	Health & Safety - Designer's Risk Assessment (DRA)			Project Code/Doc No: 02900	
FISHTEK CONSULTING	Project Title: **Bridgetown Weir**	Assessor (Name): Ashley Frampton	Assessor (Signature): 	Date: June 2021	Revision: C01

Ref	Activity & Hazard	Level of Risk	RAG List reference	Design Input to Eliminate or Reduce Hazards, and Hazards Remaining	Level of Risk	RAG List reference	Residual Hazard?
Bridgetown Weir – River Exe							
C1	Managing flow & stage levels in River Exe	High		All works should be carried out behind temporary works cofferdams (of sheet pile construction or sand / dumpy bag or other, which is subject to design by the Contractor). All cofferdams must be inspected by a competent person at the start of every shift and if the cofferdam is affected by any event that may compromise it's integrity. Suitable steps must be taken, should the contractor deem in or over water working to be necessary, to prevent persons from falling in and minimising the risk of drowning should they fall in. Contractor to ensure that correct PPE (lifejackets) to be worn by contractors and operatives. The works are to be carried out within the River Exe, which is susceptible to natural flooding. EA flood warnings can be monitored for prior notice along with weather conditions and water levels relative to cofferdam. In addition, there are many flow gauges on the Exe with real time data accessible to all that should also be checked daily. It is also recommended that a temporary gauge is used by the contractor on each cofferdam site to provide a simple check. Contractor to define safe access routes for plant, equipment, materials and construction operatives. A flooding evacuation plan, in the event of overland floodplain flow, should identify where plant & machinery may be temporarily stored.	High		Yes
C2	Managing seepage flows through weir	High		The risk of overtopping flows & seepage flows during construction of the fish pass are mitigated by the Contractor's cofferdam. The position, depth and width of the cofferdam is subject to design by the Contractor, taking due account of hydraulic gradient across the cofferdam.	Medium		Yes

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C3	Risk of falls from height	High		The risk of falls from height have been mitigated by minimising the number and depths of excavations. Contractor to provide temporary works edge protection, where required, during construction of the eel pass.	Medium		Yes
C4	Lifting	High		Lifting and access arrangements are subject to the Contractor's method statement. Masses of the prefabricated units have been given on drawings and the contractor is to determine a suitable lifting method and factor of safety. Where possible measures have been taken to reduce lifting requirements by reducing element sizes and weights.	Medium		Yes
C5	Interface with the public and adjoining site operations	High		The true right bank is on private land that is not accessible to the public. However, the true left bank of the weir/leat entrance is part of a camp site and so is accessible to the public. It is suggested that the true right bank be used for the majority of the works, which can be accessed either through the fields or via the lane off Edbrooke Road alongside the fields. Be aware that an overhead power line passes over the field adjacent to the works area. For the Smolt Chute works, access will likely be needed to the left bank and campsite. This can be done via Week Lane, to the South of the site. However, this will likely require careful traffic management and protection/reinstatement of fields/roads. It is assumed that the Contractor will position suitable fencing (Herras or similar) & signage to exclude the general public from the works and to define temporary access. Should any existing fencing be removed during construction, this must be reinstated during demobilisation.	Low		Yes

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C6	Damage to underground / overground services or services fixed to walkways, resulting in injury to operator.	High		An overhead power line passes over the field on the true right side of the weir, that will likely form part of the site access. In addition, the retaining wall on the true left side supports the A396, so care should be taken when working around this. The design has ensured that no structures are fixed to this wall to limit the effects on it. Up to date accurate services information is to be obtained prior to commencement by the Contractor. The Contractor is to scan for buried services prior to commencement of works. Contractor to confirm the services present on the existing walkway and adjust fixings as required. Contractor should note that wet soils/silt/water can absorb some of the waves relating to Ground penetrating radar. This process would not therefore absolutely rule out the presence of buried services.	Medium		Yes
C7	Stability of excavations and structures	High		Maintaining the integrity of the existing weir and adjacent wall during construction is critical. A temporary works designer is to assess the potential loads and maximum load limit of the A396 wall. A geotechnical investigation of the site has been carried out. This data can be provided if required. Contractor to determine the nature of the footings of the adjacent structures prior to commencement of works to inform temporary works requirements.	High		Yes
C8	Installation - use of toxic or hazardous chemicals - resin anchor products and or grouts could be harmful to operatives and the environment.	High		The design has been prepared so as to minimise the specification of epoxy resin anchors, or similar chemical fixing products, where possible in favour of through bolts (expansive mechanical fixings). All fixings should be undertaken within dry within cofferdam areas, reducing the risk of pollution to the environment. The Contractor must also ensure that appropriate PPE clothing is worn.	Low		Yes
C9	Installation - use of toxic or hazardous chemicals – pouring of concrete could be harmful to operatives and the environment.	High		All pours will be undertaken within a dry, cofferdam area, mitigating the risk of pollution to the environment. However, this is still a risk that pours could leak or flood waters could overtop the cofferdam. The Contractor is to determine appropriate working methods and ensure that appropriate PPE clothing is worn.	High		Yes

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C10	Fabrication of elements – risk to operatives of cutting and welding excessive amounts of metal work - associated manual handling and lifting hazards.	Medium		The complexity and fabrication requirements have been minimised by using standard extrusions and plate sizes to minimise cutting and welding requirements, and by using repetitive and simplified connections to ease assembly.	Low		Yes
C11	Hand / Arm vibration	Medium		Contractor to use appropriate equipment when compacting concrete and drilling holes for fixings. Contractor to control trigger time.	Low		Yes
C12	Presence of invasive species within the surrounding area.	Medium		An environmental assessment of the area should be made before establishing the site compound to identify any invasive species. If encountered, these are to be removed as a controlled substance by a certified contractor.	Low		Yes
C13	Access to river bed level	High		Edge protection should be installed along existing river banks/walls and any temporary exposed edges. Access requirements / suitability of plant needs to be assessed by contractor for use adjacent to retaining wall (e.g. Weight, width, gradient and interface with personnel access) or in river (on barges, etc.). Access to bed level is possible if via sloped banks downstream of the proposed pass. Alternatively temporary platforms can be created running down to the bed, provided the bed is cofferdammed and drained of water. Cranage may be possible (requiring assessment by contractor) from atop the existing river bank to ease movement of materials and equipment to river level.	Medium		Yes
O1	Access for debris clearance	High		It is assumed all debris clearance will be undertaken during low flows. The fish pass structure is to be accessed from the true right bank via the fields. Debris can be cleared by long handled rakes from the bankside. If required, stop logs can be installed and staff can enter the pass and clear larger debris. The Smolt chute is to be accessed from the true left bank via the Exe Valley Caravan Site. Here staff can access the maintenance platform and clean or remove the smolt screens as necessary. From this bank the stop board can be installed in the smolt chute as well. Operatives to wear appropriate PPE (dry suits, life jackets), according to operator's working practises, when carrying out any maintenance.	Medium		Yes

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O2	Interface with the public and adjoining site operations	High		The true right bank is on private land that is not accessible to the public. However, the true left bank of the weir/leat entrance is part of a camp site and so is accessible to the public. Any existing fences will be reinstated. Signage has also been specified to warn the public of the potential risks of the structure. When maintenance is to be carried out, the area is to be appropriately closed to the public.	Medium		Yes
O3	Lifting	High		Small debris can be pulled/lifted out of the pass, chute or off the screens and then taken away from site. Removal of large debris may be necessary and would require lifting equipment. This could approach from the field on the true right bank or via the campsite on the true left. Suitably trained staff should enact and supervise any lifts, with the public segregated from the lift area during any operations if they are necessary.	Medium		Yes
O4	Flood Risk	High		Any maintenance work is to be undertaken during low flows only to avoid personnel or equipment being at risk. The structure has been designed to minimise the occupied conveyance area within the river. The structure has been rationalised to decrease local opportunities for debris to accumulate.	Medium		Yes
O5	Presence of invasive species within the surrounding area.	Medium		If encountered, these are to be removed as a controlled substance by a certified contractor.	Low		Yes
O6	Risk of falls from height	High		Handrailing has been specified around the maintenance platform for the smolt chute, as lifting the screens out would not be safe to do without them. In addition is assumed that they will quickly accumulate debris and will therefore require regular cleaning and so the handrails will be regularly used. Around the fish pass, no handrailing has been specified as it is assumed the majority of debris will self-clear. It is assumed that the need to manually remove debris will be infrequent enough that any handrailing would be damage by high flows in the meantime and require replacement. Signage will be installed at the entrance to the path to warn of the sharp drop down to the eel pass.	Medium		Yes

*Refer to EA Operational Instruction 300_10_SD14 Designers' safety, health and environmental Red, Amber Green (RAG) list Issued 13/08/2015

Guidance

1. List all activities and hazards
2. Assign High / Medium / Low – Level of Risk
3. Check against EA-RAG List and assign colour

4. Describe design inputs to Eliminate, Reduce, Isolate and Control risks.
5. Review level of risk
6. Assign EA-RAG list colour code to residual risk
7. Confirm if there is residual hazard
8. Include significant or unusual residual hazards in SHE boxes on drawings