

**NOTES**

**GENERAL**

- DRAWINGS ARE PRELIMINARY ONLY AND INTENDED TO INFORM THE PLANNING APPLICATION. DRAWINGS ARE NOT INTENDED FOR CONSTRUCTION AND SHOULD NOT BE USED AS SUCH. FOR AVOIDANCE OF DOUBT, SURFACE WATER MANAGEMENT DESIGN IS INTENDED TO BE FURTHER DEVELOPED POST-CONSENT OF THE PLANNING APPLICATION.
- ALL LOCATIONS OF SUDS FEATURES IDENTIFIED ARE APPROXIMATE AND ARE LIMITED BY THE LEVEL OF INFORMATION AVAILABLE. DETAILED SITING OF SUDS FEATURES SHALL BE UNDERTAKEN ON AN OBSERVATIONAL BASIS DEPENDANT ON LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN.
- ADDITIONAL TEMPORARY DRAINAGE / MITIGATION WILL BE PROVIDED DURING THE CONSTRUCTION PHASE ON AN OBSERVATIONAL BASIS.
- BACKGROUND MAPPING REPRODUCED © OPENSTREETMAP CONTRIBUTORS
- ALL DRAINAGE MANAGEMENT FEATURES SHOWN SHOULD BE READ IN CONJUNCTION WITH RELEVANT TYPICAL DETAIL DRAWINGS.

**POLLUTION PREVENTION**

- ALL SETTLEMENT FEATURES SUBJECT TO DETAILED DESIGN.
- DRAINAGE / SILT MANAGEMENT FEATURES INCLUDING SETTLEMENT FEATURES AND DRAINAGE CROSSINGS TO BE INSTALLED PRIOR TO OR IN PARALLEL WITH ROAD CONSTRUCTION.
- INTERIM MEASURES TO BE EMPLOYED IN ALL INSTANCES WHERE WORK CARRIED OUT TO CONSTRUCT THE ACCESS ROAD IS LIKELY TO CAUSE ADVERSE ENVIRONMENTAL IMPACTS THROUGH INCREASED SILT LOADINGS BEING GENERATED DURING THE CONSTRUCTION PHASE.
- SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SILTS TO RECEIVING WATERCOURSES.
- OIL FUEL SHOULD BE STORED WITHIN CONTAINMENT AND CEMENT SHOULD BE MIXED WITHIN COMPOUND / CONTAINMENT, TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).

**TRACKS / INFRASTRUCTURE DRAINAGE**

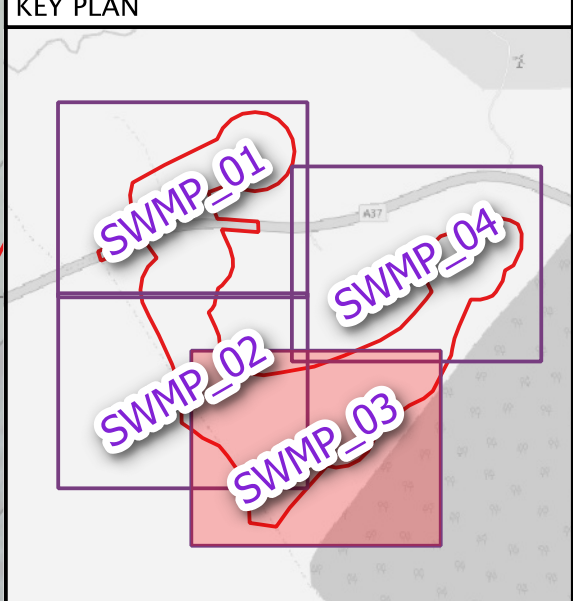
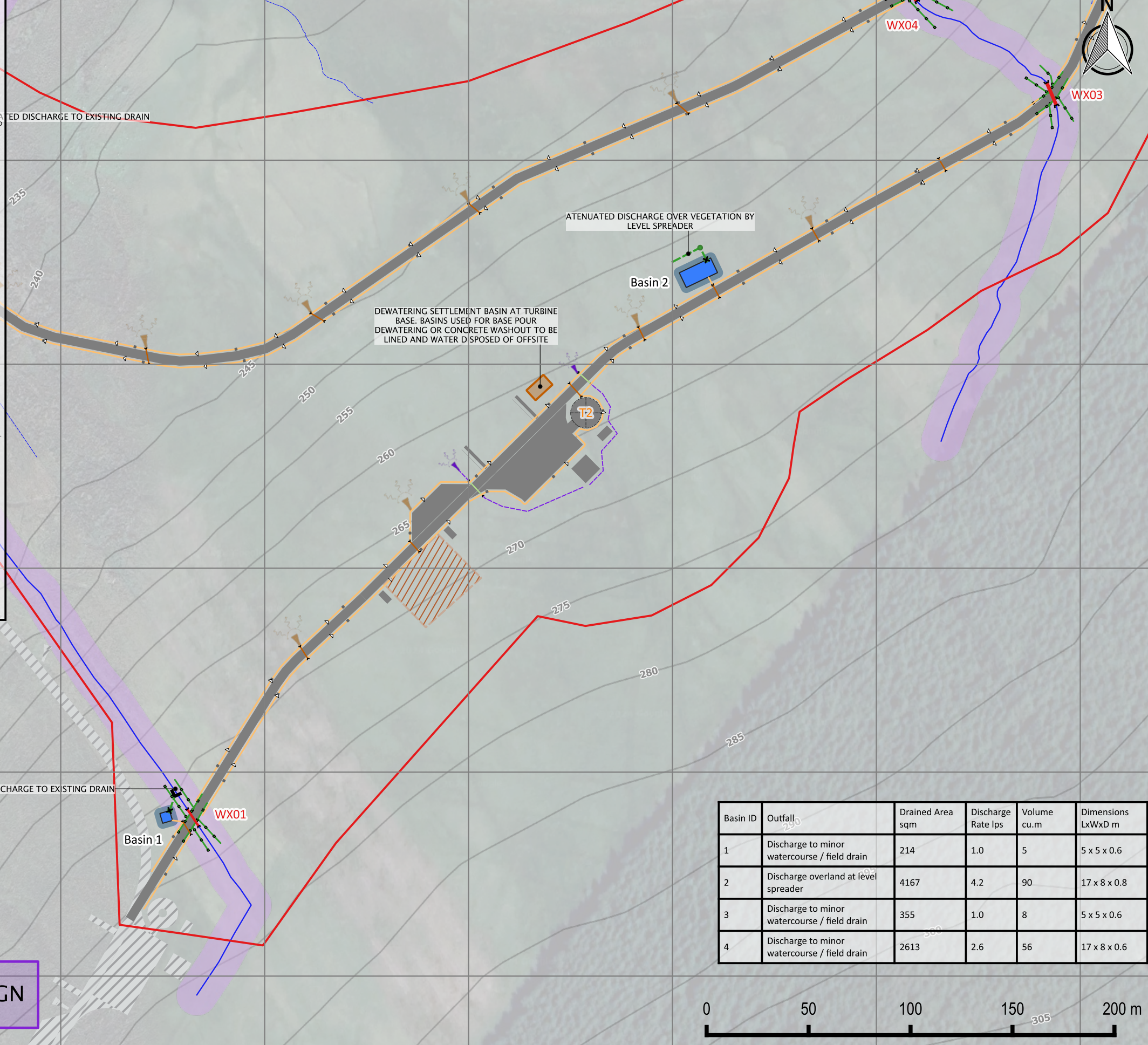
- TEMPORARY UPSLOPE CUTOFF / DIVERSION DRAINAGE TO BE INSTALLED IN ADVANCE OF MAIN EARTHWORKS IN AREAS INDICATED IN ORDER TO MINIMISE SURFACE WATER INGRESS TO EXCAVATIONS.
- SETTLEMENT / ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES.
- BATTERS OF SWALES TO HAVE DIMENSIONS AS PER SEPARATELY ISSUED TYPICAL DETAIL DRAWING. SWALE TO BE RE-VEGETATED WITH LOCAL SPECIES.
- SLOPES OF SWALES TO BE VEGETATED OR PROTECTED FROM EROSION UNTIL VEGETATION HAS BEEN ESTABLISHED. STRIPPED VEGETATIVE LAYER FROM EXCAVATIONS TO BE STORED LOCALLY AND USED TO LINE SLOPES AND BASE OF SWALE. VEGETATIVE LAYER TO BE PLACED INTO SWALE AFTER CONSTRUCTION OF THE SWALE.
- CLEAN STONE CHECK DAMS TO BE INSTALLED IN ALL DRAINAGE CHANNELS IN ORDER TO PROMOTE SETTLEMENT OF SUSPENDED SOLIDS AND CONTROL FLOW RATES. CHECK DAMS GENERALLY TO BE LOCALLY WON WELL GRADED STONE. AGGREGATE SIZE FOR STONE CHECK DAMS TO BE TYPICALLY 5-40MM CLEAN STONE. ON STEEP SECTIONS SMALL STONE TO BE ANCHORED THROUGH THE PLACEMENT OF 100MM STONE ON THE DOWNHILL FACE OF THE CHECK DAM.
- SPACING AND FREQUENCY OF CHECK DAMS WILL BE DEPENDANT UPON LONGITUDINAL GRADIENT OF SWALE, TO BE DETERMINED AT DETAILED DESIGN.

**WATERCOURSE & TRACK DRAINAGE CROSSINGS**

- THE MINIMUM PIPE DIAMETER FOR ANY TRACK DRAINAGE CROSSING SHALL BE 450MM.
- ALL HDPE PIPES SHALL BE TWINWALL TYPE, BBA HARAS APPROVED.
- ALL CROSSINGS TO BE INSTALLED MIN. 0.15M BELOW EXISTING BED LEVEL AND TO SUIT EXISTING STREAM CHANNEL GRADIENTS.

**MAINTENANCE**

- THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE TEMPORARILY MANAGED THROUGH USE OF SILT FENCES / ALUM FLOCCULANT / CONSTRUCTED SETTLEMENT FEATURES.
- BUILD UP OF SILT LEVELS AT CHECK DAMS TO BE REMOVED AND DISPOSED OF APPROPRIATELY. SILT LEVELS AT CHECK DAMS TO BE VISUALLY INSPECTED AS PART OF AN ONGOING MAINTENANCE PROGRAMME DURING THE CONSTRUCTION PHASE. WHERE CHECK DAMS BECOME CLOGGED WITH SILT OR VEGETATION, STONE CHECK DAM TO BE REMOVED AND REPLACED SUBSEQUENT TO THE REMOVAL OF SILT.



**LEGEND**

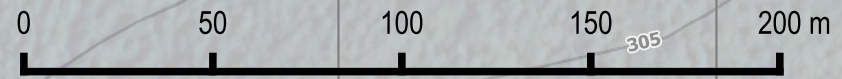
Proposed Development	Dirty Drainage Pipe
Planning Application Boundary	Clean Cutoff Drain
Turbine Locations	Clean Drainage Pipe
Consented Dunbeg South WF	Attenuation Basin
Permanent Hardstanding & tracks	Foul Drainage
Temporary Compound	Outfall to Watercourse
Substation Compound	Outfall - Level Spreader
<b>Hydrology Constraints</b>	Spoil Storage
Significant Watercourse	Drainage Breakout
Minor Watercourse	New Culvert
Abandoned	Existing Culvert
Other Ephemeral / Minor drainage	Extended Culvert
Hydrological Buffers	
<b>Proposed Drainage</b>	
Track Drainage / Check Dam	

REF	WATERCOURSE CROSSING DESC.
WX01	New 0.6m dia. culvert - Class 120 PCC or equivalent
WX02	New 0.75m dia. culvert - Class 120 PCC or equivalent
WX03	New 0.9m dia. culvert - Class 120 PCC or equivalent

Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions LxWxD m
1	Discharge to minor watercourse / field drain	214	1.0	5	5 x 5 x 0.6
2	Discharge overland at level spreader	4167	4.2	90	17 x 8 x 0.8
3	Discharge to minor watercourse / field drain	355	1.0	8	5 x 5 x 0.6
4	Discharge to minor watercourse / field drain	2613	2.6	56	17 x 8 x 0.6

**POLLUTION PREVENTION GUIDANCE NOTES:**

- Suitable SUDS prevention measures should be in place at all times to prevent the conveyance of silts to receiving watercourses.
- Temporary or permanent SUDS features should be installed BEFORE or adjacent to construction of new access road and hardstanding.
- Clean water cutoff ditch and crossing should be planned and installed BEFORE construction. Clean water management must consider spoil deposition on the site.
- Direct discharge of road drainage to watercourses shall not be permitted.
- Buffer zones are to be maintained around all relevant watercourses as indicated on this drawing. No excavated material is to be stored within the buffer zone.
- DO NOT pump water direct to watercourses.
- DO NOT strip vegetation from existing ditches unless absolutely necessary.
- If water pollution is identified the following steps should be adhered to:  
STOP - Work in the immediate area should be stopped and the source of the pollution identified  
CONTAIN - The source of the pollution should be banded using a suitable method. Natural watercourses should be temporarily diverted around the source of pollution.  
NOTIFY - The relevant authorities (Site Manager / NIEA) and Client/Developer should be notified immediately to ensure that measures can be implemented downstream to protect fisheries and other sensitive areas.



**PLANNING DESIGN**

Mossley Mill,  
Lower Ground (West),  
Carnmoney Road North,  
Newtownabbey BT36 5QA  
T: 028 9084 8694  
E: info@mcclloyconsulting.com  
w: www.mcclloyconsulting.com

DESCRIPTION			
DUNBEG SOUTH EXT. WIND FARM - DRAINAGE LAYOUT SHEET 3			
PROJECT / FIGURE NO.			
M01616-31_SWMP_03			
DRAWN BY	SCALE	REVISION	DATE
DKS	1:2000	0	31/10/2024

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**POLLUTION PREVENTION**

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**TRACK / INFRASTRUCTURE DRAINAGE**

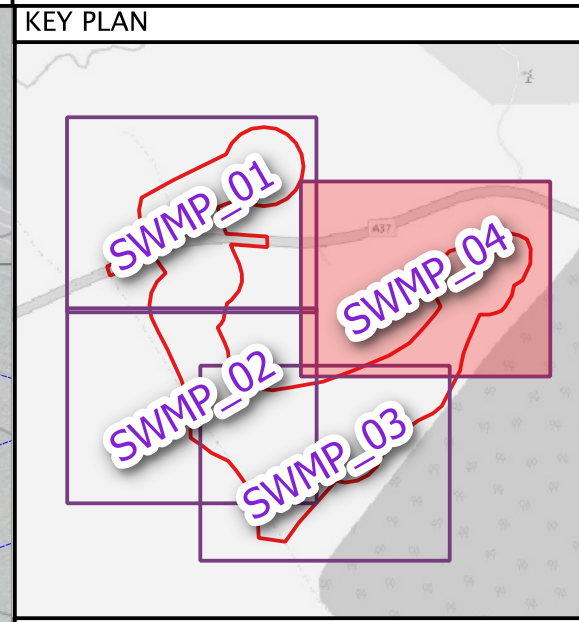
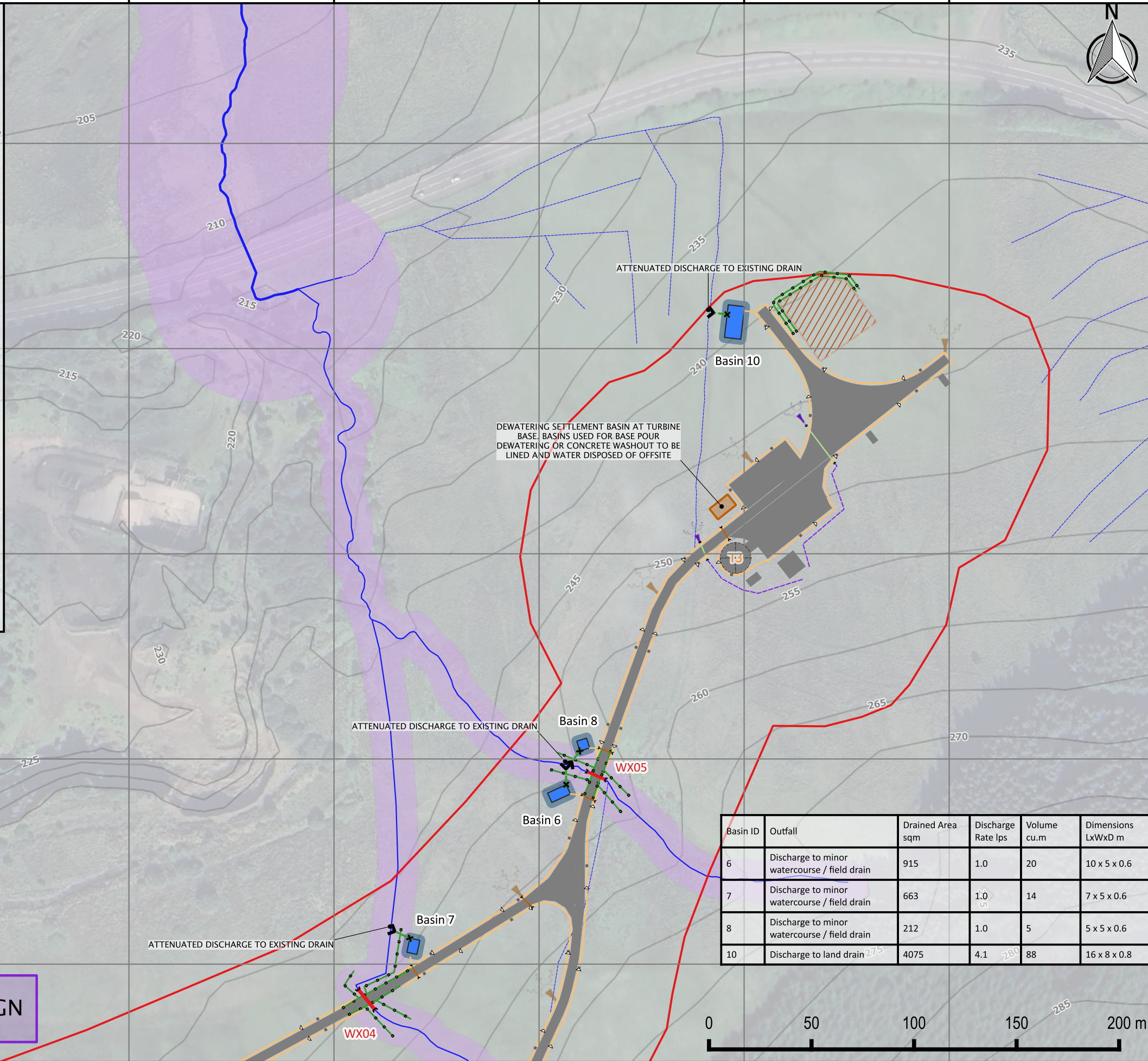
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Turbine Locations	Clean Cutoff Drain
Consented Dunbeg South WF	Clean Drainage Pipe
Permanent Hardstanding & tracks	Attenuation Basin
Temporary Compound	Foul Drainage
Substation Compound	Outfall to Watercourse
Significant Watercourse	Outfall - Level Spreader
Minor Watercourse	Silt Fence
Abandoned	Spoil Storage
Other Ephemeral / Minor drainage	Drainage Breakout
Hydrological Buffers	New Culvert
Track Drainage / Check Dam	Existing Culvert
	Extended Culvert

REF	WATERCOURSE CROSSING DESC.
WX04	New 0.9m dia. culvert - Class 120 PCC or equivalent
WX05	New 0.75m dia. culvert - Class 120 PCC or equivalent

Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions LxWxD m
6	Discharge to minor watercourse / field drain	915	1.0	20	10 x 5 x 0.6
7	Discharge to minor watercourse / field drain	663	1.0	14	7 x 5 x 0.6
8	Discharge to minor watercourse / field drain	212	1.0	5	5 x 5 x 0.6
10	Discharge to land drain	4075	4.1	88	16 x 8 x 0.8

**POLLUTION PREVENTION GUIDANCE NOTES:**

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Newtownabbey BT36 5QA  
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DESCRIPTION			
DUNBEG SOUTH EXT. WIND FARM - DRAINAGE LAYOUT SHEET 4			
PROJECT / FIGURE NO.			
M01616-31_SWMP_04			
DRAWN BY	SCALE	REVISION	DATE
DKS	1:2000	0	31/10/2024

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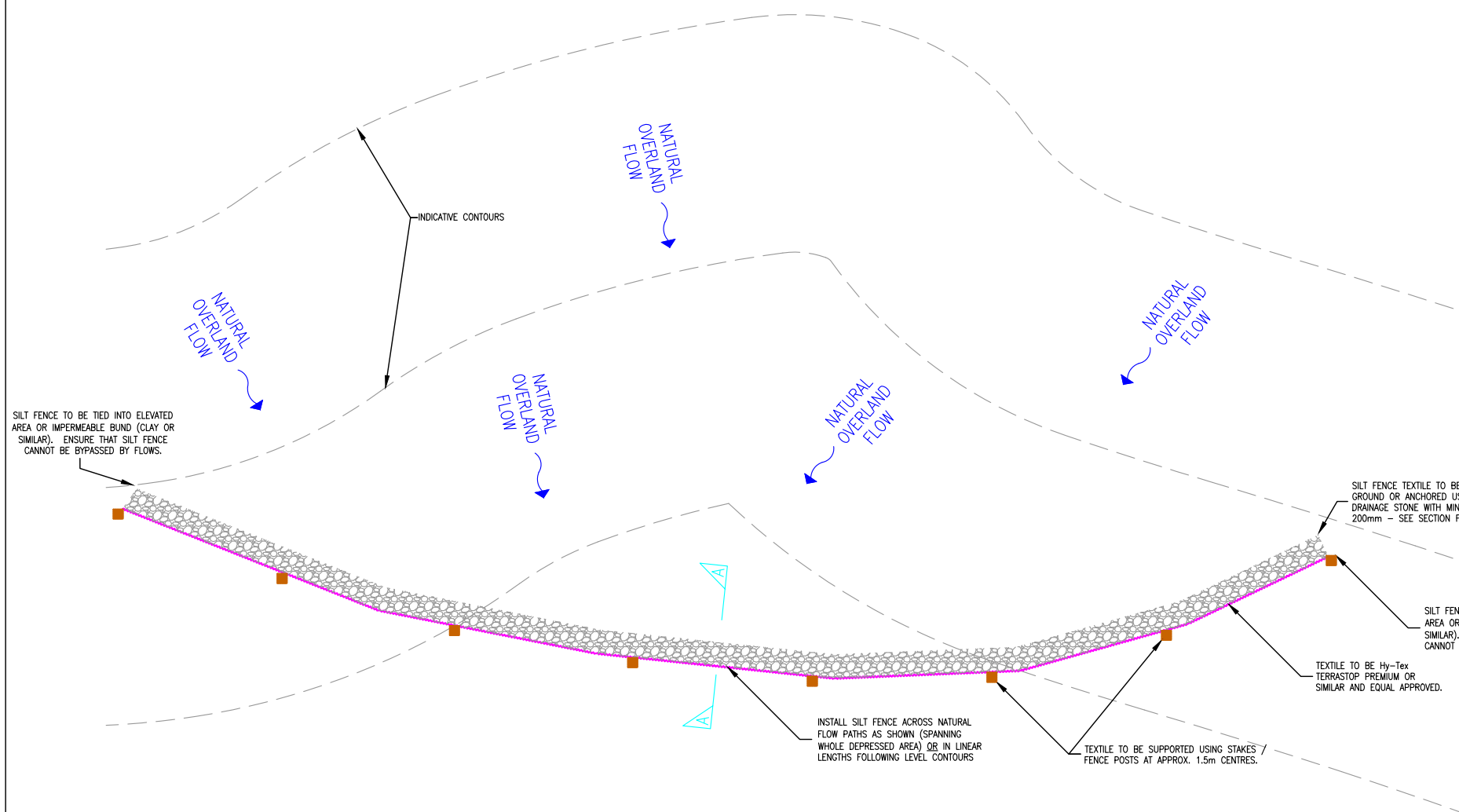
BACKGROUND MAP CONTAINS OPENSTREETMAP DATA © OSM CONTRIBUTORS (2024)



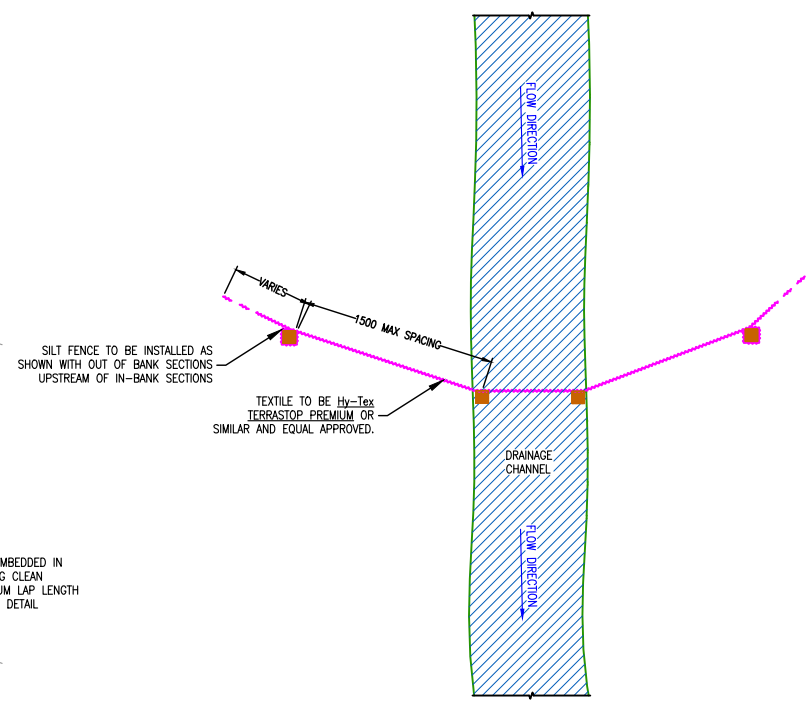
## Annex B

# Drainage Management – Typical Details

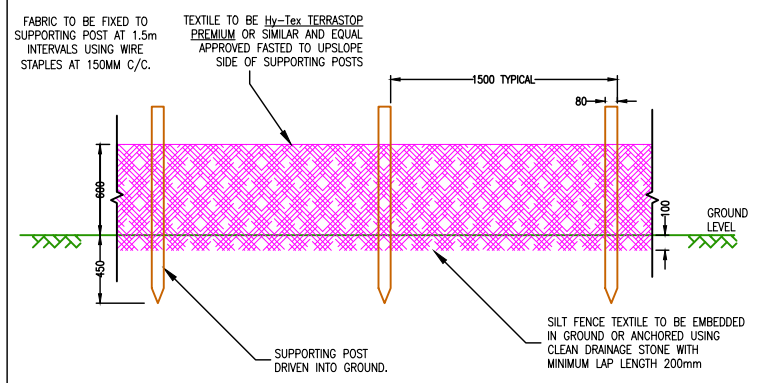
M01616-31_SWMP_20	Typical Detail - Silt Fence
M01616-31_SWMP_21	Typical Detail - Drainage at Excavated (Cut) Track
M01616-31_SWMP_22	Typical Detail - Drainage at 'Floated' Track
M01616-31_SWMP_23	Typical Detail - Settlement Lagoon Arrangement
M01616-31_SWMP_24	Typical Detail - Detention Basin / Attenuation Pond
M01616-31_SWMP_25	Typical Detail - Piped Culverts
M01616-31_SWMP_25	Typical Detail - Track drainage details



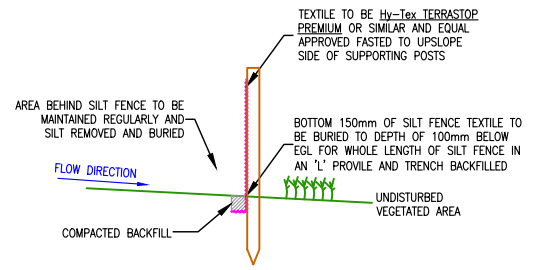
TYPICAL OVERLAND SILT FENCE PLAN  
SCALE 1:25



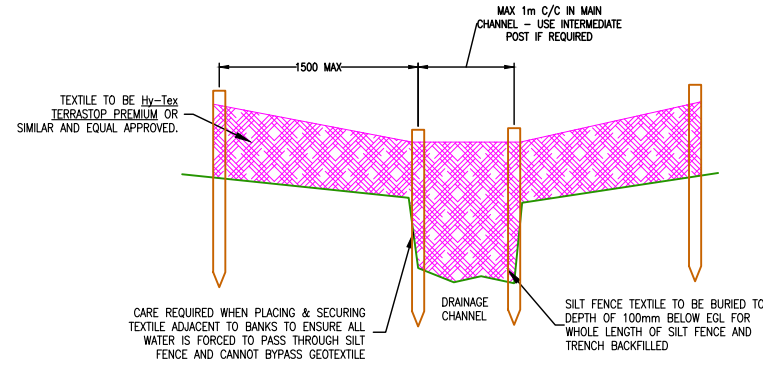
TYPICAL CHANNEL SILT FENCE PLAN  
SCALE 1:25



ELEVATION  
SCALE 1:25



SECTION A-A  
BURIED TYPE OPTION  
SCALE 1:25



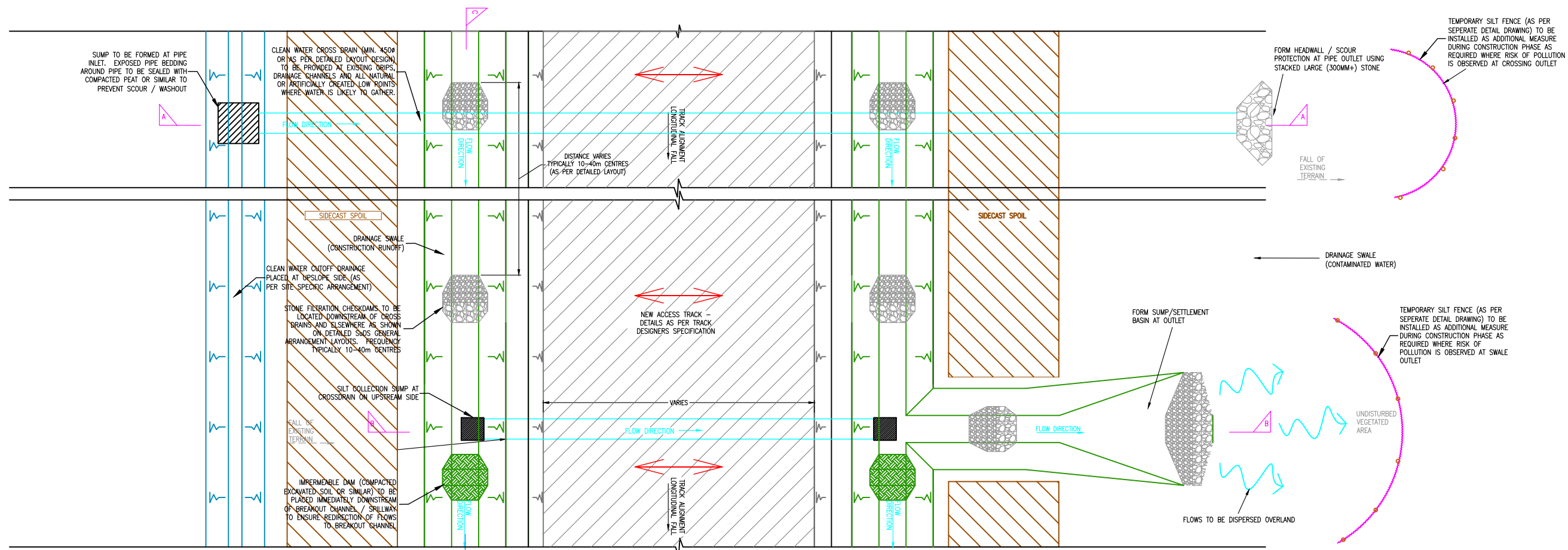
TYPICAL CHANNEL SILT FENCE ELEVATION  
SCALE 1:25

EXAMPLE OF CHANNEL SILT FENCE INSTALLATION  
NTS

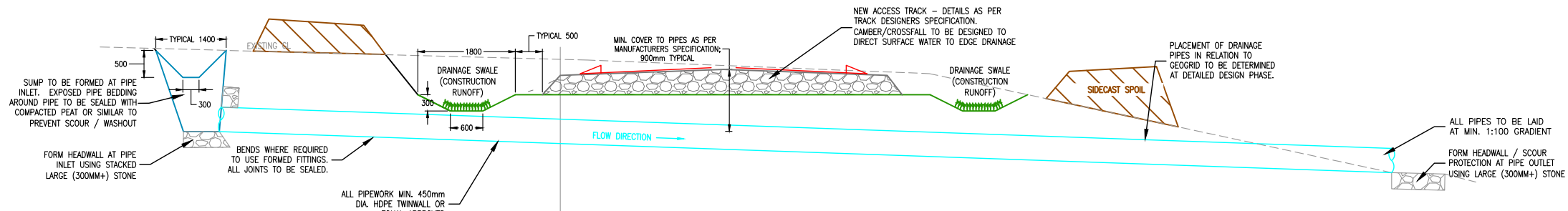
**PLANNING DESIGN**

NOTE: THIS DRAWING IS BASED ON 3RD PARTY INFRASTRUCTURE / PROPOSAL DRAWING.

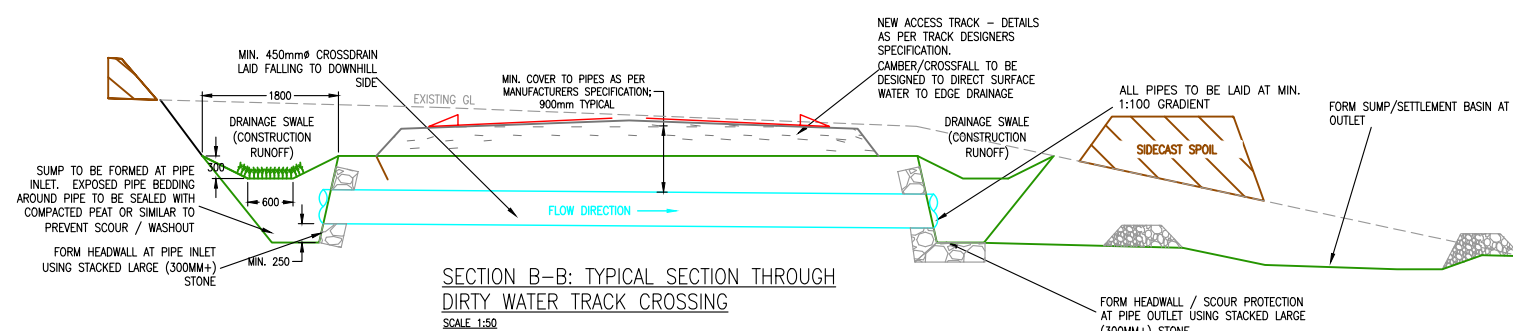
N/A				
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ISSUE	DRN	APP	DATE	NOTES / DESCRIPTION
STATUS				
FOR PLANNING				
T: 028 9084 8694 F: 028 9084 1523 E: info@mcclayconsulting.com W: www.mcclayconsulting.com				
Mossley Mill, Lower Ground (West), Carroneery Track North, Newtownabbey, Co. Antrim BT36 5QA				
PROJECT				
DUNBEG SOUTH EXTENSION WINDFARM				
CLIENT				
DRAWING TITLE				
SURFACE WATER MANAGEMENT PLAN (SWMP) TYPICAL DETAILS SILT FENCE				
SCALE		ORIGINAL SIZE		
AS SHOWN		A1		
DRAWN	CHECKED	DATE		
DL	KS	31/10/2024		
PROJECT No.	DRAWING No.	ISSUE No.		
M01616-31	SWMP_20	00		



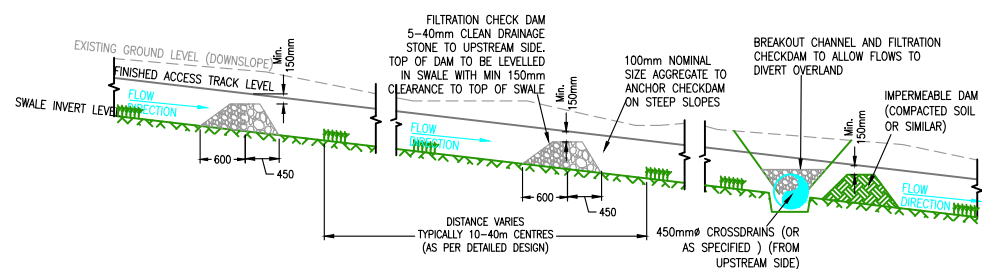
**PLAN OF TRACKSIDE DRAINAGE - TRACK SECTIONS IN CUT**  
SCALE 1:50



**SECTION A-A: TYPICAL SECTION THROUGH CLEAN WATER TRACK CROSSING**  
SCALE 1:50



**SECTION B-B: TYPICAL SECTION THROUGH DIRTY WATER TRACK CROSSING**  
SCALE 1:50



**SECTION C-C: TRACKSIDE SWALE & CHECK DAMS**  
SCALE 1:50

- NOTES:**
1. TRACK CONSTRUCTION TO BE AS PER HIGHWAY ENGINEERS DESIGN & SPECIFICATION
  2. REFER TO DETAILED PLAN SWMS DRAWINGS FOR DETAILS OF CHECK DAM / CROSS DRAIN / CUTOFF DRAIN / OUTFALL LOCATIONS ETC.
  3. FEATURES SHOWN ARE PERMANENT SITE DRAINAGE. TEMPORARY SITE DRAINAGE OVER AND ABOVE THAT SHOWN ON DRAWINGS MAY BE REQUIRED TO SUIT TEMPORARY TRACK ALIGNMENTS AND LEVELS.

NOTE: THIS DRAWING IS BASED ON 3RD PARTY INFRASTRUCTURE / PROPOSAL DRAWING  
N/A

ISSUE	DRN	APP	DATE	NOTES / DESCRIPTION
00	KS	KS	31/10/2024	ORIGINAL

STATUS: FOR PLANNING

**McCloy Consulting**  
1, 028 9084 8694  
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Mossley Mill, Lower Ground (West),  
Carnmoney TRACK North,  
Newtownabbey, Co. Antrim  
BT36 5QA

**DUNBEG SOUTH EXTENSION WINDFARM**



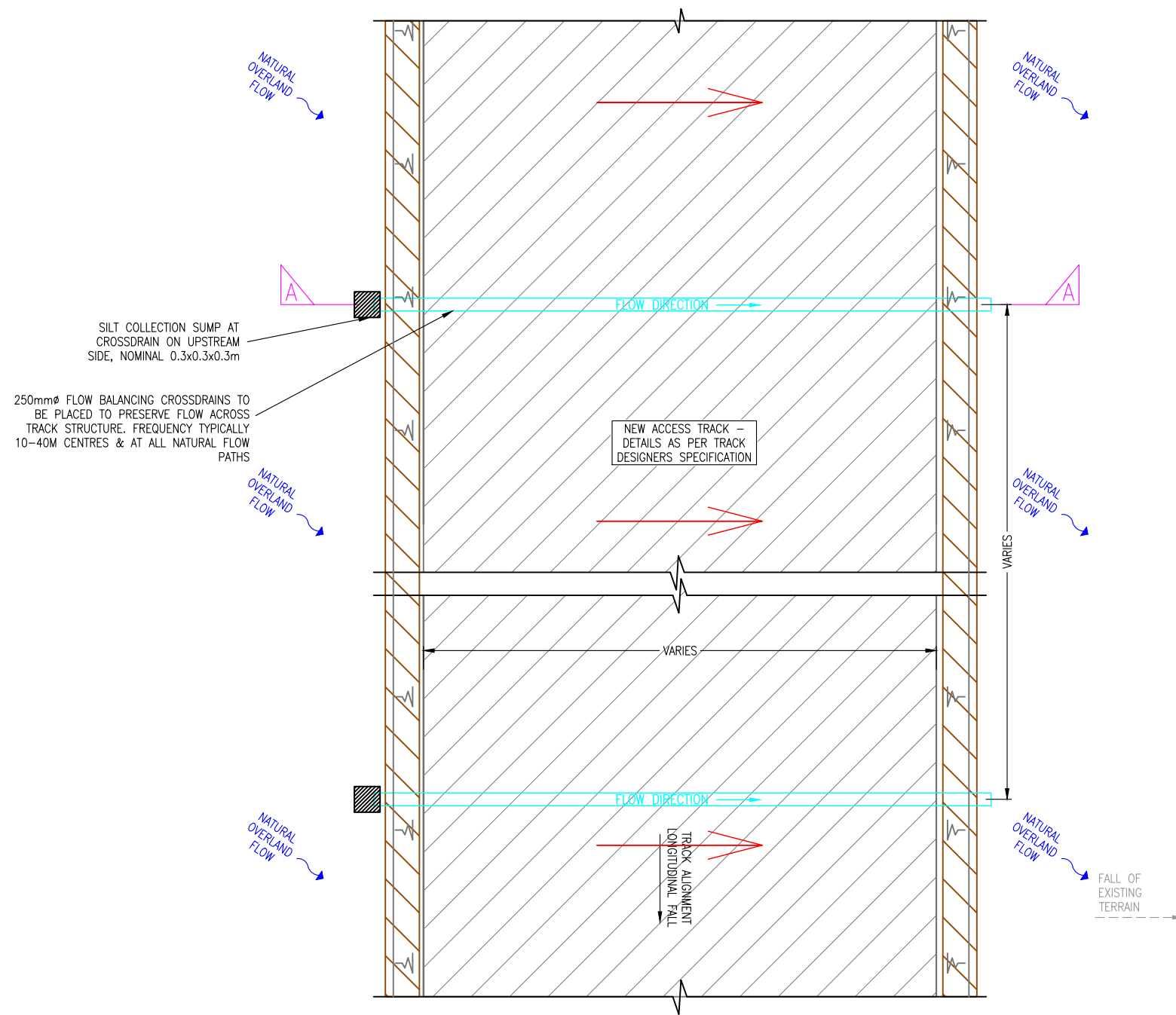
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SCALE	ORIGINAL SIZE
AS SHOWN	A1

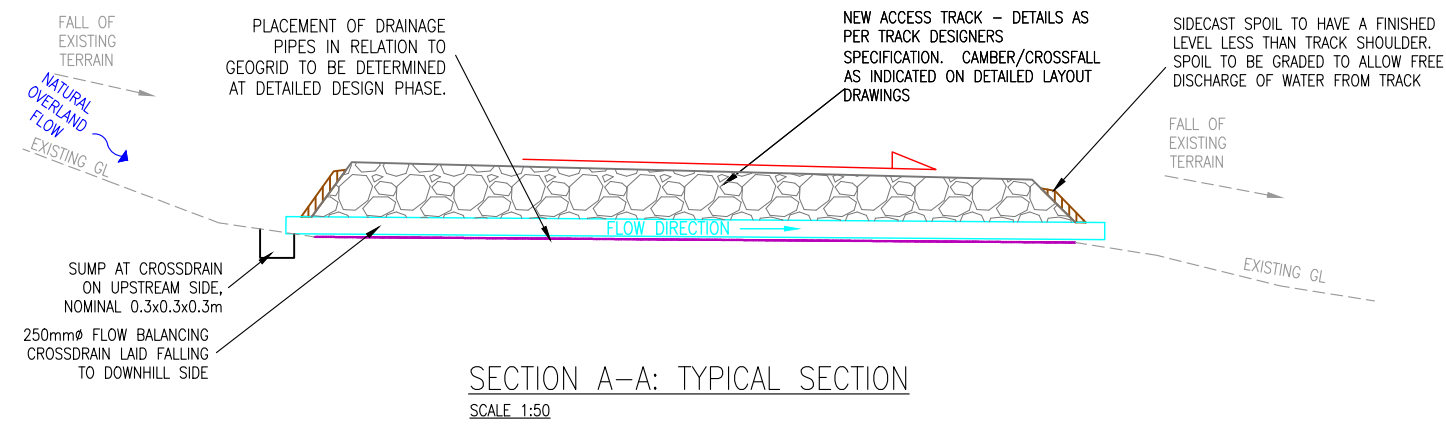
DRAWN	CHECKED	DATE
DL	KS	31/10/2024

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M01616-31	SWMP_21	00

**PLANNING DESIGN**



PLAN OF TRACKSIDE DRAINAGE –  
FLOATED TRACK SECTIONS  
SCALE 1:50



SECTION A-A: TYPICAL SECTION  
SCALE 1:50

**PLANNING DESIGN**

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ISSUE	DRN	APP	DATE	NOTES / DESCRIPTION
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STATUS FOR PLANNING

**McCloy Consulting**  
 T: 028 9084 8694 Mossley Mill, Lower Ground (West), Carroneery TRACK North, Newtownabbey, Co. Antrim, BT36 5QA  
 F: 028 9084 1525  
 E: info@mcclayconsulting.com  
 W: www.mcclayconsulting.com

PROJECT: DUNBEG SOUTH EXTENSION WINDFARM

CLIENT: **RES**

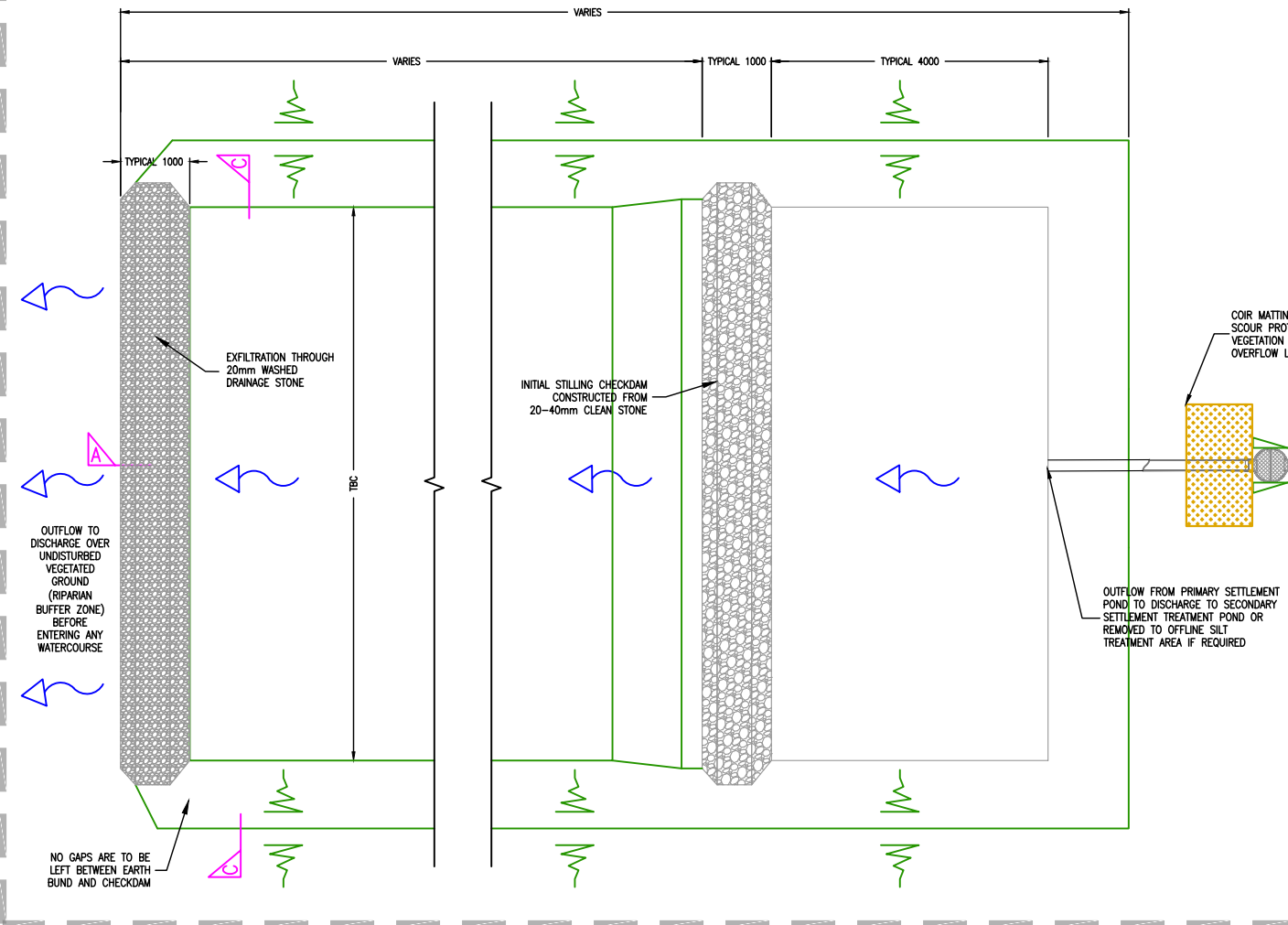
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SCALE	ORIGINAL SIZE
AS SHOWN	A1

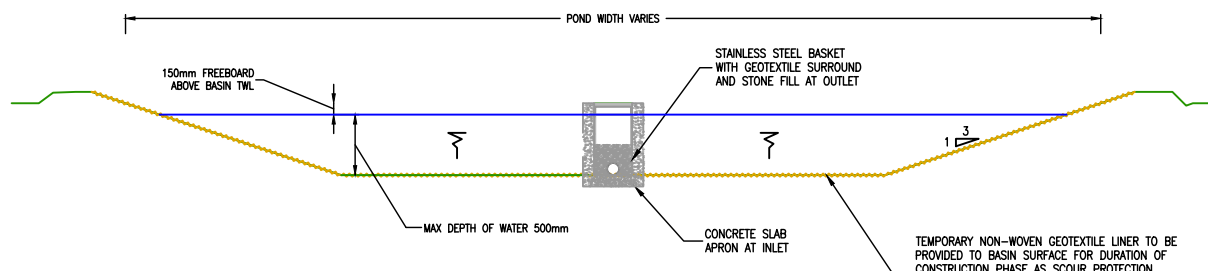
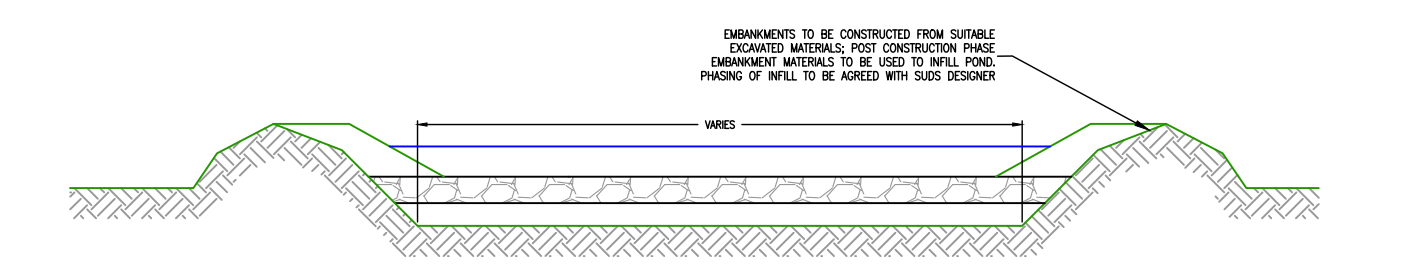
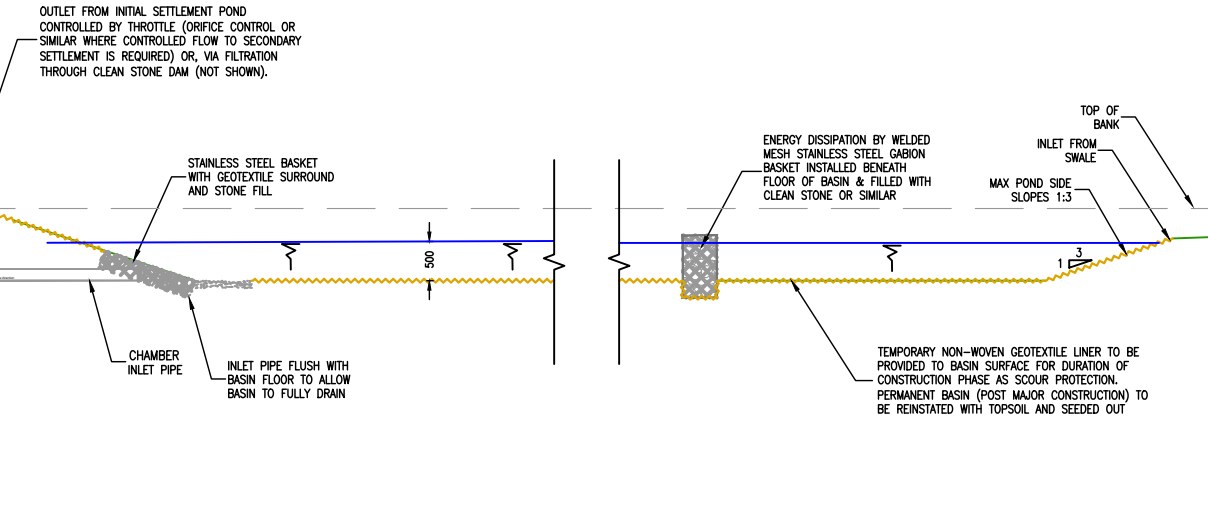
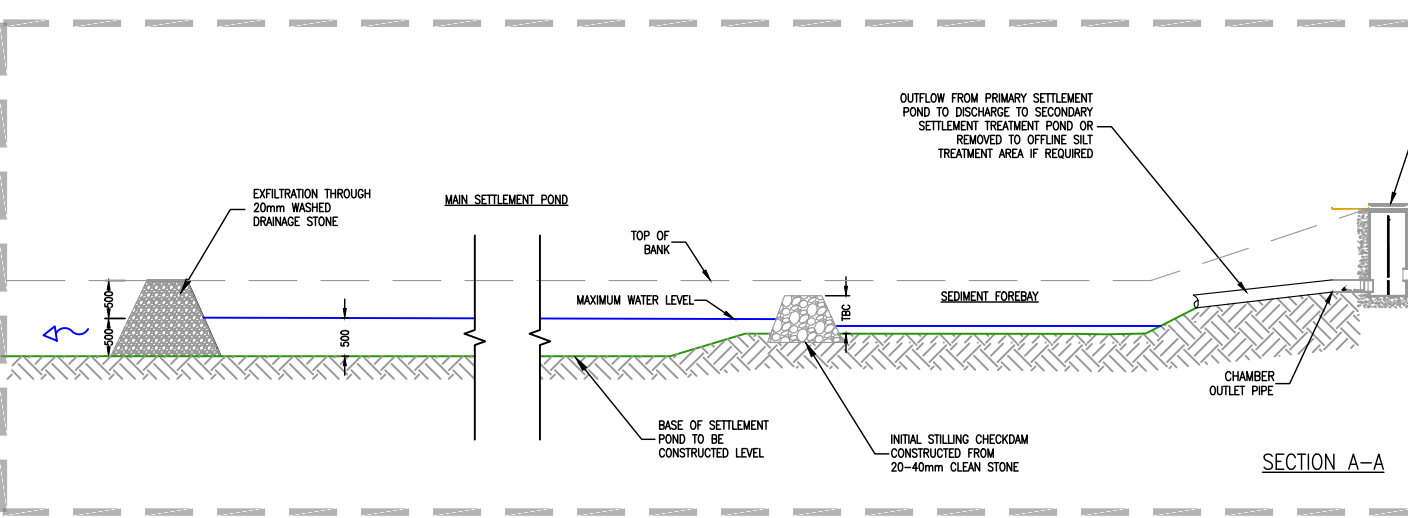
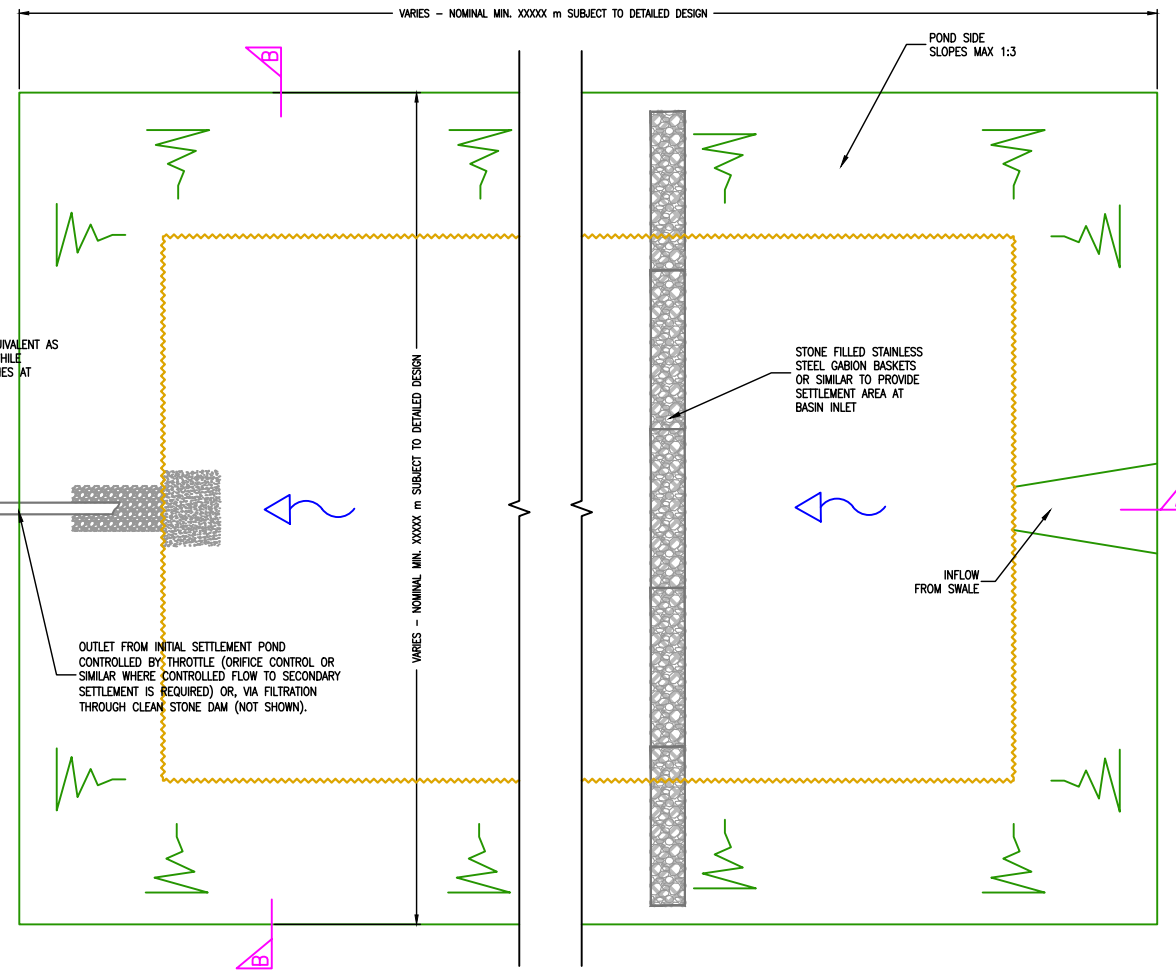
DRAWN	CHECKED	DATE
DL	KS	31/10/2024

PROJECT No.	DRAWING No.	ISSUE No.
M01616-31	SWMP_22	00

SECONDARY SETTLEMENT (IF REQUIRED BY DETAILED DESIGN)



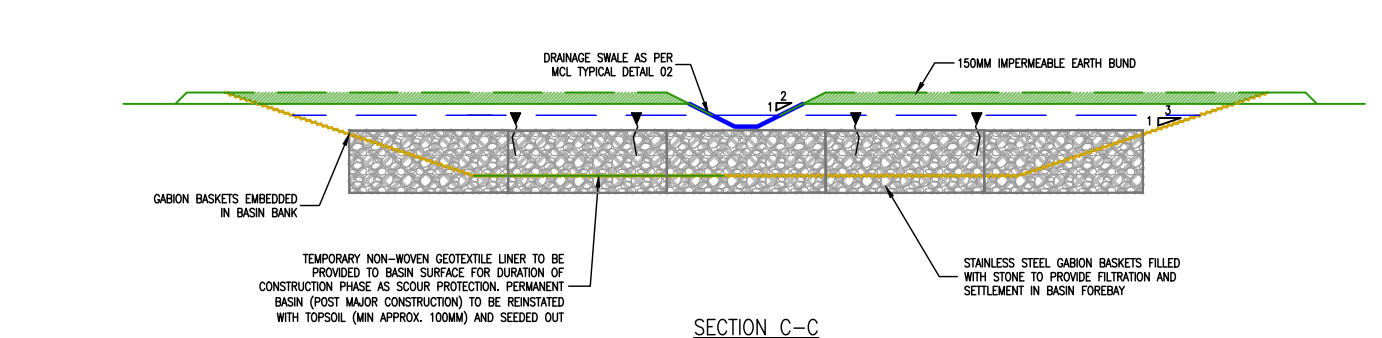
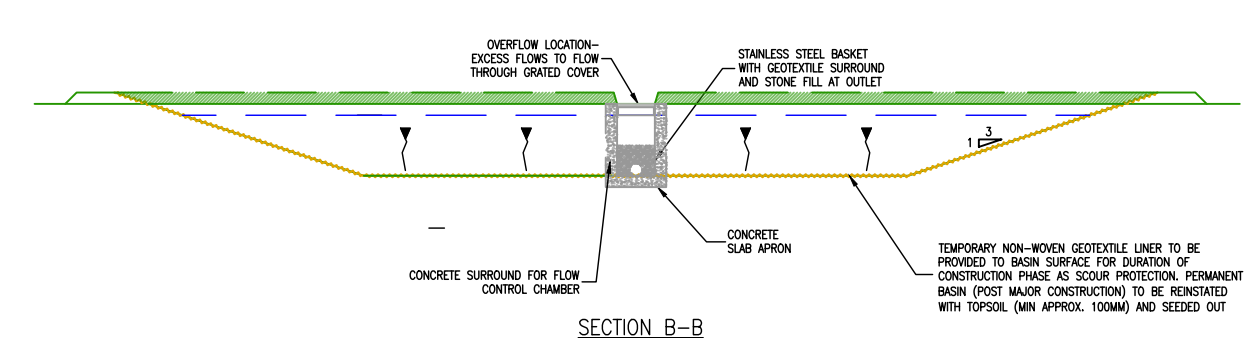
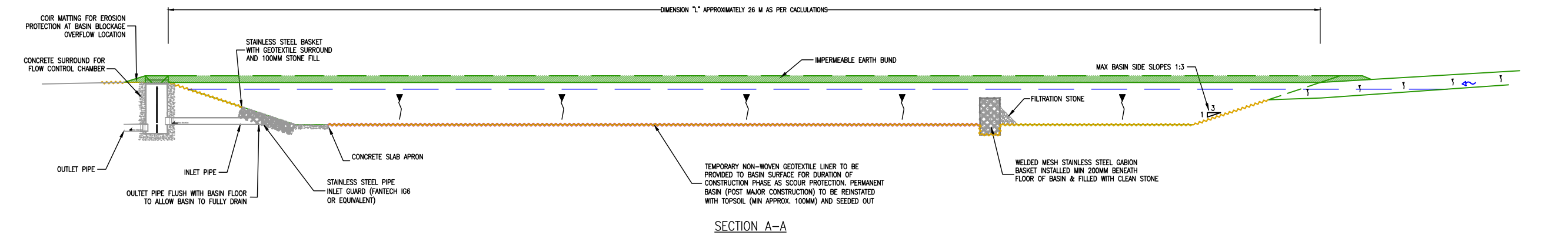
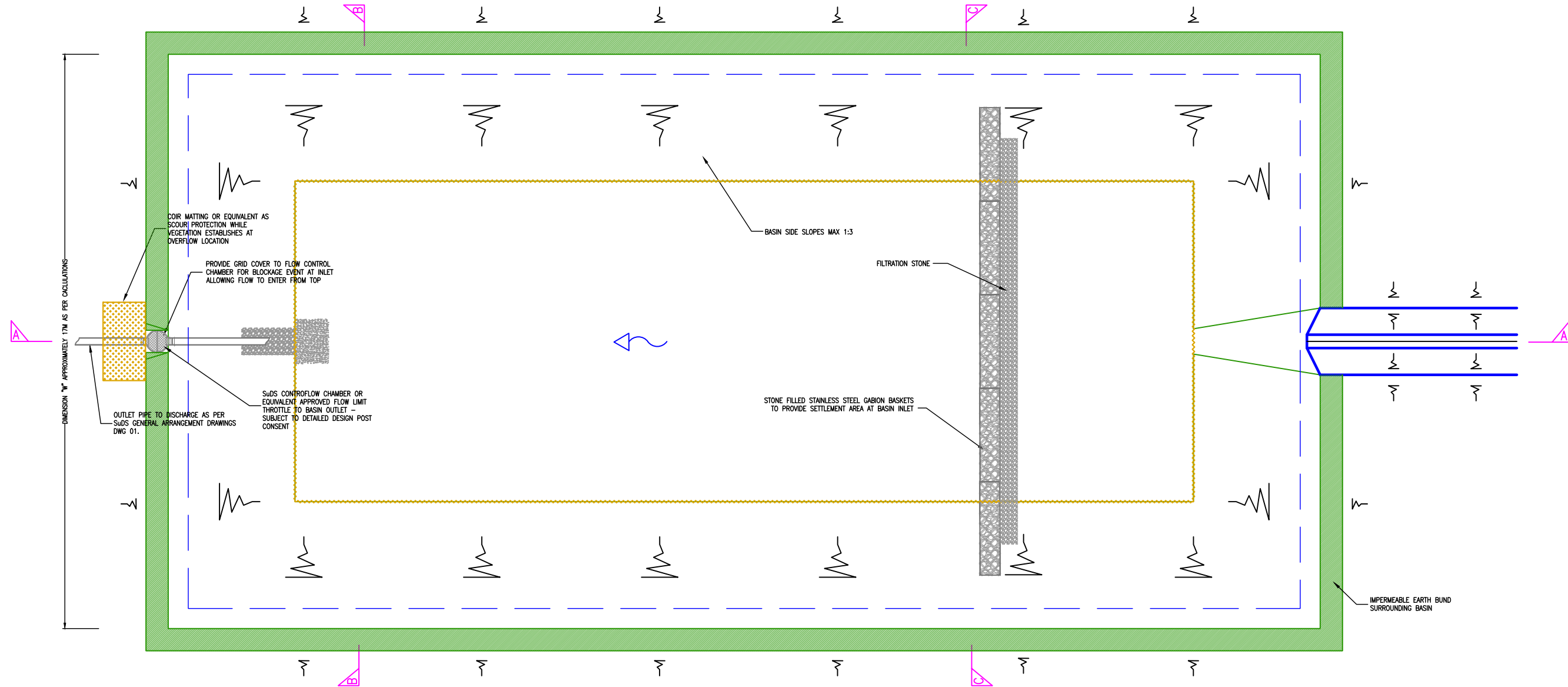
PRIMARY SETTLEMENT



**PLANNING DESIGN**

NOTE: THIS DRAWING IS BASED ON 3RD PARTY INFRASTRUCTURE / PROPOSAL DRAWING

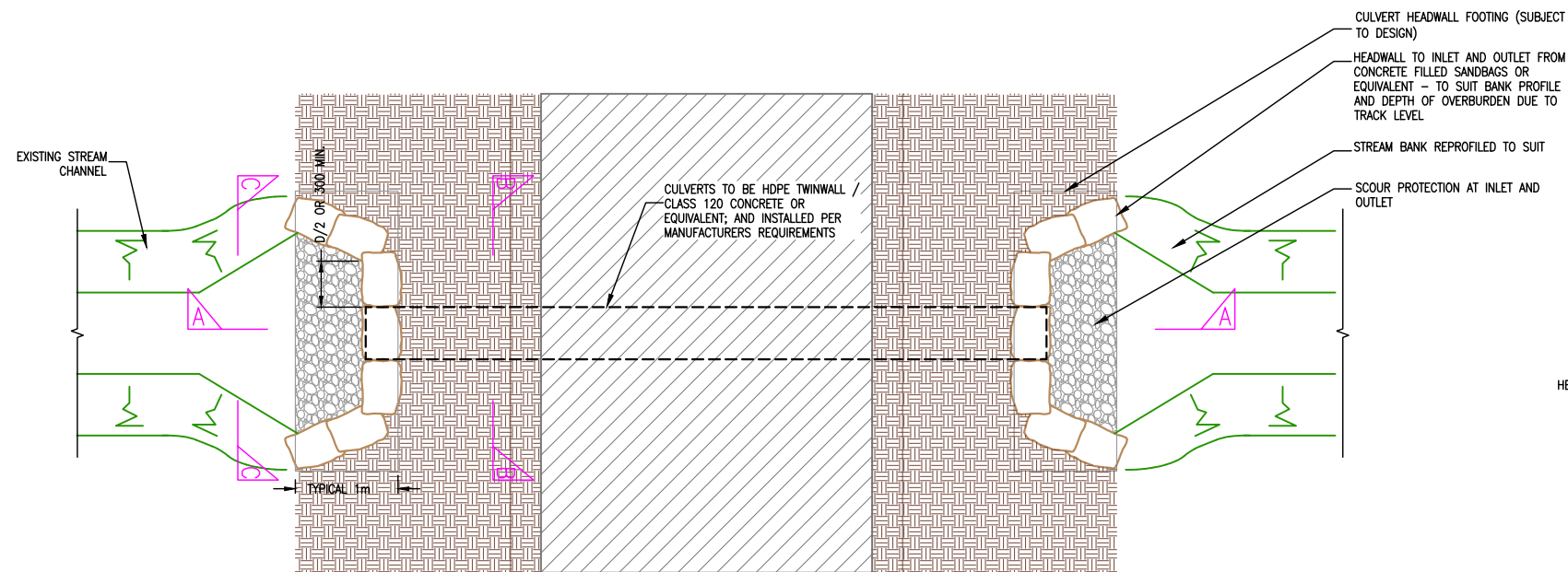
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01	DNS	DNS	04.04.2024 FLOCCULANT DOSING REMOVED DUE TO NIA CONCERN
00	KS	KS	31/10/2024 ORIGINAL
STATUS			
FOR PLANNING			
T: 028 9084 8694 Mossley Mill, Lower Ground (West), F: 028 9084 1525 Carronmorey TRACK North, E: info@mcclayconsulting.com Newtownabbey, Co. Antrim W: www.mcclayconsulting.com BT36 5QA			
PROJECT			
DUNBEG SOUTH EXTENSION WINDFARM			
CLIENT			
DRAWING TITLE			
SURFACE WATER MANAGEMENT PLAN (SWMP) TYPICAL DETAILS SETTLEMENT / WASHOUT PIT			
SCALE		ORIGINAL SIZE	
AS SHOWN		A1	
DRAWN	CHECKED	DATE	
DL	KS	31/10/2024	
PROJECT No.	DRAWING No.	ISSUE No.	
M01616-31	SWMP_23	01	



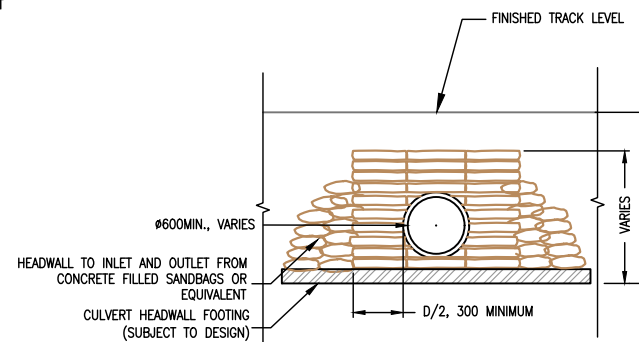
NOTE: THIS DRAWING IS BASED ON 3RD PARTY INFRASTRUCTURE / PROPOSAL DRAWING:  
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00	KS	KS	31/10/2024	ORIGINAL
ISSUE	DRN	APP	DATE	NOTES / DESCRIPTION
STATUS FOR PLANNING				
PROJECT: DUNBEG SOUTH EXTENSION WINDFARM 				
DRAWING TITLE: SURFACE WATER MANAGEMENT PLAN (SWMP) TYPICAL DETAILS DETENTION BASIN/ ATTENUATION POND SCALE: AS SHOWN ORIGINAL SIZE: A1 DRAWN: DL CHECKED: KS DATE: 31/10/2024 PROJECT No: M01616-31 DRAWING No: SWMP_24 ISSUE No: 00				





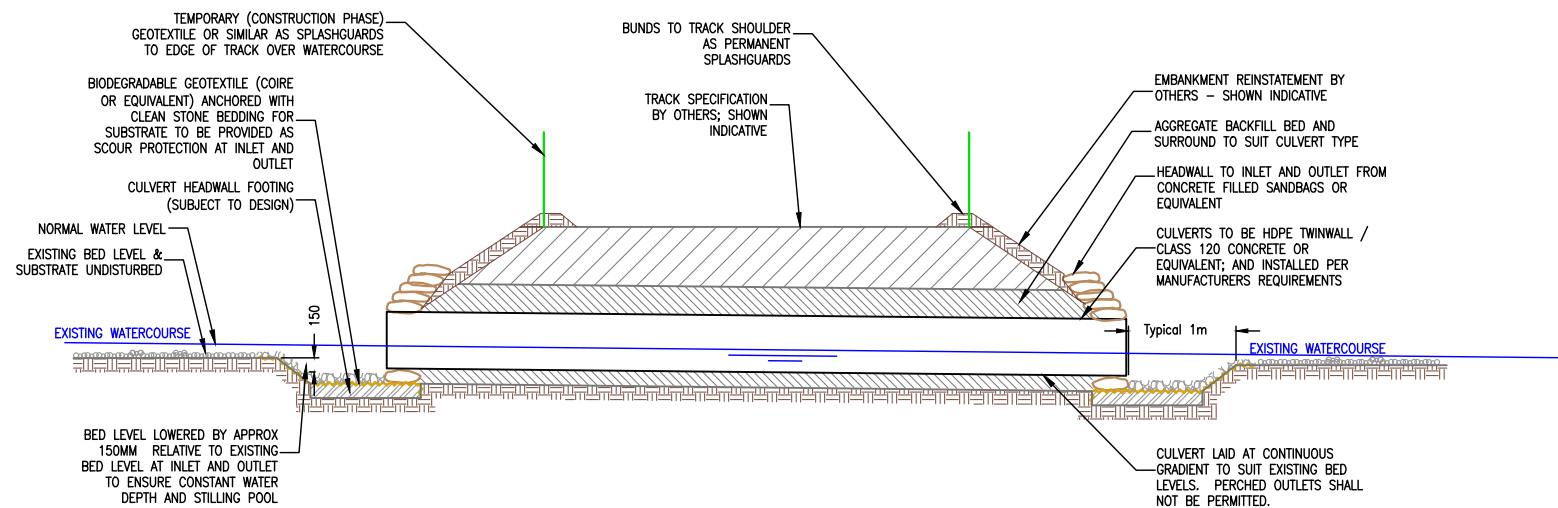
PLAN  
SCALE 1:50



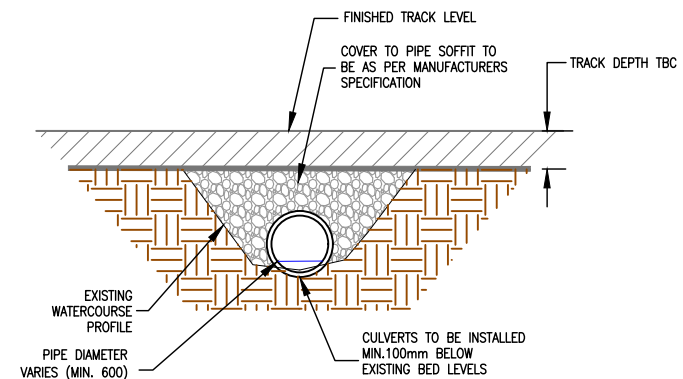
ELEVATION C-C (WITH HEADWALL)  
1:50

**NOTES FOR CONSTRUCTION METHODS & ENVIRONMENTAL PROTECTION**

- WORKS TO BE PROGRAMMED TO SUIT PERIODS OF LOW RIVER FLOW AND RAINFALL. DUE COGNISANCE GIVEN TO THE PREVAILING GROUND CONDITIONS AND SEASONAL WEATHER CONDITIONS.
- CULVERT LOCATION TO BE DAMMED UPSTREAM BY USE OF SANDBAGS OR EQUIVALENT AND OVERPUMPED IN ORDER TO PROVIDE A DRY WORKING ENVIRONMENT.
- IN CHANNEL SILT FENCING TO BE INSTALLED DOWNSTREAM OF THE WORKS AND DOWNSTREAM OF OVERPUMPING FOR THE DURATION OF THE CULVERT INSTALLATION WORKS.



SECTION A-A  
SCALE 1:50



SECTION B-B  
SCALE 1:50

NOTE: THIS DRAWING IS BASED ON 3RD PARTY INFRASTRUCTURE / PROPOSAL DRAWING

N/A				
00	KS	KS	31/10/2024	ORIGINAL
ISSUE	DRN	APP	DATE	NOTES / DESCRIPTION
STATUS FOR PLANNING				
T: 028 9084 8694 F: 028 9084 1525 E: info@mcclayconsulting.com W: www.mcclayconsulting.com				
Mossley Mill, Lower Ground (West), Carrmorey Track North, Newtownabbey, Co. Antrim BT36 5QA				

DUNBEG SOUTH EXTENSION  
WINDFARM



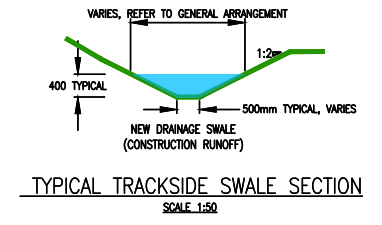
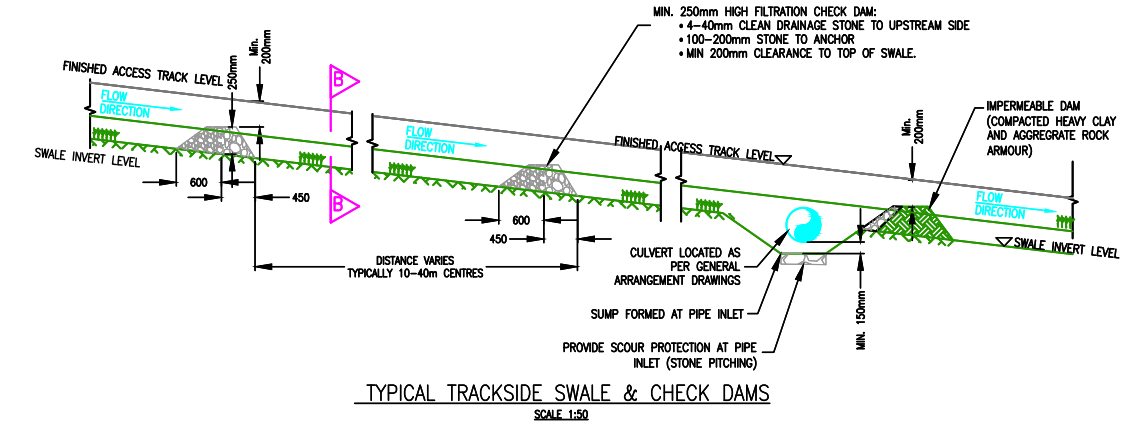
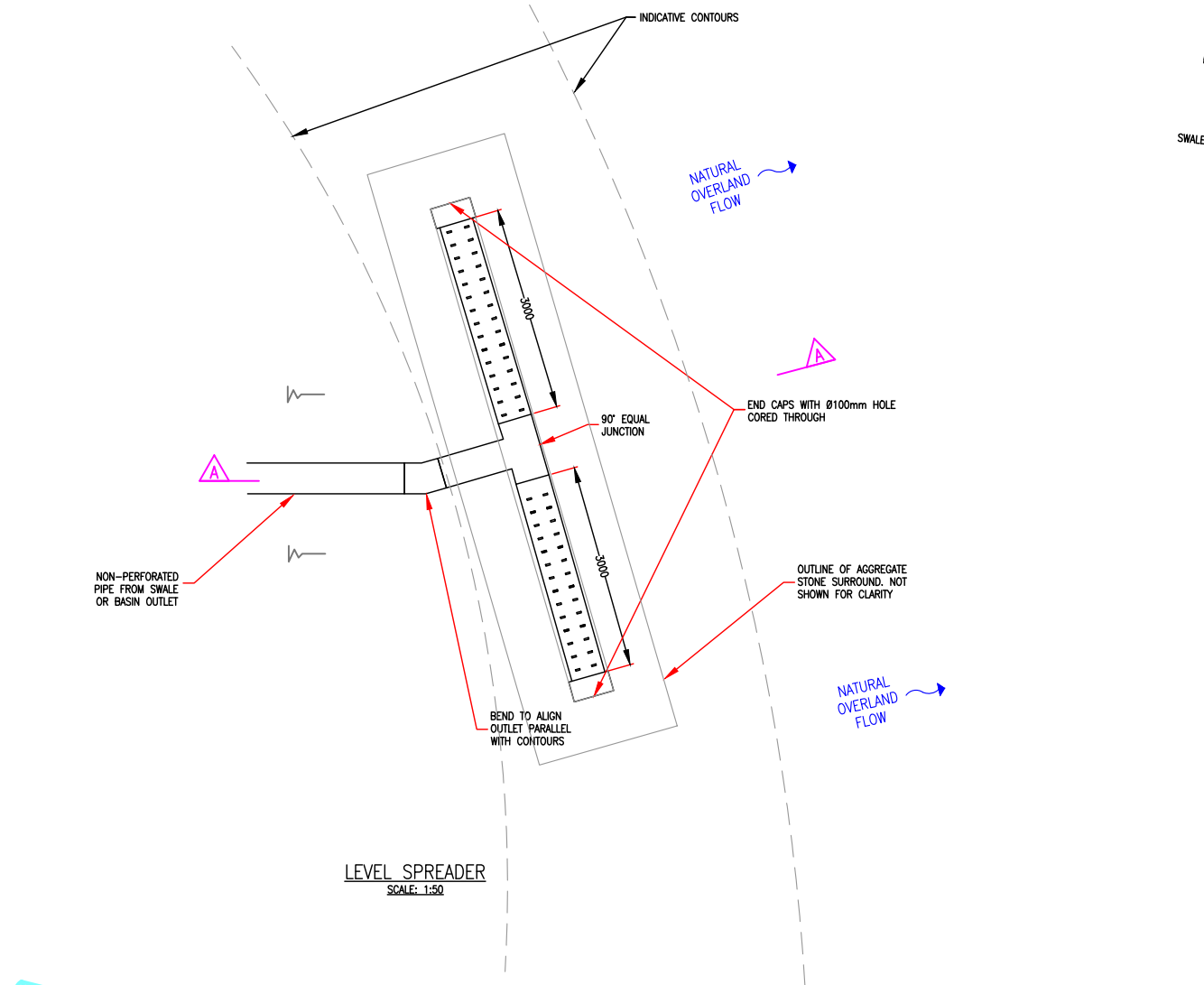
DRAWING TITLE  
SURFACE WATER MANAGEMENT PLAN (SWMP)  
TYPICAL DETAILS  
CLOSED + BOTTOMLESS CULVERT

SCALE	AS SHOWN	ORIGINAL SIZE	A1
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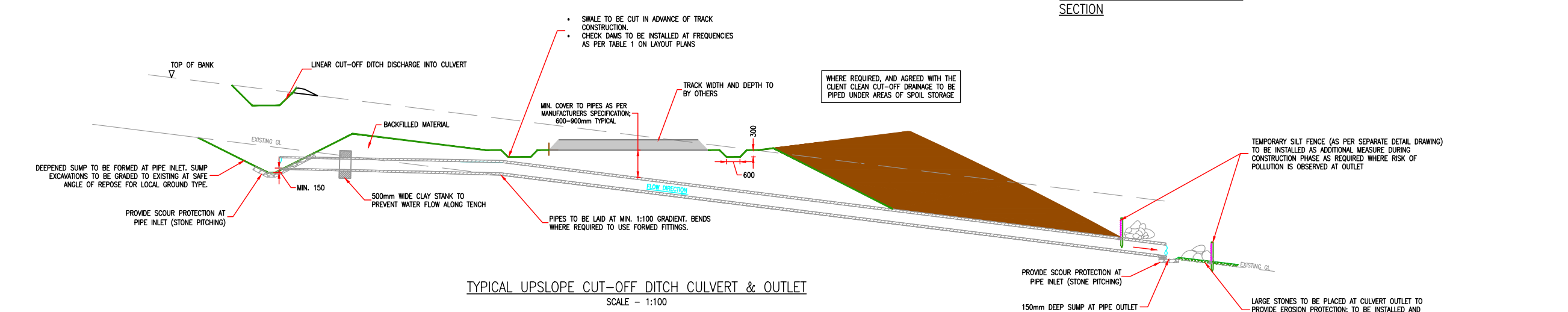
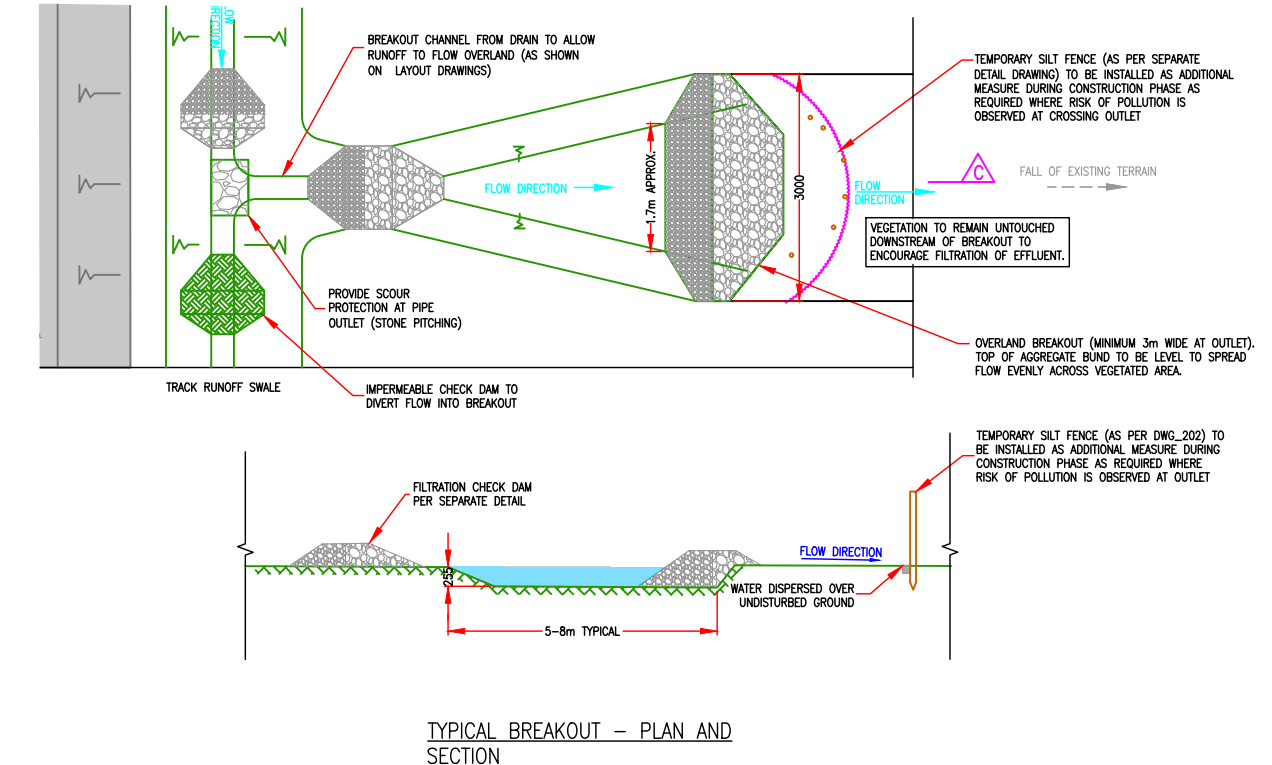
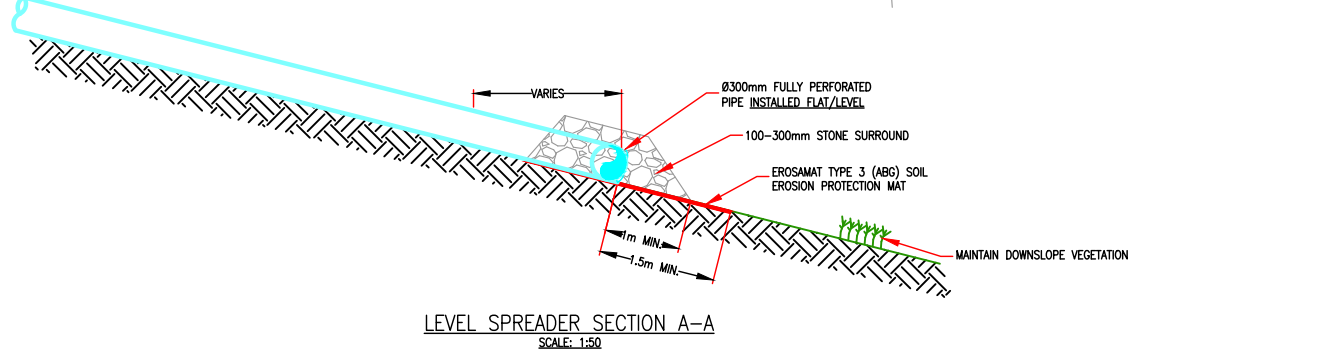
DRAWN	DL	CHECKED	KS	DATE	31/10/2024
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PROJECT No.	M01616-31	DRAWING No.	SWMP_25	ISSUE No.	00
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**PLANNING DESIGN**



CHECK-DAM SPACINGS (MAXIMUM)	
CHANNEL GRADIENT	SPACING (m)
<1%	80
1-2.5%	40
2.5-5%	20
>5%	10



**PLANNING DESIGN**

NOTE: THIS DRAWING IS BASED ON 3RD PARTY INFRASTRUCTURE / PROPOSAL DRAWING

N/A

00	KS	KS	31/10/2024	ORIGINAL
ISSUE	DRN	APP	DATE	NOTES / DESCRIPTION

STATUS

**FOR PLANNING**

**McCloy Consulting**  
1, 028 9084 8694 Mossley Mill, Lower Ground (West),  
F: 028 9084 1525 Carnmoney TRACK North,  
E: info@mcclayconsulting.com Newtownabbey, Co. Antrim  
W: www.mcclayconsulting.com BT36 5QA

PROJECT

**DUNBEG SOUTH EXTENSION WINDFARM**

CLIENT

**RES**

DRAWING TITLE

**SURFACE WATER MANAGEMENT PLAN (SWMP) TRACK DRAINAGE TYPICAL DETAILS**

SCALE	AS SHOWN	ORIGINAL SIZE	A1
DRAWN	DL	CHECKED	KS
DATE	31/10/2024	PROJECT No.	M01616-31
DRAWING No.	SWMP_26	ISSUE No.	00