 4 December 2023

DRAWING NO

NT-2023-1159-112-001

SCALE	SHEET SIZE	REVISION
NTS	A1	1



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For List of Reference Drawings, see Drawing Number: NT-2023-1159-101

REVISION INFORMATION

No:	DATE	DESCRIPTION:	BY
0	2023-11-07	ISSUED FOR CONCEPT	MT
1	2023-12-04	DETAILED DESIGN	MT

CLIENT



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PROJECT DESCRIPTION

PROVISION OF THE DESIGNS, DEVELOPMENT OF BILL OF QUANTITY AND SUPERVISION SERVICE OF THE BULK WATER SUPPLY AT BLYDE RIVER CANYON NATURE RESERVE - POTHOLES

DISCIPLINE

CIVIL ENGINEERING

DRAWING DESCRIPTION

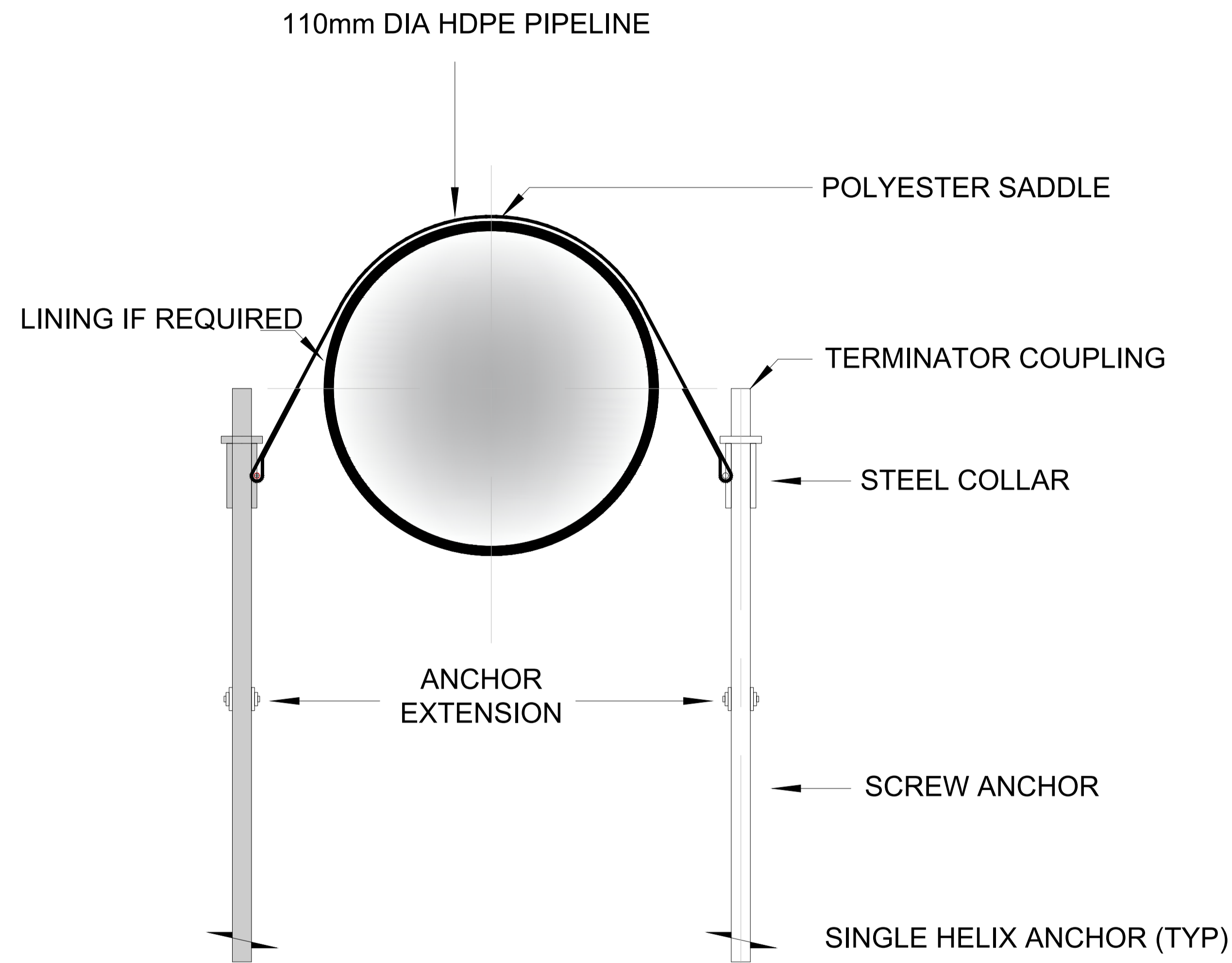
RSERVOIRS ARRANGEMENT AND DETAILS

DESIGNED BY: M. MOFOKENG	SIGNATURE AND DATE: 4 December 2023
DRAWN BY: R. KELSEY	SIGNATURE AND DATE: 4 December 2023
APPROVED BY: M. TSOAI Pr Eng.:20160198	SIGNATURE AND DATE: 4 December 2023
PROJECT NO 1159	DATE 4 December 2023

DRAWING NO

NT-2023-1159-113-001

SCALE	SHEET SIZE	REVISION
NTS	A1	1



SECTION - HDPE PIPE ANCHOR ARRANGEMENT
Not to Scale - Schematic Representation

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For List of Reference Drawings, see Drawing Number: NT-2023-1159-101

REVISION INFORMATION

No:	DATE	DESCRIPTION:	BY
0	2023-12-04	DETAILED DESIGN	MT

CLIENT



Mpumalanga Tourism and Parks Agency
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Mpumalanga, 1200
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PROJECT DESCRIPTION

PROVISION OF THE DESIGNS, DEVELOPMENT OF BILL OF QUANTITY AND SUPERVISION SERVICE OF THE BULK WATER SUPPLY AT BLYDE RIVER CANYON NATURE RESERVE - POTHOLES

DISCIPLINE

CIVIL ENGINEERING

DRAWING DESCRIPTION

TYPICAL DETAIL
SECTION - HDPE PIPE ANCHOR

DESIGNED BY: M. MOFOKENG	SIGNATURE AND DATE: 4 December 2023
DRAWN BY: R. KELSEY	SIGNATURE AND DATE: 4 December 2023
APPROVED BY: M. TSOAI Pr Eng.:20160198	SIGNATURE AND DATE: 4 December 2023
PROJECT NO 1159	DATE 4 December 2023
DRAWING NO	






NT-2023-1159-114-001

SCALE	SHEET SIZE	REVISION
NTS	A1	0



ELECTRICAL WORKS DRAWINGS



LIGHTING LEGEND	
	15w LED WALL MOUNTED BULKHEAD
	36w LED SURFACE MOUNTED VAPOUR LINE
	SINGLE LIGHT SWITCH
	DAYLIGHT SWITCH
	DISTRIBUTION BOARD

REVISION INFORMATION

No:	DATE	DESCRIPTION:	BY
F1	08/10/2024	ISSUED FOR TENDER	LM

CLIENT



CONSULTANT



AMCE
20 Barotsa Ave
Midrand
1685
Tel: 011 312 1589

PROJECT DESCRIPTION

BLYDE RIVER CANYON
NATURE RESERVE

DISCIPLINE

ELECTRICAL

DRAWING DESCRIPTION

DOMESTIC PUMP HOUSE -
LIGHTING LAYOUT

DESIGNED BY: **L. MOSHUPYA** SIGNATURE AND DATE:

CHECKED BY: **A. SKOSANA** SIGNATURE AND DATE:

APPROVED BY: **M. BOOI** SIGNATURE AND DATE:

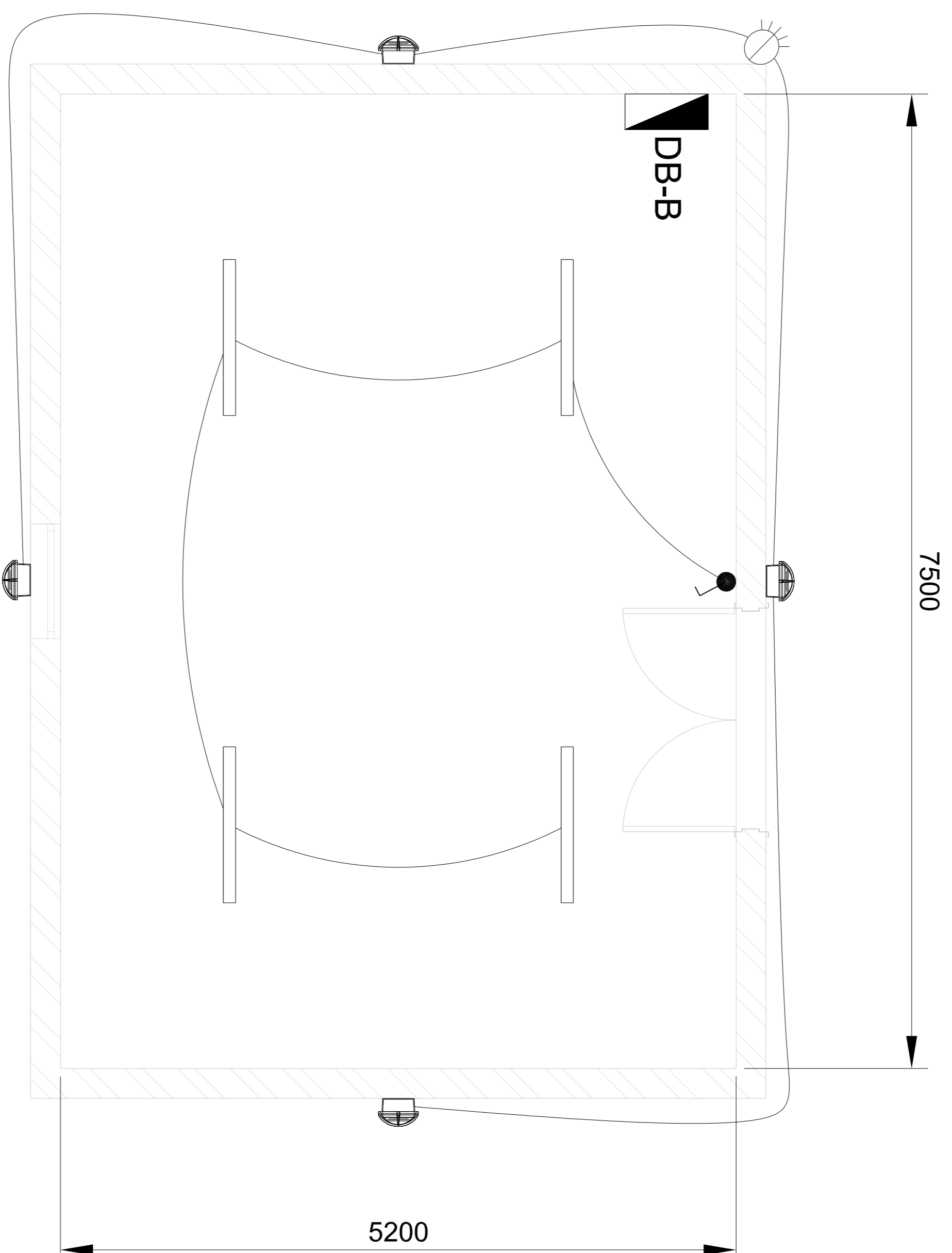
P: Tech Eng. 201270286






PROJECT NO: **1159** DATE: **04 OCTOBER 2023**

DRAWING NO:

NT06/1159/400/001

SCALE: **1:20** SHEET SIZE: **A1** REVISION: **F1**



LIGHTING LEGEND	
	15w LED WALL MOUNTED BULKHEAD
	36w LED SURFACE MOUNTED VAPOUR LINE
	SINGLE LIGHT SWITCH
	DAYLIGHT SWITCH
	DISTRIBUTION BOARD

REVISION INFORMATION

No:	DATE	DESCRIPTION:	BY
E1	12/12/2023	PRELIMINARY / DETAILED DESIGN	LM
F1	08/10/2024	ISSUED FOR TENDER	LM

CLIENT



CONSULTANT



AMCE
20 Barotia Ave
Midrand
1685
Tel: 011 312 1589

PROJECT DESCRIPTION

BLYDE RIVER CANYON
NATURE RESERVE

DISCIPLINE

ELECTRICAL

DRAWING DESCRIPTION

FIRE PUMP HOUSE - LIGHTING
LAYOUT

DESIGNED BY: **L. MOSHUPYA**

SIGNATURE AND DATE:

CHECKED BY: **A. SKOSANA**

SIGNATURE AND DATE:

APPROVED BY: **M. BOOI**

SIGNATURE AND DATE:

PROJECT NO: **1159**

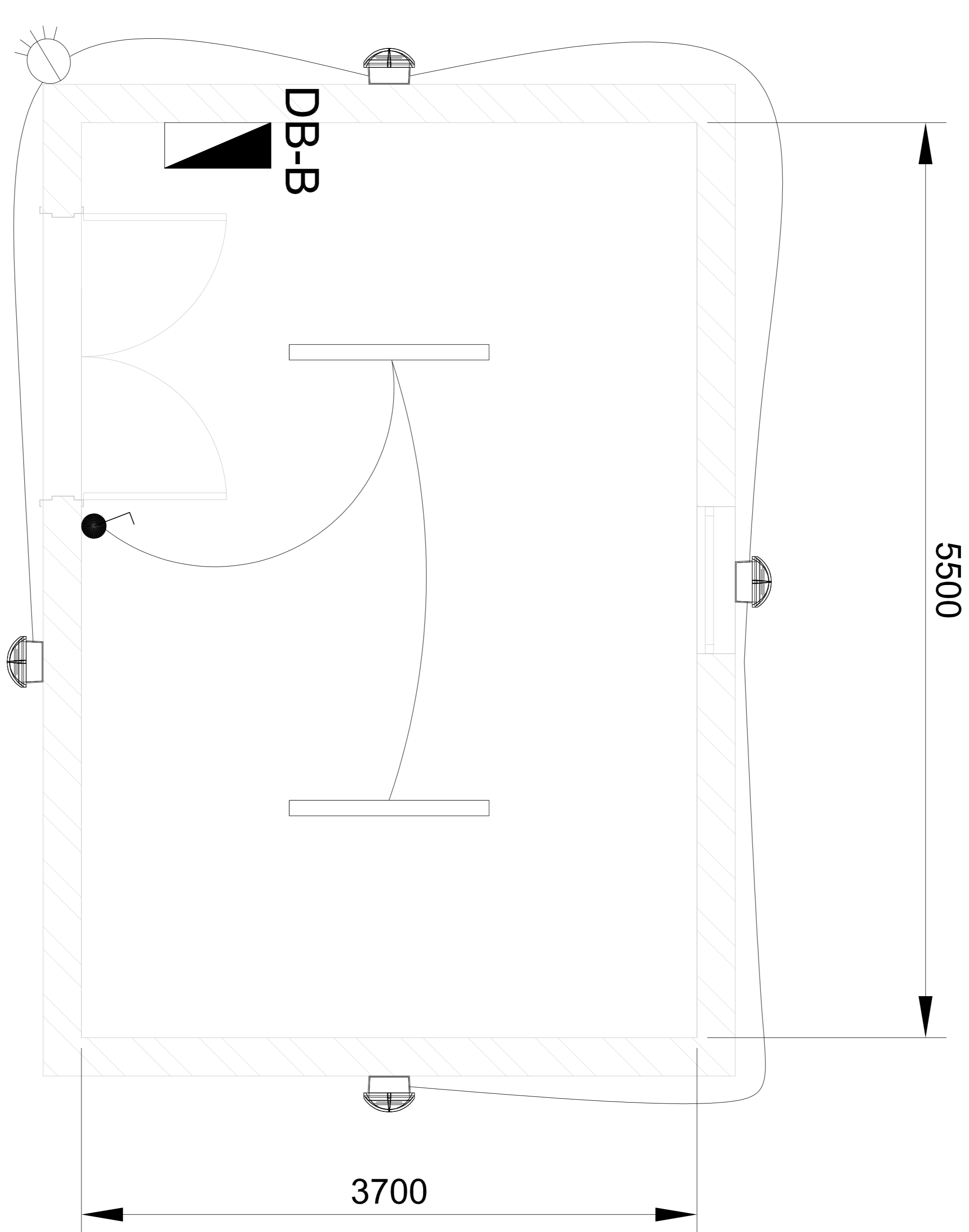
DATE: **04 OCTOBER 2023**






DRAWING NO: **NT06/1159/400/002**

SCALE: **1:20**

SHEET SIZE: **A1**

REVISION: **F1**



LIGHTING LEGEND	
	15w LED WALL MOUNTED BULKHEAD
	36w LED SURFACE MOUNTED VAPOUR LINE
	SINGLE LIGHT SWITCH
	DAYLIGHT SWITCH
	DISTRIBUTION BOARD

REVISION INFORMATION

No:	DATE	DESCRIPTION:	BY
E1	12/12/2023	DETAILED DESIGN	LM
F1	09/10/2024	ISSUED FOR TENDER	LM

CLIENT:



CONSULTANT



AMNCE
20 Baviale Ave
Midrand
1655
Tel: 011 312 1569

PROJECT DESCRIPTION
BLYDE RIVER CANYON
NATURE RESERVE

DISCIPLINE
ELECTRICAL

DRAWING DESCRIPTION
CIVIL PUMP HOUSE - LIGHTING
LAYOUT

DESIGNED BY: L. MOSHUPYA
SIGNATURE AND DATE:

CHECKED BY: A. SKOSANA
SIGNATURE AND DATE:

P: Tech: 2020600443

APPROVED BY: M. BOOI
SIGNATURE AND DATE:

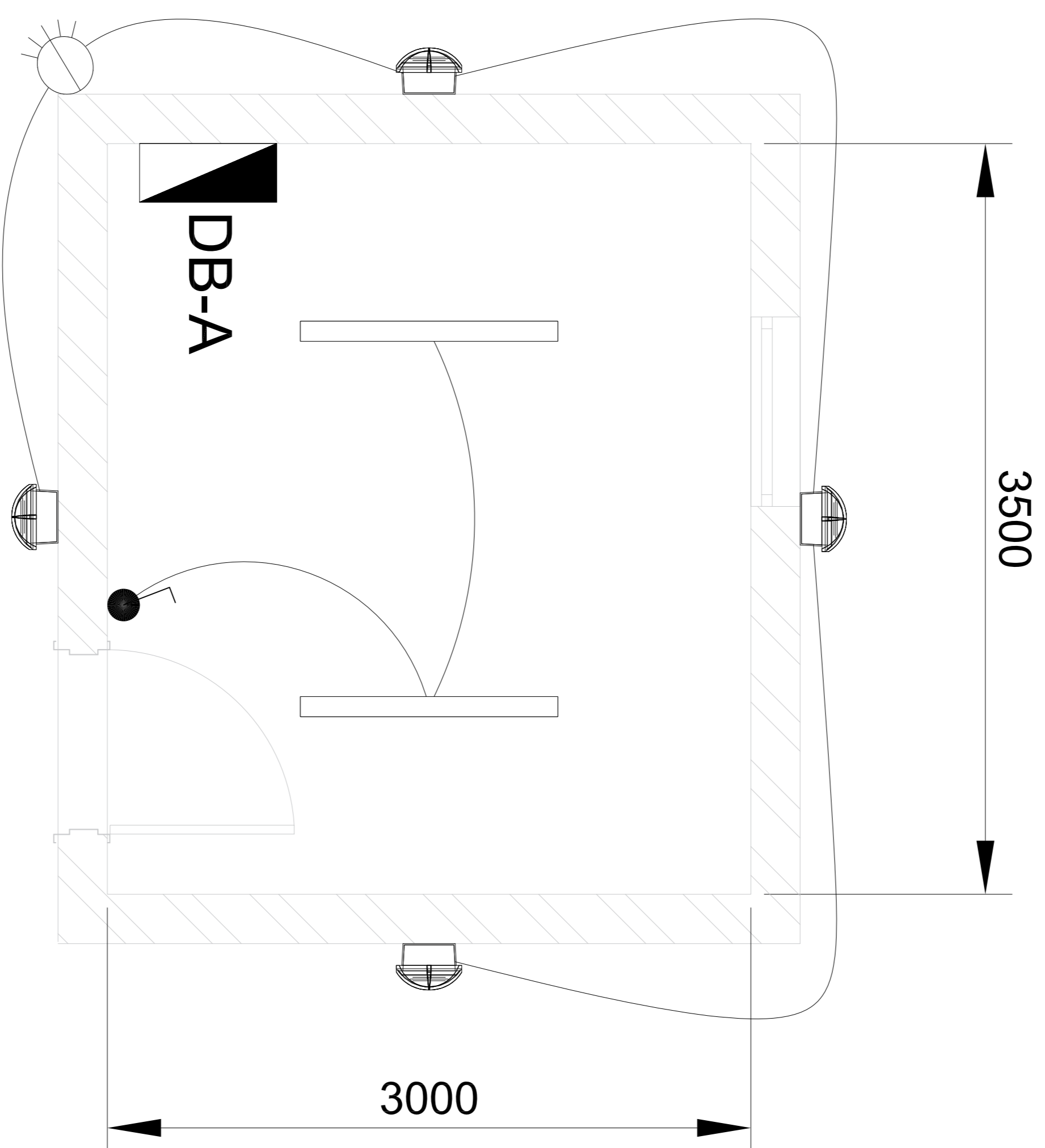
P: Tech Eng: 201270286

PROJECT NO: 1159
DATE: 04 OCTOBER 2023

DRAWING NO

NT06/1159/400/003

SCALE	SHEET SIZE	REVISION
1:20	A1	F1



SYMBOL	DESCRIPTION
⚡	SINGLE SWITCHED SOCKET OUTLET MOUNTED AT 300MM AFFL UNLESS STATED OTHERWISE
⚡	DISTRIBUTION BOARD COLOR ELECTRIC ORANGE FLUSH ARCHITRAVE AND LOCKABLE DOORS INSTALLED WITH TOP OF BOARD 2000MM AFFL
	ALL SOCKETS OUTLETS MUST HAVE A POWER COATED BOTTOM SANS 1041 AND SANS 1042

REVISION INFORMATION

No:	DATE	DESCRIPTION:	BY
F1	08/01/2024	ISSUED FOR TENDER	LM

CLIENT

CONSULTANT



 AMCE
 20 Baviaa Ave
 Midrand
 1685
 Tel: 011 312 1589

PROJECT DESCRIPTION
 BLYDE RIVER CANYON
 NATURE RESERVE

DISCIPLINE
 ELECTRICAL

DRAWING DESCRIPTION

**DOMESTIC PUMP HOUSE -
 SMALL POWER LAYOUT**

DESIGNED BY: L. MOSHUPYA
SIGNATURE AND DATE:

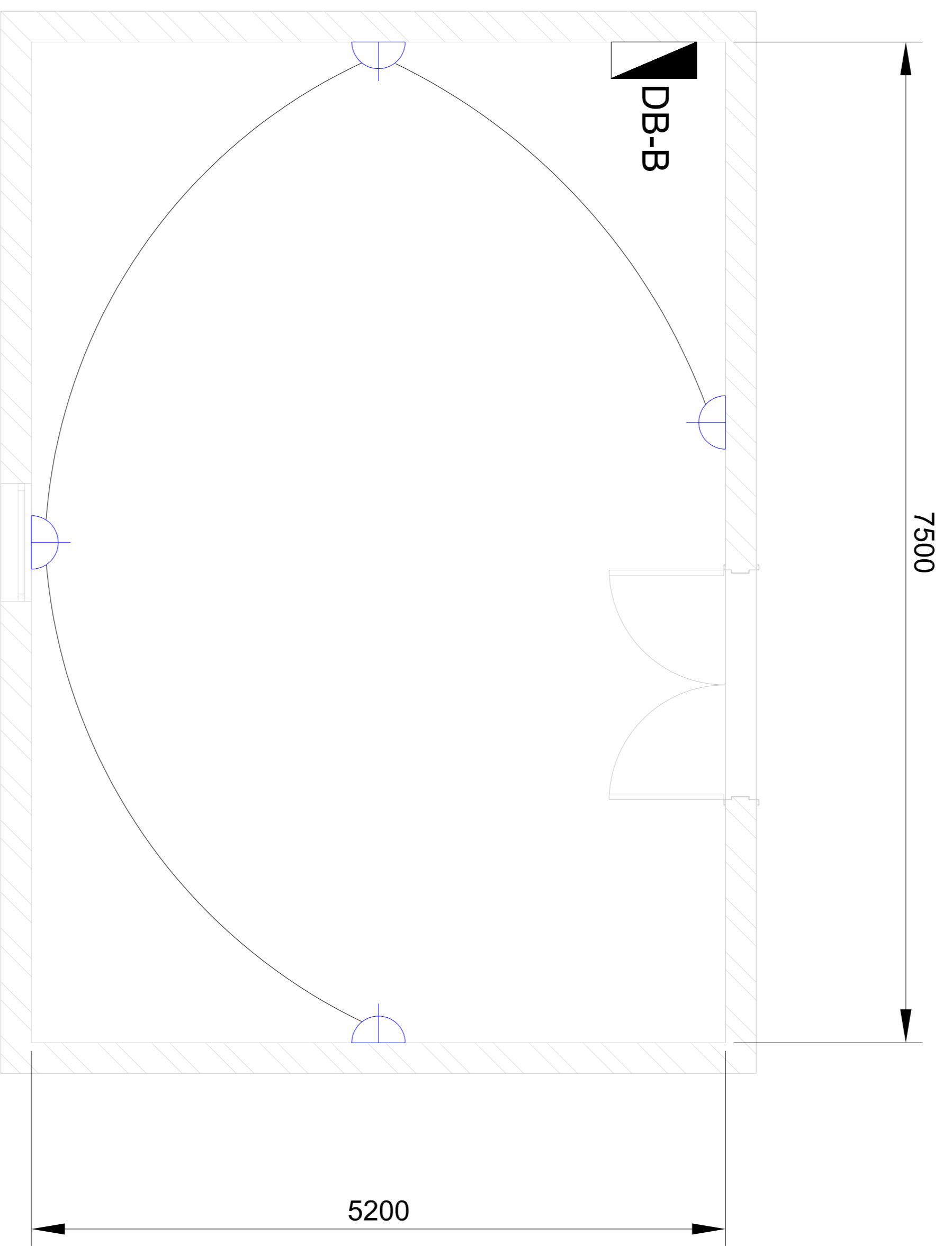
CHECKED BY: A. SKOSANA
Pt Tech: 202600443
SIGNATURE AND DATE:

APPROVED BY: M. BOOI
Pt Tech Eng: 201270286
SIGNATURE AND DATE:

PROJECT NO 1159
DATE 04 OCTOBER 2023

DRAWING NO NT06/1159/401/001

SCALE	SHEET SIZE	REVISION
1:20	A1	F1



SYMBOL	DESCRIPTION
	SINGL E SWITCHED SOCKET OUTLET MOUNTED AT 300MM APFL UNLESS STATED OTHERWISE
	DISTRIBUTION BOARD COLOR ELECTRIC ORANGE FLUSH ASSEMBLY AND LOCKABLE DOORS INSTALLED WITH TOP OF BOARD 2000MM A.F.F.L.
	ALL SOCKETS OUTLETS MUST HAVE A POWDER COATED TOP AND BOTTOM AND MUST ACCOMMODATE BOTH SANS 1641 AND SANS 1642

REVISION INFORMATION

No:	DATE	DESCRIPTION:	BY
E1	12/12/2023	PRELIMINARY / DETAILED DESIGN	LM
F1	09/10/2024	ISSUED FOR TENDER	LM

CLIENT



CONSULTANT
amce
 AMCE
 20 Barotsa Ave
 Midrand
 1685
 Tel: 011 312 1589

PROJECT DESCRIPTION
**BLYDE RIVER CANYON
 NATURE RESERVE**

DISCIPLINE
ELECTRICAL

DRAWING DESCRIPTION
**FIRE PUMP HOUSE - SMALL
 POWER LAYOUT**

DESIGNED BY: **L. MOSHUPYA** SIGNATURE AND DATE:

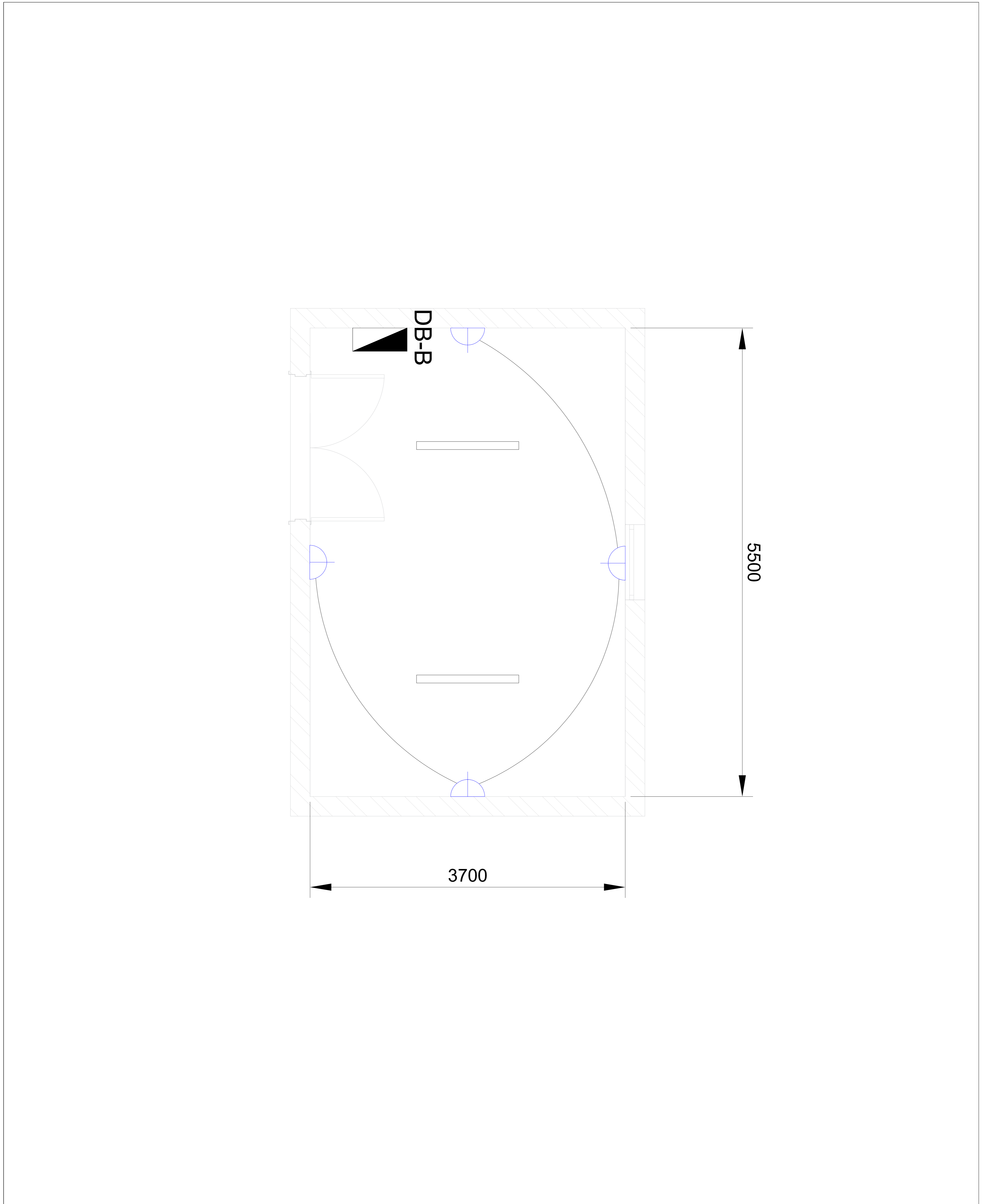
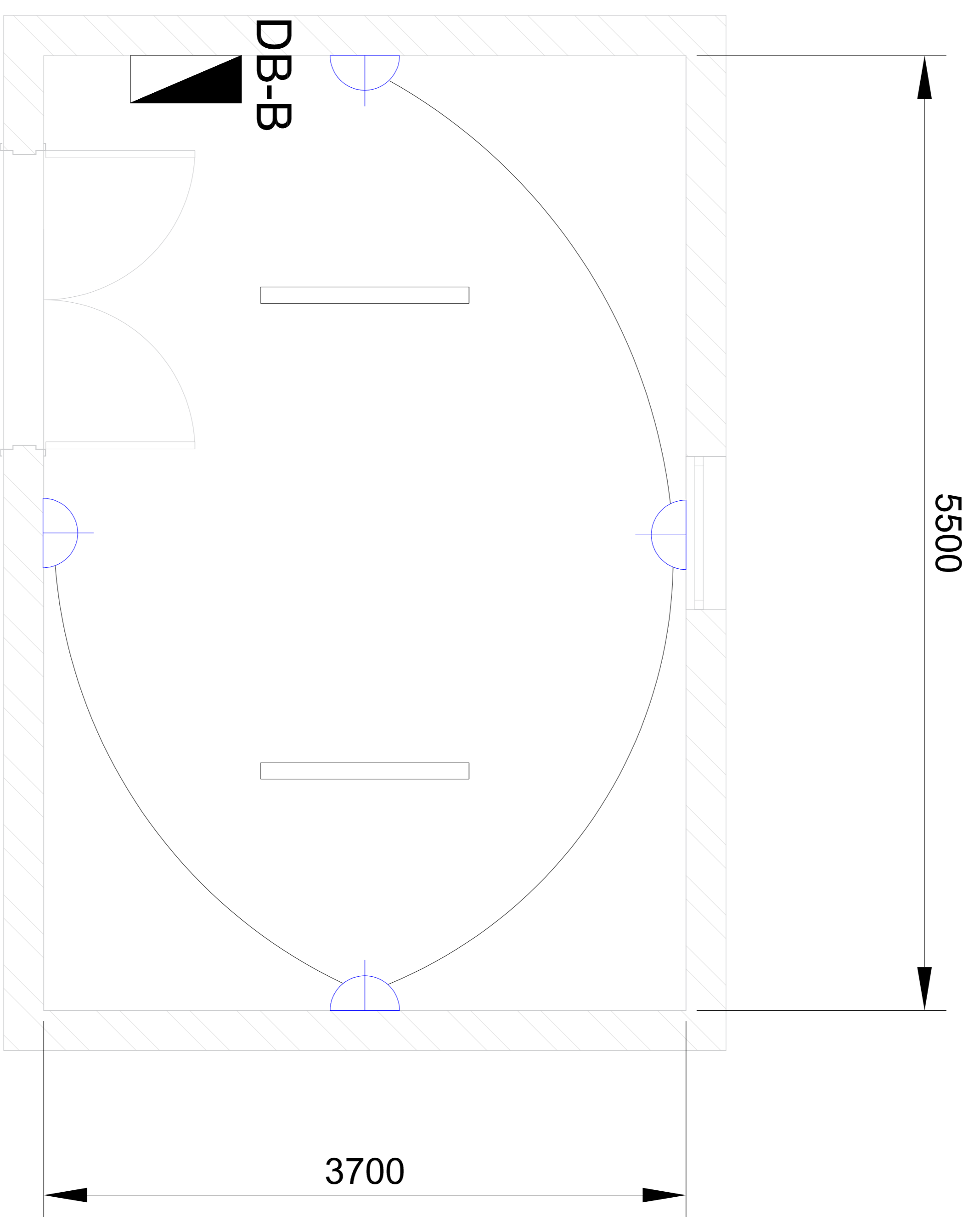
CHECKED BY: **A.SIKOSANA** SIGNATURE AND DATE:
 P1 Tech: 202600443

APPROVED BY: **M. BOOI** SIGNATURE AND DATE:
 P1 Tech Eng: 201270286

PROJECT NO: **1159** DATE: **04 OCTOBER 2023**

DRAWING NO: **NT06/1159/401/002**

SCALE	SHEET SIZE	REVISION
1:20	A1	F1



SYMBOL	DESCRIPTION
	SINGLE SWITCHED SOCKET OUTLET MOUNTED AT 300MM AFFL UNLESS STATED OTHERWISE
	DISTRIBUTION BOARD COLOR ELECTRIC ORANGE FLUSH ACQUISITIVE AND LOCKABLE DOORS INSTALLED WITH TOP OF BOARD 2000MM A.F.F.L.
	ALL SOCKET OUTLETS MUST HAVE A POWDER COATED FINISH AND MUST ACCOMMODATE BOTH 16A AND 32A 16A2

REVISION INFORMATION

No.	DATE	DESCRIPTION:	BY
E1	12/12/2023	DETAILED DESIGN	LM

CLIENT



Mpumalanga
TOURISM AND PARKS AGENCY

CONSULTANT



amce

AMCE
20 Barotsa Ave
Midrand
1685
Tel: 011 312 1589

PROJECT DESCRIPTION

**BLYDE RIVER CANYON
NATURE RESERVE**

DISCIPLINE

ELECTRICAL

DRAWING DESCRIPTION

**CIVIL PUMP HOUSE - SMALL
POWER LAYOUT**

DESIGNED BY: **L. MOSHUPYA**

SIGNATURE AND DATE:

CHECKED BY: **A. SKOSANA**

Pt Tech: 202600443

SIGNATURE AND DATE:

APPROVED BY: **M. BOOI**

Pt Tech Eng: 201270286

SIGNATURE AND DATE:

PROJECT NO: **1159**

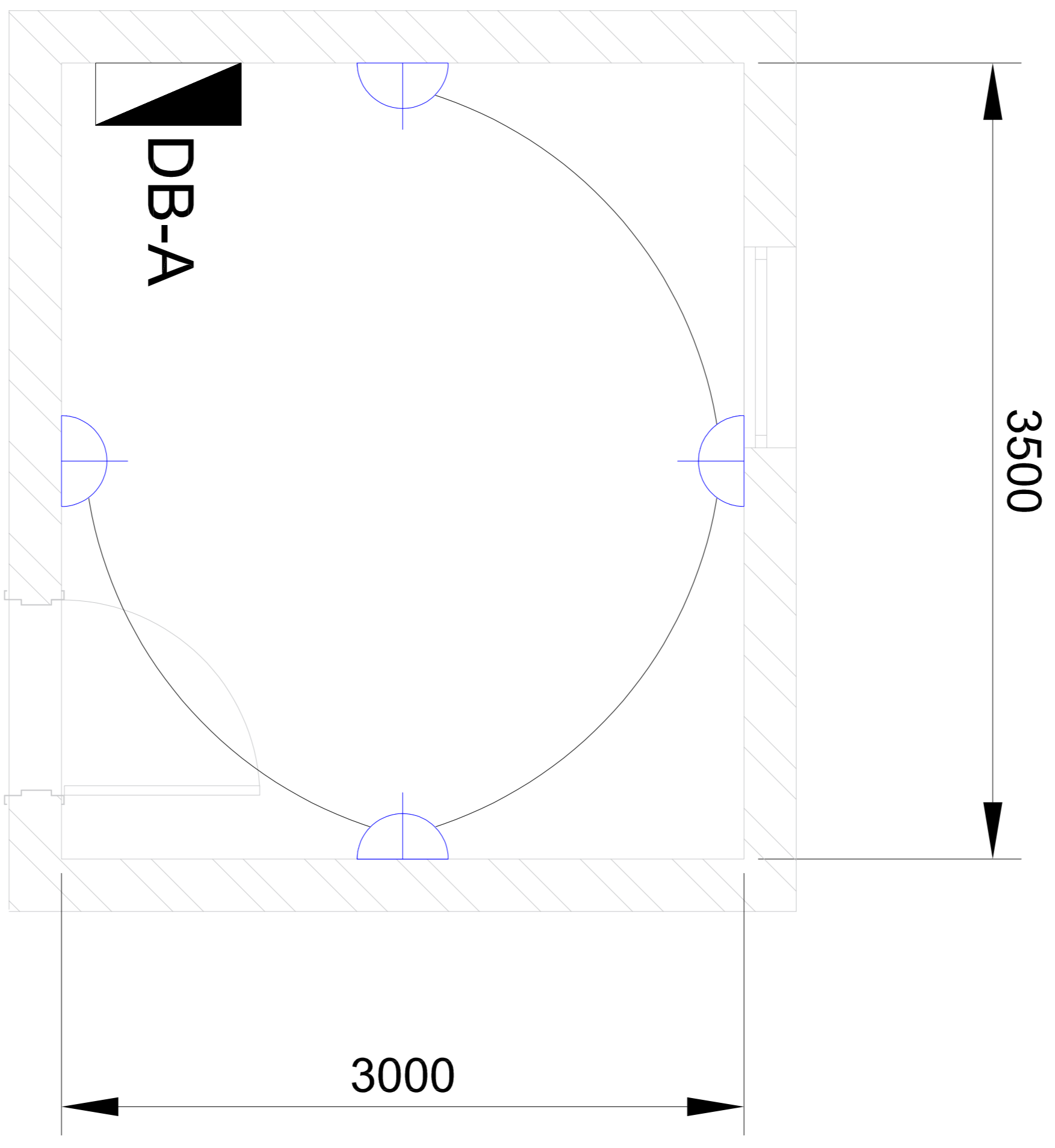
DATE: **04 OCTOBER 2023**

DRAWING NO: **NT06/1159/401/003**

SCALE: **1:20**

SHEET SIZE: **A1**

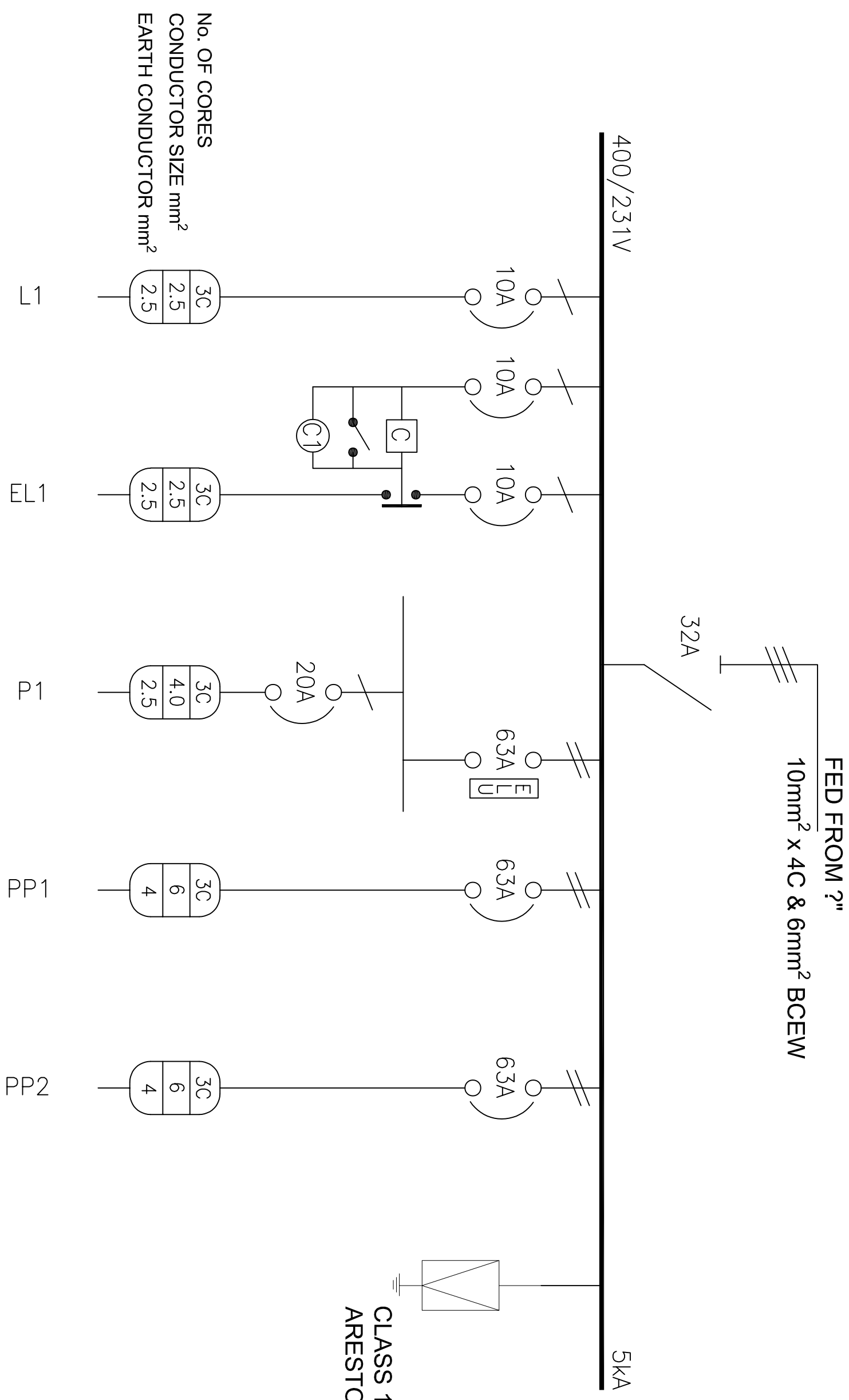
REVISION: **E1**



SYMBOL	DESCRIPTION
	SINGLE SWITCHED SOCKET OUTLET MOUNTED AT 300MM AFFL UNLESS STATED OTHERWISE
	DISTRIBUTION BOARD COLOR ELECTRIC ORANGE FLUSH ACQUISITIVE AND LOCKABLE DOORS INSTALLED WITH TOP OF BOARD 2000MM A.F.F.L.
	ALL SOCKET OUTLETS MUST HAVE A POWDER COATED FINISH AND MUST ACCOMMODATE BOTH 16A AND 32A 16A2

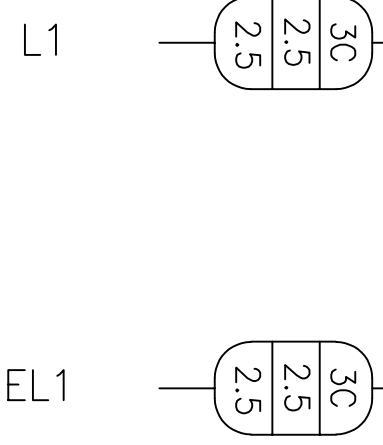
DB-A

LEGEND	
	CONDUCTOR
	SINGLE POLE CIRCUIT BREAKER.
	TWO POLE CIRCUIT BREAKER.
	THREE POLE CIRCUIT BREAKER.
	CLASS 1 AND 2 SURGE ARRESTOR.



CLASS 1 & 2 SURGE
ARRESTOR

No. OF CORES
CONDUCTOR SIZE mm²
EARTH CONDUCTOR mm²



1

1

2

CLIENT



CONSULTANT



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20 Barakia Ave
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Web: http://www.amce.co.za

REVISION INFORMATION

No.	Date	Description	BY
E1	12-12-2023	PRELIMINARY / DETAILED DESIGN	L.M
F1	22-02-2024	PRELIMINARY / DETAILED DESIGN	L.M

PROJECT DESCRIPTION:

BLYDE RIVER CANYON
NATURE RESERVE

ELECTRICAL

DRAWING DESCRIPTION:

DB-A LAYOUT

DRAWN BY:

L. MPHOLFOLO

SIGNATURE & DATE

1159

PROJECT NO

CHECKED BY:

A. SKOSANA
Pr. Tech: 2020600443

SIGNATURE & DATE

DRAWING NO
KN06/1159/420/001

DATE:

2023-10-04

SCALE:

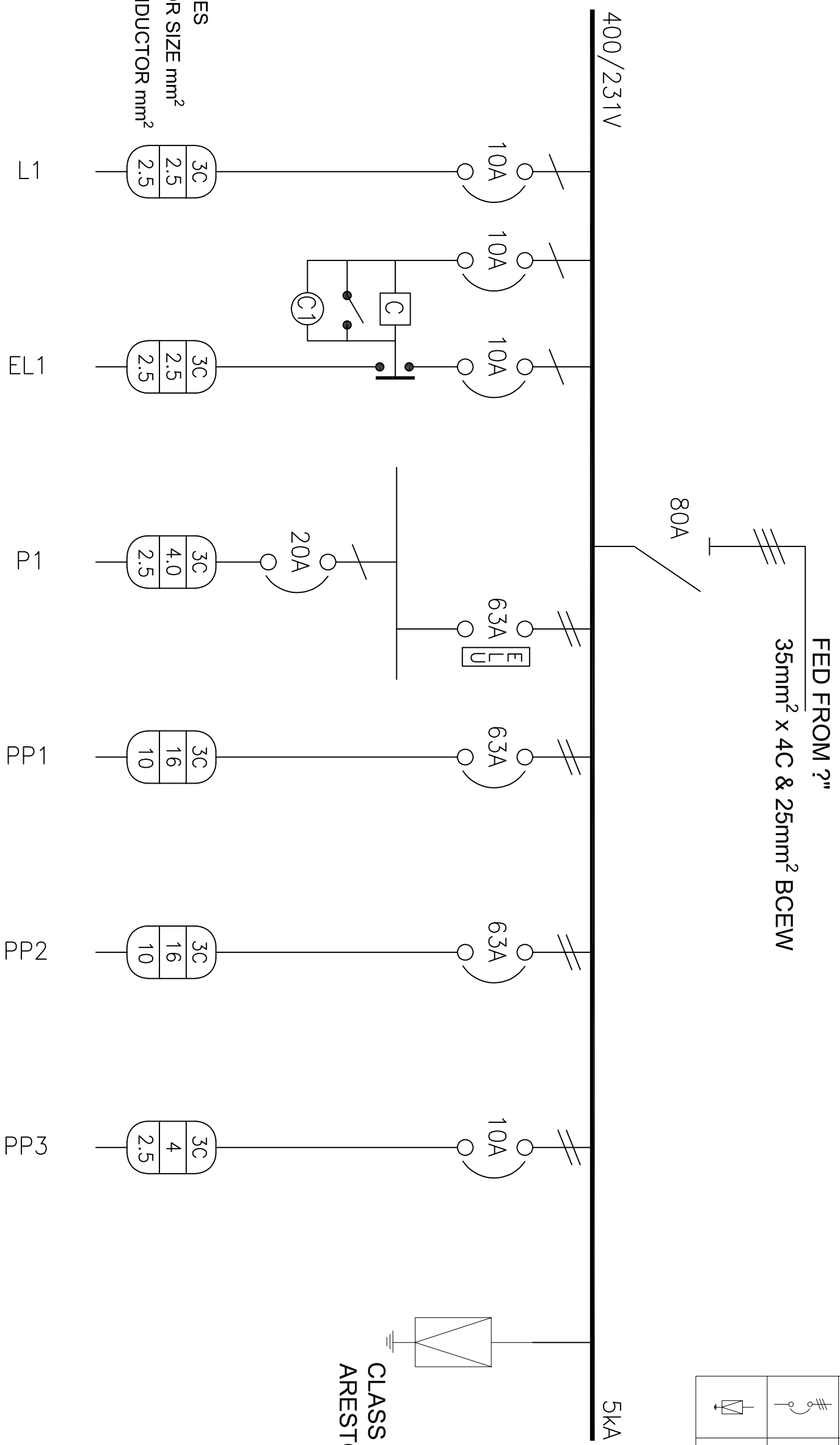
NTS

REV:

F1

DB-B

LEGEND	
	CONDUCTOR
	SINGLE POLE CIRCUIT BREAKER.
	TWO POLE CIRCUIT BREAKER.
	THREE POLE CIRCUIT BREAKER.
	CLASS 1 AND 2 SURGE ARRESTOR.



No. OF CORES
CONDUCTOR SIZE mm²
EARTH CONDUCTOR mm²

1	3C 2.5 2.5	10A	1
E1	3C 2.5 2.5	10A	E1
D1	3C 4.0 2.5	20A	D1
PP1	3C 16 10	63A	PP1
PP2	3C 16 10	63A	PP2
PP3	3C 4 2.5	10A	PP3

CLASS 1 & 2 SURGE
ARRESTOR

CLIENT



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20 Baxendale Ave
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Web: http://www.amce.co.za

CONSULTANT

REVISION INFORMATION

No.	Date	Description	BY
E1	12-12-2023	PRELIMINARY / DETAILED DESIGN	L.M
F1	22-02-2024	PRELIMINARY / DETAILED DESIGN	L.M

PROJECT DESCRIPTION:
BLYDE RIVER CANYON
NATURE RESERVE

DISCIPLINE:
ELECTRICAL

DRAWING DESCRIPTION:
DB-B LAYOUT

DRAWN BY:
L. MPHOLFOLO

CHECKED BY:
A. SKOSANA
Pr Tech: 2020600443

APPROVED BY:
M. BOOI
Pr Tech Eng: 201270286

SIGNATURE & DATE

SIGNATURE & DATE

SIGNATURE & DATE

PROJECT NO
1159

DRAWING NO
KN06/1159/420/002

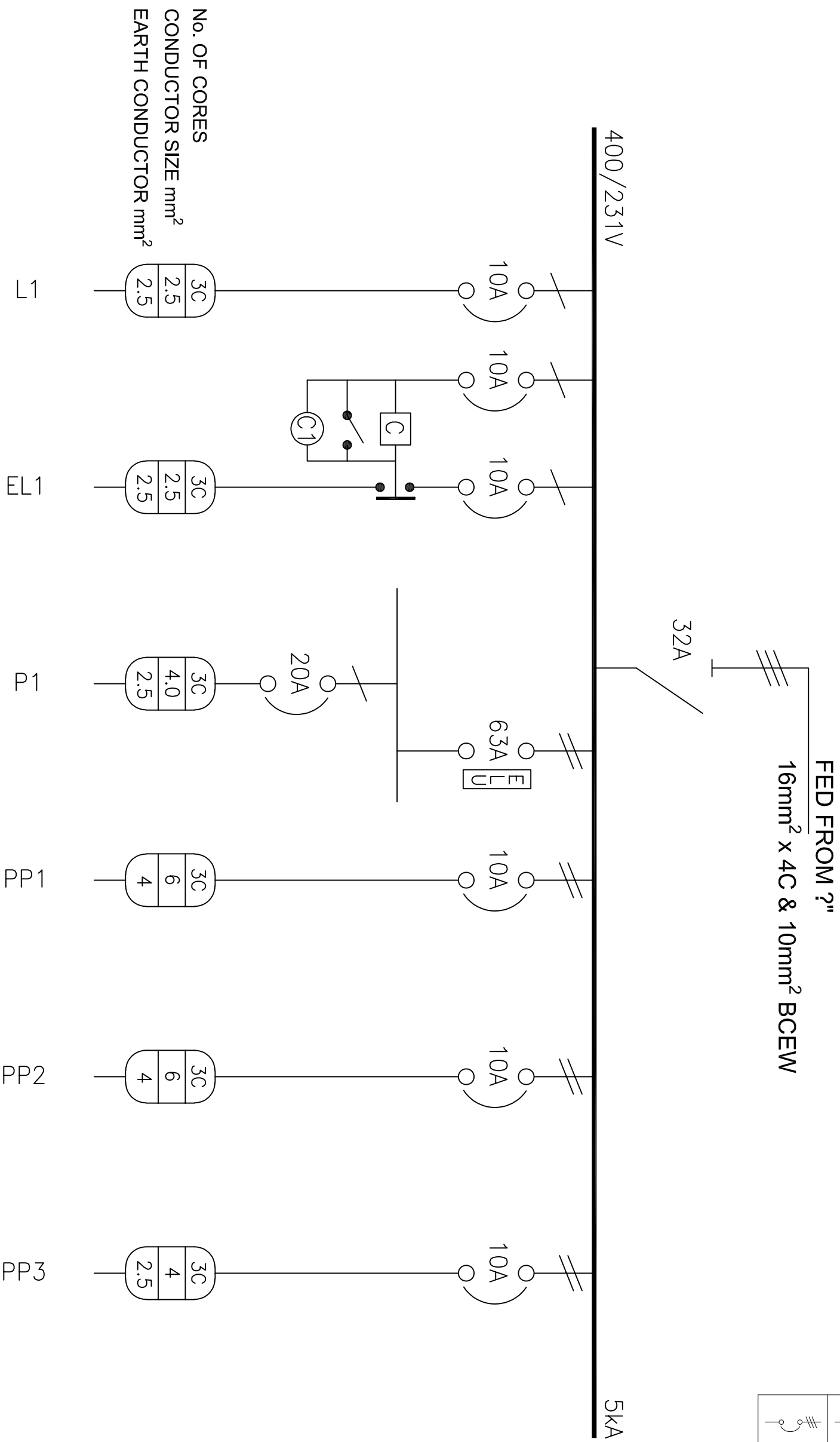
DATE:
2023-10-04

SCALE:
NTS

REV:
F1

DB-C

LEGEND	
	CONDUCTOR
	SINGLE POLE CIRCUIT BREAKER.
	TWO POLE CIRCUIT BREAKER.
	THREE POLE CIRCUIT BREAKER.



No. OF CORES
CONDUCTOR SIZE mm²
EARTH CONDUCTOR mm²

L	10A	3C	2.5	2.5
EL1	10A	3C	2.5	2.5
P1	20A	3C	4.0	2.5
PP1	10A	3C	6	4
PP2	10A	3C	6	4
PP3	10A	3C	4	2.5

CLIENT



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20 Bayside Ave
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Tel: 011 312 1569
Web: http://www.amce.co.za

CONSULTANT

REVISION INFORMATION

No.	Date	Description	BY
E1	12-12-2023	PRELIMINARY / DETAILED DESIGN	L.M
F1	22-02-2024	PRELIMINARY / DETAILED DESIGN	L.M

PROJECT DESCRIPTION:

BLYDE RIVER CANYON
NATURE RESERVE

ELECTRICAL

DISCIPLINE:

DB-C LAYOUT

DRAWN BY:

L. MPHOLFOLO

SIGNATURE & DATE

PROJECT NO

1159

CHECKED BY:

A. SKOSANA
Pr Tech: 2020600443

SIGNATURE & DATE

DRAWING NO

KN06/1159/420/003

APPROVED BY:

M. BOOI
Pr Tech Eng: 201270286

SIGNATURE & DATE

DATE:

2023-10-04

SCALE:

NTS

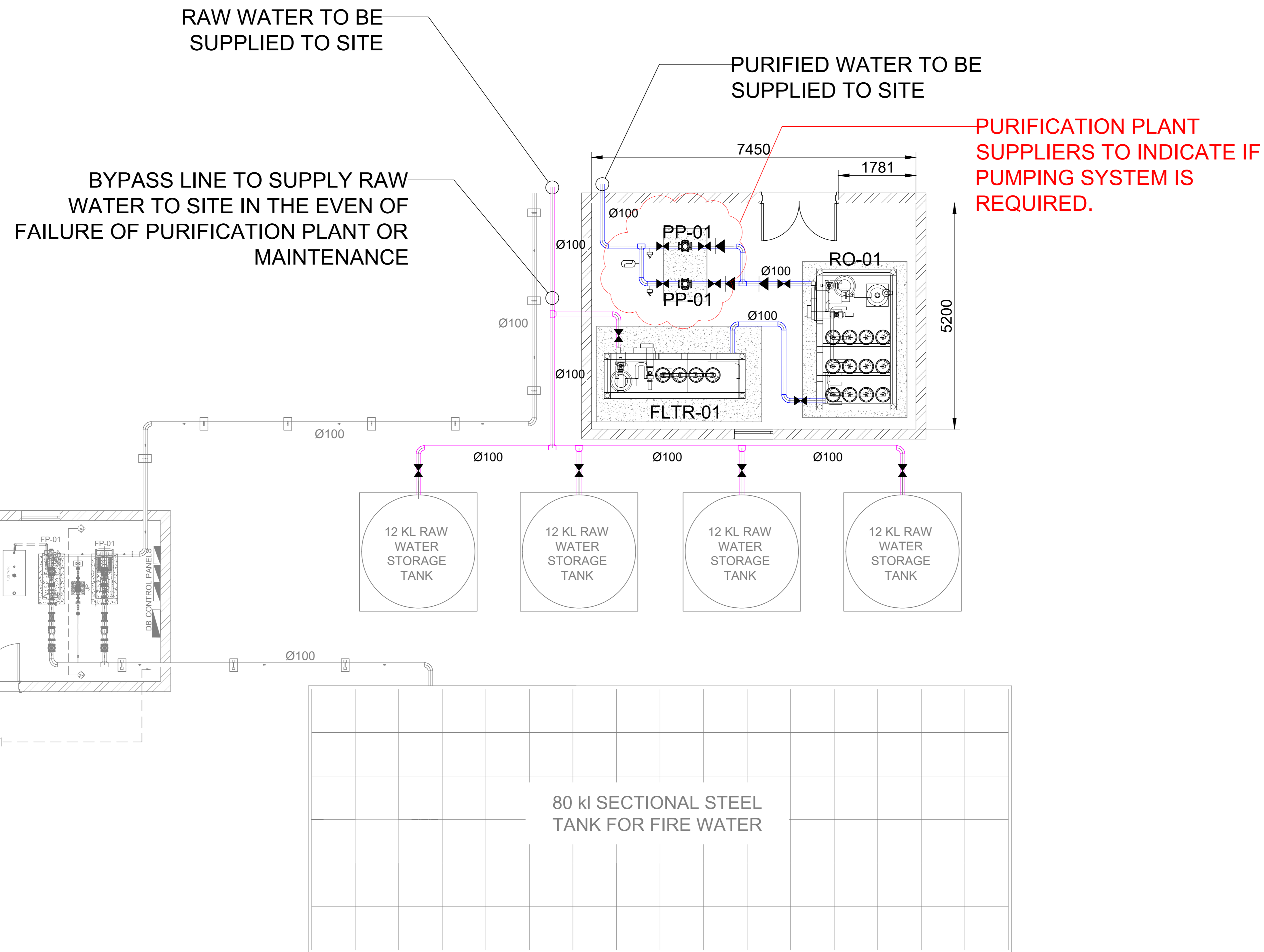
REV:

F1



WET SERVICES DRAWINGS





LEGEND	
	ISOLATING VALVE
	NON-RETURN VALVE
	PURIFIED WATER
	RAW WATER SUPPLY

NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION TECHNICAL SPECIFICATION.
2. THIS DRAWING SHALL BE USED FOR TENDER AND PLANNING PURPOSES ONLY.

- GENERAL AND NOTES:
1. ALL WORKS TO BE EXECUTED STRICTLY IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT AS AMENDED. AN OHSAS 18001 COMPLIANT H&M MANAGEMENT SYSTEM SHALL BE IMPLEMENTED BY THE RESPONSIBLE CONTRACTOR. RISKS INHERENT IN THE WORKS SHALL BE IDENTIFIED AND MITIGATED BY THE RESPONSIBLE CONTRACTOR.
 2. THIS DRAWING IS TO BE READ AND WORKS TO BE EXECUTED IN ACCORDANCE WITH THE HEALTH, SAFETY AND ENVIRONMENT (HSE) CODES AND GOOD ENGINEERING PRACTICE.
 3. WHERE A DISCREPANCY ARISES BETWEEN DRAWINGS AND THE SPECIFICATION, THE CONTRACT ADMINISTRATION MUST BE NOTIFIED PRIOR TO COMMENCEMENT OF INSTALLATION WORKS.
 4. THE DRAWING IS FOR CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING THE CONSTRUCTION WORKING DRAWINGS. WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH APPROVED SHOP DRAWINGS. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL A MINIMUM OF 14 DAYS PRIOR TO CONSTRUCTION COMMENCEMENT.
 5. THE DRAWING SHALL NOT BE SCALED. FIGURED DIMENSIONS ONLY SHALL BE USED.
 6. THE DRAWING IS CONTRACTOR'S RESPONSIBILITY. THE SUBCONTRACTOR SHALL ADHERE TO THIS COORDINATION PRINCIPLE AND SHALL NOTIFY ALL ARCHITECTS, ENGINEERS, INCLUDING STRUCTURAL AND OTHER SERVICE DESIGN DRAWINGS PERTAINING TO THE WORKS. THE SUBCONTRACTOR SHALL ACCURATELY IDENTIFY WITH THE GENERAL CONTRACTOR AND/OR ALL OTHER SERVICES AND INSURE THAT ALL WORKS WORK (IF SHALL NOT DESTROY THE FINISH OR FUTURE MAINTENANCE OF THE WORKS).
 7. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR CORRECT FIELD DIMENSIONS, CLEARANCES AND HEIGHTS. QUANTITIES, FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION COORDINATION OF WORK SHALL BE THE FACTORY OPERATOR.
 8. THE PROVISION OF STORAGE AND INSTALLATION OF EXPOSED SERVICES SHALL BE IN ACCORDANCE WITH ARCHITECTS DRAWINGS.
 9. EXPOSED SERVICES COLOURS SHALL BE TO ARCHITECTS SPECIFICATION. ALL EXPOSED PIPING TO BE PAINTED TO AN APPROVED COLOUR UNLESS OTHERWISE STATED.
 10. ALL SERVICES SHALL BE NEW UNLESS LENGTHS AS SUPPLIED BY THE MANUFACTURER AND FREE FROM DEFECTS.
 11. THE DRAWING FORMER PART OF THE SPECIFICATION AND MUST BE READ IN CONJUNCTION.
 12. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
 13. ALL VALVES ARE TO BE LOCATED WITHIN THE ACCESSIBLE AREAS.
 14. THE CONTRACTOR SHALL ENSURE THAT DEAD LEGS NO GREATER THAN 3M ARE AVOIDED.
 15. THE CONTRACTOR SHALL ENSURE ADEQUATE FLOW REGULATION THROUGHOUT.
 16. VALVES SHALL BE INSTALLED AT ALL LOW POINTS OF THE WATER SERVICE PIPING.
 17. VALVES SHALL BE INSTALLED AT ALL HIGH POINTS OF THE WATER SERVICE PIPING.
 18. THE MAINS COLD WATER SYSTEMS DOWNSTREAM OF THE UTILITIES METER SHALL BE VALVED OFF AND GRABED TO LEAVE NO DEAD LEG PIPING BRANCHES.
 19. SUCH VALVES SHALL BE EQUIPPED WITH SOLE OPERATING ACCESSORIES.
 20. ALL PIPING AND FITTINGS TO BE INSTALLED AS PER MANUFACTURER'S INSTRUCTIONS.
 21. ISOLATING VALVES TO BE INSTALLED AT STRATEGIC POINTS TO ALLOW DRAWING ZONES.
 22. ISOLATING VALVES TO BE INSTALLED AT STRATEGIC POINTS TO ALLOW DRAWING ZONES.
 23. ISOLATING VALVES TO BE INSTALLED AT STRATEGIC POINTS TO ALLOW DRAWING ZONES.
 24. ISOLATING VALVES TO BE INSTALLED AT STRATEGIC POINTS TO ALLOW DRAWING ZONES.
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 30. ISOLATING VALVES TO BE INSTALLED AT STRATEGIC POINTS TO ALLOW DRAWING ZONES.
 31. ISOLATING VALVES TO BE INSTALLED AT STRATEGIC POINTS TO ALLOW DRAWING ZONES.
 32. ISOLATING VALVES TO BE INSTALLED AT STRATEGIC POINTS TO ALLOW DRAWING ZONES.

TAG NO:	Qty	Area	MAKE & MODEL:	Weight TYPE kg	Flow Rate m3/h	Resulting Head m	Dimensions (ø/WxLxH)	ELECTRICAL POWER SUPPLY		
								Supply V/Ph/Hz	Power kW	Rated Current A
PP-01	2	Plant Area	Booster pump with duty point @0,984 l/s and 0.6 bar of head	20.5	4.6	36.41	221x382x301	240/1/50	0.9	5

TAG NO:	Qty	Area	MAKE & MODEL:	Weight TYPE kg	Flow Rate m3/h	Dimensions (ø/WxLxH)	ELECTRICAL POWER SUPPLY	
							Supply V/Ph/Hz	Power kW
FLTR-01	1	Plant Area	Filtration vessel complete with accessories and 5000 lph raw water pump	TBD	5	TBD	380/3/50	3
RO-01	1	Plant Area	4000 LPH Reverse Osmosis system	TBD	4	TBD	380/3/50	TBD

No:	DATE	DESCRIPTION:	BY
F1	2024.01.09	ISSUED FOR TENDER	MM



BLYDE RIVER CANYON NATURE RESERVE BULK WATER SUPPLY - DOMESTIC WATER SUPPLY

DISCIPLINE
MECHANICAL

DRAWING DESCRIPTION
PLANT ROOM LAYOUT - DOMESTIC WATER SUPPLY

DESIGNED BY: M.MODIBA	SIGNATURE AND DATE: 2024.01.09
CHECKED BY: M.VINKOVIC Pr.Eng.:200970171	SIGNATURE AND DATE: 2024.01.09
APPROVED BY: M.VINKOVIC Pr.Eng.:200970171	SIGNATURE AND DATE: 2024.01.09

PROJECT NO
1159

DATE
04 October 2023

DRAWING NO
NT06/2023/1159/201/001

SCALE 1:50	SHEET SIZE A0	REVISION F1
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FIRE SERVICES DRAWINGS

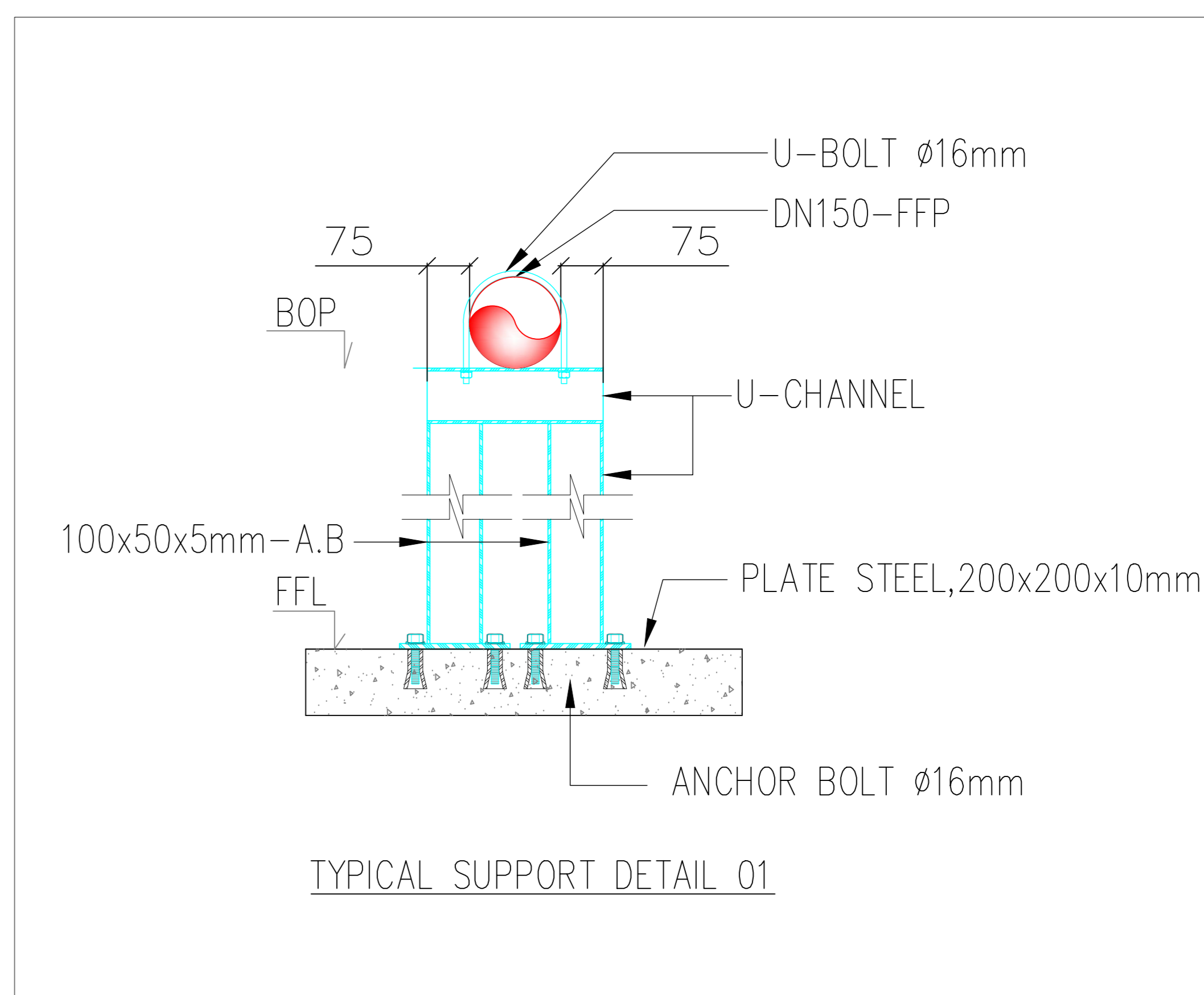
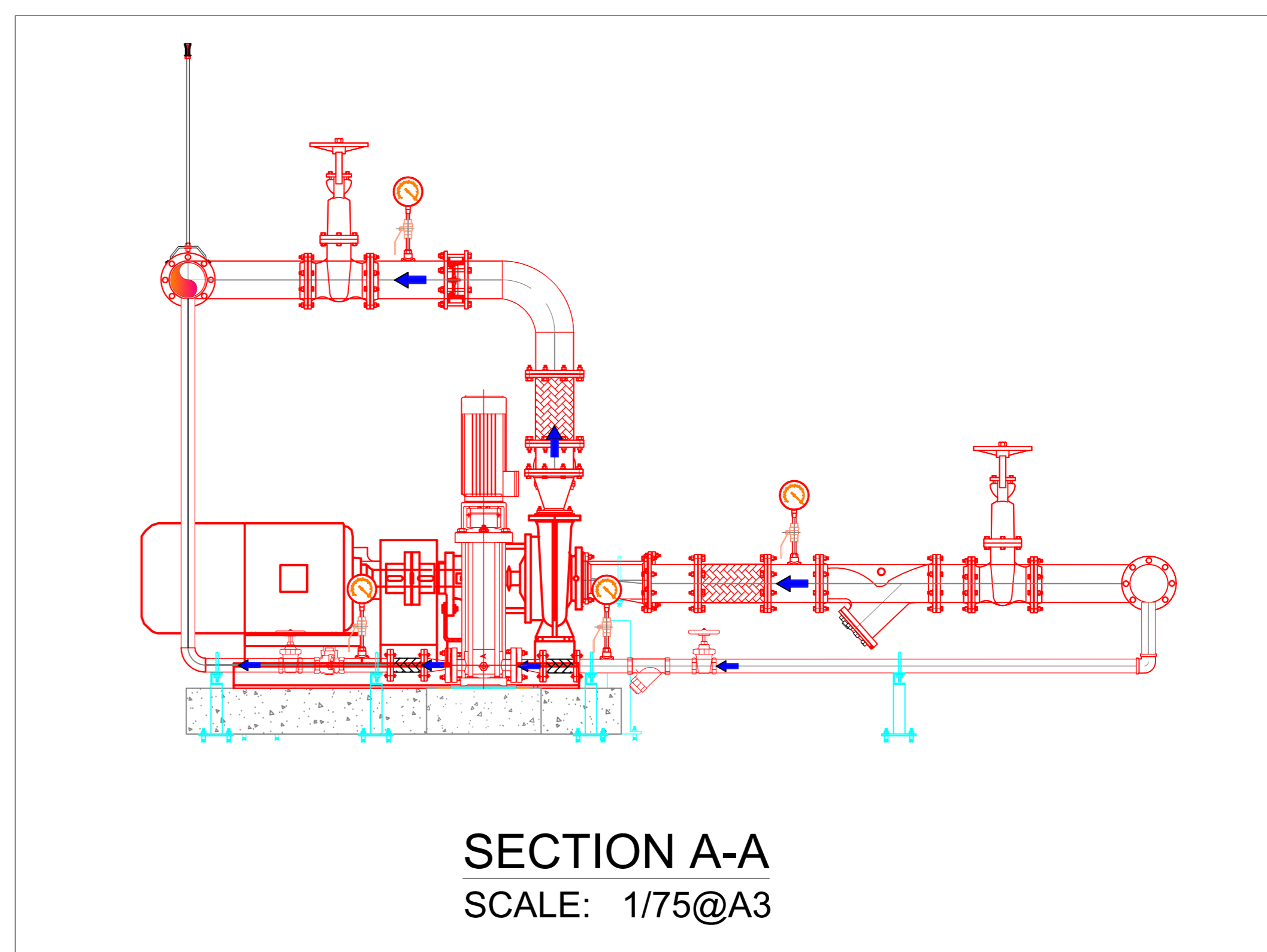


GENERAL NOTES

THE DESIGN ON THIS DRAWING IS COPYRIGHT AND REMAINS THE PROPERTY OF THE ARCHITECT.
 ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH MUNICIPAL REGULATIONS, NATIONAL BUILDING REGULATIONS, LOCAL AUTHORITY BYLAWS AND APPLICABLE CAMPUS GUIDELINES. THIS DRAWING MAY NOT BE SCALED. ONLY FIGURED DIMENSIONS AND LEVELS MAY BE USED.
 ALL RELEVANT DETAILS, LEVELS, DIMENSIONS MUST BE CHECKED ON SITE BEFORE COMMENCEMENT OF WORKS. ANY ERRORS, DISCREPANCIES OR OMISSIONS IN THE DRAWINGS OR BETWEEN THE DRAWINGS MUST BE REPORTED TO THE ARCHITECT IMMEDIATELY THEY BECOME EVIDENT.
 ALL STRUCTURAL, STEEL, CIVIL AND CONCRETE WORK TO ENGINEER'S DRAWINGS TO BE READ IN CONJUNCTION WITH RELEVANT ENGINEER'S DRAWINGS.
 CONTRACTOR IS RESPONSIBLE FOR CORRECT SETTING OUT OF THE BUILDING, ALL EXTERNAL AND INTERNAL WALLS WITH PARTICULAR REFERENCE TO THE BOUNDARIES AND BUILDING LINES SETTING OUT TO BE DONE FROM SURVEYOR'S PEGS.
 ALL CONTRACTORS TO CHECK THE DETAIL SHOWN ON THE DRAWING FOR COMPLIANCE WITH STANDARDS OF GOOD BUILDING PRACTICE WITH PARTICULAR REFERENCE TO SPECIAL REQUIREMENTS NECESSITATED BY LOCAL AND/OR SITE CONDITIONS.
 ANY ERRORS, DISCREPANCIES OR OMISSIONS MUST BE REPORTED TO THE ARCHITECT IMMEDIATELY THEY BECOME EVIDENT.
 CONTRACTORS ARE TO LOCATE AND IDENTIFY EXISTING SERVICES ON SITE AND TO PROTECT THESE FROM DAMAGE THROUGHOUT THE DURATION OF THE WORKS.
 ALL ASPECTS OF THE CONSTRUCTION REGULATIONS AS PER SANS 0400 ARE TO BE APPLIED AND ADHERED TO.

FIRE NOTES:

- FIRE PROTECTION TO SANS 10400 PART-1, DEEMED TO SATISFY SET OF RULES APPLICABLE AS SET OUT IN T.1.
- OFFICES, LABORATORIES AND PARKING.
- MAIN OCCUPANCY CLASSIFIED AS G1, G2, AND J4 OFFICES AND MODERATE RISK INDUSTRIAL (LABORATORIES) AND PARKING.
- 1 PERSON PER 15.0M² (G1 AND G2) / OR NUMBER OF SEATS.
- SAFETY DISTANCES ARE IN ORDER FOR G1 AND G2.
- STRUCTURAL STABILITY, 120 MINUTES, AS PER SANS 10400: PART-1, TABLE 4. ALL FLOORS AND EMERGENCY ESCAPE ROUTES ARE CONSTRUCTED FROM CONCRETE WITH A STRUCTURAL STABILITY OF 120 MINUTES.
- ALL ESCAPE ROUTES TO COMPLY TO SANS 10400 PART M.5, BE 1000MM WIDE, HANDRAILS ON BOTH SIDES OF A STAIRWAY, MAX 1% STEP RISE, LANDING EVERY 1200MM OF LEVEL CHANGE, RAMP: 1:12 ON FINAL EXIT, DOORS TO OPEN IN DIRECTION OF ESCAPE.
- 30 MINUTE PROTECTED WHEELCHAIR REFUGE AREA CREATED AT THE TWO EMERGENCY ROUTES. TWO WAY RADIO COMMUNICATION TO BE PROVIDED AT WHEELCHAIR REFUGE AREA.
- EMERGENCY STAIRWAYS TO BE NATURALLY VENTILATED WHERE POSSIBLE, IF NOT POSSIBLE MECHANICAL VENTILATION TO BE PROVIDED.
- AUTOMATIC FIRE DETECTION TO BE INSTALLED TO SANS 10138 CATEGORY L3M1 TO PRIMARILY SHUTDOWN VENTILATION SYSTEMS, HOME LIFT AND NOTIFY OCCUPANTS OF A FIRE CONDITION WITHIN REASONABLE TIME.
- EMERGENCY LIGHTING TO BE PROVIDED IN ALL ENCLOSED ESCAPE PASSAGES AND EMERGENCY ROUTES TO SANS 10114-2 AND 1484-22.
- FIRE EXTINGUISHERS, FIRE HOSE REELS AND FIRE HYDRANTS TO SANS 10400 PART 1 AND BE SERVICED BY A CERTIFIED INSTALLER BEFORE OCCUPATION OF THE BUILDING.
- FIRE HOSE REELS SHALL BE 30 M LONG, WITH PRESSURE GAUGES INSTALLED ON SECOND STOREY.
- FIRE EXTINGUISHERS SHALL BE SUPPLIED 4.5 KG DCP AT A RATE OF 1 PER 200M² AND BE HUNG ONTO FIXED BACK BORDERS FOR G1 CLASS BUILDING, 3000 DCP AT 1/100M² FOR THE LABORATORY AREAS AND PARKING, GLASS DOOR AND JL.
- FIRE HYDRANTS SHALL BE INSTALLED IN THE BUILDING AS PER PLAN.
- FIRE SIGNAGE TO SANS 1186, PHOTO LUMINESCENT TYPE, 100X100MM FOR G1 AND 200X200MM FOR G2/J4 AREA. INTERNALLY ILLUMINATED "EXIT" SIGNS WITH 60 MINUTE BATTERY BACKUP TO BE PROVIDED, ESCORT WHERE EMERGENCY LIGHTING IS CLOSE ENOUGH TO PROVIDE SUFFICIENT LIGHT ON PHOTO LUMINESCENT SIGNS.
- THE TRIPLE VOLUME AREA TO BE SMOKE VENTILATED VIA RIDGE/ELECTRO-MECH VENTILATORS DUE TO OPEN AREAS LARGER THAN 500M².
- THE LIFT TO HOME TO GROUND STOREY ON RECEIPT OF A FIRE SIGNAL, LIFT DOORS TO BE 120 MINUTE FIRE RATED, WITH SMOKE SEALS.
- ALL AUTOMATED DOORS OR DOORS EQUIPPED WITH ACCESS CONTROL LOCKING MECHANISMS, MUST FAIL SAFE AND RELEASE ON RECEIPT OF THE FIRE SIGNAL OR MANUAL OVERRIDE BUTTON ON THE INSIDE OF THE DOOR.
- 4.0M FIRE TRUCK ACCESS POSSIBLE AROUND THREE SIDES OF THE BUILDING.

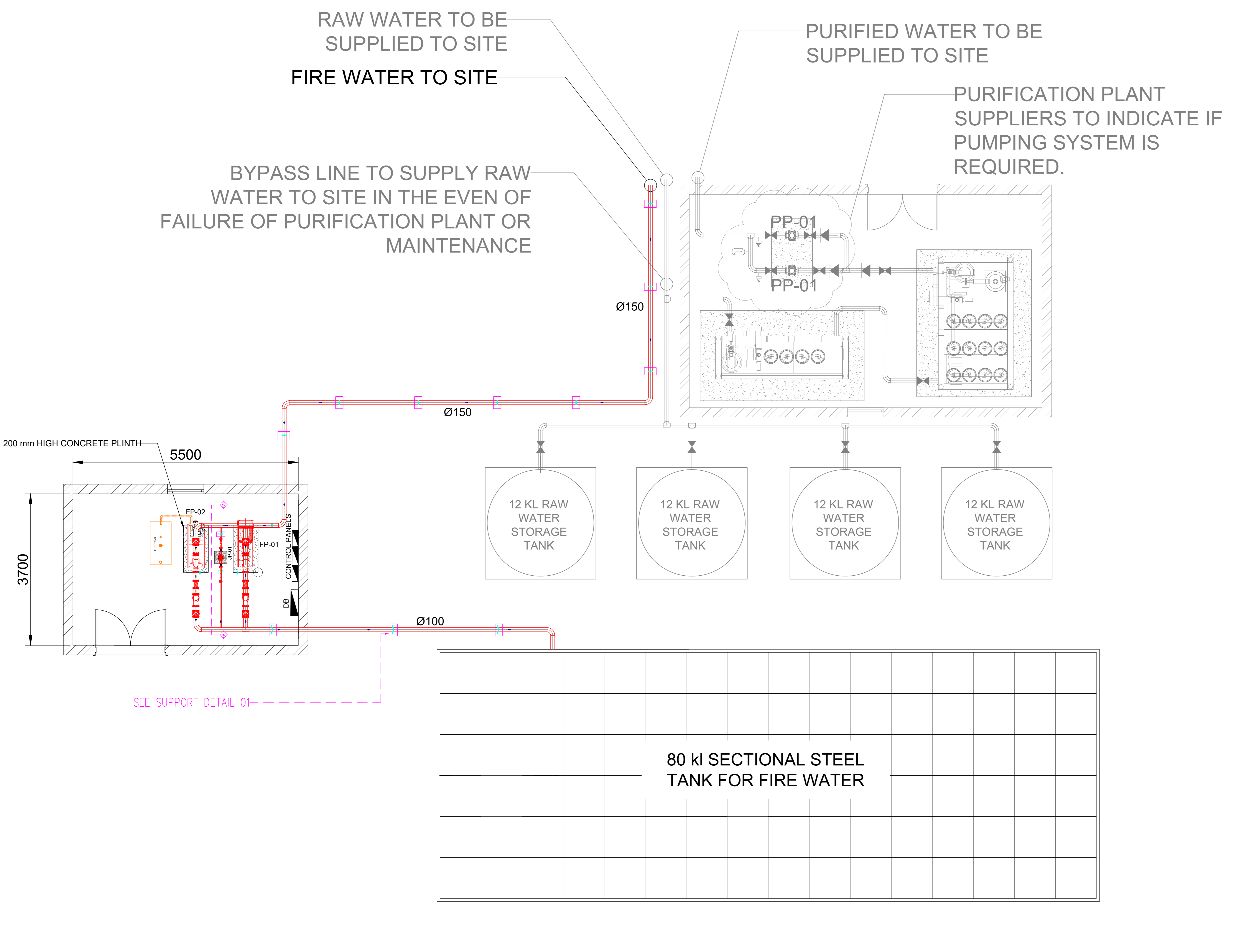


REVISION INFORMATION

No.	DATE	DESCRIPTION:	BY
F1	2024.01.09	ISSUED FOR TENDER	MM



DISCIPLINE		MECHANICAL	
DRAWING DESCRIPTION			
BLYDE RIVER CANYON NATURE RESERVE BULK WATER SUPPLY - FIRE WATER			
DESIGNED BY:	M.MODIBA	SIGNATURE AND DATE:	[Signature] 2024.01.09
CHECKED BY:	M.VINKOVIC	SIGNATURE AND DATE:	[Signature] 2024.01.09
APPROVED BY:	M.VINKOVIC	SIGNATURE AND DATE:	[Signature] 2024.01.09
PROJECT NO	1159	DATE	04 October 2023
DRAWING NO			
NT06/2023/1159/801/001			
SCALE	1:40	SHEET SIZE	A0
		REVISION	F1



FIRE PUMP SCHEDULE

TAG NO:	Qty	Area	MAKE & MODEL:	Weight TYPE kg	Flow Rate m ³ /h	Resulting Head m	Dimensions (Ø/WxLxH)	ELECTRICAL POWER SUPPLY		
								Supply V/Ph/Hz	Power kW	Rated Current A
FP-01	1	Plant Area	Skid-mounted pump set (electrical)	1710 (Gross)	72	47.11	520x2270x2182	400/3/50	30	54
FP-02	1	Plant Area	Skid-mounted pump set (diesel)	-	72	47.11	800x2270x1608	-	-	-
JP-01	1	Plant Area	Jockey Pump	-	-	-	N/A	400/3/50	1.1	2.55