~~2.1.11 The Consultant shall develop the outline design into a detailed design that optimises the project objectives and outcomes identified in the OBC, supported by evidence that will enable the Client to produce a Full Business Case.~~

~~2.1.12 The *Consultant* shall produce a detailed design that supports the *Client* to achieve efficiency targets set for this commission and future stages of the project using the Combined Efficiency Reporting Tool (CERT).~~

~~2.1.13 The *Consultant* shall prepare the ECC Scope for the main works tender document. The ECC Scope shall not contradict the *Client's* standard documents. If there is a requirement to do so the *Consultant* shall justify the need and obtain the prior written agreement of the *Client*.~~

2.1.14 AD: The outcome of the *Consultant's* services shall include the following as agreed by the *Client*

General Requirements

- The *Consultant* key persons to deliver this project are either as set out in a *Consultant's* methodology submitted to the *Client,* or by the provision of a list These individuals are approved by the *Client* any change to such list will require further approval from the *Client* and any replacements will have equivalent qualifications and experience and typically be either CEng ISTructE or CEng MICE, or approaching that level with evidence of 10 years, or approaching 10 years design experience of similar type work. The key people shall complete the site walkovers, lead the undertaking of Initial Assessments and lead the creation of updates to the Temporary Defence Management Plans (TDMP).

- the *Consultant* delivery of the Scope is subject to the duty of skill and care required by Clause 20 of the Framework Agreement conditions of contract.

Stage 1 Undertake Initial Assessment

- The *Consultant* shall review the existing information provided by the *Client* for suitability for use in the Initial Assessment The *Consultant* should inform the *Client* of any deficiencies that would prevent the assessment being carried out effectively.
- The *Consultant* should also obtain publicly available information to assist with the Initial Assessments, for example, LiDAR information, key service records, flood zone plans.
- The *Consultant* shall undertake a site walkover of the defence site, if required, in attendance with a representatives nominated by the *Client*. The *Consultant* is responsible for organising the site visit/s The relevant EA representative will be available for each site visit, subject to 2 weeks' notice being given and acceptance by the EA representative with site visits limited to one per site
- The *Consultant* shall undertake an Initial Assessment of the sites with TDDPs listed in Section 1.2.3 using the *Client's* supplied template. The purpose of this assessment is to determine whether the production of a TDMP is technically and economically feasible. The Consultant shall consider each of the 5 questions in the Initial Assessment Flowchart
- The *Consultant* shall identify the requirements for assessment of existing structures that are required to retain flood water within the Initial Assessment It is anticipated that any structure retaining more than 300mm water will require a detailed engineering assessment in Stage 2. However, the *Consultant* may adjust this threshold (either downwards for poor condition structures or upwards up to 600mm for well-built structures capable of retaining up to 300mm

water by inspection) The *Consultant* shall identify any additional data required to undertake this assessment to inform the *Client's* decision to proceed to Stage 2 it is not anticipated that any intrusive investigation will be required as part of this scope. The *Consultant* shall identify the residual risks associated with the using existing structure and with agreement from the *Client*, this shall be completed in a proportionate approach using suitable engineering judgement, as a compensation event to the contract

- The *Consultant* shall not limit their review to structural stability but should also consider buildability, health and safety~~, resourcing and timing issues~~ and as required significant environmental constraints that may impact on the deployment of the defences, for example if constructing the barriers could impact scheduled monuments or listed buildings when directly impacted. ~~The review shall consider the impact of deployment on the community behind the barrier, in particular the ability for evacuation and emergency services access if required~~
- The *Consultant* shall assess the associated pumping requirements for each plan, and as part of their review they shall identify to the *Client* if a specialist design for pumping equipment will be required at a later stage. Examples when this could be required include long pumping runs; pump sizes exceed 8" in diameter; or if specialist pieces of equipment e.g. road crossings are required
- The *Consultant* is to identify requirements for any additional data required to progress the TDMPs as described in Appendix 2 e g topographic data, PAS 128 Type B survey
- Two weeks, or earlier, after the submission of the Initial Assessment the *Consultant* will attend a meeting with the *Client* to present the conclusions from the Initial Assessment report and respond to technical questions from the *Client.* This is to support the *Client* in their decision to either update or withdraw the existing TDDPs. The *Consultant* is not required to suggest alternative mechanisms for managing flood risk for withdrawn TDDPs as part of this scope however there may be additional work requested from the *Client* at this stage Sites that are identified as viable will progress to Stage 2 If agreement on how to proceed on individual sites between the *Client's* local team cannot be agreed the *Consultant* shall raise this issue with the *Service Manager* who will instruct the approach to be undertaken.

Stage 2 Replace existing TDDPs with updated TDMPs

- The *Client* requires the *Consultant* to review and update TDMPs within the time constraints in 2.2.1 below, to ensure that the sites, if appropriate, are capable of being safely and effectively placed into service. The *Client* shall provide template documents and example TDMPs, that should build on the previously produced TDDPs. The *Consultant* is responsible for the design elements of the TDMP only, but shall work with the *Client* to ensure that matters such as timing, forecasting and logistics matters are considered

- Where identified in the Initial Assessment and instructed by the *Client,* the *Consultant* shall procure and manage any additional surveys required to create TDMPs, which shall be a compensation event. The requirement for topographic surveys will be required to be justified to the *Client*, and will be based on confirming site specific issues, for example traffic management, access constraints or tie in locations

- The *Consultant* shall produce summary design briefs for each site to demonstrate that when the temporary defences are being deployed that an assessment of the stability of the barriers has been completed using appropriate design parameters.. These outputs shall be shared with the *Client* at the earliest possible opportunities to allow equipment to be purchased

- The *Consultant* is responsible for assessing global stability of the barrier deployments

including sliding, overturning, bearing, and localised scour (e g from overtopping) The *Consultant* shall also consider the impacts of surcharging manholes where applicable. Local structural stability issues concerning structural buckling and shear is the responsibility of Others The *Consultant* is not required to undertake a quantitative assessment of the seepage performance of the barrier or assess likelihood of piping. The assessment shall be based on a global factor of safety method

- In cases where the barriers are placed on slopes exceeding a 1:20 fall the *Consultant* shall make suitable assessment to account for the impacts of slopes.

Table 1: Design Parameter & Assumptions

Design Parameter / Assumption	Details
Friction Coefficient	The *Client* will provide and warrant the current recommended friction coefficients for the temporary barriers Testing of the temporary barriers is currently underway to determine refined friction coefficients if available during the contract the *Client* will instruct the use of these.
Structural benefit of Membrane	The *Client* will provide a technical note and accompanying diagram to inform the consideration of the barrier membrane within structural calculations. The *Consultant* will be required to make an assessment of the effective length of the membrane to be used depending on site conditions and the ability to seal the barrier to the ground
Standard size kentledge	The *Client* will provide a datasheet of standard kentledge sizes for use in designing intervention measures.

- The *Consultant* shall exercise reasonable skill and care in the recommendation of intervention measures to achieve global stability of the free standing barriers, relying on information supplied by the *Client.* The interventions are anticipated to be in the form of kentledge e g proprietary concrete blocks, water containers or sandbags The intervention design should use the standard size kentledge specified by the *Client* unless justification can be provided otherwise by the *Consultant.* Specific designs are required for different scenarios, taking into account design water levels and ground conditions on the site. The effectiveness of any stability measures will be dependent on factors that will not be the subject of this study, including but not limited to, hydraulic models, key service records, LiDAR, condition of existing structures, the products provided by others as well as the construction of the free-standing barriers by other parties

- If stability cannot be effectively achieved through kentledge, design of permanent fixings is subject to agreement and instruction from the *Client.*

- The *Consultant* is not responsible for the outcome of the following parts of the barriers, these are responsibility of Others:

    - Design issues relating to sealing flow through the barrier (e g membrane design) / connection design (unless required as a result of the seepage assessment to prevent global performance requirements);

  - The method of sealing the barrier membrane to the ground; and
  - Ensuring the barriers meet the sealing requirements of PAS1188.

- After completing the assessment the *Consultant* will provide a short technical note and suitable drawings summarising the proposed intervention to address global stability The *Client* will review this and determine whether to continue developing the TDMP or to withdraw the existing TDDP depending on the scale and complexity of the intervention required.

- The *Consultant* is responsible for inspecting, assessing and advising of remedial measures to existing structures to which the barriers tie into, or form part of the flood defence line The requirement and scope for assessment of existing structures is determined during the Initial Assessment, this assessment will not require intrusive investigation The *Consultant* shall identify residual risks associated with the assessment to enable the *Client* to instruct if a more comprehensive assessment is required.

- The *Consultant* is responsible for completing a stability assessment of other structures included within the plan, for example sandbag structures, which exceed 300mm in height

- The *Consultant* shall, in the development of the TDDP, consider and plan for exceedance The design shall include so far as is practicable, a means of safely managing and controlling exceedance, including how the community can escape and how pollution risks can be managed

- As part of the design the *Consultant* shall assess and describe the materials and equipment suggested to construct the scheme, this shall be discussed and agreed with the *Client*

- The *Consultant* shall if required produce updated traffic management plans to accompany each TDMP, the *Consultant* shall consult and seek the ~~gain~~ acceptance ~~with~~ of the Highways Authority, with the support of the *Client* The *Consultant* will not be responsible for gaining acceptance of the plans. The *Consultant should however allow sufficient time within their schedule, and within Highways Authority Guidance to seek that acceptance*

- As part of their design the *Consultant* shall assess and describe the materials and equipment suggested to construct the scheme, this shall be discussed and agreed with the *Client.*

- The *Consultant* shall review in conjunction with the *Client* trigger levels for the deployment of the barrier, this shall include a check of flood levels and relate those levels to hydrometric gauges.

- The *Consultant's* graphical outputs of the design shall be developed to a point which can adequately convey sufficient construction information, these could take the form of annotated photographs, GIS maps or when required construction general arrangement drawings and sections

- Where required the *Consultant* shall update dated or missing pieces of publicly available Pre-Construction Information, for example buried services information, and information on

changes to site from the original TDDP

- Where required the *Consultant* will required to work with others to integrate complex pump plans in the TDMP, this will require the *Consultant* to consider traffic management, welfare and timing provisions of the works included withing the pump plan. The design and layout of pumping equipment will be completed by others

- To advise the *Client* and Others and to provide input as required into other CDM related documents, for example Construction Phase Plans, to assist the *Client* in ensuring that the TDMP's can be used as soon as practicable

- The TDMP's are for the sole and exclusive use and benefit of the *Client* and no other party may use, make use, or rely upon them or its contents or any part or parts thereof.

- The *Consultant's* TDMP's are strictly limited by the specific environmental factors & information for each deployment site available at the time of assessment The *Consultant* has no obligation to update or revise the TDMP's to reflect subsequent changes to the relevant environmental factors and/or information after they have been provided.

Stage 3 Flood Risk Activity Permit

- Produce and submit an application for a FRAP for each site with an updated TDMP. Detriment hydraulic modelling may be required to support the FRAP (to be agreed with the *Client*). The *Consultant* will act as the agent for the application with the *Client* being the applicant / operator

2.2 Constraints

2 2 1 The *Client* requires that the Initial assessments will be completed by the end of June 2022, with assessments delivered on a rolling programme. The list of plans included in Section 1.2.3 may be subject to change.

2 2 2 The *Client* requires that the TDMP's will be completed by the end of September 2022, with plans delivered on a rolling programme. The list of plans included in Section 1.2.3 may be subject to change

2.3 *Consultant* Project Management

2.3.1 In managing the *service* the *Consultant* shall follow all the requirements as set out in the Collaborative Delivery Framework schedules and the relevant content of the Minimum Technical Requirements.

2 3 2 In the overall management of the commission the *Consultant* shall:

- Contribute monthly to the updates to the project risk register;
- ~~Provide input to project efficiency CERT Form~~
- Attend progress meetings (virtual rather than face to face);
- Produce monthly financial updates and forecasts meeting the *Client's* project reporting timetable ~~together with progress reports~~ Monthly financial updates and forecasts to meet EA deadlines provided by no later than the 10th day of each month or otherwise agreed at the project start up meeting;
- Deliver a monthly progress report in the *Client's* standard template (Link) giving progress against programme, deliverables received. ~~and expected and financial and carbon summary against programme.~~
- Attend project board meetings as required;
- ~~Ensure quarterly input into framework performance assessment/environmental Performance Measures.~~
- ~~Ensure the *Consultant's* environmental lead provides monthly progress and risk reviews to the *Client* and attends progress meetings, as invited~~
- ~~Maintain and show how accurate and up to date information on the whole-life cost and carbon is driving optimum solutions at all stages of design development~~
- Capture lessons learnt relevant to scheme delivery for the EA PM to include in the scheme lessons learnt log ~~to be appended to the FBC~~;
- Deliver a weekly progress summary report to the *Service Manager*, using a format provided by the *Client* giving progress against programme, deliverables issued, a schedule of site visits and issues identified. The *Consultant* shall update the programme on a fortnightly basis
- Provide the *Client* with updates at the earliest possible opportunity to determine the need for additional equipment that may be needed to support the plans, in a format provided by the *Client*.

2.3.3 The contract will be administered using FastDraft.

2.4 Outputs and Deliverables

2.4.1 The *Consultant* shall confirm the list of products with the *Client* and submit the product description for the *Client's* acceptance before commencing work on the product

2.4.2 The *Consultant* shall produce the following key documents for this commission:

- Updated TDMP's for each site, including site specific assessments
- Updated Programme showing milestones to ~~construction~~ completion ~~including funding and environmental constraints and opportunities.~~ The Programme shall take account of the timeframe required for all approvals necessary ~~for mitigation and enabling works to be carried out in advance of main construction~~
- ~~Update Carbon Optimisation Report~~
- ~~Draft text within relevant sections of the FBC.~~

2 4 3 ~~The detailed design shall be sufficient for a contractor to set out and construct the works~~ The ~~detailed~~ TDMP's shall include but not be limited to:

i. Calculations.
~~ii Updated Alignment Drawings (including landscape/ ecological design drawings/ planting schedules) and details of potential fixings / support types.~~
iii Relevant Environmental Assessment
~~iv. Documents necessary to enable the *Client* to form a NEC4 Engineering and Construction Contract for the construction works with the Lot 2 Delivery Partner~~
~~v Specifications (including any additional clauses to Environment Agency standard specifications e.g. Environment Agency NEAS Landscape Specification template).~~
~~vi Design philosophy statement, giving design process, standards used, and assumptions made to the satisfaction of the *Client*. This should demonstrate compliance with the *Client's* sustainability targets.~~
~~vii Design report, including asset schedule, buildability statement and maintenance plan~~
viii. Designer's Risk Assessments.
~~ix Public Safety Risk Assessments~~
~~x. Pre-construction information.~~
xi. Application for all necessary consents and permissions required for design, and agreement of Traffic Management Plans with the relevant Local Authority. ~~at FBC stage~~.
~~xii. Environmental Action Plan.~~
~~xiii Materials Management Plan~~

2.4 4 AD Add the below to the required list

xiv Initial alignment plans showing the requirements for stabilisation measures before the development of the TDMP.
xv Updated Alignment Drawings ~~(~~and details of potential fixings / support types, the standard of drawings produced will be dependent on specific site constraints.
xvi Pre-construction information The information will be populated into the updated TDMP
xvii. Using reasonable skill and care, provide updated Temporary Defence Management Plans, to include design philosophy and buildability statements, design process and outputs and supporting calculations, standards used, and assumptions made This should include site specific key residual risks.As required, complete the assessment of other key structures which could support the design This work will be subject to a compensation event if required.

3 Site Investigation

3.1 Topographic Survey

~~3.1.1 The *Consultant* will review previous topographic survey to identify gaps in existing data. The Consultant will use this to inform the scope of supplementary topographic survey required.~~

~~3.1.2 The *Consultant* shall work with NEAS to ensure that environmental and sustainability constraints within the likely scheme footprint are identified and included in the survey and to determine if efficiencies can be made by joint working.~~

~~3.1.3 Example text - A topographical survey is required to provide further details of the existing piles so that the alignment of new piles may be optimised relative to this. A survey is also required to supplement that previously undertaken by XXXX in order to identify the location of key features on the quay so that we may clearly define working areas and accesses in the Scope. Specific requirements are:~~

- ~~Preparation of a brief and procurement of the survey in accordance with the current version of the Environment Agency's National Standard Technical Specifications for Surveying Services, to enable the above.~~
- ~~Review and agree surveyors' site risk assessment.~~
- ~~Supervision and management of topographic survey company.~~
- ~~Review data / checking deliverables.~~
- ~~AD: The *Consultant* shall undertake the topographic survey necessary to be able to complete a detailed design.~~

~~3.1.4 The *Consultant* shall use the outputs from the topographic survey in their modelling and design.~~

3.1.1 AD The *Consultant* will review previous topographic survey to identify gaps in existing data. The *Consultant* will use this to inform the scope of supplementary topographic survey required

3.1.2 AD The *Consultant* will provide advice to the *Client* on additional information required for each site to support the procurement of additional survey work, and if instructed as an extension of the scope, produce survey brief and procure the relevant surveys Specific requirements of any survey works are:

- Preparation of a brief and procurement of the survey in accordance with the current version of the Environment Agency's National Standard Technical Specifications for Surveying Services, or the relevant parts of PAS128 and the *Clients* published requirements.
- Review and agree surveyors' site risk assessment.
- Supervision and management of topographic survey company.