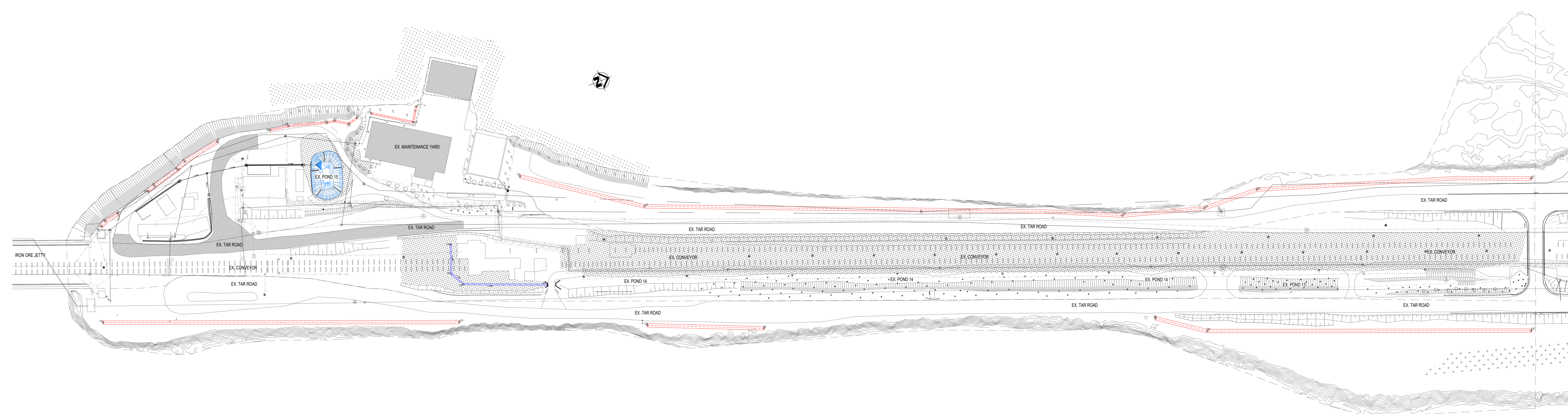


CHANNEL C/L COORDINATES	V-DRAIN C/L COORDINATES & LEVELS	
NUT	NUT	
X	X	
Y	TOP OF DRAIN LEVEL (m)	
C1	-94718.803	3656207.577
C2	-94720.785	3656204.412
C3	-94722.429	3656196.327
C4	-94728.201	3656175.852
C5	-94729.413	3656171.292
C6	-94733.732	3656155.618
C7	-94736.59	3656150.150
C7	-94740.54	3656128.934
C8	-94736.202	3656098.724
C10	-94734.671	3656080.000
C11	-94728.819	3656066.776
C12	-94728.122	3656062.456
C13	-94723.818	3656055.229
C14	-94725.288	3656048.798
C15	-94724.777	3656041.365
C16	-94711.727	3656020.897
C17	-94719.365	3656016.027
C18	-94667.215	3656226.024
C19	-94598.04	3656038.438
C20	-94556.569	3655937.000
C21	-94531.572	3655875.497
C22	-94661.362	3655974.833
C23	-94620.607	3655914.829
C24	-94519.794	3655862.406
C25	-94507.151	3655817.079
C26	-94506.544	3655856.508
C27	-94457.333	3655437.085
C28	-94458.342	3655665.205
C29	-94441.256	3655640.419
C30	-94376.379	3655467.693
C35	-94697.390	3656080.311
C36	-94703.890	3656079.074
C37	-94697.348	3656076.828
C38	-94703.066	3656074.548

PLEASE NOTE:
V-DRAIN COORDINATES ARE GIVEN FOR CENTER OF DRAIN.
PLEASE SEE 2001197-2-001-C-LA-0005-02

PLEASE NOTE:
CHANNEL COORDINATES ARE GIVEN FOR CENTER OF CHANNEL.



PLAN LAYOUT: CAUSEWAY AREA
1:1000

LEGEND - SERVICES		
PROPOSED	EXISTING	DESCRIPTION
		STORMWATER MANHOLE PIPE
		SEWER MANHOLE PIPE
		EFFLUENT MANHOLE PIPE
		NEW INFILTRATION CHANNEL
		COMMUNICATION MANHOLE/DUCTS
		ELECTRICAL MANHOLE/DUCTS
		WATERMAIN
		FENCE
		CATCHMENT BOUNDARY
		ASPHALT ROAD
		EARTH BANKS
		NEW V-DRAIN
		DEMOLISH EXISTING SERVICE
		NEW POND
		SETTING OUT COORDINATE
		BENCHMARK

GENERAL NOTES:

- THE CONTRACTOR WILL BE DEEMED TO HAVE INSPECTED THE SITE AND BE IN AGREEMENT WITH THE WORKS REQUIRED AS PER THE TENDER DOCUMENTS, UNLESS ALTERNATIVE PROPOSALS WITH COST IMPLICATIONS ARE RECEIVED TOGETHER WITH THE TENDER DOCUMENTS. ALTERNATIVE PROPOSALS SUBMITTED DURING CONSTRUCTION SHALL BE ON A DESIGN AND CONSTRUCT BASIS, WITH THE DESIGN AT CONTRACTOR'S EXPENSE.
- VARIATIONS DEEMED NECESSARY BY THE CONTRACTOR SHALL BE FORWARDED TO THE PROJECT MANAGER IN WRITING FOR APPROVAL BEFORE ANY CONSTRUCTION BASED ON THE VARIATION COMMENCES.
- SERVICES SHOWN ON DRAWING ARE KNOWN OR SOURCED FROM EXISTING DRAWINGS. THE CONTRACTOR MUST ENSURE THAT ALL SERVICES THAT INTERSECT OR RUN ALONGSIDE THE PROPOSED WORKS ARE LOCATED BEFORE CONSTRUCTION COMMENCES. ANY CLASHES SHALL BE REPORTED TO THE PROJECT MANAGER IN WRITING. THE CONTRACTOR SHALL BE HELD LIABLE FOR ANY DAMAGES TO EXISTING SERVICES DUE TO NEGLIGENCE.
- ALL EXISTING PIPES AND MANHOLES INCORPORATED INTO THE NEW SYSTEM SHALL HAVE DEFECTS RECTIFIED TO COMPLY TO STANDARDS FOR NEW WORKS.
- DIMENSIONS SHOWN ON DRAWINGS SHALL TAKE PREFERENCE OVER DIMENSIONS SCALED.
- ALL LEVELS AND DIMENSIONS SHALL BE CHECKED BEFORE ANY WORK COMMENCES. FAILURE TO DO SO SHALL BE THE CONTRACTOR'S RESPONSIBILITY FOR ANY WORK REQUIRED TO RECTIFY ERRORS AS A RESULT OF THE FAILURE TO CHECK THE LEVELS AND DIMENSIONS.
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS, UNLESS OTHERWISE INDICATED.
- THE LATEST REVISION OF SANS SPECIFICATIONS SHALL APPLY. ALL WORK SHALL BE DONE IN ACCORDANCE WITH RELEVANT SANS SPECIFICATIONS, UNLESS OTHERWISE INDICATED.
- ALL LENGTHS SHOWN ARE APPROXIMATE AND SHALL BE CONFIRMED ON SITE BY CONTRACTOR.

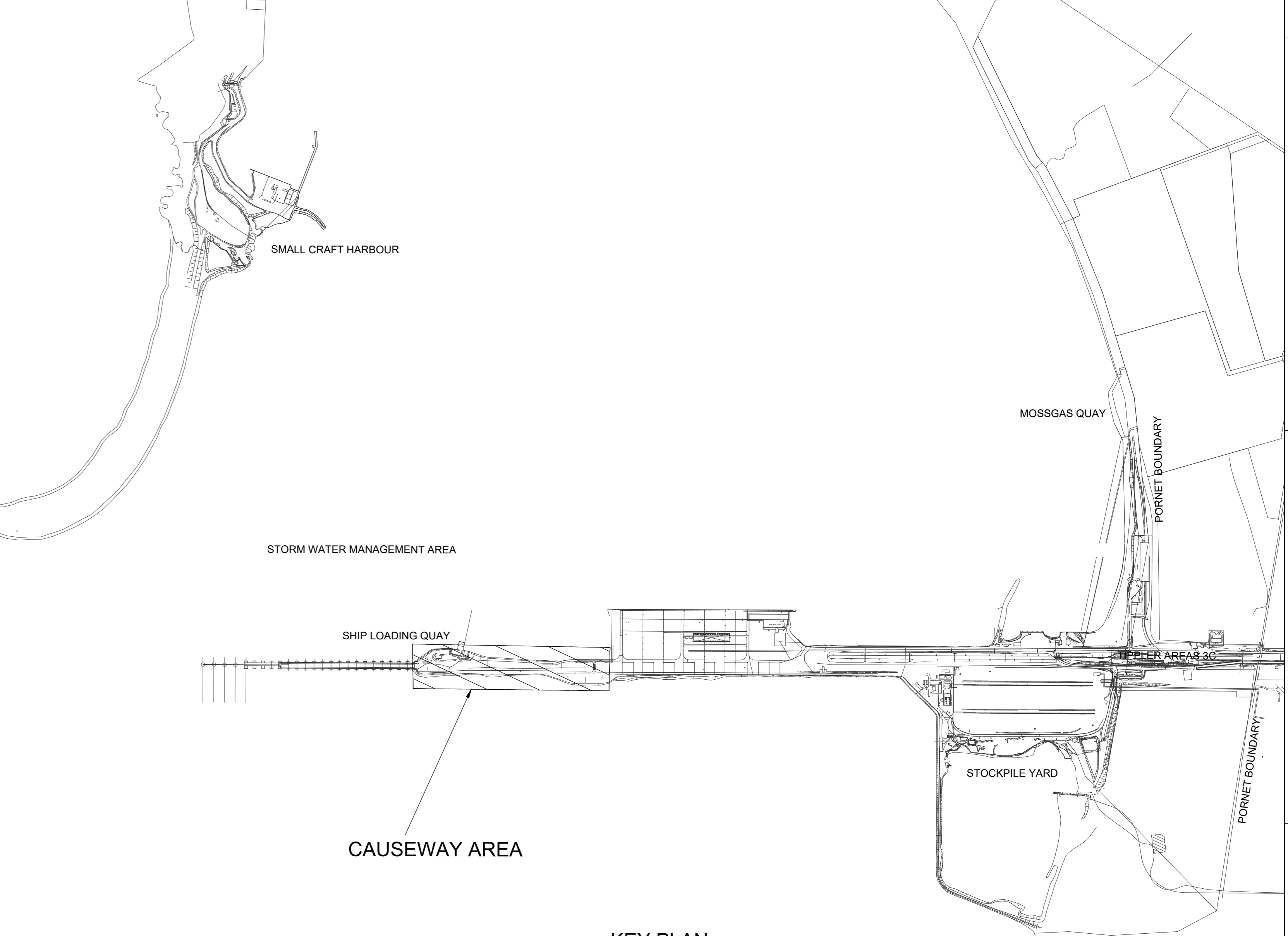
STORMWATER NOTES

- TRENCHES FOR PIPES TO BE EXCAVATED AND BACKFILLED IN ACCORDANCE WITH THE REQUIREMENT OF SANS 1200 DB - PIPE TRENCHES.
- ALL RIGID CONCRETE PIPES SHALL HAVE CLASS B BEDDING UNLESS STATED OTHERWISE.
- FOR STORMWATER PIPES SHALL BE SPIGOT & SOCKET CLASS 1000 (SANS 677).
- ALL CONCRETE PIPE JOINTS TO BE WRAPPED WITH 40 BDMF KNOWN/KNOWN CONTINUOUS FILAMENT NEEDLE PUNCHED POLYESTER(GEOTEXTILE) MIN. WIDTH TO BE 100mm FOR PIPES 3000 TO 6000.
- NO. ALL MANHOLE COVERS TO SUIT CROSSFALL OF FINISHED PAVING.
- ON COMPLETION, THE INSTALLATION SHALL BE TESTED TO THE ENGINEER'S SPECIFICATION.
- THE CONTRACTOR SHALL SUBMIT A FULL SET OF AS-BUILT DRAWINGS UPON COMPLETION OF THE INSTALLATION.
- ALL EXISTING STORMWATER PIPES, MANHOLES, CHANNELS AND ANY OTHER STORMWATER INFRASTRUCTURE TO BE CLEARED AND CLEARED OF ALL DEBRIS BEFORE ANY WORK COMMENCES. ALL DAMAGED EXISTING STORMWATER INFRASTRUCTURE SHALL BE REINSTATED TO ORIGINAL CONDITION.
- ANY DISCREPANCIES IN LEVELS AND SETTING OUT DATA TO BE QUERIED WITH THE ENGINEER PRIOR TO COMMENCEMENT OF ANY WORK.
- ALL EXISTING STORMWATER PIPES ARE CONCRETE UNLESS STATED OTHERWISE.
- WHERE MINIMUM COVER OF 1000mm FOR OPERATIONAL AREAS & 600mm FOR NON OPERATIONAL AREA CANNOT BE ACHIEVED, CONCRETE ENCASEMENT IS REQUIRED AS PER THE DETAIL DRAWINGS.

EARTHWORKS

- ANY DISCREPANCIES IN LEVELS AND SETTING OUT DATA TO BE QUERIED WITH THE ENGINEER PRIOR TO COMMENCEMENT OF ANY WORK.
- ALL WORKMANSHIP TO BE IN ACCORDANCE WITH SANS 1200 PART D: EARTHWORKS AND THE RELEVANT PROJECT SPECIFICATIONS AS INCLUDED IN THE CONTRACT.
- BEFORE PLACING ANY FILL MATERIAL, THE EXISTING GROUND SURFACE MUST BE CLEARED AND GRUBBED OF ALL VEGETATION AND ORGANIC MATTER.
- UNLESS OTHERWISE INDICATED, ALL BANK BATTERS TO BE: 1:1.5 OUT AND 1:2 FALL.
- THE UNCOMPACTED THICKNESS OF FILL LAYERS SHALL NOT EXCEED 300mm.
- LOCATE ALL EXISTING SERVICES IN AREA PRIOR TO ANY CONSTRUCTION TAKING PLACE.

BENCHMARK NAME	Y	X	Z	TYPE
PK002_S1	-93476.287	-3654091.162	5.692	Pillar Beacon
PK004_S1	-94375.598	-3652758.526	11.637	Pillar Beacon
PK005_S1	-94350.064	-3655384.385	4.526	Pillar Beacon
PK006_S1	-94121.326	-3654507.768	11.216	Pillar Beacon
2DD25_S1	-97921.795	-3653141.320	5.446	Town Survey Mark
B1	-93666.668	-3653064.208	6.915	Drill Hole in Concrete
B2	-93748.380	-3653393.098	3.313	12mm Round Iron Peg
B3	-93899.392	-3652754.514	2.997	12mm Round Iron Peg
B4	-94026.972	-3654037.881	2.939	12mm Round Iron Peg
B5	-94146.158	-3654428.016	3.055	12mm Round Iron Peg
B6	-94380.974	-3654714.558	3.666	Roof Nail in Concrete
B7	-94294.497	-3655014.636	3.386	12mm Round Iron Peg
B8	-93829.849	-3654096.752	4.241	12mm Round Iron Peg
B9	-93195.652	-3653381.865	3.673	12mm Round Iron Peg
B10	-93431.837	-3653261.361	3.484	12mm Round Iron Peg



KEY PLAN
N.T.S.

DRAWING NO.	REFERENCE DRAWINGS
5200197-2-001-C-GA-0005-01	GENERAL ARRANGEMENT
5200197-2-001-C-LA-0005-01	PLAN LAYOUT & LONGITUDINAL SECTION CATCHMENT AREA 1
5200197-2-001-C-LA-0005-02	PLAN LAYOUT & LONGITUDINAL SECTION CATCHMENT AREA 2
5200197-2-001-C-LA-0005-03	PLAN LAYOUT & LONGITUDINAL SECTION CATCHMENT AREA 3 & 4
5200197-2-001-C-DE-0001-02	TYPICAL STORMWATER MANHOLE DETAILS
5200197-2-001-C-DE-0001-03	TYPICAL STORMWATER GRID INLET & CATCHPIE DETAILS
5200197-2-001-C-DE-0001-04	TYPICAL HEADWALL, SCOUR & CONCRETE ENCASEMENT DETAILS

NOTES:

- MEASUREMENTS ARE BASED ON METRIC SYSTEM.
- ALL LEVELS ARE IN METERS TO MEAN SEA LEVELS (MSL).
- DO NOT SCALE DRAWING - ONLY DIMENSIONS SHOWN TO BE USED.
- THE CONTRACTOR SHALL VERIFY ALL SERVICES OR CONDITIONS ON THE SITE AND NOTIFY THE ENGINEERING OF ANY VARIATIONS FROM DIMENSIONS BEFORE CONSTRUCTION.

NO.	DESCRIPTION	BY	CHKD	APPD	DATE
00	ISSUED FOR CONSTRUCTION	HD	RM	RN	04/08/2023
0A	ISSUED FOR CLIENT APPROVAL	HD	RM	RN	28/10/2022

CONTRACTOR / CONSULTANT				TRANSNET PORT TERMINALS			
TITLE	NAME	SIGN	DATE	TITLE	NAME	SIGN	DATE
				DRAWN	HdW	[Signature]	28 10 22
				CHECKED	RM	[Signature]	28 10 22
				DESIGNED	HdW	[Signature]	28 10 22
				CHECKED	RM	[Signature]	28 10 22

OPERATING DIVISIONS			
TITLE	NAME	SIGN	DATE

Transnet Port Terminals

PORT OF SALDANHA

SALDANHA STORMWATER MANAGEMENT
CAUSEWAY AREA
GENERAL ARRANGEMENT

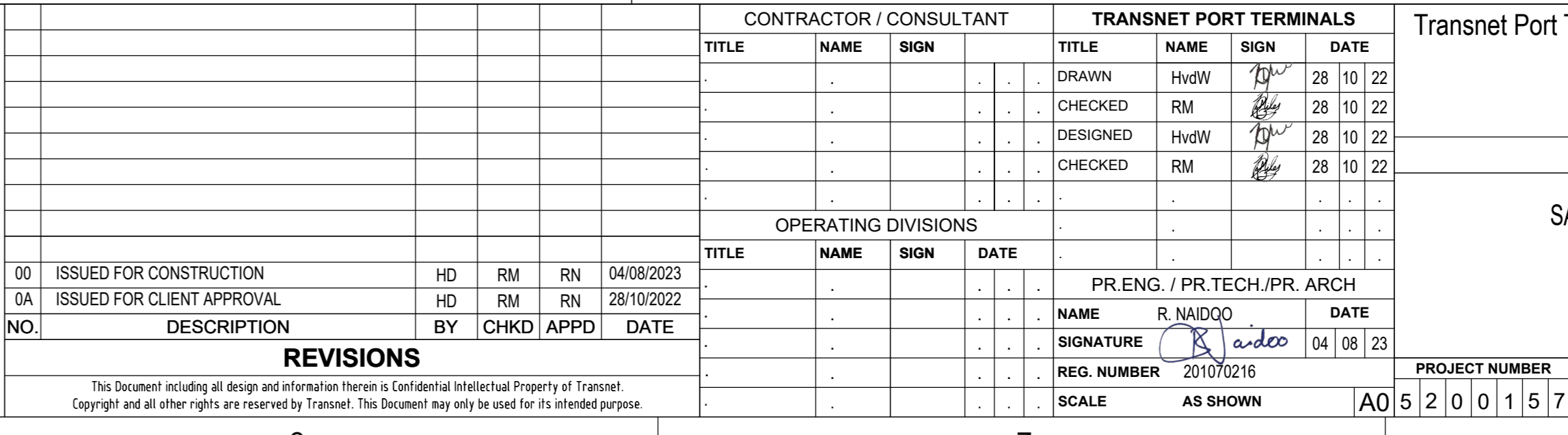
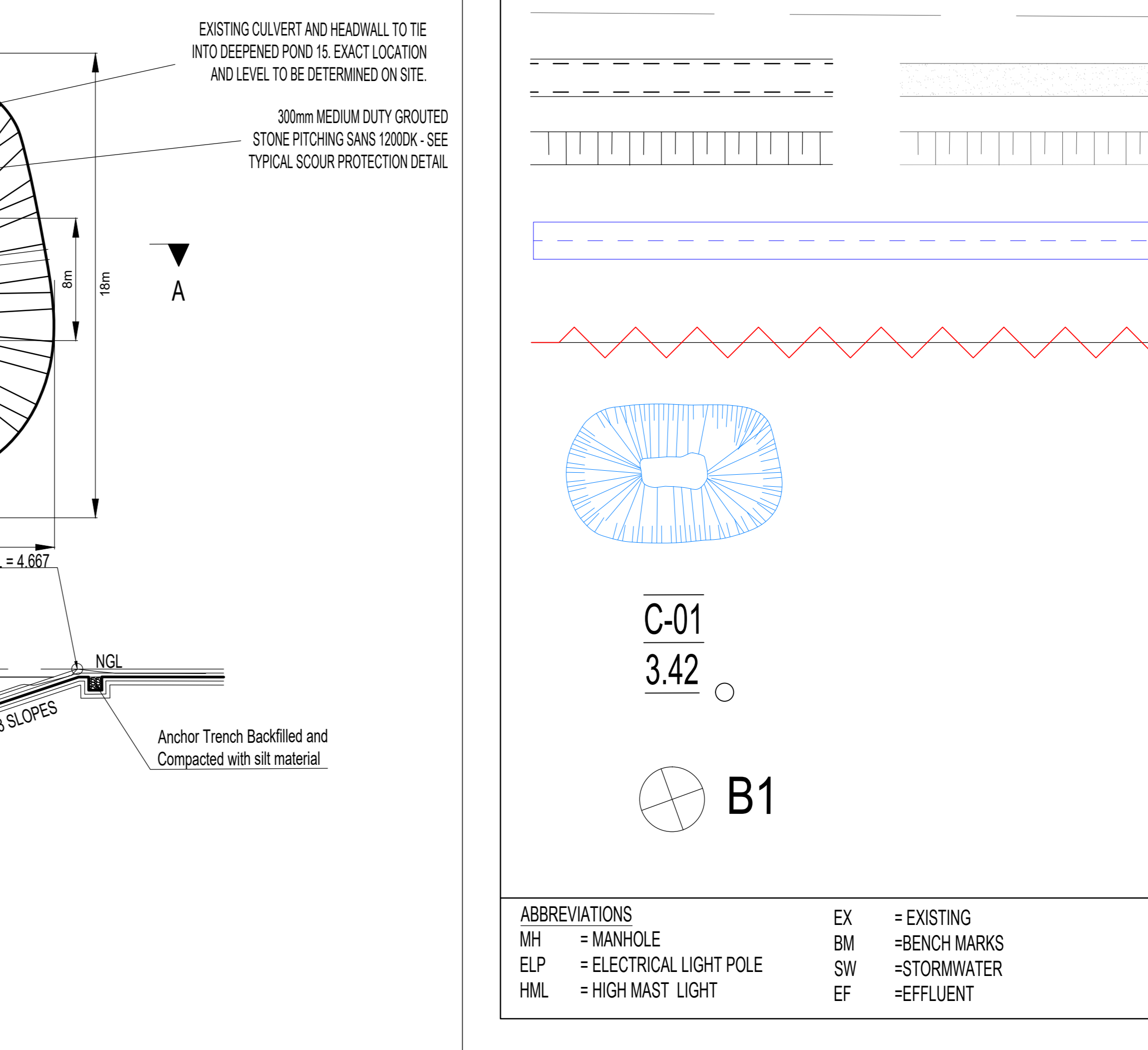
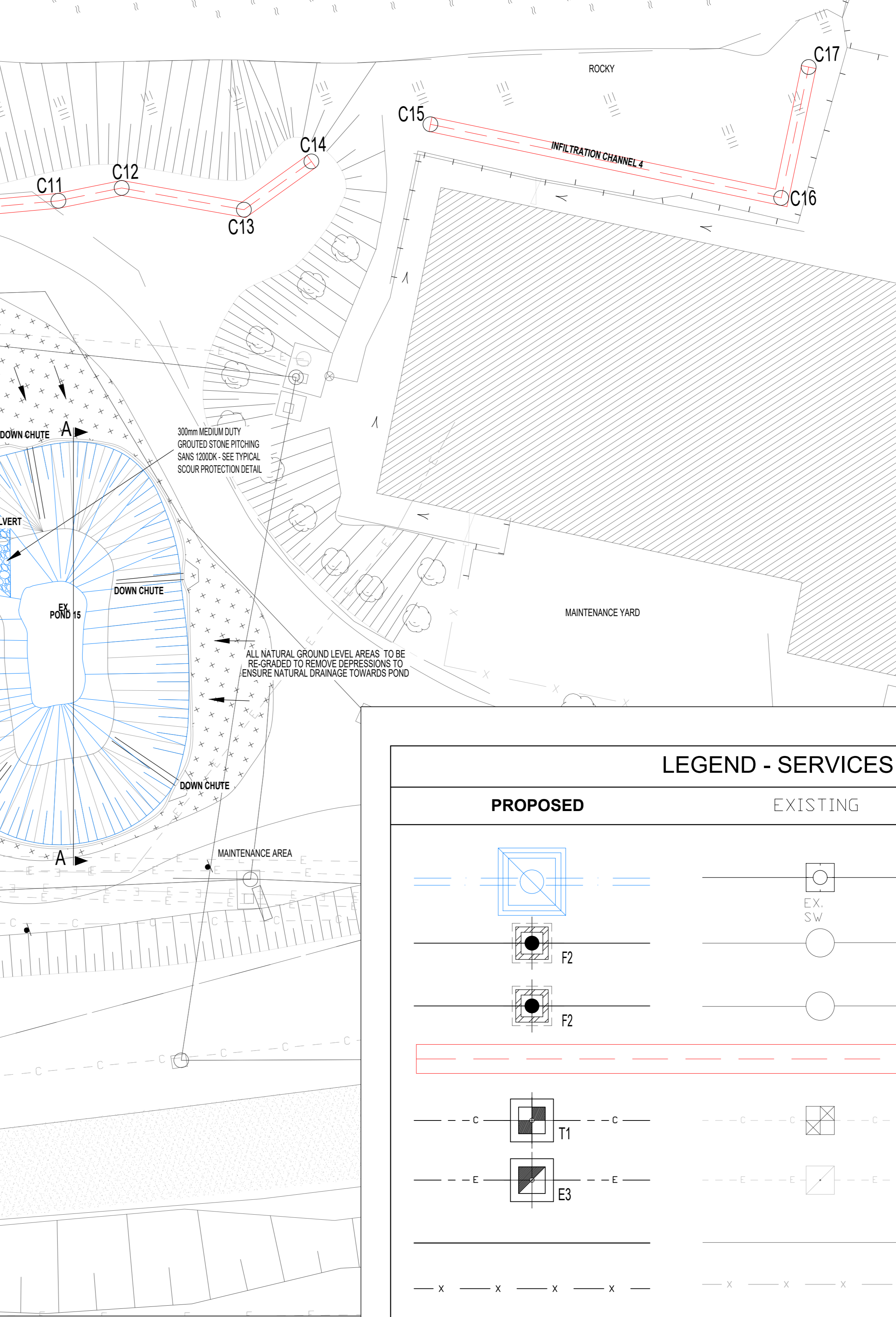
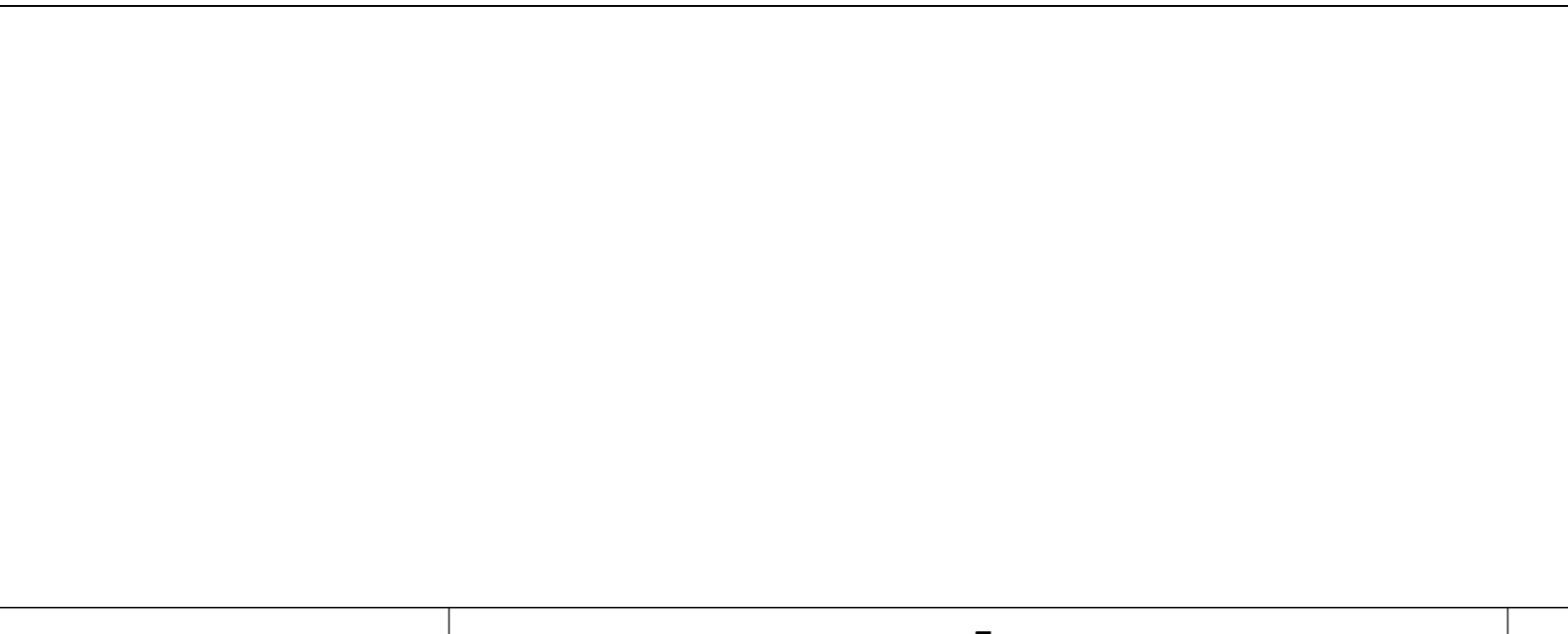
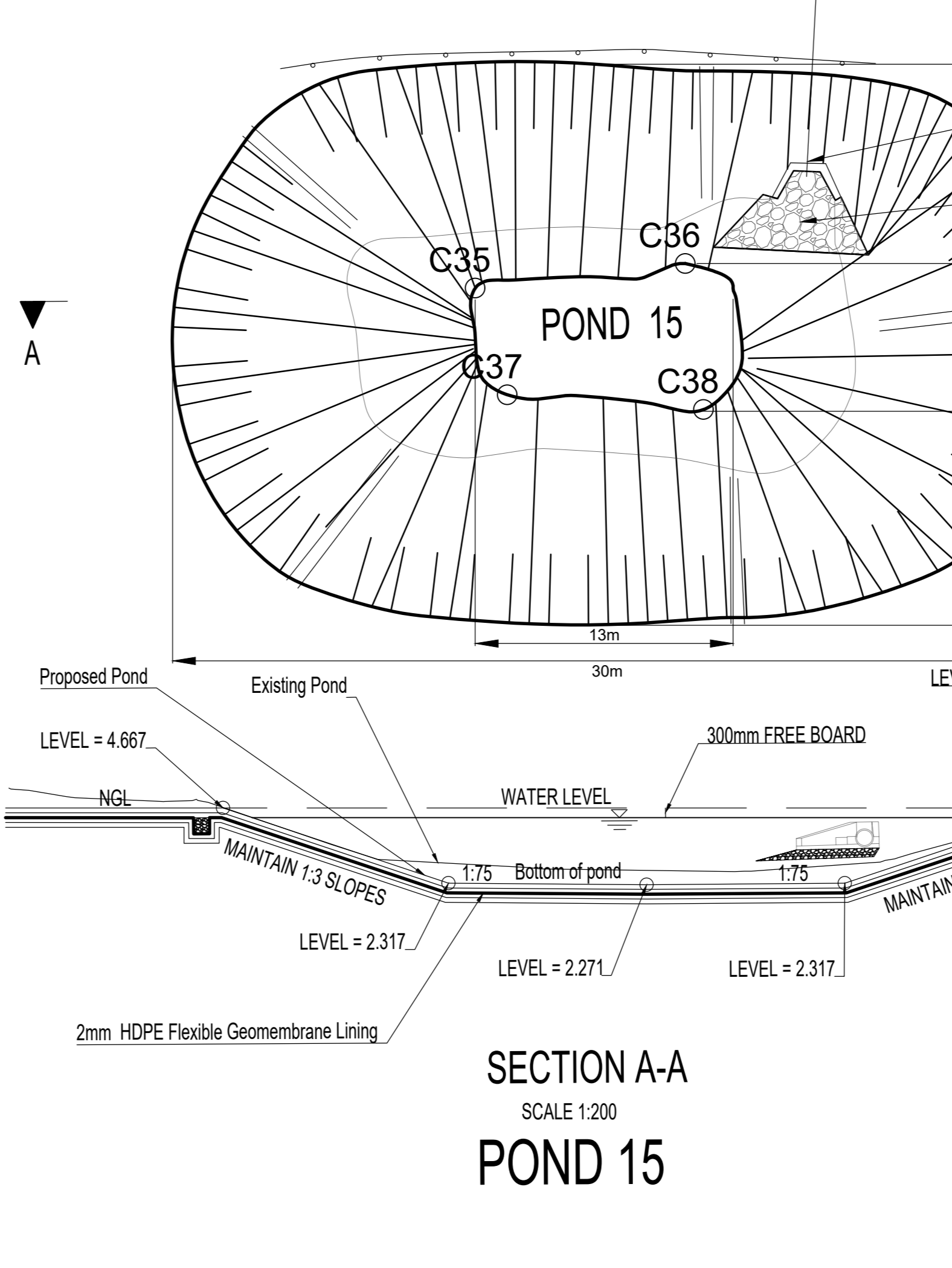
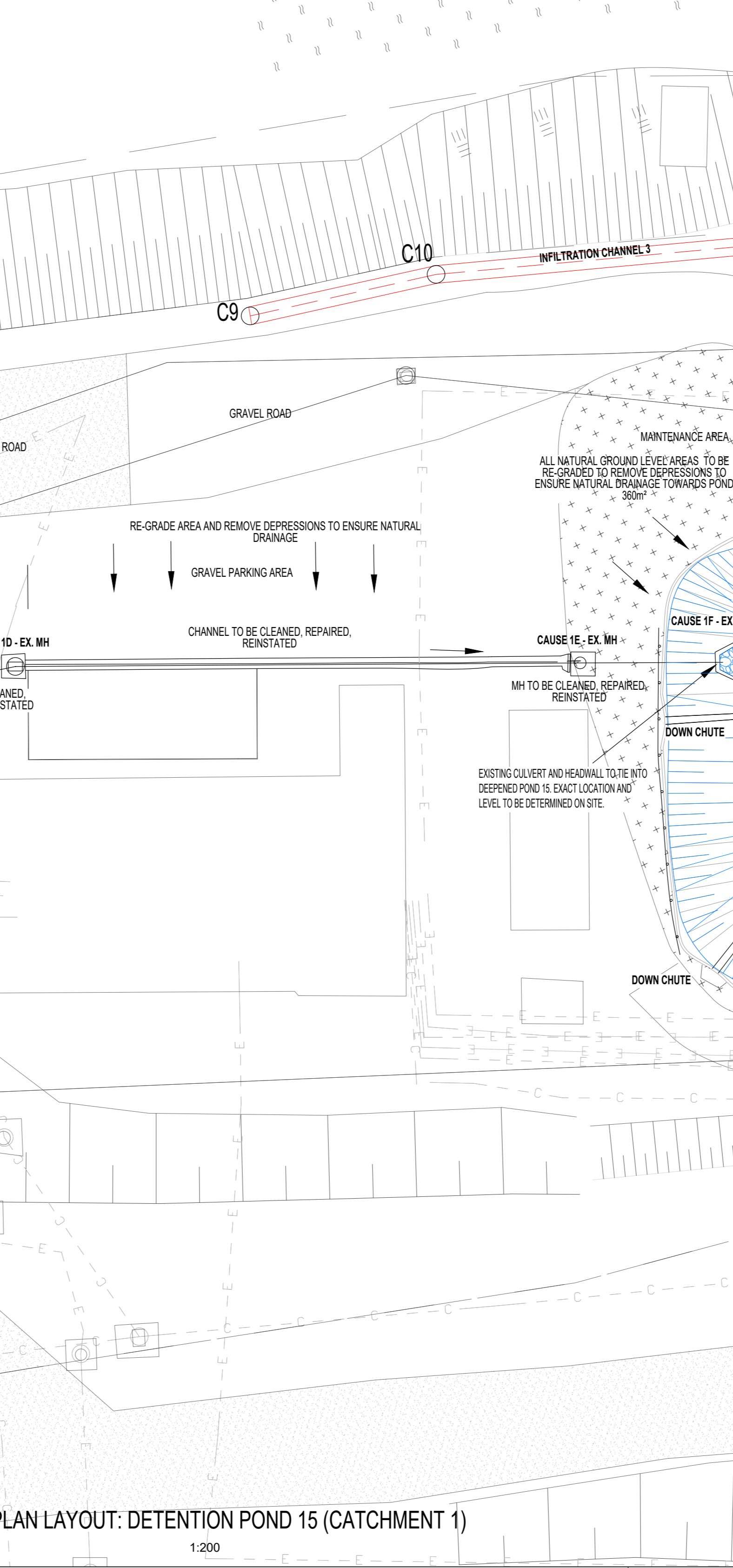
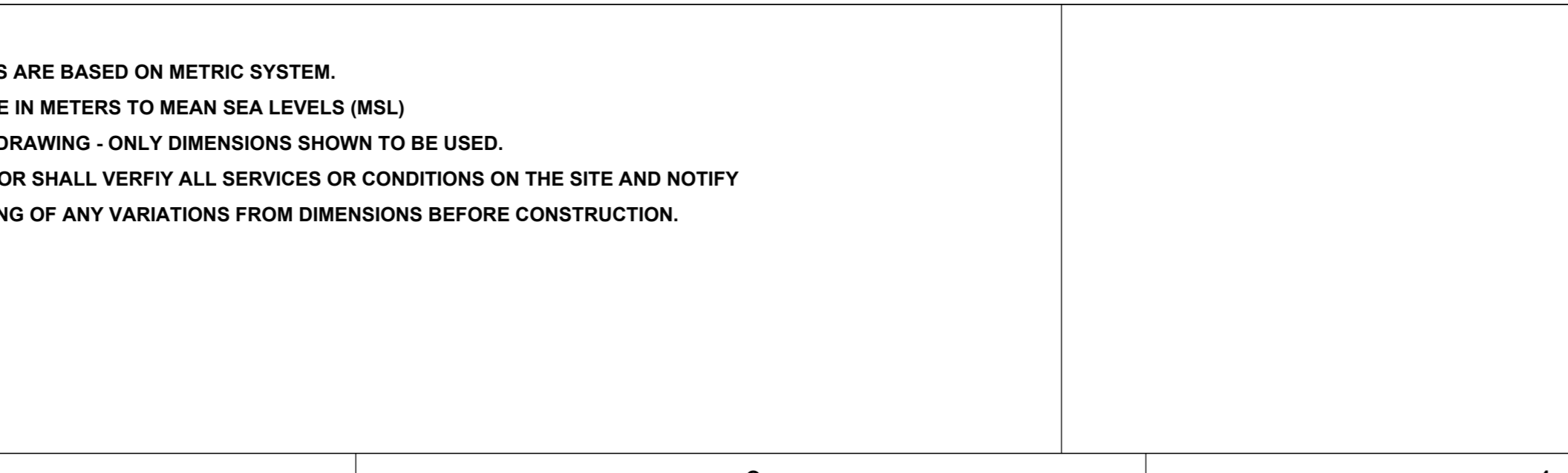
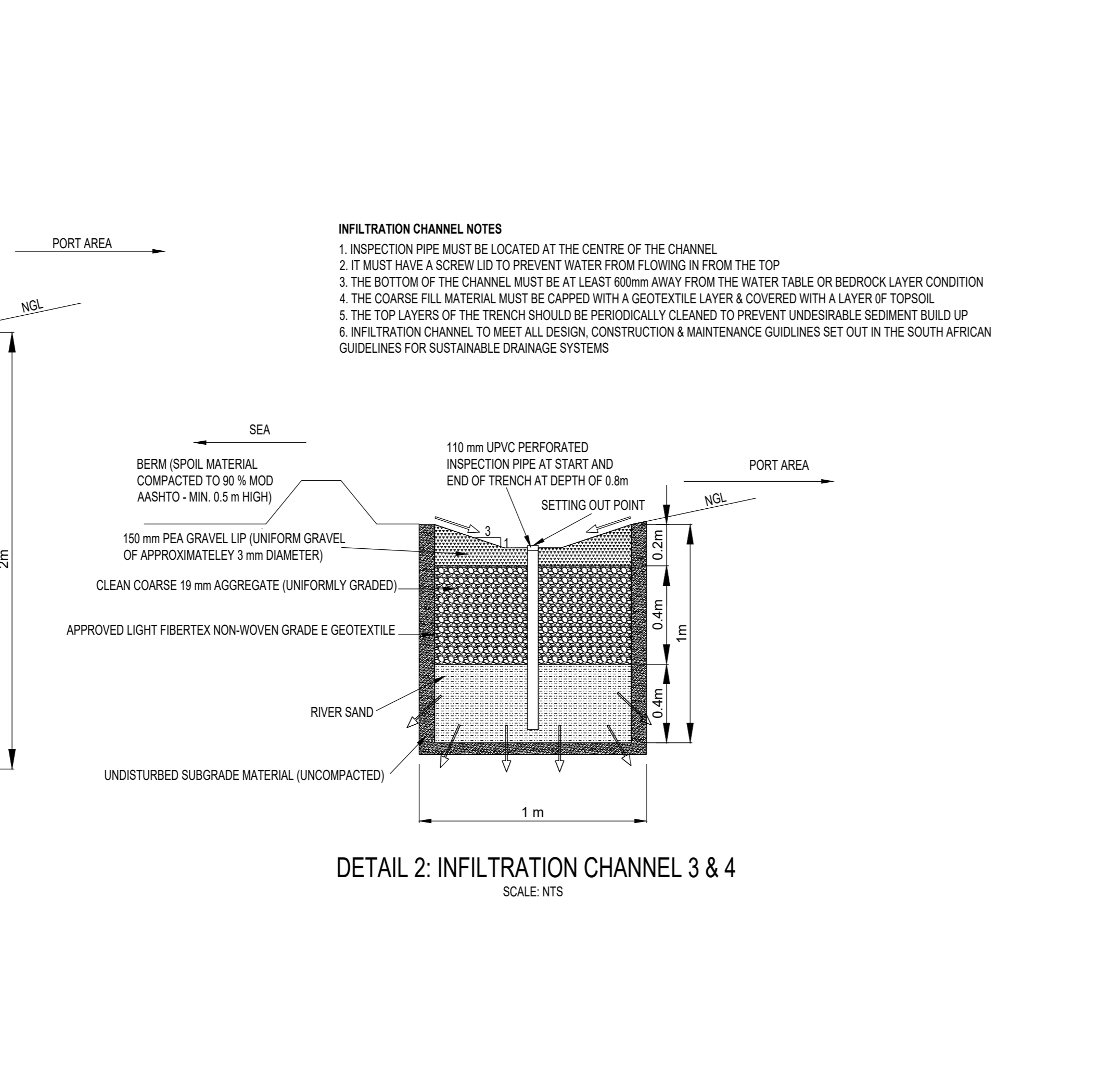
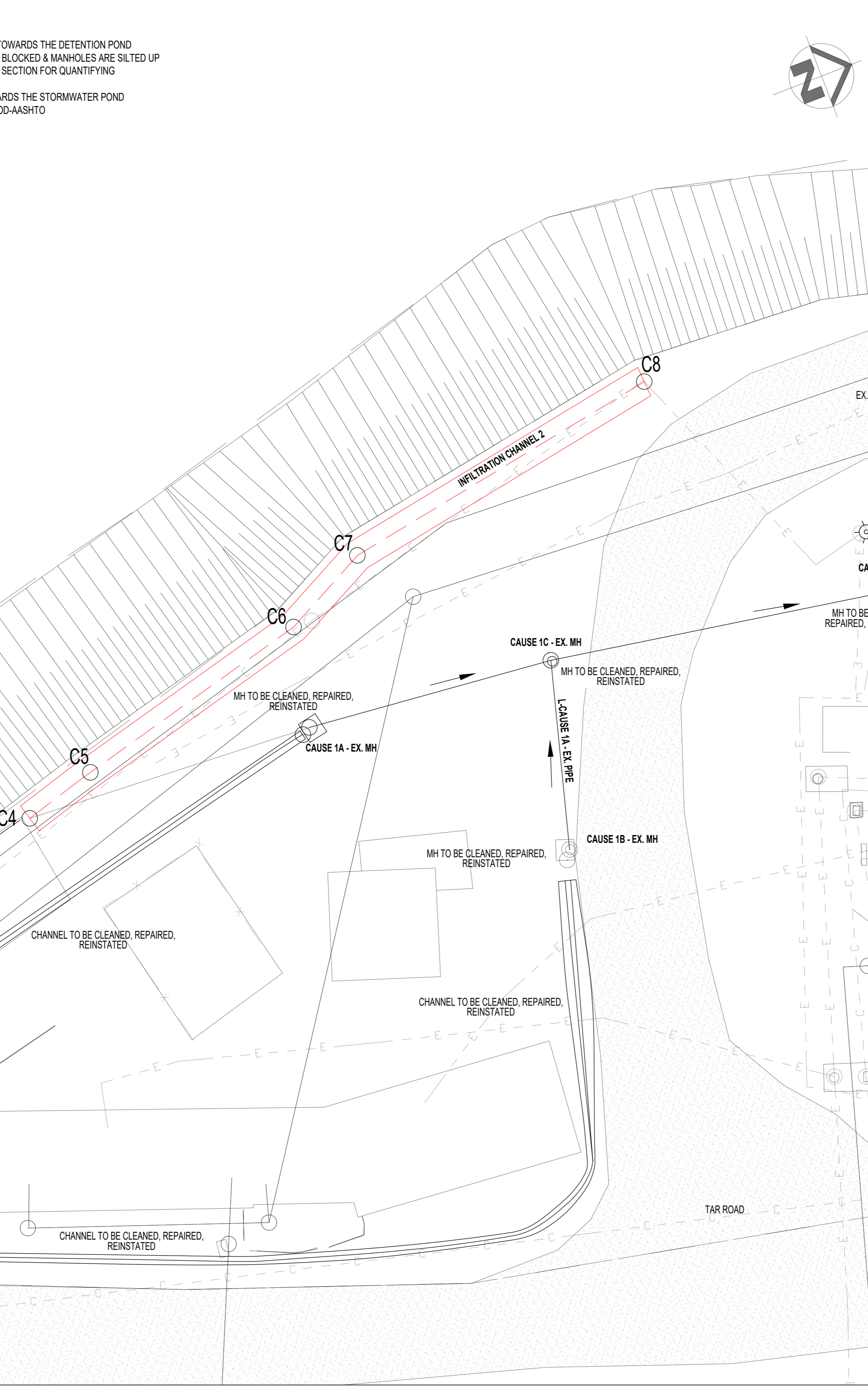
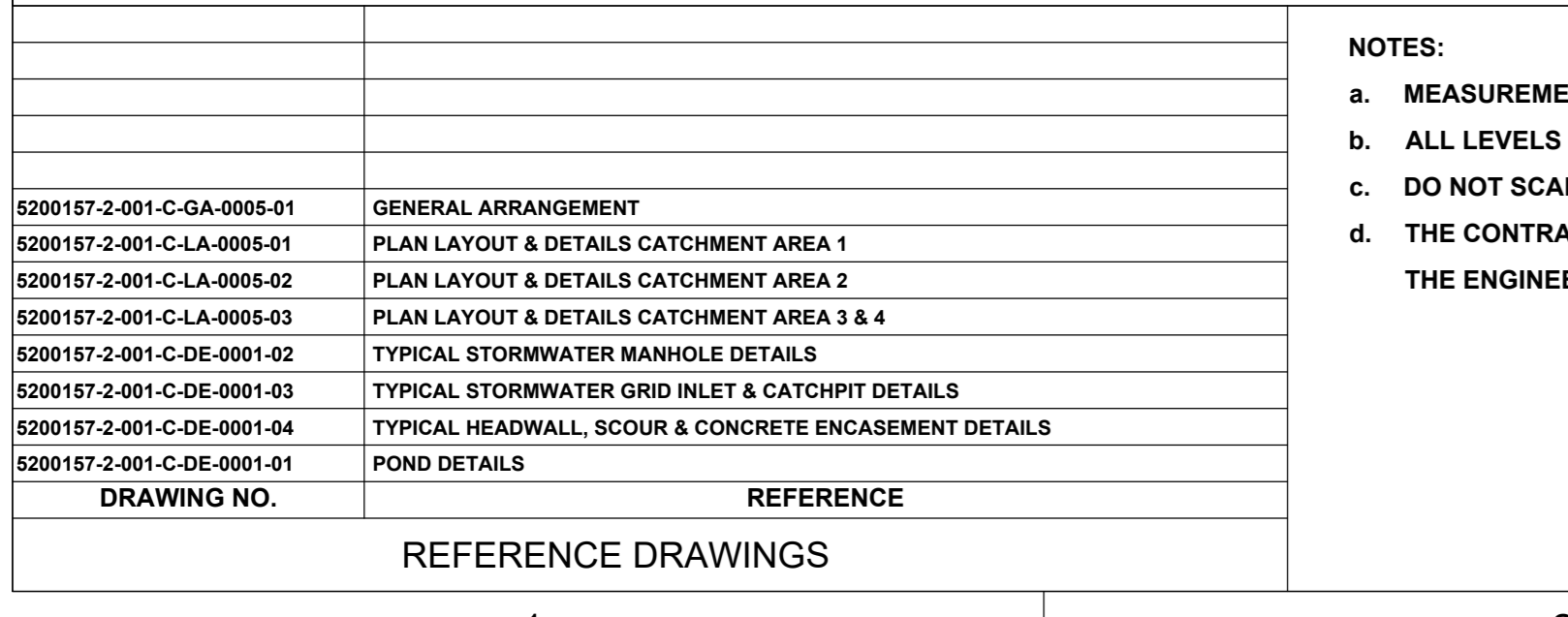
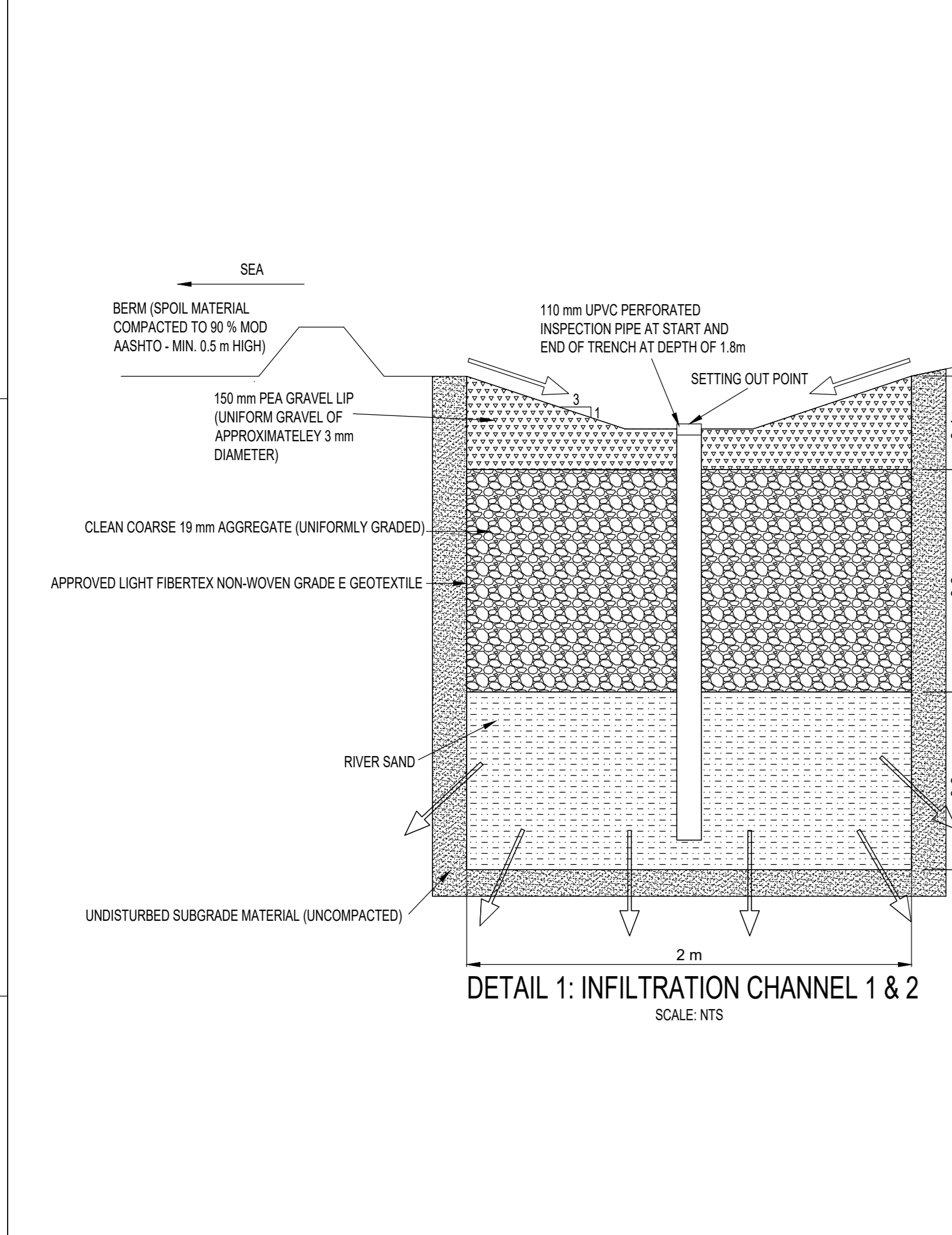
PROJECT NUMBER	DD	FBS	DHS	TYPE	DRAWING NO.	SHEET	REV	ID
5200197-2-001-157	2	0	1	C	GA-0005	10	1	00

CHANNEL C/L	COORDINATES	Y	X	Z	TYPE
C1	94728.823	3656207.277			
C2	94727.785	3656204.422			
C3	94722.429	3656196.327			
C4	94728.201	3656175.852			
C5	94723.413	3656171.282			
C6	94733.732	3656165.618			
C7	94736.59	3656150.150			
C8	94740.54	3656128.934			
C9	94736.202	3656098.124			
C10	94734.671	3656088.000			
C11	94728.819	3656066.176			
C12	94728.122	3656062.456			
C13	94723.818	3656055.229			
C14	94725.268	3656049.798			
C15	94724.777	3656041.365			
C16	94711.727	3656020.897			
C17	94719.365	3656016.027			
C18	94667.215	3656226.024			
C19	94596.04	3656036.438			
C20	94585.569	3656031.000			
C21	94531.572	3655875.497			
C22	94681.362	3655974.833			
C23	94620.607	3655914.829			
C24	94519.784	3655882.408			
C25	94507.151	3655871.079			
C26	94506.544	3655866.508			
C27	94457.333	3656437.085			
C28	94438.342	3656565.205			
C29	94417.256	3656540.419			
C30	94376.379	3656547.993			
C31	94297.390	3656600.311			
C32	94703.890	3656070.074			
C33	94697.348	3656070.828			
C34	94703.906	3656074.549			

PLEASE NOTE:
CHANNEL COORDINATES ARE GIVEN FOR CENTER OF CHANNEL.

INFILTRATION CHANNEL NO.	WIDTH	LENGTH	DEPTH
1	2m	12m	2m
2	2m	50m	2m
3	1m	30m	1m
4	1m	1m	1m

BENCHMARK NAME	Y	X	Z	TYPE
PN02_S1	-93475.257	-9854091.162	5.692	Pillar Beacon
PN04_S1	-94375.598	-9852788.626	11.637	Pillar Beacon
PN05_S1	-94330.064	-9855384.385	4.526	Pillar Beacon
PN06_S1	-94121.326	-9854507.768	11.216	Pillar Beacon
20025_S1	-97921.795	-9853141.320	5.446	Town Survey Mark
B1	-93666.669	-9853904.208	9.515	Ordnance Iron Peg
B2	-93748.380	-9853393.096	3.313	12mm Round Iron Peg
B3	-93899.392	-9853764.514	2.997	12mm Round Iron Peg
B4	-94006.972	-9854037.881	2.839	12mm Round Iron Peg
B5	-94146.158	-9854428.016	3.055	12mm Round Iron Peg
B6	-94300.974	-9854714.558	3.066	12mm Round Iron Peg
B7	-94284.497	-9855014.636	3.386	12mm Round Iron Peg
B8	-93829.649	-9854096.752	4.241	12mm Round Iron Peg
B9	-93195.652	-9853381.885	3.673	12mm Round Iron Peg
B10	-93431.837	-9853281.361	3.484	12mm Round Iron Peg

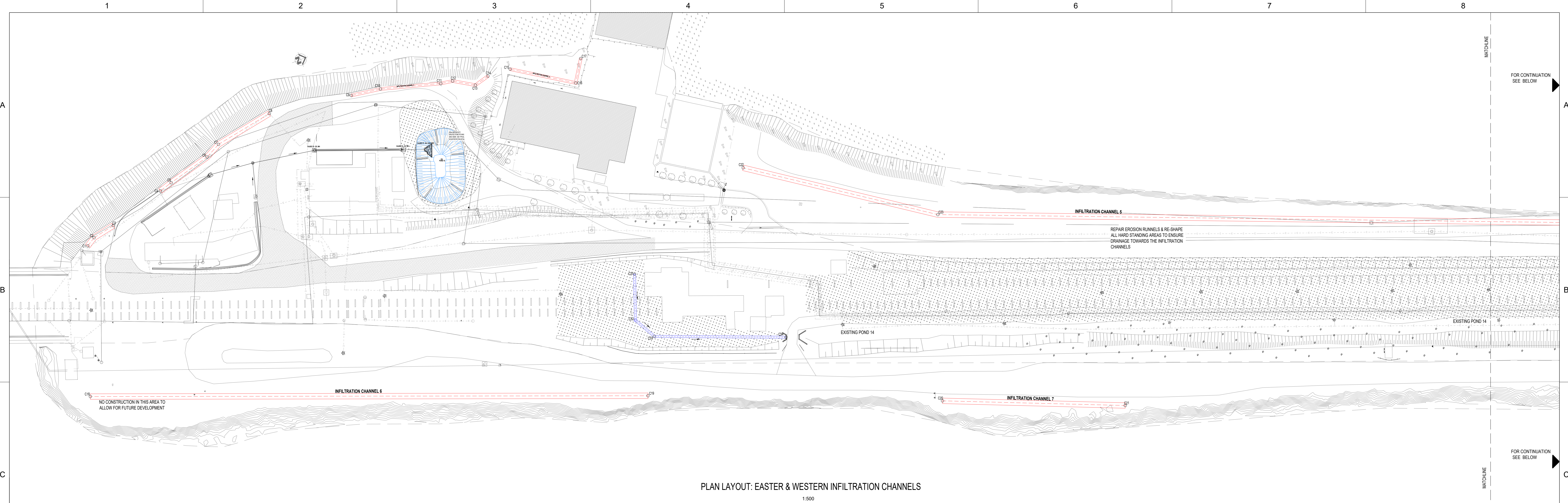


PORT OF SALDANHA
SALDANHA STORMWATER MANAGEMENT
CAUSEWAY AREA
PLAN LAYOUT & DETAILS
CATCHMENT AREA 1

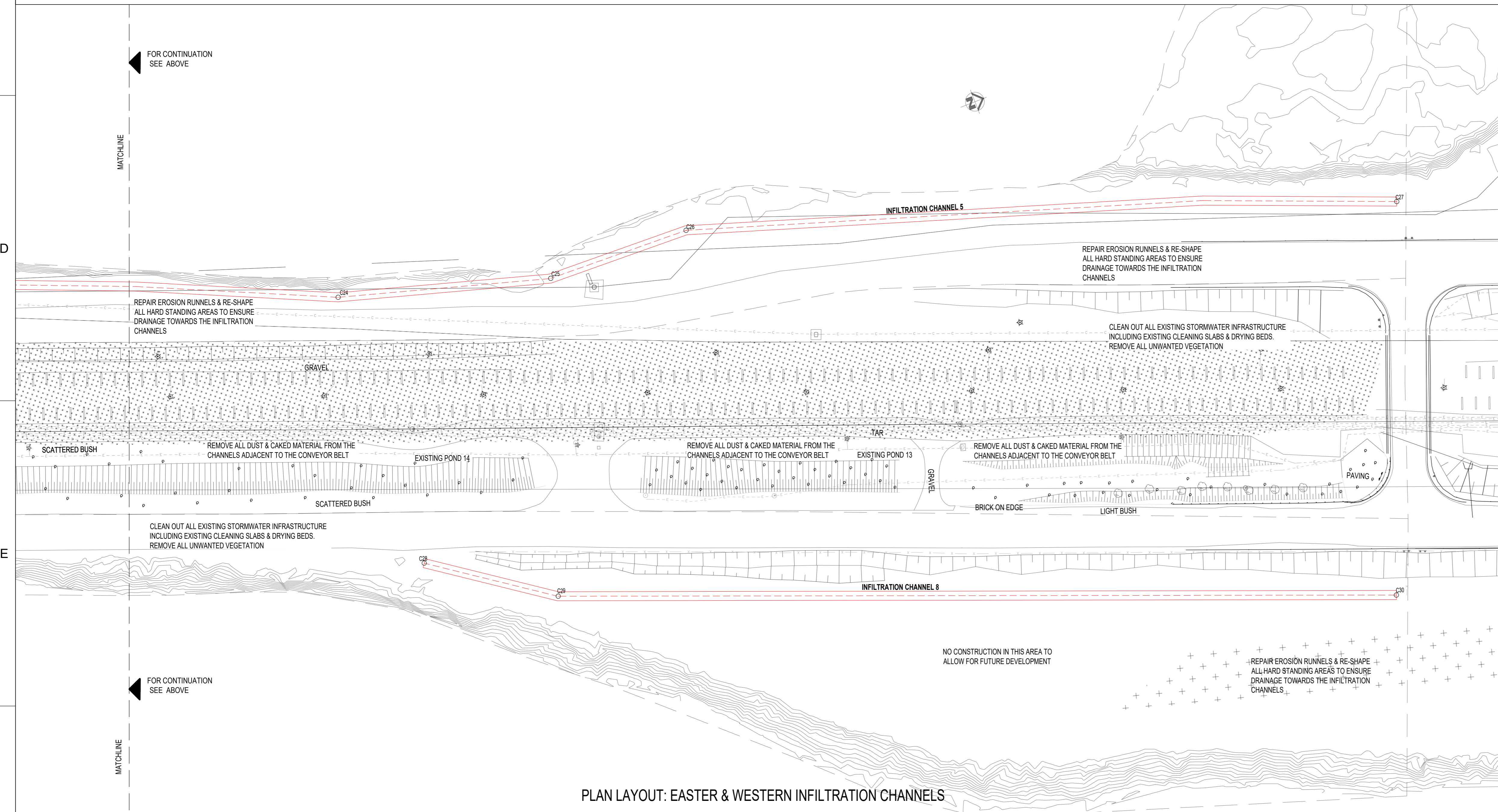
TRANSNET

PROJECT NUMBER: AQ52010157200101000501010000

SCALE: AS SHOWN



PLAN LAYOUT: EASTER & WESTERN INFILTRATION CHANNELS
1:500

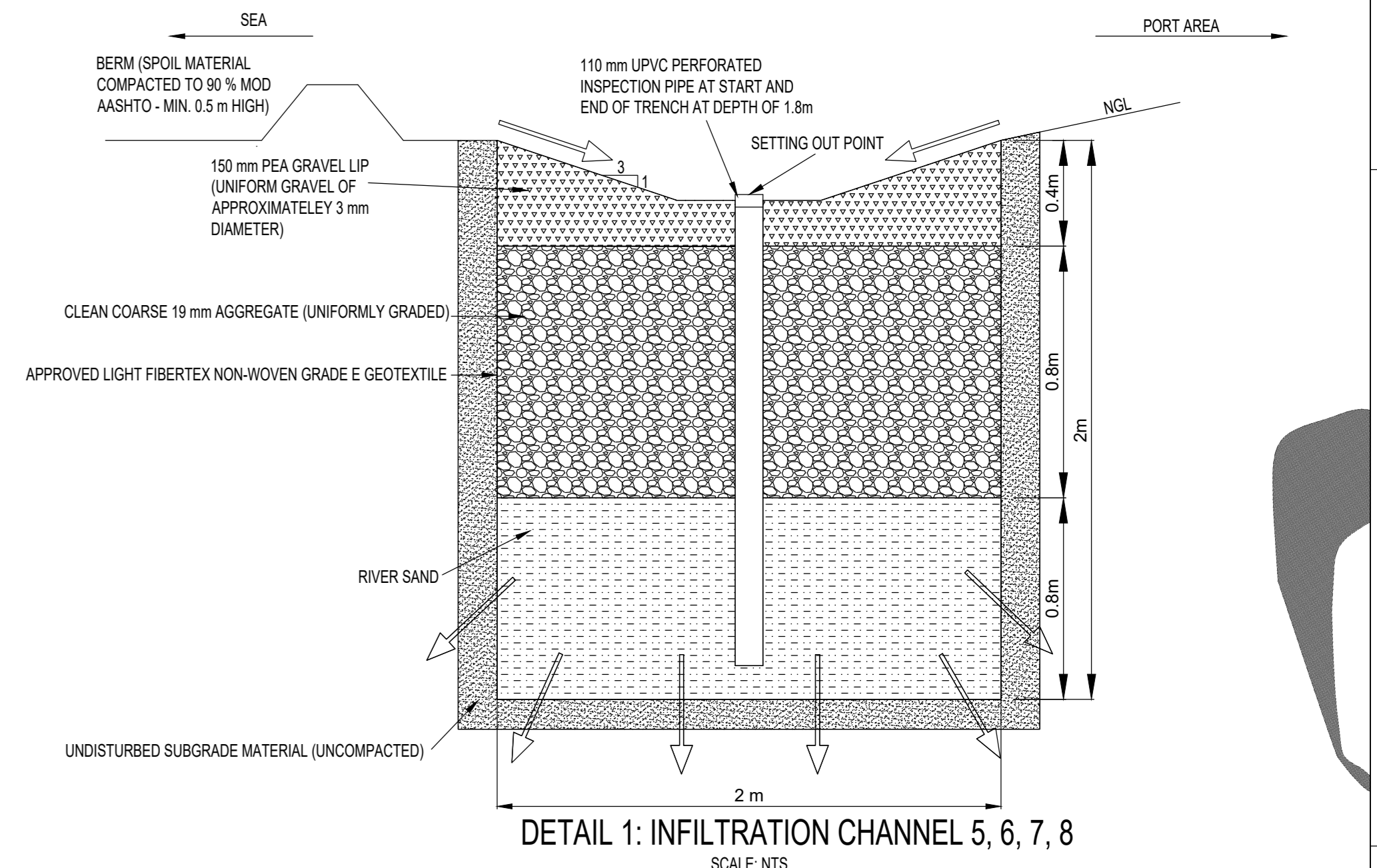


PLAN LAYOUT: EASTER & WESTERN INFILTRATION CHANNELS
1:500

LEGEND - SERVICES		
PROPOSED	EXISTING	DESCRIPTION
		STORMWATER MANHOLE/PIPE
		SEWER MANHOLE/PIPE
		EFFLUENT MANHOLE/PIPE
		NEW INFILTRATION CHANNEL
		COMMUNICATION MANHOLE/DUCTS
		ELECTRICAL MANHOLE/DUCTS
		WATERMAIN
		FENCE
		CATCHMENTS BOUNDARY
		ASPHALT ROAD
		EARTH BANKS
		NEW DRAIN
		DEMOLISH EXISTING SERVICE
		NEW POND

SETTING OUT COORDINATE:	
R	RAIL SUBSTATION
M	MULTI PURPOSE TERMINAL
S	STOOPLE
C	CAUTION
T	T-PIPE

ABBREVIATIONS	
MH	MANHOLE
ELP	ELECTRICAL LIGHT POLE
HML	HIGH WAST LIGHT
EX	EXISTING
BM	BENCH MARKS
SW	STORMWATER
EF	EFFLUENT
FM	FIRE MAIN
V	WATERMAIN VALVE



INFILTRATION CHANNEL NO.	WIDTH	LENGTH	DEPTH
5	2 m	580 m	2 m
SEE DETAIL 1			
6	2 m	202 m	2 m
SEE DETAIL 1			
7	2 m	66 m	2 m
SEE DETAIL 1			
8	2 m	215 m	2 m
SEE DETAIL 1			

INFILTRATION CHANNEL NOTES

- INSPECTION PIPE MUST BE LOCATED AT THE CENTER OF THE CHANNEL
- IT MUST HAVE A SCREW LID TO PREVENT WATER FROM FLOWING IN FROM THE TOP
- THE BOTTOM OF THE CHANNEL MUST BE AT LEAST 800mm AWAY FROM THE WATER TABLE OR BEDROCK LAYER CONDITION
- THE COARSE FILL MATERIAL MUST BE COVERED WITH A GEOTEXTILE LAYER & COVERED WITH A LAYER OF TOPSOIL
- THE TOP LAYERS OF THE TRENCH SHOULD BE PERIODICALLY CLEANED TO PREVENT UNDESIRABLE SEDIMENT BUILD UP
- INFILTRATION CHANNEL TO MEET ALL DESIGN, CONSTRUCTION & MAINTENANCE GUIDELINES SET OUT IN THE SOUTH AFRICAN GUIDELINES FOR SUSTAINABLE DRAINAGE SYSTEMS

CONSTRUCTION & REHABILITATION ACTIVITIES FOR STORMWATER SYSTEM

- REMOVE ALL DUST & CAKED MATERIAL FROM SURFACE & SUB-SURFACE DRAINAGE SYSTEMS
- REPAIR EROSION RUNNELS & RE-SHAPE ALL HARD STANDING AREAS TO ENSURE DRAINAGE TOWARDS THE DETENTION POND
- PIPES, CULVERTS, MANHOLES & CHANNELS NEED TO BE CLEANED REGULARLY AS SYSTEM IS BLOCKED & MANHOLES ARE SILENT UP
- LENGTHS OF PIPES, NUMBER OF CULVERTS & MANHOLES CLEARLY SHOWN IN LONGITUDINAL SECTION FOR QUANTIFYING
- CLEAN OUT ALL SLABS & DRYING BEDS
- RE-SHAPE ALL HARD STANDING AREAS TO ENSURE DRAINAGE AWAY FROM THE ROADS TOWARDS THE STORMWATER POND
- LOW POINTS TO BE REPAIRED WITH A MINIMUM OF 150 mm G2 LAYER COMPACTED TO 95% MOD-AASHTO

DRAWING NO.	REFERENCE DRAWINGS
5200157-2-001-C-GA-0005-01	GENERAL ARRANGEMENT
5200157-2-001-C-LA-0005-01	PLAN LAYOUT & DETAILS CATCHMENT AREA 1
5200157-2-001-C-LA-0005-02	PLAN LAYOUT & DETAILS CATCHMENT AREA 2
5200157-2-001-C-LA-0005-03	PLAN LAYOUT & DETAILS CATCHMENT AREA 3 & 4
5200157-2-001-C-DE-0001-02	TYPICAL STORMWATER MANHOLE DETAILS
5200157-2-001-C-DE-0001-03	TYPICAL STORMWATER GRID INLET & CATCHPIE DETAILS
5200157-2-001-C-DE-0001-04	TYPICAL HEADWALL, SCOUR & CONCRETE ENCASEMENT DETAILS

NOTES:

- MEASUREMENTS ARE BASED ON METRIC SYSTEM.
- ALL LEVELS ARE IN METERS TO MEAN SEA LEVELS (MSL)
- DO NOT SCALE DRAWING - ONLY DIMENSIONS SHOWN TO BE USED.
- THE CONTRACTOR SHALL VERIFY ALL SERVICES OR CONDITIONS ON THE SITE AND NOTIFY THE ENGINEERING OF ANY VARIATIONS FROM DIMENSIONS BEFORE CONSTRUCTION.

CONTRACTOR / CONSULTANT		TRANSNET PORT TERMINALS	
TITLE	NAME	NAME	DATE
		PR. ENGS. / PR. TECH. / PR. ARCH	
		NAME	DATE
		SIGNATURE	DATE
		REG. NUMBER	04/06/23
		SCALE	AS SHOWN

OPERATING DIVISIONS	
TITLE	NAME

ISSUED FOR CONSTRUCTION		ISSUED FOR CLIENT APPROVAL	
NO.	DESCRIPTION	BY	DATE
00		HD	04/08/2023
01		HD	28/10/2022

REVISIONS	
NO.	DESCRIPTION

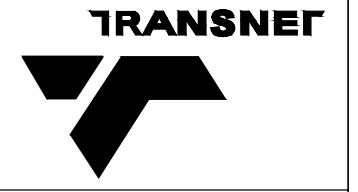
PROJECT NUMBER	DD	FBS	DHS	TYPE	DRAWING NO.	SHEET	REV	ID
AO5200157	2	0	1	C	LA	0005	03	00

CONTRACTOR / CONSULTANT: TRANSNET PORT TERMINALS

PROJECT: SALDANHA STORMWATER MANAGEMENT CAUSEWAY AREA PLAN LAYOUT & DETAILS CATCHMENT AREA 3 & 4

DATE: 04/06/23

SCALE: AS SHOWN



PORT OF SALDANHA
SALDANHA STORMWATER MANAGEMENT
CAUSEWAY AREA
PLAN LAYOUT & DETAILS
CATCHMENT AREA 3 & 4