

Upstream tie in point
SD 49626 96906

To ensure a stable design, sediment sizes through this section of the restoration reach require to be coarse gravel and cobble (with a D50 of 60-70 mm).

Creation of a proto channel from the crest of the rock ramp extending ~140 m upstream. If rockhead is uncovered when excavating the new channel, it can be left in place.

Existing middle 'island' feature and associated vegetation will be retained to avoid minimal impacts on biodiversity.

Morphodynamic model results show that the area of 'wetland' habitat upstream of the current weir location on river right is ephemerally wetted, inundating at flows equal to and larger than the 1:2 year return flood event.

Bank to be inspected during construction to ensure bank protection is adequate and no further repairs are needed.

Additional bank toe protection is required along the existing wall on right bank using the same rock/sizing as main rock ramp.

The superstructure of the rock ramp shall comprise a boulder-sized mix of rock, with D90 of 800mm, D50 of 550mm and D15 of 325mm. The interstices of the superstructure shall be filled with coarse gravel to cobble sized particles (32 to 200mm mix), won from the excavation of material currently stored within the weir pond area.

Overhead 11KV powerlines

Overhead 33KV powerlines

Removal of existing weir structure and associated fish passes

Removal of old, disconnected pipe (United Utilities) downstream of weir including related rock pillar

Rock ramp start point
SD 49727 96792

New low gradient rock ramp to allow fish passage and improve navigation on the River Kent. The new structure includes boulder-formed 'spurs' to alternately obstruct the flow over the structure and 'pool' features to provide resting locations for fish passing up through the structure.

At the downstream end particles will grade from 400-500mm to 200-300mm and steel pins will be fixed to the existing channel bed to secure the basal particles of the rock ramp at that section.

Downstream tie in point
SD 49756 96746

SAFETY HEALTH AND ENVIRONMENTAL INFORMATION	
In addition to the hazards/risk normally associated with the types of work detailed on this drawing, note the following risks and information.	
* Please note that risks listed here are not exhaustive.	
* Please follow Designers Risk Assessment for further details.	
CONSTRUCTION	
* Working in close proximity to deep water environments.	
* Disturbing or striking existing utilities and services.	
* Risk of flooding from river	
MAINTENANCE/CLEANING	
* No unusual hazards/risks	
DECOMMISSIONING/DEMOLITION	
* The river right bank at the location of the fish pass is to be inspected during construction by a suitably qualified engineer, to ensure the existing gabion bank protection is fit for purpose and no repairs are required.	
It is assumed that all works will be carried out by a competent contractor working.	
Further details are shown in Design Method Statement document.	

LEGEND	

Quality Project No. : 20-1053

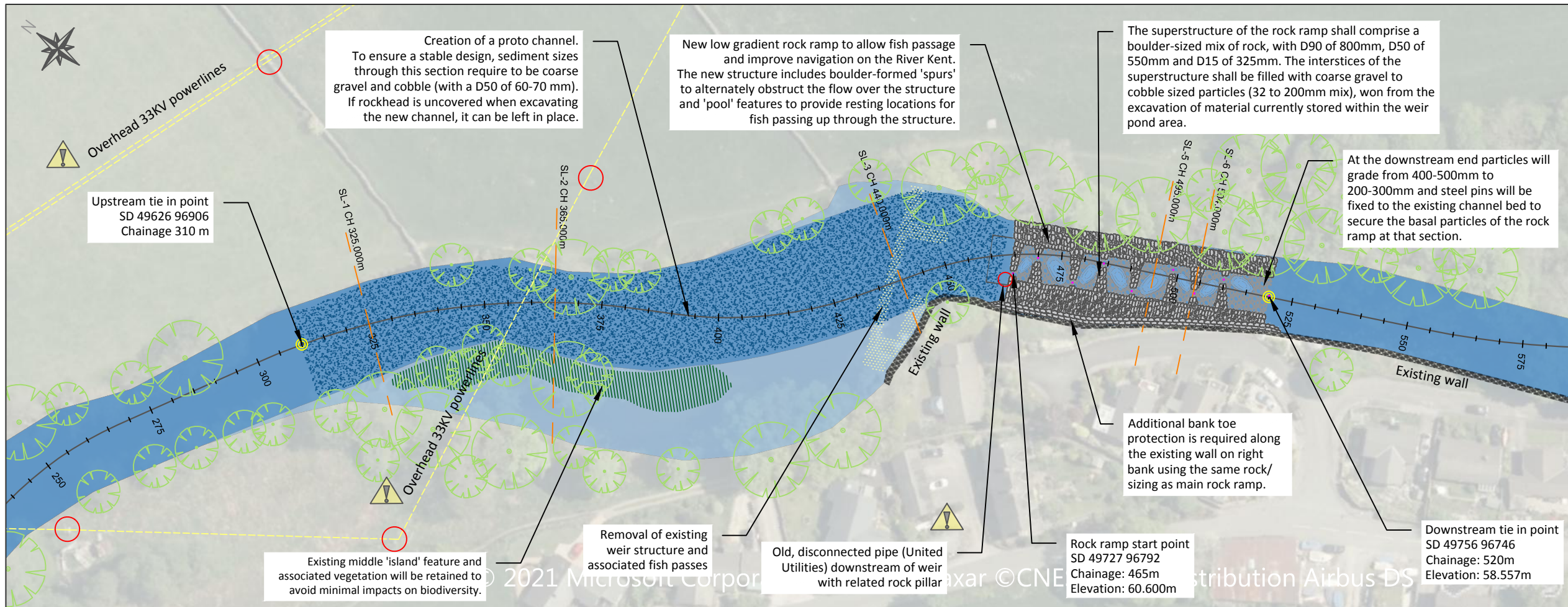
Project Title
Bowston Weir Removal

Drawing Title
ROCK RAMP PROPOSED DESIGN

Designed by HM		Scale @ A3 1:1,000	
Drawn JL	Date 16/03/2021	British National Grid ORD SURV GB	
Checked AW	Date 16/03/2021		
Approved HM	Date 16/03/2021	Issued 1	Date 16/03/2021



Drawing Number
1



SAFETY HEALTH AND ENVIRONMENTAL INFORMATION

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CONSTRUCTION

- * Working in close proximity to deep water environments.
- * Disturbing or striking existing utilities and services.
- * Risk of flooding from river

MAINTENANCE/CLEANING

- * No unusual hazards/risks

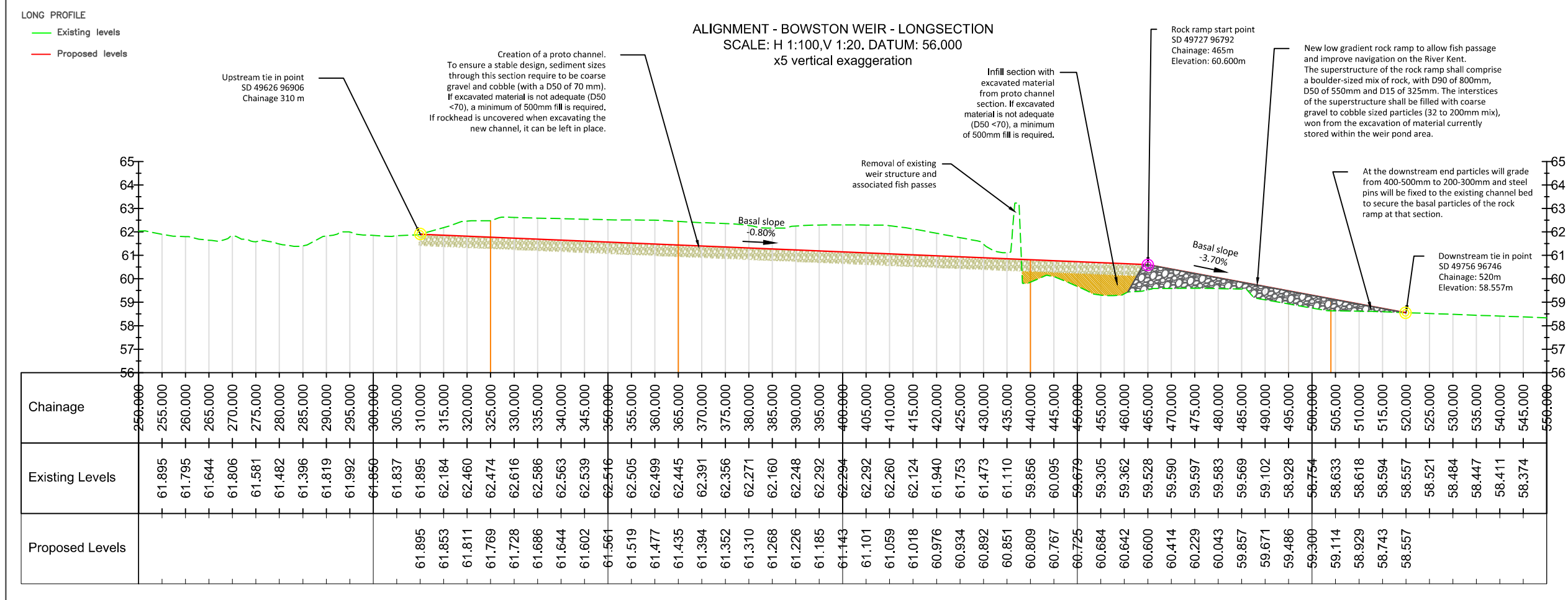
DECOMMISSIONING/DEMOLITION

- * The river right bank at the location of the fish pass is to be inspected during construction by a suitably qualified engineer, to ensure the existing gabion bank protection is fit for purpose and no repairs are required.

It is assumed that all works will be carried out by a competent contractor working.

Further details are shown in Design Method Statement document.

LEGEND



Quality Project No. : 20-1053

Project Title
Bowston Weir Removal

Drawing Title
ROCK RAMP LONG PROFILE

Designed by HM
Scale @ A3 1:1,000

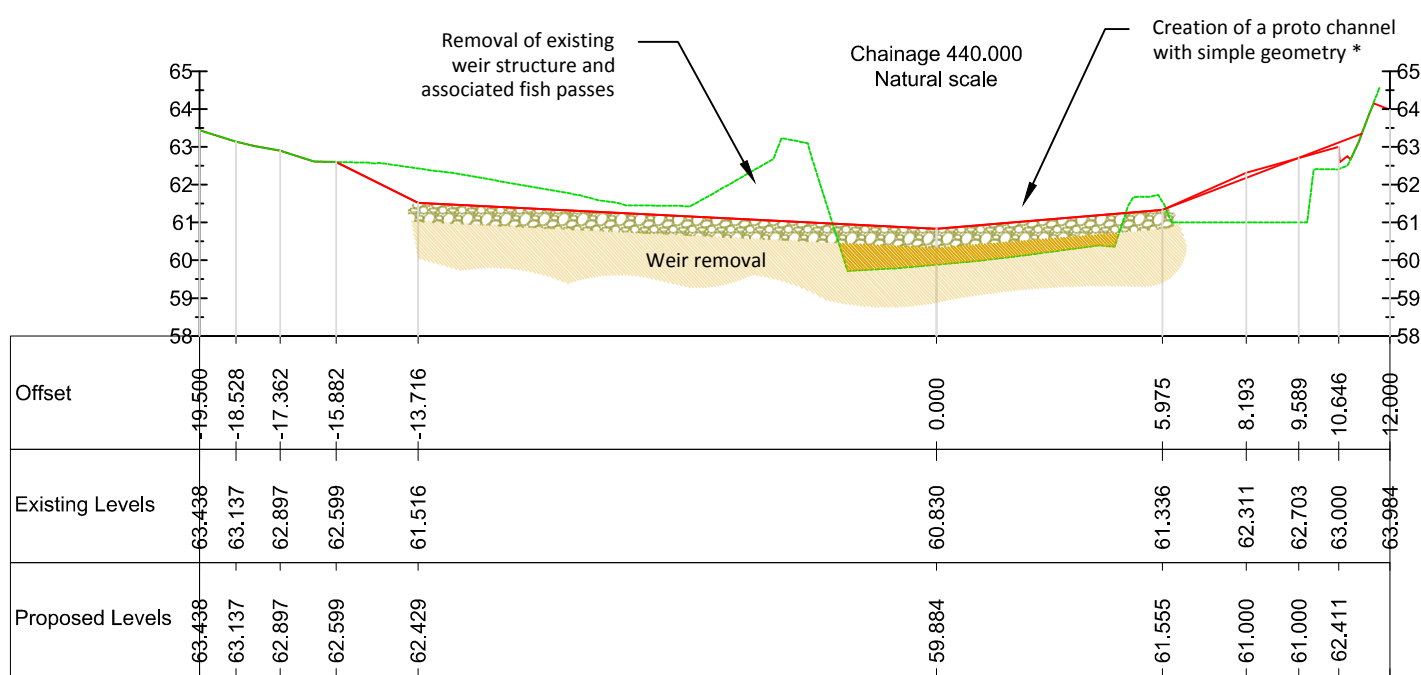
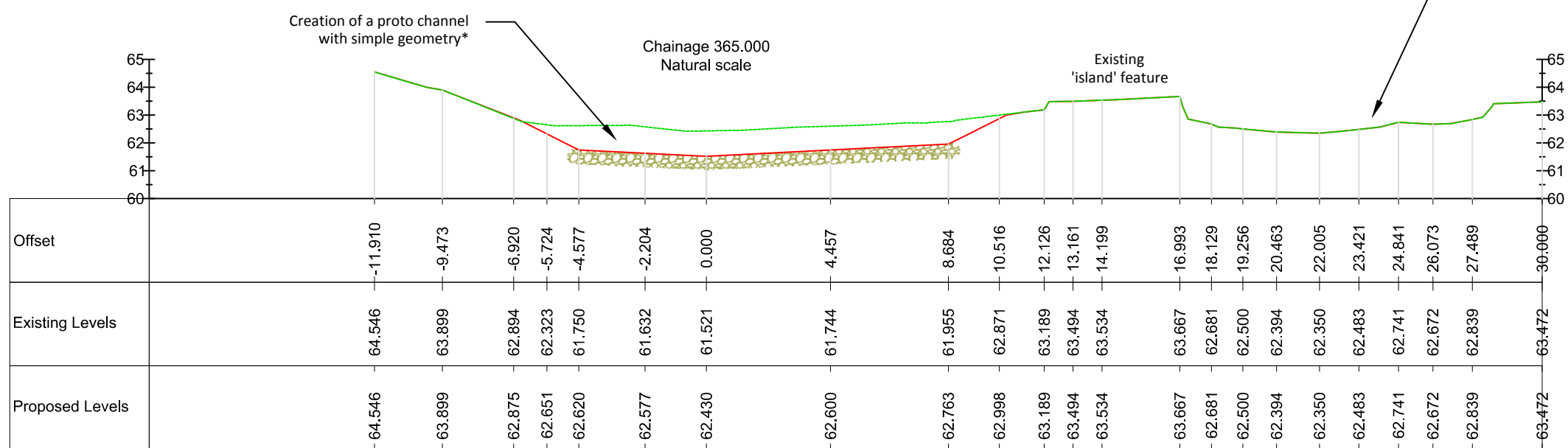
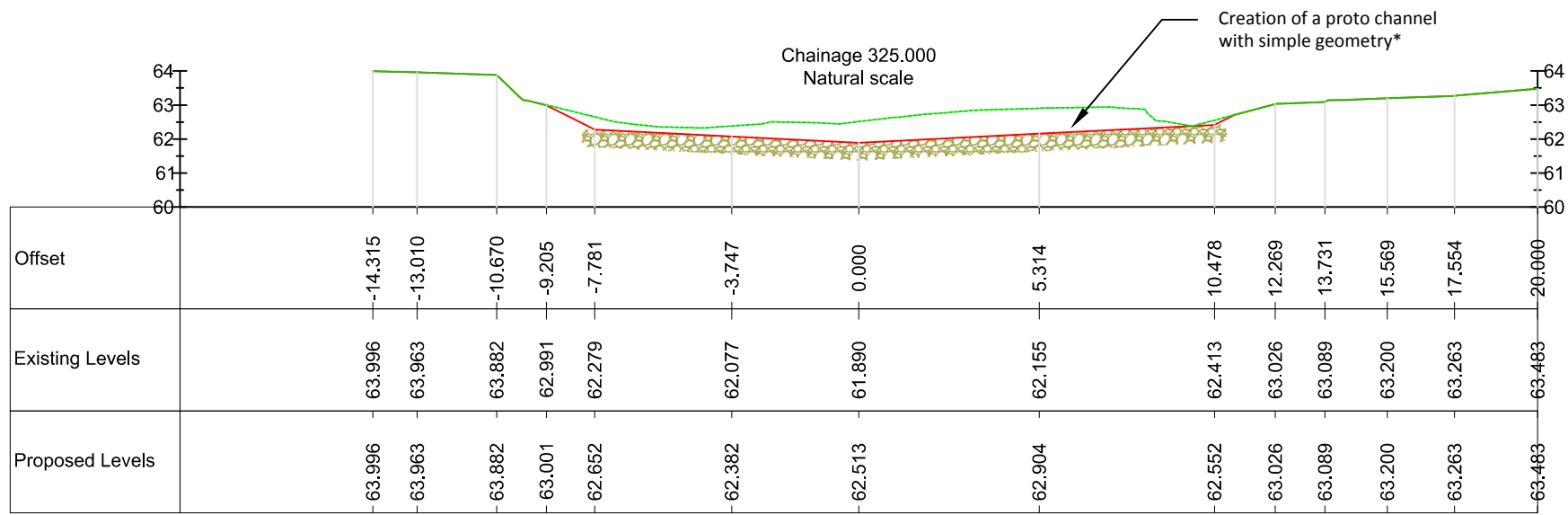
Drawn Date 16/03/2021
Checked Date 16/03/2021
Approved Date 16/03/2021

British National Grid
ORD SURV GB

Issued 1 Date 16/03/2021



Drawing Number
2



* To ensure a stable design, sediment sizes through the proto channel section require to be coarse gravel and cobble (with a D50 of 70 mm). If excavated material is not adequate (D50 <70), a minimum of 500mm fill is required.

If rockhead is undercover when excavating the new channel, it can be left in place.

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* Risk of flooding from river	
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DECOMMISSIONING/DEMOLITION	
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LEGEND	
Existing levels Proposed levels	
Sections reference zero offset point location: (Easting,Northing)m	
Chainage 325m = 349637, 496896	
Chainage 365m = 349665, 496867	
Chainage 440m = 349712, 496811	

Quality Project No. : 20-1053

Project Title

Bowston Weir Removal

Drawing Title

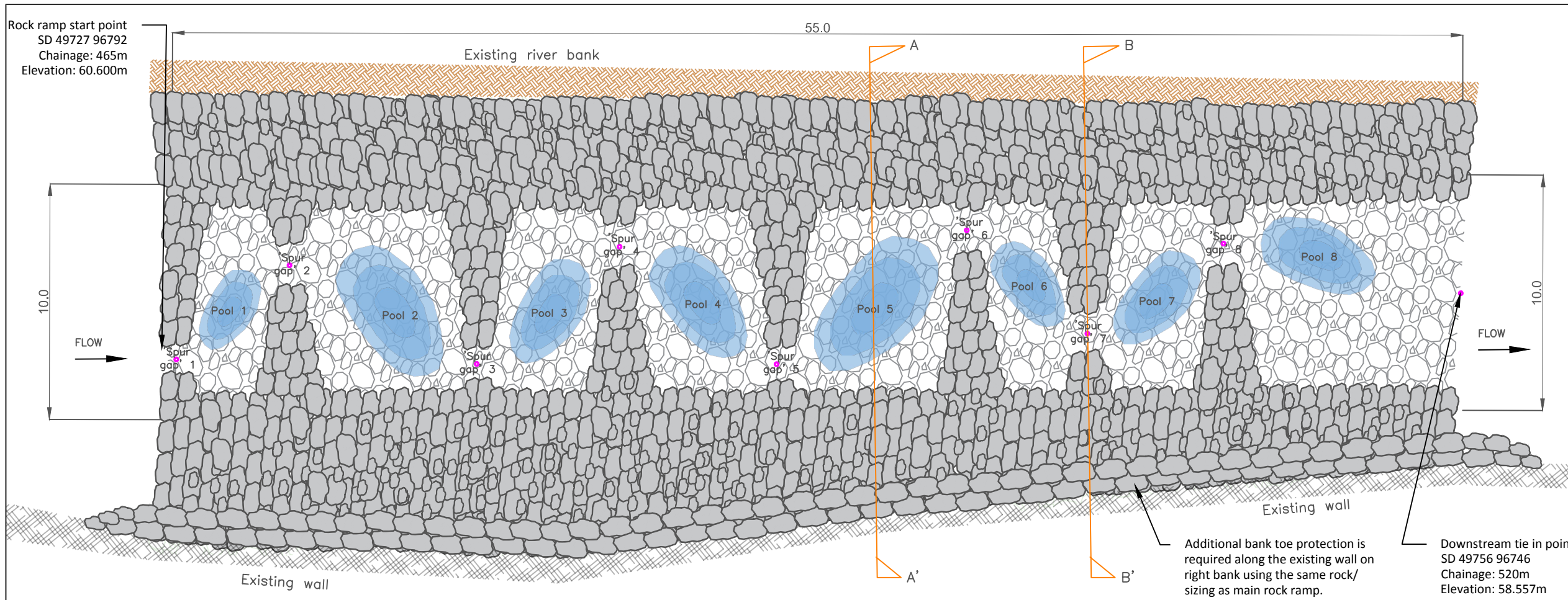
PROPOSED DESIGN SECTIONS

Designed by		Scale @ A3 1:200	
HM			
Drawn	Date	British National Grid	
JL	16/03/2021	ORD SURV GB	
Checked	Date	Issued	
AW	16/03/2021	1	Date
Approved	Date	16/03/2021	
HM	16/03/2021		

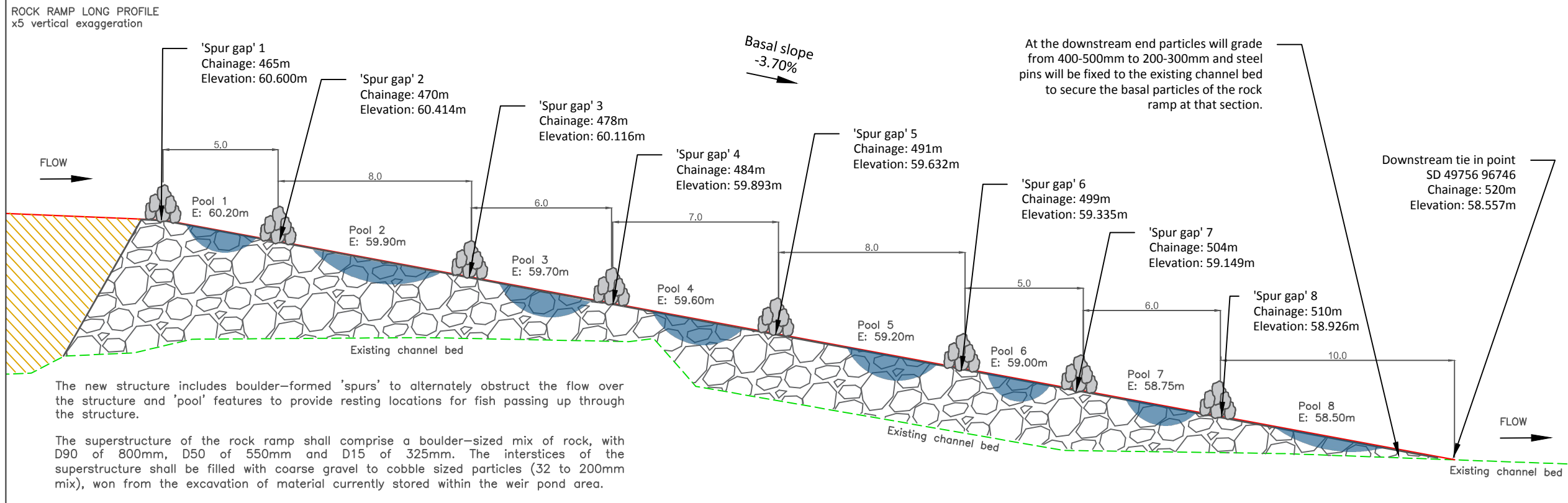


Drawing Number

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[K] Key points	'Spur gap' 1	'Spur gap' 2	'Spur gap' 3	'Spur gap' 4	'Spur gap' 5	'Spur gap' 6	'Spur gap' 7	'Spur gap' 8	Downstream tie in point
Easting	349727.92m	349733.75m	349733.86m	349741.15m	349739.94m	349748.82m	349747.40m	349753.54m	349756.49m
Northing	496792.98m	496790.65m	496781.64m	496778.66m	496770.39m	496765.99m	496759.38m	496756.12m	496746.21m
Elevation	60.600m	60.414m	60.116m	59.893m	59.632m	59.335m	59.149m	58.926m	58.557m



The new structure includes boulder-formed 'spurs' to alternately obstruct the flow over the structure and 'pool' features to provide resting locations for fish passing up through the structure.

The superstructure of the rock ramp shall comprise a boulder-sized mix of rock, with D90 of 800mm, D50 of 550mm and D15 of 325mm. The interstices of the superstructure shall be filled with coarse gravel to cobble sized particles (32 to 200mm mix), won from the excavation of material currently stored within the weir pond area.

SAFETY HEALTH AND ENVIRONMENTAL INFORMATION
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CONSTRUCTION
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* Risk of flooding from river
MAINTENANCE/CLEANING
* No unusual hazards/risks
DECOMMISSIONING/DEMOLITION
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LEGEND

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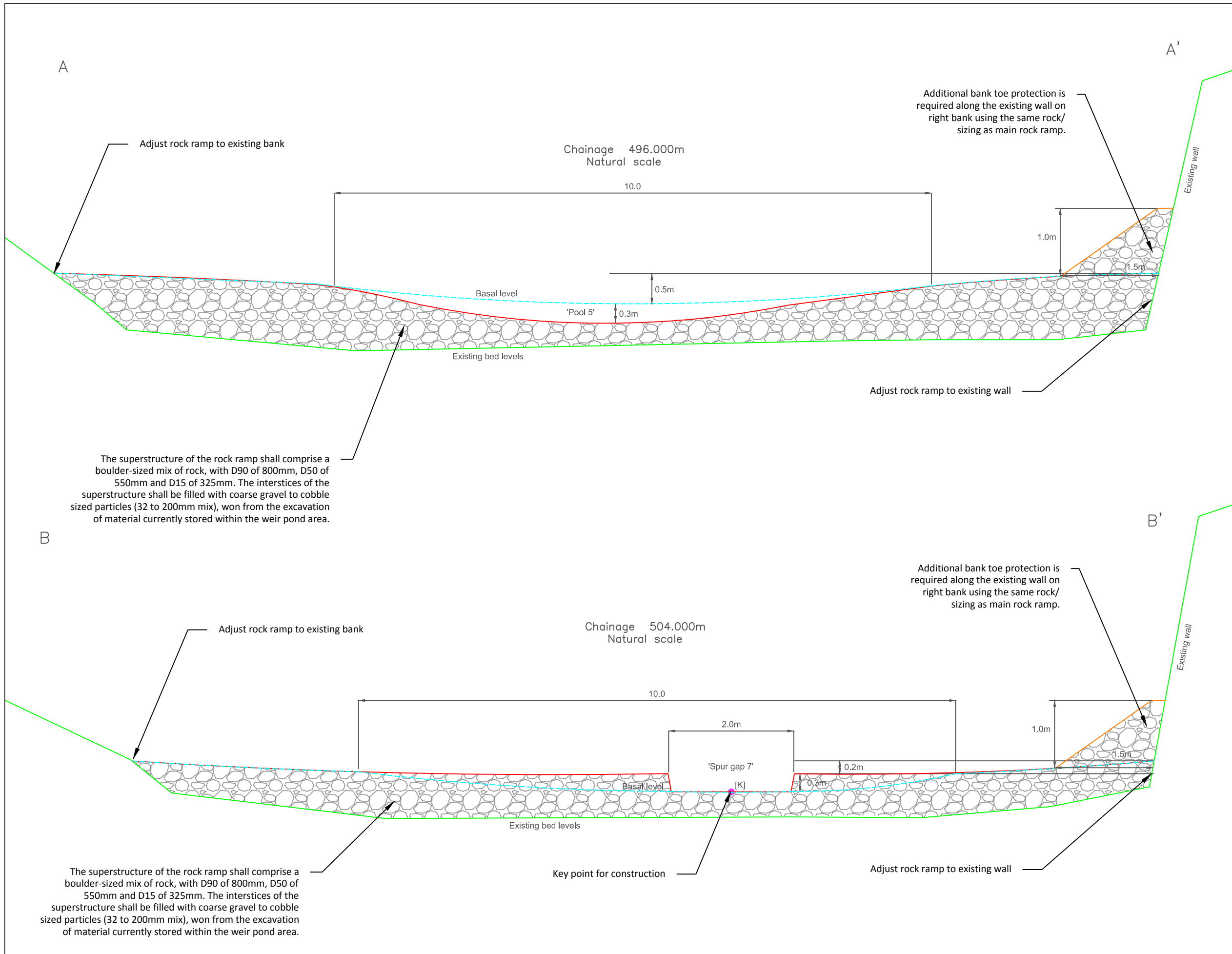
Project Title
Bowston Weir Removal

Drawing Title
ROCK RAMP DETAIL

Designed by HM	Scale @ A3 1:200
Drawn JL	Date 16/03/2021
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Approved HM	Date 16/03/2021
	British National Grid ORD SURV GB
	Issued 1
	Date 16/03/2021



Drawing Number
4



Adjust rock ramp to existing bank

Chainage 496.000m
Natural scale

Additional bank toe protection is required along the existing wall on right bank using the same rock/sizing as main rock ramp.

The superstructure of the rock ramp shall comprise a boulder-sized mix of rock, with D90 of 800mm, D50 of 550mm and D15 of 325mm. The interstices of the superstructure shall be filled with coarse gravel to cobble sized particles (32 to 200mm mix), won from the excavation of material currently stored within the weir pond area.

Adjust rock ramp to existing wall

Adjust rock ramp to existing bank

Chainage 504.000m
Natural scale

Additional bank toe protection is required along the existing wall on right bank using the same rock/sizing as main rock ramp.

The superstructure of the rock ramp shall comprise a boulder-sized mix of rock, with D90 of 800mm, D50 of 550mm and D15 of 325mm. The interstices of the superstructure shall be filled with coarse gravel to cobble sized particles (32 to 200mm mix), won from the excavation of material currently stored within the weir pond area.

Key point for construction

Adjust rock ramp to existing wall

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CONSTRUCTION	
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* Disturbing or striking existing utilities and services.	
* Risk of flooding from river	
MAINTENANCE/CLEANING	
* No unusual hazards/risks	
DECOMMISSIONING/DEMOLITION	
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LEGEND	
	Existing levels
	Proposed levels

Quality Project No. :	20-1053
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Project Title
Bowston Weir Removal

Drawing Title
ROCK RAMP SECTIONS

Designed by HM	Date 16/03/2021	Scale @ A3 1:60
Drawn JL	Date 16/03/2021	British National Grid ORD SURV GB
Checked AW	Date 16/03/2021	
Approved HM	Date 16/03/2021	Issued 1
		Date 16/03/2021



Drawing Number
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