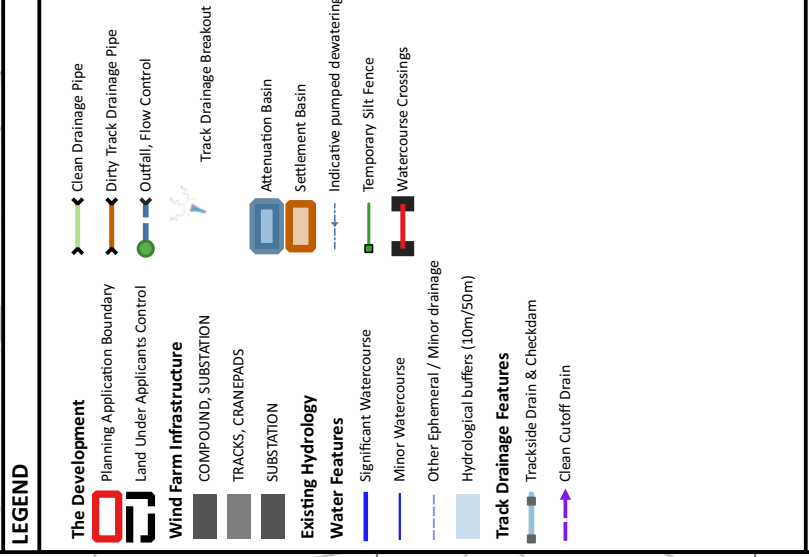
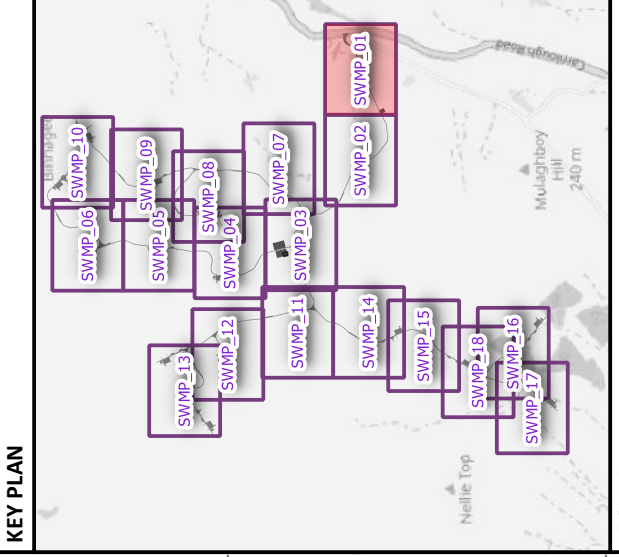
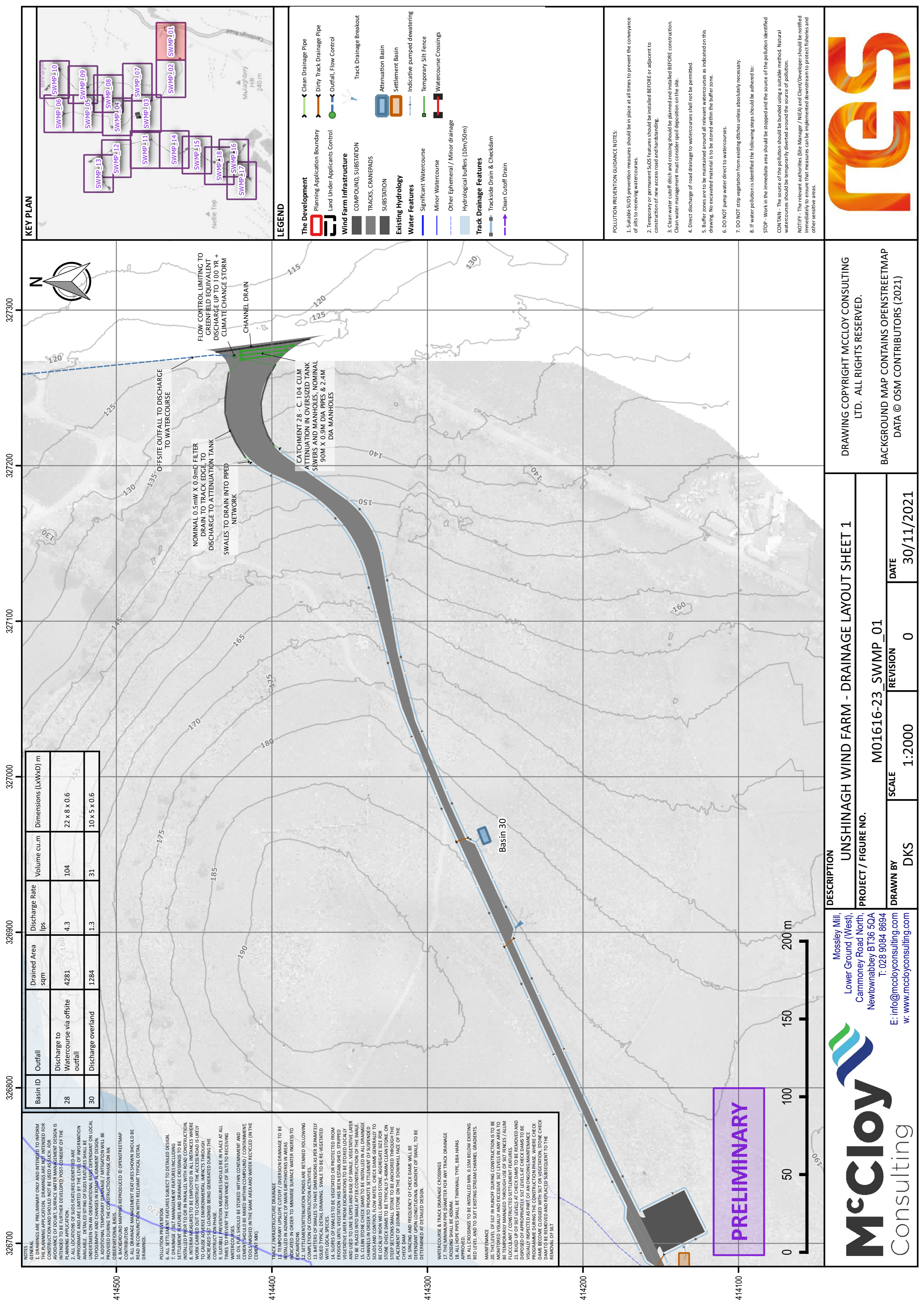


## Annex A

# Drainage Management - General Arrangement

M01616-23_SWMP_01	M01616-23 Drainage GA Sheet 1
M01616-23_SWMP_02	M01616-23 Drainage GA Sheet 2
M01616-23_SWMP_03	M01616-23 Drainage GA Sheet 3
M01616-23_SWMP_04	M01616-23 Drainage GA Sheet 4
M01616-23_SWMP_05	M01616-23 Drainage GA Sheet 5
M01616-23_SWMP_06	M01616-23 Drainage GA Sheet 6
M01616-23_SWMP_07	M01616-23 Drainage GA Sheet 7
M01616-23_SWMP_08	M01616-23 Drainage GA Sheet 8
M01616-23_SWMP_09	M01616-23 Drainage GA Sheet 9
M01616-23_SWMP_10	M01616-23 Drainage GA Sheet 10
M01616-23_SWMP_11	M01616-23 Drainage GA Sheet 11
M01616-23_SWMP_12	M01616-23 Drainage GA Sheet 12
M01616-23_SWMP_13	M01616-23 Drainage GA Sheet 13
M01616-23_SWMP_14	M01616-23 Drainage GA Sheet 14
M01616-23_SWMP_15	M01616-23 Drainage GA Sheet 15
M01616-23_SWMP_16	M01616-23 Drainage GA Sheet 16
M01616-23_SWMP_17	M01616-23 Drainage GA Sheet 17
M01616-23_SWMP_18	M01616-23 Drainage GA Sheet 18



**POLLUTION PREVENTION GUIDANCE NOTES:**

1. Suitable SUDS prevention measures should be in place at all times to prevent the conveyance of silts to receiving watercourses.
2. Temporary or permanent SUDS features should be installed BEFORE or adjacent to construction of new access road and hardstanding.
3. Clean water cutoff ditch and crossing should be planned and installed BEFORE construction. Clean water management must consider spoil deposition on the site.
4. Direct discharge of road drainage to watercourses shall not be permitted.
5. 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.
6. DO NOT pump water direct to watercourses.
7. DO NOT strip vegetation from existing ditches unless absolutely necessary.
8. 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 contained using a suitable method. Natural watercourses should be temporarily diverted around the source of pollution.
  - NOTIFY - The relevant authorities (Site Manager / NEA) and Client/Developer should be notified immediately to ensure that measures can be implemented downstream to protect fisheries and other sensitive areas.



Flow control limiting to Greenfield equivalent discharge up to 100 YR + climate change storm

Channel drain

NOMINAL 0.5 MW X 0.9 M FILTER DRAIN TO TRACK EDGE, TO DISCHARGE TO ATTENUATION TANK

SWALES TO DRAIN INTO PIPED NETWORK

CATCHMENT 28 - C. 104 CLUM ATTENUATION IN OVERSIZED TANK SEWERS AND MANHOLES, NOMINAL 90M X 0.9M DIA PIPES & 2.4M DIA MANHOLES

OFFSITE OUTFALL TO DISCHARGE TO WATERCOURSE

Basin 30

Basin 28

Basin 30

Basin 30

Basin 30

Basin 30

Basin 30

Basin 30

Basin 30

Basin 30

Basin 30

Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m
28	Discharge to Watercourse via offsite outfall	4281	4.3	104	22 x 8 x 0.6
30	Discharge overland	1284	1.3	31	10 x 5 x 0.6

NOTES

GENERAL

1. DRAWINGS ARE PRELIMINARY ONLY AND INTENDED TO INFORM THE PLANNING APPLICATION. DRAWINGS ARE NOT INTENDED FOR CONSTRUCTION.
2. ALL LOCATIONS OF SUDS FEATURES IDENTIFIED ARE APPROXIMATE AND ARE LIMITED BY THE LEVEL OF INFORMATION AVAILABLE AT THE TIME OF DESIGN.
3. ADDITIONAL TEMPORARY DRAINAGE / MITIGATION WILL BE PROVIDED DURING THE CONSTRUCTION PHASE ON AN OBSERVATIONAL BASIS.
4. BACKGROUND MAPPING REPRODUCED © OPENSTREETMAP
5. ALL DRAINAGE MANAGEMENT FEATURES SHOWN SHOULD BE READ IN CONJUNCTION WITH RELEVANT TYPICAL DETAIL DRAWINGS.

POLLUTION PREVENTION

6. ALL SETTLEMENT FEATURES SUBJECT TO DETAILED DESIGN.
7. DRAINAGE / SUDS MANAGEMENT FEATURES INCLUDING SETTLEMENT FEATURES AND DRAINAGE CROSSINGS TO BE INSTALLED PRIOR TO OR IN PARALLEL WITH ROAD CONSTRUCTION.
8. INTERIM MEASURES TO BE EMPLOYED IN ALL INSTANCES WHERE WORK CARRIED OUT TO CONSTRUCT THE ACCESS ROAD IS LIKELY TO INCREASE SUDS LOADINGS BEING GENERATED DURING THE CONSTRUCTION PHASE.
9. SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SILTS TO RECEIVING WATERCOURSES.
10. ALL SUDS FEATURES SHOULD BE STORED WITHIN CONFINEMENT AND CAPABLE OF BEING WASHED WITHIN A COMPACTED / CONTAMINATED AREA. WASH WATER SHOULD BE STORED IN A CONTAINER OR TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MK).

TRACK / INFRASTRUCTURE DRAINAGE

11. TEMPORARY SUDS FEATURES / CONVEYANCE DRAINAGE TO BE INSTALLED IN ADVANCE OF MAIN EARTHWORKS IN AREAS INDICATED IN ORDER TO MINIMISE SURFACE WATER INGRESS TO EXCAVATIONS.
12. SETTLEMENT/ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES.
13. ALL SUDS FEATURES TO BE INSTALLED AS PER SEPARATELY ISSUED TYPICAL DETAIL DRAWING. SWALE TO BE RE-VEGETATED WITH LOCAL SPECIES.
14. 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 RE-USED AS A TOP SOIL LAYER OR TO BE RE-VEGETATED WITH LOCAL SPECIES.
15. 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 THE DOWNHILL FACE OF THE CHECK DAM.
16. SPACING AND FREQUENCY OF CHECK DAMS WILL BE DETERMINED UPON LONGITUDINAL GRADIENT OF SWALE. TO BE DETERMINED AT DETAILED DESIGN.

WATERCOURSE & TRACK DRAINAGE CROSSINGS

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

MAINTENANCE

20. THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED IMMEDIATELY.
21. 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 DAMS TO BE REMOVED AND REPLACED SUBSEQUENTLY TO THE REMOVAL OF SILT.

DESCRIPTION

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 1

PROJECT / FIGURE NO. M01616-23\_SWMP\_01

DRAWN BY DKS

SCALE 1:2000

REVISION 0

DATE 30/11/2021

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

McClroy Consulting

0 50 100 150 200 m

PRELIMINARY

Basin 30

Basin 30

414500

414400

414300

414200

414100

326800

326900

327000

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326500

326600

NOTES  
GENERAL

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2. ALL LOCATIONS OF SUDS FEATURES IDENTIFIED ARE APPROXIMATE AND ARE LIMITED BY THE LEVEL OF INFORMATION AVAILABLE. THE LEVEL OF INFORMATION IS BASED ON LOCAL UNDERGROUND OPERATIONAL DATA, BASED ON LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN.
3. ADDITIONAL TEMPORARY DRAINAGE / MITIGATION WILL BE PROVIDED DURING THE CONSTRUCTION PHASE ON AN OBSERVATIONAL BASIS.
4. BACKGROUND MAPPING REPRODUCED © OPENSTREETMAP
5. ALL DRAINAGE MANAGEMENT FEATURES SHOWN SHOULD BE READ IN CONJUNCTION WITH RELEVANT TYPICAL DETAIL DRAWINGS.

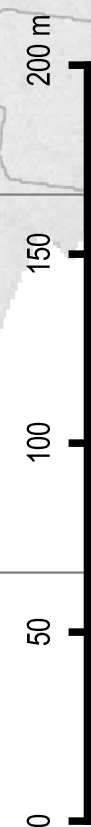
6. ALL SETTLEMENT FEATURES SUBJECT TO DETAILED DESIGN.
7. DRAINAGE / SILT MANAGEMENT FEATURES INCLUDING SETTLEMENT FEATURES AND DRAINAGE CROSSINGS TO BE INSTALLED PRIOR TO OR IN PARALLEL WITH ROAD CONSTRUCTION. INTERIM MEASURES TO BE EMPLOYED IN ALL INSTANCES WHERE WORK CARRIED OUT TO CONSTRUCT THE ACCESS ROAD IS LIKELY TO INCREASE SILT LOADINGS BEING GENERATED DURING THE CONSTRUCTION PHASE.
8. SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SILTS TO RECEIVING WATERCOURSES.
9. ALL SILT SHOULD BE STORED WITHIN CONFINEMENT AND CARRY SHOULD BE AWAY WITHIN CONFINEMENT / CONTAINMENT TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).

10. TRACKS / INFRASTRUCTURE FRAMEWORK
11. TEMPORARY SLOPE CUTSLOPE / DIVERSION DRAINAGE TO BE INSTALLED IN ADVANCE OF MAIN EARTHWORKS IN AREAS INDICATED IN ORDER TO MINIMISE SURFACE WATER INGRESS TO EXCAVATIONS
12. SETTLEMENT/ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES
13. ALL TRACKS / INFRASTRUCTURE FRAMEWORKS TO BE ISSUED TYPICAL DETAIL DRAWING. SWALE TO BE RE-VEGETATED WITH LOCAL SPECIES.
14. 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 RE-USED AS A LAYER OF SILT TRAPPING WATER
15. 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 THE DOWNHILL FACE OF THE CHECK DAM
16. SPACING AND FREQUENCY OF CHECK DAMS WILL BE DETERMINED UPON LONGITUDINAL GRADIENT OF SWALE. TO BE DETERMINED AT DETAILED DESIGN.

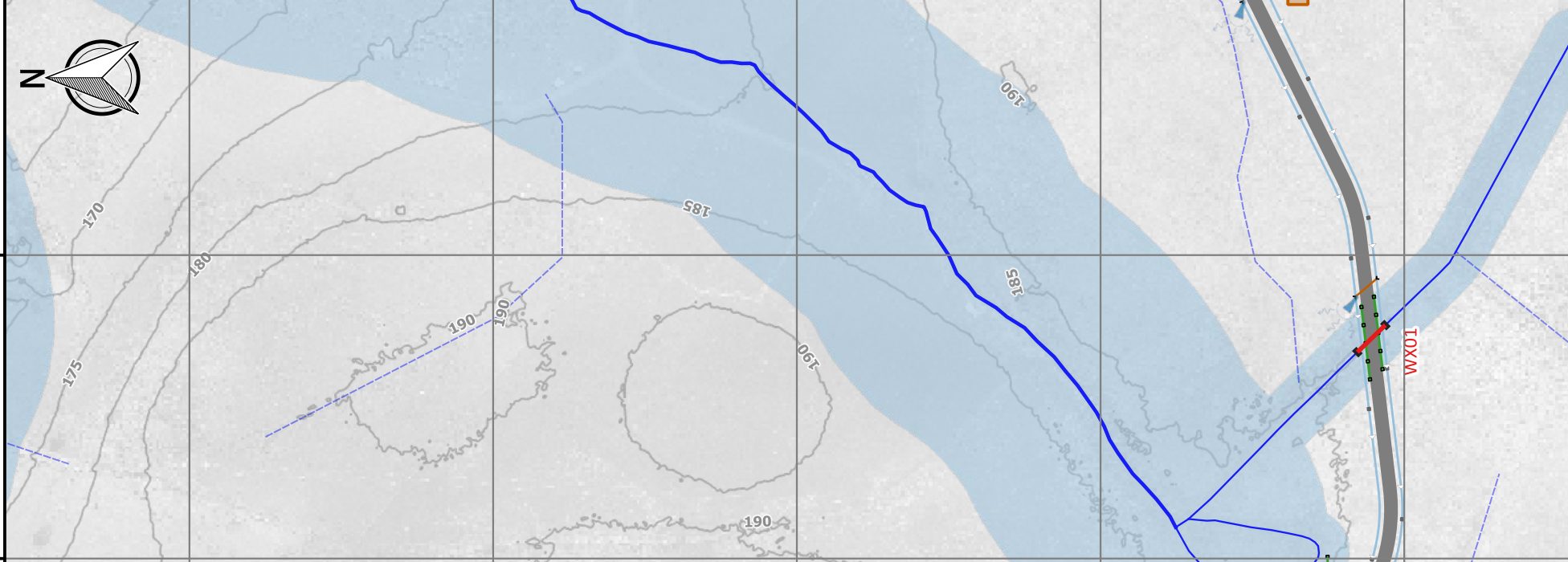
17. WATERCOURSE & TRACK DRAINAGE CROSSINGS
18. THE MINIMUM PIPE DIAMETER FOR ANY TRACK DRAINAGE CROSSING SHALL BE 450MM.
19. ALL HOPE PIPES SHALL BE TWINWALL TYPE, BBA HP4S
20. APPROVED CROSSINGS TO BE INSTALLED MIN. 0.15M BELOW EXISTING BED LEVEL AND TO SUIT EXISTING STREAM CHANNEL GRADIENTS

21. MAINTENANCE
22. THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED IMMEDIATELY BY THE CONTRACTOR USING 'FLOCCULANT' CONSTRUCTED SETTLEMENT FEATURES.
23. 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 DAMS TO BE REMOVED AND REPLACED SUBSEQUENT TO THE REMOVAL OF SILT

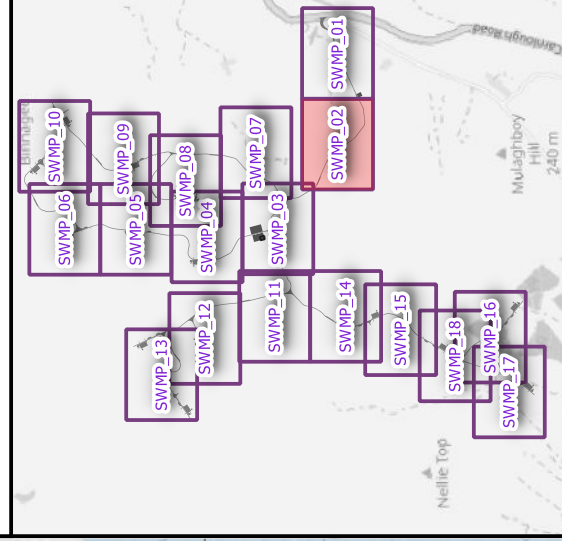
**PRELIMINARY**



Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m	REF	DESCRIPTION
29	Discharge to Drain / Watercourse	5795	5.8	141	29 x 8 x 0.6	WX01	NEW MIN 0.75 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT), SUBJECT TO DESIGN POST PLANNING APPROVAL.
						WX02	NEW MIN 0.75 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT), SUBJECT TO DESIGN POST PLANNING APPROVAL.



KEY PLAN



LEGEND

- The Development**
- Planning Application Boundary
  - Land Under Applicants Control
- Wind Farm Infrastructure**
- COMPOUND, SUBSTATION
  - TRACKS, CRANEPADS
  - SUBSTATION
- Existing Hydrology**
- Watercourse
  - Significant Watercourse
  - Minor Watercourse
  - Other Ephemeral / Minor drainage
  - Hydrological buffers (10m/50m)
- Track Drainage Features**
- Trackside Drain & Checkdam
  - Clean Cutoff Drain
  - Clean Drainage Pipe
  - Dirty Track Drainage Pipe
  - Outfall, Flow Control
  - Track Drainage Breakout
  - Attenuation Basin
  - Settlement Basin
  - Indicative pumped dewatering
  - Temporary Silt Fence
  - Watercourse Crossings

- POLLUTION PREVENTION GUIDANCE NOTES:**
1. Suitable SUDS prevention measures should be in place at all times to prevent the conveyance of silts to receiving watercourses.
  2. Temporary or permanent SUDS features should be installed BEFORE or adjacent to construction of new access road and handstanding.
  3. Clean water cutoff ditch and crossing should be planned and installed BEFORE construction. Clean water management must consider spoil deposition on the site.
  4. Direct discharge of road drainage to watercourses shall not be permitted.
  5. 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.
  6. DO NOT pump water direct to watercourses.
  7. DO NOT strip vegetation from existing ditches unless absolutely necessary.
  8. 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 bounded 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.



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DESCRIPTION	
UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 2	
PROJECT / FIGURE NO. M01616-23_SWMP_02	
DRAWN BY	DKS
SCALE	1:2000
REVISION	0
DATE	30/11/2021

**MCCLOY Consulting**

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

325500

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325800

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326000

**NOTES**

GENERAL

- DRAWINGS ARE PRELIMINARY ONLY AND INTENDED TO INFORM THE PLANNING APPLICATION. DRAWINGS ARE NOT INTENDED FOR AVOIDANCE OF COURT 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. LOCAL CONDITIONS SUCH AS OBSTACLES, 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
- 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 INCREASE SITE 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.
- ALL MATERIALS TO BE STORED WITHIN CONFINEMENT, AND CLEAN SHOULD BE AWAY FROM CONFINEMENT / CONTAMINANT TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).

TRACK / INFRASTRUCTURE DRAINAGE

- TEMPORARY UPSLOPE CUTOFFS / 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.
- ALL SUDS FEATURES TO BE IDENTIFIED AS PER SEPARATELY ISSUED TYPICAL DETAIL DRAWINGS. 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 REUSED TO REVEGETATE SLOPES. ALL VEGETATIVE LAYER TO BE PLANTED WITHIN 14 DAYS OF EXCAVATION COMPLETION.
- 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 WORK WELL GRADED STONE. AGGREGATE SIZE FOR STONE CHECK DAMS TO BE TYPICALLY 5-40MM CLEAN STONE. ON PLACEMENT OF 100MM STONE ON THE DOWNHILL FACE OF THE CHECK DAM.
- SPACING AND FREQUENCY OF CHECK DAMS WILL BE DETERMINED UPON LONGITUDINAL GRADIENT OF SWALE. TO BE DETERMINED AT DETAILED DESIGN.

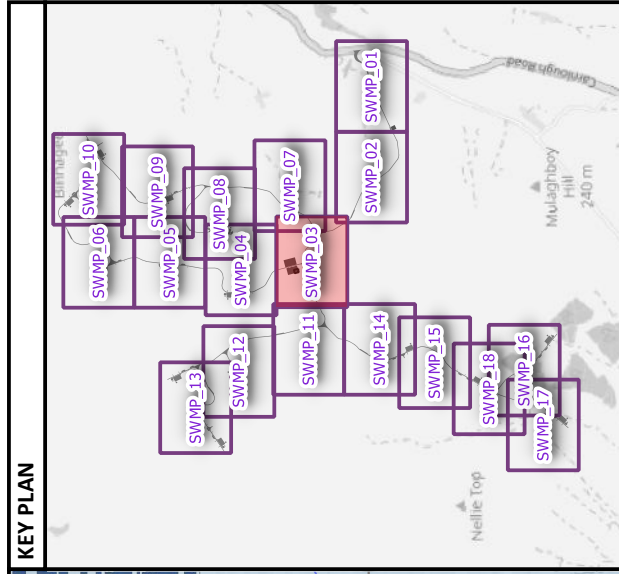
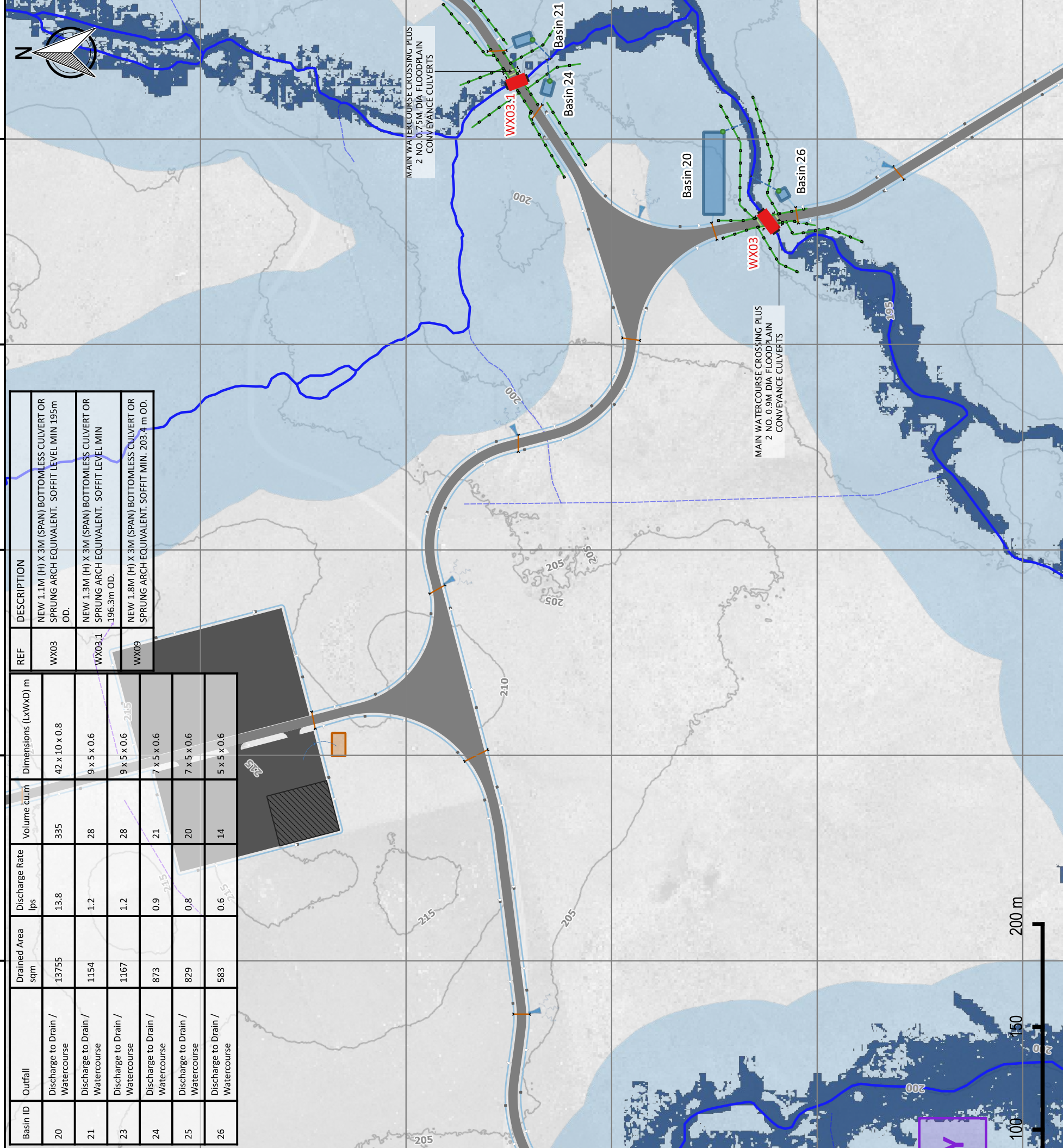
WATERCOURSE & TRACK DRAINAGE CROSSINGS

- THE MINIMUM PIPE DIAMETER FOR ANY TRACK DRAINAGE CROSSING SHALL BE 450MM.
- ALL HOPE PIPES SHALL BE TWIN WALL TYPE. B8B (4646) 23 APPROVED.
- HOPE PIPINGS TO BE INSTALLED MIN. 0.15M BELOW EXISTING BED LEVEL AND TO SUIT EXISTING STREAM CHANNEL GRADIENTS.

MAINTENANCE

- ROUGH-DRAINAGE CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE IDENTIFIED AND REMOVED IMMEDIATELY.
- FLOCCULANT / CONSTRUCTED SETTLEMENT FEATURES TO BE BUILT 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 DAMS TO BE REMOVED AND REPLACED SUBSEQUENTLY TO THE REMOVAL OF SILT.

Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m	REF	DESCRIPTION
20	Discharge to Drain / Watercourse	13755	13.8	335	42 x 10 x 0.8	WX03	NEW 1.1M (H) X 3M (SPAN) BOTTOMLESS CULVERT OR SPRUNG ARCH EQUIVALENT. SOFFIT LEVEL MIN 195m OD.
21	Discharge to Drain / Watercourse	1154	1.2	28	9 x 5 x 0.6	WX03.1	NEW 1.3M (H) X 3M (SPAN) BOTTOMLESS CULVERT OR SPRUNG ARCH EQUIVALENT. SOFFIT LEVEL MIN 196.3m OD.
23	Discharge to Drain / Watercourse	1167	1.2	28	9 x 5 x 0.6	WX09	NEW 1.8M (H) X 3M (SPAN) BOTTOMLESS CULVERT OR SPRUNG ARCH EQUIVALENT. SOFFIT MIN. 203.4 m OD.
24	Discharge to Drain / Watercourse	873	0.9	21	7 x 5 x 0.6		
25	Discharge to Drain / Watercourse	829	0.8	20	7 x 5 x 0.6		
26	Discharge to Drain / Watercourse	583	0.6	14	5 x 5 x 0.6		



**LEGEND**

- The Development**
- Planning Application Boundary
  - Land Under Applicants Control
- Wind Farm Infrastructure**
- COMPOUND, SUBSTATION
  - TRACKS, CRANEPADS
  - SUBSTATION
- Existing Hydrology**
- Watercourse
  - Significant Watercourse
  - Minor Watercourse
  - Other Ephemeral / Minor drainage
  - Hydrological buffers (10m/50m)
- Track Drainage Features**
- Trackside Drain & Checkdam
  - Clean Cutoff Drain
- Water Features**
- Atenuation Basin
  - Settlement Basin
  - Indicative pumped dewatering
  - Temporary Silt Fence
  - Watercourse Crossings
- Watercourse**
- Clean Drainage Pipe
  - Dirty Track Drainage Pipe
  - Outfall, Flow Control
- Track Drainage Breakout**
- Track Drainage Breakout

**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 handstanding.
- 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 bounded using a suitable method. Natural watercourses should be temporarily diverted around the source of pollution.
  - NOTIFY - The relevant authorities (Site Manager / NEA) and Client/Developer should be notified immediately to ensure that measures can be implemented downstream to protect fisheries and other sensitive areas.

**McCloy Consulting**

Mossley Mill,  
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T: 028 9084 8694  
E: info@mccloyconsulting.com  
w: www.mccloyconsulting.com

<b>DESCRIPTION</b>	
UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 3	
PROJECT / FIGURE NO. M01616-23_SWMP_03	
<b>DRAWN BY</b>	<b>SCALE</b>
DKS	1:2000
<b>REVISION</b>	<b>DATE</b>
0	30/11/2021

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2. ALL LOCATIONS OF SUDS FEATURES IDENTIFIED ARE APPROXIMATE AND ARE LIMITED BY THE LEVEL OF INFORMATION AVAILABLE. THE DESIGN OF SUDS FEATURES IS SUBJECT TO LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN.  
3. ADDITIONAL TEMPORARY DRAINAGE / MITIGATION WILL BE PROVIDED DURING THE CONSTRUCTION PHASE ON AN OBSERVATIONAL BASIS.  
4. BACKGROUND MAPPING REPRODUCED © OPENSTREETMAP  
5. ALL DRAINAGE MANAGEMENT FEATURES SHOWN SHOULD BE READ IN CONJUNCTION WITH RELEVANT TYPICAL DETAIL DRAWINGS.

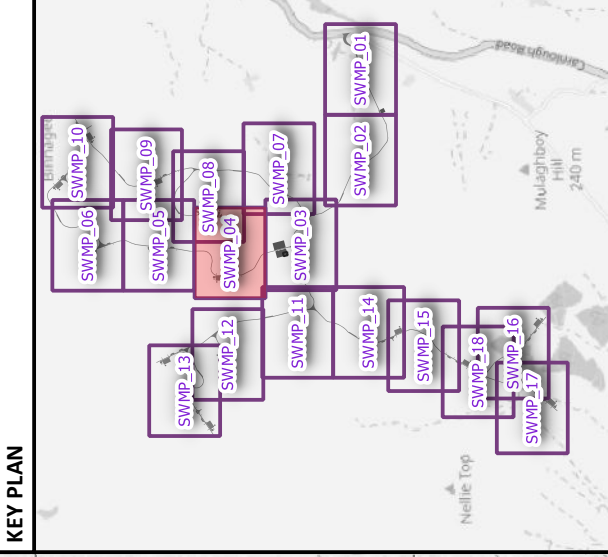
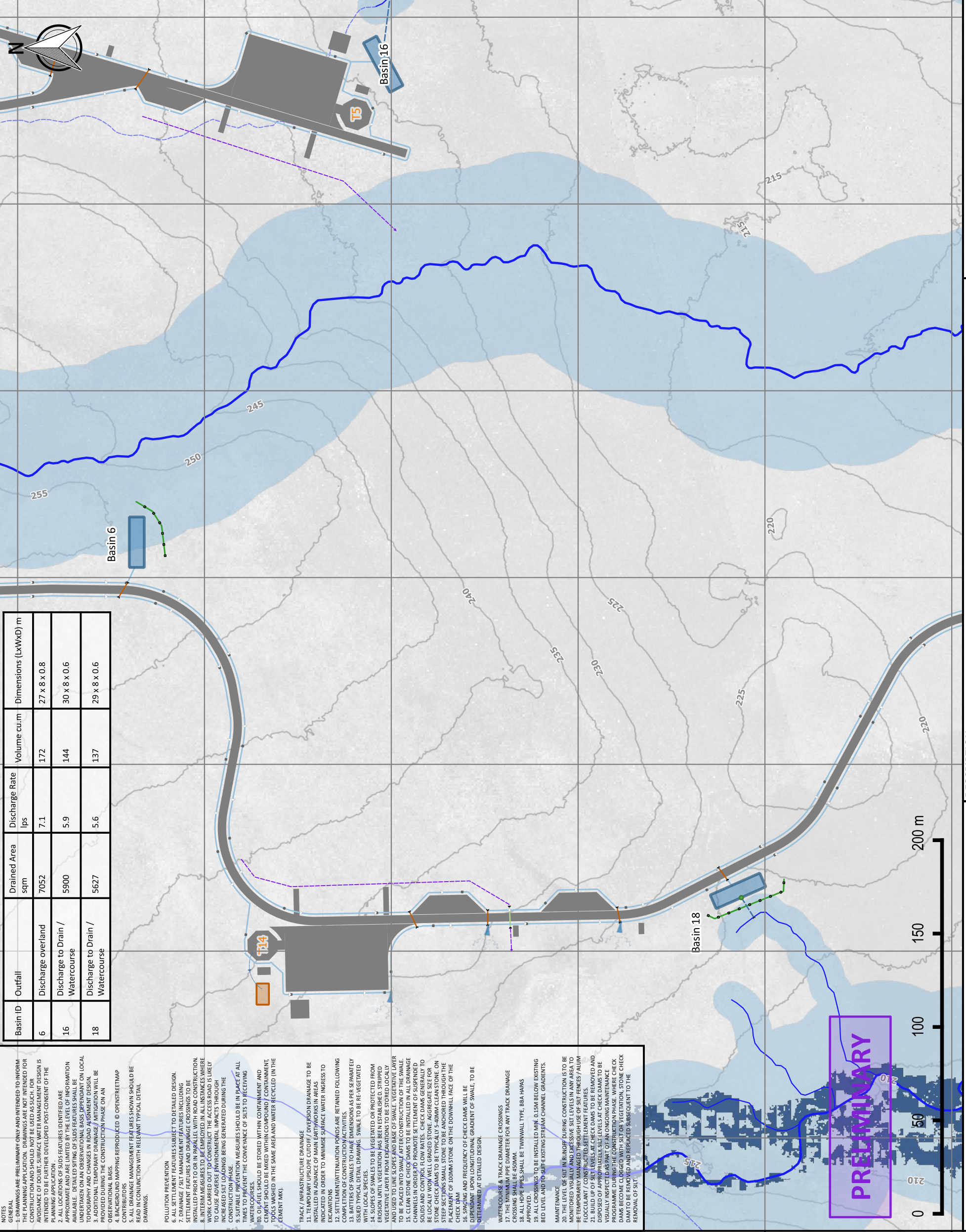
**POLLUTION PREVENTION**  
6. ALL SETTLEMENT FEATURES SUBJECT TO DETAILED DESIGN.  
7. DRAINAGE / SILT MANAGEMENT FEATURES INCLUDING SETTLEMENT FEATURES AND DRAINAGE CROSSINGS TO BE INSTALLED PRIOR TO OR IN PARALLEL WITH ROAD CONSTRUCTION.  
8. INTERIM MEASURES TO BE EMPLOYED IN ALL INSTANCES WHERE WORK CARRIED OUT TO CONSTRUCT THE ACCESS ROAD IS LIKELY TO INCREASE SILT LOADINGS BEING GENERATED DURING THE CONSTRUCTION PHASE.  
9. SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SILTS TO RECEIVING WATERCOURSES.  
10. ALL SUDS FEATURES SHOULD BE STORED WITHIN CONFINEMENT, AND CHECK DAMS SHOULD BE AIDED WITH ACCUMULATED / CONTAMINATED TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE EVENT MK).

**TRACK / INFRASTRUCTURE DRAINAGE**  
11. TEMPORARY SLOPE CUTS / DIVERSION DRAINAGE TO BE INSTALLED IN ADVANCE OF MAIN EARTHWORKS IN AREAS INDICATED IN ORDER TO MINIMISE SURFACE WATER INGRESS TO EXCAVATIONS.  
12. SETTLEMENT/ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES.  
13. SUDS FEATURES TO BE INSTALLED AS PER SEPARATELY ISSUED TYPICAL DETAIL DRAWING. SWALE TO BE RE-VEGETATED WITH LOCAL SPECIES.  
14. 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 RE-USED TO REFACE SLOPES OF SUDS FEATURES.  
15. 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 WORN WELL GRADED STONE. AGGREGATE SIZE FOR STONE CHECK DAMS TO BE TYPICALLY 5-40MM CLEAN STONE ON A 100MM BED OF 100MM STONE ON THE DOWNHILL FACE OF THE CHECK DAM.  
16. SPACING AND FREQUENCY OF CHECK DAMS WILL BE DETERMINED UPON LONGITUDINAL GRADIENT OF SWALE. TO BE DETERMINED AT DETAILED DESIGN.

**WATERCOURSE & TRACK DRAINAGE CROSSINGS**  
17. THE MINIMUM PIPE DIAMETER FOR ANY TRACK DRAINAGE CROSSING SHALL BE 450MM.  
18. ALL HOPE PIPES SHALL BE TWINWALL TYPE, BBA HPAS APPROVED CROSSINGS TO BE INSTALLED MIN. 0.15M BELOW EXISTING BED LEVEL AND TO SUITE EXISTING STREAM CHANNEL GRADIENTS.

**MAINTENANCE**  
19. THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED BY HAND OR BY MEANS OF SUITABLE REMEDIATION FLOCCULANT CONSTRUCTED SETTLEMENT FEATURES.  
20. 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 DAMS TO BE REPLACED AND REPAIRED SUBSEQUENT TO THE REMOVAL OF SILT.

Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m
6	Discharge overlaid	7052	7.1	172	27 x 8 x 0.8
16	Discharge to Drain / Watercourse	5900	5.9	144	30 x 8 x 0.6
18	Discharge to Drain / Watercourse	5627	5.6	137	29 x 8 x 0.6



**LEGEND**

**The Development**

- Planning Application Boundary
- Land Under Applicants Control

**Wind Farm Infrastructure**

- COMPOUND, SUBSTATION
- TRACKS, CRANEPADS
- SUBSTATION

**Existing Hydrology**

- Watercourse
- Significant Watercourse
- Minor Watercourse
- Other Ephemeral / Minor drainage
- Hydrological buffers (10m/50m)

**Track Drainage Features**

- Trackside Drain & Checkdam
- Clean Cutoff Drain

**Water Features**

- Track Drainage Breakout
- Attenuation Basin
- Settlement Basin
- Indicative pumped dewatering
- Temporary Silt Fence
- Watercourse Crossings

**Water Features**

- Clean Drainage Pipe
- Dirty Track Drainage Pipe
- Outfall, Flow Control

**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 handstanding.
- 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:
  - Work in the immediate area should be stopped and the source of the pollution identified

**CONTAIN** - The source of the pollution should be bounded 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.



**DESCRIPTION**

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 4  
PROJECT / FIGURE NO. M01616-23\_SWMP\_04

DRAWN BY DKS  
SCALE 1:2000  
REVISION 0  
DATE 30/11/2021

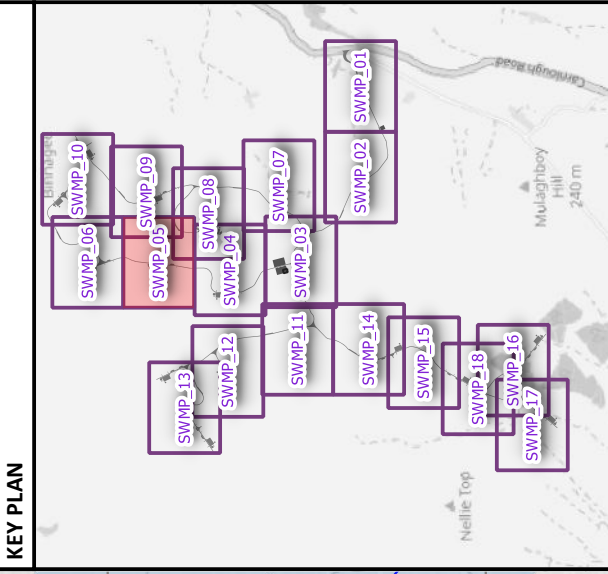
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BACKGROUND MAP CONTAINS OPENSTREETMAP DATA © OSM CONTRIBUTORS (2021)

**MCCLOY Consulting**

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

NOTES  
GENERAL  
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2. ALL LOCATIONS OF SUDS FEATURES IDENTIFIED ARE APPROXIMATE AND ARE LIMITED BY THE LEVEL OF INFORMATION AVAILABLE. THE DESIGN OF SUDS FEATURES SHOULD BE BASED ON LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN.  
3. ADDITIONAL TEMPORARY DRAINAGE / MITIGATION WILL BE PROVIDED DURING THE CONSTRUCTION PHASE ON AN OBSERVATIONAL BASIS.  
4. BACKGROUND MAPPING REPRODUCED © OPENSTREETMAP  
5. ALL DRAINAGE MANAGEMENT FEATURES SHOWN SHOULD BE READ IN CONJUNCTION WITH RELEVANT TYPICAL DETAIL DRAWINGS.  
6. POLLUTION PREVENTION  
7. ALL SETTLEMENT FEATURES SUBJECT TO DETAILED DESIGN.  
8. DRAINAGE / SILT MANAGEMENT FEATURES INCLUDING SETTLEMENT FEATURES AND DRAINAGE CROSSINGS TO BE INSTALLED PRIOR TO OR IN PARALLEL WITH ROAD CONSTRUCTION. WORK CARRIED OUT TO CONSTRUCT THE ACCESS ROAD IS LIKELY TO INCREASE SILT LOADINGS BEING GENERATED DURING THE CONSTRUCTION PHASE.  
9. SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SILTS TO RECEIVING WATERCOURSES.  
10. ALL SILT AND DEBRIS SHOULD BE STORED WITHIN CONFINEMENT, AND CARENT SHOULD BE TAKEN TO PREVENT POLLUTION / CONTAMINATION TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MK).  
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19. THE MINIMUM PIPE DIAMETER FOR ANY TRACK DRAINAGE CROSSING SHALL BE 450MM.  
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21. MAINTENANCE  
22. THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED IMMEDIATELY.  
23. FLOCCULANT / CONSTRUCTED SETTLEMENT FEATURES TO BE 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 DAMS SHOULD BE REMOVED AND REPLACED SUBSEQUENT TO THE REMOVAL OF SILT.  
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1:2000  
0 50 100 150 200 m



**LEGEND**

	Planning Application Boundary
	Land Under Applicants Control
	COMPOUND, SUBSTATION
	TRACKS, CRANEPADS
	SUBSTATION
	Existing Hydrology
	Water Features
	Significant Watercourse
	Minor Watercourse
	Other Ephemeral / Minor drainage
	Hydrological buffers (10m/50m)
	Track Drainage Features
	Trackside Drain & Checkdam
	Clean Cutoff Drain
	Clean Drainage Pipe
	Dirty Track Drainage Pipe
	Outfall, Flow Control
	Track Drainage Breakout
	Attenuation Basin
	Settlement Basin
	Indicative pumped dewatering
	Temporary Silt Fence
	Watercourse Crossings

**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.
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- DO NOT strip vegetation from existing ditches unless absolutely necessary.
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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.



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DESCRIPTION		
UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 5		
PROJECT / FIGURE NO. M01616-23_SWMP_05		
DRAWN BY	SCALE	DATE
DKS	1:2000	30/11/2021
REVISION	0	

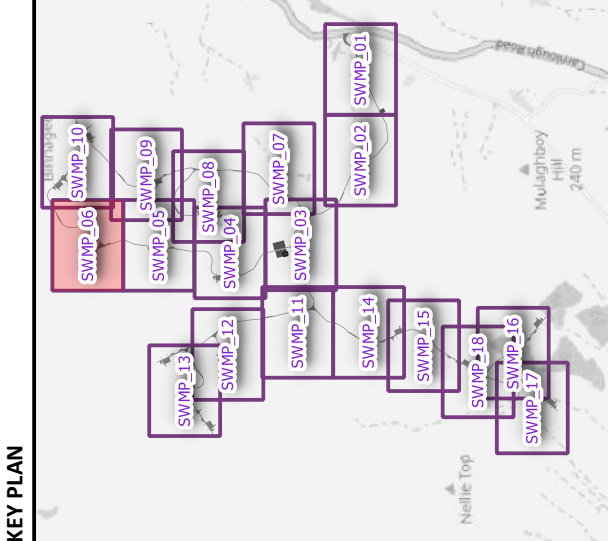
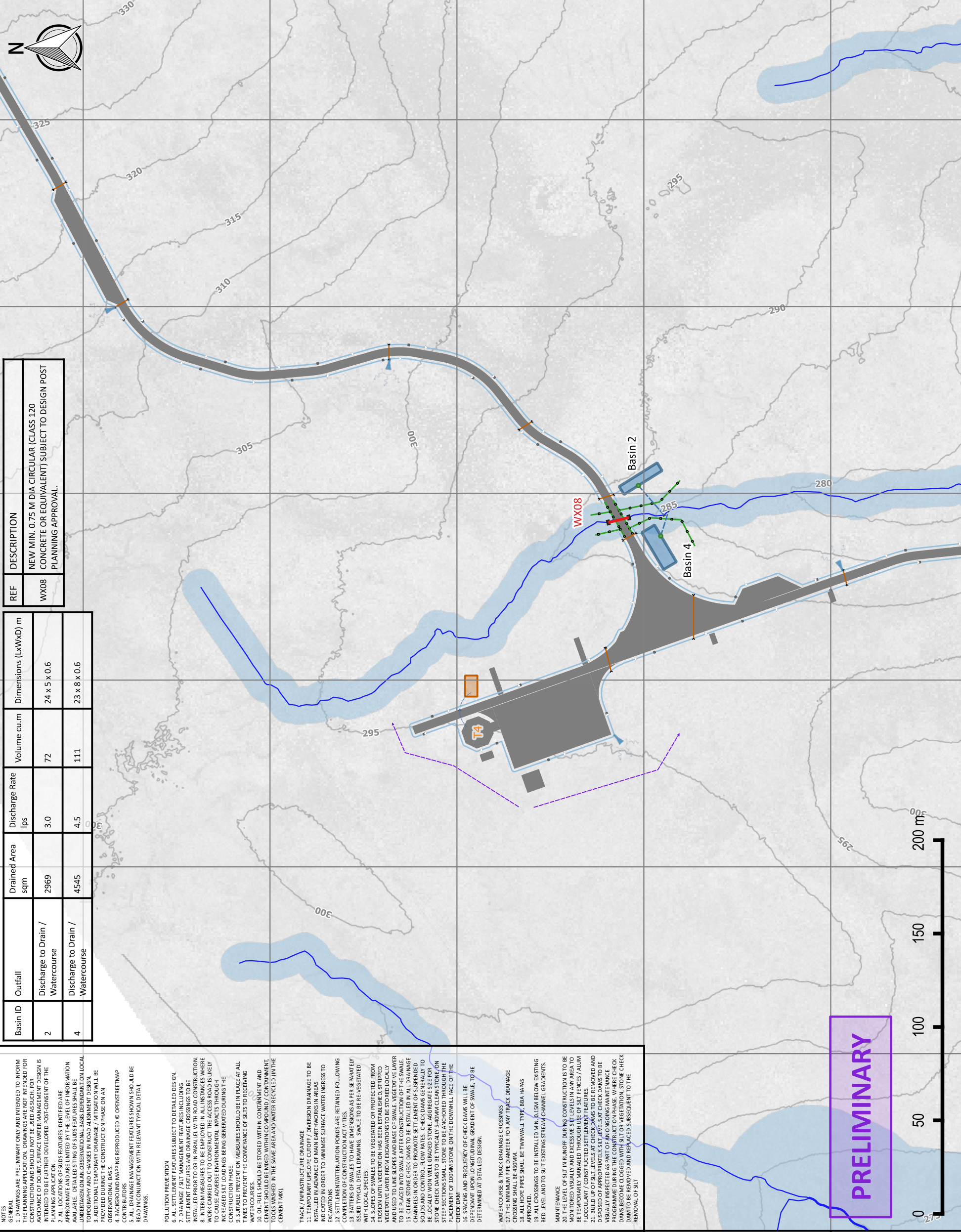
Mossley Mill,  
Lower Ground (West),  
Carmoney Road North,  
Newtownabbey BT36 5QA  
T: 028 9084 8694  
E: info@mccloyconsulting.com  
w: www.mccloyconsulting.com

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4. BACKGROUND MAPPING REPRODUCED © OPENSTREETMAP  
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POLLUTION PREVENTION  
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8. SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SILTS TO RECEIVING WATERCOURSES.  
9. ALL EXCESSIVE MATERIALS SHOULD BE STORED WITHIN COVERED AREAS AND SHOULD BE WASHED WITHIN COVERED AREAS. TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).

TRACK / INFRASTRUCTURE DRAINAGE  
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13. LOCAL SPECIES.  
14. 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 RE-USED TO REVEGETATE SLOPES OF SWALES. VEGETATIVE WATER BEING STORED TO BE USED TO REVEGETATE SLOPES OF SWALES.  
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19. CROSSINGS TO BE INSTALLED MIN. 0.15M BELOW EXISTING BED LEVEL AND TO SUIT EXISTING STREAM CHANNEL GRADIENTS.  
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20. THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED IMMEDIATELY. EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED IMMEDIATELY. EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED IMMEDIATELY.  
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Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m	REF	DESCRIPTION
2	Discharge to Drain / Watercourse	2969	3.0	72	24 x 5 x 0.6	WX08	NEW MIN. 0.75 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.
4	Discharge to Drain / Watercourse	4545	4.5	111	23 x 8 x 0.6		



### LEGEND

**The Development**

- Planning Application Boundary
- Land Under Applicants Control

**Wind Farm Infrastructure**

- COMPOUND, SUBSTATION
- TRACKS, CRANEPADS
- SUBSTATION

**Existing Hydrology**

- Watercourse
- Significant Watercourse
- Minor Watercourse
- Other Ephemeral / Minor drainage
- Hydrological buffers (10m/50m)

**Track Drainage Features**

- Trackside Drain & Checkdam
- Clean Cutoff Drain

**Water Features**

- Clean Drainage Pipe
- Dirty Track Drainage Pipe
- Outfall, Flow Control
- Track Drainage Breakout
- Attenuation Basin
- Settlement Basin
- Indicative pumped dewatering
- Temporary Silt Fence
- Watercourse Crossings

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DESCRIPTION	SCALE	REVISION	DATE
UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 6 PROJECT / FIGURE NO. M01616-23_SWMP_06	1:2000	0	30/11/2021
DRAWN BY DKS			

**MCCLOY Consulting**

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

Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m	REF	DESCRIPTION
19	Discharge to Drain / Watercourse	2002	2.0	49	16 x 5 x 0.6	WX03.1	NEW 1.3M (H) X 3M (SPAN) BOTTOMLESS CULVERT OR SPRUNG ARCH EQUIVALENT. SOFFIT LEVEL MIN 196.3m OD.
20	Discharge to Drain / Watercourse	13755	13.8	335	42 x 10 x 0.8		
21	Discharge to Drain / Watercourse	1154	1.2	28	9 x 5 x 0.6		
24	Discharge to Drain / Watercourse	873	0.9	21	7 x 5 x 0.6		

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 4. BACKGROUND MAPPING REPRODUCED © OPENSTREETMAP  
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 MAINTENANCE  
 20. THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED IMMEDIATELY.  
 21. 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 DAMS TO BE REMOVED AND REPLACED SUBSEQUENTLY TO THE REMOVAL OF SILT.  
 MAIN WATERCOURSE CROSSING PLUS 2 NO. 0.75M DIA FLOODPLAIN CONVEYANCE CULVERTS

**Basin 19**

**Basin 21**

**Basin 24**

**Basin 20**

**Basin 24**

**Basin 21**

**Basin 24**

**Basin 21**

**Basin 24**

**Basin 21**

**Basin 24**

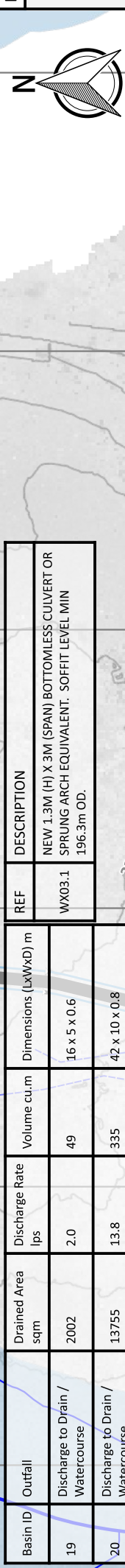
**Basin 21**

**Basin 24**

**Basin 21**

**Basin 24**

**Basin 21**



Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m	REF	DESCRIPTION
19	Discharge to Drain / Watercourse	2002	2.0	49	16 x 5 x 0.6	WX03.1	NEW 1.3M (H) X 3M (SPAN) BOTTOMLESS CULVERT OR SPRUNG ARCH EQUIVALENT. SOFFIT LEVEL MIN 196.3m OD.
20	Discharge to Drain / Watercourse	13755	13.8	335	42 x 10 x 0.8		
21	Discharge to Drain / Watercourse	1154	1.2	28	9 x 5 x 0.6		
24	Discharge to Drain / Watercourse	873	0.9	21	7 x 5 x 0.6		

**Basin 19**

**Basin 21**

**Basin 24**

**Basin 20**

**Basin 24**

**Basin 21**

**Basin 24**

**Basin 21**

**Basin 24**

**Basin 21**

**Basin 24**

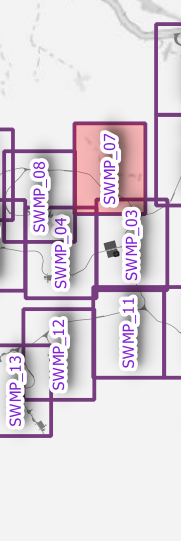
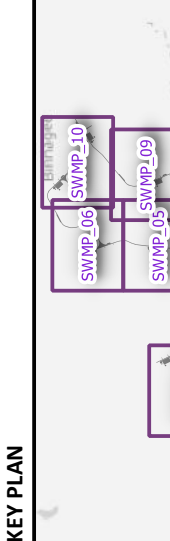
**Basin 21**

**Basin 24**

**Basin 21**

**Basin 24**

**Basin 21**



**DESCRIPTION**  
 UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 7  
 PROJECT / FIGURE NO.  
 M01616-23\_SWMP\_07

**DRAWN BY**  
 DKS

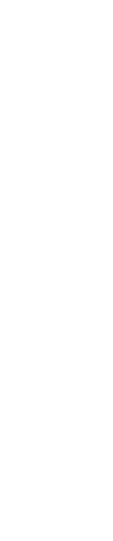
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**REVISION**  
 0

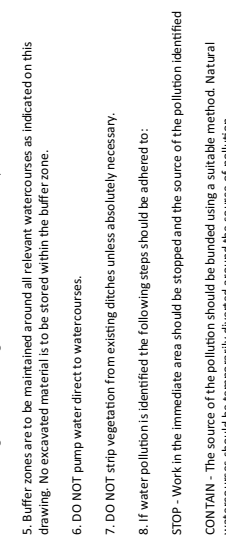
**DATE**  
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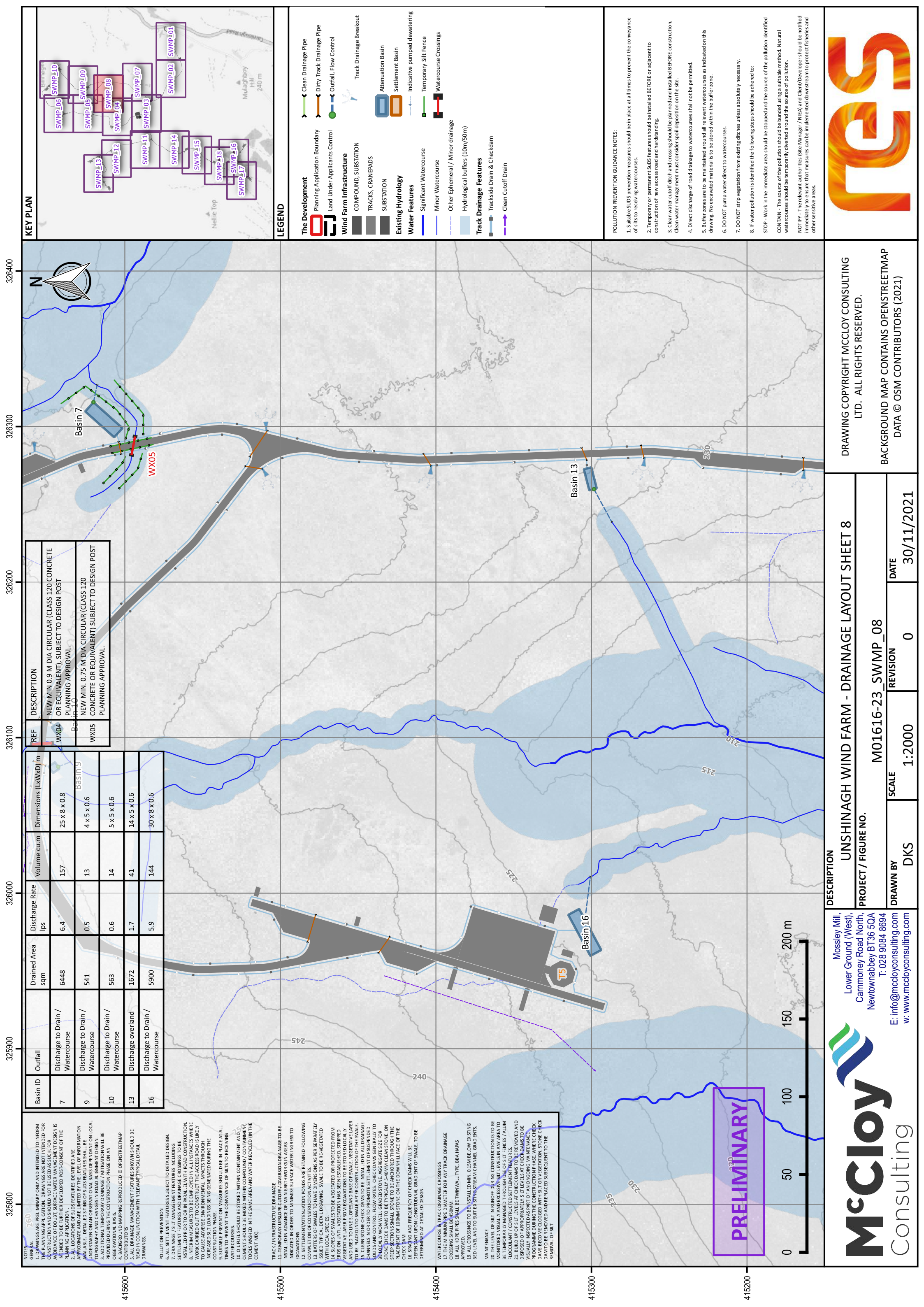
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Mossley Mill,  
 Lower Ground (West),  
 Carramey Road North,  
 Newtownabbey BT36 5QA  
 T: 028 9084 8694  
 E: info@mccloyconsulting.com  
 w: www.mccloyconsulting.com







REF	DESCRIPTION
WX04	NEW MIN 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT), SUBJECT TO DESIGN POST PLANNING APPROVAL.
WX05	NEW MIN. 0.75 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.

Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m
7	Discharge to Drain / Watercourse	6448	6.4	157	25 x 8 x 0.8
9	Discharge to Drain / Watercourse	541	0.5	13	4 x 5 x 0.6
10	Discharge to Drain / Watercourse	563	0.6	14	5 x 5 x 0.6
13	Discharge overland	1672	1.7	41	14 x 5 x 0.6
16	Discharge to Drain / Watercourse	5900	5.9	144	30 x 8 x 0.6

**NOTES**

**GENERAL**

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2. ALL LOCATIONS OF SUDS FEATURES IDENTIFIED ARE APPROXIMATE AND ARE LIMITED BY THE LEVEL OF INFORMATION AVAILABLE. THE DESIGN OF SUDS FEATURES SHOULD BE BASED ON LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN.
3. ADDITIONAL TEMPORARY DRAINAGE / MITIGATION WILL BE PROVIDED DURING THE CONSTRUCTION PHASE ON AN OBSERVATIONAL BASIS.
4. BACKGROUND MAPPING REPRODUCED © OPENSTREETMAP
5. ALL DRAINAGE MANAGEMENT FEATURES SHOWN SHOULD BE READ IN CONJUNCTION WITH RELEVANT TYPICAL DETAIL DRAWINGS.

**POLLUTION PREVENTION**

6. ALL SETTLEMENT FEATURES SUBJECT TO DETAILED DESIGN.
7. DRAINAGE / SILT MANAGEMENT FEATURES INCLUDING SETTLEMENT FEATURES AND DRAINAGE CROSSINGS TO BE INSTALLED PRIOR TO OR IN PARALLEL WITH ROAD CONSTRUCTION.
8. INTERIM MEASURES TO BE EMPLOYED IN ALL INSTANCES WHERE WORK CARRIED OUT TO CONSTRUCT THE ACCESS ROAD IS LIKELY TO INCREASE SILT LOADINGS BEING GENERATED DURING THE CONSTRUCTION PHASE.
9. SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SILTS TO RECEIVING WATERCOURSES.
10. ALL SILT SHOULD BE STORED WITHIN CONFINEMENT AND CEMENT SHOULD BE AWKED WITHIN COMPOUND / CONTAMINANT TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).

**TRACK / INFRASTRUCTURE DRAINAGE**

11. TEMPORARY SURFACE CUTOFFS / CONVEYANCE DRAINAGE TO BE INSTALLED IN ADVANCE OF MAIN EARTHWORKS IN AREAS INDICATED IN ORDER TO MINIMISE SURFACE WATER INGRESS TO EXCAVATIONS.
12. SETTLEMENT/ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES.
13. ALL TRACKS TO BE CONSTRUCTED AS PER SEPARATELY ISSUED TYPICAL DETAIL DRAWING. SWALE TO BE RE-VEGETATED WITH LOCAL SPECIES.
14. 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 RE-USED TO REVEGETATE SLOPES OF SWALES.
15. 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 CLEANSING STONE ON PLACEMENT OF 100MM STONE ON THE DOWNHILL FACE OF THE CHECK DAM.
16. SPACING AND FREQUENCY OF CHECK DAMS WILL BE DETERMINED UPON LONGITUDINAL GRADIENT OF SWALE. TO BE DETERMINED AT DETAILED DESIGN.

**WATERCOURSE & TRACK DRAINAGE CROSSINGS**

17. THE MINIMUM PIPE DIAMETER FOR ANY TRACK DRAINAGE CROSSING SHALL BE 450MM.
18. ALL HOPE PIPES SHALL BE TWINWALL TYPE. BBA HPAS APPROVED.
19. CROSSINGS TO BE INSTALLED MIN. 0.15M BELOW EXISTING BED LEVEL AND TO SUIT EXISTING STREAM CHANNEL GRADIENTS.

**MAINTENANCE**

20. THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE IDENTIFIED AND REMOVED AS PART OF AN ONGOING MAINTENANCE PROGRAMME DURING THE CONSTRUCTION PHASE. WHERE CHECK DAMS BECOME CLOGGED WITH SILT OR VEGETATION, STONE CHECK DAMS TO BE REMOVED AND REPLACED SUBSEQUENT TO THE REMOVAL OF SILT.

**PRELIMINARY**



**POLLUTION PREVENTION GUIDANCE NOTES:**

1. Suitable SUDS prevention measures should be in place at all times to prevent the conveyance of silts to receiving watercourses.
2. Temporary or permanent SUDS features should be installed BEFORE or adjacent to construction of new access road and hardstanding.
3. Clean water cutoff ditch and crossing should be planned and installed BEFORE construction. Clean water management must consider spoil deposition on the site.
4. Direct discharge of road drainage to watercourses shall not be permitted.
5. 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.
6. DO NOT pump water direct to watercourses.
7. DO NOT strip vegetation from existing ditches unless absolutely necessary.
8. 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 contained 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.

**DESCRIPTION**

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 8

PROJECT / FIGURE NO. M01616-23\_SWMP\_08

DRAWN BY DKS

SCALE 1:2000

REVISION 0

DATE 30/11/2021

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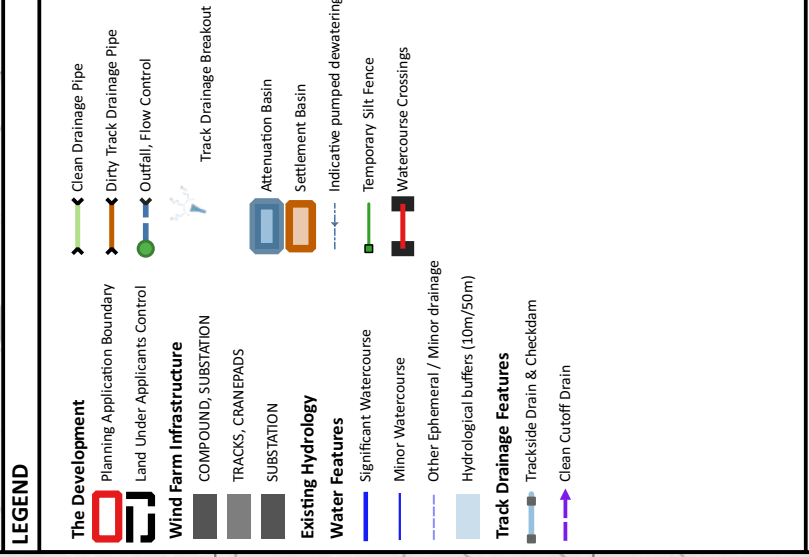
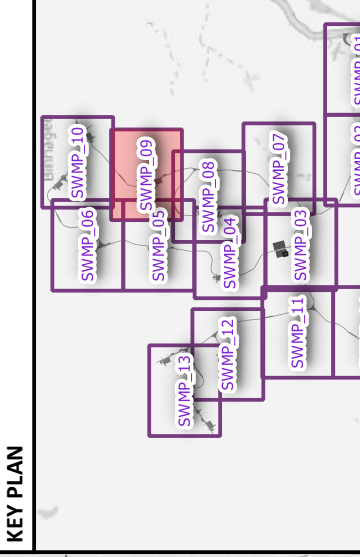
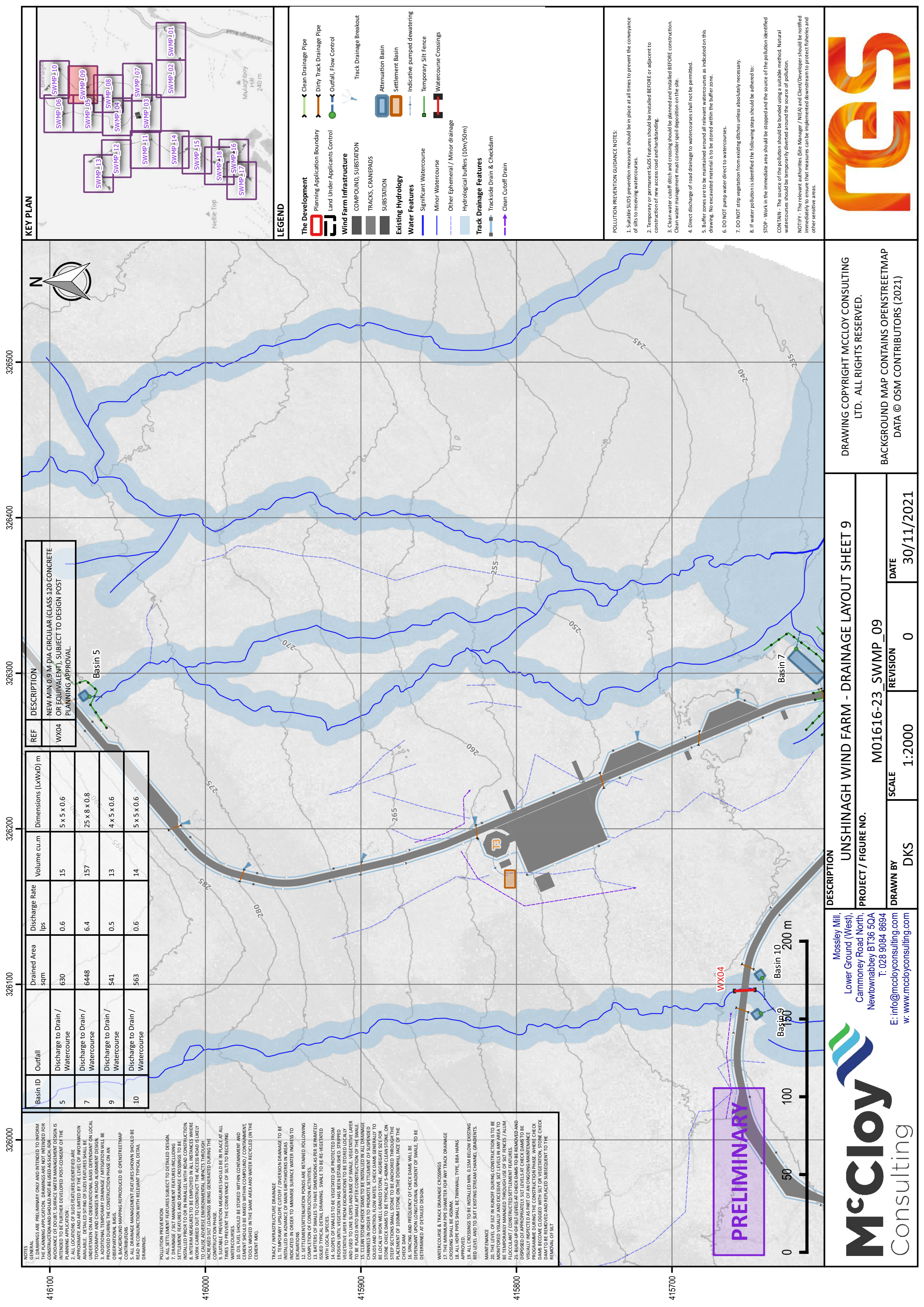
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Mossley Mill,  
Lower Ground (West),  
Carmoney Road North,  
Newtownabbey BT36 5QA  
T: 028 9084 8694  
E: info@mccloyconsulting.com  
w: www.mccloyconsulting.com

**McClroy Consulting**





**POLLUTION PREVENTION GUIDANCE NOTES:**

1. Suitable SUDS prevention measures should be in place at all times to prevent the conveyance of silts to receiving watercourses.
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4. Direct discharge of road drainage to watercourses shall not be permitted.
5. 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.
6. DO NOT pump water direct to watercourses.
7. DO NOT strip vegetation from existing ditches unless absolutely necessary.
8. 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 contained 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.



Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m	REF	DESCRIPTION
5	Discharge to Drain / Watercourse	630	0.6	15	5 x 5 x 0.6	WX04	NEW MIN 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT), SUBJECT TO DESIGN POST PLANNING APPROVAL.
7	Discharge to Drain / Watercourse	6448	6.4	157	25 x 8 x 0.8		
9	Discharge to Drain / Watercourse	541	0.5	13	4 x 5 x 0.6		
10	Discharge to Drain / Watercourse	563	0.6	14	5 x 5 x 0.6		

**NOTES**

GENERAL

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2. ALL LOCATIONS OF SUDS FEATURES IDENTIFIED ARE APPROXIMATE AND ARE LIMITED BY THE LEVEL OF INFORMATION AVAILABLE. THE DESIGNER HAS CONDUCTED VISUAL INSPECTIONS ON LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN.
3. ADDITIONAL TEMPORARY DRAINAGE / MITIGATION WILL BE PROVIDED DURING THE CONSTRUCTION PHASE ON AN OBSERVATIONAL BASIS.
4. BACKGROUND MAPPING REPRODUCED © OPENSTREETMAP
5. ALL DRAINAGE MANAGEMENT FEATURES SHOWN SHOULD BE READ IN CONJUNCTION WITH RELEVANT TYPICAL DETAIL DRAWINGS.

**POLLUTION PREVENTION**

6. ALL SETTLEMENT FEATURES SUBJECT TO DETAILED DESIGN.
7. DRAINAGE / SILT MANAGEMENT FEATURES INCLUDING SETTLEMENT FEATURES AND DRAINAGE CROSSINGS TO BE INSTALLED PRIOR TO OR IN PARALLEL WITH ROAD CONSTRUCTION.
8. INTERIM MEASURES TO BE EMPLOYED IN ALL INSTANCES WHERE WORK CARRIED OUT TO CONSTRUCT THE ACCESS ROAD IS LIKELY TO INCREASE SILT LOADINGS BEING GENERATED DURING THE CONSTRUCTION PHASE.
9. SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SILTS TO RECEIVING WATERCOURSES.
10. ALL EXCAVATIONS SHOULD BE STORED WITHIN CONFINEMENT, AND CARE SHOULD BE TAKEN TO PREVENT SPILLAGE OF OILS / CONTAMINANT TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MK).

**TRACK / INFRASTRUCTURE DRAINAGE**

11. TEMPORARY SLOPE CUTOFFS / DIVERSION DRAINAGE TO BE INSTALLED IN ADVANCE OF MAIN EARTHWORKS IN AREAS INDICATED IN ORDER TO MINIMISE SURFACE WATER INGRESS TO EXCAVATIONS.
12. SETTLEMENT/ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES.
13. ALL TRACKS AND DRAINAGE FEATURES AS PER SEPARATELY ISSUED TYPICAL DETAIL DRAWINGS. SWALE TO BE RE-VEGETATED WITH LOCAL SPECIES.
14. 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 RE-USED TO REVEGETATE SLOPES.
15. 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 5-50MM CLEAN STONE. ON THE DOWNHILL SIDE OF THE CHECK DAM.
16. SPACING AND FREQUENCY OF CHECK DAMS WILL BE DETERMINED UPON LONGITUDINAL GRADIENT OF SWALE. TO BE DETERMINED AT DETAILED DESIGN.

**WATERCOURSE & TRACK DRAINAGE CROSSINGS**

17. THE MINIMUM PIPE DIAMETER FOR ANY TRACK DRAINAGE CROSSING SHALL BE 450MM.
18. ALL HOPE PIPES SHALL BE TWINWALL TYPE, BBA HPAS
19. ALL DRAINAGE CROSSINGS TO BE INSTALLED MIN. 0.15M BELOW EXISTING BED LEVEL AND TO SUIT EXISTING STREAM CHANNEL GRADIENTS.

**MAINTENANCE**

20. THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED IMMEDIATELY.
21. 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 DAMS TO BE REMOVED AND REPLACED SUBSEQUENT TO THE REMOVAL OF SILT.

**UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 9**

PROJECT / FIGURE NO. M01616-23\_SWMP\_09

SCALE 1:2000

REVISION 0

DATE 30/11/2021

DRAWN BY DKS

**DESCRIPTION**

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 9

PROJECT / FIGURE NO. M01616-23\_SWMP\_09

SCALE 1:2000

REVISION 0

DATE 30/11/2021

DRAWN BY DKS

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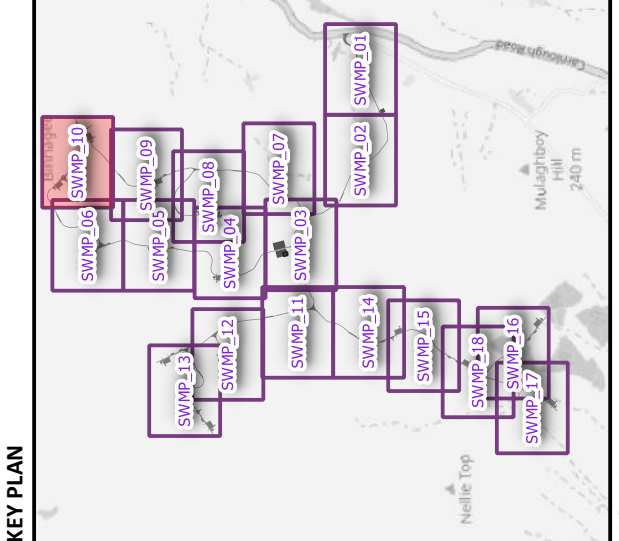
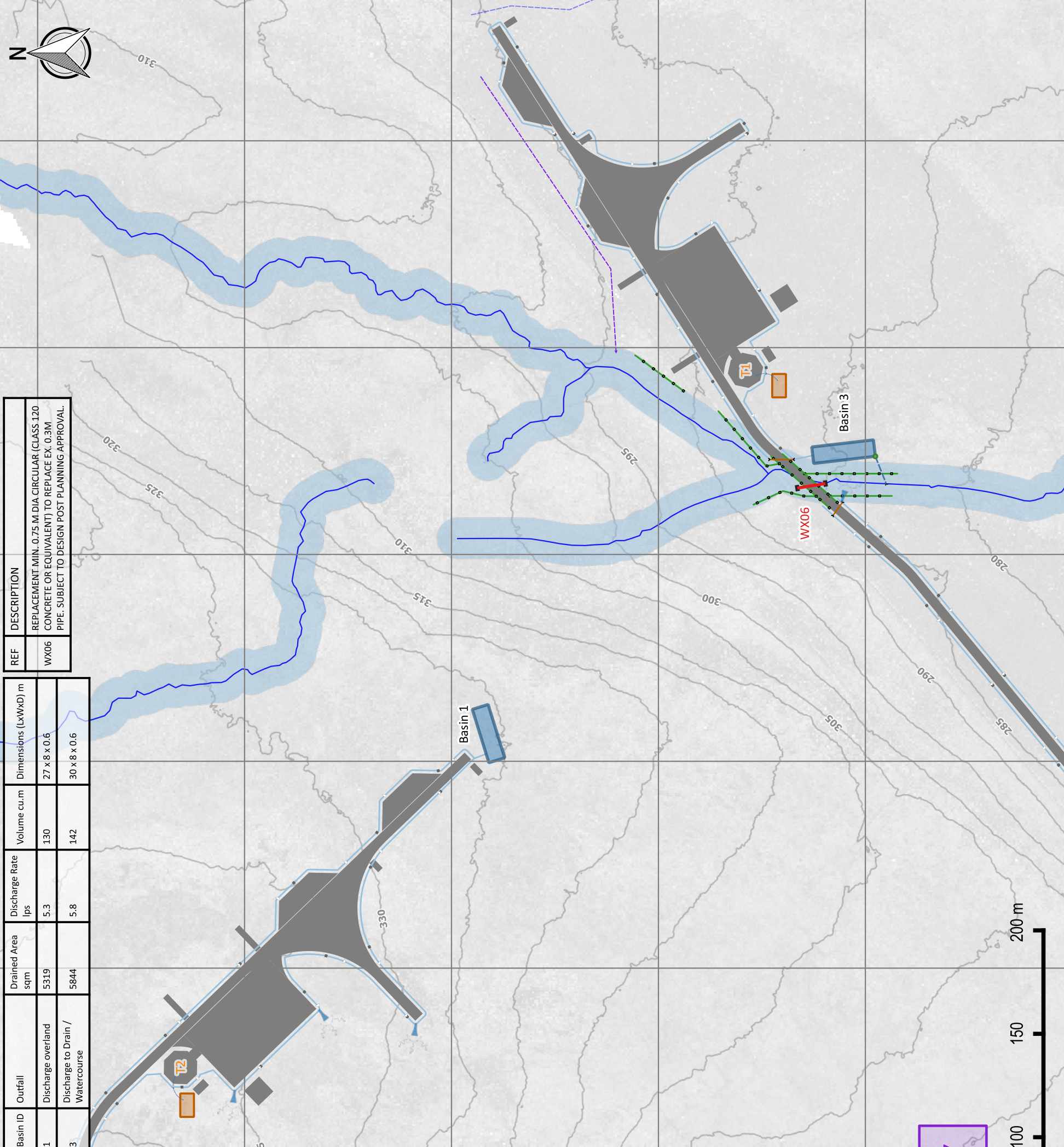
**Mossley Mill,**  
 Lower Ground (West),  
 Carramey Road North,  
 Newtownabbey BT36 5QA  
 T: 028 9084 8694  
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2. ALL LOCATIONS OF SUDS FEATURES IDENTIFIED ARE APPROXIMATE AND ARE LIMITED BY THE LEVEL OF INFORMATION AVAILABLE. THE LOCATION OF SUDS FEATURES SHOULD BE VERIFIED ON THE GROUND PRIOR TO CONSTRUCTION. REFERENCE TO LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN SHOULD BE TAKEN INTO ACCOUNT.
3. ADDITIONAL TEMPORARY DRAINAGE / MITIGATION WILL BE PROVIDED DURING THE CONSTRUCTION PHASE ON AN OBSERVATIONAL BASIS.
4. BACKGROUND MAPPING REPRODUCED © OPENSTREETMAP
5. ALL DRAINAGE MANAGEMENT FEATURES SHOWN SHOULD BE READ IN CONJUNCTION WITH RELEVANT TYPICAL DETAIL DRAWINGS.
6. POLLUTION PREVENTION
7. ALL SETTLEMENT FEATURES SUBJECT TO DETAILED DESIGN.
8. DRAINAGE / SUDS MANAGEMENT FEATURES INCLUDING SETTLEMENT FEATURES AND DRAINAGE CROSSINGS TO BE INSTALLED PRIOR TO OR IN PARALLEL WITH ROAD CONSTRUCTION.
9. INTERIM MEASURES TO BE EMPLOYED IN ALL INSTANCES WHERE WORK CARRIED OUT TO CONSTRUCT THE ACCESS ROAD IS LIKELY TO INCREASE SUDS LOADINGS BEING GENERATED DURING THE CONSTRUCTION PHASE.
10. SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SILTS TO RECEIVING WATERCOURSES.
11. ALL SUDS FEATURES SHOULD BE STORED WITHIN CONFINEMENT, AND CLEAN SHOULD BE AWKED WITH LOCAL ROAD / CONTAMINATION TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).
12. TRACK / INFRASTRUCTURE DRAINAGE
13. TEMPORARY SLOPE CUTOFFS / DIVERSION DRAINAGE TO BE INSTALLED IN ADVANCE OF MAIN EARTHWORKS IN AREAS INDICATED IN ORDER TO MINIMISE SURFACE WATER INGRESS TO EXCAVATIONS
14. SETTLEMENT/ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES
15. ALL SUDS FEATURES TO BE INSTALLED AS PER SEPARATELY ISSUED TYPICAL DRAWING. SWALE TO BE RE-VEGETATED WITH LOCAL SPECIES.
16. 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 RE-USED TO RE-VEGETATE SWALES. VEGETATIVE LAYER TO BE STORED IN SWALES AND NOT IN THE WATER.
17. 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 5-50MM CLEANSITONE ON CHANNELS TO BE TYPICALLY 100MM STONE ON THE DOWNHILL FACE OF THE CHECK DAM
18. SPACING AND FREQUENCY OF CHECK DAMS WILL BE DETERMINED UPON LONGITUDINAL GRADIENT OF SWALE. TO BE DETERMINED AT DETAILED DESIGN.
19. WATERCOURSE & TRACK DRAINAGE CROSSINGS
20. THE MINIMUM PIPE DIAMETER FOR ANY TRACK DRAINAGE CROSSING SHALL BE 450MM.
21. ALL HOPE PIPES SHALL BE TWINWALL TYPE, BBA HPAPS
22. APPROVED CROSSINGS TO BE INSTALLED MIN. 0.15M BELOW EXISTING BED LEVEL AND TO SUIT EXISTING STREAM CHANNEL GRADIENTS
23. MAINTENANCE
24. THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED IMMEDIATELY.
25. FLOCCULANT / CONSTRUCTED SETTLEMENT FEATURES
26. 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 DAMS TO BE REMOVED AND REPLACED SUBSEQUENTLY TO THE REMOVAL OF SILT

Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m	REF	DESCRIPTION
1	Discharge to Drain / Watercourse	5319	5.3	130	27 x 8 x 0.6	WX06	REPLACEMENT MIN. 0.75 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) TO REPLACE EX. 0.3M PIPE. SUBJECT TO DESIGN POST PLANNING APPROVAL.
3	Discharge to Drain / Watercourse	5844	5.8	142	30 x 8 x 0.6		



**LEGEND**

**The Development**

- Planning Application Boundary
- Land Under Applicants Control
- Wind Farm Infrastructure
  - COMPOUND, SUBSTATION
  - TRACKS, CRANEPADS
  - SUBSTATION
- Existing Hydrology
- Water Features
  - Significant Watercourse
  - Minor Watercourse
  - Other Ephemeral / Minor drainage
  - Hydrological buffers (10m/50m)
- Track Drainage Features
  - Trackside Drain & Checkdam
  - Clean Cutoff Drain

**Water Management**

- Clean Drainage Pipe
- Dirty Track Drainage Pipe
- Outfall, Flow Control
- Track Drainage Breakout
- Attenuation Basin
- Settlement Basin
- Indicative pumped dewatering
- Temporary Silt Fence
- Watercourse Crossings

**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 handstanding.
- 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 contained 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.



**DESCRIPTION**

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 10  
PROJECT / FIGURE NO.

M01616-23\_SWMP\_10

DRAWN BY: DKS  
SCALE: 1:2000  
REVISION: 0  
DATE: 30/11/2021

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**MCCLOY Consulting**

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

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2. ALL LOCATIONS OF SUDS FEATURES IDENTIFIED ARE APPROXIMATE AND ARE LIMITED BY THE LEVEL OF INFORMATION AVAILABLE. THE DESIGN OF SUDS FEATURES SHOULD BE BASED ON LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN.
3. ADDITIONAL TEMPORARY DRAINAGE / MITIGATION WILL BE PROVIDED DURING THE CONSTRUCTION PHASE ON AN OBSERVATIONAL BASIS.
4. BACKGROUND MAPPING REPRODUCED © OPENSTREETMAP
5. ALL DRAINAGE MANAGEMENT FEATURES SHOWN SHOULD BE READ IN CONJUNCTION WITH RELEVANT TYPICAL DETAIL DRAWINGS.

**POLLUTION PREVENTION**

6. ALL SETTLEMENT FEATURES SUBJECT TO DETAILED DESIGN.
7. DRAINAGE / SILT MANAGEMENT FEATURES INCLUDING SETTLEMENT FEATURES AND DRAINAGE CROSSINGS TO BE INSTALLED PRIOR TO OR IN PARALLEL WITH ROAD CONSTRUCTION.
8. INTERIM MEASURES TO BE EMPLOYED IN ALL INSTANCES WHERE WORK CARRIED OUT TO CONSTRUCT THE ACCESS ROAD IS LIKELY TO INCREASE SILT LOADINGS BEING GENERATED DURING THE CONSTRUCTION PHASE.
9. SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SILTS TO RECEIVING WATERCOURSES.
10. ALL SILT TO BE STORED WITHIN CONTAINMENT, AND CLEAN SHOULD BE AWKED WITH COMBINATION / CONTAINMENT TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).

**TRACK / INFRASTRUCTURE DRAINAGE**

11. TRACK / INFRASTRUCTURE DRAINAGE / DIVERSION DRAINAGE TO BE INSTALLED IN ADVANCE OF MAIN EARTHWORKS IN AREAS INDICATED IN ORDER TO MINIMISE SURFACE WATER INGRESS TO EXCAVATIONS.
12. SETTLEMENT/ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES.
13. TRACK / INFRASTRUCTURE DRAINAGE AS PER SEPARATELY ISSUED TYPICAL DETAIL DRAWING. SWALE TO BE RE-GENERATED WITH LOCAL SPECIES.
14. 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 RE-USED TO RE-GENERATE SWALE VEGETATIVE LAYER.
15. CLEAN STONE CHECK DAMS TO BE INSTALLED IN ALL DRAINAGE CHANNELS IN ORDER TO PROMOTE SETTLEMENT OF SUSPENDED SOLIDS AND CONTROL FLOW PATES. CHECK DAMS GENERALLY TO BE LOCALLY WON WELL GRADED STONE. AGGREGATE SIZE FOR STONE CHECK DAMS TO BE TYPICALLY 5-50MM CLEAN STONE ON THE DOWNHILL FACE OF THE CHECK DAM.
16. SPACING AND FREQUENCY OF CHECK DAMS WILL BE DETERMINED UPON LONGITUDINAL GRADIENT OF SWALE. TO BE DETERMINED AT DETAILED DESIGN.

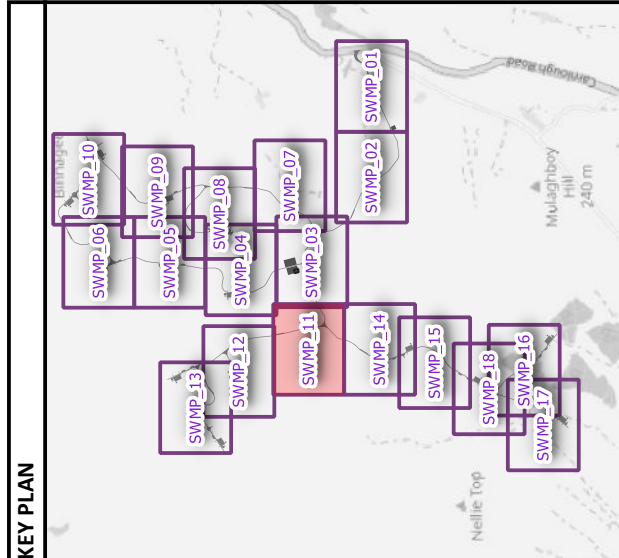
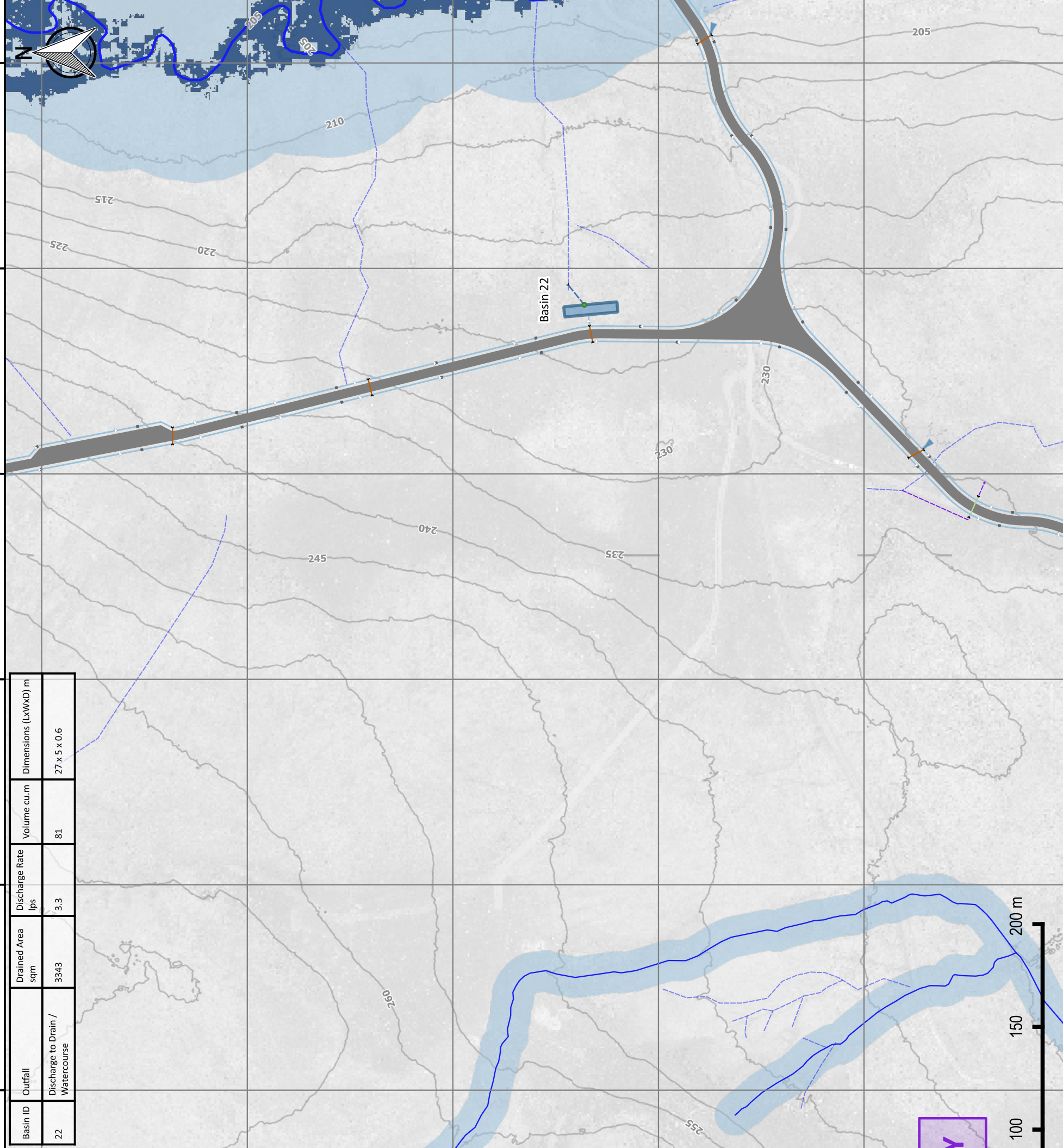
**WATERCOURSE & TRACK DRAINAGE CROSSINGS**

17. THE MINIMUM PIPE DIAMETER FOR ANY TRACK DRAINAGE CROSSING SHALL BE 450MM.
18. ALL HOPE PIPES SHALL BE TWINWALL TYPE. BBA HPAS
19. APPROVED CROSSINGS TO BE INSTALLED MIN. 0.15M BELOW EXISTING BED LEVEL AND TO SUIT EXISTING STREAM CHANNEL GRADIENTS.

**MAINTENANCE**

20. THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED IMMEDIATELY BY THE CONTRACTOR USING 'FLOCCULANT' CONSTRUCTED SETTLEMENT FEATURES.
21. 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 DAMS TO BE REMOVED AND REPLACED SUBSEQUENTLY TO THE REMOVAL OF SILT.

Basin ID	Outfall	Discharge to Drain / Watercourse	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m
22			3343	3.3	81	27 x 5 x 0.6



**LEGEND**

- The Development**
- Planning Application Boundary
  - Land Under Applicants Control
- Wind Farm Infrastructure**
- COMPOUND, SUBSTATION
  - TRACKS, CRANEPADS
  - SUBSTATION
- Existing Hydrology**
- Water Features
  - Significant Watercourse
  - Minor Watercourse
  - Other Ephemeral / Minor drainage
  - Hydrological buffers (10m/50m)
- Track Drainage Features**
- Trackside Drain & Checkdam
  - Clean Cutoff Drain
- Water Features**
- Clean Drainage Pipe
  - Dirty Track Drainage Pipe
  - Outfall, Flow Control
  - Track Drainage Breakout
  - Attenuation Basin
  - Settlement Basin
  - Indicative pumped dewatering
  - Temporary Silt Fence
  - Watercourse Crossings

**POLLUTION PREVENTION GUIDANCE NOTES:**

1. Suitable SUDS prevention measures should be in place at all times to prevent the conveyance of silts to receiving watercourses.
2. Temporary or permanent SUDS features should be installed BEFORE or adjacent to construction of new access road and handstanding.
3. Clean water cutoff ditch and crossing should be planned and installed BEFORE construction. Clean water management must consider spoil deposition on the site.
4. Direct discharge of road drainage to watercourses shall not be permitted.
5. 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.
6. DO NOT pump water direct to watercourses.
7. DO NOT strip vegetation from existing ditches unless absolutely necessary.
8. 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 bounded 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.

**DESCRIPTION**

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 11

PROJECT / FIGURE NO. M01616-23\_SWMP\_11

DRAWN BY DKS

SCALE 1:2000

REVISION 0

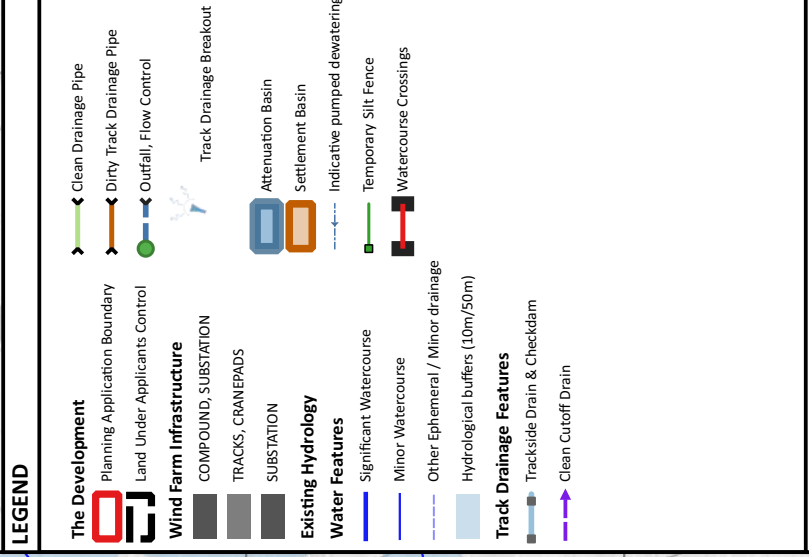
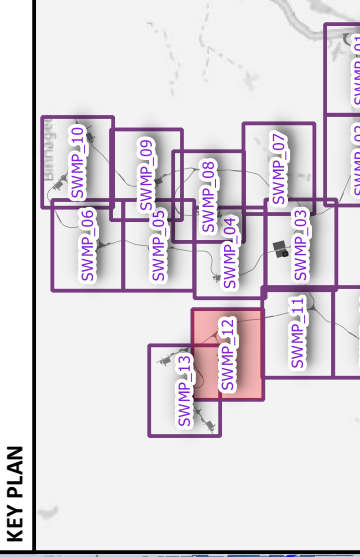
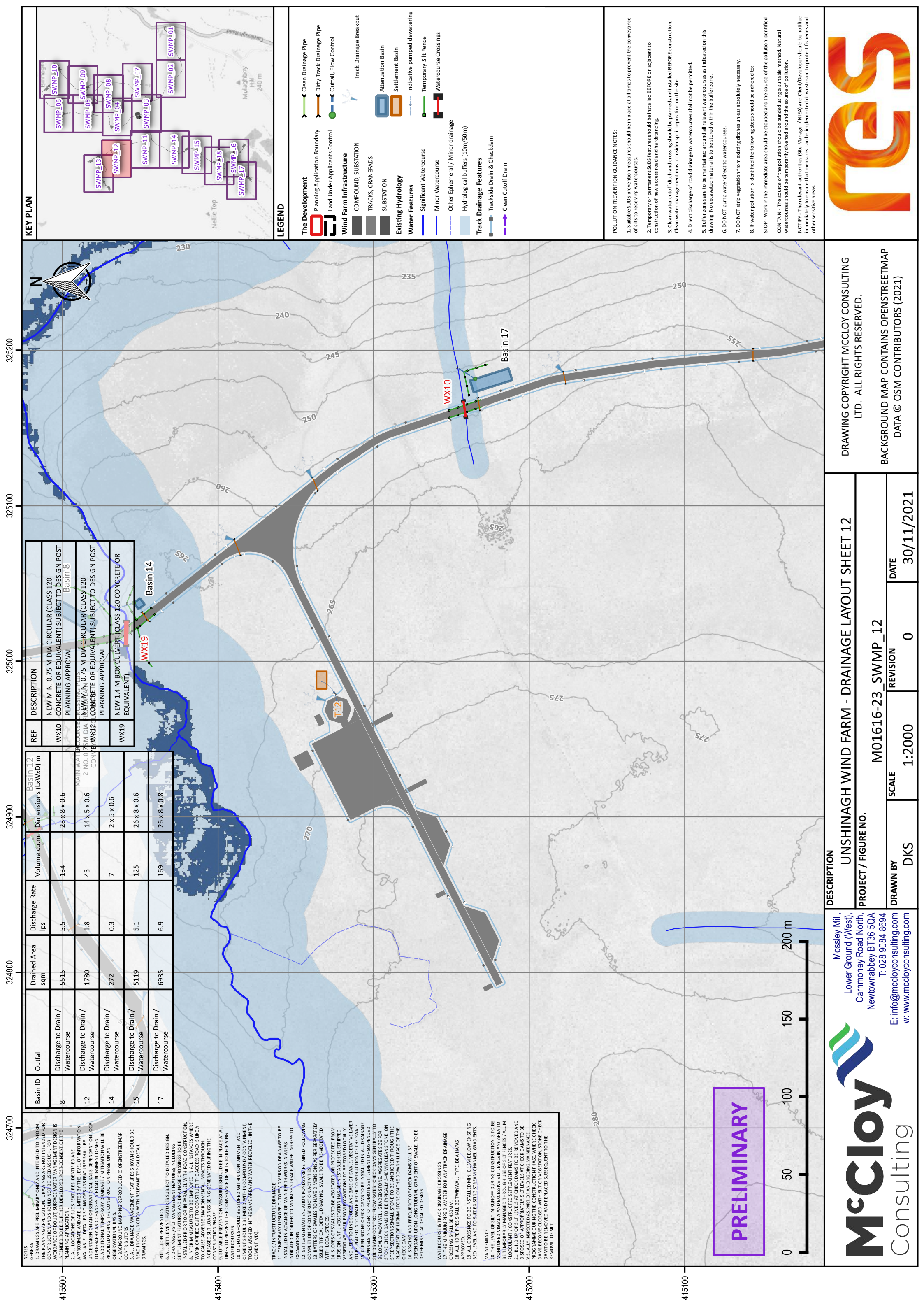
DATE 30/11/2021

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





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  - 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.



Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m	DESCRIPTION	REF
8	Discharge to Drain / Watercourse	5515	5.5	134	28 x 8 x 0.6	NEW MIN. 0.75 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.	WX10
12	Discharge to Drain / Watercourse	1780	1.8	43	14 x 5 x 0.6	NEW MIN. 0.75 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.	WX12
14	Discharge to Drain / Watercourse	272	0.3	7	2 x 5 x 0.6	NEW 1.4 M BOX CULVERT (CLASS 120 CONCRETE OR EQUIVALENT)	WX19
15	Discharge to Drain / Watercourse	5119	5.1	125	26 x 8 x 0.6		
17	Discharge to Drain / Watercourse	6935	6.9	169	26 x 8 x 0.8		

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2. ALL LOCATIONS OF SUDS FEATURES IDENTIFIED ARE APPROXIMATE AND ARE LIMITED BY THE LEVEL OF INFORMATION AVAILABLE. THE DESIGNER HAS CONDUCTED VISUAL LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN.
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7. DRAINAGE / SUDS MANAGEMENT FEATURES INCLUDING SETTLEMENT FEATURES AND DRAINAGE CROSSINGS TO BE INSTALLED PRIOR TO OR IN PARALLEL WITH ROAD CONSTRUCTION.
8. INTERIM MEASURES TO BE EMPLOYED IN ALL INSTANCES WHERE WORK CARRIED OUT TO CONSTRUCT THE ACCESS ROAD IS LIKELY TO INCREASE SUDS LOADINGS BEING GENERATED DURING THE CONSTRUCTION PHASE.
9. SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SILTS TO RECEIVING WATERCOURSES.
10. ALL MATERIALS TO BE STORED WITHIN CONFINEMENT, AND CEMENT SHOULD BE AWAY FROM CONFINEMENT / CONTAMINATION TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MK).
11. TRACK / INFRASTRUCTURE DRAINAGE
12. SETTLEMENT/ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES.
13. TEMPORARY SLOPE CUTOFF / DIVERSION DRAINAGE TO BE INSTALLED IN ADVANCE OF MAIN EARTHWORKS IN AREAS INDICATED IN ORDER TO MINIMISE SURFACE WATER INGRESS TO EXCAVATIONS.
14. SLOPES OF SWALES TO BE VEGETATED OR PROTECTED FROM EROSION UNTIL VEGETATION HAS BEEN ESTABLISHED. STRIPPED VEGETATIVE LAMINAE FROM EXCAVATIONS TO BE STORED LOCALLY AND RE-USED TO REVEGETATE SLOPES OF SWALES.
15. CLEAN STONE CHECK DAMS TO BE INSTALLED IN ALL DRAINAGE CHANNELS IN ORDER TO PROMOTE SETTLEMENT OF SUSPENDED SOLIDS AND CONTROL FLOW PATES. CHECK DAMS GENERALLY TO BE LOCALLY WON WELL GRADED STONE. AGGREGATE SIZE FOR STONE CHECK DAMS TO BE TYPICALLY 5-50MM CLEAN STONE ON PLACEMENT OF 100MM STONE ON THE DOWNHILL FACE OF THE CHECK DAM.
16. SPACING AND FREQUENCY OF CHECK DAMS WILL BE DEPENDANT UPON LONGITUDINAL GRADIENT OF SWALE. TO BE DETERMINED AT DETAILED DESIGN.
17. THE MINIMUM PIPE DIAMETER FOR ANY TRACK DRAINAGE CROSSING SHALL BE 450MM.
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19. CROSSINGS TO BE INSTALLED MIN. 0.15M BELOW EXISTING BED LEVEL AND TO SUIT EXISTING STREAM CHANNEL GRADIENTS.
20. THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED IMMEDIATELY BY CLEANING OF CHANNELS / ALUM FLOCCULANT CONSTRUCTED SETTLEMENT FEATURES.
21. 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 DAMS TO BE REMOVED AND REPLACED SUBSEQUENT TO THE REMOVAL OF SILT.

**UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 12**

PROJECT / FIGURE NO. M01616-23\_SWMP\_12

SCALE 1:2000

DRAWN BY DKS

REVISION 0

DATE 30/11/2021

DESCRIPTION

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 12

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**PRELIMINARY**

**MCCLOY Consulting**  
 Mossley Mill,  
 Lower Ground (West),  
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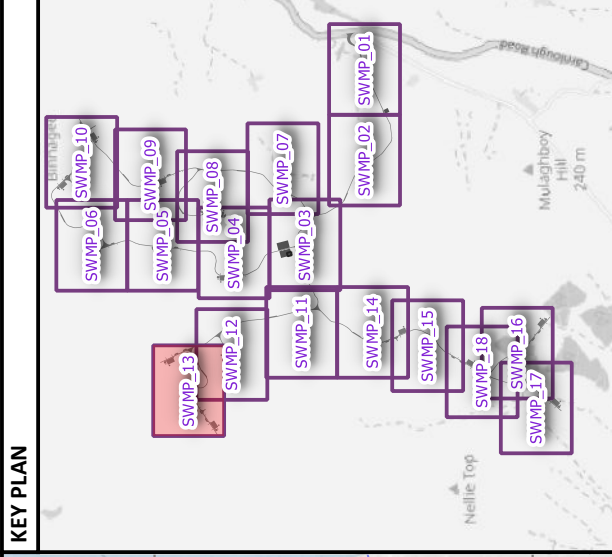
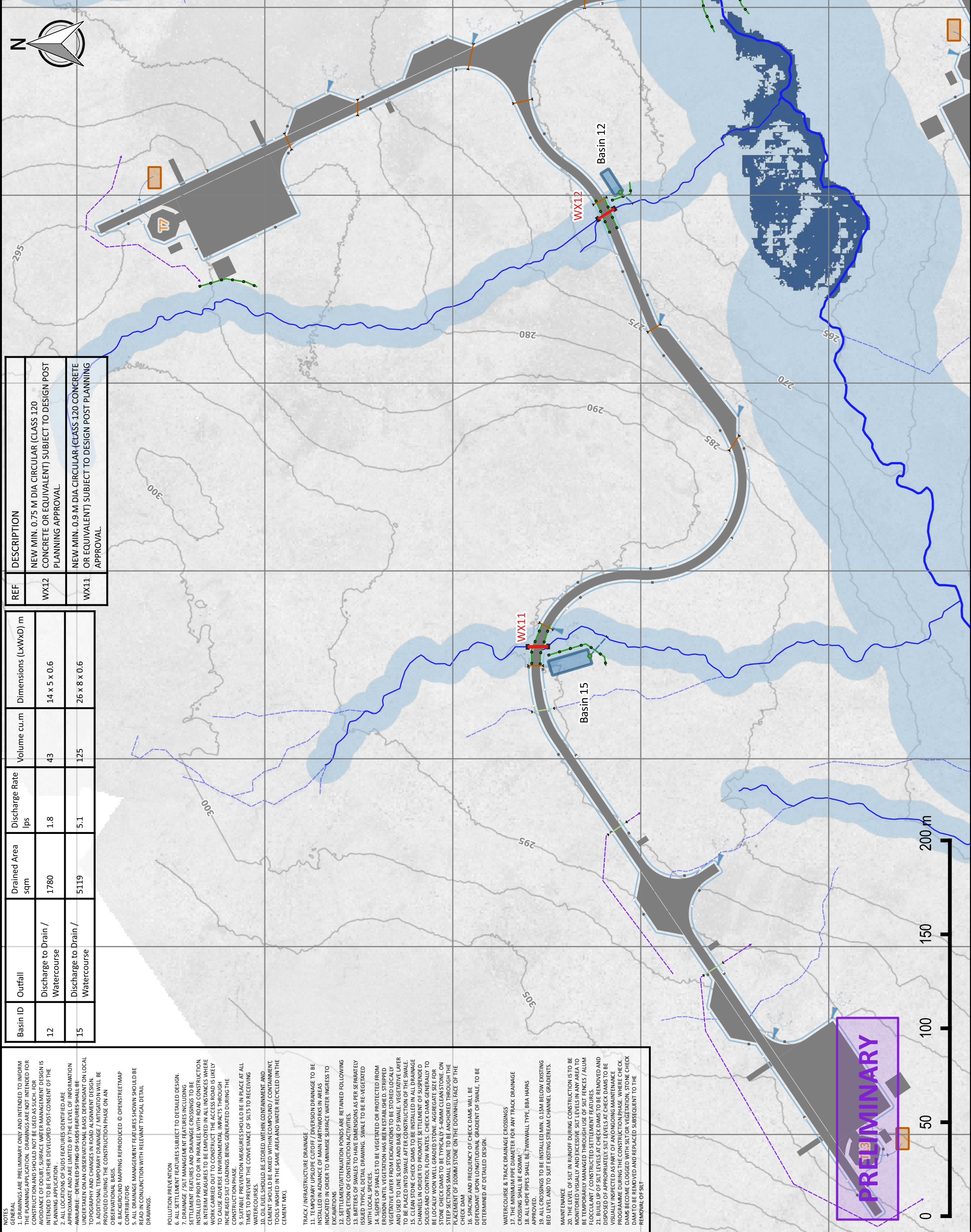
UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 12  
 PROJECT / FIGURE NO. M01616-23\_SWMP\_12  
 SCALE 1:2000  
 DRAWN BY DKS  
 REVISION 0  
 DATE 30/11/2021

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 13. SUDS FEATURES TO BE INSTALLED AS PER SEPARATELY ISSUED TYPICAL DETAIL DRAWINGS. SWALE TO BE RE-VEGETATED WITH LOCAL SPECIES.  
 14. 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 RE-USED AS TOP SOIL OR TO BE RECYCLED. VEGETATIVE LAYER TO BE STORED IN A DRAINAGE BASIN OR SETTLEMENT BASIN.  
 15. 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 PLACEMENT OF 100MM STONE ON THE DOWNHILL FACE OF THE CHECK DAM.  
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Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m	REF	DESCRIPTION
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15	Discharge to Drain / Watercourse	5119	5.1	125	26 x 8 x 0.6	WX11	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.



**LEGEND**

**The Development**

- Planning Application Boundary
- Land Under Applicants Control

**Wind Farm Infrastructure**

- COMPOUND, SUBSTATION
- TRACKS, CRANEPADS
- SUBSTATION

**Existing Hydrology**

- Watercourse
- Significant Watercourse
- Minor Watercourse
- Other Ephemeral / Minor drainage
- Hydrological buffers (10m/50m)

**Track Drainage Features**

- Trackside Drain & Checkdam
- Clean Cutoff Drain

**Water Features**

- Significant Watercourse
- Minor Watercourse
- Other Ephemeral / Minor drainage
- Hydrological buffers (10m/50m)

**Watercourse Crossings**

- Watercourse Crossings

**Track Drainage Breakout**

- Clean Drainage Pipe
- Dirty Track Drainage Pipe
- Outfall, Flow Control

**Attenuation Basin**

- Attenuation Basin
- Settlement Basin

**Indicative pumped dewatering**

- Indicative pumped dewatering
- Temporary Silt Fence

**POLLUTION PREVENTION GUIDANCE NOTES:**

- Suitable SUDS prevention measures should be in place at all times to prevent the conveyance of silts to receiving watercourses.
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**DESCRIPTION**  
 UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 13  
 PROJECT / FIGURE NO.  
 M01616-23\_SWMP\_13

**DRAWN BY**  
 DKS

**SCALE**  
 1:2000

**REVISION**  
 0

**DATE**  
 30/11/2021

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Mossley Mill,  
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 Carramoney Road North,  
 Newtownabbey BT36 5QA  
 T: 028 9084 8694  
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 w: www.mccloyconsulting.com

414500

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331600

331800

332000

332200

332400

332600

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 GENERAL  
 1. DRAWINGS ARE PRELIMINARY ONLY AND INTENDED TO INFORM THE PLANNING APPLICATION. DRAWINGS ARE NOT INTENDED FOR AVOIDANCE OF EXISTING SURFACE WATER MANAGEMENT DESIGN IS INTENDING TO BE FURTHER DEVELOPED POST-CONSENT OF THE PLANNING APPLICATION.  
 2. ALL LOCATIONS OF SUDS FEATURES IDENTIFIED ARE APPROXIMATE AND ARE LIMITED BY THE LEVEL OF INFORMATION AVAILABLE. THE LEVEL OF INFORMATION AVAILABLE ON LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN UNDERGROUNDS, UNDERGROUNDS, BASES, PERMANENT ON LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN IS PROVIDED DURING THE CONSTRUCTION PHASE ON AN OBSERVATIONAL BASIS.  
 3. ADDITIONAL TEMPORARY DRAINAGE / MITIGATION WILL BE PROVIDED DURING THE CONSTRUCTION PHASE ON AN OBSERVATIONAL BASIS.  
 4. BACKGROUND MAPPING REPRODUCED © OPENSTREETMAP  
 5. ALL DRAINAGE MANAGEMENT FEATURES SHOWN SHOULD BE READ IN CONJUNCTION WITH RELEVANT TYPICAL DETAIL DRAWINGS.  
 POLLUTION PREVENTION  
 6. ALL SETTLEMENT FEATURES SUBJECT TO DETAILED DESIGN.  
 7. DRAINAGE / SILT MANAGEMENT FEATURES INCLUDING SETTLEMENT FEATURES AND DRAINAGE CROSSINGS TO BE INSTALLED PRIOR TO OR IN PARALLEL WITH ROAD CONSTRUCTION.  
 8. INTERIM MEASURES TO BE EMPLOYED IN ALL INSTANCES WHERE WORK CARRIED OUT TO CONSTRUCT THE ACCESS ROAD IS LIKELY TO INCREASE SILT LOADINGS BEING GENERATED DURING THE CONSTRUCTION PHASE.  
 9. SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SILTS TO RECEIVING WATERCOURSES.  
 10. ALL SILT SHOULD BE STORED WITHIN CONTAINMENT, AND CEMENT SHOULD BE AWKED WITHIN COMPACTED / CONTAINMENT TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).  
 TRACK / INFRASTRUCTURE DRAINAGE  
 11. TEMPORARY SLOPE CUTOFF / DIVERSION DRAINAGE TO BE INSTALLED IN ADVANCE OF MAIN EARTHWORKS IN AREAS INDICATED IN ORDER TO MINIMISE SURFACE WATER INGRESS TO EXCAVATIONS.  
 12. SETTLEMENT/ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES.  
 13. ALL DRAINAGE MANAGEMENT FEATURES SHOWN SHOULD BE ISSUED TYPICAL DETAIL DRAWING. SWALE TO BE RE-VEGETATED WITH LOCAL SPECIES.  
 14. 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 RE-USED TO RE-VEGETATE SLOPES OF SWALES.  
 15. 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 THE DOWNHILL FACE OF THE CHECK DAM.  
 16. SPACING AND FREQUENCY OF CHECK DAMS WILL BE DETERMINED AT DETAILED DESIGN.  
 WATERCOURSE & TRACK DRAINAGE CROSSINGS  
 17. THE MINIMUM PIPE DIAMETER FOR ANY TRACK DRAINAGE CROSSING SHALL BE 450MM.  
 18. ALL HOPE PIPES SHALL BE TWINWALL TYPE. BBA HPAPS APPROVED.  
 19. ALL HOPE PIPES TO BE INSTALLED MIN. 0.15M BELOW EXISTING BED LEVEL AND TO SUIT EXISTING STREAM CHANNEL GRADIENTS.  
 MAINTENANCE  
 20. THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED IMMEDIATELY.  
 21. 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 DAMS TO BE REMOVED AND REPLACED SUBSEQUENTLY TO THE REMOVAL OF SILT.

**Basin ID**  
27

**Outfall**  
Discharge to Drain / Watercourse

**Discharge Rate**  
lps  
2.6

**Dained Area**  
sqm  
2601

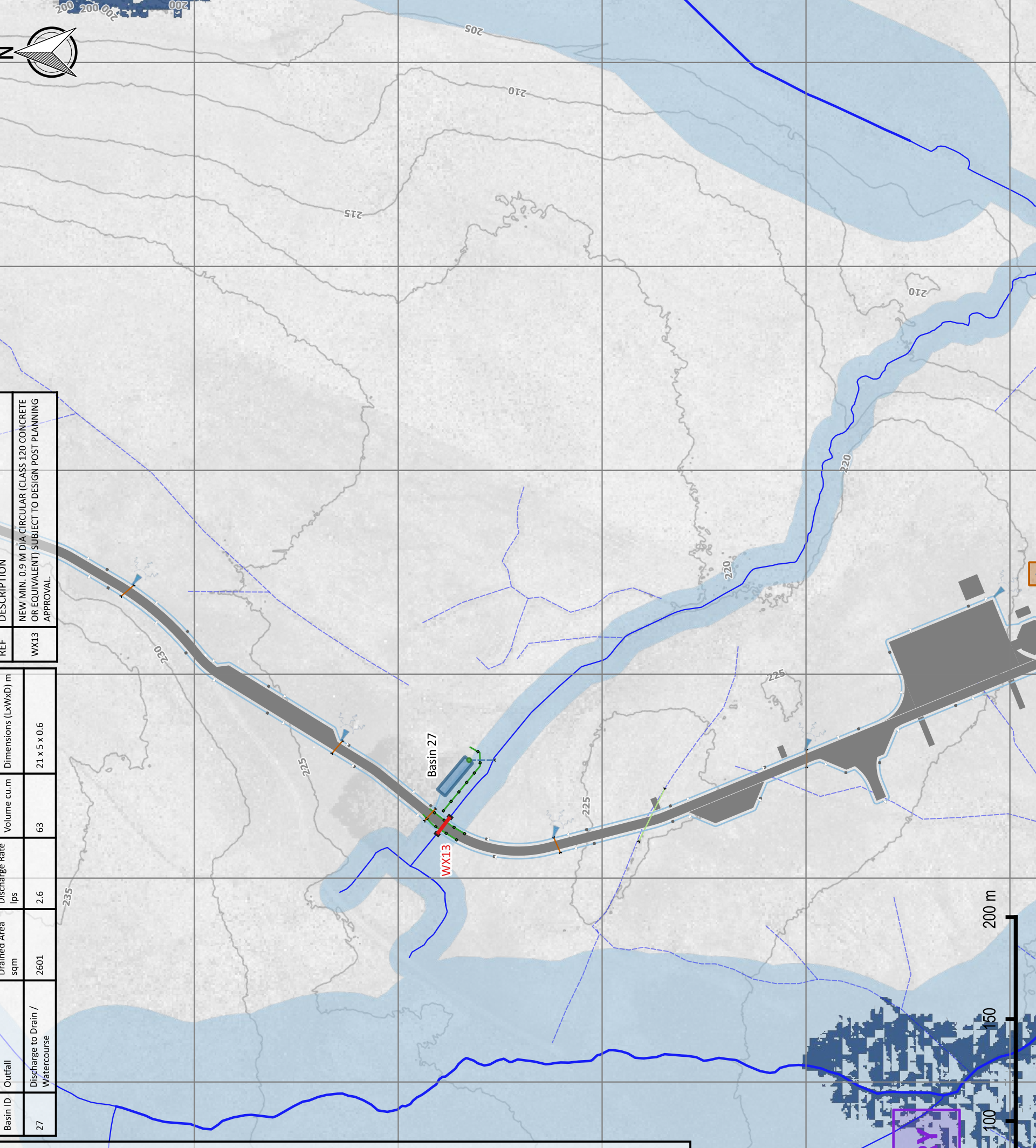
**Volume cu.m**  
63

**Dimensions (LxWxD) m**  
21 x 5 x 0.6

**REF**  
WX13

**DESCRIPTION**  
NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.

Basin ID	27
Outfall	Discharge to Drain / Watercourse
Discharge Rate	lps 2.6
Dained Area	sqm 2601
Volume cu.m	63
Dimensions (LxWxD) m	21 x 5 x 0.6
REF	WX13
DESCRIPTION	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.

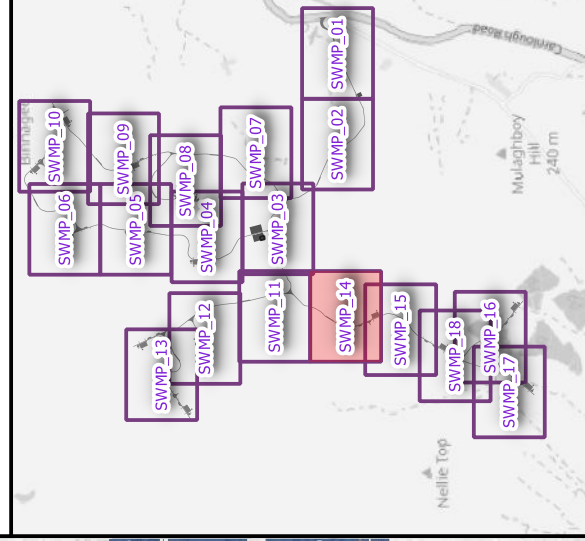


**McCloy Consulting**  
 Mossley Mill,  
 Lower Ground (West),  
 Carmoney Road North,  
 Newtownabbey BT36 5QA  
 T: 028 9084 8694  
 E: info@mccloyconsulting.com  
 w: www.mccloyconsulting.com

<b>DESCRIPTION</b>	
UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 14	
PROJECT / FIGURE NO. M01616-23_SWMP_14	
<b>DRAWN BY</b>	DKS
<b>SCALE</b>	1:2000
<b>REVISION</b>	0
<b>DATE</b>	30/11/2021

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 BACKGROUND MAP CONTAINS OPENSTREETMAP DATA © OSM CONTRIBUTORS (2021)

**KEY PLAN**



**LEGEND**

- The Development**
- Planning Application Boundary
  - Land Under Applicants Control
- Wind Farm Infrastructure**
- COMPOUND, SUBSTATION
  - TRACKS, CRANEPADS
  - SUBSTATION
- Existing Hydrology**
- Watercourse
  - Significant Watercourse
  - Minor Watercourse
  - Other Ephemeral / Minor drainage
  - Hydrological buffers (10m/50m)
- Track Drainage Features**
- Trackside Drain & Checkdam
  - Clean Cutoff Drain
- Water Features**
- Attenuation Basin
  - Settlement Basin
  - Indicative pumped dewatering
  - Temporary Silt Fence
  - Watercourse Crossings
- Water Management**
- Clean Drainage Pipe
  - Dirty Track Drainage Pipe
  - Outfall, Flow Control
  - Track Drainage Breakout

- 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 handstanding.
  - 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 bundled using a suitable method. Natural watercourses should be temporarily diverted around the source of pollution.  
 NOTIFY - The relevant authorities (Site Manager / NEA) and Client/Developer should be notified immediately to ensure that measures can be implemented downstream to protect fisheries and other sensitive areas.







324700

324800

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325100

325200

**NOTES**

**GENERAL**

- DRAWINGS ARE PRELIMINARY ONLY AND INTENDED TO INFORM THE PLANNING APPLICATION. DRAWINGS ARE NOT INTENDED FOR AVOIDANCE OF COLLISION. SURFACE WATER MANAGEMENT DESIGN IS INTENDING 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. THE LEVEL OF INFORMATION IS BASED ON LOCAL UNDERSTANDING OF THE LOCAL BASINS AND 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
- 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 / SUDS 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 INCREASE SUDS 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.
- WATERCOURSES SHOULD BE STORED WITHIN CONFINEMENT AND TOOLS SHOULD BE AWKED WITHIN COMPOUND / CONTAMINANT TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).

**TRACK / INFRASTRUCTURE DRAINAGE**

- TEMPORARY SLOPE 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.
- TEMPORARY SLOPE CUTOFF / DIVERSION DRAINAGE TO BE ISSUED TYPICAL DETAIL DRAWINGS. 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 STOCKED LOCALLY AND RE-USED AS COVER OR MULCH. VEGETATIVE LAYER TO BE STOCKED UNTIL VEGETATION HAS BEEN ESTABLISHED.
- 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 A16 TO BE TYPICALLY 5-40MM CLEAN STONE ON THE DOWNHILL FACE OF THE CHECK DAM.
- SPACING AND FREQUENCY OF CHECK DAMS WILL BE DETERMINED AT DETAILED DESIGN.

**WATERCOURSE & TRACK DRAINAGE CROSSINGS**

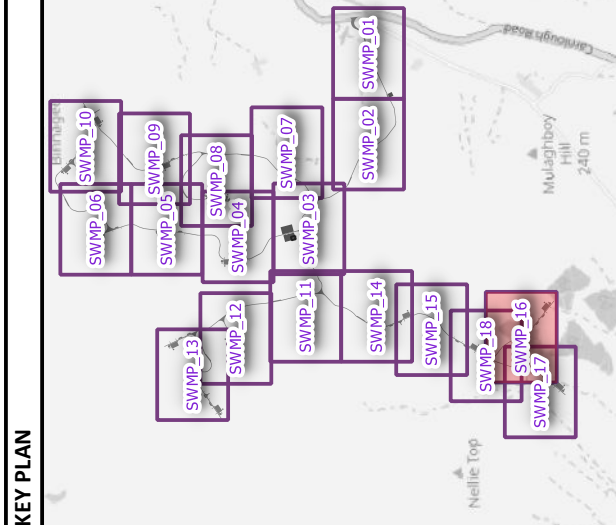
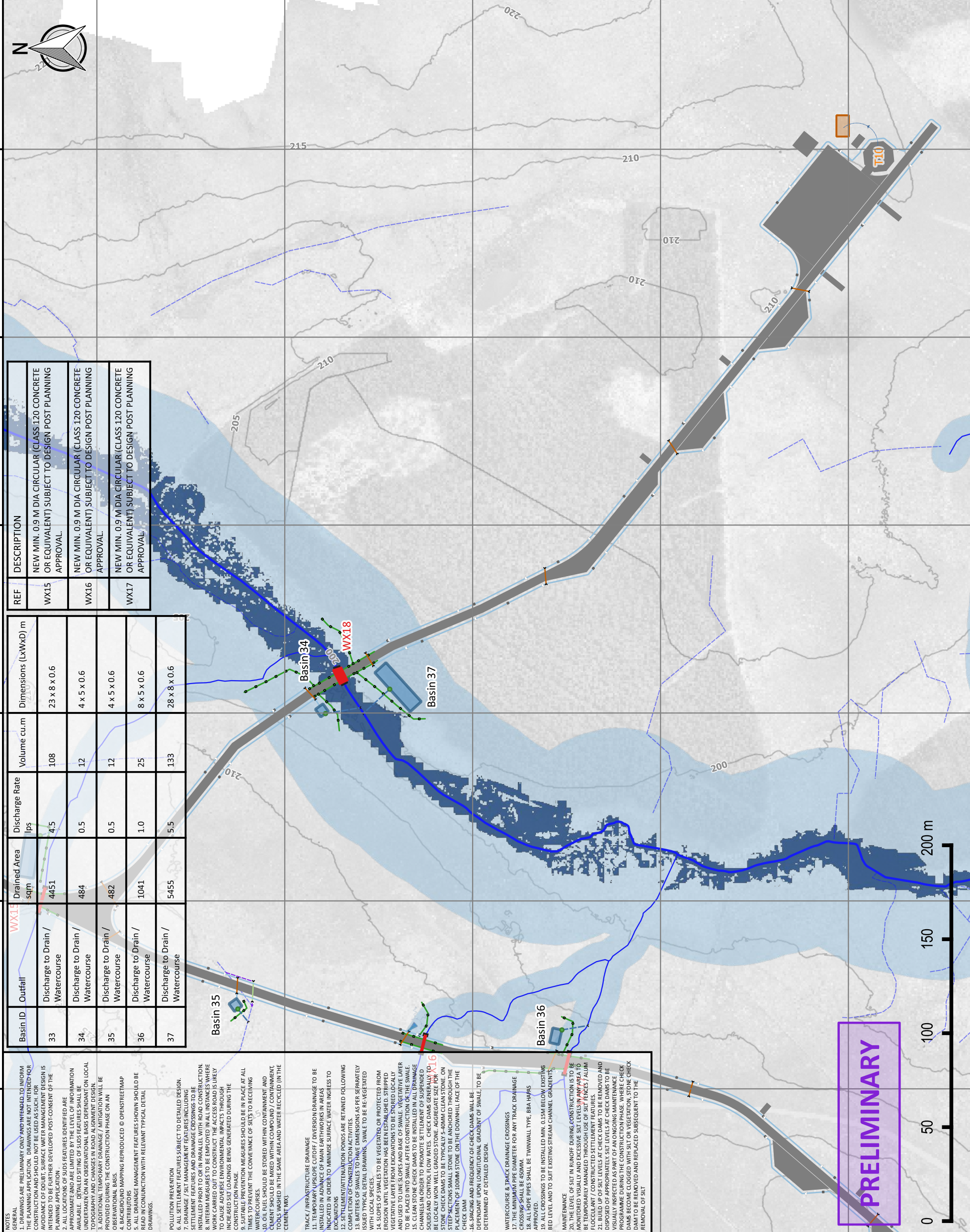
- THE MINIMUM PIPE DIAMETER FOR ANY TRACK DRAINAGE CROSSING SHALL BE 450MM.
- ALL HOPE PIPES SHALL BE TWINWALL TYPE. BBA HAPAS APPROVED.
- CROSSINGS TO BE INSTALLED MIN. 0.15M BELOW EXISTING BED LEVEL AND TO SUIT EXISTING STREAM CHANNEL GRADIENTS.

**MAINTENANCE**

- THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED IMMEDIATELY.
- CONSTRUCTED SETTLEMENT FEATURES / ALUMI 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 DAMS TO BE REMOVED AND REPLACED SUBSEQUENT TO THE REMOVAL OF SILT.

Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m	DESCRIPTION
33	Discharge to Drain / Watercourse	4451	4.5	108	23 x 8 x 0.6	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.
34	Discharge to Drain / Watercourse	484	0.5	12	4 x 5 x 0.6	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.
35	Discharge to Drain / Watercourse	482	0.5	12	4 x 5 x 0.6	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.
36	Discharge to Drain / Watercourse	1041	1.0	25	8 x 5 x 0.6	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.
37	Discharge to Drain / Watercourse	5455	5.5	133	28 x 8 x 0.6	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.

REF	DESCRIPTION
WX15	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.
WX16	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.
WX17	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.



**LEGEND**

**The Development**

- Planning Application Boundary
- Land Under Applicants Control

**Wind Farm Infrastructure**

- COMPOUND, SUBSTATION
- TRACKS, CRANEPADS
- SUBSTATION

**Existing Hydrology**

- Watercourse
- Significant Watercourse
- Minor Watercourse
- Other Ephemeral / Minor drainage
- Hydrological buffers (10m/50m)

**Track Drainage Features**

- Trackside Drain & Checkdam
- Clean Cutoff Drain

**Water Features**

- Attenuation Basin
- Settlement Basin
- Indicative pumped dewatering
- Temporary Silt Fence
- Watercourse Crossings

**Track Drainage Breakout**

- Clean Drainage Pipe
- Dirty Track Drainage Pipe
- Outfall, Flow Control

**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 handstanding.
- 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 contained 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.

**DESCRIPTION**

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 16  
PROJECT / FIGURE NO.

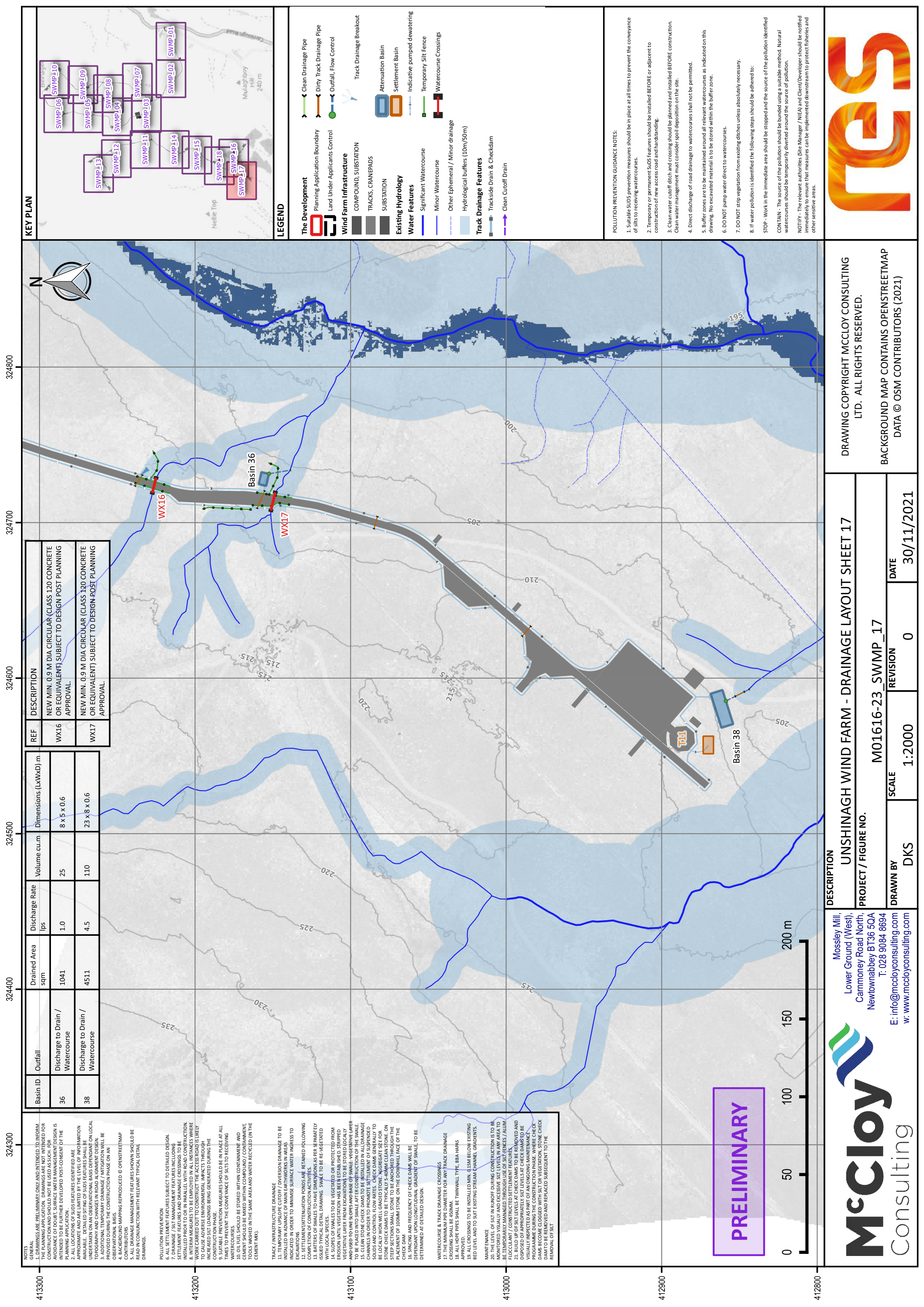
M01616-23\_SWMP\_16

DRAWN BY: DKS  
SCALE: 1:2000

REVISION: 0  
DATE: 30/11/2021

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



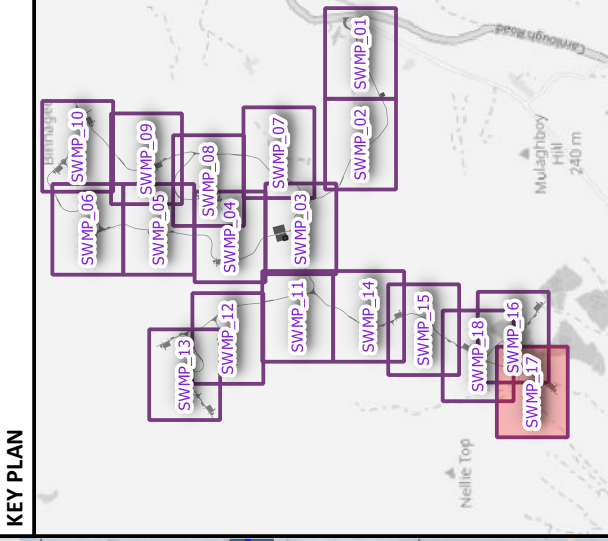
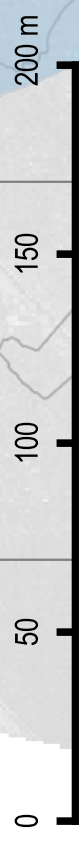
Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m	REF	DESCRIPTION
36	Discharge to Drain / Watercourse	1041	1.0	25	8 x 5 x 0.6	WX16	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.
38	Discharge to Drain / Watercourse	4511	4.5	110	23 x 8 x 0.6	WX17	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.

**NOTES**  
GENERAL  
1. DRAWINGS ARE PRELIMINARY ONLY AND INTENDED TO INFORM THE PLANNING APPLICATION. DRAWINGS ARE NOT INTENDED FOR CONSTRUCTION. SURFACE WATER MANAGEMENT DESIGN IS INTENDED TO BE FURTHER DEVELOPED POST-CONSULT OF THE PLANNING APPLICATION.  
2. ALL LOCATIONS OF SUDS FEATURES IDENTIFIED ARE APPROXIMATE AND ARE LIMITED BY THE LEVEL OF INFORMATION AVAILABLE. FOR FURTHER INFORMATION ON LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN, CONSULT THE LOCAL AUTHORITY'S REFERENCE DATA.  
3. ADDITIONAL TEMPORARY DRAINAGE / MITIGATION WILL BE PROVIDED DURING THE CONSTRUCTION PHASE ON AN OBSERVATIONAL BASIS.  
4. BACKGROUND MAPPING REPRODUCED © OPENSTREETMAP  
5. ALL DRAINAGE MANAGEMENT FEATURES SHOWN SHOULD BE READ IN CONJUNCTION WITH RELEVANT TYPICAL DETAIL DRAWINGS.

**POLLUTION PREVENTION**  
6. ALL SETTLEMENT FEATURES SUBJECT TO DETAILED DESIGN.  
7. DRAINAGE / SUDS MANAGEMENT FEATURES INCLUDING SETTLEMENT FEATURES AND DRAINAGE CROSSINGS TO BE INSTALLED PRIOR TO OR IN PARALLEL WITH ROAD CONSTRUCTION.  
8. INTERIM MEASURES TO BE EMPLOYED IN ALL INSTANCES WHERE WORK CARRIED OUT TO CONSTRUCT THE ACCESS ROAD IS LIKELY TO INCREASE SUDS LOADINGS BEING GENERATED DURING THE CONSTRUCTION PHASE.  
9. SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SILTS TO RECEIVING WATERCOURSES.  
10. ALL MATERIALS TO BE STORED WITHIN CONFINEMENT, AND CARE SHOULD BE TAKEN TO PREVENT ANY CONTAMINANT TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).

**TRACK / INFRASTRUCTURE DRAINAGE**  
11. TEMPORARY SLOPE CUTOFF / DIVERSION DRAINAGE TO BE INSTALLED IN ADVANCE OF MAIN EARTHWORKS IN AREAS INDICATED IN ORDER TO MINIMISE SURFACE WATER INGRESS TO EXCAVATIONS.  
12. SETTLEMENT/ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES.  
13. SUDS FEATURES TO BE INSTALLED AS PER SEPARATELY ISSUED TYPICAL DETAIL DRAWINGS. SWALE TO BE RE-VEGETATED WITH LOCAL SPECIES.  
14. 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 RE-USED TO REVEGETATE SLOPES.  
15. 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 5-30MM CLEAN STONE. ON PLACEMENT OF 100MM STONE ON THE DOWNHILL FACE OF THE CHECK DAM.  
16. SPACING AND FREQUENCY OF CHECK DAMS WILL BE DETERMINED UPON LONGITUDINAL GRADIENT OF SWALE. TO BE DETERMINED AT DETAILED DESIGN.  
**WATERCOURSE & TRACK DRAINAGE CROSSINGS**  
17. THE MINIMUM PIPE DIAMETER FOR ANY TRACK DRAINAGE CROSSING SHALL BE 450MM.  
18. ALL HOPE PIPES SHALL BE TWINWALL TYPE. BBA HAPPS APPROVED CROSSINGS TO BE INSTALLED MIN. 0.15M BELOW EXISTING BED LEVEL AND TO SUIT EXISTING STREAM CHANNEL GRADIENTS.  
**MAINTENANCE**  
20. THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED IMMEDIATELY. CLEANING TO BE CONDUCTED BY 'FLOCCULANT' CONSTRUCTED SETTLEMENT FEATURES.  
21. 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 DAMS TO BE REPLACED AND REPLACED SUBSEQUENT TO THE REMOVAL OF SILT.

PRELIMINARY



- LEGEND**
- The Development**
    - Planning Application Boundary
    - Land Under Applicants Control
  - Wind Farm Infrastructure**
    - COMPOUND, SUBSTATION
    - TRACKS, CRANEPADS
    - SUBSTATION
  - Existing Hydrology**
    - Watercourse
    - Significant Watercourse
    - Minor Watercourse
    - Other Ephemeral / Minor drainage
    - Hydrological buffers (10m/50m)
  - Track Drainage Features**
    - Trackside Drain & Checkdam
    - Clean Cutoff Drain
    - Clean Drainage Pipe
    - Dirty Track Drainage Pipe
    - Outfall, Flow Control
  - Water Features**
    - Attenuation Basin
    - Settlement Basin
    - Indicative pumped dewatering
    - Temporary Silt Fence
    - Watercourse Crossings
  - Track Drainage Breakout**

- 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 handstanding.
  - 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 bounded 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.



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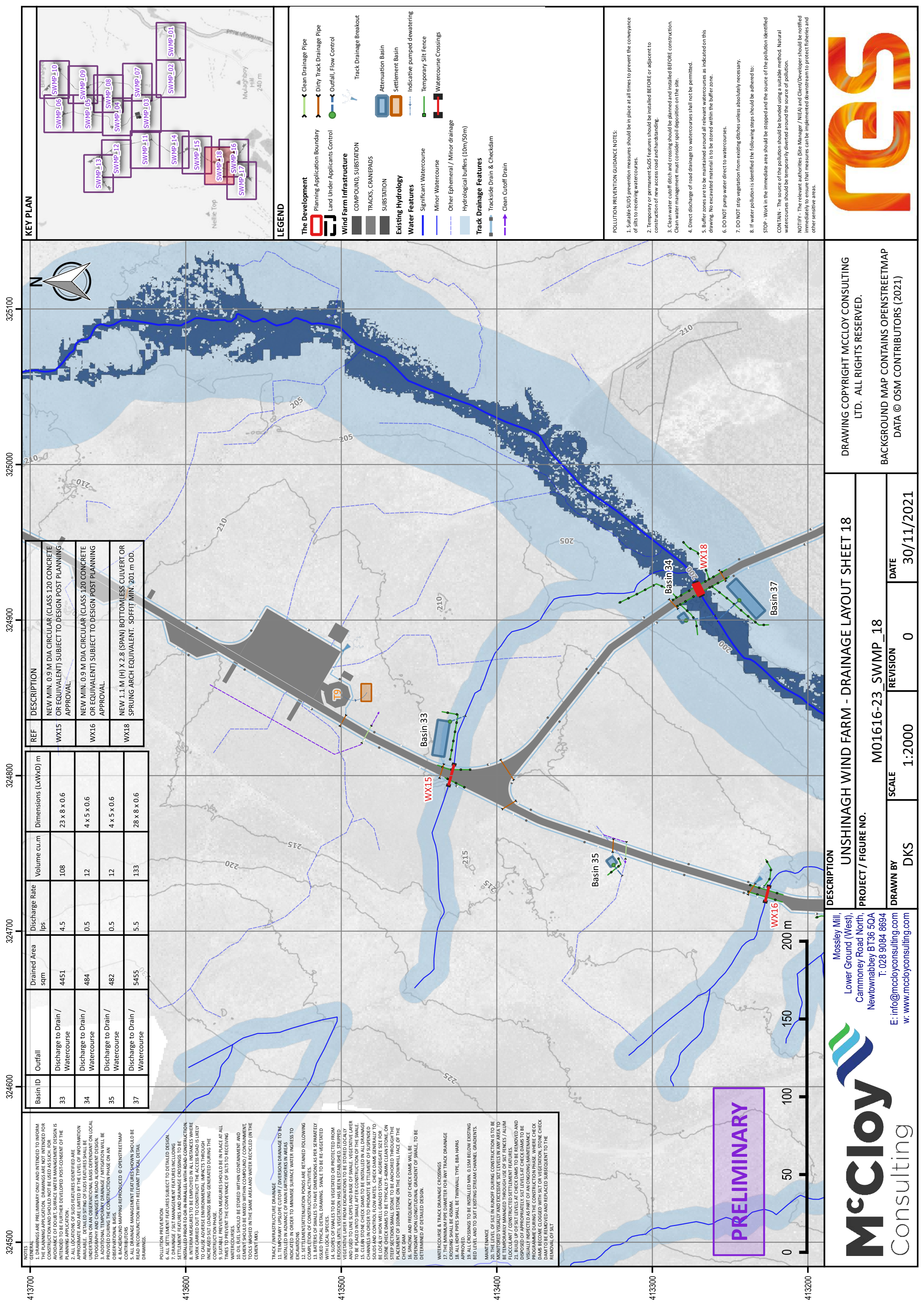
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<b>DESCRIPTION</b>			
UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 17			
PROJECT / FIGURE NO. M01616-23_SWMP_17			
<b>DRAWN BY</b>	<b>SCALE</b>	<b>REVISION</b>	<b>DATE</b>
DKS	1:2000	0	30/11/2021

**MCCLOY Consulting**  
Mossley Mill,  
Lower Ground (West),  
Carmoney Road North,  
Newtownabbey BT36 5QA  
T: 028 9084 8694  
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w: www.mccloyconsulting.com



Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m	DESCRIPTION
33	Discharge to Drain / Watercourse	4451	4.5	108	23 x 8 x 0.6	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.
34	Discharge to Drain / Watercourse	484	0.5	12	4 x 5 x 0.6	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.
35	Discharge to Drain / Watercourse	482	0.5	12	4 x 5 x 0.6	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.
37	Discharge to Drain / Watercourse	5455	5.5	133	28 x 8 x 0.6	NEW 1.1 M (H) X 2.8 (SPAN) BOTTOMLESS CULVERT OR SPRUNG ARCH EQUIVALENT. SOFFIT MIN. 201 m OD.

**NOTES**

- GENERAL DRAWINGS ARE PRELIMINARY ONLY AND INTENDED TO INFORM THE PLANNING APPLICATION. DRAWINGS ARE NOT INTENDED FOR CONSTRUCTION. 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. LOCAL OBSTRUCTIONS, BASES, DEFLECTIONS ON LOCAL UNDERGROUND SERVICES, AND CHANGES IN ROAD ALIGNMENT DESIGN 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
- 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 INCREASE 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.
- WATERCOURSES SHOULD BE STORED WITHIN CONFINEMENT, AND CARE SHOULD BE TAKEN WITH ACCUMULATED / CONTAMINATED TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).

**TRACK / INFRASTRUCTURE DRAINAGE**

- TEMPORARY SLOPE CUTOFFS / 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.
- ALL SUDS FEATURES TO BE INSTALLED AS PER SEPARATELY ISSUED TYPICAL DETAIL DRAWINGS. 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 NOT TO BE USED AS FILL OR SPILL. VEGETATIVE LAYER TO BE STORED IN A CONTAINED AREA.
- 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 5-50MM CLEAN STONE. ON PLACEMENT OF 100MM STONE ON THE DOWNHILL FACE OF THE CHECK DAM.
- SPACING AND FREQUENCY OF CHECK DAMS WILL BE DETERMINED 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 HOPE PIPES SHALL BE TWINWALL TYPE, BBA HPMS APPROVED.
- HOPE 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 REMOVED IMMEDIATELY.
- 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 DAMS TO BE REMOVED AND REPLACED SUBSEQUENTLY TO THE REMOVAL OF SILT.

**PRELIMINARY**

**McCloy Consulting**

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

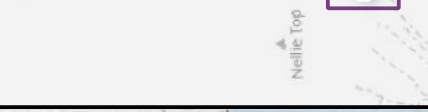
**DESCRIPTION**

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 18  
PROJECT / FIGURE NO.

<b>DRAWN BY</b>	DKS	<b>SCALE</b>	1:2000	<b>REVISION</b>	0	<b>DATE</b>	30/11/2021
<b>M01616-23_SWMP_18</b>							

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BACKGROUND MAP CONTAINS OPENSTREETMAP DATA © OSM CONTRIBUTORS (2021)

**KEY PLAN**



**LEGEND**

- The Development**
- Planning Application Boundary
  - Land Under Applicants Control
- Wind Farm Infrastructure**
- COMPOUND, SUBSTATION
  - TRACKS, CRANEPADS
  - SUBSTATION
- Existing Hydrology**
- Water Features
  - Significant Watercourse
  - Minor Watercourse
  - Other Ephemeral / Minor drainage
  - Hydrological buffers (10m/50m)
- Track Drainage Features**
- Trackside Drain & Checkdam
  - Clean Cutoff Drain
- Track Drainage Breakout**
- Clean Drainage Pipe
  - Dirty Track Drainage Pipe
  - Outfall, Flow Control
  - Attenuation Basin
  - Settlement Basin
  - Indicative pumped dewatering
  - Temporary Silt Fence
  - Watercourse Crossings

**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 handstanding.
- 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 contained using a suitable method. Natural watercourses should be temporarily diverted around the source of pollution.  
NOTIFY - The relevant authorities (Site Manager / NEA) and Client/Developer should be notified immediately to ensure that measures can be implemented downstream to protect fisheries and other sensitive areas.