

NOTES:

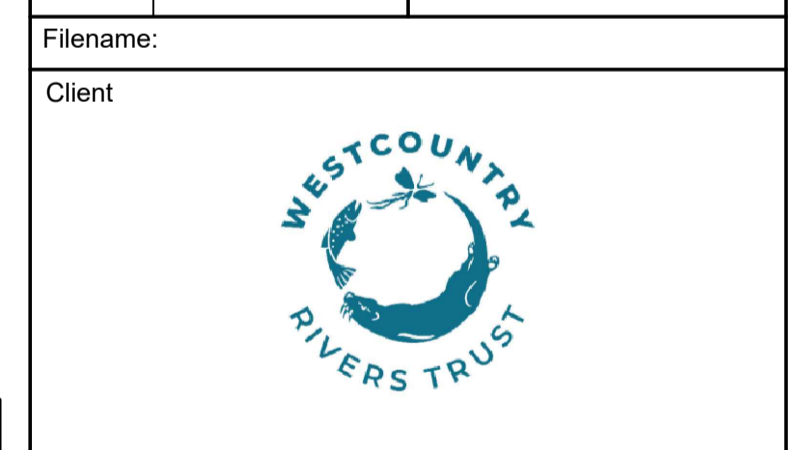
**1. DIMENSIONS:**

- Are in millimetres unless otherwise stated.
- Marked thus (\*) are approximate.
- All levels are in metres to Site Datum.

**3. SPECIFICATION:**

All works to be carried out in accordance with the Environment Agency Minimum Technical Requirements which shall be the Civil Engineering Specification for the Water Industry (CESWI). All technical requirements clauses apply unless stated as deleted, amended or augmented in accordance with the EA WEM Contract Works Information documentation.

P01	Initial Issue	18.07.22
Issue	Description	Date
<b>Detailed Design</b>		
Scale	1:1250	Current Issue Signatures
Original Size	A1	Author: J.Czyrw, Checker: M.Lakin, Approver: S.Pudwell
Datum		© Copyright reserved



PROJECT

**Bolham Weir  
Smolt Screen & Smolt Notch**

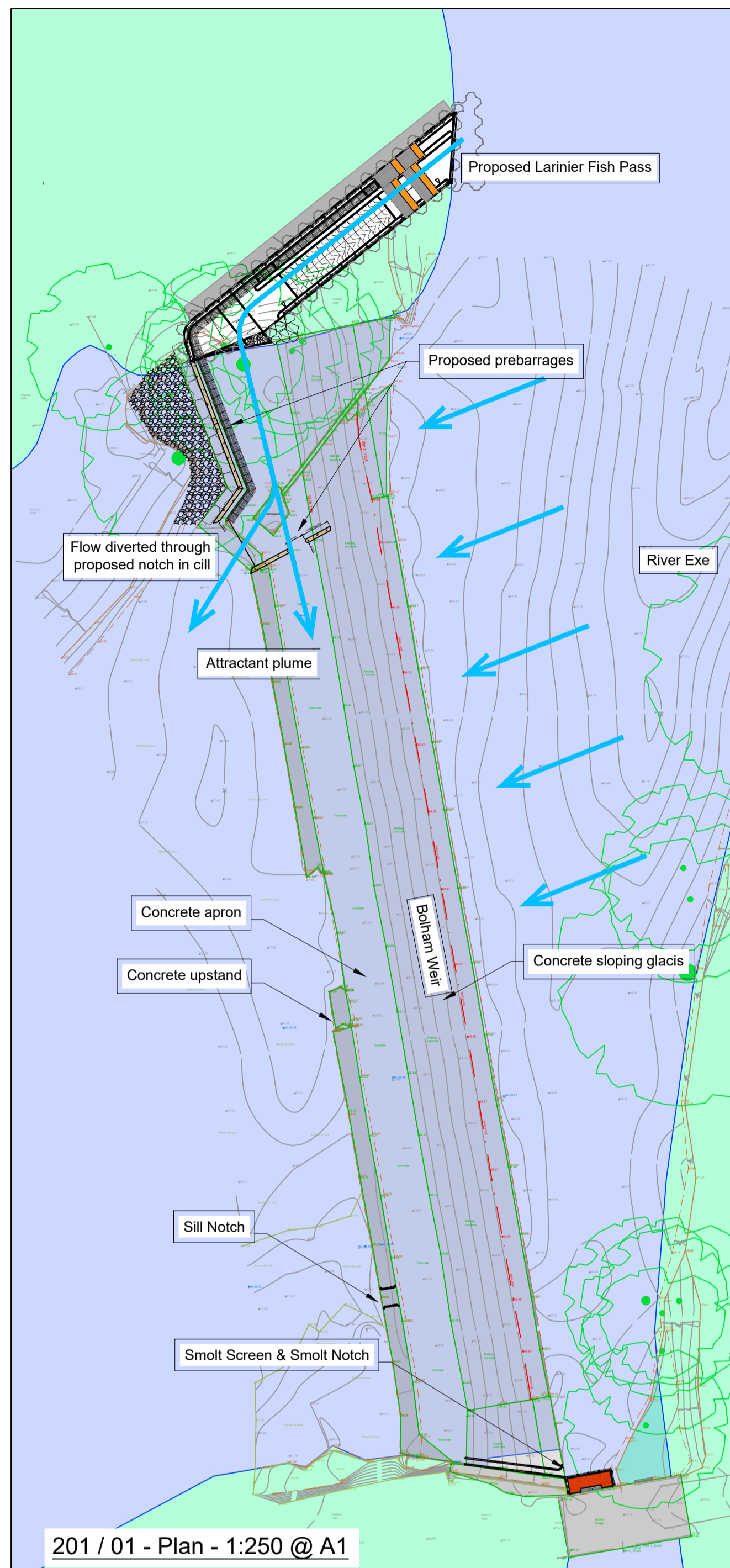
TITLE

**Site Location Plan**

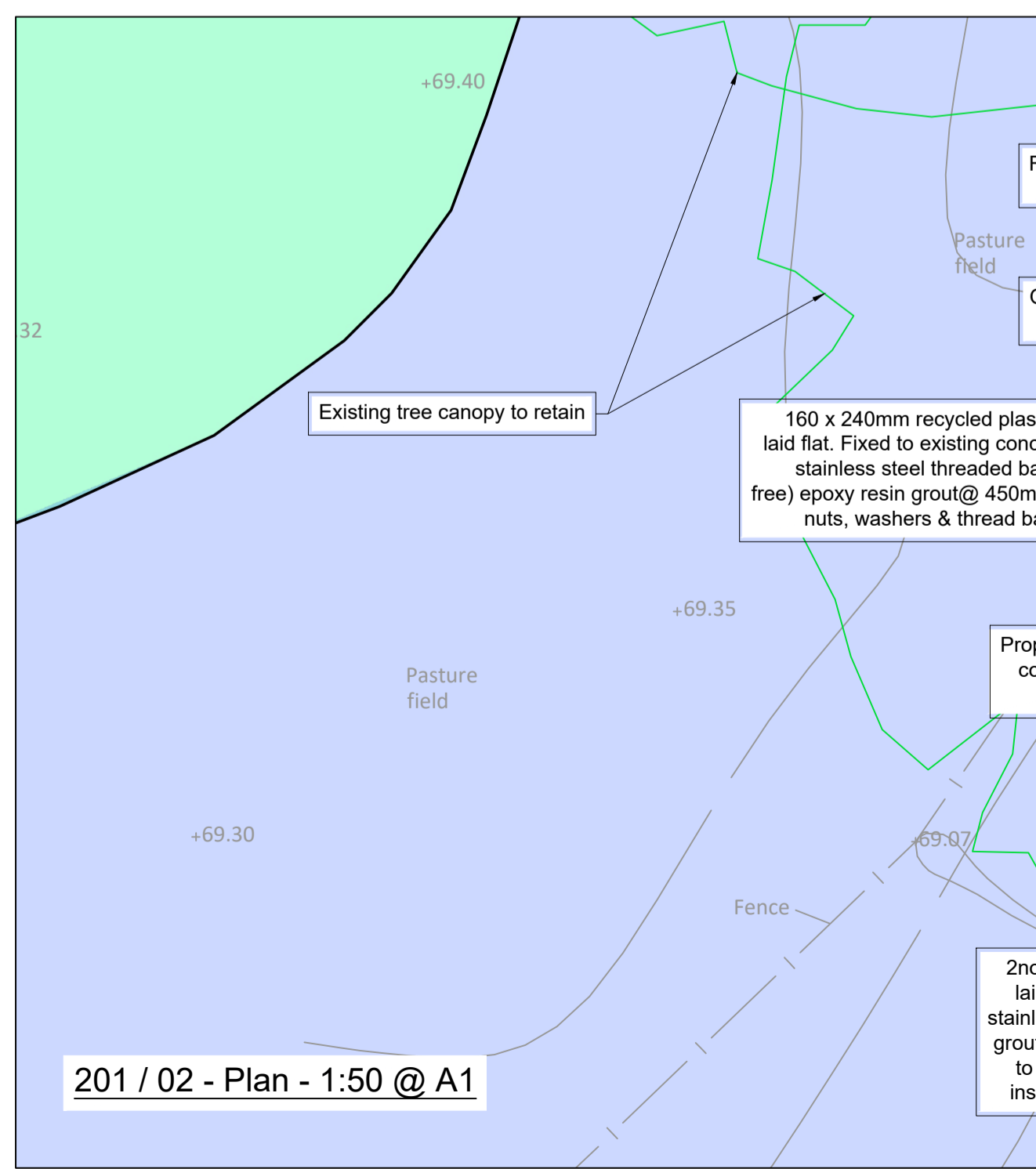
Safety Health & Environmental	
Refer to DRA and pre-construction phase plan.	
<b>CONSTRUCTION</b>	
<b>C1</b>	<b>Managing flow &amp; stage levels in River Exe</b> -Monitor river levels & EA flood warnings.
<b>C2</b>	<b>Working near water</b> -Check appropriate PPE & life jackets, access points and throw lines & life buoys are located bankside. -Assess bank stability / conditions considering access for personnel and machinery
<b>C3</b>	<b>Risk of falls from height</b> - Check adequate provision of guard rails and access points.
<b>C4</b>	<b>Access &amp; Lifting</b> -Check / agree an access through the land with the Landowner. -Screen to be lifted by excavator. -Stintly observe lifting plans.
<b>C5</b>	<b>Services</b> - Check for identified & unidentified services by review of PCI, CATscan & GPR survey and mark-up prior to start of works.
<b>C6</b>	<b>Interface with public &amp; other site operations</b> - Erect secure Heras fencing with lockable gates around the site compound and bankside working area.
<b>E1</b>	<b>Pollution of Watercourse</b> -Observe 'Guidance for Pollution Prevention 2018' -Observe Site Waste Management, Site Environmental Emergency and Incident Response Plans.
For information relating to Use, Cleaning and Maintenance see the Health and Safety File	
It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement	

200 - Site Location Plan - 1:1250 @ A1

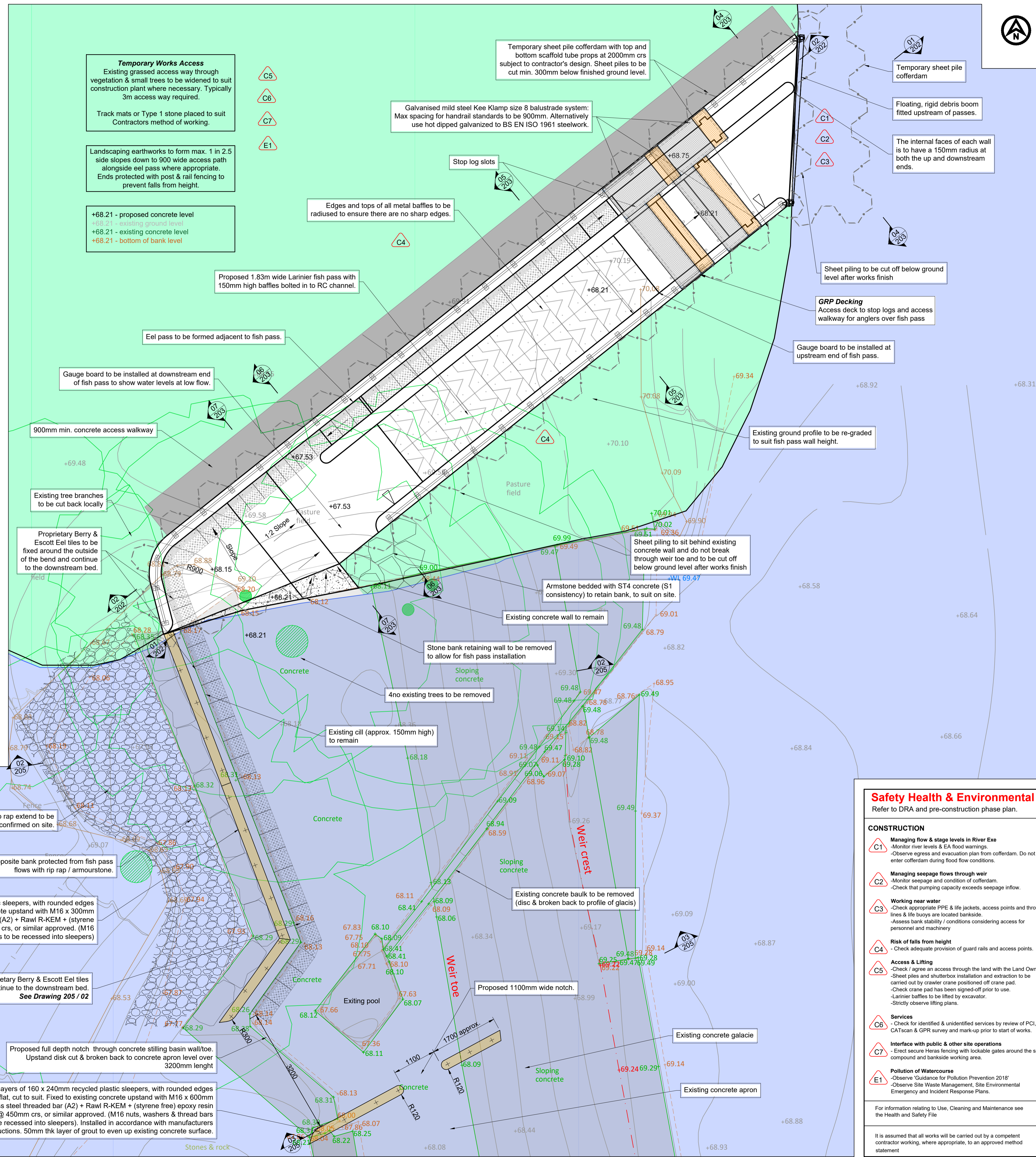
Drawing No.	Project No.	Issue
300 -	02925 -	P01



201 / 01 - Plan - 1:250 @ A1



201 / 02 - Plan - 1:50 @ A1



**Temporary Works Access**  
Existing grassed access way through vegetation & small trees to be widened to suit construction plant where necessary. Typically 3m access way required.  
Track mats or Type 1 stone placed to suit Contractors method of working.

Landscaping earthworks to form max. 1 in 2.5 side slopes down to 900 wide access path alongside eel pass where appropriate. Ends protected with post & rail fencing to prevent falls from height.

+68.21 - proposed concrete level  
+68.21 - existing ground level  
+68.21 - existing concrete level  
+68.21 - bottom of bank level

Galvanised mild steel Kee Klamp size 8 balustrade system: Max spacing for handrail standards to be 900mm. Alternatively use hot dipped galvanized to BS EN ISO 1961 steelwork.

Temporary sheet pile cofferdam with top and bottom scaffold tube props at 2000mm crs subject to contractor's design. Sheet piles to be cut min. 300mm below finished ground level.

Temporary sheet pile cofferdam

Floating, rigid debris boom fitted upstream of passes.

The internal faces of each wall is to have a 150mm radius at both the up and downstream ends.

Sheet piling to be cut off below ground level after works finish

**GRP Decking**  
Access deck to stop logs and access walkway for anglers over fish pass

Gauge board to be installed at upstream end of fish pass.

Existing ground profile to be re-graded to suit fish pass wall height.

Gauge board to be installed at downstream end of fish pass to show water levels at low flow.

Existing tree branches to be cut back locally

Proprietary Berry & Escott Eel tiles to be fixed around the outside of the bend and continue to the downstream bed.

Armstone bedded with ST4 concrete (S1 consistency) to retain bank, to suit on site.

Existing concrete wall to remain

Stone bank retaining wall to be removed to allow for fish pass installation

4no existing trees to be removed

Existing cill (approx. 150mm high) to remain

Existing concrete bank to be removed (disc & broken back to profile of glacis)

Rip rap extend to be confirmed on site.

Opposite bank protected from fish pass flows with rip rap / armourstone.

160 x 240mm recycled plastic sleepers, with rounded edges laid flat. Fixed to existing concrete upstand with M16 x 300mm stainless steel threaded bar (A2) + Rawl R-KEM + (styrene free) epoxy resin grout @ 450mm crs, or similar approved. (M16 nuts, washers & thread bars to be recessed into sleepers)

Proprietary Berry & Escott Eel tiles continue to the downstream bed. See Drawing 205 / 02

Proposed full depth notch through concrete stilling basin wall/toe. Upstand disk cut & broken back to concrete apron level over 3200mm length

2no. layers of 160 x 240mm recycled plastic sleepers, with rounded edges laid flat, cut to suit. Fixed to existing concrete upstand with M16 x 600mm stainless steel threaded bar (A2) + Rawl R-KEM + (styrene free) epoxy resin grout @ 450mm crs, or similar approved. (M16 nuts, washers & thread bars to be recessed into sleepers). Installed in accordance with manufacturers instructions. 50mm thick layer of grout to even up existing concrete surface.

- NOTES:
- DIMENSIONS:**
    - Are in millimetres unless otherwise stated.
    - Marked thus (\*) are approximate.
    - All levels are in metres to Site Datum.
  - SPECIFICATION:**

All works to be carried out in accordance with the Environment Agency Minimum Technical Requirements which shall be the Civil Engineering Specification for the Water Industry (CESWI). All technical requirements clauses apply unless stated as deleted, amended or augmented in accordance with the EA WEM Contract Works Information documentation.

Issue	Description	Date
P06	Eel tiles added DS	09.11.23
P05	Minor amendment	27.03.23
P04	Minor amendment	01.03.23
P03	Minor amendment	17.01.23
P02	GRP walkway over fish pass added	03.11.22
P01	Initial Issue	01.04.22

Detailed Design	
Scales	1:50
Original Size	A1
Grid	

Current Issue Signatures	
Author	J.Czyrw
Checker	M. Lakin
Approver	S. Pudwell
© Copyright reserved	



PROJECT  
**Bolham Fish Pass**

TITLE  
**Site Plan**

Drawing No.	Project No.	Issue
201 -	02925	P06

**Safety Health & Environmental**  
Refer to DRA and pre-construction phase plan.

**CONSTRUCTION**

- C1 Managing flow & stage levels in River Exe**
  - Monitor river levels & EA flood warnings.
  - Observe egress and evacuation plan from cofferdam. Do not enter cofferdam during flood flow conditions.
- C2 Managing seepage flows through weir**
  - Monitor seepage and condition of cofferdam.
  - Check that pumping capacity exceeds seepage inflow.
- C3 Working near water**
  - Check appropriate PPE & life jackets, access points and throw lines & life buoys are located bankside
  - Assess bank stability / conditions considering access for personnel and machinery
- C4 Risk of falls from height**
  - Check adequate provision of guard rails and access points.
- C5 Access & Lifting**
  - Check / agree an access through the land with the Land Owner.
  - Sheet piles and shutterbox installation and extraction to be carried out by crawler crane positioned off crane pad.
  - Check crane pad has been signed-off prior to use.
  - Larinier baffles to be lifted by excavator.
  - Strictly observe lifting plans.
- C6 Services**
  - Check for identified & unidentified services by review of PCI, CATScan & GPR survey and mark-up prior to start of works.
- C7 Interface with public & other site operations**
  - Erect secure Heras fencing with lockable gates around the site compound and bankside working area.
- E1 Pollution of Watercourse**
  - Observe Guidance for Pollution Prevention 2018
  - Observe Site Waste Management, Site Environmental Emergency and Incident Response Plans.

For information relating to Use, Cleaning and Maintenance see the Health and Safety File

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

NOTES:

- 1. DIMENSIONS:**
  - Are in millimetres unless otherwise stated.
  - Marked thus (\*) are approximate.
  - All levels are in metres to Site Datum.
- 2. SPECIFICATION:**

All works to be carried out in accordance with the Environment Agency Minimum Technical Requirements which shall be the Civil Engineering Specification for the Water Industry (CESWI). All technical requirements clauses apply unless stated as deleted, amended or augmented in accordance with the EA WEM Contract Works Information documentation.

  - 3. RC CONCRETE:**
    - All concrete to comply with BS 8500-2.
    - Concrete to have a min. strength class of C35 / 45.
    - Designed Concrete Specification for Fish Pass walls and base with 60 mm cover
      - Compressive strength class = C35/45
      - Maximum water/cement ratio = 0.40
      - Minimum cement/combination content = 380 kg/m<sup>3</sup>
      - Recommended cement/combinations types = CEM I,IIIA (Max. 50% ggbs)
      - Maximum aggregate size = 20 mm
      - Chloride content class = Cl 0, 20
      - Consistency class = S2
  - Reinforcement: All steel reinforcement shall be deformed Type 2 and shall be cut and bent to BS4466 or BS 4449. It is to be obtained from firms holding a valid Certificate of Approval for the manufacture and/or fabrication of steel reinforcement issued by the UK Certification Authority for Reinforcing Steels.
  - Tying wire for steel reinforcement shall be 1.6mm diameter, annealed mild steel wire complying with BS1052.
  - **MJ:** Movement joint to comprise 20mm thick hydrocell compressible filler + elastomeric sealant finish (e.g. Nitoseal MS300) or similar approved. Joint filler hydrocell to be fixed to concrete surfaces with Joint Filler Adhesive (rubber based one part contact adhesive)
- 4. FORMWORK:**
  - Exposed formed concrete surfaces to have a fair worked finish unless otherwise indicated.
  - Exposed unformed concrete surfaces to have a wood float finish unless otherwise indicated.
  - Outside edges to have 25mm chamfer. (End 'butting edges' to have square edge).
- 5. MASS CONCRETE**
  - All concrete to comply with BS 8500-2
  - Gen3 mass concrete
  - Max 20mm Aggregate
  - S2 consistency class
- 6. RIP RAP ROCK:**
  - Riprap with mass grading as per BS EN 13383-1:2013 category A standard light grading of LMA40/200.

Issue	Description	Date
P05	Eel tiles added DS	09.11.23
P04	Minor amendment	01.03.23
P03	Minor amendment	17.01.23
P02	GRP walkway over fish pass added	03.11.22
P01	Initial Issue	01.04.22

Status		Detailed Design	
Scale	As Shown	Current Issue Signatures	
Original Size	A1	Author	J. Czyr
Datum		Checker	M. Lakin
Grid		Approver	S. Pudwell
© Copyright reserved			

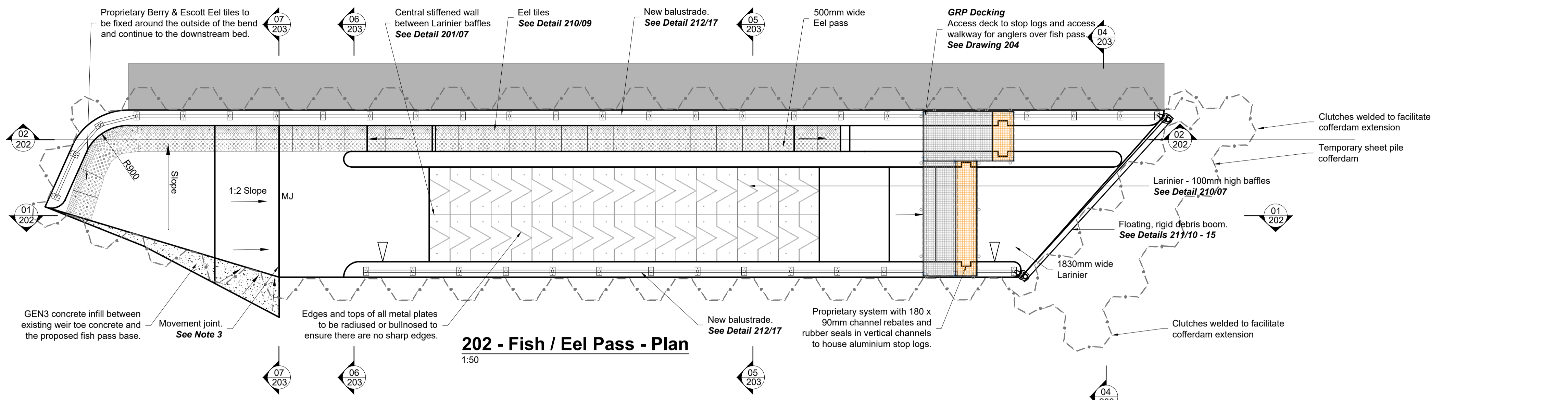
Filename:  
Client:



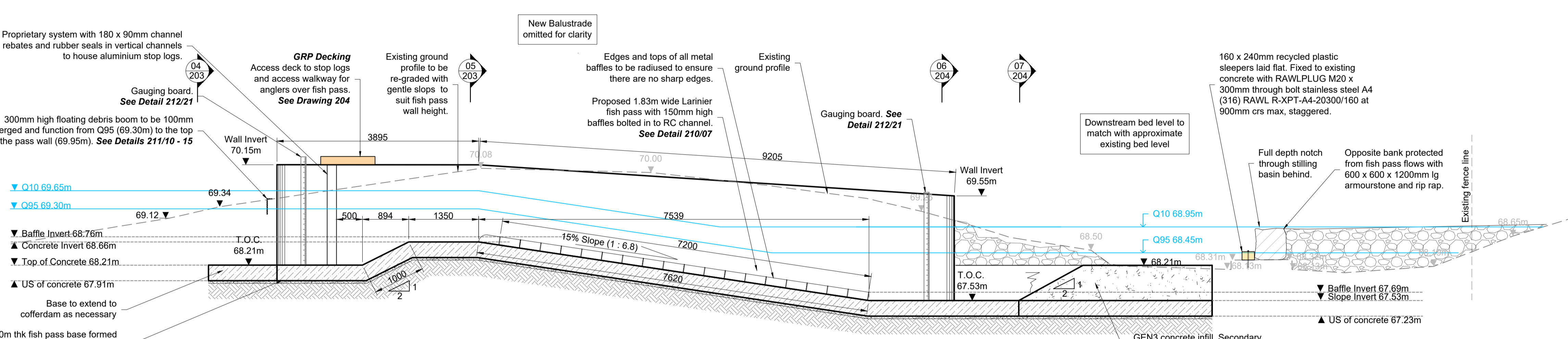
PROJECT  
**Bolham Fish Pass**

TITLE  
**Plans & Sections**

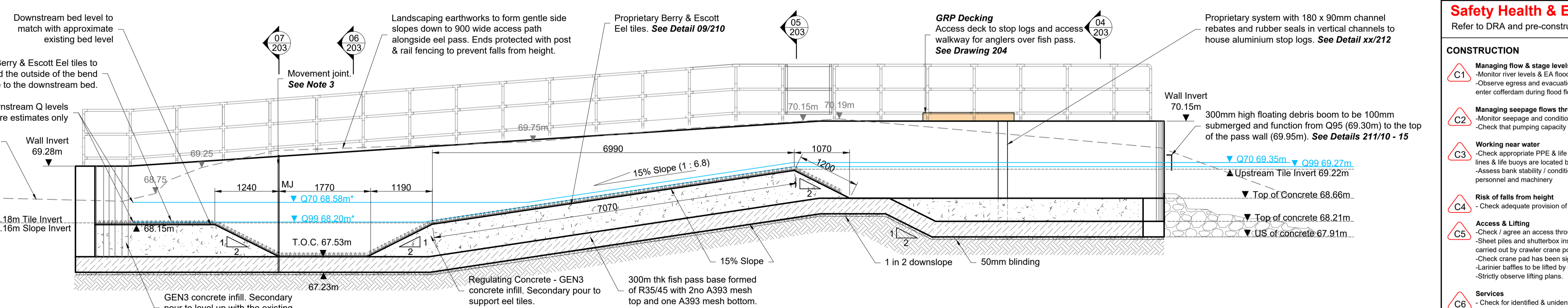
Drawing No.	Project No.	Issue
202 -	02925	- P05



**202 - Fish / Eel Pass - Plan**  
1:50



**202 / 01 - Larinier Fish Pass - Typical Long Section**  
1:50



**202 / 02 - Eel Pass - Typical Long Section**  
1:50

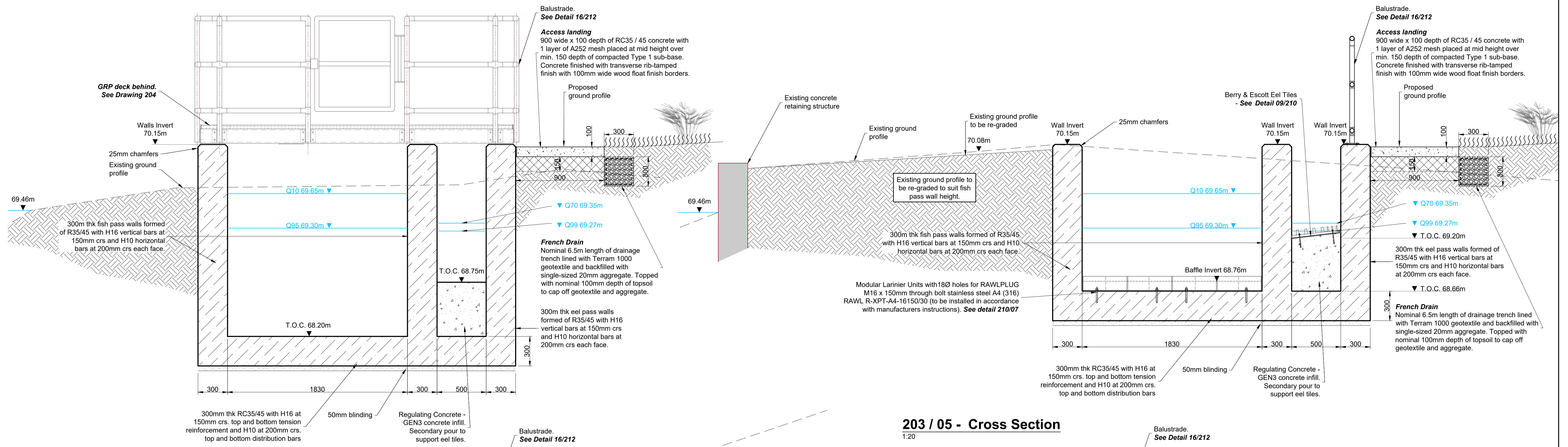
**Safety Health & Environmental**  
Refer to DRA and pre-construction phase plan.

**CONSTRUCTION**

- C1 Managing flow & stage levels in River Exe**
  - Monitor river levels & EA flood warnings.
  - Observe egress and evacuation plan from cofferdam. Do not enter cofferdam during flood flow conditions.
- C2 Managing seepage flows through weir**
  - Monitor seepage and condition of cofferdam.
  - Check that pumping capacity exceeds seepage inflow.
- C3 Working near water**
  - Check appropriate PPE & life jackets, access points and throw lines & life buoys are located bankside.
  - Assess bank stability / conditions considering access for personnel and machinery
- C4 Risk of falls from height**
  - Check adequate provision of guard rails and access points.
- C5 Access & Lifting**
  - Check / agree an access through the land with the Land Owner.
  - Sheet piles and shutterbox installation and extraction to be carried out by crawler crane positioned off crane pad.
  - Check crane pad has been signed-off prior to use.
  - Larinier baffles to be filled by excavator.
  - Strictly observe lifting plans.
- C6 Services**
  - Check for identified & unidentified services by review of PCI, CATScan & GPR survey and mark-up prior to start of works.
- C7 Interface with public & other site operations**
  - Erect secure Heras fencing with lockable gates around the site compound and bankside working area.
- E1 Pollution of Watercourse**
  - Observe Guidance for Pollution Prevention 2018
  - Observe Site Waste Management, Site Environmental Emergency and Incident Response Plans.

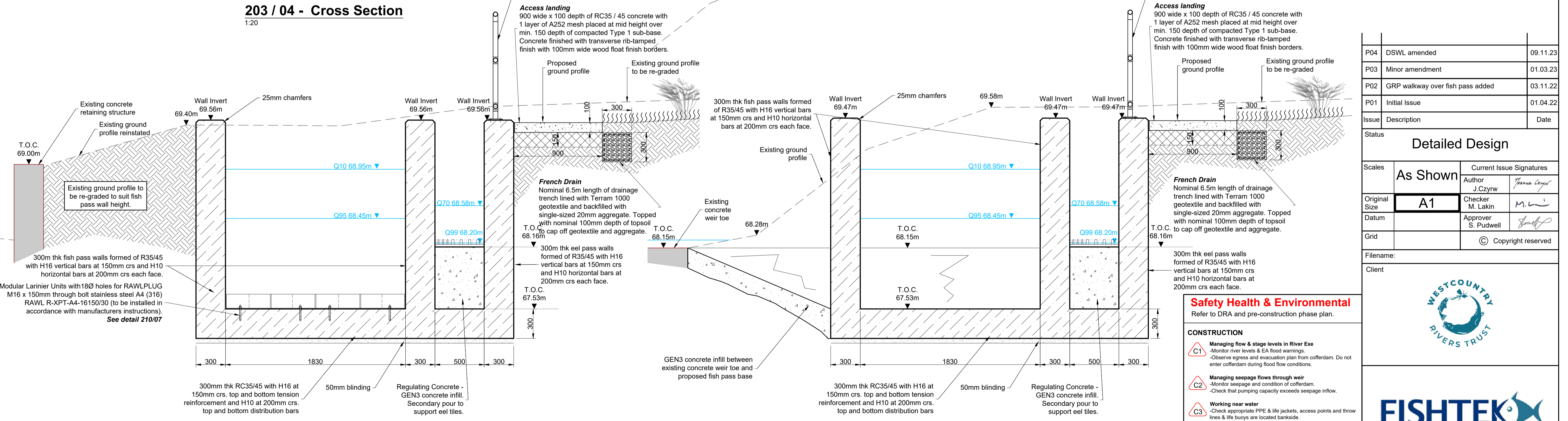
For information relating to Use, Cleaning and Maintenance see the Health and Safety File

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement



**203 / 04 - Cross Section**  
1:20

**203 / 05 - Cross Section**  
1:20



**203 / 06 - Cross Section**  
1:20

**203 / 07 - Cross Section**  
1:20

- NOTES:**
- 1. DIMENSIONS:**
    - Are in millimetres unless otherwise stated.
    - Marked thus (\*) are approximate.
    - All levels are in metres to Site Datum.
  - 2. SPECIFICATION:**
    - All works to be carried out in accordance with the Environment Agency Minimum Technical Requirements which shall be the Civil Engineering Specification for the Water Industry (CESWI). All technical requirements clauses apply unless stated as deleted, amended or augmented in accordance with the EA WEM Contract Works Information documentation.
  - 3. RC CONCRETE:**
    - All concrete to comply with BS 8500-2.
    - Concrete to have a min. strength class of C35 / 45.
    - Designed Concrete Specification for Fish Pass walls and base with 60 mm cover
      - Compressive strength class = C35/45
      - Maximum water/cement ratio = 0.40
      - Minimum cement/combination content = 380 kg/m<sup>3</sup>
      - Recommended cement/combinations types = CEM I, IIIA (Max. 50% ggbs)
      - Maximum aggregate size = 20 mm
      - Chloride content class = Cl 0, 20
      - Consistence class = S2
    - Reinforcement: All steel reinforcement shall be deformed Type 2 and shall be cut and bent to BS4466 or BS 4449. It is to be obtained from firms holding a valid Certificate of Approval for the manufacture and/or fabrication of steel reinforcement issued by the UK Certification Authority for Reinforcing Steels.
  - 4. FORMWORK:**
    - Exposed formed concrete surfaces to have a fair worked finish unless otherwise indicated.
    - Exposed unformed concrete surfaces to have a wood float finish unless otherwise indicated.
    - Outside edges to have 25mm chamfer. (End 'abutting edges' to have square edge).
  - 5. MASS CONCRETE**
    - All concrete to comply with BS 8500-2
    - Gen3 mass concrete
    - Max 20mm Aggregate
    - S2 consistency class
  - 6. RIP RAP ROCK:**
    - Riprap with mass grading as per BS EN 13383-1:2013 category A standard light grading of LMA40/200.
- Tying wire for steel reinforcement shall be 1.6mm diameter, annealed mild steel wire complying with BS1052.
- MJ:** Movement joint to comprise 20mm thick hydrocell compressible filler + elastomeric sealant finish (e.g. Nitoseal MS300) or similar approved. Joint filler hydrocell to be fixed to concrete surfaces with Joint Filler Adhesive (rubber based one part contact adhesive)

**Safety Health & Environmental**  
Refer to DRA and pre-construction phase plan.

**CONSTRUCTION**


- C1** Managing flow & stage levels in River Exe
  - Monitor river levels & EA flood warnings.
  - Observe egress and evacuation plan from cofferdam. Do not enter cofferdam during flood flow conditions.
- C2** Managing seepage flows through weir
  - Monitor seepage and condition of cofferdam.
  - Check that pumping capacity exceeds seepage inflow.
- C3** Working near water
  - Check appropriate PPE & life jackets, access points and throw lines & life buoys are located bankside.
  - Assess bank stability / conditions considering access for personnel and machinery
- C4** Risk of falls from height
  - Check adequate provision of guard rails and access points.
- C5** Access & Lifting
  - Check / agree an access through the land with the Land Owner.
  - Sheet piles and shutterbox installation and extraction to be carried out by crawler crane positioned off crane pad.
  - Check crane pad has been signed-off prior to use.
  - Lanier baffles to be lifted by excavator.
  - Strictly observe lifting plans.
- C6** Services
  - Check for identified & unidentified services by review of PCI, CATscan & GPR survey and mark-up prior to start of works.
- C7** Interface with public & other site operations
  - Erect secure Hera fencing with lockable gates around the site compound and bankside working area.
- E1** Pollution of Watercourse
  - Observe 'Guidance for Pollution Prevention 2018'
  - Observe Site Waste Management, Site Environmental Emergency and Incident Response Plans.

For information relating to Use, Cleaning and Maintenance see the Health and Safety File

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement.

P04	DSWL amended	09.11.23
P03	Minor amendment	01.03.23
P02	GRP walkway over fish pass added	03.11.22
P01	Initial Issue	01.04.22
Issue	Description	Date
Status		
Detailed Design		
Scales		Current Issue Signatures
As Shown		Author J.Czyrwy
Original Size	A1	Checker M. Lakin
Datum		Approver S. Pudwell
Grid		© Copyright reserved

Client



**FISHTEK CONSULTING**

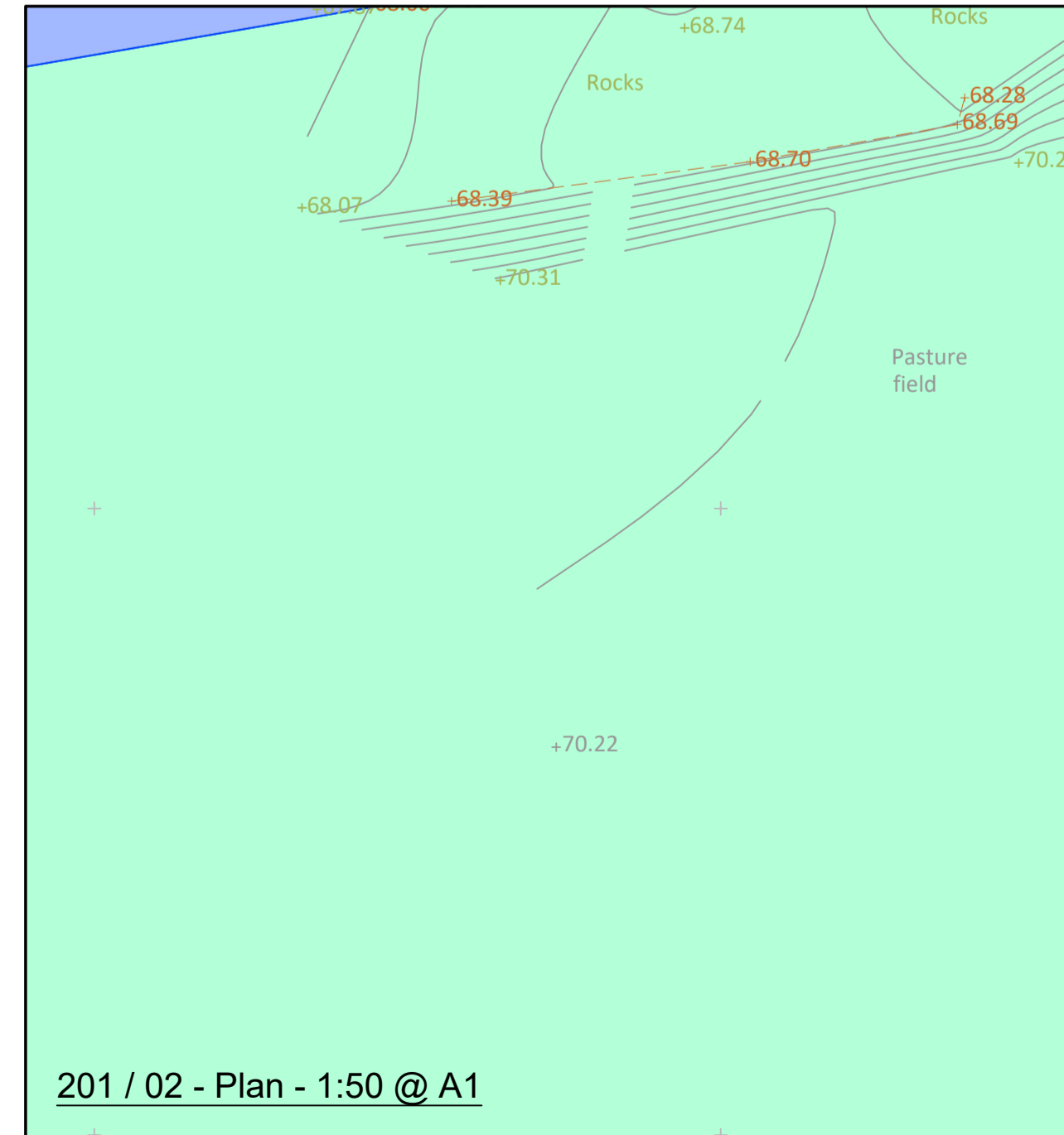
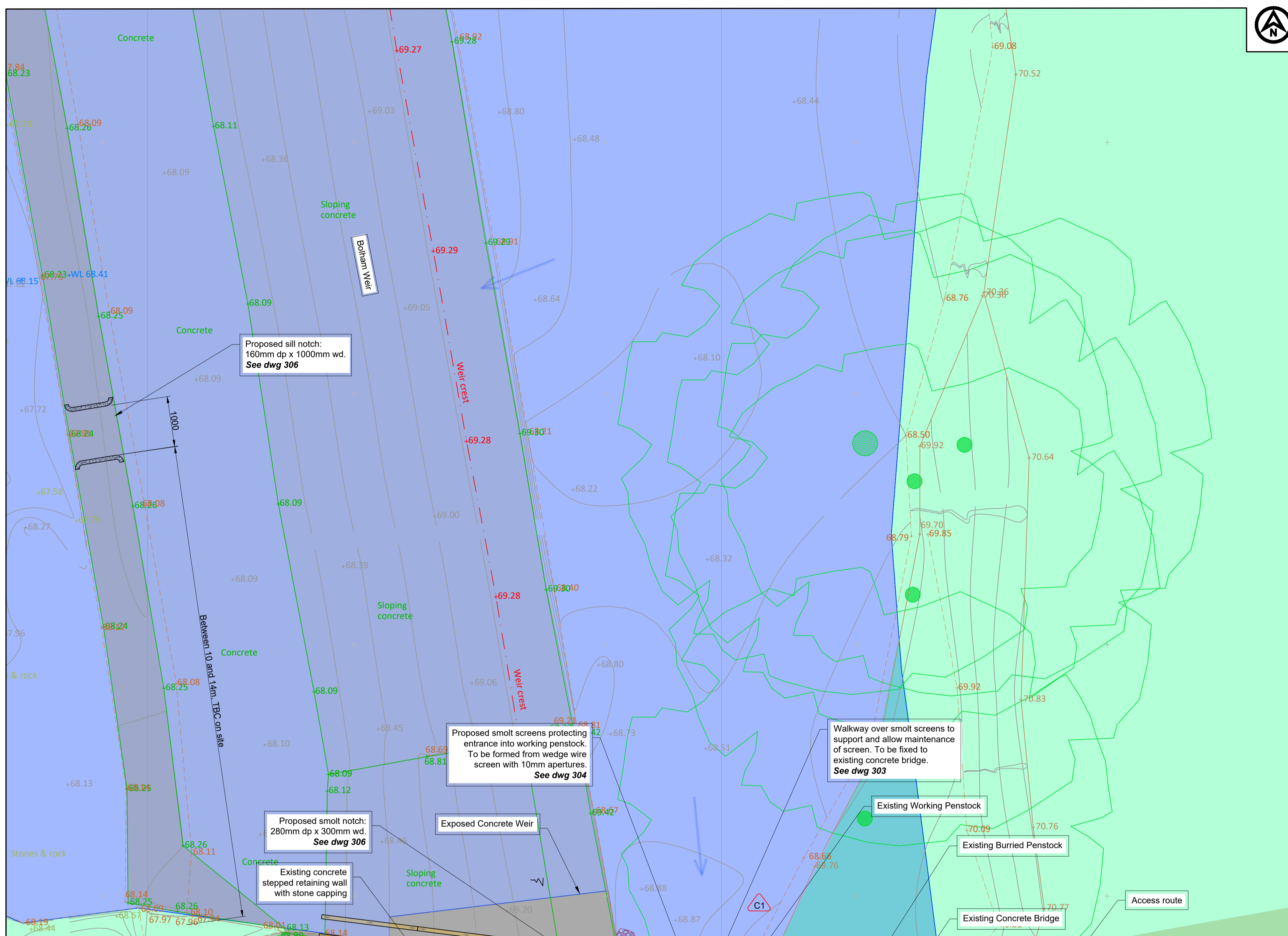
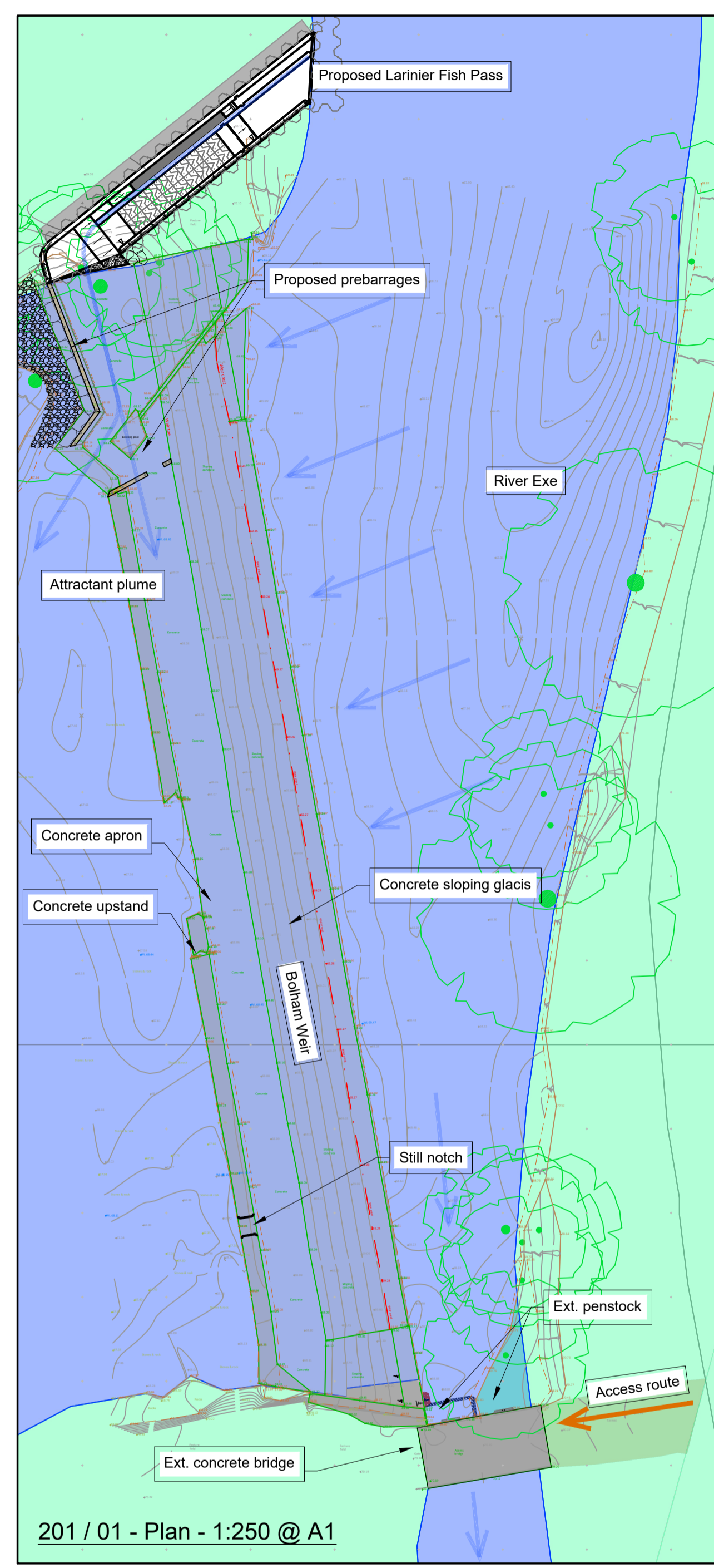
PROJECT

**Bolham Fish Pass**

TITLE

**Sections Sheet 2 of 2**

Drawing No.	Project No.	Issue
203 -	02925	- P04



NOTES:

**1. DIMENSIONS:**

- Are in millimetres unless otherwise stated.
- Marked thus (\*) are approximate.
- All levels are in metres to Site Datum.

**2. SPECIFICATION:**

All works to be carried out in accordance with the Environment Agency Minimum Technical Requirements which shall be the Civil Engineering Specification for the Water Industry (CESWI). All technical requirements clauses apply unless stated as deleted, amended or augmented in accordance with the EA WEM Contract Works Information documentation.

P03	Sill Notch added	03.11.22
P02	Notch slope added	26.08.22
P01	Initial Issue	18.07.22
Issue	Description	Date

<b>Detailed Design</b>		
Scales	1:50	Current Issue Signatures
Original Size	A1	Author J.Czyrw
Datum		Checker M. Lakin
Grid		Approver S. Pudwell
© Copyright reserved		



PROJECT

**Bolham Weir  
Smolt Screen & Smolt Notch**

TITLE

**Site Plan**

**Safety Health & Environmental**  
Refer to DRA and pre-construction phase plan.

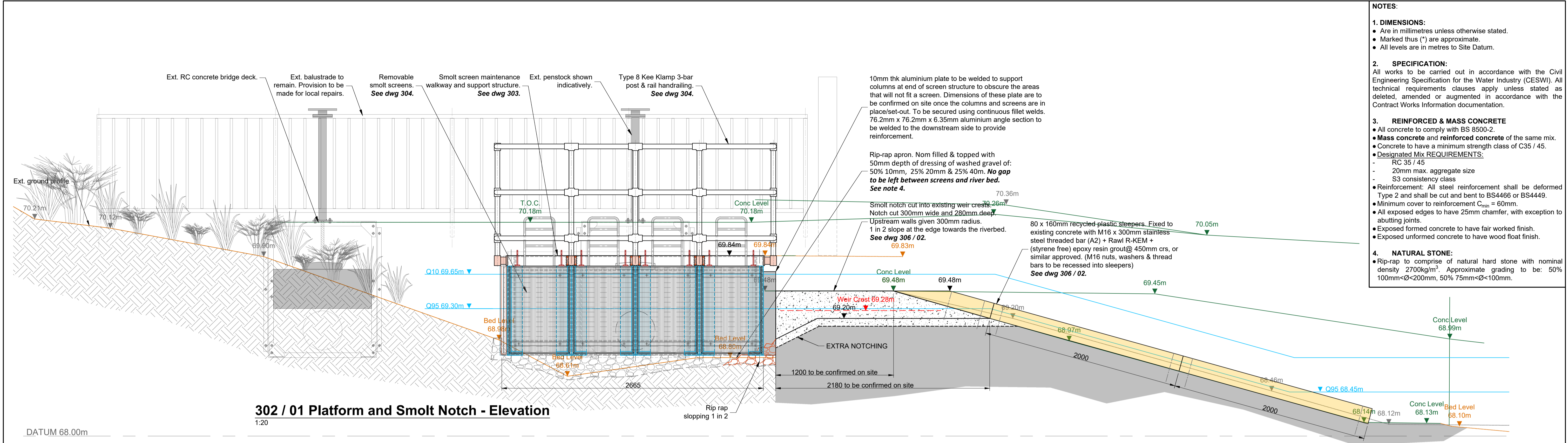
**CONSTRUCTION**

- C1** Managing flow & stage levels in River Exe
  - Monitor river levels & EA flood warnings.
- C2** Working near water
  - Check appropriate PPE & life jackets, access points and throw lines & life buoys are located bankside.
  - Assess bank stability / conditions considering access for personnel and machinery
- C3** Risk of falls from height
  - Check adequate provision of guard rails and access points.
- C4** Access & Lifting
  - Check / agree an access through the land with the Landowner.
  - Screen to be lifted by excavator.
  - Strictly observe lifting plans.
- C5** Services
  - Check for identified & unidentified services by review of PCI, CATScan & GPR survey and mark-up prior to start of works.
- C6** Interface with public & other site operations
  - Erect secure Heras fencing with lockable gates around the site compound and bankside working area.
- E1** Pollution of Watercourse
  - Observe 'Guidance for Pollution Prevention 2018'
  - Observe Site Waste Management, Site Environmental Emergency and Incident Response Plans.

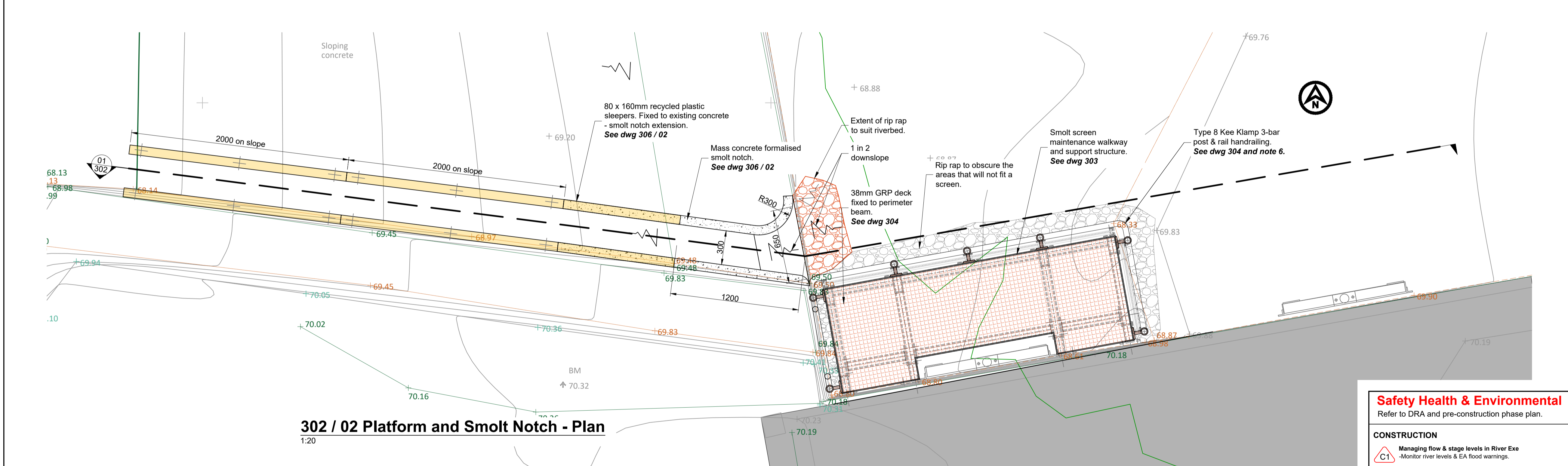
For information relating to Use, Cleaning and Maintenance see the Health and Safety File

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Drawing No.	Project No.	Issue
301 -	02925 -	P03

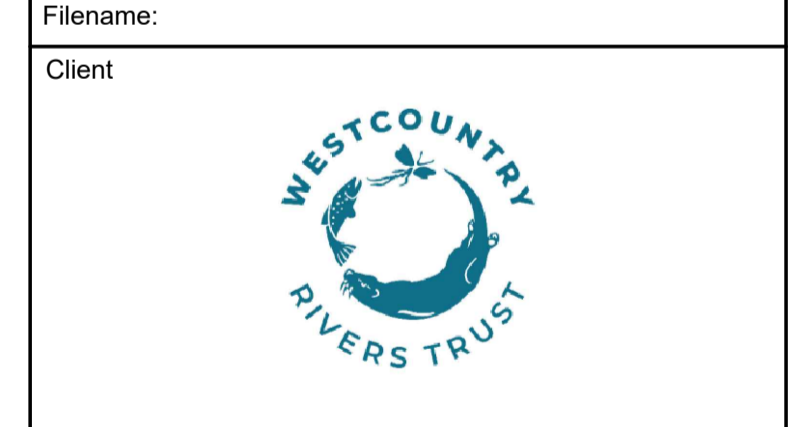


- NOTES:**
- DIMENSIONS:**
    - Are in millimetres unless otherwise stated.
    - Marked thus (\*) are approximate.
    - All levels are in metres to Site Datum.
  - SPECIFICATION:**
    - All works to be carried out in accordance with the Civil Engineering Specification for the Water Industry (CESWI). All technical requirements clauses apply unless stated as deleted, amended or augmented in accordance with the Contract Works Information documentation.
  - REINFORCED & MASS CONCRETE**
    - All concrete to comply with BS 8500-2.
    - Mass concrete and reinforced concrete of the same mix.
    - Concrete to have a minimum strength class of C35 / 45.
    - Designated Mix REQUIREMENTS:
      - RC 35 / 45
      - 20mm max. aggregate size
      - S3 consistency class
    - Reinforcement: All steel reinforcement shall be deformed Type 2 and shall be cut and bent to BS4466 or BS4449.
    - Minimum cover to reinforcement  $C_{min} = 60mm$ .
    - All exposed edges to have 25mm chamfer, with exception to abutting joints.
    - Exposed formed concrete to have fair worked finish.
    - Exposed unformed concrete to have wood float finish.
  - NATURAL STONE:**
    - Rip-rap to comprise of natural hard stone with nominal density  $2700kg/m^3$ . Approximate grading to be: 50%  $100mm < \phi < 200mm$ , 50%  $75mm < \phi < 100mm$ .



Issue	Description	Date
P06	Chute walls raised	09.11.23
P05	Minor amendments	01.03.23
P04	Screen handles amended	03.11.22
P03	Drawing rearranged	15.09.22
P02	Notch slope added	26.08.22
P01	Initial Issue	18.07.22

Status		
<b>Detailed Design</b>		
Scale	As Shown	Current Issue Signatures
Original Size	A1	Author: J. Czyrw, Checker: M. Lakin, Approver: S. Pudwell
© Copyright reserved		



**PROJECT**

Bolham Weir  
Smolt Screen & Smolt Notch

**TITLE**

Platform & Smolt Notch  
General Arrangement

**Safety Health & Environmental**  
Refer to DRA and pre-construction phase plan.

**CONSTRUCTION**

- C1 Managing flow & stage levels in River Exe** - Monitor river levels & EA flood warnings.
- C2 Working near water** - Check appropriate PPE & life jackets, access points and throw lines & life buoys are located bankside. - Assess bank stability / conditions considering access for personnel and machinery.
- C3 Risk of falls from height** - Check adequate provision of guard rails and access points.
- C4 Access & Lifting** - Check / agree an access through the land with the Landowner. - Screen to be lifted by excavator. - Strictly observe lifting plans.
- C5 Services** - Check for identified & unidentified services by review of PCI, CATscan & GPR survey and mark-up prior to start of works.
- C6 Interface with public & other site operations** - Erect secure Heras fencing with lockable gates around the site compound and bankside working area.
- E1 Pollution of Watercourse** - Observe 'Guidance for Pollution Prevention 2018' - Observe Site Waste Management, Site Environmental Emergency and Incident Response Plans.

For information relating to Use, Cleaning and Maintenance see the Health and Safety File.

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement.

Drawing No.	Project No.	Issue
302 -	02925 -	P06