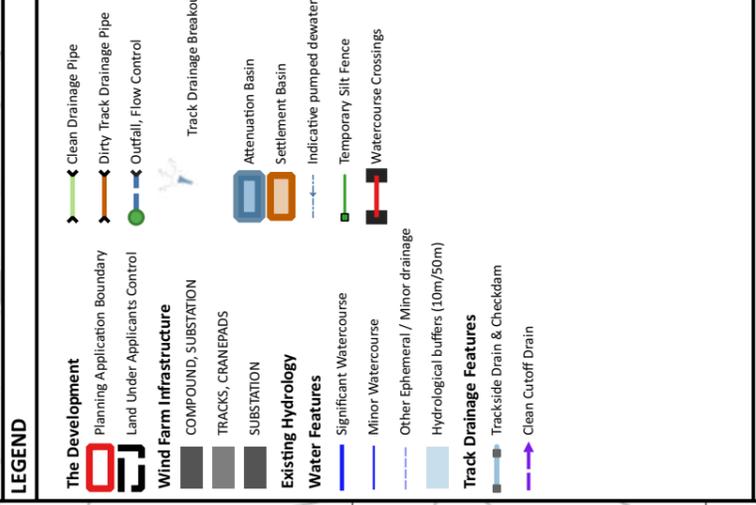
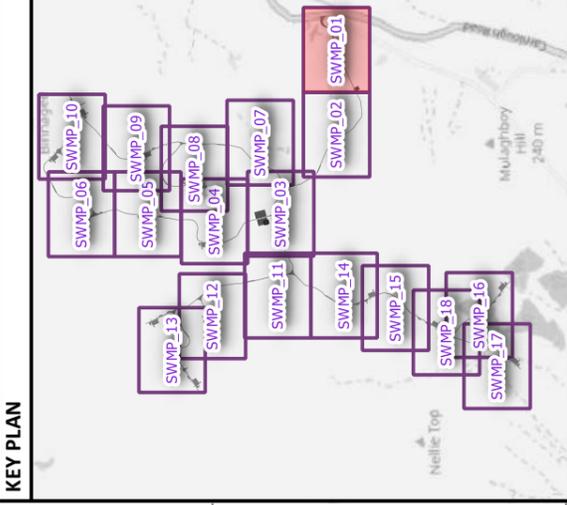
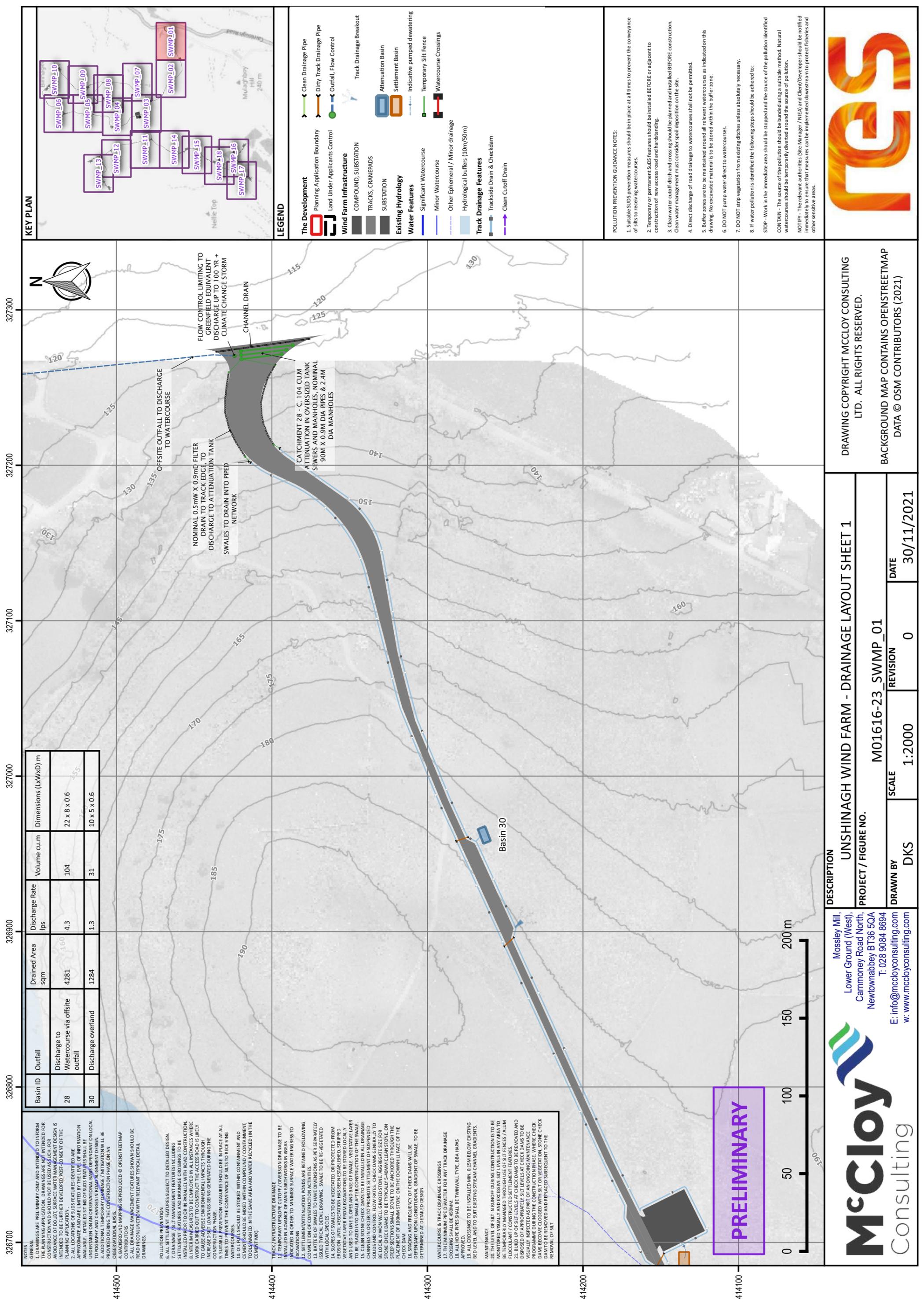


Appendix B

Preliminary Drainage Layouts



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 CLM ATTENUATION IN OVERSIZED TANK SEWERS AND MANHOLES, NOMINAL 90M X 0.9M DIA PIPES & 2.4M DIA MANHOLES

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

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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 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 / 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 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 CAPABLE OF BEING REMOVED WITHIN A SHORT PERIOD OF TIME. TOOLS SHOULD BE WASHED WITHIN A COMPANION / CONTAMINANT FREE AREA AND WASH WATER RECYCLED (IN THE CEMENT MK).

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 EXCAVATIONS ARE 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 SOIL ENRICHMENT LAYER.
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 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 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. ALL TRACK DRAINAGE 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.

PRELIMINARY

Basin 30

326700

326800

326900

327000

327100

327200

327300

327400

327500

327600

327700

414300

414400

414500

414600

414700

414800

414900

415000

415100

415200

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DESCRIPTION	
UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 1	PROJECT / FIGURE NO.
M01616-23_SWMP_01	REVISION
1:2000	0
DKS	DATE
	30/11/2021

MCCLOY Consulting

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Lower Ground (West),
Carmoney Road North,
Newtownabbey BT36 5QA
T: 028 9084 8694
E: info@mccloyconsulting.com
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326100

326200

326300

326400

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 UTILITY RECORDS, LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN.
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POLLUTION PREVENTION
6. ALL SETTLEMENT FEATURES SUBJECT TO DETAILED DESIGN.
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10. ALL SILT TO BE STORED WITHIN CONFINEMENT, AND CARE SHOULD BE TAKEN TO PREVENT POLLUTION OF / CONTAMINATION OF TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).
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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 BED OF SILENT VEGETATIVE LAYER TO BE STORED UNTIL VEGETATION IS ESTABLISHED.
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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 IDENTIFIED AND REMOVED AS PART OF THE MAINTENANCE PROGRAMME. FLOCCULANT / CONSTRUCTED SETTLEMENT FEATURES.
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Basin ID

29

Outfall

Discharge to Drain / Watercourse

Drained Area sqm

5795

Discharge Rate lps

5.8

Volume cu.m

141

Dimensions (LxWxD) m

29 x 8 x 0.6

REF

WX01

DESCRIPTION

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

WX02

DESCRIPTION

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

KEY PLAN



LEGEND



The Development



Existing Hydrology



Track Drainage Features



POLLUTION PREVENTION GUIDANCE NOTES:

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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.

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 2

PROJECT / FIGURE NO.

M01616-23_SWMP_02

DRAWN BY

DKS

SCALE

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REVISION

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DATE

30/11/2021

DESCRIPTION

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 2

PROJECT / FIGURE NO.

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PROJECT / FIGURE NO.

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PROJECT / FIGURE NO.

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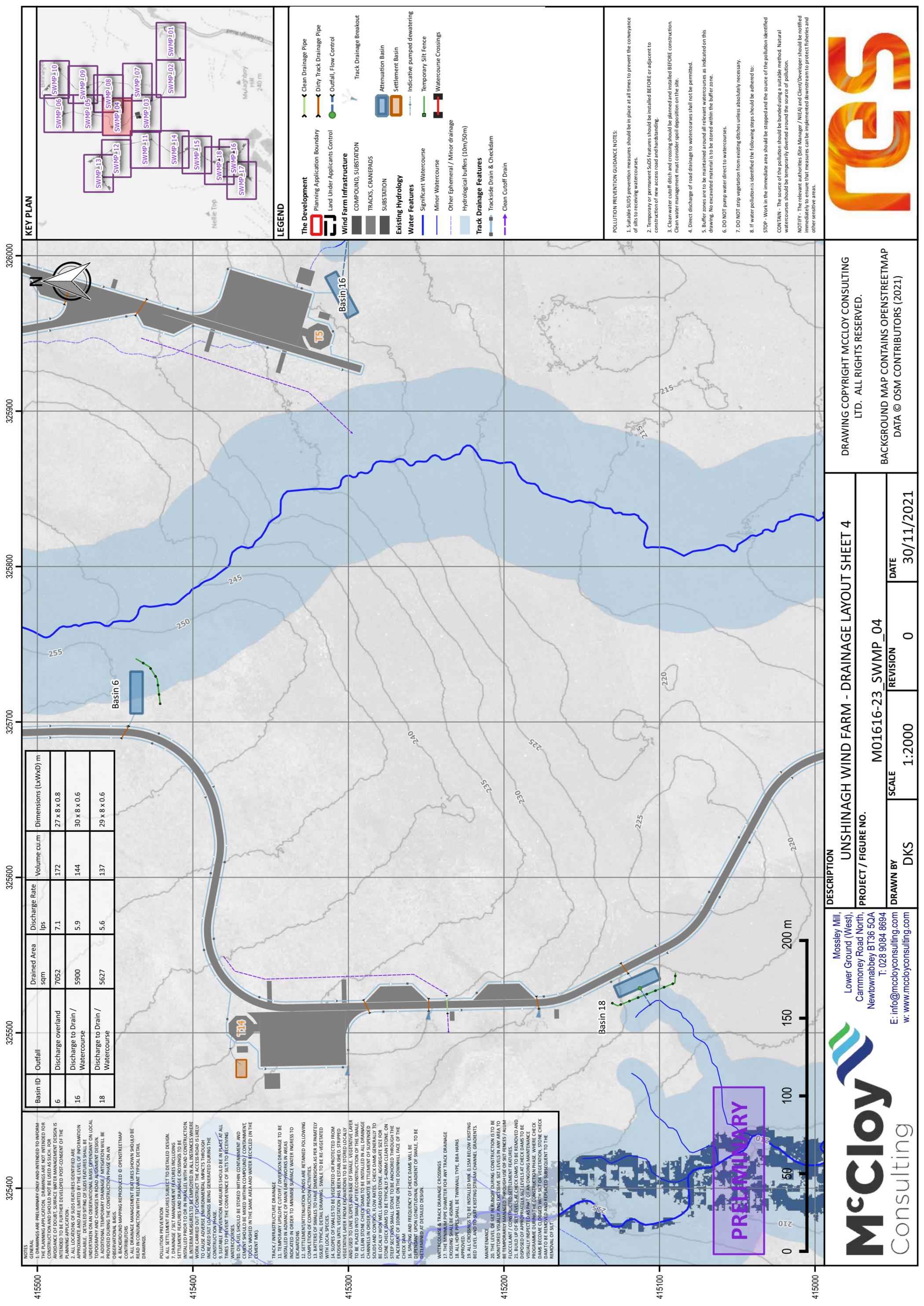
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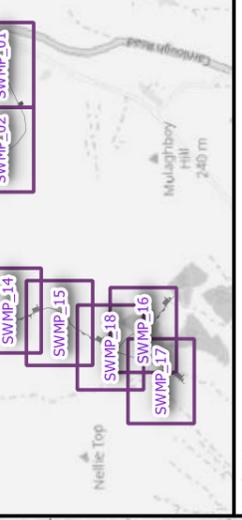
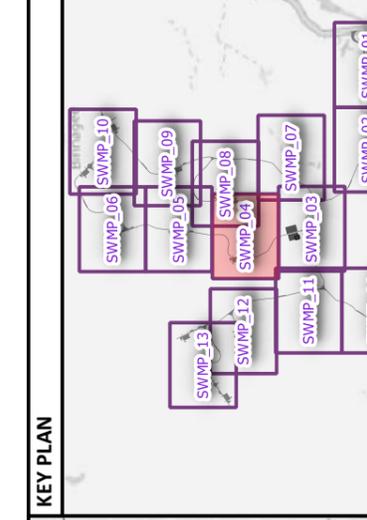
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REVISION

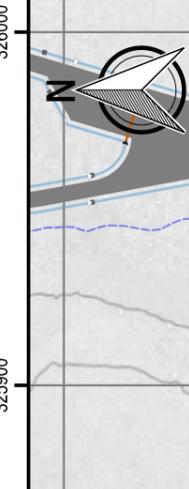


Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m
6	Discharge overlaid	7052	7.1	172	27 x 8 x 0.8
16	Discharge to Drain / Watercourse	5900	5.9	144	30 x 8 x 0.6
18	Discharge to Drain / Watercourse	5627	5.6	137	29 x 8 x 0.6



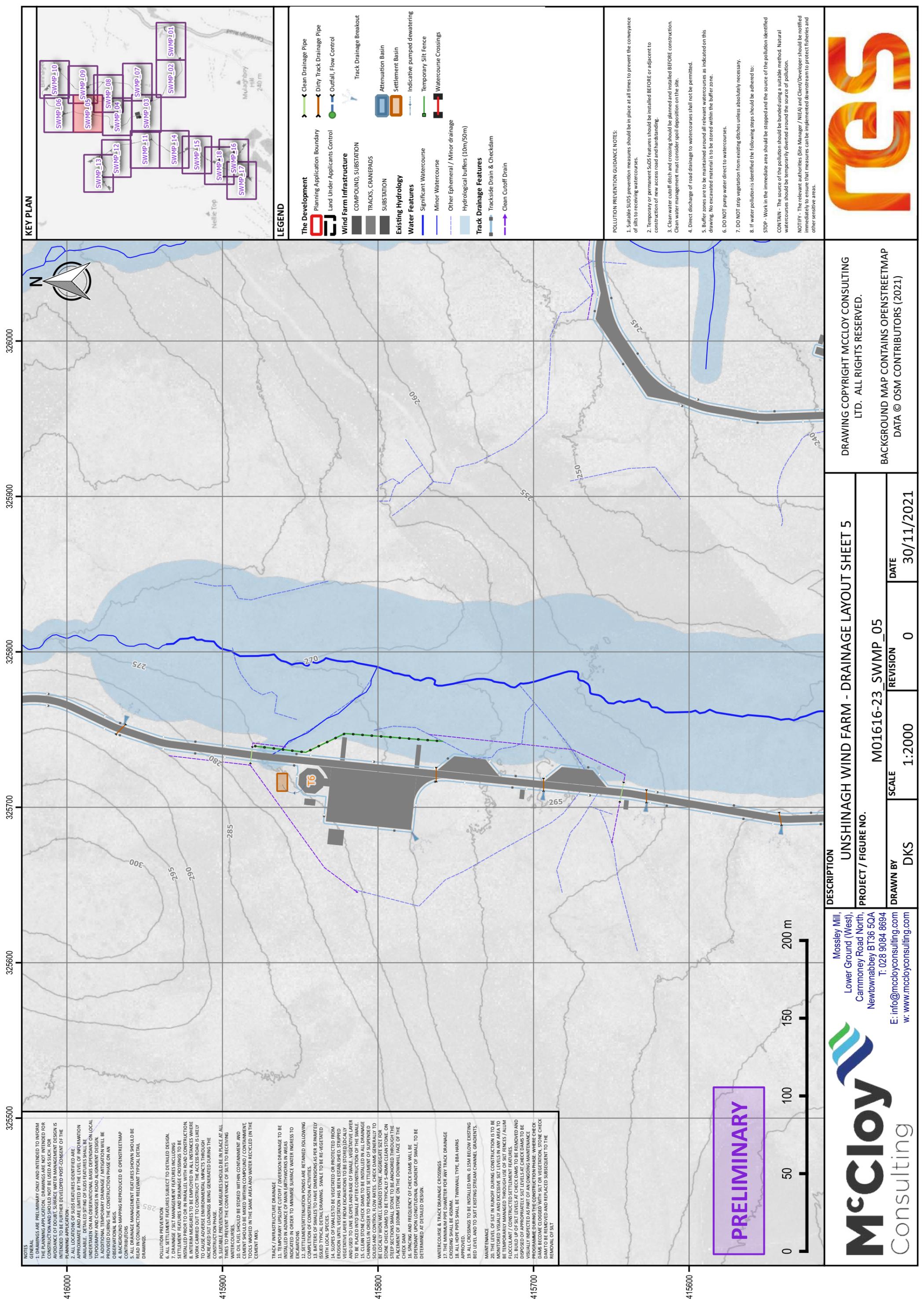
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 17. ALL HOPE PIPES SHALL BE TWINWALL TYPE, BBA HPAS APPROVED.
 18. CHECK DAMS TO BE INSTALLED MIN. 0.15M BELOW EXISTING BED LEVEL AND TO SUIT EXISTING STREAM CHANNEL GRADIENTS.
 MAINTENANCE
 19. THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED BY HAND OR BY MEANS OF SUITABLE METHODS / FLOCCULANT CONSTRUCTED SETTLEMENT FEATURES.
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 3. Clean water cutoff ditch and crossing should be planned and installed BEFORE construction. Clean water management must consider spoil deposition on the site.
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 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.

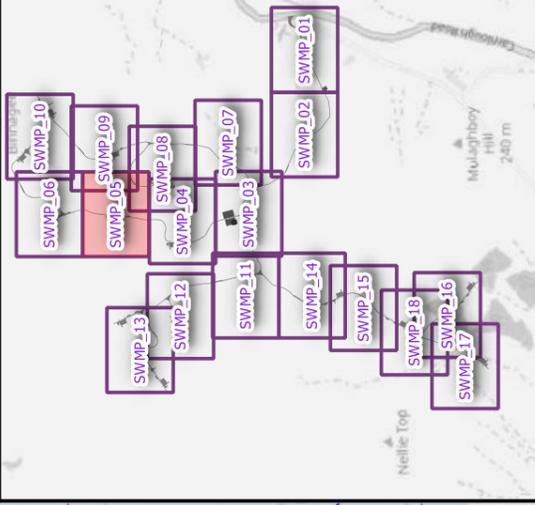


UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 4
 PROJECT / FIGURE NO. M01616-23_SWMP_04
 DRAWN BY DKS
 SCALE 1:2000
 REVISION 0
 DATE 30/11/2021

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

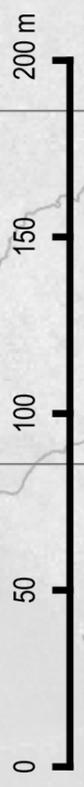
POLLUTION PREVENTION GUIDANCE NOTES:

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 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.



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-CONSENT OF THE PLANNING APPLICATION.
 2. ALL LOCATIONS OF SUDS FEATURES IDENTIFIED ARE APPROXIMATE AND ARE LIMITED BY THE LEVEL OF INFORMATION AVAILABLE. FIELD SURVEYING SHOULD BE CONDUCTED TO UNDERSTAND LOCAL OBSERVATIONS, 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. 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 MATERIALS TO BE STORED WITHIN CONFINEMENT, AND CEMENT SHOULD BE AWKED WITH COMPOUND / CONTAMINANT TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).
 TRACK / INFRASTRUCTURE DRAINAGE
 10. TRACKSIDE CUTOFF / CONVEYANCE DRAINAGE TO BE INSTALLED IN ADVANCE OF MAIN EARTHWORKS IN AREAS INDICATED IN ORDER TO MINIMISE SURFACE WATER INGRESS TO EXCAVATIONS.
 11. SETTLEMENT/ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES.
 12. TYPICAL DETAIL DRAWINGS SHALL BE ISSUED PER SEPARATELY ISSUED TYPICAL DETAIL DRAWING. SWALE TO BE RE-VEGETATED WITH LOCAL SPECIES.
 13. 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 BED OF MULCH. VEGETATIVE LAYER TO BE STORED IN BAGS AT ALL TIMES.
 14. 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.
 15. SPACING AND FREQUENCY OF CHECK DAMS WILL BE DETERMINED UPON LONGITUDINAL GRADIENT OF SWALE. TO BE DETERMINED AT DETAILED DESIGN.
 WATERCOURSE & TRACK DRAINAGE CROSSINGS
 16. THE MINIMUM PIPE DIAMETER FOR ANY TRACK DRAINAGE CROSSING SHALL BE 450MM.
 17. ALL HOPE PIPES SHALL BE TWINWALL TYPE, BBA HPAS APPROVED.
 18. CROSSINGS TO BE INSTALLED MIN. 0.15M BELOW EXISTING BED LEVEL AND TO SUIT 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 IMMEDIATELY.
 20. 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.

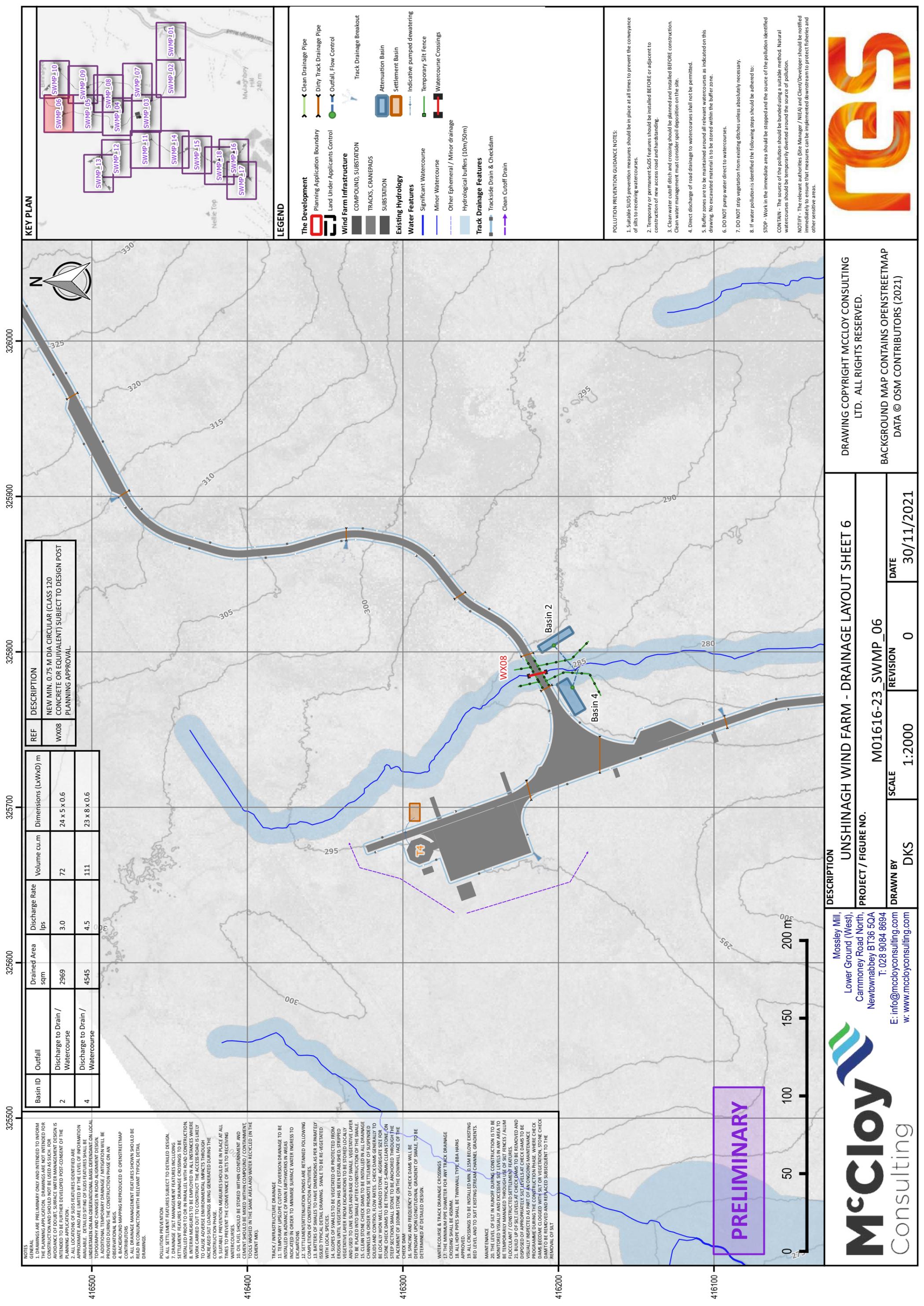
PRELIMINARY



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Carmoney Road North,
Newtownabbey BT36 5QA
T: 028 9084 8694
E: info@mccloyconsulting.com
w: www.mccloyconsulting.com**

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

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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		

NOTES
GENERAL

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- ALL LOCATIONS OF SUDS FEATURES IDENTIFIED ARE APPROXIMATE AND ARE LIMITED BY THE LEVEL OF INFORMATION AVAILABLE. FOR MORE DETAILED INFORMATION, PLEASE REFER TO LOCAL UNDERGROUND SERVICES AND BASES INFORMATION 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.
- ALL MATERIALS TO BE STORED WITHIN COVERED AREAS AND SHOULD BE WASHED WITHIN A WASHDOWN / CONTAMINANT TRAP BEFORE BEING WASHED INTO A WATER COURSE (IN THE EVENT MK).

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.
- ALL SUDS FEATURES TO BE IDENTIFIED AS PER SEPARATELY ISSUED TYPICAL DETAIL DRAWING. SWALE TO BE RE-VEGETATED WITH LOCAL SPECIES.
- SLOPES OF SWALES TO BE VEGETATED OR PROTECTED FROM EROSION UNTIL VEGETATION HAS BEEN ESTABLISHED. STRIPPED VEGETATIVE LAYER FROM EXCAVATIONS TO BE STORED LOCALLY AND RE-USED TO RE-VEGETATE SWALES AND SLOPES.
- 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 OR EQUIVALENT.
- 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 HPAPS 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.
- ALL 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 SUBSEQUENT TO THE REMOVAL OF SILT.

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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

- 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)

The Development

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

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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.

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 6

PROJECT / FIGURE NO. M01616-23_SWMP_06

DRAWN BY DKS

SCALE 1:2000

REVISION 0

DATE 30/11/2021

DESCRIPTION

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 6

PROJECT / FIGURE NO. M01616-23_SWMP_06

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UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 6

PROJECT / FIGURE NO. M01616-23_SWMP_06

DRAWN BY DKS

SCALE 1:2000

REVISION 0

DATE 30/11/2021

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 6

PROJECT / FIGURE NO. M01616-23_SWMP_06

DRAWN BY DKS

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PROJECT / FIGURE NO. M01616-23_SWMP_06

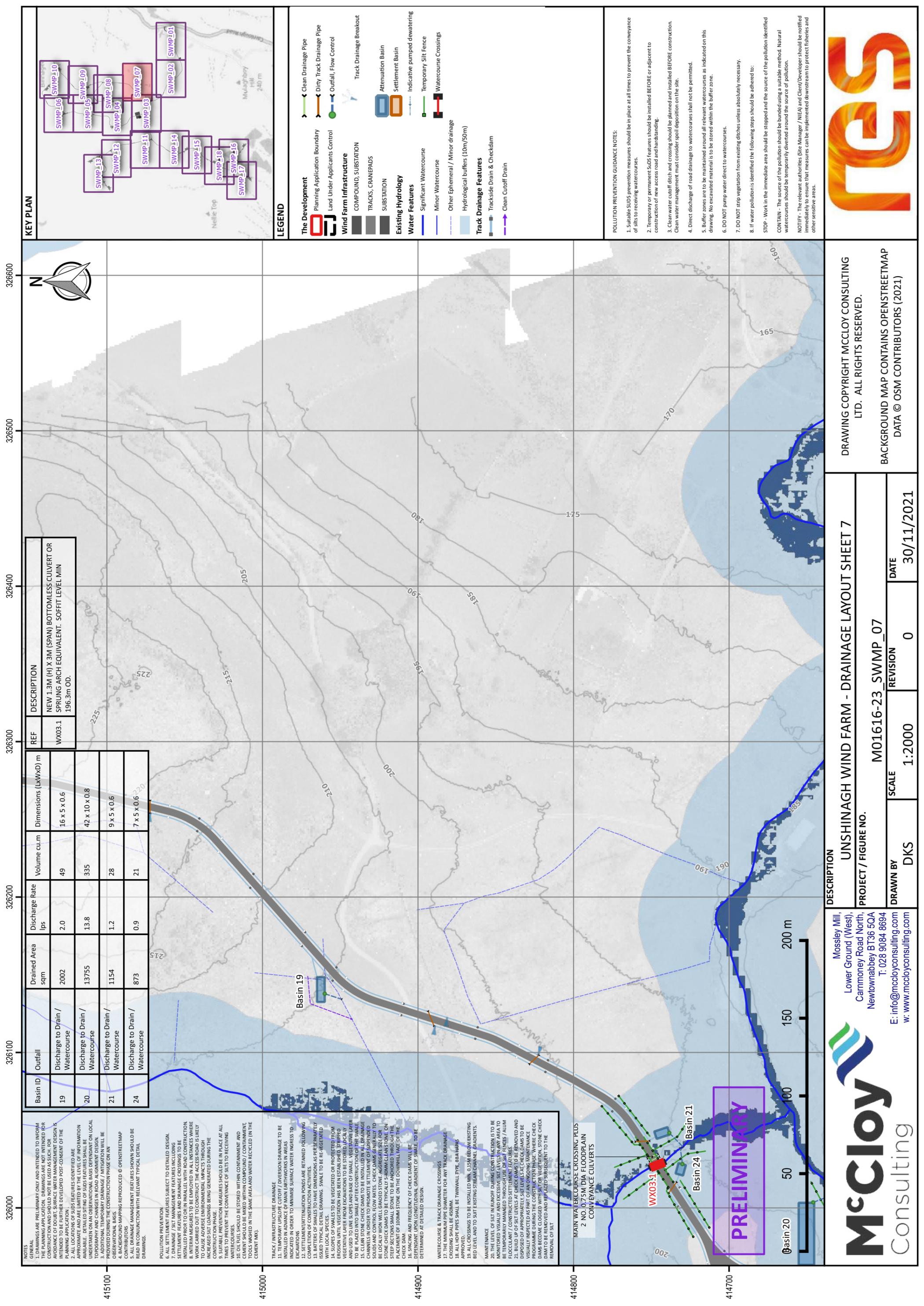
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SCALE 1:2000

REVISION 0

DATE 30/11/2021

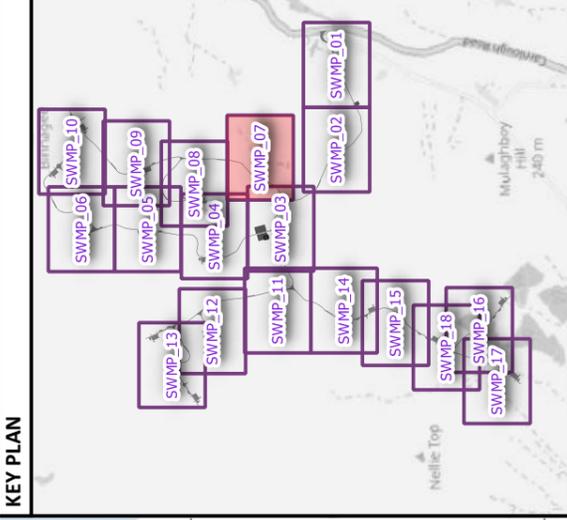
UNSHINAGH WIND FARM - DRAIN



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		

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 WILL BE DETERMINED BY THE TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN UNDER TAKEN ON OBSERVATIONAL BASIS REFERENCE 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 / 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 CARE SHOULD BE TAKEN TO PREVENT POLLUTION OF CONTAMINANT TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).
 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 SUDS FEATURES ARE 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 RE-VEGETATE 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/HAPS APPROVED.
 19. CROSSINGS TO BE INSTALLED MIN. 0.15M BE LOW 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.
 MAIN WATERCOURSE CROSSING PLUS
 2 NO. 0.75M DIA FLOODPLAIN CONVEYANCE CULVERTS

Basin 19
 Basin 20
 Basin 21
 Basin 24



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 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.



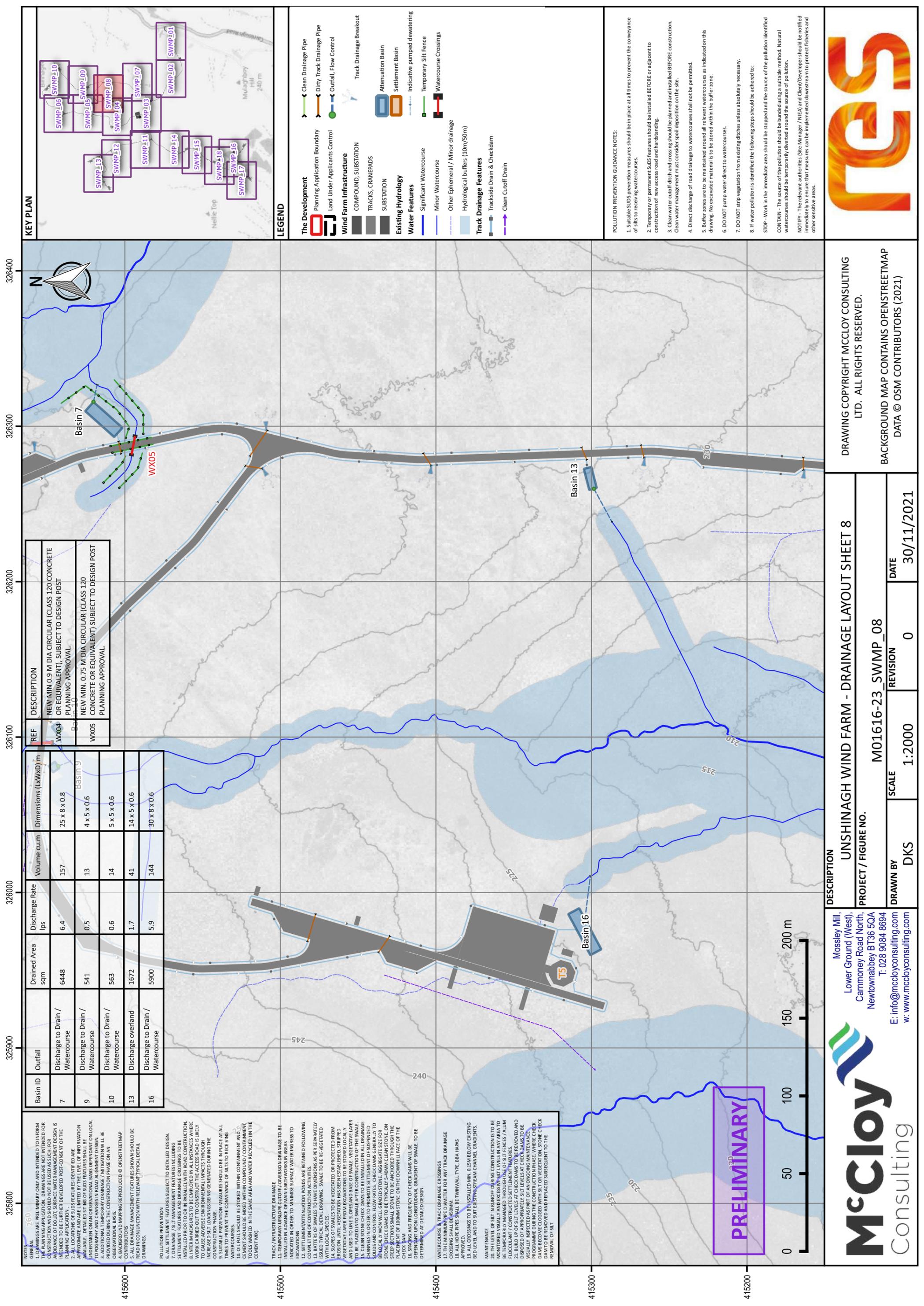
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DESCRIPTION
 UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 7
 PROJECT / FIGURE NO.
 M01616-23_SWMP_07
 DRAWN BY: DKS
 SCALE: 1:2000
 REVISION: 0
 DATE: 30/11/2021

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 7
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 Carrmoney Road North,
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 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
7	Discharge to Drain / Watercourse	6448	6.4	157	25 x 8 x 0.8	WX04	NEW MIN 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT), SUBJECT TO DESIGN POST PLANNING APPROVAL.
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	WX05	NEW MIN. 0.75 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.
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

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GENERAL

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- ALL LOCATIONS OF SUDS FEATURES IDENTIFIED ARE APPROXIMATE AND ARE LIMITED BY THE LEVEL OF INFORMATION AVAILABLE. LOCAL TOPOGRAPHY, GEOTECHNICAL DATA, LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN UNDER TAKE ON OPERATIONAL BASIS REFERENCE TO LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN SHOULD BE CHECKED PRIOR TO CONSTRUCTION.
- 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.
- 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

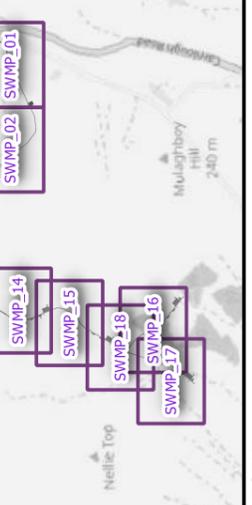
- TEMPORARY SLOPE CUTOFF / CONVERSION DRAINAGE TO BE INSTALLED IN ADVANCE OF MAIN EARTHWORKS IN AREAS INDICATED IN ORDER TO MINIMISE SURFACE WATER INGRESS TO EXCAVATIONS.
- SETTLEMENT/ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES.
- TEMPORARY DRAINAGE FEATURES TO BE INSTALLED IN ALL AREAS ISSUED TYPICAL DETAIL DRAWING. SWALE TO BE RE-VEGETATED WITH LOCAL SPECIES.
- SLOPES OF SWALES TO BE VEGETATED OR PROTECTED FROM EROSION UNTIL VEGETATION HAS BEEN ESTABLISHED. STRIPPED VEGETATIVE LAYER FROM EXCAVATIONS TO BE STORED LOCALLY AND RE-USED TO REVEGETATE SLOPES.
- VEGETATIVE LAYER TO 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).
- 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 CLEANSITONE. 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 HPAPS 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 RANOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE REMOVED BY HAND OR BY MEANS OF SUITABLE TOOLS. 'ALUM FLOCCULANT' CONSTRUCTED SETTLEMENT FEATURES.
- BUILD UP OF SILT LEVELS AT CHECK DAMS TO BE REMOVED AND DISPOSED OF APPROPRIATELY. SILT LEVELS AT CHECK DAMS TO BE VISUALLY INSPECTED AS PART OF AN ONGOING MAINTENANCE PROGRAMME DURING THE CONSTRUCTION PHASE. WHERE CHECK DAMS BECOME CLOGGED WITH SILT OR VEGETATION, STONE CHECK DAMS TO BE REMOVED AND REPLACED SUBSEQUENT TO THE REMOVAL OF SILT.



POLLUTION PREVENTION GUIDANCE NOTES:

- Suitable SUDS prevention measures should be in place at all times to prevent the conveyance of silts to receiving watercourses.
- Temporary or permanent SUDS features should be installed BEFORE or adjacent to construction of new access road and hardstanding.
- Clean water cutoff ditch and crossing should be planned and installed BEFORE construction. Clean water management must consider spoil deposition on the site.
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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.

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

DESCRIPTION

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 8

PROJECT / FIGURE NO. M01616-23_SWMP_08

DRAWN BY DKS

SCALE 1:2000

REVISION 0

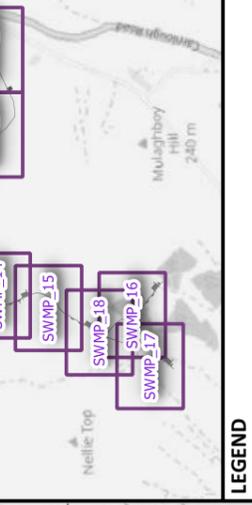
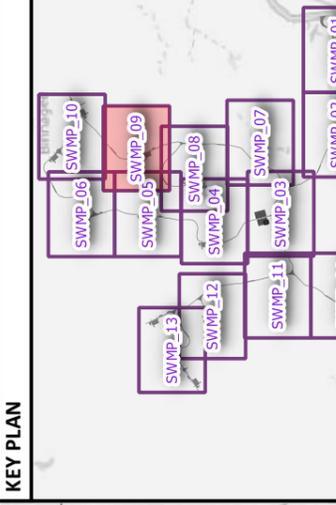
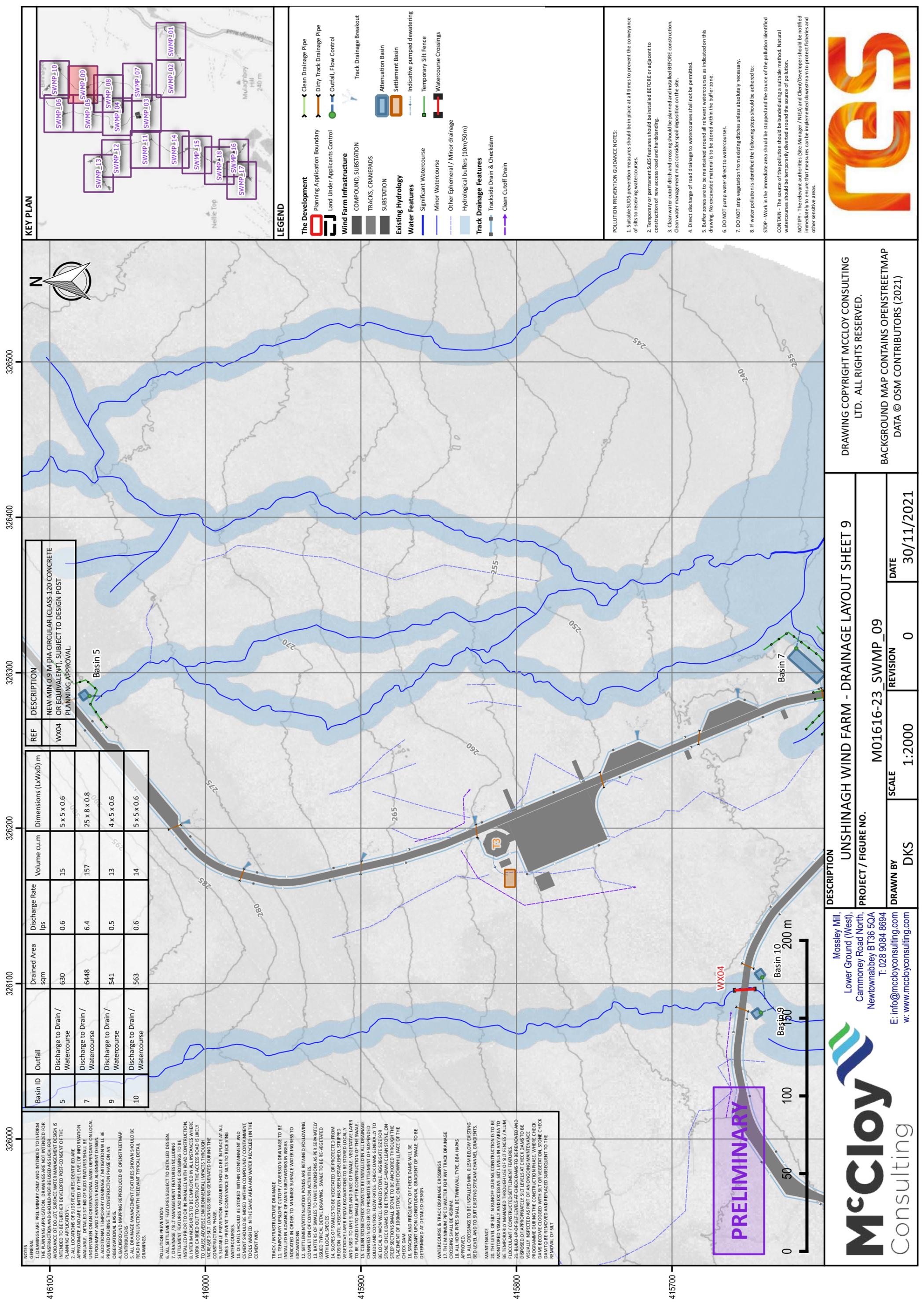
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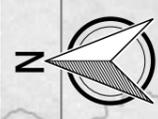




- The Development**
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 - Land Under Applicants Control
- Wind Farm Infrastructure**
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 - TRACKS, CRANEPADS
 - SUBSTATION
- Existing Hydrology**
- Significant Watercourse
 - Minor Watercourse
 - Other Ephemeral / Minor drainage
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 - Watercourse Crossings
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 - Clean Cutoff Drain
 - Clean Drainage Pipe
 - Dirty Track Drainage Pipe
 - Outfall, Flow Control

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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		

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- BACKGROUND MAPPING REPRODUCED © OPENSTREETMAP
- ALL DRAINAGE MANAGEMENT FEATURES SHOWN SHOULD BE READ IN CONJUNCTION WITH RELEVANT TYPICAL DETAIL DRAWINGS.
- POLLUTION PREVENTION**
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- SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SILTS TO RECEIVING WATERCOURSES.
- ALL EXCAVATIONS SHOULD BE STORED WITHIN CONFINEMENT, AND CARE SHOULD BE TAKEN TO PREVENT SPILLAGE OF MATERIALS INTO 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 INCREASES TO EXCAVATIONS.
- SETTLEMENT/ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES.
- ALL TRACKS AND DRAINAGE FEATURES 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 RE-USED AS BED OF SWALE. VEGETATIVE LAYER TO BE STORED IN BAGS AT ALL TIMES.
- 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.
- SPACING AND FREQUENCY OF CHECK DAMS WILL BE DETERMINED UPON LONGITUDINAL GRADIENT OF SWALE. TO BE DETERMINED AT DETAILED DESIGN.
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- THE MINIMUM PIPE DIAMETER FOR ANY TRACK DRAINAGE CROSSING SHALL BE 450MM.
- ALL HOPE PIPES SHALL BE TWINWALL TYPE, BBA HPAS
- 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 USING SUITABLE METHODS (E.G. ROPS, ALUM FLOCCULANT) / CONSTRUCTED SETTLEMENT FEATURES.
- BUILD UP OF SILT LEVELS AT CHECK DAMS TO BE REMOVED AND DISPOSED OF APPROPRIATELY. SILT LEVELS AT CHECK DAMS TO BE VISUALLY INSPECTED AS PART OF AN ONGOING MAINTENANCE PROGRAMME DURING THE CONSTRUCTION PHASE. WHERE CHECK DAMS BECOME CLOGGED WITH SILT OR VEGETATION, STONE CHECK DAMS TO BE REMOVED AND REPLACED SUBSEQUENT TO THE REMOVAL OF SILT.

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UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 9
PROJECT / FIGURE NO.

M01616-23_SWMP_09

SCALE 1:2000
DRAWN BY DKS

REVISION 0
DATE 30/11/2021

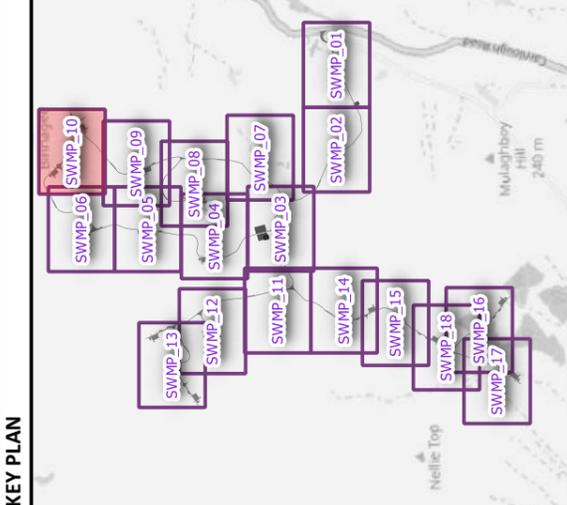
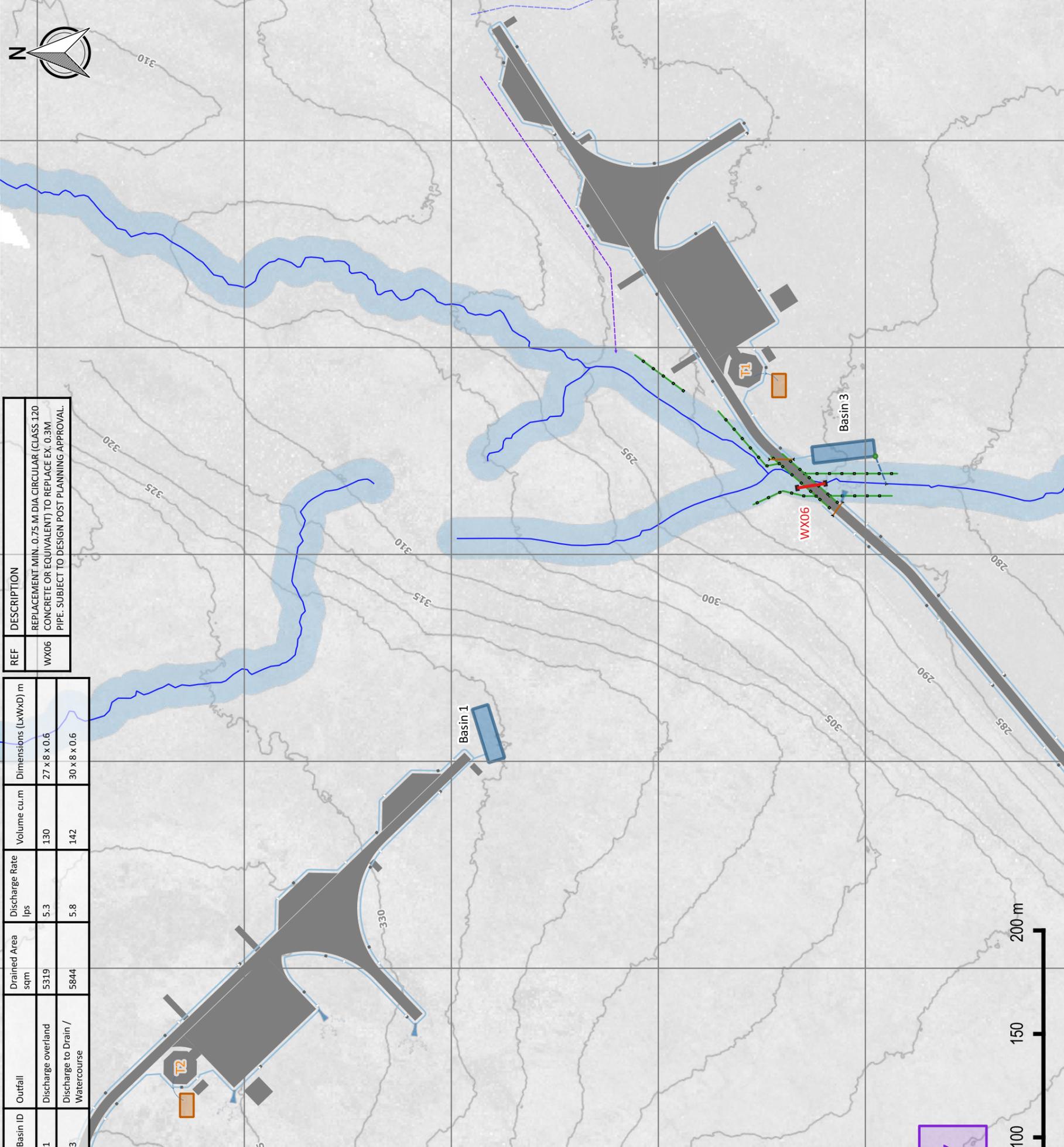
DESCRIPTION
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E: info@mccloyconsulting.com
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NOTES

- 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-CONSENT OF THE PLANNING APPLICATION.
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. MITIGATION WILL BE 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.
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 CEMENT SHOULD BE AWKED WITH COMPROMISED / CONTAMINATED TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MK).
11. TRACK / INFRASTRUCTURE DRAINAGE
12. 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
13. SETTLEMENT/ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES.
14. LOCAL SPECIES
15. 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. VEGETATIVE LAYER TO BE STORED IN SWALES AND NOT IN ALLIWAYS.
16. 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 THE DOWNHILL FACE OF THE DAM.
17. 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

- 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:

- 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.



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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NOTES

GENERAL

1. DRAWINGS ARE PRELIMINARY ONLY AND INTENDED TO INFORM THE PLANNING APPLICATION. DRAWINGS ARE NOT INTENDED FOR AVOIDANCE OF LIABILITY. SURFACE WATER MANAGEMENT DESIGN IS INTENDED 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 UNDERGROUND SERVICES, INCLUDING BUT NOT LIMITED 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 SILT TO BE STORED WITHIN CONTAINMENT, AND CLEANERS SHOULD BE AWKED WITH COMBINATION / CONTAMINANT TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).

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. TRACKS / CRANEPADS ARE TO BE SEPARATELY ISSUED TYPICAL DETAIL DRAWINGS. 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 VEGETATION 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 5-40MM CLEANSITONE. 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.

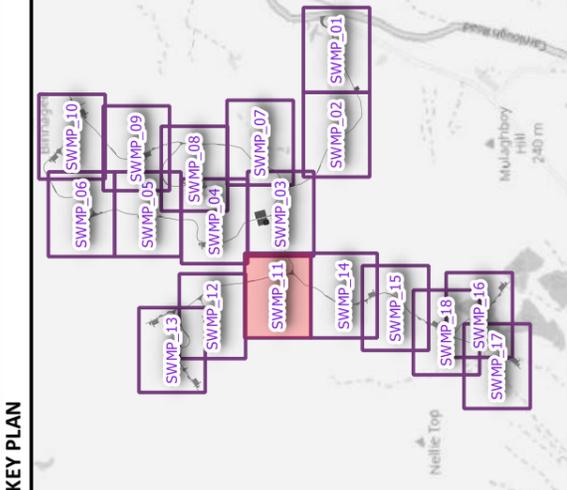
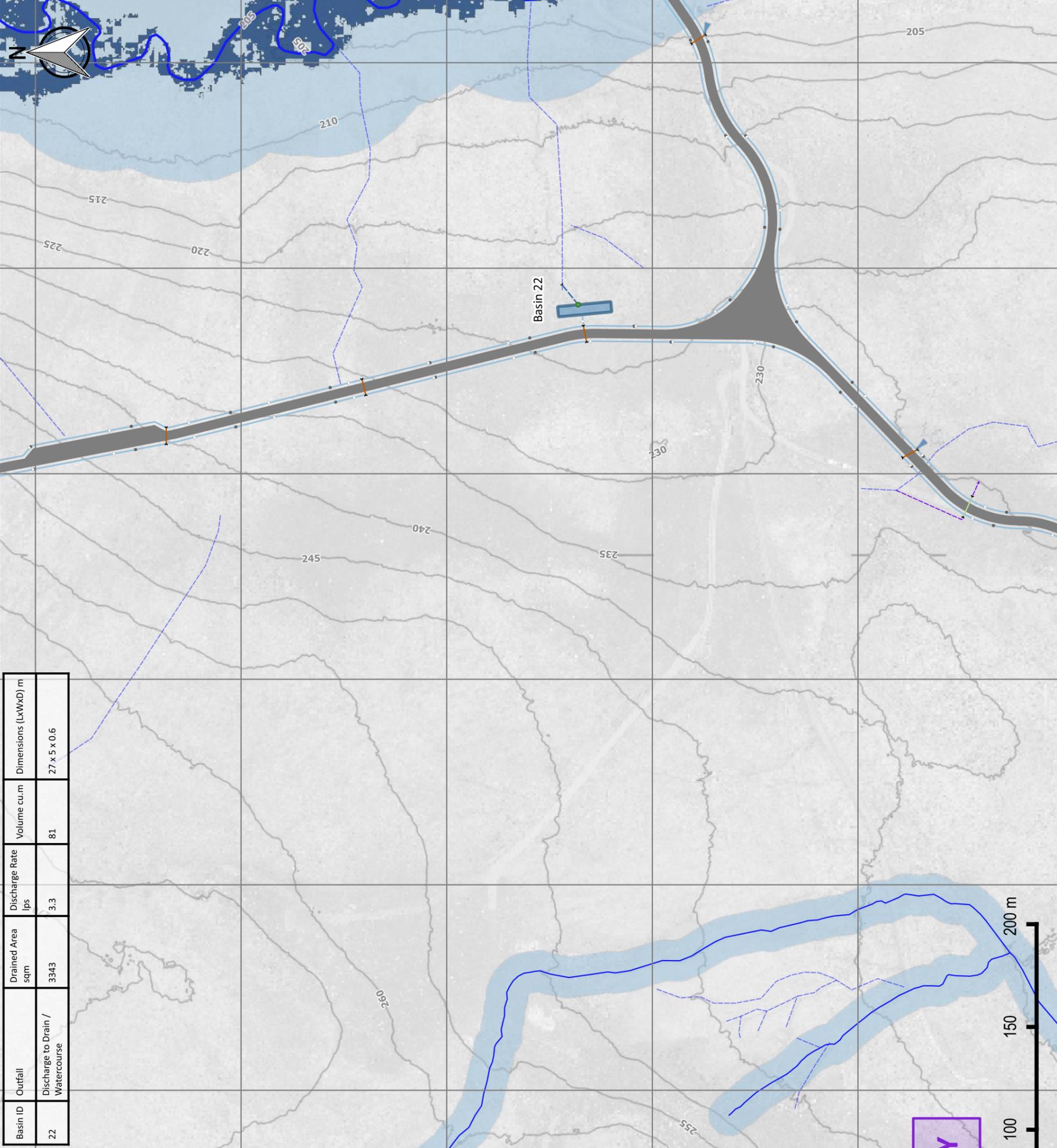
WATERCOURSE & TRACK DRAINAGE CROSSINGS

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	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m
22	Discharge to Drain / Watercourse	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 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.



UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 11

PROJECT / FIGURE NO. M01616-23_SWMP_11

SCALE 1:2000

REVISION 0

DATE 30/11/2021

DRAWN BY DKS

DESCRIPTION

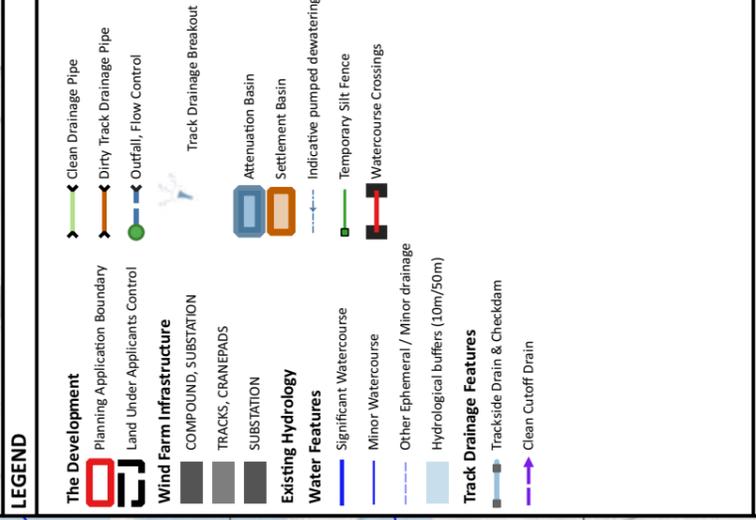
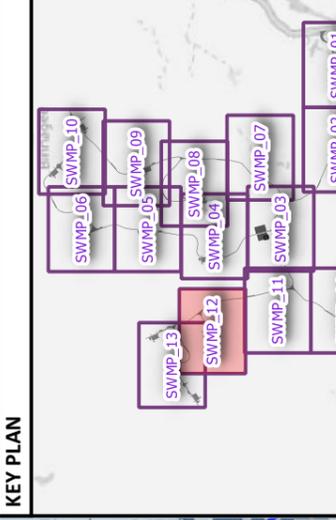
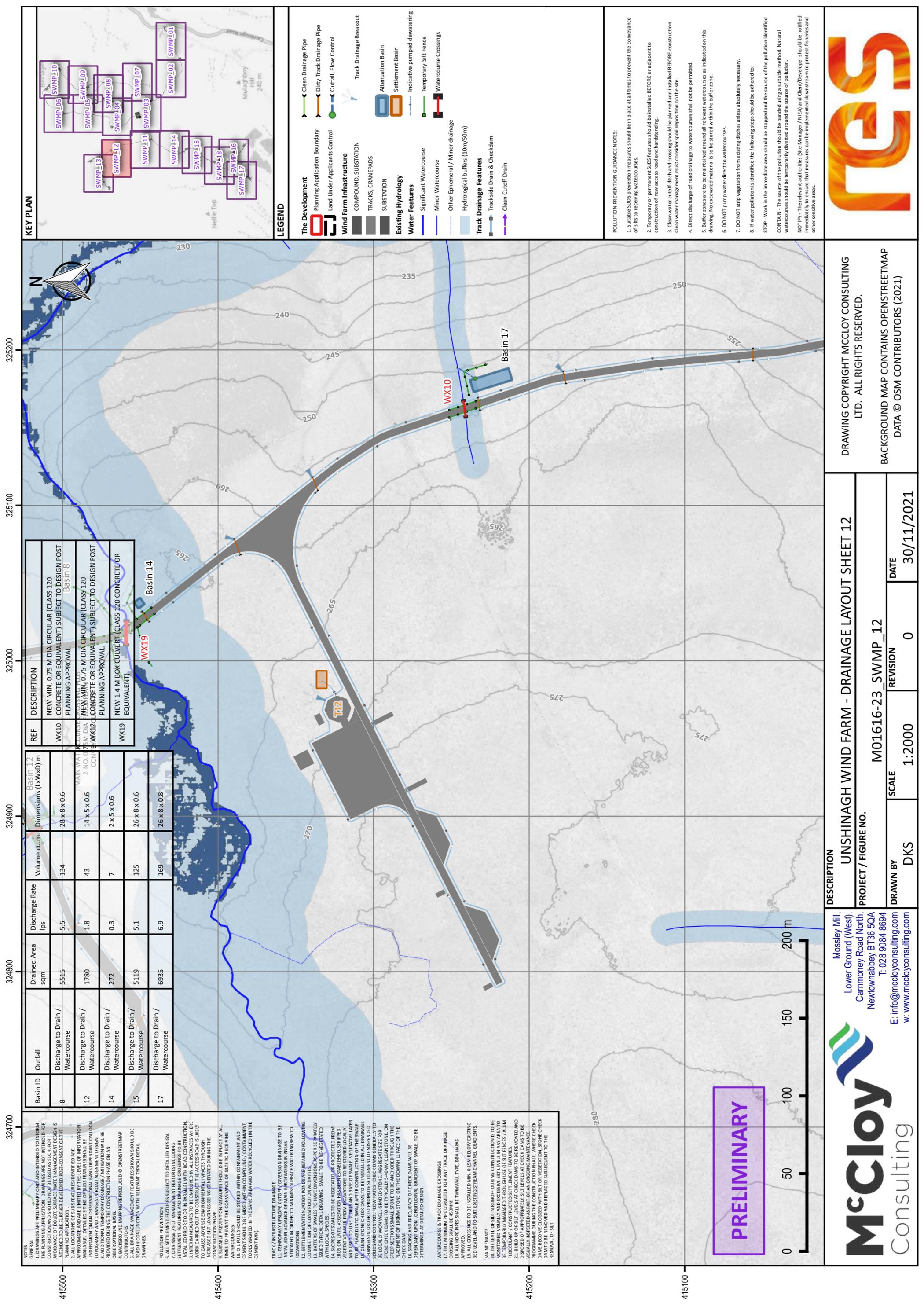
UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 11

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POLLUTION PREVENTION GUIDANCE NOTES:

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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.	WX19
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)	
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		

NOTES

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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 CEMENT SHOULD BE AWKED WITHIN COMPOUND / CONTAMINANT TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MK).
10. 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. TRACKS AND SUBSTATIONS ARE TO BE SEPARATELY ISSUED TYPICAL DETAIL DRAWINGS. SWALE TO BE VEGETATED WITH LOCAL SPECIES.
14. SLOPES OF SWALES TO BE VEGETATED OR PROTECTED FROM EROSION UNTIL VEGETATION HAS BEEN ESTABLISHED. STRIPPED VEGETATIVE LAMAE FROM EXCAVATIONS TO BE STORED LOCALLY AND REUSED 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 CLEANSTONE ON PLACEMENT OF 100MM SWALE 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 HAPAS APPROVED.
20. 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.
23. 'FLOCCULANT' CONSTRUCTED SETTLEMENT FEATURES.
24. 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

DESCRIPTION

UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 12

PROJECT / FIGURE NO. M01616-23_SWMP_12

DRAWN BY DKS

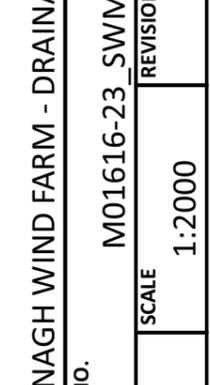
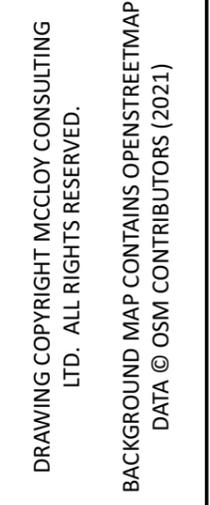
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REVISION 0

DATE 30/11/2021

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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 AVAILABLE ON LOCAL TOPOGRAPHY AND CHANGES IN ROAD ALIGNMENT DESIGN UNDERSTAKE ON OBSERVATIONS. BASIS REFERENCE 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 CONTAINMENT. CEMENT SHOULD BE AWKED WITHIN COMPOUND / 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 SHALL BE 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-USE TO BE USED TO RE-VEGETATE 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 5-40MM 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 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 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

27

Outfall

Discharge to Drain / Watercourse

Discharge Rate

lps

2.6

Drainage Area

sqm

2601

Volume cu.m

63

Dimensions (LxWxD) m

21.1 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

Drainage Area

sqm

2601

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sqm

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Dimensions (LxWxD) m

21.1 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

414100

324700

324800

324900

325000

325100

325200

325300

325400

325500

325600

325700

325800

325900

326000

326100

326200

326300

326400

326500

326600

326700

326800

326900

327000

327100

327200

327300

327400

327500

327600

327700

327800

327900

328000

328100

328200

328300

328400

328500

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-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 IS BASED ON LOCAL UNDERSTANDING OF THE SITE AND SHOULD BE VERIFIED 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 / 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 CEMENT SHOULD BE AWKED WITHIN COMPOUND / CONTAINMENT TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).

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 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 A BED OF SWALE. VEGETATIVE LAYER TO BE STORED IN AREAS IDENTIFIED ON THE DRAWINGS.

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.

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 HPAPS APPROVED.

19. ALL HOPE 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. ALL TRACK DRAINAGE CROSSINGS / 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	Discharge to Drain / Watercourse	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m	REF	DESCRIPTION
31	Discharge to Drain / Watercourse	Discharge to Drain / Watercourse	Discharge to Drain / Watercourse	5361	5.4	131	27 x 8 x 0.6	WX14	NEW 1.2M (H) X 2.5 (SPAN) BOTTOMLESS CULVERT OR SPRUNG ARCH EQUIVALENT SOFFIT MIN. 210.4 m OD.
32	Discharge to Drain / Watercourse	Discharge to Drain / Watercourse	Discharge to Drain / Watercourse	1770	1.8	43	14 x 5 x 0.6		

PRELIMINARY

0 50 100 150 200 m

324800

413900

413800

413700

413600

413500

413400

413300

413200

413100

413000

412900

412800

412700

412600

412500

412400

412300

412200

412100

412000

411900

411800

411700

411600

411500

411400

411300

411200

411100

411000

410900

410800

410700

410600

410500

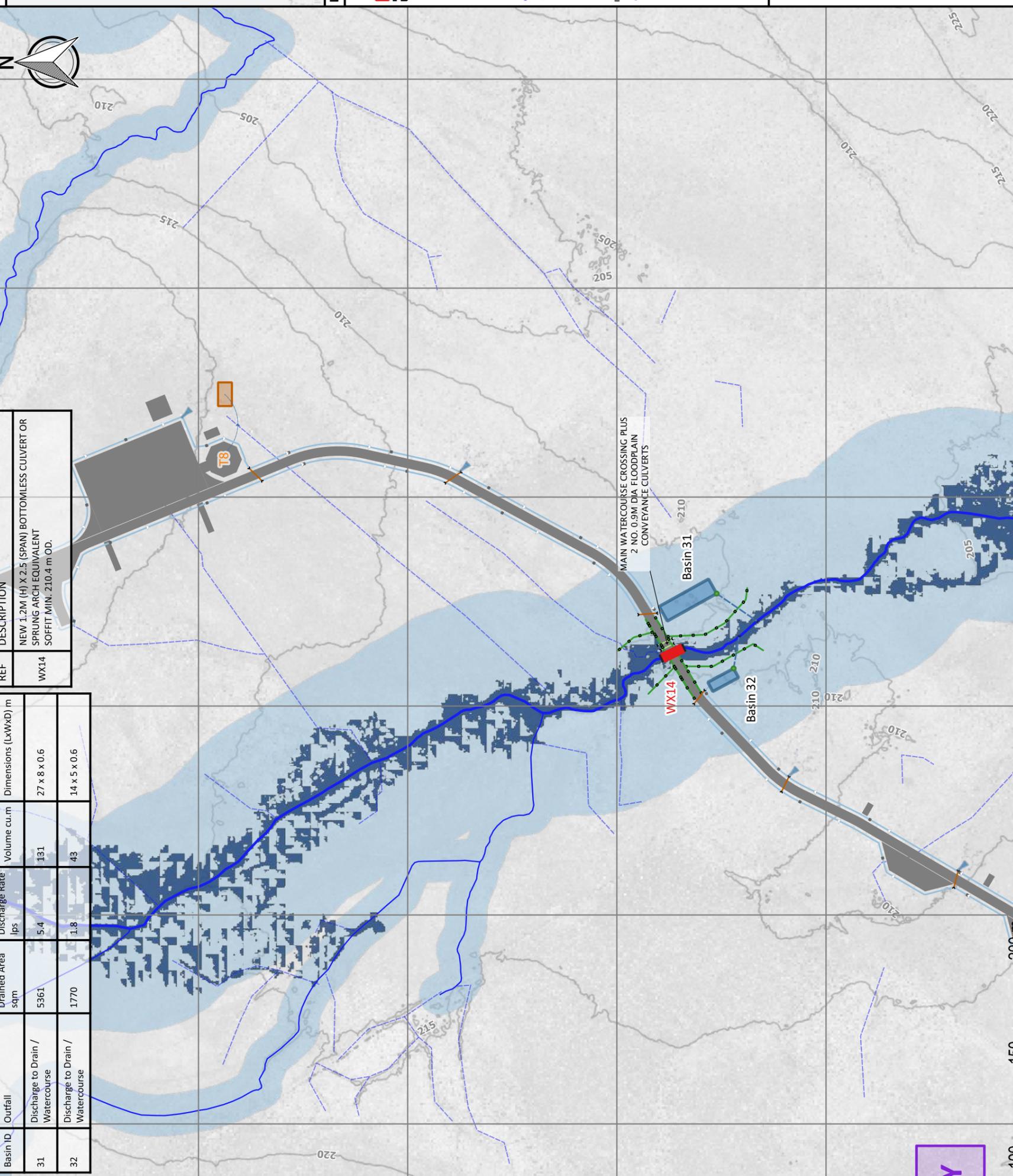
410400

410300

410200

410100

410000



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

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:

- 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 15	
PROJECT / FIGURE NO.		M01616-23_SWMP_15	
DRAWN BY	SCALE	REVISION	DATE
DKS	1:2000	0	30/11/2021

McCloy Consulting

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Carmoney Road North,
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w: www.mccloyconsulting.com

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BACKGROUND MAP CONTAINS OPENSTREETMAP DATA © OSM CONTRIBUTORS (2021)



324700

324800

324900

325000

325100

325200

NOTES

GENERAL

- DRAWINGS ARE PRELIMINARY ONLY AND INTENDED TO INFORM THE PLANNING APPLICATION. DRAWINGS ARE NOT INTENDED FOR AVOIDANCE OF DOUBLE 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 SITE AND 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.
- ALL MATERIALS TO BE STORED WITHIN COVERED AND STAKED AREAS. ALL MATERIALS TO BE STORED WITHIN COVERED AND STAKED AREAS SHOULD BE WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CASE OF ASPHALT).

TRACK / INFRASTRUCTURE DRAINAGE

- 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.
- SETTLEMENT/ATTENUATION PONDS ARE RETAINED FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES.
- ALL TRACKS TO BE CONSTRUCTED 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 STOKED LOCALLY AND RE-USED AS BACKFILL. VEGETATIVE LAYER TO BE STOKED TO THE DOWNHILL FACE OF SWALES.
- 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 PER A16 TO BE TYPICALLY 5-40MM CLEAN STONE ON DOWNHILL FACE OF CHECK DAM.
- SPACING AND FREQUENCY OF CHECK DAMS WILL BE DETERMINED AT DETAILED DESIGN.

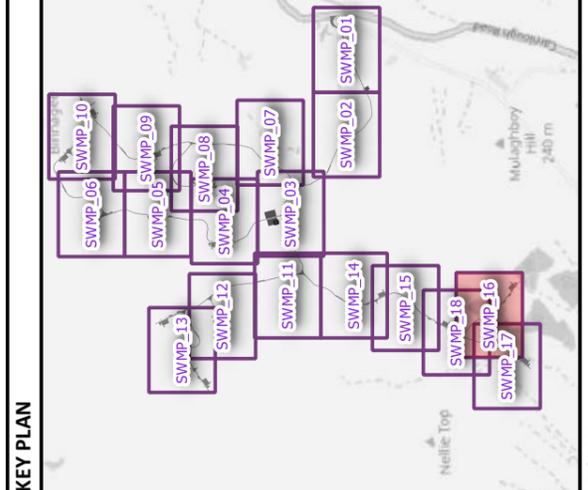
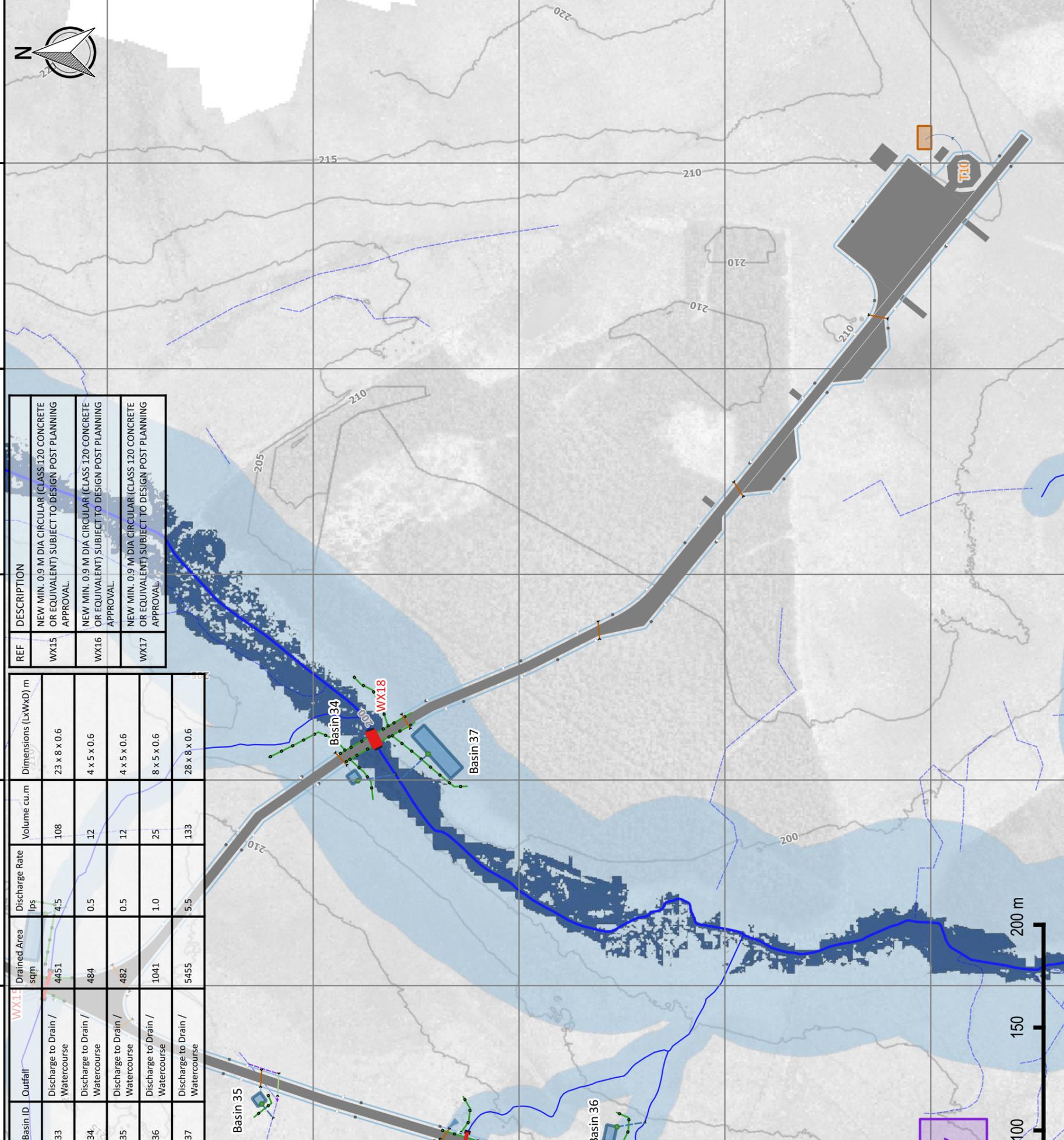
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Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m	DESCRIPTION
33	Discharge to Drain / Watercourse	4451	4.5	108	23 x 8 x 0.6	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING 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	
37	Discharge to Drain / Watercourse	5455	5.5	133	28 x 8 x 0.6	



LEGEND

The Development

- Planning Application Boundary
- Land Under Applicants Control

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- COMPOUND, SUBSTATION
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- Watercourse
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- Clean Drainage Pipe
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DESCRIPTION

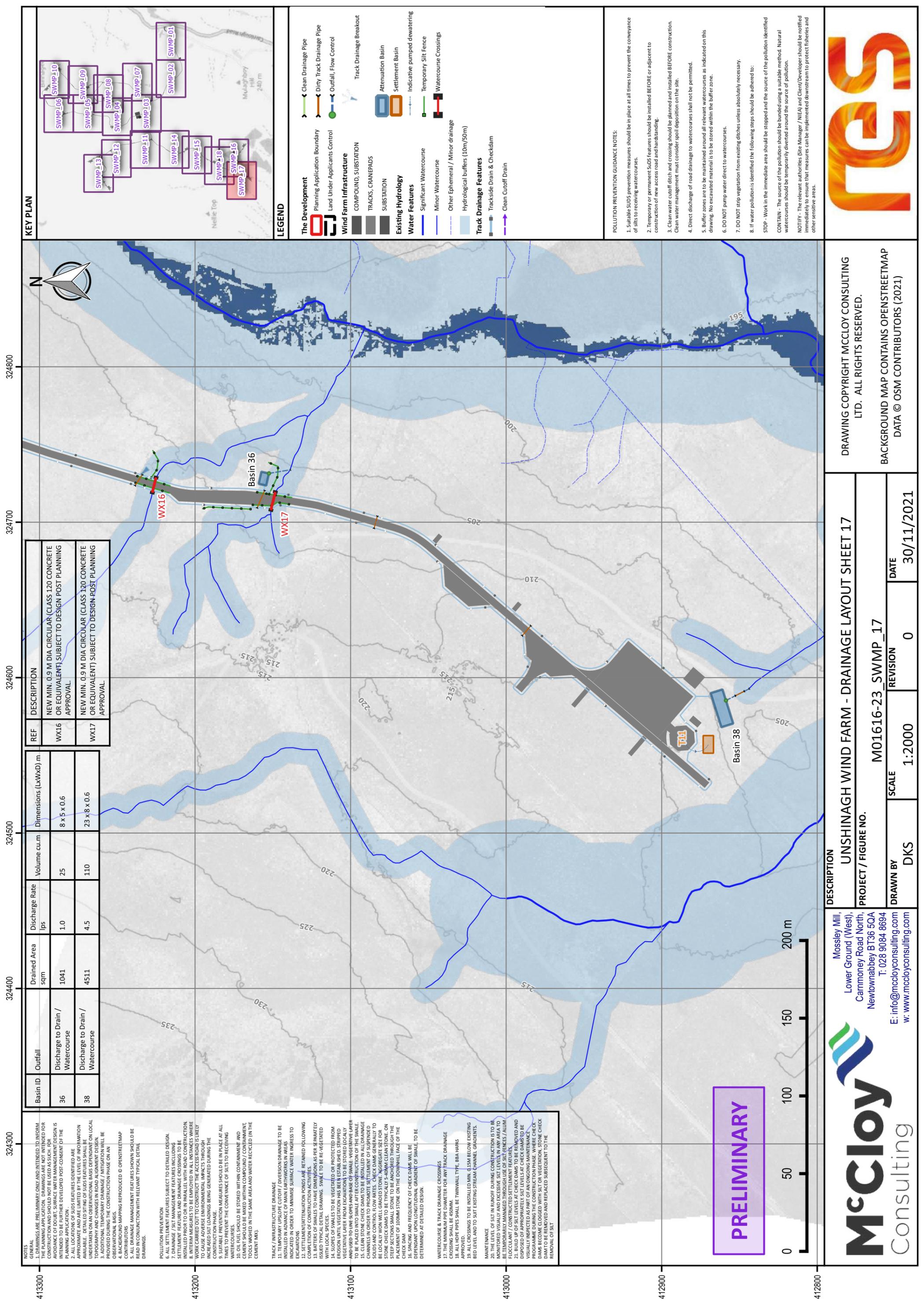
UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 16
PROJECT / FIGURE NO.

M01616-23_SWMP_16

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

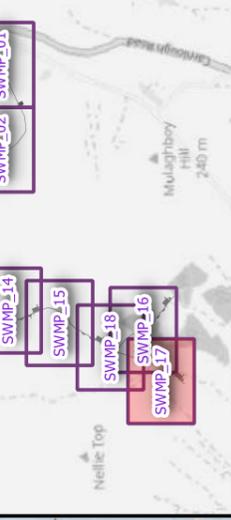
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Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m	REF	DESCRIPTION
36	Discharge to Drain / Watercourse	1041	1.0	25	8 x 5 x 0.6	WX16	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN 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 AVOIDANCE OF COURT. 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 IS BASED ON LOCAL UNDERSTANDING OF THE SITE AND SHOULD BE VERIFIED 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 MATERIALS TO BE STORED WITHIN CONFINEMENT, AND CARE SHOULD BE TAKEN TO PREVENT SPILLAGE / CONTAMINATION TOOLS WASHED IN THE SAME AREA AND WATER RECYCLED (IN THE CEMENT MIX).
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 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 ON SITE OR OFF-SITE.
 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 SLOPES OF 1:1 TO 1:1.5, THE 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 HIPS
 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 SUBSEQUENT TO THE REMOVAL OF SILT.



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:
 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.

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UNSHINAGH WIND FARM - DRAINAGE LAYOUT SHEET 17
 PROJECT / FIGURE NO.

M01616-23_SWMP_17

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

DESCRIPTION
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 PROJECT / FIGURE NO.
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LEGEND

The Development

- Planning Application Boundary
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- COMPOUND, SUBSTATION
- TRACKS, CRANEPADS
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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

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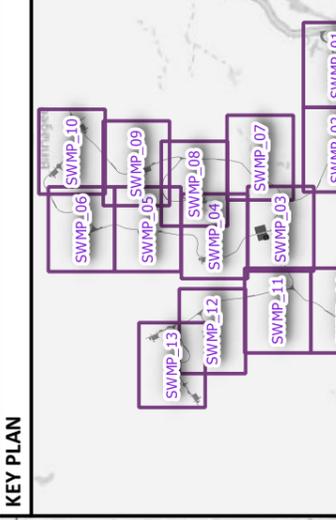
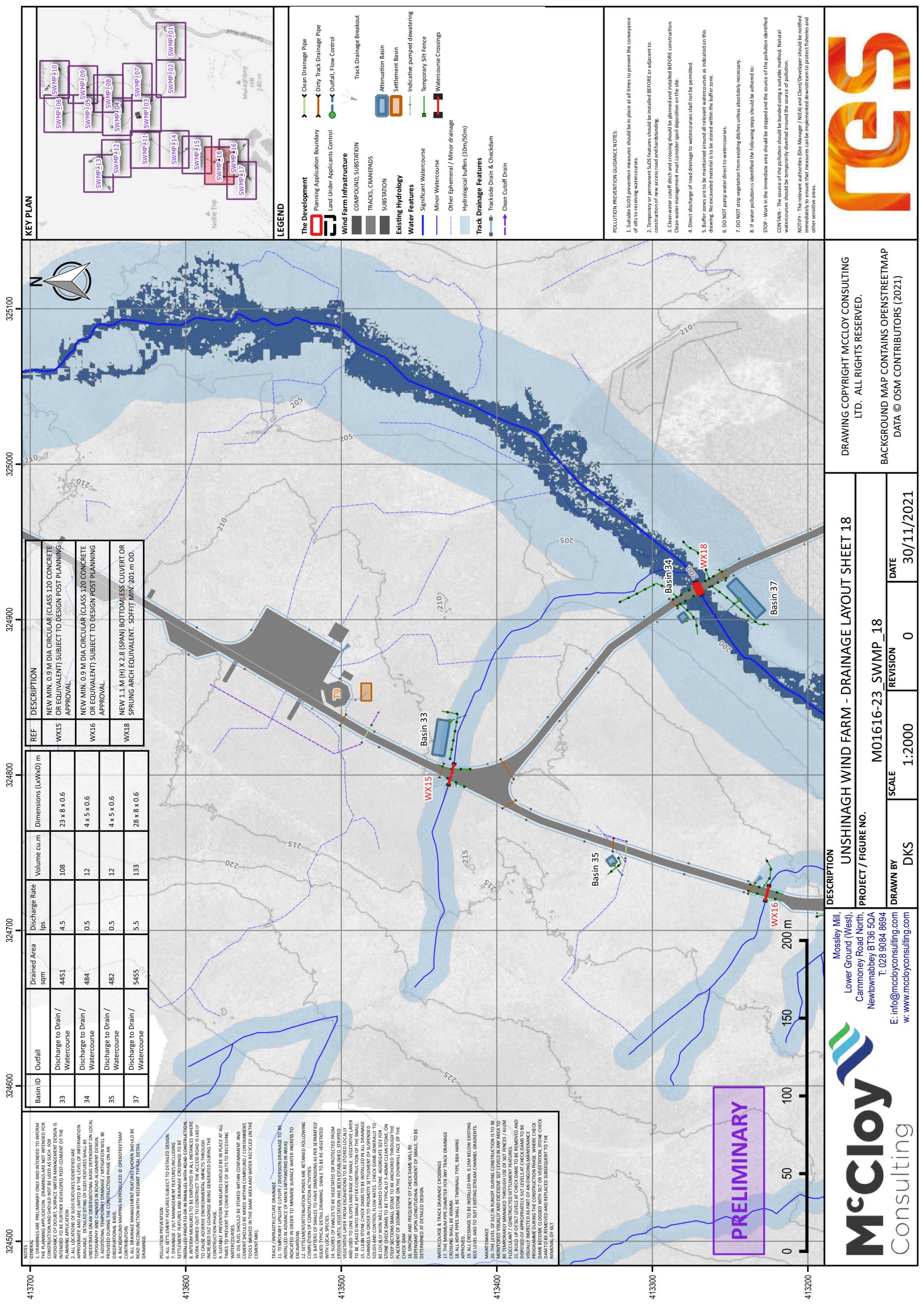
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REF	DESCRIPTION
WX15	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.
WX16	NEW MIN. 0.9 M DIA CIRCULAR (CLASS 120 CONCRETE OR EQUIVALENT) SUBJECT TO DESIGN POST PLANNING APPROVAL.
WX18	NEW 1.1 M (H) X 2.8 (SPAN) BOTTOMLESS CULVERT OR SPRUNG ARCH EQUIVALENT. SOFFIT MIN. 201 m OD.

Basin ID	Outfall	Drained Area sqm	Discharge Rate lps	Volume cu.m	Dimensions (LxWxD) m
33	Discharge to Drain / Watercourse	4451	4.5	108	23 x 8 x 0.6
34	Discharge to Drain / Watercourse	484	0.5	12	4 x 5 x 0.6
35	Discharge to Drain / Watercourse	482	0.5	12	4 x 5 x 0.6
37	Discharge to Drain / Watercourse	5455	5.5	133	28 x 8 x 0.6

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PRELIMINARY

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