B10 GENERALLY

B10/010 PREAMBLE

The work includes remedial works to the stream banks at Polson Bridge Gauging Station, Launceston, National Grid Reference SX3530487 as shown below:

The gauging station provides level monitoring from the River Tamar as part of a strategic monitoring network for Roadford reservoir and its associated water transfer schemes and is used to initiate flood warnings.

Water levels within the river can reach **in excess of 3.0m deep** during flood events. This project requires working within the watercourse and monitoring of weather and water levels to ensure safe execution of the works.

Access to the works either side of the river is by land under other ownership. EA have permission to access the site provided any disturbed surfaces are reinstated.

All references to left-hand and right-hand banks in this report are made with reference to the view looking downstream from above the weir.

The works involve:

- **PREPARATORY WORKS**
- **REMEDIAL WORKS TO LEFT HAND BANK**
- **REMEDIAL WORKS TO RIGHT HAND BANK**
- **WITHDRAWAL FROM SITE**

The general arrangement of the site is shown in the following photos:

Left-hand bank

Left hand bank

Right hand bank

Right hand bank

THE FOLLOWING ITEMS DESCRIBE THE MAIN ITEMS OF WORK TO BE CARRIED OUT. ALLOW FOR ALL WORKS NECESSARY TO SATISFACTORILY COMPLETE THE WORKS.

THE CONTRACTOR SHALL LIST AND PRICE ANY OTHER ITEMS OF PLANT, TEMPORARY WORKS, MATERIALS AND/OR LABOUR FOR WHICH HE/SHE HAS NOT INCLUDED PRICES ELSEWHERE AND FOR WHICH HE/SHE WISHES PROVISION TO BE MADE.

B10/020 PRE-COMMENCEMENT SURVEY

B10/030 NOT REQUIREDPHOTOGRAPHIC RECORD

Prior to commencement complete a photographic survey of the condition of the external paving's and features external to the building to facilitate any associated reinstatement following completion of the works.

Take full record details and photographs of all associated walls, buildings and other adjacent features to assist in determining any defect reinstatement requirements.

Before using the land on the left hand (Devon) bank compile a pre-commencement photographic condition survey starting at the access from the A388 into the farm driveway and the access into the first field and covering all other areas and features that might be affected by the Contractors use of this land. Include all working areas, storage areas etc, hedges, fences, walls, gateways, stream crossings, stiles, trees and the like.

Include in the photographic survey as much of the concrete weir structure and its wing walls as is practical.

Submit photographic record to CA prior to commencing work on site.

B10/040 ACCESS TO SITE

The site is in a rural location and requires work to both banks of the River Tamar.

Existing pedestrian access is available to the riverbed from the steps formed in the right-hand bank. The riverbed is uneven and should not be crossed on foot.

Vehicular/plant access is available to both riverbanks from the A388 via amenity and agricultural land.

Allow for the provision of site facilities and for the safe storage of materials. Allow to secure and prevent unauthorised access to the site. Allow for the hire and location of skips, to include the removal of all debris from site.

Develop detailed drawings for contractors' compound to be located in a field adjacent to left-hand riverbank. Landowner approval will be required.

The principal landowners on and adjacent to the site are:

- **Right hand bank access/approach to site-**

[redacted]

- **Left hand bank access/approach to site-**

[redacted]

- Permission has been gained to carry out the works using the access points, routes and site areas specified in Crabb DMC Drawing 21014-0-CB-100. The Environment Agency will be required to serve notice prior to the works.
- In the summer months there may be a tenant farmer using the left-hand bank field for cattle or sheep grazing. The landowner is aware of the proposed work and has agreed to make suitable arrangements to relocate cattle elsewhere.
- There are no current long term lease arrangements for the site and permissions by the landowners are only temporary.

B10/050 WATER LEVEL MONITORING

The site shall be added to the EAs "High Risks Sites Log" the Flood Incident Duty Officer (FIDO) will contact the Site Manager should a flood warning be identified.

A responsible person shall also be identified by the contractor to monitor water levels within the river.

The contractor shall identify the responsible person prior to commencement of the works. It is anticipated that this will be the Site Manager.

Data on water levels for the last 5 days is available at: https://flood-warning-information.service.gov.uk/station/3203

The National River Flow Archive provides live data, and historic data on flow rates at: https://nrfa.ceh.ac.uk/data/station/meanflow/47019

It is expected that the Site Manager will sign up to the Environment Agency flood warning system at https://www.gov.uk/sign-up-for-flood-warnings. The information informs the actions taken by the contractor as identified in the following table which, where blank, shall be completed by the contractor in advance of commencement of the works:

Alert Level	Definition	Action	Responsibility
Flooding Alert	Flooding is possible be prepared		Project Manager
Flood Warnings	Flooding is expected – immediate action required	Cease all in river works	Project Manager
Sever Flood Warning	Severe flooding danger to life	Work called off in advance i.e., before flood event. Site closed, vacated, and secured	Project Manager

In addition to flood alerts the Site Manager will also be required to sign up to the Met Office weather warning system at: https://www.metoffice.goc.u/public/weahter/warnings The information inform the actions taken by the contractor as identified in the following table which, where blank, shall be completed by the contractor in advance of commencement of the works:

Alert Level	Definition	Action	Responsibility
Yellow: Be Aware	Yellow warnings can be issued for a range of weather situations. Many are issued when it is likely that the weather will cause some low-level impacts, including some disruption to travel in a few places. Other yellow warnings are issued when the weather could bring much more severe impacts to many people but the certainty of those impacts occurring is		Project Manager

	much lower. It is important to read the content of yellow warnings to determine which weather situation is being covered by the yellow warning		
Amber: Be Prepared	There is an increased likelihood of impacts from severe weather, which could potentially disrupt your works plans. This means there is the possibility of travel delays, road and rail closures, power cuts and the potential risk to life and property.		Project Manager
Red: Take Action	Dangerous weather is expected and, if you haven't already done so, you should take action now to keep yourself and your works force safe from the impact of the severe weather. It is very likely that there will be a risk to life, with substantial disruption to travel, energy supplies and possibly widespread. You should avoid travelling, where possible, and follow the advice of the emergency services and local authorities.	Work called off in advance i.e., before red weather warning Site closed, vacated, and secured	Project Manager

Working in the river will not be permitted when the water level is expected to rise above 0.50m on the gauging board.

B10/060 HOT WORKS:

Hot works are not planned for this site. any/all requests to complete hot works shall be planned and agreed with Project Manager prior to commencement. Hot works will be subject to approval of a detailed Risk Assessment and Method Statement (RAMS) by the Principal Designer.

Wherever possible hot works are to be eliminated.

B10/070 COMPLIANCE WITH CDM

Allow for complying with the CDM Regulations, including the preparation of Construction Phase Plan, the Health & Safety File & providing on site Welfare Facilities.

Pre-Construction Information has been prepared and should be reviewed by the construction team

CONSTRUCTION PHASE HEALTH AND SAFETY PLAN

The construction phase plan as a minimum shall contain:

- Method statements on how risks from hazards identified in the pre-construction information and other hazards identified by the contractor will be addressed/controlled.
- Details of the management structure and responsibilities.
- Arrangements for issuing health and safety directions.
- Procedures for informing other contractors and employees of health and safety hazards.
- Selection procedures for ensuring competency of other contractors, the self-employed and designers.
- Procedures for communications between the project team, other contractors and site operatives.
- Arrangements for cooperation and coordination between contractors.
- Procedures for carrying out risk assessment and for managing and controlling the risk.
- Emergency procedures including those for fire prevention and escape.
- Arrangements for ensuring that all accidents, illness and dangerous occurrences are recorded.
- Arrangements for welfare facilities.
- Procedures for ensuring that all persons on site have received relevant health and safety information and training.
- Arrangements for consulting with and taking the views of people on site.
- Arrangements for preparing site rules and drawing them to the attention of those affected and ensuring their compliance.
- Monitoring procedures to ensure compliance with site rules, selection and management procedures, health and safety standards and statutory requirements.
- Review procedures to obtain feedback.

B10/080 HANDOVER PROCESS & BUILDING MANUAL/HEALTH AND SAFETY FILE

Prepare and issue the Building Manual/Health and Safety File to the Principal Designer for review in full accordance with Preliminaries A37, presenting the data in the prescribed format, including the provision of all necessary certification.

Ensure that adequate resources are devoted to this critical activity, allow for all costs associated with this aspect of the Works, for arranging and implementing a formal running-in period of all plant, equipment and systems, for giving timely notice to the CA to ensure attendance at commissioning and testing, and for training, explaining, demonstrating to the Client the purpose, function and operation of the installations.

THE WORKS WILL NOT BE DEEMED COMPLETE UNTIL THE HEALTH AND SAFETY FILE HAS BEEN COMPLETED TO SATISFACITON OF THE PRINCIPAL DESIGNER

B10/090 SITE SET UP

Provide and erect Heras fencing to provide guarding and perimeter security to the site and compound.

Accept responsibility for any damage caused by lack of protection during the Works from weather or other cause.

Parking on site is available for off road vehicles. The contractor will be required to make arrangements for hardstanding for the parking of other vehicles.

Make arrangements for materials and welfare to be located above flood risk levels.

Identify minimal area for site deliveries and laydown of materials prior to offloading.

Provide temporary signage erected at entrances both sides of riverbank to warn public that construction works in progress.

All arrangements shall take into consideration the existing access and egress routes from the A388 as required to access both sides of the riverbank.

B10/0100 PREVENTION OF POLLUTION

Comply with EA SHEW CoP.

Contractors must engage with local Environment Agency Environment Officers to make use of their local knowledge and expertise in planning and undertaking works in or near to water bodies, including watercourses, marine, estuaries, boreholes, groundwater, reservoirs, etc.

Before starting works, contractors must ensure site drainage, pathways, watercourses and groundwater source protection zones have been identified. This information, together with site specific measures to prevent spread of pollution, must be included in the site environmental emergency plan or site pack, (following Environment Agency Pollution Prevention Guidance Note 21). This will include actions to be taken in the event of silt, concrete and other chemical incidents where these risks exist.

Particular attention should be given where risks such as grout/concrete and silt exist on the site formal site-specific arrangements including mitigation checks, communications lines and emergency actions must be developed and operatives must be trained in these. This should include a suitable arrangement for wash out of equipment, taking best practice into account to avoid pollution. Actions to take in the event of changes that could occur on site should also be identified.

Suitable pollution prevention measures, (e.g., 'nappies') should be put in place under attachments, parked plant or static equipment, (e.g., generator, pump) whenever there is a risk of fluid leaks or spillages, especially during refuelling operations or within 10m of a watercourse.

Evidence must be readily available that operatives have received training in the use of spill kits within the previous six-month period. Where works are anticipated to last more than 30 days or are being carried out in an environmentally sensitive site, where the risk of spills have the potential for significant impact, a mock exercise for each risk will be undertaken. This will be within 2 weeks of starting on site, unless otherwise defined in the CPP or Site Pack.

Spill kits must be appropriate to the risk and amount of fuel and oils on site and located to be readily available should there be a spillage. Suitable PPE, (such as goggles and impermeable gauntlet gloves) must be included in the spill kits.

Suitable provision must be provided on site for storage of hazardous waste, (e.g., following a spill) prior to its removal from site by a licensed carrier.

Contractors must minimise in-channel works as far as practicable and implement suitable mitigation measures where required, considering active spawning seasons and other restrictions on the site. **Water pollution and discolouration shall be kept to a minimum with dirty water pumped onto the adjoining grassland.**

Maintenance of site plant will be done in a way to minimise the environmental risk, with appropriate control measures in place.

All hydraulic oils supplied in plant under this Code of Practice must be defined as "Readily Biodegradable" and meet OECD 301B. Exceptions to this for specialist plant must be justified and the pollution risk assessed and approved in writing by the Environment Agency appointed person discharging the Client's duties.

The design assumes that the following precautions will be followed by the contractor:

- All machinery to be run on biodegradable hydraulic oils and fluids.
- All refuelling of machinery to be complete within the contractor's compound where spill kits will be available.

- Separate washout areas to be designated for cleaning all equipment coming into contact with concrete. Washout to be completed in compound away from riverbank with any waste directed into Skip and disposed of offsite.

Generally, all works will be completed in accordance with Works in, near or watercourses, PPG5: Prevent Pollution.

B20 PREPARATORY WORKS

B20/010 ACCESS TO LEFT HAND BANK, SITE SET-UP, WORKING AREAS

Drawings 21014-0-CB-100

The agreed access point to land on the left hand (Devon) river bank is shown on drawing CB100-A. Compounds and access routes shown on this drawing are indicative of what has been discussed with the landowner, the Contractor must assess their actual requirements for working areas, welfare facilities, storage, on-site parking of plant, equipment and vehicles, access routes, security and safety fencing and provide a plan of their proposed arrangements with their tender. Note that the tenant farmer may be using the remainder of these fields during the works and include a suitable boundary/stock fence in your proposal.
Protection of the ground, including routes between the access point and working areas etc, hedges, fences, walls, gateways, stream crossings, stiles, trees and the like is the responsibility of the Contractor.

The Contractor is responsible for the full reinstatement of any damage to land occupied or used and any damage to hedges, fences, walls, gateways, stream crossings, stiles, trees and the like. Reinstatement is to be to the satisfaction of the Environment Agency Estates Officer and be completed before Practical Completion will be certified.

B20/020 FENCE REMOVAL

Drawings 21014-0-CB-100

Where existing fences need to be removed to carry out works (eg adjacent riverbanks or around the gauging hut compound) these should be carefully dismantled and stored until re-installation. This is particularly important for the recently installed post & rail fences with the recycled plastic posts.

B20/030 TEMPORARY COFFERDAM

Drawings 21014-0-CB-101 & 21014-0-CB-104

A temporary cofferdam will be required to dry out the works, the Principal Contractor shall be required to manage all temporary works design. Temporary works designs are to be reviewed and approved by the Principal Designer with authorisation from the Client.

The top of the upstream end of the cofferdam will be set at a minimum level of **49.000 mA0D**, the cofferdam shall be a minimum of 1.0m tall and 1.0m above bed level for the remainder of its length.

The cofferdam will be set to dry out the works required to construct the new walling extending the left-hand riverbank.

The Principal Contractor shall allow for over pumping, silt curtains as required.

The cofferdam shall be installed prior to removal of the existing riverbank wall and shall be maintained in-situ until the new walling is complete and all wet trades are no longer required on site.

The Principal Contractor shall undertake the FRAP application process to gain approval for the cofferdam and working method.

B30 REMEDIAL WORKS TO LEFT HAND BANK

B30/010 BAG WORK INFILL AND FACING TO SCOUR POCKET

Drawings 21014-0-CB-104

B30/020 NEW CONCRETE RETAINING WALL

Drawings 21014-0-CB-101, 21014-0-CB-104, 21014-0-CB-105 & 21014-0-CB-106

Generally, from new 9.5m long mass concrete retaining wall.

Excavate face of existing bank to remove existing stone facing and expose formation level. Allow for removing stump and root ball at base of new wall.

Batter excavation to a safe angle of repose and protect excavation with tarpaulin staked and draped over face of excavation. Mark 2m control zone and do not enter with machine.

Cast new grade C30 mass concrete foundation minimum 2650mm wide x 500mm deep.

B[redacted]

As the stonework progresses build in 6mmØ stainless steel Helibar bent to form staples, set bed joint reinforcement into mortar.

Generally, progress stonework in lifts approximately 450mm high. Allow newly laid bed joint mortar to set overnight and next day place maximum 450mm deep grade C30 mass concrete between rear face of stonework and plywood shutter.

As the wall progresses backfill behind wall with graded 50 to 150mm clean stone, wrap stone fill in Lotrak 300 geotextile membrane and compact as the work progresses in layers.

Build in 50mmØ weepholes as the work progresses, stagger weepholes at 1.5m centres horizontally and ensure that pipes installed are inclined.

Coordinate work sequence to ensure that no more than 450mm concrete is place in one lift at any one time, no more than 450mm of backfill is placed in any one lift, no more than 450mm of stonework is erected prior to concrete being placed.

B30/030 BOULDER TOE PROTECTION TO NEW WALL

Import and place boulders to provide rock protection at base of new wall c. 9.5m long and continue past toe for approximately 1.0m i.e., 10.5m total.

Stone to be sourced from Pilsamoor Quarry, Egloskerry, Launceston, Tel: 01566 86205 boulders to be 150kg each, 500-700mm minimum.

B30/040 DOWNSTREAM SOFT ENGINEERING AND BANK PROTECTION

Drawings 21014-0-CB-104 & 21014-0-CB-105

Generally, to be installed in accordance with Detail C on drawing 21014-0-CB-105.

Immediately downstream of the new walling install c.3m long stacked and staked 300Ø stone filled "rock Rolls" placed downstream of the toe of the new walling. Stake with c.900mm long x 75mmØ chestnut stakes along channel edge.

Place Salix NAG C350 or equivalent turn reinforcement mat under rolls and place over backfilled, graded and prepared bank with 100 to 200mm seeded topsoil finish. Tuck in behind new stonework at upstream end. Stake in position with chestnut stakes or rebar soil nails installing a minimum of 3 number per square meter.

B40 REMEDIAL WORKS TO RIGHT HAND BANK

B40/010 WIRE REPAIRS TO GABIONS (PROVISIONAL)

Drawings 21014-0-CB-104

This item is removed from Scope of Work (and from Price List)

B40/020 BAG WORK HEADWALL RECONSTRUCTION

Drawings 21014-0-CB-104

Downstream of the weir along the right-hand bank 3 number pipes discharge into the water course. The arrangement is shown in the photo included below:

Allow for forming a bag work headwall below the piped outfalls. Generally fill the existing void below the pipes with coursed bag work and extend past the pipes upstream and downstream by a minimum of 600mm.

Prepare sound level base to receive bags and install in alternate header and stretcher courses. Staple bags in courses as the work proceeds.

[redacted]

[redacted]

[redacted]

Bag fill:	25N structural dry mix concrete.
Bags	Biodegradable liner inside an outer biodegradable hessian bag.
System	Prefilled (offsite)
Weight:	25kg (per bag)
Finished dimensions	500 x 250 x 100mm
Fire Barriers:	Not required system is non-combustible.
Delivery:	Shrink wrapped on pallet.
Fixing:	10mmØ stainless steel rebar staples deice through bags.

B50 WITHDRAWAL FROM SITE

B50/010 REINSTATEMENT OF POST AND WIRE FENCING

Drawings 21014-0-CB-104

Reinstate post and barbed wire fence, generally reinstate to match existing arrangement i.e., post centres, size rail centres sizes etc.

Components to include:

Round peeled softwood (not spruce) and pressure tanalised to BS 4072, or timber of equivalent quality and durability.

Straining posts 2m x 120mm top diameter at all corners and changes in direction.

Struts 2m x 100mm top diameter.

Intermediate stakes 1.7m x 65mm top diameter, pointed.

Wire must comply to BS 4102 and be galvanised to BS 443. Line wire: 4mm (8 swg) plain mild galvanised wire.

Barbed wire: Two strand 2.5mm (12½ swg) mild steel galvanised 4-point barbed wire.

Covered with netting: C8/80/15 galvanised pig netting secured with staples: 40mm x 4mm galvanised wire staples.

The fence shall finish 1200mm above adjacent ground levels.

B50/020 DISPOSAL OF ARISINGS

Remove waste from site and dispose of all other arising's off site at licensed tip.

B50/030 CLEAN AND TIDY SITE

Remove all contractor signage, protection barriers, etc. Allow for reinstating all surfaces that have become disrupted or disturbed during the Works. Remove all surplus materials from site and leave in clean and generally tidy condition to the satisfaction of the Designer.