Security Marking: Official

Environment Agency

NGSA SOC-OBC PSC Standard Scope – Appraisal & Outline Design

NEC4 Professional Service Contract (PSC)

Scope

Project / contract information

Project name	Curry Moor Reservoir Improvements
Project SOP code	ENV0002496C
Contract number	31636
Date	14th of June 2021

Assurance

Author	Project Manager [redacted]	Date: 14th June 2021
Consulted	Senior User [redacted]	Date: 5th June 2021
Reviewed	Project Executive [redacted]	Date: 14th June
Checked prior to issue	Commercial Services Manager [redacted]	Date: 1st April 2021
Consulted	NEAS [redacted]	5th of June 2021

Revision History

Revision date	Summary of changes	Version number
2nd March 2021	First issue	1
29th March 2021	Final draft, DW requirements, AS and JI comments	2
14th April 2021	[redacted] comments incorporated	3
21st April 2021	AS further comments incorporated	4
14th June 2021	Updates for revised scope	5

This Scope shall be read in conjunction with the version of the Minimum Technical Requirements current at the Contract Date. In the event of conflict, this Scope shall prevail. The *service* is to be compliant with the following version of the Minimum Technical Requirements:

Document	Document Title	Version No	Issue date
412_13_SD01	**Minimum Technical Requirements** **https://defra.sharepoint.com/:w:/r/sites/def-contentcloud/_layouts/15/Doc.aspx?sourcedoc=%7B3db593b9-5be5-4044-ae09-7f2dab62d3dd%7D&action=default&mobileredirect=true**	**3**	**22/4/21**

1. Overview

1.1Background

1.1.1The Curry Moor Flood Detention Reservoir is a flood storage area (FSA) formed on a low-lying area of moor in the Somerset Levels and Moors. It is in an area of the Moors that has historically flooded when the River Tone has been unable to pass all the river flow. The reservoir has two cells (see **Error! Reference source not found.**) that are interconnected via an inverted syphon under the River Tone. The River Tone flows from the southwest to the northeast through the reservoir. The larger cell of the reservoir, on the left (north) side of the river, is known as Curry Moor, the smaller cell on the right (south) side of the river, is known as Hay Moor.

1.1.2 The Curry Moor cell is contained by the raised river banks of the River Tone along the southwest, south, and southeast, by a series of low banks to the north and northeast, by higher surrounding ground to the northwest and with a low bank across the flood plain at the southwest end. The Hay Moor cell is bounded by the raised riverbanks of the River Tone to the north, a low bank at the eastern end, high ground to the south and a bank across the floodplain at the western end

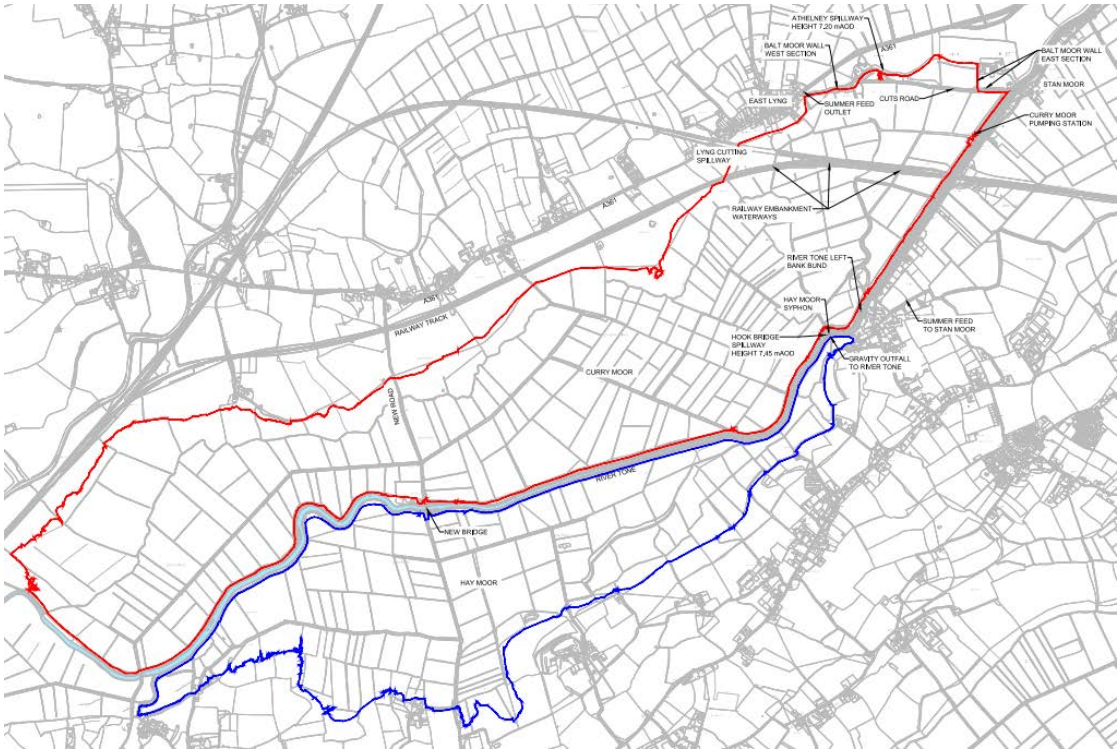

Fig 1.1 Plan showing approximate extents of Curry Moor Flood Detention Reservoir (Curry Moor cell in red, Hay moor cell in blue). Actual extent depends on impoundment level

1.1.3 The retaining elements forming the Curry Moor Flood Storage Area Reservoir, starting from the northern side (near the village of East Lyng) and going around the reservoir in a clockwise direction, are detailed below. Refer also to **Error! Reference source not found.**.

- Curry Moor sub-cell (North):
  - Lyng cutting spillway
    - Baltmoor Wall
  - Saxonburgh Gardens
  - Cuts Road
  - Moorside
  - Haggetts
  - Hill Section
  - Athelney Spillway
  - Athelney Farm
    - Athelney Farm wall
    - Banklands
    - Banklands Bungalow
  - River Tone raised left (north) riverbank
    - Curry Moor Pumping Station
  - London-Penzance railway line (sub-cell divider going east/west)
- Curry Moor sub-cell (South)
  - London-Penzance railway line (east/west sub-cell divider)
  - River Tone raised left (north) riverbank
  - Syphon (connecting the Curry Moor and Hay Moor cells)
  - Hook Bridge spillway
  - Upstream cut-off embankment
  - (High ground)

- Hay Moor sub-cell
    - Stan Moor cut-off Embankment (Curload Farm)
    - (High ground)
    - Haymoor End upstream cut-off embankment
    - River Tone raised right (south) riverbank

-figure 2 Overview of Curry Moor Flood Detention Reservoir (information sign at Curry Moor Pumping Station) Note this does not show full extent of impounded area.

1.1.4 On 22nd September 2016, the Curry Moor Flood Detention Reservoir was designated as a High-Risk reservoir under the Reservoirs' Act 1975. It is capable of storing approximately 11,300,000m^3. Due to its High Risk designation, it is subject to the associated legislative requirements for supervision and inspection by engineers on the appropriate panels. The resulting Section 10 Inspection Report (2019), dated 22nd July 2019 contains recommendations, including Measures to be taken in the Interests of Safety (MIOS) which have legally enforceable deadline for completion. Their completion is accepted by a Qualified Civil Engineer (QCE) by the issue of a certificate.

1.1.5 The most recent S10 Inspection Report (2019) notes that the embankments retaining the reservoir are mostly assessed to be Dam Category B (as defined by Floods and Reservoir Safety, Fourth Edition), although the Stanmoor cut-off bund is Category A and the upstream closure banks and raised riverbanks are Category C or D.

1.1.6 Between December 2018 and January 2019, an Inspection under Section 10 of the Reservoirs Act 1975 was completed. In the associated report, issued on the 22nd July 2019 (rev. 2, with two corrections issued in August 2019 and September 2019), the Inspecting Engineer made ten recommendations as to Measures to be taken in the Interests of Safety (MIOS). These included studies to be completed within three years and works to be completed within six years of the date of the report, including any additional works recommended by the studies.

1.2 Previous Studies

The table below details the previous studies on Curry Moor.

Report	Date	Format	Outcomes of study
Reservoirs Act 1975. Report on an inspection under Section 10(2)	22-Jul-2019	Stored on ASite	Recommendations in the interests of safety – Confidential
Curry Moor Flood Detention Reservoir Engineering Activities Outline Document (rev. 3.0)	09-Oct-2020	Electronic	Initial methodology

1.3 Objective

1.3.1 The primary objective of the Curry Moor Flood Detention Reservoir project is to address recommendations made as to Measures to be taken in the Interests of Safety (MIOS) and other recommended measures, which can be included without compromising meeting legally enforceable deadlines, made in latest Section 10 inspection report, issued in July 2019.

1.3.2 In meeting the above objectives, the *Consultant* shall consider requirements to achieve acceptable bank stability; deal with seepage and improve durability against burrowing animals; compliance with EA operational and maintenance requirements and environmental designations; and mitigate possible impacts to the environment and landowners.

1.3.3 For clarity, the MIOS recommendations from the 2019 Section 10 Report (section 15.2a) are reproduced below:

i. *"Where badgers have burrowed in the River Tone left raised riverbank, in the section between Hook Bridge and New Bridge, works are carried out to restore the integrity of the embankment from risk of internal erosion and overflow discharges.*

ii. *The section of the River Tone left raised riverbank just before New Bridge:*
•is repaired to improve its stability and maintain safe vehicle access along the crest,
•is assessed to determine the risk of overflow, which should be reduced if necessary,
•and maintain safe vehicle access along the crest

(NB: MIOS ii above is included for completeness, but does not form part of this scope)

iii. *Hook Bridge Inlet Spillway is modified to reduce the risk of blockage by debris.*

iv. *The trash screen on the Curry Moor side of Hay moor siphon is replaced to comply with current debris screen guidance to make it easier to keep clear.*

v. *A structural assessment is carried out for the culverts beneath the access track to Curry Moor Pumping Station, which is shared with Network Rail, to determine the maximum vehicle weight that can be accommodated.*

vi. *The risk of a breach to the raised riverbank of the River Tone into the reservoir and its impact on the retaining embankments along Cuts Road and Athelney Farm areas is assessed.*

vii. *The anticipated flood levels in the reservoir are assessed using current good practice methodology.*

viii. The adequacy of the spillways is re-assessed once the flood levels have been updated as recommended above.

ix. The outer face of Banklands wall is surveyed, the suitability of the erosion protection on the lower part of the slope is assessed and any necessary works undertaken.

x. The risk of failure of Stanmoor cut-off bund against both internal erosion and overtopping failure is assessed and demonstrated to be suitably low with regards to the adequacy of drawdown capacity."

1.3.4 Other recommendations to be taken but not requiring supervision by a QCE (Other)

For clarity, the other recommendations not requiring supervision by a QCE from the 2019 Section 10 Report (section 15.3) are reproduced below – these are not currently included in the scope but options to add to the scope will be considered where this will not affect programme for delivery of the MIOS:

i. "The ivy covering the wall in Saxonburgh Gardens is removed and sufficient vegetation cleared to permit close examination to assess whether the tree is causing any damage. Any works recommended arising from the examination shall be implemented." This is EA Maintenance so not required as part of this delivery.

ii. "The embankment from the top of the ramp onto Cuts Road as far as the line projected from the wall round Saxonburgh Gardens is taken to form part of the reservoir and thus potentially subject to overflow, albeit noting that any initial shallow discharge will be deflected down the ramp by the kerb. This embankment should be sufficiently cleared of vegetation to make the ground surface visible for surveillance and the large trees pollarded."

iii. "If the tree on Willow Tree Cottage embankment is dead, it is removed and any new planting at the outer toe is moved to a minimum distance of 2m beyond the toe where it will not shade the embankment outer face." This is EA Maintenance so not required as part of this delivery.

iv. "The trees situated close to the outer slope of Haggetts are relocated at least 3m away from the embankment toe or their growth controlled to be a maximum of approximately 2m". This is EA Maintenance so not required as part of this delivery.

v. "The ground level near eastern end of Hill section is reinstated and measures taken to prevent degradation." This is part of legacy works and not required under this project.

vi. "The trees close to the inner face of Banklands (wall) are inspected and any surgery undertaken where required to minimise the risk of their blowing over. It is agreed that an arboriculture survey should be included within this scope."

vii. "The lower crest and eroded inner face of Curry Moor River Tone left bank of the Newbridge to Knapp Bridge section between the tenth and eleventh gates is investigated to determine whether it is subject to preferential overflow, and if so the crest raised locally."

viii. "The vegetation on the Curry Moor upstream cut-off bank is cut back to permit effective surveillance of the bund, following which the bund is surveyed and levelled. The line should be plotted on the reservoir impoundment plan as a revision to show this bund and any inlet pipes that may exist."

ix. "The area of the Curry Moor upstream cut-off bank around the broken pipe is cleared to identify whether there is a pipe passing through the cut-off bank. If a pipe is present, the condition of the pipe is assessed and if it presents a risk of internal erosion failure of the cut-off bund that remedial works are carried out."

x. "The small slip/erosion on the inner face (Curry Moor side) of the River Tone left raised riverbank approximately 30m upstream of the seventh gate is repaired, regrading with dredged material or locally sourced material would be acceptable."

xi. "The fallen tree leaning out from the River Tone bank approximately 30m upstream of the fourth gate upstream of New Bridge is removed, as it could leave a void in the bank if removed during a flood or cause a blockage in the river downstream".

xii. "The low areas in the crest track off Hook Bridge Inlet Spillway are filled with suitable material to allow vehicles to cross without significant damage occurring and a constant cross-fall provided to improve surface drainage and avoid surface ponding."

xiii. "The downstream face of Hook Bridge Inlet Spillway is closely inspected for scour damage once the grass has been cut. Following this any necessary repairs should be completed, the required surface protection and maintenance regime for the spillway reviewed and improvements implemented, if necessary."

xiv. "Grass cover is established on the bare ground at the upstream end of Hook Bridge Inlet Spillway."

xv. "The displaced pipe at Curry Moor Upper Inlet is renewed."

xvi. "The source of the water heard leaking into Curry Moor Lower Inlet pipe and emerging at the outfall on the left-hand side of the structure is ascertained and any necessary repairs effected." **(NB: Other recommendation above is included for completeness, but does not form part of this scope)**

xvii. "The cracked and spalled concrete on the face of the Curry Moor Pumping Station discharge culvert outfall into the River Tone is assessed and repaired or replaced as necessary. The gaps in the concrete upstand on the edge of the River Tone in front of the Curry Moor Pumping Station are replaced with flapped outfalls, as water flowing through these gaps currently provides a health and safety issue for both the station and operational staff."

xviii. "Coir matting, or similar, is placed on the surface around Baltmoor Wall inlet intake and grass cover established".

xix. "A new manhole is cover is constructed on Stanmoor Inlet shaft situated within the Stanmoor cut-off bund, with the first shaft ring replaced or repaired".

1.3.5 Additional Works

For clarity, the recommended investigations from the 2019 Section 10 Report (section 15.3) are reproduced below - these are not currently included in the scope but options to add to the scope will be considered where this will not affect programme for delivery of the MIOS:

i. "The area around the head of the rhyne running away from the inner toe of the River Tone left raised riverbank near the fourteenth gate upstream from New Bridge is checked for seepage when the weather has been dry. If the area is still wet, then appropriate works are put in place to prevent any adverse impact from the seepage."

ii. "The reservoir impoundment plan is revised to show the reservoir upper limit at the Curry Moor upstream cut-off bund." This is included in the current scope and Option E forecast

The following guidelines have been provided by the *Client on requirements for "deed packs"* and the *Client* requires that they shall be included in the scope of work: These "deed packs" are to be included in the scope and option E forecast

a. “As a general note to all the sections where the 2015 improvements were implemented, it is understood that the land has not been officially handed back. Of the few affected landowners, there has been no official guidance/instructions with regards to maintenance requirements where the embankments are located on their land. These should be formally set out for their benefit, such that they have a known requirement for future maintenance”.

b. “They have requested what they call “deed packs”. Essentially these would be a set of simplified drawing and maintenance schedules, such that they know what is installed on their land and how to maintain it"

c. “In terms of scoping a review of the information available to be undertaken, and where none exists, to be drafted to ensure that the affected landowners are provided with information that is clear in the extent of their responsibilities and the areas of land concerned”.

2.1 Outcome Specification

2.1.1 The Consultant shall deliver the service such that it meets the outcomes listed in this section.

2.1.2 The *Consultant* shall demonstrate sustainability leadership through fully considering and contributing to achieving the *Client*'s environment and sustainability ambitions and targets where opportunity arises that does not compromise the programme. These are set out in the EA2025 Action Plan, e:Mission 2030 Strategy, the Defra 25 Year Environment Plan and are in line with the principles of sustainability as described by the United Nation's Sustainable Development Goals.

2.1.3 The *Consultant* shall design (to outline design) the scheme taking into account the environmental sensitivities and opportunities of the sites and involving key environmental specialists as appropriate within the *Consultant* and the *Client's* organisation.

2.1.4 The *Consultant* shall ensure the optioneering process fully considers and addresses sustainability including carbon reduction as strategic outcomes where opportunity arises that does not compromise the programme. The EA business case template further requires separate option appraisals of sustainability benefits and whole-life carbon to compare with the economic appraisal and promotes a preference for the most sustainable option.

2.1.5 The *Consultant* shall ensure the optioneering process fully considers environmental mitigation and opportunities to further conserve and enhance as per our legal and policy obligations but to also contribute to the Environment Agency's ambitions where opportunity arises that does not compromise the programme. This includes delivery against OM4, to achieve biodiversity net gain but must also consider wider sustainability opportunities. The *Consultant* shall ensure the optioneering process avoids where possible, minimises and compensates or offsets any adverse environmental effects.

2.1.6 The *Consultant* shall produce an outline design which seeks to provide the optimum economic, technical, social and environmental/sustainability/carbon outcomes, supported by evidence that will enable the *Client* to produce an Outline Business Case.

- 2.1.7 The *Consultant* shall produce an appraisal report and outline design that enables the *Client* to achieve efficiency targets set for this commission and future stages of the project using the Combined Efficiency Reporting Tool (CERT).
- 2.1.8 The *Consultant* shall ensure that the options and preferred option take into consideration all relevant guidance and legislation and seek to minimise long-term asset/land management and maintenance costs and carbon where opportunity arises that does not compromise the programme.

- This commission shall be completed on the basis that the works shall be delivered under permitted development. Should this change and planning permission and all other necessary permissions/licences have to be obtained prior to OBC then this will be subject to a CE.
- The *Consultant* shall demonstrate that consideration has been given to a list of potential options, identified an appropriate shortlist, appraised these to identify a preferred option and developed this option, its impacts, planning and Environmental Impact Assessment (EIA) requirements scoped to a level that it can be priced. The *Consultant* shall develop a series of options to meet the above objectives.
- The *Consultant* shall assume that the options shortlisted in the OBC will be aligned with the strategy identified in the SOC. However, the *Consultant* shall not assume that the preferred option will necessarily be the same as that identified at the SOC stage.
- The *Consultant* shall compile the supporting technical documentation required for the *Client* to obtain a screening opinion from the local planning authority. This is currently not included in the fee and if required will be covered under a CE.
- Separately and not covered by this scope, one MIOS recommendation, MIOS ii (River Tone bank works downstream of Newbridge) and Other Recommendation xvi (Lower Inlet pipe), are being completed under an urgent works contract. The Consultant will consider these completed works in the assessments to be completed under this Scope.
- The Consultant shall identify (through surveys, studies, specialist advise, technical input, and consultation) the works required to carry into effect the MIOS recommendations, detailed under section 1.3.6, to the satisfaction of the Qualified Civil Engineer (QCE) appointed under the Reservoirs' Act 1975. In addition, to identify the works required to carry into effect the other recommendations. Should changes in, or additions to, QCE guidance / comment occur, where these have been incorporated into the Consultants work addressing them shall be subject to a Compensation Event.
- In addition, these works are to be designed to outline design stage to inform the Outline Business Case (OBC), which the Client will produce with input from the Consultant. The OBC will allow the Client to obtain funding for the detailed design and construction works.

2.2 Constraints

2.2.1 The MIOS recommendations in the Section 10 report require that the *Consultant's* studies, and assessments required to determine the need for, and the nature of, the MIOS works, are completed no later than three years from the issue of the report detailed in section 1,1,4. However, the *Client* requires these studies (the options appraisal report) to be complete six months earlier, i.e by 22nd January 2022.

2.2.2 Similarly, the construction works are to be completed one year ahead of the statutory deadline; i.e by the 22th July 2024, to enable establishment in the year prior to the required sign off date.

2.2.3 The Outline Design shall be signed off and approved by the Senior Users and Qualified Civil Engineer (QCE) by the *Consultant* by the 8th April 2022

2.2.4 Revisions to the reservoir shall not impact on the standard of protection of existing flood defences to properties on the right bank of the Tone from the Parrett confluence to Hookbridge at Stanmoor, Curload and Ham, and on the left bank at Coal Harbour House (Ham) and Turkey Cottage (Hookbridge).

2.2.5 River Tone may suffer "lock out" at confluence due to high tides and/orflows coming down River Parrett.

2.2.6 The flood embankments where they are being refurbished or made more resilient shall be increased in dimensions to comply with EA OI992_14, refer Section 7 below for further details.
2.2.7 In completing the Services the *Consultant* shall take as its starting point work completed under Project CDF-SW-WSX-Appraisal-Reservoirs CE's 44 to 50, 54 and 55 Curry Moor OBC Early Start Activities
2.2.8 The contract will be administered using FastDraft.

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 managing the *service* the *Consultant* shall:

- Provide input to project efficiency CERT Form.
- Attend progress meetings and prepare record minutes within a week for the *Client* to issue. Progress meetings are assumed to be held monthly via Teams or similar software over the programme duration. Progress meetings will be attended by the PM, the environmental lead and selected representatives from the engineering team.
- 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 of options is driving optimum solutions at all stages of design development.
- Capture lessons learnt relevant to scheme delivery for the *Client* to include in the scheme lessons learnt log to be appended to the OBC
- Contribute to the maintenance of the project risk register produced by the *Client*
- Attend weekly PM calls with *Client* Team
- Provide programme updates on the *Consultant's* programme to inform the master programme

2.4 Outputs and Deliverables

2.4.1 The *Consultant* shall provide input to product descriptions for key outputs and deliverables that the *Consultant* shall produce during the appraisal stage. Agree the list of products with the *Client* and submit the product description for the *Client's* approval before commencing work on the product.

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

- Economics report. (subject to a CE)
- Outline Design(s).
- Draft text within relevant sections of OBC.
- Documentation of the environmental process and considerations including risks and opportunities (i.e. Scoping Report);
- Options Appraisal Report
- "Deed packs" for works delivered under this commission.

2.4.3 These outputs and deliverables shall include:

- Investigative Studies
- Environmental studies to support options appraisal and outline design;
- Outline design of single preferred option including provision of specification, drawings and documentation produced in collaboration with Early Supplier Engagement;
- Consultation with key stakeholders with associated technical support;
- Provision of a Principal Designer for the main works project;
- Carbon and CEEQUAL assessment as applicable - To be covered under a CE once scope agreed
- Provision of technical support during development of business case
- Support for development of the OBC for the preferred option.
- Input (on consultancy activities) to master programme to completion of works on site;
- Investigative Studies report (to confirm the full remediation scope) for each location;
- Options appraisal technical notes on a location by location basis;
- Documentation of the environmental process and considerations including risks and opportunities.

2.4.4 Curry Moor is not a conventional Reservoir and an approach using engineering judgment is more appropriate to its appraisal. This approach requires a high level of collaboration from the Consultant. The Client expects the Consultant to adopt a pragmatic approach to ensure deliverability by the MIOS date. As a consequence the Client requires limited optioneering. There are numerous constraints and unknowns within the River Tone catchment. In summary, the Client's requirement is to increase the safety and maintainability of their assets, without changing the current flood risk and without increasing the EA's future maintenance liability.

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. The management, procurement and undertaking of the surveys are not currently included in the scope and will be subject to Compensation Events. The outputs from the topographic survey will be used in the ~~modelling~~ hydraulic assessment and option appraisal.

3.2 Ground Investigation

3.2.1. Following completion of initial Investigative Studies, the *Consultant* will confirm whether further Ground Investigation is required to inform development of the remedial works. As the requirement is not currently known, provision of Ground Investigation design, documentation, supervision, identification of environmental risks and opportunities associated with the Ground Investigation, identification of contaminated land and a summary of key interpretative decisions for the Ground Investigation are not included in this Scope and will be added as a Compensation Event if needed.

3.3 Services Search

3.3.1 The *Consultant* shall obtain services data from utility companies and from relevant landowners. This shall include direct costs of obtaining data. This shall be incorporated into the appraisal, including preparation of plans.

3.3.2 When locations are identified, the *Client* will arrange for a non-intrusive survey to detect key utilities (e.g. GPR etc.) to inform GI and or options appraisal. The *Consultant* shall determine the extent of the survey and produce a specification for the survey in accordance with EA Guidance and Principal Designer discussion; defining type and purpose of survey including extents and available information. This will be covered under a CE once extent identified.

3.3.3 When locations are identified, the *Consultant* shall also provide a site supervisor to manage the survey supplier. This work is not included in this scope and will be covered under a CE.

3.3.4 The outputs from this survey shall be included in the *Consultant's* appraisal, including revising the plans.

4.0 Hydrology and Hydraulics

4.1.1. Hydraulics activities for this project are being completed under a separate commission.

5.1 Economics Appraisal

5.1.1 The *Consultant* shall undertake a cost effectiveness analysis (CEA) approach for short listed options using information provided by the cost consultant appointed by the *Client* to establish the least whole life cost method of fulfilling the recommendations of the S10 report for each location subject to appraisal. A cost benefit analysis (CBA) is not required.

5.1.2 Once the outline design has been completed for a given location, the location-specific CEA will be summarised by the *Consultant* into the Options Appraisal Report. The Technical Notes will therefore be accepted in stages with the completed location-specific sections frozen at each acceptance point.

6 Environmental Assessment

6.1.1 The Consultant shall confirm the expected environmental outputs agreed through engagement with NEAS. The activities identified shall take into account proportionality whilst supporting the achievement of the Client's wider aspiration.

6.1.2 The *Consultant* shall give due consideration of the environment and sustainability risks and opportunities throughout the design evolution of the project to maximise the delivery of *Client* and project whole life objectives.

6.1.3 The *Consultant* shall ensure that the project level assessment sits within the context of any previous strategic environmental assessment and supporting information for the area and brings forward all relevant information and conclusions.

6.1.4 The *Consultant* shall establish and understand the baseline and the legal and policy context to identify the key environmental/sustainability risks and opportunities. This shall support the options appraisal and justify the need for any future environmental assessment activity.

6.1.5 The *Consultant* shall report the findings of the scoping exercise as required which will form an Appendix to the OBC with relevant summary details incorporated into the relevant section(s) of the OBC main text.

6.1.6 The following appraisals will be completed by the *Consultant* to inform OAST and highlight potential impacts of each option:

- Preliminary Ecological Appraisal;
- Aquatic data (invertebrate and Macrophyte) will be reviewed to establish a baseline for inclusion in the PEA;
- Habitats Regulations Assessment (HRA) screening to compare options;
- WFD Screening;
- Heritage Appraisal;
- Planning Appraisal (to include landowner impacts);
- Landscape Appraisal;
- Climate change impacts;
- Air Quality and Noise impacts;

6.1.7 Outcomes and recommendations from the Environmental Options Appraisal may include the following which are excluded from this Scope:

- Formal EIA Screening;
- Further Heritage/Archaeological investigations/watching briefs;
- Planning Permission;
- Full EIA;
- Noise and/or Air Quality surveys;
- Further ecological surveys;
- Landscape and Visual Impact Assessment.

6.1.8 The Consultant shall obtain Heritage input as required to inform High Level Options Appraisal.

6.1.9 The Consultant shall obtain from Natural England, breeding wader data (including the associated survey methodology) to incorporate into the assessment free of charge.

6.1.10 Additional protected species and main growing season vascular plant surveys are likely to be required following completion of the Preliminary Ecological Appraisal Report and will be covered by CE's. The Consultant shall note the survey seasonal constraints, as indicated in the table below, and ensure, that should any additional surveys be required, that sufficient notice is given to allow for permissions, and that the surveys are able to be carried out within the timescales noted below.

Survey	Time constraint
Fish	June – August
Badger	Peak survey season November to April, with limited surveys outside of this period.
Bat - activity	April - October
Bat - presence / absence surveys	May to September
Birds - wintering	Survey period November - February
Birds - breeding	April - June
Dormouse	Deployment of nest tubes from March onwards, for checking in November
Otter	Can be surveyed any time of year
Reptiles - slow worm, grass snake, common lizard	Peak months are April and May, with surveys also possible in late August to late September. July and early August are to be avoided.
Water vole	Two surveys; one survey in the first half of the season (mid-April to end of June) and one the second half of the season (July to September).

6.1.11 The OAST Technical Notes provided by the *Consultant* will summarise the potential economic, environmental, social and legal impacts of options for each location forming part of the scheme. Wherever feasible, impacts will be quantified and converted into a monetary value. Where impacts cannot be quantified a qualitative assessment shall be used.

6.1.12 The *Consultant* shall prepare the Environmental assessment in the form of an Options Appraisal Summary Table (OAST) prepared for each location with listed options to support the Outline Business Case (OBC) and Options Assessment for the works. The findings of the Technical Notes will be collated for inclusion with the OBC

6.1.13 The Environmental, Social and Economic Options Appraisal Summary shall include those necessary for proportional assessment of impacts including the following

- Economic:
  - Property impacts (if any)
  - Recreation
- Environmental:
  - Biodiversity
  - Land use/Quality
  - Water (resources/flood risk/WFD)
  - Air Quality
  - Noise
  - Climate Change
  - Heritage/Archaeology
- Social:
  - Risk to life

- Landscape and Visual Amenity

- Legal obligations (including appraisal of planning requirements).

6.1.14 It is anticipated that the proposed options are likely to constitute Permitted Development under The Town and Country Planning (General Permitted Development) (England) Order 2015 (Stat Ins 2015 No 596). A6.1.16 To inform the OAST, the following tasks shall be undertaken by the *Consultant:*

- Review of the NEAS Screening;
- Liaison with the engineering team;
- Liaison with environmental specialists; and
- Liaison with NEAS

6.1.15 The Consultant will produce the items above, ensuring that any consent or communication with Natural England is dealt with in a timely manner and built into the overall programme. All documents including HRA, SSSI assents and habitat surveys will be written in collaboration with FBG and NEAS.

6.1.16 The *Consultant* is to note that the Site falls within the Somerset Levels Ramsar and SPA. A Habitats Regulations Assessment (HRA) is required by Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitats Regulations) for all projects and plans which may have 'likely significant effects' on a European Site and are not directly connected with or necessary to the management of the European Site.

6.1.17 As the Proposed Scheme is located within the Ramsar/SPA it will be necessary for the *Consultant* to undertake a Stage 1 Screening. It is anticipated that the HRA will also proceed to Stage 2 Appropriate Assessment. As mitigation/ controls will be required with regard to water quality, a simple Stage 2 Appropriate Assessment shall be undertaken by the *Consultant*. Should any further assessment be required to support the HRA, this will be a Compensation Event.

6.1.18 The Site also includes Curry and Hay Moors SSSI. Section 28H of the Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act (CRoW) 2000, places a duty upon the Competent Authority (in the case, the *Client*) to apply for assent to the Statutory Nature Conservation Body (SNCB) (Natural England) in relation to carrying out operational activities within or capable of affecting Sites of Special Scientific Interest (SSSI). Completion of a CRoW Act 2000: Environment Agency own works - Formal Notice by the *Consultant* shall be allowed for, with one round of consultation with a representative of Natural England. Submission to Natural England and any associated fees will be the responsibility of the *Client.* Once the OAST Technical Note has been written for a location, it shall be required to be approved by the *Client* and then frozen. The Environmental, Social and Economic Options Appraisal Summary will be collated once all the OAST Technical Notes are completed by the *Consultant* and accepted. Once the OAST Technical Notes are frozen the content for each location shall not be revisited.

6.1.19 Following completion of ecological surveys, (Ecology surveys are to be carried out under CE44 on Project CDF-SW-WSX-Appraisal-Reservoirs)

6.1.20 A Protected Species Survey Report will be produced for each species stated above (Badgers, Great Crested Newts, Bats), by the *Consultant,* which will set out agreed avoidance, mitigation, compensation and enhancement measures. Each report will include a protected species survey plan as well as any drawings required detailing the location and mitigation for protected species, produced digitally in QGIS

6.1.21 The scope of any additional Protected Species Surveys and Reporting will be based on the findings of the Phase 1 Habitat Survey and Preliminary Ecological Appraisal (PEA), and where possible, upon confirmation of the full scope of required works. Due to the time-sensitive nature of many Protected Species Survey methods, it may be necessary to undertake some species surveys ahead of the confirmation of all options being appraised in order to meet the *Client* dates for MIOS completion. There this leads to abortive / additional work this shall be subject to a compensation event.

7.Option Development

The Consultant shall prepare a list of options in collaboration with the area FCRM, ESE Contractor's representative, NEAS, Field Services and the Principal Designer, The Options Appraisal Report shall give reasons for including or excluding each option and up to three viable options per location shall be assessed in detail for technical, environmental and economic suitability.

7.1.1 Options appraisal shall include engagement with the ESE contractor on buildability and maintainability and the Client including Field Services and Area FCRM, Senior User and the QCE.

7.1.2 The Consultant shall use these outputs to select a preferred option at each location. The Consultant shall facilitate design workshops, attend risk workshops to produce a risk register with analysis in accordance with LIT 14847 Risk Guidance for Capital Flood Risk Management Projects.

7.1.3 The Consultant will use the outputs of the Option Appraisal to recommend a preferred option at each location for the Client's review. Client agreement of the preferred option will freeze the principal features of the arrangement being considered. Following outline design freeze, the preferred option at each location will be developed into the outline design for more detailed costing (by the Client's CCE) and inclusion in the OBC.

7.1.4 Curry Moor Reservoir is a flood cell on the floodplain to the River Tone, it is not a conventional reservoir. For an overview of the Somerset Levels and Moors the Consultant shall refer to the Client's 'Somerset Levels and Moors, Water Level Management and Nature Conservation Strategy Flood Defence Review – System Overview May 1999' by Lewin, Fryer & Partners.

7.1.5 Curry Moor is located beside the River Tone, and able to discharge downstream in extreme events via Athelney spillway, Lyng railway cutting spillway and over Baltmoor Wall into the River Parrett floodplain (North Moor and Salt Moor), or during periods of extreme impoundment via high spillway outlets, such as Baltmoor Wall, Athelney Farm Wall, Haggetts/ Moorside, Hill Section and Banklands wall.

7.1.6 The River Tone is tidally influenced to Newbridge Sluice. River Tone may suffer "lock out" at its confluence with the River Parrett due to high tides and/or flows coming down the River Parrett.

7.1.7 The designated inflow point into Curry Moor is Hookbridge spillway and other minor intakes including one from the adjacent flood cell of Haymoor via a siphon beneath the River Tone. The Haymoor siphon can work both ways, however the flows are a very small input compared to the Tone inflow. Anecdotally discrete "low spot" lengths of the left and right banks of the River Tone overtop before Hookbridge spillway overflows.

7.1.8 Revisions to the Reservoir shall not impact on the standard of protection of existing flood defences to properties on the right bank of the Tone from the Parrett confluence to Hookbridge at Stanmoor, Curload and Ham, and on the left bank at Coal Harbour House (Ham), Lawn Moor Farm, New Bridge Cottage and Turkey Cottage (Hookbridge).

7.1.9 The flood embankments where they are being refurbished or made more resilient shall be increased in dimensions to comply with EA OI992_14, assuming maintenance/construction plant with a maximum 3m width, but not limited in weight, but shall be as expected to access this farmed area.

7.1.10 Minimum embankment top width shall be designed to be minimum of 5m wide where there is no riverside berm or 4m with a berm. The riverward bank slope shall be a pragmatic safe gradient, which the existing river bank profile shall not intercept. The landward profile shall be at least 1 vertical to 4 horizontal, but ideally 1 in 5 to make it easily assessable to farmers livestock and machinery. The aforementioned specifics are the minimum Client requirements, and shall not necessarily be seen to automatically satisfy the QCE's requirements.

7.1.11 The bank top levels shall be assessed from the hydraulic analysis that will be required in order to comply with MIOS vii) and viii). The Client requires the Consultant's analysis to recognise the following constraints:

- Flood risk to properties on the right bank of the Tone from the Parrett confluence to Hookbridge at Stanmoor and Curload, and at Haymoor and Ham, and on the left bank at Coal Harbour House (Ham),Lawn Moor House Farm (North Curry), Newbridge Cottage, Turkey Cottage (Hookbridge), East Lyng and Cogload Farm shall not suffer a reduction in the current standard of flood protection.
- There is no change to the balance of flood risk between the left and right banks of the River Tone from upstream of the confluence with the River Parrett. The *Consultant* is required to undertake a topographic survey of the flood defence level on both the left and right banks of the River Tone.

7.1.12 If required, the improved embankments of the River Tone shall be designed to be raised as informed by the hydraulic analysis, not only recognising the above constraints, but also considering the inevitable consolidation of the newly placed material to extend the existing embankments. The Consultant shall present a pragmatic appreciation for the acceptance of the QCE and Client's Senior User.

8 The required methodology to progress MIOS ii is as follows:

The results of the assessment of a) Probability and b) Consequence competed as part of a separate commission to be presented to the QCE to agree options to be considered for mitigation based on a qualitative assessment of the severity of the risk (ie a x b based on Low, Medium, High type assessment). For current contractual purposes it can be assumed that options will include the following:

- Repairing/improving the Tone bank
- Repairing/improving hydraulic structures on the Moor which are likely to breach in the event of an uncontrolled filling of the moor
- Repairing/improving any weak points around the perimeter of the moor which are likely to breach in the event of an uncontrolled filling of the moor

In addition to the above, this MIOS contains a specific requirement for safe vehicle access, and this may be addressed by reference to EA OI 992_14, as the existing embankment is known to be narrow with a steep riverside bank.

7.1.14 The required methodology to progress Currymoor MIOS ii) is assessed to determine the risk of overflow which should be reduced as necessary, vi) and vii) is as follows:

a) The *Consultant* shall, for this stage, use a topographical survey of the existing flood embankments (separate CE) to identify low spots and vulnerabilities for the purpose of a breach analysis and the assessment of impact on the downstream retaining embankments and spillways. Should this assessment show that physical works are required the Consultant shall then undertake an outline design.

b) The *Consultant* shall carry out a visual inspection of condition to confirm the MIOS requirements and identify if and what other issues may exist.

c) At the same time as b) the *Consultant* shall consider whether any issues identified warrant GI.

d) At the same time as b) the *Consultant* shall consider whether other works (for example a piled cut off) are required in combination with the application of the OI.

e) At the same time as b) the *Consultant* shall consider whether the requirements of the OI can be relaxed as the embankment height is low and/or there is a wide berm present.

f) The *Consultants* deliverables from the above shall be a report detailing a desk top breach analysis with an appreciation of the risks and recommendations for undertaking GI, if required for the options identified. The desk type breach analysis shall be based on:

   i) The size and condition of the embankments;

   ii) A simple backwater analysis based on bank full conditions at the confluence of the Rivers Parrett and Tone;

   iii) The identification of low spots;

   iv) Assess the probability that the bank will breach. This will be based on assessing likely velocities on the bank and ability of the bank to withstand these velocities. An quantitative assessment of probability of breach is not required, but a quantitative assessment of the velocities is required.

   v) An assessment of the consequences by confirming what happens if the bank does breach - where does the water go, what level does it get to and would it cause a failure of another part of the 'dam' around the reservoir, thus releasing the contents of the reservoir.

   vi) The *Consultant* shall note that the above shall be undertaken by comparing levels in the Tone when overtopping is occurring into the reservoir (i.e when there is a probability of a breach) to levels of the features that will be overtopped (therefore no modelling required, but just a comparison of levels). Hydraulic calculations undertaken by the *Consultant* shall ascertain the ability of those features to withstand overtopping based on downstream profile and an assumed head. This will confirm if construction work could/should be undertaken to reduce the consequences of a failure. The Client requires to understand the consequences of these features failing and whether the areas they would fail into may be already inundated, in which case the consequences are zero.

   vii) Plans and marked up cross sections of OI strengthened embankments.

   viii) Plans and marked up cross sections of additional works from d) above.

   ix) Plans and marked up cross sections of alternative reduced width banks from e) above.

For MIOS ii and vi the *Consultant* shall appraise the risk of breach to all the raised embankments beside the River Tone to Curry Moor and Hay Moor. This appraisal shall be based on a topographic survey, photographic and visual inspection of the embankments in sufficient detail to consider the stability and detail the proposed works to the riverward and landward of the existing embankments. The *Consultant* shall record the above and analyse the condition and stability of the embankments

using reasonable skill and care with engineering judgement. It is envisaged that no specific ground investigation will be undertaken (other than that identified to date at Newbridge), although the *Client* will make available what information they have. The justifications for this approach, which the *Consultant* shall record, are as follows: a) The riverward banks and embankments comprise a mixture of material from multiple cycles of deposition and erosion, previous bank repairs and reconstruction likely using dredged material. The material will therefore vary from reach to reach along the River Tone. b)The assessment of the requirements of EA OI 992_14 (through bank widening to obtain an appropriate control zone) are likely to ensure the profile of the embankments are resilient for the envisaged imposed loads and current farming practice

7.1.15 The bank top levels shall be assessed from the hydraulic analysis that will be required in order to comply with MIOS vii) and viii). The Client requires the Consultant's analysis to recognise the following constraints:

- Flood risk to properties on the right bank of the Tone from the Parrett confluence to Hookbridge at Stanmoor and Curload, and at Haymoor and Ham, and on the left bank at Coal Harbour House (Ham), Lawn Moor House Farm (North Curry), New Bridge Cottage Turkey Cottage (Hookbridge), East Lyng and Cogload Farm shall not suffer a reduction in the current standard of flood protection.
- There is no change to the balance of flood risk between the left and right banks of the River Tone from upstream of the confluence with the River Parrett. The *Consultant* is required to undertake a topographic survey of the flood defence level on both the left and right banks of the River Tone.

7.1.13 For MIOS ii and vi the *Consultant* shall appraise the risk of breach to all the raised embankments beside the River Tone to Curry Moor and Hay Moor. This appraisal shall be based on a topographic survey, photographic and visual inspection of the embankments in sufficient detail to consider the stability and detail the proposed works to the riverward and landward of the existing embankments. The *Consultant* shall record the above and analyse the condition and stability of the embankments using reasonable skill and care with engineering judgement. It is envisaged that no specific ground investigation will be undertaken (other than that identified to date at Newbridge), although the *Client* will make available what information they have. The justifications for this approach, which the *Consultant* shall record, are as follows:

a) The riverward banks and embankments comprise a mixture of material from multiple cycles of deposition and erosion, previous bank repairs and reconstruction likely using dredged material. The material will therefore vary from reach to reach along the River Tone.

b) The assessment of the requirements of EA OI 992_14 (through bank widening to obtain an appropriate control zone) are likely to ensure the profile of the embankments are resilient for the envisaged imposed loads and current farming practices.

Where GI is required such as the need to identify suitable materials via burrows pits and or imported materials this will be instructed via the change process.

a) The *Consultant* shall, for this stage use the LiDAR data to identify low spots in the reservoir footprint, undertake the breach analysis, and develop the outline design. For the detailed design we may return to the locations of interest and undertake further detailed topographical survey.

b) The *Consultant* shall carry out a visual inspection of condition to confirm the MIOS requirements and identify if and what other issues may exist.

c) At the same time as b) the *Consultant* shall consider whether any issues identified warrant GI.

d) At the same time as b) the *Consultant* shall consider whether other works (for example a piled cut off) are required in combination with the application of the OI.

e) At the same time as b) the *Consultant* shall consider whether the requirements of the OI can be relaxed as the embankment height is low and/or there is a wide berm present.

g) The *Consultants* deliverables from the above shall be a report detailing a desk type breach analysis with an appreciation of the risks and recommendations for undertaking GI for the options identified. The desk type breach analysis shall be based on:

x) The size and condition of the embankments;

xi) A simple backwater analysis based on bank full conditions at the confluence of the Rivers Parrett and Tone;

xii) The identification of low spots;

xiii) An assessment of the consequences by confirming what happens if the bank does breach - where does the water go, what level does it get to and would it cause a failure of another part of the 'dam' around the reservoir, thus releasing the contents of the reservoir.

xiv) The *Consultant* shall note that the above shall be undertaken by comparing levels in the Tone when overtopping is occurring into the reservoir (i.e when there is a probability of a breach) to levels of the features that will be overtopped (therefore no modelling required, but just a comparison of levels). Hydraulic calculations undertaken by the *Consultant* shall ascertain the ability of those features to withstand overtopping based on downstream profile and an assumed head. This will confirm if construction work could/should be undertaken to reduce the consequences of a failure. The Client requires to understand the consequences of these features failing and whether the areas they would fail into may be already inundated, in which case the consequences are zero.

xv) Plans and marked up cross sections of OI strengthened embankments.

xvi) Plans and marked up cross sections of additional works from d) above.

xvii) Plans and marked up cross sections of alternative reduced width banks from e) above.

7.1.17 The aim of the outline design is to:

- Prepare the preliminary specification, drawings and documentation in consultation with Early Supplier Engagement;
- Enable sufficiently robust pricing by the *Client's* CCE to inform the OBC; and
- Enable the *Client* to draft the scope for the next phase of the project (OBC to FBC).

7.1.18 The *Consultant* shall provide input to the business case for the preferred option at each location and the outline design including provision of specification, drawings and documentation required for Early Supplier Engagement.

7.1.19 The Client will draft the scope for the next stage of the project (OBC-FBC) and the Consultant shall support the Client to produce the scope.

7.1.20 The *Consultant* will develop preliminary designs of the t listed options suitable for costing and appraise these options for technical, environmental and economic suitability, as discussed in the relevant sections of this Scope, utilising the evidence and data collated as part of this commission, buildability advice from the ESE and option costing information by others.

7.1.21 Costing of the preferred option will be undertaken (by others) to inform the target cost for the works and detailed design, and the OBC.

7.1.22 The *Consultant* will prepare the whole life cost build-up based on information supplied by the Environment Agency Operations team, and the *Client's* CCE.

7.1.23 The Options Appraisal will be summarised in a location-specific Technical Note

7.1.24 The Options Appraisal Report will collate and summarise the findings of the Technical Notes produced to describe the Options Appraisal. The document will be updated by the *Consultant* for each location once the final costing of the outline design has been completed.

7.1.25 The parts of the OBC document, that are the responsibility of the *Consultant* (as defined in Section 10 Business Case Submission, below), will be completed based on the information from the Options Appraisal Report, and the pricing from the *Client's* CCE using the outline design.

8. Stakeholder Engagement

8.1.1 The *Client* will lead on stakeholder engagement and consultation.

8.1.2 The *Consultant* shall prepare and update and maintain a stakeholder engagement plan in accordance with the EA guidance "Working with Others" including agreement of key stakeholders with discussion with the *Client*. The *Consultant* shall ensure that the results from the stakeholder engagement informs the appraisal. A Stakeholder engagement plan is being developed as part of a separate commission and will be used to further inform the consultation approach. Any changes required to this document will be completed under a compensation event

8.1.3 The *Consultant* shall consider the following and document how they are addressed on this contract

- Public diversity in engagement and perception of the project team.
- Accessibility.
- How inclusive environments are created for the project team.

8.1.4 Up to four newsletters and one resident letter will be prepared during the OBC stage of the project. The Client will arrange the printing and distribution of the newsletters and resident letters

8.1.5 The *Client* will arrange any printing of the public engagement display materials required (this will not apply should the event be virtual, but in such a case the consultant shall prepare materials for and help host the virtual event)

8.1.6The *Consultant* will attend monthly communication progress meetings, which will change to weekly meetings in the six-week lead up to the public consultation event

8.1.7 The *Consultant* will prepare information for and attend two key stakeholder meetings, one at short list stage and one at preferred option. Attendees may include

- Internal EA consultees via NEAS;
- Landowners;
- Local residents;
- Somerset Heritage Society;
- Local Planning Authority Archaeological Officer;
- Lead Local Flood Authority;
- Natural England; and
- Local Parish Councils
- Local Independent Drainage Board representatives

8.1.8 The *Client* will arrange and advertise 1 no. public meeting/workshop after the preferred options for all the locations have been agreed. The *Consultant* will prepare information for input into the consultation documents consisting of a PowerPoint presentation, a set of electronic handout materials, site plans and typical outline design drawings for public display. Attendance at this meeting will comprise the *Consultant* project manager and environmental lead

8.1.9 The Consultant will communicate with the statutory environmental body Natural England with input up to 0.5 days for an ecologist. Further communication with Historic England and Local Planning Authority Archaeological Officer will be subject to a Compensation Event

8.1.10 The *Client* will lead in the direct communication for obtaining the screening opinion from local planning authority. The *Consultant* will compile the supporting technical documentation for each location short listed for appraisal to obtain the screening opinion. This will comprise

- A plan to identify the land
- Description of the development and its location, including environmental sensitivities
- Description of the aspects of the environment likely to be significantly affected, and the nature of those effects
-

8.1.11 The Consultation process will be led by the Client, with support from the Consultant as outlined above.

9. Health and Safety

9.1.1 Health, Safety and Wellbeing (HSW) is the number one priority of the *Client.* The *Consultant* shall promote and adopt safe working methods and shall strive to deliver design solutions that provide optimum HSW to all.

9.1.2 The *Consultant* shall follow and comply with the requirements outlined in the Safety, health environment and wellbeing (SHEW) Code of Practice (LIT 16559).

9.1.3 The *Consultant* shall supply designer risk assessments, drawings and any other data required to fulfil their duties under CDM.

9.1.4 The works on site included in the geotechnical section will be subject to notification to the HSE. Appraisal work to outline design shall be treated as if it was notifiable.

9.1.5 The *Consultant* will provide the Principal Designer for this Scope from contract award until OBC. The Principal Designer duties will include a review of the outline design. As the extent of any site-based works during this scope of work is unknown, the additional input by the Principal Designer for these will be subject to a CE.

- The PD must be a lead or active designer and can either demonstrate relevant Skills, Knowledge and Experience to undertake the role or have access to relevant support to discharge their duties.

9.1.6 The PD will demonstrate their compliance with their CDM duties by preparing and updating the Pre-Construction Management Tool on a monthly basis (or more frequently for start of construction activities) and liaising with the CSF Resident Principal Designer.

9.1.7 The PD will identify and track significant risks, scrutinise the quality of treatment of risks with regards to the principals of prevention, co-ordinate other designers' mitigation and handover designs which can be constructed safely.

9.1.8 The PD shall ensure there is effective liaison and coordination between phases with the Principal *Contractor*

10. Business Case Submission

10.1.1 The *Consultant* shall support the *Client* in aggregating all of the work undertaken from this commission into a business case document – the Outline Business Case. The format of this document and guidance on the contents is detailed in Write a Business Case LIT 55124 and the Business Case templates.

10.1.2 The *Client* shall be responsible for dealing with responses to queries during the approval process and any resubmission required.

10.1.3 This section of the study shall conclude with the final approval of OBC using latest *Client* Guidance including all appendices and FSoD approval following submission to LPRG.

10.1.4 The *Consultant* will prepare an Options Appraisal Report. The format of this document and guidance on the contents is detailed in the guidance 'completing a project appraisal report' and the OBC templates.

10.1.5 The *Client* will prepare the OBC with support from the *Consultant*. The OBC document breaks down in five main parts, which are listed below along with the Consultant's input.

- STRATEGIC CASE: refers back to previous strategic studies, in this case to the Section 10 report. The *Consultant* will prepare the text describing the need for the works with reference to the Section 10 report to be inserted into the OBC.

- ECONOMIC CASE: narrative on how the option has been chosen. The content will be taken from the Option Appraisal Report.
- COMMERCIAL CASE: commercial case for works including procurement strategy, commercial terms. No *Consultant* input - written by the *Client.*
- FINANCIAL CASE: summary tables on cost with some background text on affordability. No *Consultant* input: costs supplied by the *Client's* CCE .
- MANAGEMENT CASE: project structure and governance. No *Consultant* input - written by the *Client*.

10.1.6 The *Client* will finalise the OBC and submit to LPRG for approval

11.Carbon

Section 11 shall be considered in line with clause 2.1

11.1.1 Carbon emissions shall be identified and assessed on a strategic whole life basis (cost and benefit) in the economic appraisal of options and also as a specific operational target (carbon budget) of the *Client.*

11.1.2 The *Consultant* is required to work with the *Client* and the ESE *contractor* to reduce the project carbon footprint by an amount to be agreed.

11.1.3 The *Consultant* shall demonstrate how they have met the corporate requirement for carbon reduction using the Carbon Tool, 'ERIC' and

- Identifying carbon differentials between alternative solution options at appraisal stage.
- Ongoing updates to the carbon calculator and use of the carbon calculator to inform design and construction methodology decisions.
- Completion and submission of the carbon calculator at the pre-defined stages.
- Inclusion of a whole-life carbon appraisal to ensure optimisation of lowest carbon in short-listed and preferred options in OBC

11.1.4 Carbon emissions shall be identified and assessed on a strategic whole life basis in the appraisal of the shortlisted options and the optimisation of the preferred option.

11.1.5 At the options appraisal stage the Carbon Modelling Tool (CMT) will be completed for all shortlisted options at each location identifying carbon differentials between alternative options. This assessment will form part of the criteria for the options appraisal.

11.1.6 In addition to this the CMT will be used to establish the carbon baseline for the project. Carbon savings over the project life cycle will be assessed against this baseline.

11.1.7 Following the establishment of the carbon baseline and confirmation of the preferred option at each location, the Carbon Calculator will be used to inform design decisions. The process will be used to demonstrate how the project has met the *Clients* corporate requirement for carbon reduction.

11.1.8 The process of carbon optimisation will be documented through a Carbon Optimisation Report covering the whole project.

11.1.9 The completed carbon tool (comprising the Carbon Modelling Tool and the Carbon Calculator) and the Carbon Optimisation Report will be submitted as part of the OBC supporting information.

12.General

CEEQUAL

12.1.1 The Consultant will complete the CEEQUAL assessment in line with the provided CEEQUAL scoping note based on the CEEQUAL V6 Technical Manual requirements. Assessment issues to be scoped in will be provided by NEAS. As the scope of the assessment is currently unknown the assessment is not included in this Scope, this will be added by a CE once the scope has been agreed.

13 Relevant guidance

The *Consultant* shall deliver the *service* using the following guidance:

Ref	Report Name	Where used
LIT 16559	Safety, health environment and wellbeing (SHEW) Code of Practice	Throughout
183_05	Data management for FCRM projects	Mapping and modelling
379_05	Computational Modelling to assess flood and coastal risk	Modelling
LIT 14847	Risk Guidance for Capital Flood Risk Management Projects	Option development
OI 120_16	Whole-life Carbon Planning Tool	Option development
LIT 14284	Whole Life (Construction) Carbon Planning Tool User Guide	Option development
	Access for All Design Guide	Option development
	Project Cost Tool	Costs
LIT 12982	Working with Others: A guide for staff	Consultation & Engagement
Gov.uk	Appraisal Guidance Manual	OBC
672_15_SD03	Business case template – 5 case Model	OBC
672_15_SD02	Short Form Business case template	OBC

Ref	Report Name	Where used
LIT 4909	Flood and Coastal Erosion Risk Management appraisal guidance (FCERM-AG)	OBC
OI 992-14	Operating ride on plant on raised embankments, berms or riverbanks	OBC
	Flood and Coastal Erosion Risk Management: A Manual for Economic Appraisal (the 'Multi Coloured Manual')	OBC
OI 1334_16	Benefits management Framework	OBC
Gov.uk	Partnership Funding Calculator Guidance	OBC
LIT 15030	The Investment Journey	OBC
LIT 55124	Write a Business Case	OBC
LIT 14953	FCRM Efficiency Reporting – capital and Revenue	OBC
LIT 12280	Lessons Log template	OBC
LIT 55096	Integrated Assurance & Approval Strategy	Approvals

14. Requirements of the Programme

14.1.1 The Consultant shall provide a detailed programme in Microsoft Project format version X meeting all requirements of Cl.31 of the Conditions of Contract.

14.1.2 The Consultant shall provide a baseline programme for the project start up meeting and shall update the programme monthly for progress meetings with actual and forecast progress against the baseline. The programme shall also include alignment and submission of the BIM Execution Plan (BEP) and Master Information Delivery Plan (MIDP).

14.1.3 The programme shall cover all the activities and deliverables in the project, and include all major project milestones from commencement to the end of the reporting, consultation and approvals stage.

14.1.4 The programme shall include review and consultation periods for drafts, scoping letters, statutory consultation etc.

14.1.5 The programme shall identify time risk allowance on the activities and float.

14.1.6 The Consultant shall contribute to the Programme such that the following milestone dates are achieved

Date	Event
8/4/22	Completion of Outline Design

14.1.7 The following are absolute requirements for Completion to be certified:

- Population of the *Client's* latest version of the Project Cost and Carbon Tool, or its successor

- Transfer to the *Client* of BIM data
- Clause 11.2(2) work to be done by the Completion Date

15. Services and other things provided by the *Client*

Access to Environment Agency systems and resources including:

- Asite.
- FastDraft.
- Collaborative Delivery Community SharePoint access.
    - Letter of Appointment of Principal Designer.
    - Site access authorisation letter(s).
    - Previous studies listed in Section 1.2.1. The *Client* will provide the previous studies within two weeks of contract award.

16. Data

Requirements for the handling of project data are covered by the framework schedules.

17. *Client's* Advisors

17.1.1 The *Client* for the Contract is represented by the Programme & Contract Management (PCM) team, primarily the EA *Project Manager*, acting as the Service Manager, and in their absence the Project Executive. Instructions may only be given by these staff.

17.1.2 The *Client* has a number of advisory departments. Instructions will only be deemed enacted from them when they are confirmed by an Instruction from the Client. These departments include Asset Performance, Partnership & Strategic Overview, NEAS, etc.

17.1.3 The *Client's* organisation has a regulatory function. Communications from the Environment Agency in its capacity as a regulator are not to be confused with communications as the *Client.*

18. Client Documents the *Consultant* Contributes to

The *Client* maintains several project documents, the *Consultant* is required to contribute to these *Client* owned documents:

- Project Risk Register.
- Project Efficiency CERT Form.
- Scheme Lessons Learnt Log.

- Cost and Carbon Tool (CCT)
- Outline Business Case (OBC)
- Master Programme.

Appendices

Appendix 1 – BIM Protocol

The *Consultant* shall adhere to the Environment Agency's Employers Information Requirements (EIR) framework level minimum technical requirements.
All *Client* issued information referenced within the Information Delivery Plan (IDP) requires verifying by the *Consultant* unless it is referenced elsewhere within the Scope.
https://www.asite.com/login-home
The *Consultant* shall register for an Asite Account and request access to the project workspace to view the IDP.