

AECOM

PROJECT

HORSESHOE FALLS FISH PASS

CLIENT

NATURAL RESOURCES WALES

CONSULTANT

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NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM NEWLYN UNLESS STATED OTHERWISE. DO NOT SCALE.

2. LEVELS AND TOPOGRAPHICAL SURVEY DATA ARE BASED A MIXTURE OF SOURCES WITH VARYING LEVELS OF ACCURACY / DETAIL. REFER TO SITE INFORMATION FOR DETAILS. CHANGES MAY HAVE OCCURRED SINCE SURVEYS UNDERTAKEN.

3. FOR PROPOSED GENERAL ARRANGEMENT REFER TO DRAWING 60672359-ACM-XX-XX-DR-CE-200004.

4. DRAWINGS TO BE READ IN CONJUNCTION WITH THE SPECIFICATION FOR HIGHWAY WORKS (S.H.W) SUPPLEMENTED WITH PROJECT SPECIFIC APPENDICES.

5. CUT FACES AND BASE OF OPEN CHANNEL ARE TO BE INSPECTED BY A COMPETENT GEOTECHNICAL ENGINEER. ANY LOOSE SOILS AND SOFT SPOTS (UNDRAINED SHEAR STRENGTH  $c_u < 40kPa$ ) ON THE FORMATION ARE TO BE REMOVED AND REPLACED WITH COMPACTED CLASS 1A/6N/6P FILL. SOFT SPOTS AND VERY LOOSE SOILS ON THE CHANNEL BANK TO BE TREATED IN THE SAME WAY.

6. AEP = ANNUAL EXCEEDANCE PROBABILITY. CC = ALLOWANCE FOR FLOW INCREASE DUE TO CLIMATE CHANGE. FWL = FLOOD WATER LEVEL. Q10 = THE FLOW EXCEEDED 10% OF THE TIME OVER AN AVERAGE YEAR. Q95 = THE FLOW EXCEEDED 95% OF THE TIME OVER AN AVERAGE YEAR.

7. EXPECTED GROUND CONDITIONS AT THE CULVERT AND CHANNEL LOCATIONS ARE SHOWN ON DRAWINGS 60672359-ACM-XX-XX-DR-GT-200041 AND 200042. DESIGN ASSUMPTIONS ARE SPECIFIED IN THE GEOTECHNICAL DESIGN REPORT. IF GROUND CONDITIONS VARY SIGNIFICANTLY FROM DESIGN ASSUMPTIONS, THE DESIGNER SHOULD BE NOTIFIED PRIOR TO CONTINUING CONSTRUCTION.

ISSUE/REVISION

C01	01/11/2022	FOR CONSTRUCTION
P01	09/09/2022	WORKING DRAFT FOR INFO
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60672359

SHEET TITLE

HORSESHOE FALLS FISH PASS  
OPEN CHANNEL CROSS SECTIONS

SHEET NUMBER

60672359-ACM-XX-XX-DR-CE-200022

1100 HIGH TIMBER FENCING IN ACCORDANCE WITH MCHW VOLUME 3 SECTION 1 DETAIL H15 TO BE TO BE INSTALLED AT EDGE OF CHANNEL IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS. EXACT POSITION OF FENCING TO BE AGREED WITH SUPERVISOR ON SITE

EXISTING GROUND

500 MIN

COMPACTED AS-DUG MATERIAL

PERMANENT EROSION CONTROL MATTING (SALIX VMX3 C350 PERMANENT TURF REINFORCEMENT MATTING OR EQUAL APPROVED) PLACED ON TOPSOIL. MATTING TO BE PINNED IN PLACE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. ALL LAPS TO FACE DOWNSTREAM AND BE A MINIMUM OF 150.

Q10 WATER LEVEL (VARIES ALONG CHANNEL)

Q50 WATER LEVEL

Q95 WATER LEVEL

ROCK MATTRESS TO EXTEND UP BANKS 450 (APPROX. Q10 WATER LEVEL)

150 THICK LAYER REINSTATED TOPSOIL SEEDED WITH GRASS SEED

300 THICK ROCK MATTRESS (SALIX ROCK MATTRESS OR EQUAL APPROVED)

1500

450

300

MATting SECURED UNDER MATTRESS

NON-WOVEN GEOTEXTILE TO BE PLACED BELOW ROCK MATTRESSES

HEAVY ROCK MATTRESSES  
APPROX. MASS 640kg, LENGTH 2m

CHAINAGE	00.000	01.000	02.000	03.000	04.000	05.000	06.000	07.000	08.000	09.000	10.000	11.000	12.000	13.000	14.000	15.000	16.000	17.000	18.000	19.000	20.000	21.000	22.000	23.000	24.000	25.000	26.000	27.000	28.000	29.000	30.000	
EXISTING LEVELS	95.843	95.930	96.006	96.079	96.157	96.228	96.287	96.334	96.358	96.389	96.441	96.496	96.552	96.590	96.622	96.639	96.656	96.676	96.689	96.692	96.692	96.699	96.710	96.714	96.716	96.727	96.742	96.752	96.765	96.785	96.792	
PROPOSED LEVELS				96.013	95.763	95.513	95.263	95.013	94.763	94.513	94.263	94.013	93.763	93.513	93.263	93.013	92.763	92.513	92.263	92.013	91.763	91.513	91.263	91.013	90.763	90.513	90.263	90.013	89.763	89.513	89.263	89.013

J OPEN CHANNEL CROSS SECTION

200020 1:50

0 1.25 2.5 m

1100 HIGH TIMBER FENCING IN ACCORDANCE WITH MCHW VOLUME 3 SECTION 1 DETAIL H15 TO BE TO BE INSTALLED AT EDGE OF CHANNEL IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS. EXACT POSITION OF FENCING TO BE AGREED WITH SUPERVISOR ON SITE

EXISTING GROUND

500 MIN

COMPACTED AS-DUG MATERIAL

PERMANENT EROSION CONTROL MATTING (SALIX VMX3 C350 PERMANENT TURF REINFORCEMENT MATTING OR EQUAL APPROVED) PLACED ON TOPSOIL. MATTING TO BE PINNED IN PLACE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. ALL LAPS TO FACE DOWNSTREAM AND BE A MINIMUM OF 150.

Q10 WATER LEVEL

Q50 WATER LEVEL

Q95 WATER LEVEL

BOULDER LAYER TO EXTEND UP BANKS 450 (APPROX. Q10 WATER LEVEL)

150 THICK LAYER REINSTATED TOPSOIL SEEDED WITH GRASS SEED

1500

450

1500

MATting SECURED UNDER STONES

DOUBLE LAYER OF HMA40/200 ANGULAR STONES PLACED IN TIGHTLY PACKED LAYERS LEAVING AN UNEVEN SURFACE

BOULDER SUBSTRATE TO BE PLACED ON TOP OF LAYER OF SEPARATION GEOTEXTILE (LOTRAK 25R OR EQUAL APPROVED)

UPPER VOIDS FILLED WITH 75% 20-63 DIAMETER CLEAN ANGULAR COARSE GRAVEL AND 25% 63-200 DIAMETER CLEAN ANGULAR COBBLES. BOULDERS LEFT PROTRUDING ABOVE SUBSTRATE.

LOWER VOIDS FILLED WITH SELECTED SITE-WON MATERIAL

HEAVY BOULDERS  
APPROX. MASS 150kg

CHAINAGE	00.000	01.000	02.000	03.000	04.000	05.000	06.000	07.000	08.000	09.000	10.000	11.000	12.000	13.000	14.000	15.000	16.000	17.000	18.000	19.000	20.000	21.000	22.000	23.000	24.000	25.000	26.000	27.000	28.000	29.000	30.000	
EXISTING LEVELS	95.865	95.859	95.863	95.853	95.837	95.817	95.792	95.763	95.748	95.727	95.652	95.544	95.485	95.549	95.663	95.755	95.838	95.935	96.064	96.187	96.298	96.363	96.417	96.477	96.544	96.607	96.643	96.648	96.645	96.646	96.645	
PROPOSED LEVELS				95.719	95.463	95.207	94.950	94.695	94.444	94.194	93.944	93.694	93.434	93.174	92.914	92.654	92.394	92.134	91.874	91.614	91.354	91.094	90.834	90.574	90.314	90.054	89.794	89.534	89.274	89.014	88.754	88.494

K OPEN CHANNEL CROSS SECTION

200020 1:50

0 1.25 2.5 m