**Framework:** Collaborative Delivery Framework
**Supplier:** Ove Arup & Partners Ltd
**Company Number:** 01312453

**Geographical Area:** North East
**Contract Name:** South Elmsall FAS SOC to OBC
**Project Number:** [redacted]

**Contract Type:** Professional Service Contract
**Option:** Option C

**Contract Number:** C20131

**Stage:** SOC_to_OBC

| Revision | Status | Originator | Reviewer | Date |
|---|---|---|---|---|
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| | | | | |
| | | | | |
| | | | | |

## PROFESSIONAL SERVICE CONTRACT under the Collaborative Delivery Framework
## CONTRACT DATA

**Project Name** South Elmsall FAS SOC to OBC

**Project Number** [redacted]

This contract is made on 01 August 2023
between the *Client* and the *Consultant*

- This contract is made pursuant to the Framework Agreement (the "Agreement") dated 01st day of April 2019 and Framework Agreement Extension dated 1st April 2023 between the *Client* and the *Consultant* in relation to the Collaborative Delivery Framework. The entire agreement and the following Schedules are incorporated into this Contract by reference

- Schedules 1 to 23 inclusive of the Framework schedules are relied upon within this contract.

- The following documents are incorporated into this contract by reference
South Elmsall FAS OBC Scope_V1.8

## Part One - Data provided by the *Client*

### Statements given in all Contracts

**1 General**

The *conditions of contract* are the core clauses and the clauses for the following main Option, the Option for resolving and avoiding disputes and secondary Options of the NEC4 Professional Service Contract June 2017.

| Main Option | Option C | Option for resolving and avoiding disputes | W2 |
|---|---|---|---|

Secondary Options

X2: Changes in the law

X7: Delay damages

X9: Transfer of rights

X10: Information modelling

X11: Termination by the *Client*

X18: Limitation of liability

X20: Key Performance Indicators

Y(UK)2: The Housing Grants, Construction and Regeneration Act 1996

Y(UK)3: The Contracts (Rights of Third Parties) Act 1999

Z: *Additional conditions of contract*

The *service* is As defined in the scope to this contract: completion of appraisal work to progress the project from SOC to OBC.

The *Client* is Environment Agency

Address for communications
Horizon House
Deanery Road
Bristol
BS1 5AH

Address for electronic communications [redacted]

The *Service Manager* is [redacted]
Address for communications [redacted]

Address for electronic communications [redacted]

The Scope is in
South Elmsall FAS OBC Scope_V1.7

The *language of the contract* is English

The *law of the contract* is
the law of England and Wales, subject to the jurisdiction of the courts of England and Wales

The period for reply is 2 weeks

The *period for retention* is
6 years following Completion or earlier termination

The following matters will be included in the Early Warning Register
Incorporation of Historical Environmental Action Plane (HEMP) for appraisal activities. Implementation of new Environmental MTRs are still being queried, and this resolution to how best to include and price for the HEMP are yet to be decided.

Early warning meetings are to be held at intervals no longer than 2 weeks

## 2 The *Consultant's* main responsibilities

The *key dates* and *conditions* to be met are

| *conditions* to be met | *key date* |
|---|---|
| 'none set' | 'none set' |
| 'none set' | 'none set' |
| 'none set' | 'none set' |

The *Consultant* prepares forecasts of the total Defined Cost plus Fee and *expenses* at intervals no longer than 4 weeks

## 3 Time

The *starting date* is 01 August 2023

The *Client* provides access to the following persons, places and things

| access | *access date* |
|---|---|
| Asite | 01 August 2023 |
| FastDraft | 01 August 2023 |

The *Consultant* submits revised programmes at intervals no longer than 4 weeks

The *completion date* for the whole of the *service* is 05 March 2025

The period after the Contract Date within which the *Consultant* is to submit a first programme for acceptance is 4 weeks

## 4 Quality management

The period after the Contract Date within which the *Consultant* is to submit a quality policy statement and quality plan is 4 weeks

The period between Completion of the whole of the *service* and the *defects date* is 26 weeks

## 5 Payment

The *currency of the contract* is the £ sterling

The *assessment interval* is Monthly

The *Client* set total of the Prices is [redacted]

The *expenses* stated by the *Client* are as stated in Schedule 9

The *interest rate* is 2.00% per annum (not less than 2) above the Base rate of the Bank of England

The locations for which the *Consultant* provides a charge for the cost of support people and office overhead are

All UK Offices

If Option C is used

The *Consultant's share percentages* and the *share ranges* are:

| *share range* | | | | *Consultant's share percentage* | |
|---|---|---|---|---|---|
| less than | | *80 %* | | *0* | *%* |
| from | *80 %* | *to* | *120 %* | *as set out in Schedule 17* | |
| greater than | | *120 %* | | *as set out in Schedule 17* | |

## 6 Compensation events

These are additional compensation events

1. Carbon Methodology - Updates to the Carbon Methodolgy v3 dated 08 June 2023.
2. 'not used'
3. 'not used'
4. 'not used'
5. 'not used'

## 8 Liabilities and insurance

These are additional *Client's* liabilities

1. 'not used'
2. 'not used'
3. 'not used'

The minimum amount of cover and the periods for which the *Consultant* maintains insurance are

| EVENT | MINIMUM AMOUNT OF COVER | PERIOD FOLLOWING COMPLETION OF THE WHOLE OF THE *SERVICE* OR TERMINATION |
|---|---|---|
| The *Consultant's* failure to use the skill and care normally used by professionals providing services similar to the *service* | [redacted] | [redacted] |
| Loss of or damage to property and liability for bodily injury to or death of a person (not an employee of the *Consultant)* arising from or in connection with the *Consultant* Providing the Service | [redacted] | [redacted] |
| Death of or bodily injury to the employees of the *Consultant* arising out of and in the course of their employment in connection with the contract | [redacted] | [redacted] |
| The *Consultant's* total liability to the *Client* for all matters arising under or in connection with the contract, other than the excluded matters is limited to | [redacted] | |

## Resolving and avoiding disputes

The *tribunal* is litigation in the courts

| | |
|---|---|
| The *Adjudicator* is | 'to be confirmed' |
| Address for communications | 'to be confirmed' |
| Address for electronic communications | 'to be confirmed' |
| The *Adjudicator nominating body* is | The Institution of Civil Engineers |

## Z Clauses

**Z1 Disputes**
Delete existing clause W2.1

**Z2 Prevention**

The text of clause 18 Prevention is deleted.
Delete the text of clause 60.1(12) and replaced by:
The *service* is affected by any of the following events
• War, civil war, rebellion, revolution, insurrection, military or usurped power;
• Strikes, riots and civil commotion not confined to the employees of the *Consultant* and sub consultants,
• Ionising radiation or radioactive contamination from nuclear fuel or nuclear waste resulting from the combustion of nuclear fuel,
• Radioactive, toxic, explosive or other hazardous properties of an explosive nuclear device,
• Natural disaster,
• Fire and explosion,
• Impact by aircraft or other aerial device or thing dropped from them.

**Z3 Disallowed Costs**

Add the following in second bullet of 11.2 (18) add:
(including compensation events with the Subcontractor, i.e. payment for work that should not have been undertaken).
Add the following additional bullets after 'and the cost of ' :
• Mistakes or delays caused by the *Consultant's* failure to follow standards in Scopes/quality plans
• Reorganisation of the *Consultant's* project team
• Additional costs or delays incurred due to *Consultant's* failure to comply with published and known guidance or document formats
• Exceeding the Scope without prior instruction that leads to abortive cost
• Re-working of documents due to inadequate QA prior to submission, i.e. grammatical, factual arithmetical or design errors
• Production or preparation of self-promotional material
• Excessive charges for project management time on a commission for secondments or full time appointments (greater than 5% of commission value)
• Any hours exceeding 8 per day unless with prior written agreement of the *Service Manager*
• Any hours for travel beyond the location of the nearest consultant office to the project unless previously agreed with the *Service Manager*
• Attendance of additional individuals to meetings/ workshops etc who have not been previously invited by the *Service Manager*
• Costs associated with the attendance at additional meetings after programmed Completion, if delay is due to *Consultant* performance
• Costs associated with rectifications that are due to *Consultant* error or omission
• Costs associated with the identification of opportunities to improve our processes and procedures for project delivery through the *Consultant's* involvement
• Was incurred due to a breach of safety requirements, or due additional work to comply with safety requirements
• Was incurred as a result of the *Client* issuing a Yellow or Red Card to prepare a Performance Improvement Plan
• Was incurred as a resulting of rectifying a non-compliance with the Framework Agreement and/or any call off contracts following an audit

**Z4 Share on termination**

Delete existing clause 93.3 and 93.4 and replace with:
93.3 In the event of termination in respect of a contract relating to services there is no *Consultant's* share'

**Z6 The Schedule of Cost Components**

The Schedule of Cost Components are as detailed in the Framework Schedule 9.

54.1 The *Service Manager* assess the *Consultant's* share of the difference between the Aggregated Total of the Prices and the Aggregated Price for Service Provided to Date.
The difference is divided into increments falling within each of the share ranges. The limits of a share range are the Aggregated Price for Service Provided to Date divided by the Aggregated Total of the Prices, expressed as a percentage. The *Consultant's* share equals the sum of the products of the increment within each share range and the corresponding *Consultant's* share percentage.
54.2 If the Aggregated Price for Service Provided to Date is less than the Aggregated Total of the Prices, the Consultant is paid its share of the saving. If the Aggregated Price for Service Provided to Date is greater than the Aggregated Total of the Prices, the *Consultant* pays its share of the excess.
54.2A If, prior to Completion of the whole of the service, the Price for Service Done to Date exceeds 111% of the total of the Prices, the amount in excess of 111% of the total of the Prices is retained from the Consultant.
54.3 If, prior to the Completion Date, the Price for Service Provided to Date exceeds 110% of the total of the Prices, the amount in excess of 110% of the total of the Prices is retained from the *Consultant* .
54.4 The *Service Manager* makes a preliminary assessment of the *Consultant's* share at Completion of the Whole of the service using forecasts of the final Aggregated Price for Service Provided to Date and the final Aggregated Total of Prices. This share is included in the amount due following Completion of the whole of the services.
54.5 The *Service Manager* makes a final assessment of the *Consultant's* share, using the final Aggregated Price for Service Provided to Date and the final Aggregated Total of the Prices. This share is included in the final amount due.
93.3 If there is a termination except if Z4 applies, the *Service Manager* assesses the *Consultant's* share after certifying termination. The assessment uses as the Aggregated Price for Service Provided to Date the sum of
• the total of
– the Defined Cost which the *Consultant* has paid and
– which it is committed to pay for work done before termination
and
• the total of
– the Defined Cost which the *Consultant* or *Contractor* has paid and
– which it is committed to pay
in the *partner contract* before the date the termination certificate is issued under this contract.
The assessment uses as the Aggregated Total of the Prices the sum of
• the total of
– the lump sum price for each activity which has been completed and
– a proportion of the lump sum price for each incomplete activity which is the proportion of the work in the activity which has been completed
and
• the total of
– the lump sum price for each activity which has been completed and
– a proportion of the lump sum price for each incomplete activity which is the proportion of the work in the activity which has been completed
in the *partner contract* before the date the termination certificate is issued under this contract.

Add:
11.2(25) The Aggregated Total of the Prices is sum of
• the total of the Prices and
• the total of the Prices in the *partner contract*

11.2(26 ) The Aggregated Price for Service Provided to Date is the sum of
• the Price for Service Provided to Date and
• the Price for Service Provided to Date or the Price for Work Done to Date in the *partner contract* .

**Z23 Linked contracts**

Issues requiring redesign or rework on this contract due to a fault or error of the *Consultant* will neither be an allowable cost under this contract or any subsequent contract, nor will it be a Compensation event under this contract or any subsequent contract under this project or programme.

**Z24 Requirement for Invoice**

Add the following sentence to the end of clause 51.1:
The Party to which payment is due submits an invoice to the other Party for the amount to be paid within one week of the *Service Manager's* certificate.
Delete existing clause 51.2 and replace with:
51.2 Each certified payment is made by the later of
• one week after the paying Party receives an invoice from the other Party and
• three weeks after the assessment date, or, if a different period is stated in the Contract Data, within the period stated.
If a certified payment is late, or if a payment is late because the *Service Manager* has not issued a certificate which should be issued, interest is paid on the late payment. Interest is assessed from the date by which the late payment should have been made until the date when the late payment is made, and is included in the first assessment after the late payment is made

**Z25 Risks and insurance**

The *Consultant* is required to submit insurances annually as Clause Z4 of the Framework Agreement

**Z 29 Payment for Service Provided to Date**

Delete existing clause 11.2 (21) and replace with:
"11.2 (21) The Price for Service Provided to Date is the total Defined Cost which the *Service Manager* forecasts will have been paid by the *Consultant* before the next assessment date plus the Fee. The Price for Service Provided to Date shall not exceed the forecast for the same as provided under clause 20.5"

**Z111 PSC - Fee adjustment for non compliance with Scope**

Delete existing 11.2 (8) and replace with the following clause
The Fee is the amount calculated by applying the fee percentage to the amount of the Defined Cost excluding the cost of Subcontractors that have not complied with procurement by best value processes as defined in the Scope. 80% of the fee percentage is applied to the amount of the Defined Cost for Subcontractors that have not complied with procurement by best value processes as defined in the Scope.

**Z120 PSC – Carbon reduction**

| Ref. (Clause No.) | Clause words |
|---|---|
| 11.2<br>Definitions | Add as Clause 11.2(36)<br>(36) The Performance Table states the targets the *Consultant* is to achieve in Providing the Service and sets out the adjustment to payment if a measured performance is higher, the same or lower than its target. The Performance Table is the *performance table* unless later changed in accordance with the contract. |
| 15.1<br>Early Warning | In Clause 15.1 add as a new bullet between the second and third bullet:<br>"• result in a target in the Performance Table not being met," |
| 42.2<br>Accepting Defects | Delete Clause 42.2 and replace with:<br>'If the *Consultant* and the *Service Manager* are prepared to consider the change, the *Consultant* submits a quotation to the *Service Manager* for acceptance including any combination of:<br>• Reduced Prices<br>• an earlier Completion Date<br>• a revised programme<br>• Changes to the Performance Table<br><br>If the quotation is accepted, the *Service Manager* changes the Scope, the Prices, the Completion Date and the Performance Table accordingly and accepts the revised programme. |
| Performance Measurements | |
| 57 | Add as Clause 57: |
| 57.1 | From the starting date until the Completion Date, the *Consultant* reports to the *Service Manager* its performance against the targets in the Performance Table. Reports are provided at the intervals stated in the Performance Table. |
| 57.2 | If the *Consultant's* performance against a target in the Performance Table is not achieving or is forecast not to achieve the performance target stated, it submits to the *Service Manager* for acceptance its proposals for improving performance.<br><br>A reason for not accepting the proposals is that they will not provide the improvement in performance needed to achieve the target in the Performance Table. |
| 57.3 | At the dates stated in the Performance Table,<br>• if the relevant performance does not meet the target stated in the Performance Table, the *Consultant* pays the amount stated in the Performance Table,<br><br>• if the relevant performance exceeds or meets the target stated in the Performance Table, the *Consultant* is paid the amount stated in the Performance Table. |
| 57.4 | Information in the Performance Table is not Scope. |
| X18 | X18.5 add as a new bullet after the fourth bullet:<br>• Low performance damages if the Performance Table applies. |

The *performance table* is

| |
|---|
| the Performance Table for this contract type [form, Partner, Stage] as set out in the Carbon Methodology. |

## Secondary Options

### OPTION X2: Changes in the law

The *law of the project* is the law of England and Wales, subject to the jurisdiction of the courts of England and Wales

### OPTION X7: Delay damages

***X7 only*** Delay damages for Completion of the whole of the *service* are [redacted] per day

### OPTION X10: Information modelling

The period after the Contract Date within which the *Consultant* is to submit a first Information Execution Plan for acceptance is 2 weeks

### OPTION X18: Limitation of liability

The *Consultant's* liability to the *Client* for indirect or consequential loss is limited to

[redacted]

The *Consultant's* liability to the *Client* for Defects that are not found until after the *defects date* is limited to

[redacted]

The *end of liability* date is [redacted] after the Completion of the whole of the *service*

### OPTION X20: Key Performance Indicators (not used with Option X12)

The *incentive schedule* for Key Performance Indicators is in Schedule 17

A report of performance against each Key Performance Indicator is provided at intervals of

3 months

### Y(UK)2: The Housing Grants, Construction and Regeneration Act 1996

The period for payment is 14 days after the date on which payment becomes due

### Y(UK)3: The Contracts ( Rights of Third Parties Act) 1999

term *beneficiary*

## Part Two - Data provided by the *Consultant*

Completion of the data in full, according to the Options chosen, is essential to create a complete contract.

### 1 General

The *Consultant* is

Name [redacted]

Address for communications [redacted]

Address for electronic communications [redacted]

The *fee percentage* is Option C 14.00%

The *key persons* are

Name (1) [redacted]
Job
Responsibilities
Qualifications
Experience

Name (2) [redacted]
Job
Responsibilities
Qualifications
Experience

The following matters will be included in the Early Warning Register

**3 Time**

The programme identified in the Contract Data is

**5 Payment**

The *activity schedule* is

**Resolving and avoiding disputes**

The *Senior Representatives* of the *Consultant* are

Name (1) [redacted]
Address for communications
[redacted]

Address for electronic communications
[redacted]

**X10: Information Modelling**

The *information execution plan* identified in the Contract Data is

# Contract Execution

***Client*** **execution**

Signed Underhand by [**PRINT NAME**] for and on behalf of the Environment Agency

[redacted]

[redacted] 01/08/2023 [redacted]

Signature Date Role

***Consultant*** **execution**

Signed Underhand by [**PRINT NAME**] for and on behalf of Ove Arup & Partners Ltd

[redacted]

[redacted] 24/07/2023 [redacted]

Signature Date Role

Environment Agency

NEC4 Professional Service Contract (PSC)
Scope
Project / contract information

| | |
|---|---|
| Project name | South Elmsall FAS |
| Project SOP code | [redacted] |
| Contract number | C20131 |
| Date | 11/07/2023 |

Assurance

| | | |
|---|---|---|
| Author | [redacted] | Date: 11/07/2023 |
| Consulted | [redacted] | Date: 02/08/2022 |
| Reviewed | [redacted] | Date:11/07/2023 |
| Checked prior to issue | [redacted] | Date:<br>11/07/2023<br>05/06/2023 |
| Consulted | [redacted] | Date: 03/05/2023 |

Revision History

| Revision date | Summary of changes | Version number |
|---|---|---|
| 27/07/2022 | First issue | V1.0 |
| 25/08/2022 | Review, edits and comments by [redacted] | V1.1 |
| 05/09/2022 | Review and comments from EA prior to scope freeze | V1.2 |
| 12/09/2022 | Review of further comments to section 6 | V1.3 |
| 13/09/2022 | Document to review following scope freeze discussion | V1.4 |
| 22/09/2022 | [redacted] Response to scope freeze comments | V1.5 |
| 03/04/2023 | Review of Section 6, Environmental Assessment to reflect updated MTRs | V1.6 |
| 03/5/2023 | Amendment of Section 6, Environmental Assessment to reflect updated MTRs approach | V1.7 |
| 11/07/2023 | Update of the scope to align with Carbon Methodology (see Section 11) | V1.8 |

This Scope should be read in conjunction with the version of the Minimum Technical Requirements and Exchange Information 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 and Exchange Information Requirements:

1

| Document | Document Title | Version No | Issue date |
|---|---|---|---|
| LIT 13258 | Minimum Technical Requirements | Version 12 | 30/12/2021<br><br>MTR library |
| LIT 17641 | Exchange Information Requirements | Version 2.4 | 27/02/2023<br><br>EIR library |
| LIT_65150 | Minimum Technical Requirements – Environment and Sustainability | Version 2.0 | 30/03/2023 |

# 1 Overview

## 1.1 Background

South Elmsall is a busy market town located to the east of Hemsworth in West Yorkshire, situated between Wakefield and Doncaster (Figure 1). There is a history of flooding in South Elmsall, with the most notable flood event to date occurring in June 2007. Hydraulic modelling suggests a significant flood risk to residents, becoming more severe with the impacts of climate change. An effective scheme would provide opportunities to not only improve flood risk, but also enhance the environment, deliver amenity benefits, increase and maintain investor confidence in the area and reduce vulnerability, allowing communities to focus on other opportunities.

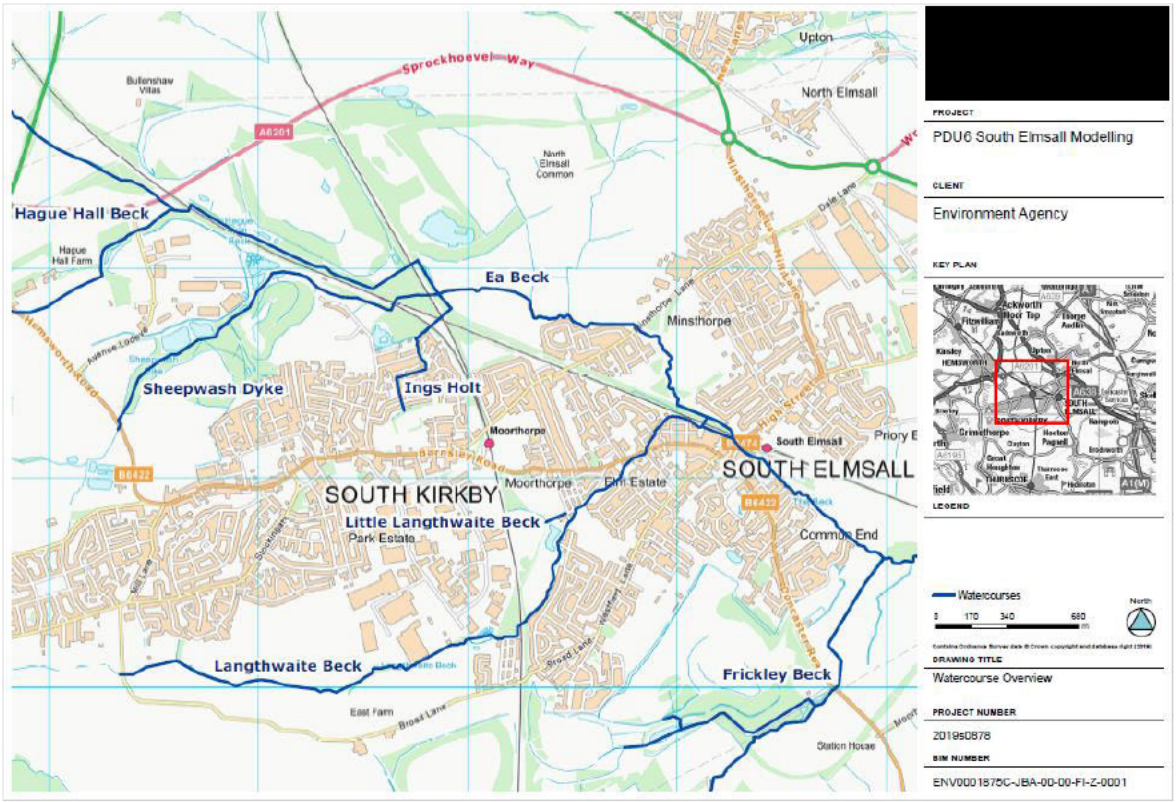



Figure 1 Location of South Elmsall and study area

Various mechanisms pose flood risk to different areas of South Elmsall:

- Langthwaite Beck exceeding the culvert capacity on Langthwaite Lane, flooding properties in Moorthorpe;
- Langthwaite Beck overtopping the right bank near the town centre, flooding properties and inundating the Artisans Yard, market and public car park;
- Elevated levels of Ea Beck causing overtopping of the right bank, flooding properties on Minsthorpe Vale and Pendennis Avenue;
- Elevated levels of South Kirkby Marsh, meaning the tributaries Sheepwash Dyke and Ings Holt are unable to effectively drain; and
- Exceedance of culverts on Ings Holt, flooding properties along Brooksfield, South Kirkby.

The Environment Agency (EA) commissioned [redacted] to develop a Strategic Outline Case (SOC) for the town of South Elmsall. A modelling and mapping study, undertaken alongside the

SOC, improved the understanding of fluvial flood risk from Ea Beck, Langthwaite Beck and tributaries. Particularly notable flood events occurred in June 2007 and January 2008.

The overarching report summarises the findings of the work undertaken and developed as supporting appendices. The overall aim of the study was to determine the scheme requirements needed to provide a 1% AEP event plus climate change (CC) Standard of Protection (SoP) from fluvial flooding. The next stage of this project is to produce an OBC with sufficient modelling and economics to appraise the project, including ground investigation of areas to be scoped within this next stage. This project will be delivered through the CDF Framework using [redacted] and [redacted] as the nominated suppliers for this region.

## 1.2 Previous Studies

1.2.1 **In undertaking the *service* the *Consultant* shall take account of the previous studies detailed in the table below and produce a short technical summary explaining how best use will be made of historical data.**

| Report | Date | Format | Outcomes of study |
|---|---|---|---|
| Strategic Outline Case | Nov 2021 | [redacted] | Detailed in document |
| Hydraulic Modelling | Nov 2021 | [redacted] | Detailed in document |
| Topographic Surveys / CCTC surveys | Feb 2017<br><br>Nov 2018 | [redacted] | Detailed in documents |

Some existing data such as Light Detection and Ranging (LiDAR) data and base mapping can be found on the DEFRA data services platform - https://environment.data.gov.uk/

Environment Agency data and evidence must be used in compliance with the Open Government licence found here: http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3 along with Conditional Data Licence 136333 found on the project workspace on Asite under reference I0100_1.

1.2.2 **The previous studies have been undertaken by or for the *Client* using reasonable skill and care and have been accepted. The *Consultant* shall review the information provided and notify the *Client* of any deficiencies in its adequacy. Following this review, and completion of any work required to rectify the deficiencies identified, the *Consultant* shall take the risk of any deficiencies in existing data quality and quantity which have not been notified to the *Client*.**

## 1.3 Objective

The Environment Agency has a 25 Year Environment Plan aims to ‘reduce the risk of harm to people, the environment and the economy from natural hazards including flooding, drought and coastal erosion by boosting the long term resilience of homes, businesses and infrastructure.’

The objectives for the project are to:

1. Assess the impact of flooding in South Elmsall, considering economic, environmental and social effects
2. Review the causes of previous incidents and their significance
3. Identify potential flood alleviation measures and undertake a screening exercise to determine which should be taken forward for more detailed assessment
4. 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.
5. Undertake a more detailed feasibility assessment of screened measures to determine viability based on a Benefit-Cost Analysis.
6. Assess the feasibility of future flood warning systems in the catchment.

# 2 The *service*

## 2.1 Outcome Specification

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

2.1.1 The *Consultant* shall demonstrate sustainability leadership through fully considering and contributing to achieving the *Client*'s environment and sustainability ambitions and targets. 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.

2.1.2 The *Consultant* shall 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.

2.1.3 The *Consultant* shall ensure the optioneering process fully considers and addresses sustainability including carbon reduction as strategic outcomes. 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.

2.1.4 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. 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.

2.1.5 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.

2.1.6 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).

2.1.7 The *Consultant* shall ensure that the options and final solution take into consideration all relevant guidance and legislation and seek to minimise long-term asset/land management and maintenance costs and carbon.

2.1.8 The options will also demonstrate that the *Consultant* has learnt from best practice and demonstrate how optimum flood risk reduction, natural processes, carbon reduction, recreation, good ecological water quality and visual amenity can be combined.

2.1.9 This commission must consider planning permission and all other necessary permissions/licences being obtained at detailed design stage. The outline design shall feasibly be able to obtain planning permission.

2.1.10 The *Consultant* shall demonstrate that consideration has been given to a long 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.

2.1.11 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.

2.1.12 The *Consultant* shall compile the supporting technical documentation required for the *Client* to obtain a screening opinion from the local planning authority.

## 2.2 Constraints

2.2.1 Stakeholders: The preferred option developed must have taken account the comments of the key Stakeholders, who are identified by the *Client*. Refer to Section 8 for the details on stakeholder engagement.

2.2.2 Site Visits: The Consultant shall inform and agree any site visits with the Client's Project Manager. The Client will arrange access, based on Consultant supplied information and requirements. The Consultant shall inform the Client at least 7 days before any planned site visits.

## 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 (strike through any of the following that are not required for the project):

- Contribute monthly to the updates to the project risk register.
- Provide input to project efficiency CERT Form.
- Attend progress meetings and prepare record minutes within a week for the *Client* to issue.
- Deliver a monthly progress report in the *Client's* standard template [redacted] giving progress against programme, deliverables received and expected through IDP and MIDP, financial summary against programme and forecast project carbon.

- Provide a backup to application for payment in accordance with the *Client's* standard template [redacted]

2.3.3 Submission of an application for payment without this format of backup sheet will not be recognised and treated as a compliant submission.

- Commission capital forecast to be entered on FastDraft monthly & Project forecast carbon outturn to be entered onto FastDraft monthly. The *Consultant/Contractor* is required to provide a monthly forecast on FastDraft for both carbon and cost in accordance with FHU

[redacted]

- 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.

2.3.4 The contract will be administered using FastDraft.

2.3.5 Procurement of subcontractors

Subcontractors need to be selected using best value processes.

This requires the *Consultant* to demonstrate that they have made reasonable attempts to obtain three competitive tenders for all work in excess of £25,000.

The only exception to this is work which has been accepted (in writing) by the hub Commercial Services Manager for strategic suppliers or for emergency work.

## 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:

- Modelling report.
- Economics report.
- Options appraisal report.

- Documentation of the environmental process and considerations including risks and opportunities (e.g. Scoping Report).

- Outline Design(s).

- Carbon Optimisation Report.

- Programme showing milestones to construction completion for the preferred option 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.

- Draft text within relevant sections of OBC.

- GeoCobie data.

- Master Information Delivery Plan (MIDP).

- The *Consultant* shall in accordance with the latest Exchange Information Requirements ensure that a 3D modelling approach is undertaken. The approach should plan to generate object-based native Autodesk format discipline 3D models and to federate these for coordination, alignment and review by the *Client* purposes. The federated output model should be produced in NavisWorks NWD format and open ifc format

2.4.3 AD: The *Consultant* should assume that the *Client* will write the Management Case and Commercial Case for the OBC document. All other sections will be prepared by the *Consultant*.

2.4.4 AD: The *Consultant* shall work in collaboration with the Client and Lot 2 Contractor when preparing draft text within relevant sections of the OBC, such that the input of the wider project team is taken into account within draft text. The *Consultant* shall submit to the Client;

- One draft Outline Business Case for *Client* review. This shall be essentially a complete document with no missing sections or appendices and having undergone quality assurance by the *Consultant* prior to issue. Coordination of review comments will be managed by the *Client* as standard to prevent iterative approach.
- One final draft Outline Business Case for *Client* approval, encompassing the feedback from the one iteration of *Client's* review of the first draft and having undergone quality assurance and sign-off by the *Consultant* prior to issue using a collaborative approach. The final draft should be sufficiently developed and complete to enable submission of the document(s) to National Project Appraisal Service (NPAS).

# 3 Site Investigation

The surveys listed in Table 2 have been undertaken and are available to the Consultant. They are stored on Asite and on the EA's national survey archive.

| Report | Date | Format | Outcomes of study |
|---|---|---|---|
| Channel Survey: Ea beck and tributaries, South Elmsall | Nov 2021 | Digital [redacted] | Detailed in document |
| Topographic Surveys / CCTC surveys | Feb 2017<br><br>Nov 2018 | [redacted] | Detailed in documents |
| | | | |

## 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 Topographic surveys are to be specified, managed and supervised by the Consultant.

3.1.4 Topographic surveys required for hydraulic model development are included in the standard Scope.

3.1.5 The *Consultant* shall use the outputs from the topographic survey in their modelling and option appraisal.

3.1.6 AD: The procurement of topographic surveys for purposes other than hydraulic model development is to be undertaken by the *Consultant* in agreement with the *Client* and costs to be recovered via a compensation event (instructed).

## 3.2 Ground Investigation

3.2.1 The *Consultant* shall scope the Ground Investigation required to be able to undertake an options appraisal and detailed design and agree the scope with the *Client*.

3.2.2 The *Consultant* shall ensure that the environmental risks and opportunities associated with the Ground Investigation, including the collection of environmental evidence to support Appraisal and Assessment, are identified and addressed.

3.2.3 In scoping the Ground Investigation works the *Consultant* shall include the necessary works to facilitate efficient and sustainable materials management planning and re-use within the project.

3.2.4 The *Consultant* shall identify any contaminated land within the area of the project and specify testing within the Ground Investigation scope such that it can be classified properly for disposal.

3.2.5 The *Consultant* shall clearly communicate the scope of the Ground Investigation to the Lot 2 contractor for the Lot 2 contractor to undertake.

3.2.6 The *Consultant* shall supervise the Ground Investigation undertaken by the Lot 2 contractor. The supervision will be subject to a Compensation Event.

3.2.7 The *Consultant* shall produce a summary of key interpretative decisions for the Ground Investigation undertaken by the Lot 2 contractor.

## 3.3 Services Search

3.3.1 The *Consultant* shall obtain services data from utility companies and shall ensure services data is requested 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 The *Client* will arrange for a non-intrusive survey to detect key utilities (e.g. GPR etc.) to inform SI 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.

3.3.3 The *Consultant* shall also provide a site supervisor to manage the survey supplier.

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

# 4 Hydrology and Hydraulics

## 4.1 General

4.1.1. The existing modelling is identified in the table in section 1.2. The extents of the modelling and assumptions made are within the model report.

4.1.2. The *Consultant* shall verify the model with quality and extent checks.

4.1.3. The *Consultant* shall provide the *service* in accordance with the Modelling Technical Scope, included in Appendix 2.

4.1.4. Additional runs shall be allowed for the final design case to give a sensitivity analysis on key parameters.

4.1.5. The output shall be designed to interface with the economic analysis to allow for depths and durations of flooding to be determined.

.

# 5 Economics Appraisal

5.1.1 The *Consultant* shall undertake an economic appraisal in line with FCERM – Appraisal Guidance (FCERM-AG), Supplementary guidance and the HM Treasury 'Green Book'. This will include a valuation of all the key benefits, both economic and environmental, carbon assessment and whole life costs in order to produce a cost benefit analysis that will be used to determine the selection of a preferred option.

5.1.2 Costs will be the whole life expenditure including, design, investigation, construction, operation and maintenance. Costs can be devised in the most efficient but accurate manner and Early Supplier Engagement (ESE) input is required. The *Client* will provide support and costs where possible to complete this estimate.

5.1.3 Carbon will be whole-life emissions of an asset including embodied (construction), operation, maintenance and end of life emissions. The values will be calculated from the carbon tool (OI 120_16) to help optimise all options through all stages of design and business case development.

5.1.4 Risk and Optimism Bias allowances shall be calculated in accordance with Risk Guidance for Capital Flood Risk Management Projects. The *Consultant* shall attend risk workshops facilitated by others / the *Consultant* to deliver the Scope.

5.1.5 Selection of the preferred option shall be undertaken in accordance with the FCERM-AG decision rules including consideration of the most sustainable and lowest carbon options following the EA business case template and guidance.

5.1.6 The assessment shall include for sensitivity tests to look at the effects of any changes to key parameters / beneficiaries and to demonstrate the robustness of any key assumptions made.

5.1.7 The *Consultant* shall produce, and maintain through the project, the FCRM Partnership Funding Calculator for Flood and Coastal Erosion Risk Management Grant in Aid (The PF calculator). The PF calculator shall be updated at the request of the *Client* or when evidence obtained during the project suggests a significant change is likely. The *Consultant* shall inform the *Client* of any expected significant change in scheme choice or affordability at the earliest opportunity as the project develops.

5.1.8 The *Consultant* shall use this data to assist the *Client* in identifying suitable sources of external funding.

**Economic, Sustainability and Carbon Appraisal Deliverables**

5.1.9 The *Consultant* shall provide the results of this section of the study in an economics report which shall feed into the economics appendix of the OBC. This will provide a clear view of the process in order that the economic lead for the review team can review the process. As a minimum this will include, but not be limited to:

- Overview of methodology adopted.
- Parameters quantified and standards used (e.g. Multi-Coloured Manual).
- Parameters considered and not used together with reasons.
- Key receptors/ major beneficiaries.
- Wider benefits.
- Assumptions made.
- How the decision rules have been applied.
- What sensitivity tests have been applied and why.
- Treatment of climate change, carbon reduction and sustainability benefits.
- FCERM-AG spreadsheets and PF calculator.

# 6 Environmental Assessment

~~6.1.1 The *Consultant* shall confirm in the activity schedule 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 aspirations.~~

~~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 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 *Consultant* shall report on the CEEQUAL assessment in accordance with the hub workload plan.~~

6.1.7 AD: The Consultant shall undertake all activities within the 'Minimum Technical Requirements – Environment and Sustainability [redacted] Version 2.0', with the exception of items 9.3, 10.1 and 12.1, in relation to the need for any Natural Capital Assessment and Habitats Regulations Likely Significant Effects (LSE) Assessment, or an Historic Environmental Action Plan (HEMP), respectively.

# 7 Option Development

7.1.1 The *Consultant* shall undertake an options appraisal, which will include a review of the previous work, to prepare a long list of options. The long list shall not be constrained by previous work and will be agreed with the *Client* at an options meeting, where the *Client* will invite representation from area FCRM, the ESE contractor's representative, NEAS, MEICA, Field Services and the Principal Designer. The *Consultant* shall screen and assess this long list of options for technical, environmental, sustainability, carbon and economic suitability, as considered appropriate.

7.1.2 Following this screening, the *Consultant* shall prepare a short list of viable options for the *Client's* approval, giving reasons for including or excluding each of the long list options. The most sustainable option shall be included in the short list. On the agreement of the *Client*, the *Consultant* shall assess in detail these options for technical, environmental and economic suitability, as discussed in the relevant sections of this brief, utilising the evidence and data collated as part of this commission.

7.1.3 Options appraisal shall include engagement with the ESE contractor on pricing, buildability and maintainability and the *Client* including Field Services and Area FCRM.

7.1.4 The *Consultant* shall analyse and appraise the carbon footprint of options as outlined in Section 11.

7.1.5 The *Consultant* shall seek options that support the e:Mission 2030 sustainability targets.

7.1.6 The *Consultant* shall use these outputs to select a preferred option. The *Consultant* shall facilitate design workshops, facilitate risk workshops to produce a risk register with analysis in accordance with [redacted] Risk Guidance for Capital Flood Risk Management Projects.

7.1.7 The *Consultant* shall develop the business case for the preferred option and the outline design including provision of specification, drawings and documentation required for Early Supplier Engagement.

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

# 8 Stakeholder Engagement

8.1.1 The *Consultant* shall prepare / review 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.

8.1.2 Monthly circulation of updated communications record at progress meetings.

8.1.3 The *Consultant* shall provide technical support, prepare information for and attend a key stakeholder meeting as well as preparing information and reviewing external communications prepared by Others (e.g. quarterly newsletters).

8.1.4 The *Client* will arrange and advertise 1 no. public meeting/workshops. The *Consultant* shall provide technical support, prepare information for input into the consultation documents and prepare site plans and typical outline design drawings for public display. Attendance at these meetings shall include the *Consultant* project manager, environmental lead and other roles as necessary.

8.1.5 The *Consultant* shall provide technical support and attend 1 no. meetings with key external organisations/individuals impacting upon option selection process. The current known stakeholders are identified in Appendix 4.

8.1.6 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.

# 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 [redacted].

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 AD: The *Consultant* shall fulfil the Principal Designer (PD) role and discharge the duties in accordance with the requirements of regulations 8, 9, 11 and 12 of the Construction Design Management Regulations 2015.~~

~~9.1.6 AD: 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.~~

~~9.1.7 AD: 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.~~

~~9.1.8 AD: 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.~~

~~9.1.9 AD: 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 aggregate 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 [redacted] and the Business Case templates.

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

10.1.3 The OBC Delivery is to be in accordance with the *Client's* submission programme for either the National Project Assurance Service (NPAS) or the Large Projects Review Group (LPRG) for projects costing over £10m. The *Client* shall be kept up to date of progress and submission dates in order that the delivery of this to the review team can be programmed and a place booked at the appropriate review meeting.

10.1.4 This section of the study shall conclude with the final approval of OBC using latest EA Guidance including all appendices and FSoD approval following submission to NPAS or LPRG.

# 11 Carbon

11.1. An SOC/OBC/FBC must aim to minimise carbon emissions by:
- 11.1.1. Stating 'minimised carbon' as a strategic objective.
- 11.1.2. Appraising and ranking options by their net whole-life carbon impact value (cost-benefit) in tCO2e and monetised as carbon £ NPV.
- 11.1.3. Selecting a most likely/preferred option that best delivers the outcome measures and strategic objectives whilst minimising carbon based on the ranked carbon impact measures.
- 11.1.4. Optimising for lowest carbon in the design of the proposed option and evidencing this through an assessment of carbon forecast against a carbon budget.

11.2. An SOC/OBC/FBC must have a supporting carbon appendix that reports the results of appraising carbon impacts and the carbon assessment.
- 11.2.1. A carbon impact tool and guidance is available as part of the FCRM Appraisal Guidance.
- 11.2.2. The EA carbon assessment tool is ERIC for calculating carbon forecasts (ERIC CMT or CC tool) and a carbon budget (ERIC CBUD sheet).
- 11.2.3. The carbon appendix is a further EA spreadsheet tool available to projects and must have been verified by EA appointed Carbon Specialist before submission of the SOC/OBC/FBC.

11.3. The project should be looking at how to minimise carbon throughout the SOC/OBC/FBC stage. The project will produce 'draft' versions of carbon assessments (as forecasts) as well as carbon budgets to reflect their consideration of opportunities and constraints in reducing carbon as they progress their appraisal of options and optimisation of a proposed option and design. A monthly report of the 'draft' forecast and budget of a most likely/proposed option must be provided via FastDraft (using the carbon form) to inform the EA of progress.

11.4. The project preparing the SOC/OBC/FBC will submit the carbon appendix and supporting carbon assessment and carbon budget (i.e. ERIC) for verification by an EA appointed Carbon Specialist via Asite. The verification process requires project team engagement with the verifier and may result in actions to:
- 11.4.1. update the carbon appendix and supporting carbon assessment and budget (i.e. ERIC).
- 11.4.2. set out most likely opportunities for further reductions by project completion.

11.5. The verified forecasts and budgets from this process will be required in the SOC/OBC/FBC and for the performance measure set out in this contract.

11.6. The verification information in the carbon appendix will be required for an EA process of carbon budget authorisation managed by EA Project Sponsor.

11.7. The Carbon Methodology for this contract shall be v3 dated 08 June 2023

# 12 General

12.1.1 Not required.

# 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 |
| LIT 4909 | Flood and Coastal Erosion Risk Management appraisal guidance (FCERM-AG) | 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 |

| Ref | Report Name | Where used |
|---|---|---|
| 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 produce a Programme such that the following milestone dates are achieved (examples below, delete if not required):~~

| ~~Date~~ | ~~Event~~ |
|---|---|
| ~~XX/XX/XXXX~~ | ~~Completion of stakeholder engagement plan~~ |
| | ~~Consultation meeting Any Village Parish Council~~ |
| | |
| ~~XX/XX/XXXX~~ | ~~Submission of OBC to NPAS~~ |

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*

15.1.1 Access to Environment Agency systems and resources including:

- Asite.
- FastDraft.
- Collaborative Delivery Community SharePoint access.

15.1.2 ~~Letter of Appointment of Principal Designer.~~ Provision of Principal Designer ([redacted] to be appointed under separate option C contract as agreed at framework level).

15.1.3 Site access authorisation letter(s).

15.1.4 Previous studies listed in Section 1.2.1. The *Client* will provide the previous studies within two weeks of contract award.

# 16 Data

16.1.1 The *Consultant* shall handle, manage data in accordance with the framework schedules and Exchange Information Requirements (EIR).

# 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

18.1.1 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).

# Appendices

## Appendix 1 – BIM Protocol

The *Consultant* shall adhere to the Environment Agency's Exchange 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.

[redacted]

The *Consultant* shall register for an Asite Account and request access to the project workspace to view the IDP.

# Appendix 2 – Modelling Technical Scope

## Project Details

### Environment Agency
### NEC4 Professional Service

### Contract (PSC) Modelling

### Technical Scope

| | |
|---|---|
| Project name | South Elmsall FAS |
| Expected completion | 12/12/2024 |
| Version number | 5 |
| Environment Agency | Yorkshire |
| Area lead | [redacted] |
| Modelling technical lead | [redacted] |
| Contact for additional information | [redacted] |

### Project / contract Information

This scope should be read in conjunction with LIT 56326 Fluvial Modelling Standards current at the Contract Date. In the event of conflict, this Scope shall prevail. The service is compliant with the minimum technical requirements set out in LIT 56326 Fluvial
Modelling Standards and LIT 18686 NEC4 Minimum Technical Requirements for Modelling current at the Contract Date.

### Project Overview

a) The Environment Agency (EA) commissioned [redacted] to develop a Strategic Outline Case (SOC) for the town of South Elmsall, a busy market town located to the east of Hemsworth in West Yorkshire, situated between Wakefield and Doncaster. This project, undertaken alongside a modelling and mapping study, aimed to improve the understanding of fluvial flood risk from Ea Beck, Langthwaite Beck and tributaries. Particularly notable flood events occurred in June 2007 and January 2008. The impact of flooding was assessed in terms of economic, environmental and social effect, which together with a review of the causes of flood incidents allowed identification of potential flood alleviation measures. Screening of these determined which should be taken forward for detailed assessment, and suggested a combination of options (enhanced maintenance, upstream storage, improved storage, and reinstatement of the flood relief culvert) comprising the 'Do Something' option, were compared to the baseline scenarios of 'Do Nothing', 'Do Minimum' and 'small works package'. The overarching report (F_2122_1076 South Elmsall FAS SOC) summarises the findings of the work undertaken and developed as supporting appendices. The overall aim of the study was to determine the scheme requirements needed to provide a 1% AEP event plus climate change (CC) Standard of Protection (SoP) from fluvial flooding.

An effective flood alleviation scheme would provide opportunities to not only improve flood risk, but also enhance the environment, deliver amenity benefits, increase and maintain investor confidence in the area and reduce vulnerability, allowing communities to focus on other opportunities.
The next stage of this project is to produce an outline business case (OBC) with sufficient modelling and economics to appraise the flood alleviation scheme, including Ground Investigation of areas to be scoped within this next stage. This project will be delivered through the CDF Framework using [redacted] and [redacted] as
the nominated suppliers for this region.

b) Various mechanisms pose flood risk to different areas of South Elmsall:
Langthwaite Beck exceeding the culvert capacity on Langthwaite Lane, flooding properties in Moorthorpe; Langthwaite Beck overtopping the right bank near the town centre, flooding properties and inundating the Artisans Yard, market and public car park;
Elevated levels of Ea Beck causing overtopping of the right bank, flooding properties on Minsthorpe Vale and Pendennis Avenue;
Elevated levels of South Kirkby Marsh, meaning the tributaries Sheepwash Dyke and Ings Holt are unable to effectively drain; and
Exceedance of culverts on Ings Holt, flooding properties along Brooksfield, South Kirkby.
A modelling and mapping study, undertaken alongside the SOC, improved the understanding of fluvial flood risk from Ea Beck, Langthwaite Beck and tributaries. The hydraulic model that was created as part of this project is available for this phase of works (baseline model and hydrology were signed off by the EA in October 2020).

Note: The following clauses are not used in this document:

Section 3: 3.1, 3.2
Section 4: 4.2
Section 5: 5.1.2, 5.1.4, 5.3.1, 5.3.2, 5.3.3, 5.3.3, 5.3.3, 5.3.3, 5.4.3, 5.7.4, 5.8.1, 5.8.2, 5.8.3,
5.8.4, , 5.10.1, 5.10.2, 5.11.1, 5.11.2, 5.11.3
Section 8: 8.1, 8.2, 8.3, 8.5, 8.6, 8.7, 8.8, 8.9,
Section 9: 9.1, 9.2, 9.3, 9.5.1, 9.5.2, 9.5.3, 9.5.4, 9.6, 9.6.1, 9.6.2, 9.6.3, 9.7, 9.7.1, 9.7.2, 9.7.3,
9.7.4, 9.7.5, 9.7.6, 9.7.7, 9.7.8,
Section 10: 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.8,
Section 19: 19.6, 19.7,

## 1: Hydraulic Model Review

The *Consultant* shall review the hydraulics within the South Elmsall (10/2020) model; as this was signed off in 2020 sense checking against key parts of the model, survey ages, data from intervening flood events is required.

## 2: Hydrological Model Boundary Review

The *Consultant* shall review the South Elmsall (10/2020) model hydrology using the Environment Agency hydrological review sheet. Clear recommendations on required activities to update the hydrology to the *Client's* stated needs. .

## 3 : Local Flood History

This was completed at SOC stage. As such this section is not relevant to this study.

## 4: Site Visit and Topographic Survey

The *Consultant* shall:

4.1 Visit the site to understand the local flood flow pathways and flood history. The *Client* will facilitate this visit / these visits and arrange for appropriate staff to accompany the *Consultant* to provide local knowledge. The *Consultant* shall give the *Client* 10 working days' notice prior to any required visits.

## 6: Tidal / Coastal Boundary Analysis

This section is not relevant to this study

## 7: Fluvial - New Hydraulic Model Build

This section is not relevant to this study

## 8: Fluvial - Update Existing Hydraulic Model(s)

The *Consultant* shall update the defended and defences removed or no defences scenarios from South Elmsall (10/2020) hydraulic model. The scope for updating will be confirmed following acceptance by the *Client* of the Model Review Report.

The model must be able to simulate flood events for:
Fluvial undefended: 50%, 20%, 10%, 5%, 3.3%, 2%, 1.33%, 1%, 0.5%, 0.1% AEPs. Climate change scenarios are required as part of this project; agreed that 3 climate change runs for 1% AEP. Please refer to Minimum Technical Requirements for Modelling for details of climate change requirements.

8.4 Updating of the floodplain representation using latest LiDAR. The area requiring update is shown on the study area plan in project details.

8.10 ~~The model will be updated with the most up to date topographic survey and remote sensing data available at the time of baseline model development.~~

## 9: Model Proving, Calibration and Verification & Sensitivity

The *Consultant* shall provide written interpretation of results, including impact on model calibration / proving, design configuration, onset of flooding, standard of protection and recommendations for prioritisation of maintenance.

## 10: Design Simulations & Results

All scenarios listed below must be delivered for defended scenarios:

Scenarios:
Fluvial defended: 50%, 20%, 10%, 5%, 3.3%, 2%, 1.33%, 1%, 0.5%, 0.1% AEPs. Climate change scenarios are required as part of this project; agreed that 3 climate change runs for 1% AEP. Please refer to Minimum Technical Requirements for Modelling for details of climate change requirements.

10.7

## 11: Flood Warning Improvements

This section is not relevant to this study

## 12: Blank section

This section is not relevant to this study

## 13: Flood Forecasting - Inception Stage

This section is not relevant to this study

## 14: Flood Forecasting - Model Development and Calibration

This section is not relevant to this study

## 15: Coastal - New Hydraulic Model

This section is not relevant to this study

## 16: Coastal - Hydraulic Model Review

This section is not relevant to this study

## 17: Coastal - Update Existing Hydraulic Model(s)

This section is not relevant to this study

## 18: Broadscale Modelling

This section is not relevant to this study

## 19: Options Appraisal

Using the *Client's* accepted baseline model and outputs (South Elmsall FAS SOC Model model, 2020), the *Consultant* shall construct and deliver flood alleviation scheme design modelling.

The area to be covered by the scheme design modelling will be South Elmsall.

The *Consultant* shall:

19.1 Based on model review in Section 1 the Do Nothing and Do Minimum options will be rerun

The initial do something options to be tested shall include:

- Enhanced maintenance, including improved access and removal of unnecessary structures;
- Upstream storage – embankment on Langthwaite Beck;
- Improved storage – improvement of offline pond / creation of online storage on Langthwaite Beck;
- Reinstatement of flood relief culvert.

19.2 The Do something scenarios to be created and run for 3 scenarios x 4 %AEPs. These will be as follows and based on the option listed above:

- Enhanced maintenance
- Enhanced maintenance plus combination no1
- Enhanced maintenance plus combination no2

19.3 Once the preferred option has been chosen, the *Consultant* shall conduct sensitivity testing of the preferred option to optimise the design (e.g. testing bund height / orifice size / FSR area etc.)

19.4 The *Consultant* shall run the preferred flood alleviation scheme design model for the following Fluvial defended: 50%, 20%, 10%, 5%, 3.3%, 2%, 1.33%, 1%, 0.5%, 0.1% AEPs. Climate change scenarios are required as part of this project; agreed that 3 climate change runs for 1% AEP. Please refer to Minimum Technical Requirements for Modelling for details of climate change requirements. plus climate change.

The *Consultant* shall also:

19.5 Produce an addendum to the original modelling report and model log documenting the changes in the model for each option

**Project Specific Requirements**

19.8 Meetings specifically addressing the hydraulic modelling requirements are assumed to total 3 across the 92 day programme. It is considered these would provide opportunity for *client* / *consultant* engagement to address risks and issues relating to e.g. deliverables, addressing instabilities, additional requirements for design development that are not detailed within this scope document.

## 20: Surface Water - Hydraulic Model Review

This section is not relevant to this study

## 21: Surface Water- Update Existing Hydraulic Model(s)

This section is not relevant to this study

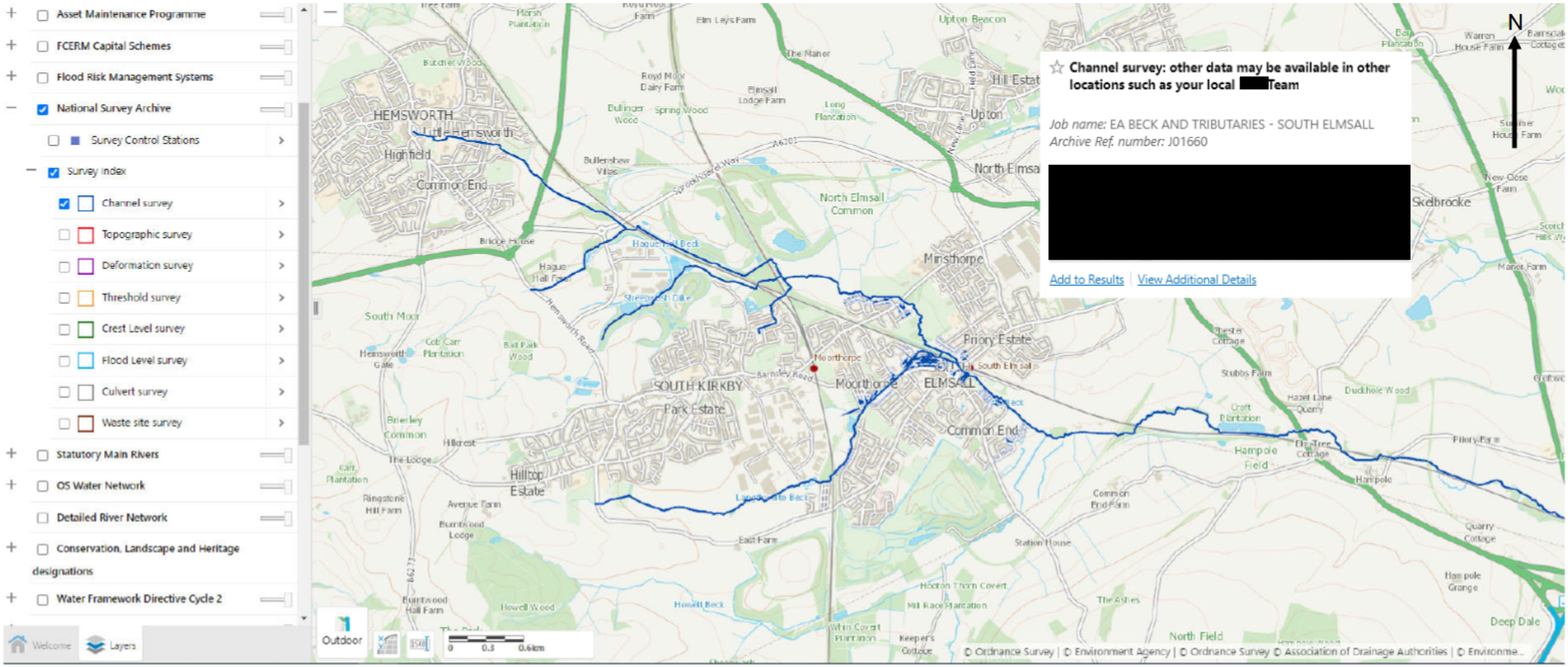
## 22: Surface Water - New Hydraulic Model Build

This section is not relevant to this study

## Available Data - Treat as Site Information

All datasets supplied for the project must be returned to the *Client* upon project completion. Datasets returned should adopt the appropriate security marking, be password protected/encrypted in accordance with the latest government guidelines. Data that will be made available to the *Consultant* include:

### Survey Coverage Map



**Project Specific Data:**
South Elmsall FAS SOC

Ea Beck and Langthwaite Beck hydraulic model

## Existing Model Summary - Fluvial Hydraulic

| Model name | Date | Length of modelled watercourse (km) | Hydraulic model type | Other Type | Column1 | Information only or to be updated |
|---|---|---|---|---|---|---|
| South Elmsall | 10/2020 | 19.22 | Flood Modeller Pro - Estry -Tuflow | | The study catchment of Ea Beck is approximately 48km2 (at the point where Ea Beck passes under the A1) and has several tributaries including Langthwaite Beck, Ings Holt, Sheepwash Dyke and Hague Hall Beck. The watercourses rise from the elevated areas surrounding south Elmsall (approx. 120mAOD).<br>The tributaries converge in the centre of south Elmsall (approx. 20-30mAOD). | Update |

# Appendix 3 – Visualisation scope

Guidance on visualisation can be found here
A tool to aide in the identification and scoping of visualisation can be found in knowledge management [redacted]. Create a scope of visualisation requirements if needed and embed a PDF output here as Appendix 3.
Visualisation e-learning can be found on learning zone. Search visualisation.

# Appendix 4 – Stakeholder Engagement Plan

During the SOC stage, a Working with Others Plan has been developed which establishes the routes of communication between the EA, partner organisations, other third parties and the public. The key portfolio stakeholders are identified in the plan. The plan is a live document which will be reviewed through the development of the project. The plan has identified the following key groups with whom the project team should seek to engage:

- [redacted] – with particular focus on surface water issues
- [redacted] - with particular focus on surface water issues
- Local businesses – as set out in the Working with Others plan
- Community groups – as set out in the Working with Others plan
- Engagement with residents and landowners – through development of the scheme. This could be through press and social media, newsletters and emails. When on site there should be a point of information for passers-by.
- Engagement with local developers
- Engage with local business groups – chamber of commerce and market traders

# Appendix 5 – Glossary of terms

| | |
|---|---|
| AEP | Annual Exceedance Probability |
| ASCII | American Standards Code for Information Interchange |
| BEP | BIM Execution Plan |
| BIM | Building Information Model |
| CEEQUAL | Civil Engineering Environmental Quality and Assessment Scheme |
| CERT | Combined Efficiency Reporting Tool |
| CDM | Construction Design Management |
| CE | Compensation Event |
| CFMP | Catchment Flood Management Plan |
| CifA | Chartered Institute of Archaeologists |
| DAP | Drainage Area Plan |
| EA | Environment Agency |
| EAP | Environmental Action Plan |
| EIA | Environmental Impact Assessment |
| EIR | Employers Information Requirements |
| ESE | Early Supplier Engagement |
| ESRI | Environmental Systems Research Institute |
| EW | Early Warning |
| FAS | Flood Alleviation Scheme |
| FBC | Full Business Case |
| FCERM-AG | Flood and Coastal Erosion Risk Management – Appraisal Guidance |
| FRM | Flood Risk Management |
| FsoD | Financial Scheme of Delegation |
| G3 | Gateway 3 |
| G4 | Gateway 4 |
| GI | Ground Investigation |
| GIS | Geographical Information System |
| GPR | Ground Penetrating Radar |

| | |
|---|---|
| GVA | Gross Value Added |
| HRA | Habitat Regulations Assessment |
| HSE | Health & Safety Executive |
| IAR | Information Asset Register |
| ISIS | Integrated Systems and Information Services |
| IDP | Information Delivery Plan |
| IHBC | Institute of Historical Building Conservation |
| ILP | Indicative Landscape Plan |
| LED | Landscape and Environmental Design |
| LEDG | Landscape and Environmental Design Guidance |
| LiDAR | Light Detection and Ranging |
| LPRG | Large Project Review Group |
| LVIA | Landscape and Visual Impact Assessment |
| MEICA | Mechanical and Electrical, Instrumentation, Control and Automation |
| MIDP | Master Information Delivery Plan |
| MTR | Minimum Technical Requirements |
| NaFRA | National Flood Risk Assessment |
| NEAS | National Environmental Assessment and Sustainability |
| NFCDD | National Flood and Coastal Defence Database |
| NGR | National Grid Reference |
| NPAS | National Project Assurance Service |
| NYCC | North Yorkshire County Council |
| OBC | Outline Business Case |
| OMs | Outcome Measures |
| PAB | Project Assurance Board |
| PAR | Project Appraisal Report |
| PCCT | Project Cost and Carbon Tool |
| PCT | Project Cost Tool |
| PEIR | Preliminary Environmental Information Report |
| PESTLE | Political, Economic, Social, Technological, Legal and Environmental |

| | |
|---|---|
| PM | Project Manager |
| PRSA | Public Safety Risk Assessment |
| PSC | Professional Services Contract |
| PSO | Partnership & Strategic Overview |
| SHE | Safety, Health and Environment |
| SHEW | Safety, Health, Environmental and Wellbeing |
| SMP | Shoreline Management Plan |
| SOC | Strategic Outline Case |
| SoP | Standard of Protection |
| SSSI | Site of Special Scientific Interest |
| SuDS | Sustainable Drainage Systems |
| UXO | Unexploded Ordnance |
| WFD | Water Framework Directive |
| YW | Yorkshire Water |