



<b>Framework:</b>	<b>Collaborative Delivery Framework</b>
<b>Supplier:</b>	<b>Ove Arup &amp; Partners Ltd</b>
<b>Company Number:</b>	<b>[REDACTED]</b>
<b>Geographical Area:</b>	<b>Midlands</b>
<b>Project Name:</b>	<b>Lowdham Cocker Beck FAS Outline Business Case</b>
<b>Project Number:</b>	<b>ENVIMMI001615</b>
<b>Contract Type:</b>	<b>Professional Service Contract</b>
<b>Option:</b>	<b>Option C</b>
<b>Contract Number:</b>	<b>project_30756</b>

Revision	Status	Originator	Reviewer	Date

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

**Project Name** Lowdham Cocker Beck FAS Outline Business Case

**Project Number** ENVIMM001615

This contract is made on 05 October 2020  
between the *Client* and the *Consultant*

- This contract is made pursuant to the Framework Agreement (the "Agreement") dated 01st day of April 2019 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 22 inclusive of the Framework schedules are relied upon within this contract.
- The following documents are incorporated into this contract by reference  
Lowdham\_OBC\_Scope v4 dated 20 August 2020

**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
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## 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 Complete appraisal and outline design of the Lowdham Cocker Beck Flood Alleviation Scheme, and produce the Outline Business Case.

The Client is Environment Agency

Address for communications

Address for electronic communications

The *Service Manager* is  
Address for communications

Address for electronic communications

The Scope is in  
Lowdham\_OBC\_Scope v4 dated 20 August 2020

The *partner contract* is  
Contract number project\_29632 with Jackson Civil Engineering for undertaking Ground Investigation and providing Early Supplier Engagement to the OBC phase of the Lowdham Cocker Beck FAS.

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

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

**2 The Consultant's main responsibilities**

The <i>key dates</i> and <i>conditions</i> to be met are <i>conditions</i> to be met	<i>key date</i>
'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 05 October 2020

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

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

The *completion date* for the whole of the service is 31 March 2021

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 Bank of England  
Base rate of the

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

- Managing and mitigating the impact of Covid 19 and working in accordance with Public Health England guidance, as may vary from time to time, between 1st July and 31st October 2020
- 'not used'
- 'not used'
- 'not used'
- 'not used'

#### 8 Liabilities and insurance

These are additional *Client's* liabilities

- 'not used'
- 'not used'
- '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 <i>Consultant's</i> failure to use the skill and care normally used by professionals providing services similar to the service	£5,000,000 in respect of each claim, without limit to the number of claims	12 years after Completion
Loss of or damage to property and liability for bodily injury to or death of a person (not an employee of the <i>Consultant</i> ) arising from or in connection with the <i>Consultant</i> Providing the Service	£15,000,000 in respect of each claim, without limit to the number of claims	12 years after Completion
Death of or bodily injury to the employees of the <i>Consultant</i> arising out of and in the course of their employment in connection with the contract	Legal minimum in respect of each claim, without limit to the number of claims	For the period required by law
The <i>Consultant's</i> total liability to the <i>Client</i> for all matters arising under or in connection with the contract, other than the excluded matters is limited to	£5,000,000	

#### 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.

**Z7 Aggregated Consultant's share**

Delete existing clauses 54 and 93.3 and replace with:

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.

54.3 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

## 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 £91.20 per day

### OPTION X9: Transfer of rights

### 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 X11: Termination by the *Client*

### OPTION X18: Limitation of liability

The *Consultant's* liability to the *Client* for indirect or consequential loss is limited to £1,000,000

The *Consultant's* liability to the *Client* for Defects that are not found until after the *defects date* is limited to £5,000,000

The *end of liability date is* 6 years 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

### 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

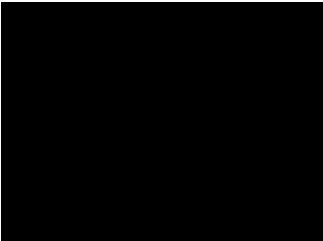
Completion of the data in full, according to the Options chosen, is essential to create a complete contract.

1 General

The Consultant is  
Name

Ove Arup & Partners Ltd

Address for communications



Address for electronic communications

The fee percentage is

Option C

[Redacted]

The key persons are

Name (1) [Redacted]  
Job [Redacted]  
Responsibilities Project Management of the Consultants responsibilities  
Qualifications MEng CEng  
Experience 9 years water industry

Name (2) [Redacted]  
Job [Redacted]  
Responsibilities Project Director  
Qualifications MEng, CEng, MAPM  
Experience 22 years

Name (3)  
Job  
Responsibilities  
Qualifications  
Experience

Name (4)  
Job  
Responsibilities  
Qualifications  
Experience

Name (5)  
Job  
Responsibilities  
Qualifications  
Experience

Name (6)  
Job  
Responsibilities  
Qualifications  
Experience

Name (7)  
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  
delivery of the identified scope

### Resolving and avoiding disputes

The *Senior Representatives* of the *Consultant* are

Name (1)

Address for communications

Address for electronic communications

Name (2)

Address for communications

Address for electronic communications

### X10: Information Modelling

The *information execution plan* identified  
in the Contract Data is  
to follow within 4 week.

Contract Execution

Client execution

Signed under hand by for and on behalf of the Environment Agency

Signature		Role	
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Consultant execution

Consultant execution

Signed under hand by for and on behalf of Ove Arup & Partners Ltd

Signature		Role	
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# Environment Agency

## NEC4 professional services contract (PSC)

### Scope

#### Project / contract Information

Project name	Lowdham Cocker Beck FAS – Phase 2 OBC and Outline Design
Project SOP reference	ENVIMMI001615
Contract reference	project_30756
Date	20/08/2020
Version number	04
Author	

#### Revision history

Revision date	Summary of changes	Version number
02/06/2020	First issue – Client (SU, PE)	01
10/06/2020	Second issue – Consultant/Contractor/Environmental Lead	02
07/07/20	Following EA PM handover to and final amendments	03
20/08/2020	Following PCM, PE and Arup PM review	04

This Scope should 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 *services* are 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	V9	29/08/2018

customer service line  
03708 506 506  
[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

incident hotline  
0800 80 70 60

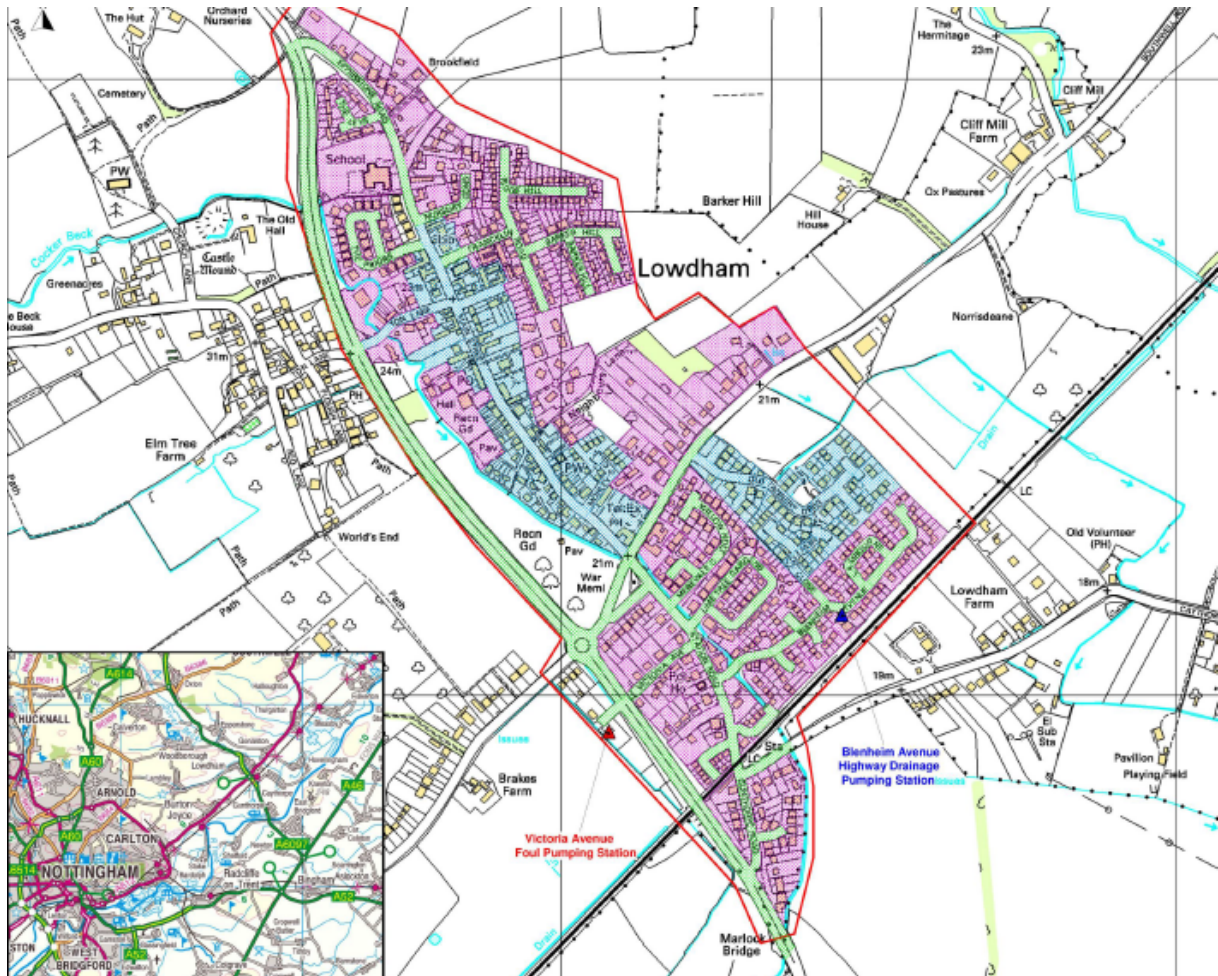
floodline  
0845 988 1188

## Details of the services are:

### 1 Overview

#### Background:

Lowdham is a village in Nottinghamshire between Nottingham and Southwell and is situated on the Cocker Beck which is a tributary of the River Trent. The Cocker Beck has been acknowledged as the main contributor to flooding in Lowdham on four notable occasions within recent history, in January 1999, in June and July 2007, summer 2013 and November 2019. In response to this, we are appraising a capital scheme to provide a large scale Flood Alleviation Scheme (FAS) for the village.



The Cocker Beck flows in from the north of Lowdham to the west before flowing in a southerly direction through the village before its confluence with the River Trent at Gunthorpe. Lowdham itself is a relatively flat plain, although the Cocker Beck does not appear to flow through the lowest point in the village, consequently, when water comes out of bank it flows away from the river and inundates a large area. The Cocker Beck is classified as a main river through the village.

The Cocker Beck catchment upstream of Lowdham is approximately 12km<sup>2</sup> in area and flows through a relatively steep sided valley which results in a typically fast catchment response to storm events.

Road bridges and culverts along the Cocker Beck result in pinch points for flow within the village. The river is generally surrounded and constrained by mainly residential development with only a few green spaces.

In response to extensive flooding in 1999, a flood alleviation scheme (FAS) was constructed by Newark Area Internal Drainage Board (now Trent Valley Internal Drainage Board) in 2000, using the recreation ground as a flood storage area in addition to bank protection measures, however, further flooding in June and July 2007 showed that the 2000 scheme was not operating to the standard of protection it was intended. A flood event in the summer of 2013 resulted in flooding of many

properties in the village, even though the Cocker Beck did not overtop its banks. This highlights that there are other sources of flood risk in the village, namely from surface water and highways related assets. Resolving flood risk from Cocker Beck alone will not necessarily resolve flood risk for the residents of the village, it would require an integrated approach.

Our Natural Flood Management (NFM) Scheme is currently operating in the upper catchment area with further work planned and should be incorporated as much as possible within our Capital Scheme. Details of NFM measures with accompanying design drawings are outlined below.

#### Work to date on the Capital Scheme:


The previous phase of work commenced in 2017 when Jacobs was engaged under the Water and Environmental Management (WEM) framework to prepare an Outline Business Case (OBC) based upon the findings from the Initial Assessment (IA) carried out in 2016 (Appendix A) and the Strategic Outline Case (SOC) carried out in 2017 (Appendix B).

Whilst the OBC was being developed, the preferred option came under review because there were concerns over the Partnership Funding Score (PFS). This resulted in the preferred option being technically viable, however, assessments at this stage indicate a technically complex and therefore costly construction value with significant associated health and safety risks. This option was also deemed to be very intrusive with the need for additional extensive flood walls throughout the village and would have associated high visual and community impacts. For these reasons combined, this option was not progressed to Final Business Case (FBC).

However, an alternative option of upstream storage was identified by the previous consultant which the project team are now investigating. A proof of concept technical note for the upstream storage areas is included in (Appendix C).

This scope document defines the work for delivery by the CDF delivery partner appointed as the *Consultant* and is for the production of an Outline Business Case (OBC) which is split into two phases of work to allow the opportunity to closely assess the PFC and give a clear decision point to proceed further. Phase 1 incorporates mostly modelling activities and confirms technical viability of options considered (Appendix J - to be added once finalised.) and Phase 2 will take us through to full OBC. This scope of work is for Phase 2 to deliver an OBC.

The *Consultant* shall review the below table detailing previous studies and append as necessary:

Report	Author	Date	Overview
Strategic Outline Case (SOC)	EA	December 2017	
NEAS Determination of Need		May 2017 – updated August 2019	Appendix D.
Initial Assessment Report (IA)	Capita AECOM	March 2016	
NEAS Determination – Midlands Screening register Extract	Environment Agency	April 2015	Found through the Lowdham Information Delivery Plan (IDP). Report highlighting environmental constraints and opportunities in advance of the Midlands Initial Assessments. This report has been used to inform the Initial Assessment of any potential environmental opportunities or constraints within the study area and to inform the option development.
Lowdham Project Appraisal Report	Black and Veatch	June 2010	Appendix F. Project Appraisal Report for a flood risk management scheme in Lowdham. The preferred option identified was a channel bypass / flow diversion within the catchment. This report has been used to evaluate options to be considered within this Initial Assessment. It is considered that this Initial Assessment will develop ideas informed by the 2010 PAR and highlight what areas

			should be further investigated if the project is progressed further.
Lowdham Flood Alleviation Scheme, Scheme Appraisal and Pre-feasibility Study	Halcrow Group Ltd	August 2008	Available upon request. Option appraisal through modelling. This prefeasibility study was carried out in advance of the 2010 PAR and was used to inform options within the PAR process.
Lowdham Channel Survey	STORM Geomatics	September 2015	Appendix G. Cocker Beck, Lowdham channel survey: <ul style="list-style-type: none"> <li>• Plans</li> <li>• Cross sections</li> <li>• Photographs</li> </ul> Data processing information
Channel Survey from Notts Trent Tribs Scheme (Relevant for Lowdham Upper Catchment)		2013	Appendix H.
Phase 1 Deliverables	Arup	July 2020	Appendix J – to be added once finalised.

#### Work to date on the NFM Scheme:

Our NFM scheme is currently taking place in the upper catchment and Trent Rivers Trust (TRT) have undertaken some engagement with all of the land owners in the catchment where works could be progressed. The team have done walkovers on a number of sites which has been formally recorded. There are currently 40 leaky barriers, 6 bunds, 5 ponds and 0.5Ha of tree planting that has been completed as part of the NFM scheme with more opportunities identified that could be brought forward. Screening at all of the sites has taken place and we have an indication of the ecology & heritage risks in the upper catchment. There has been work done to look at flow paths and a monitoring plan is in place on all of the NFM structures including date on how they are functioning. An initial piece of work has also been completing to look at natural capital benefit calculations. NFM measures have not been incorporated into existing modelling or benefits analysis. Please refer to Appendix I for NFM information and design drawings.

#### Objectives of the Lowdham Cocker Beck FAS:

1. Provide an improved standard of protection of ideally 1 in 100yr AEP including climate change such that the properties in Lowdham are moved to a lower flood risk category in line with the new partnership funding rules. The minimum standard of protection targetted is 1 in 75yr
2. Aim to maximise the benefits of the scheme against the available funds
3. Progress the previous work produced in the Lowdham Phase 1 study to produce the OBC
4. Maximises opportunities to link in with our NFM Scheme (currently in progress) and to provide wider biodiversity and environmental benefits.
5. Maximise opportunities for environmental and biodiversity improvement.
6. Minimise carbon emissions as part of the design of the construction to help the *Client* meet it's carbon objectives.
7. Enhance wider social benefits whenever possible.
8. Minimise future operation and maintenance requirements whenever possible.
9. Embraces sustainability principles with success measured by CEEQUAL.
10. Consider all sources of flood risk and where appropriate proposed property protection measures to enable the full amount of FDGIA to be claimed.

## 1.1 Outputs and Deliverables

The following is a list of outputs and deliverables the *Consultant* shall be responsible for. Further details are provided in section 2.

1. Outline design drawings detailed below in 2d.
2. A project programme with input from the Contractor.
3. Carbon calculations for the preferred option
4. Outline Business Case (OBC) document
5. OBC appendices detailed below in 2i.
6. Updated Partnership Funding Calculation (PFC).
7. Various environmental products detailed below in 2w.
8. CEEQUAL assessment of the preferred solution.

## 1.2 Outcome Specification

The *Consultant* shall produce an outline design for the preferred option supported by economic, social and environmental evidence that will provide the *Client* with an OBC and support the *Client* through OBC submission and assurance process.

The *Consultant* shall review available information including recent modelling, GI and ecology data and reports, to appraise whether the preferred option is the most optimum when considering the *Client* selection criteria. These criteria include:

- carbon,
- sustainability measures
- flood risk
- environmental, including ecology, archaeology and visual impact among others
- health and safety
- stakeholder/landowner/community impact

The *Consultant* shall ensure that the preferred option solution considered is compliant with all relevant guidance and legislation given the project stage and seek to minimise long-term asset, land management and maintenance costs and ensure future management is feasible.

## 1.3 Consultant Project Management

The *Consultant* shall produce an OBC, liaising with the *Client* and other consultants (including any sub-consultants or sub-contractors as necessary) in order to complete the *services* in line with the conditions of contract and best practice procedures.

The *Consultant* shall attend monthly progress meetings, fortnightly telecons, and other meetings included in this scope (see section 10 of this scope in particular). The *Consultant* will produce a monthly progress report and financial forecast, 7no. assumed, to document progress against programme. This report will be delivered electronically to the *Client* via PDF and native format, and be presented by the *Consultant* at monthly progress meetings.

## 2 The *services* specifically include the following:

- a) The *Consultant* shall scope the boundaries of the problem of flooding from all sources including allowance for climate change. The *Consultant* shall consult with the *Client* about potential negative impacts as well as opportunities and input into the scope of the problem;
- b) Review existing reports & studies. Following the completion of the GI by the *Client*'s ESE partner and environmental surveys within this scope the *Consultant* shall complete an initial review of existing information and update the relevant summary reports listed below, ensuring the relevant cross referencing takes place to check whether the preferred option remains viable. This includes the following aspects:

- Environmental updates
  - GI information including producing a GI interpretative report
  - Additional modelling amendments (limited to no more than 50 FTE man hours not including unattended simulation runs)
  - Finance and Economics update reflecting any *Client* or ESE Partner provided cost estimates and changes to the benefits model
  - Phase 1 Options report (Incorporated and updated into OBC report)
  - Pre-concept design assumptions for the dimensions and key properties of the preferred option such as bund width/height etc.
  - Other elements such as carbon measures
- c) Using all available information from 2b, the *Consultant* shall update the assessment of the short list of options from the Phase 1 Options report based on *Client* criteria. The *Consultant* shall review with the *Client* non-economic factors relevant to the scheme and its constraints which includes ecology, carbon, technical viability etc.
- d) The *Consultant* shall produce outline design drawings of the preferred option. For flood walls - 1 long section and 1 cross-section. The assumption for this scope is that two flood walls are required for the preferred option. For the storage area – General Arrangement per storage area; 2 drawings per control structure; typical long section per embankment; typical cross section per embankment. The assumption for this scope is that a single storage area is required for the preferred option
- e) The *Consultant* shall facilitate one full day workshop at concept design stage and one full day workshop at outline design stage each attended by no more than five members of the *Consultant* team;
- f) The *Consultant* shall provide support to the *Client's* Cost & Carbon Lead/ESE Contractor to allow them to produce a detailed costing of the preferred option, suitable for inclusion in the OBC;
- g) The *Consultant* shall prepare a project programme through to construction completion of the preferred option suitable for inclusion in the OBC (with ESE input);
- h) The *Consultant* shall produce the appropriate carbon calculations for the preferred option and discounted options as required for an NPAS OBC
- i) The *Consultant* shall include the following OBC appendices for the preferred design solution and ensure OBC submission through the assurance process until the OBCs final determination;
- Appendix A: Hydraulic Modelling Summary
  - Appendix B: Lowdham SOC
  - Appendix C: Economic Appraisal Summary
  - Appendix D: Appraisal Summary
  - Appendix E: Photographs
  - Appendix F: PEIR
  - Appendix G: Risk Register
  - Appendix H: End to end delivery Programme
  - Appendix I: Stakeholder Engagement Plan
  - Appendix J: Partnership Funding Calculator
  - Appendix K: Construction Cost Build up
  - Others: additional short or long list of options information, efficiency register, Equality Analysis, Carbon Assessment and 3 x miscellaneous appendix notes e.g. project plans
- j) The *Consultant* shall review constraints and cost estimations at outline design stage with sufficient detail to inform the outline business case development and submission (with ESE input);
- k) The *Consultant* shall ensure that any existing assets not altered by the scheme, but still essential to providing flood protection by the scheme are considered as part of the full life of the FAS;

- l) The *Consultant* will make use of previous ground investigation and interpretive reports and information on the capital scheme for OBC development. Specification, scoping and interpretation of additional Ground Investigation is not included in this scope.
- m) The *Consultant* shall ensure that benefits from the FAS are captured and review the benefits already identified. The estimate/review of benefits for potential solution(s) should be prepared based upon the information collated to date and operational experience. At this stage the focus is on the scale and timing of possible benefits to be used by the *Client* to review the project mandate and aid planning. Any benefits or impacts not included in the rough estimate but potentially relevant to decisions should be flagged at this stage;
- n) The *Client* shall produce and own a Project Risk Register which the *Consultant* shall contribute to and review (with support from the ESE supplier). The project team will review the Project Risk Register and update it on a monthly basis.
- o) The *Consultant* shall facilitate and lead on one risk review workshop prior to OBC submission; the *Consultant* prepares a final OBC Project Risk Register (with support from ESE supplier) that meets assurance requirements for quantified risk and optimism bias;
- p) The *Consultant* shall provide input into the project efficiency register (CERT). The efficiency register is to be maintained by the *Client*. The *Consultant* shall work with the *Client* to identify efficiencies, provide baseline and cost saving figures. The *Client* shall update and submit the efficiency register. CERT submissions are required on a quarterly basis throughout the contract. Submissions will be discussed at progress meetings;
- q) The *Consultant* shall review landownership plans and National Receptors Database to be provided by EA for inclusion into the OBC;
- r) The *Consultant* shall be responsible for the production and management of the partnership funding calculator (PFC) to identify viability, noting the various funding sources available and timing. The PFC will be submitted as part of the OBC for assurance purposes;
- s) The *Client* will appoint a communications officer who will manage the stakeholder engagement plan, prepare any public consultation materials and arrange/advertise public consultation workshops appropriate to the project stage. It is assumed that three workshops will take place - internal EA, Professional Partners & general public. The *Consultant* shall prepare information for input into the public consultation documents. This will include preparation of site plans, visualisations and typical outline design drawings for public display. Attendance at the public consultation workshops shall include the *Consultant* project manager (or suitable delegate) and environmental lead;
- t) The *Consultant* shall attend meetings with key external organisations/individuals impacting upon option selection process;
- u) The key stakeholders are:
  - Nottinghamshire County Council
  - Newark and Sherwood District Council
  - Gedling Borough Council
  - Trent Valley IDB
  - Severn Trent Water
  - Lowdham Parish Council
  - Flood Lowdham Action Group
  - Individual landowners
- v) The *Consultant* shall identify opportunities for collaborative working including future maintenance and operation of the assets;
- w) Environmental Services:
 

Environmental services required include a review of the quality and appropriateness of the existing documents listed below.

  - i) Preliminary Ecological Appraisal (PEA) (Feb 2018)
  - ii) Lowdham Water Vole FRMS Options Assessment (Dec 2018)
  - iii) Indicative landscape Plan (ILP)
  - iv) Landscape & Visual Appraisal report (April 2019)
  - v) Environmental Site Appraisal Plans (ESAP) (March 2018)
  - vi) Baseline Ecology surveys carried out under Phase 1 scope (July 2020)

- vii) Cultural Heritage Desk Based assessment (March 2018)
- viii) Preliminary Water Framework Directive (WFD) Assessment (June 2018)

The *Consultant* shall then produce a suite of environmental documents for the preferred option to accompany the OBC. Where data can be used from pre-existing reports to inform these deliverables this will be done so by the *Consultant*. The *Consultant* shall produce the following environmental products:

- Environmental site appraisal plan to inform option appraisal and input to the OBC;
  - Use of carbon modelling tool to inform option appraisal and a more detailed carbon calculation for the preferred option;
  - Preliminary Environmental Information Report;
  - Initial Environmental Action Plan;
  - Support in obtaining screening opinion from LPA;
  - Cultural Heritage Desk Based Assessment;
  - Preliminary Ecological Appraisal;
  - Indicative landscape Plan;
  - Landscape & Visual Appraisal report; and
  - Preliminary WFD assessment.
- x) A programme of environmental surveys for delivery during Phase 2 will be agreed with the Client. The execution of these surveys will be agreed as a separate compensation event.
- y) The *Consultant* shall endeavour that the scheme design delivers biodiversity net gain in line with the Sustainability Chapter of the Midlands CDT Annual Plan. The *Consultant* shall produce a preliminary biodiversity net gain assessment using the Defra Biodiversity Metric based on the preferred option and highlight any mitigation requirements. Biodiversity net gain requirements associated with Local Planning Authority requirements shall also be considered by the *Consultant*. Baseline work on biodiversity net gain is to be delivered as part of a separate commission and is therefore specifically excluded from this scope. The *Consultant* shall provide a solution that integrates with NFM scheme as much as possible. The preferred option should take account of the existing NFM measures within the catchment and an assessment of the current contribution to flood risk should be undertaken to inform the design. Any NFM measures delivered upstream should be taken into account when producing modelling information;
- z) The *Client's* scope for inclusion into the CEEQUAL assessment 16 assessment issues using v6 of the manual. These are as follows:
- 1.1 Sustainability Leadership
  - 1.2 Environmental Management
  - 1.3 Responsible Construction Management
  - 1.5 Whole Life Costing
  - 2.3 Future Needs
  - 3.1 Consultation and Engagement
  - 3.2 Wider Social Benefits
  - 3.3 Wider Economic Benefits
  - 7.1 Strategy for Resource Efficiency
  - 7.2 Whole Life Carbon Emissions
  - 7.3 Environmental Impact of Construction Products
  - 7.4 Circular use of Construction Products
  - 7.5 Responsible Sourcing of Construction Products
  - 7.6 Construction Waste Management
  - 7.7 Energy Use
  - 7.8 Water Use

The *Consultant* shall scope individual assessment criteria within these assessment issues for agreement with the *Client*. The *Consultant* will provide a qualified CEEQUAL assessor to undertake the assessment and evidence gathering throughout the services. Alongside the assessment, the *Consultant* shall be responsible for completing the CEEQUAL portal.



## 2.1 Hydrology and Hydraulics

Additional modelling required i.e to determine parameters for civil engineering elements such as control structures and spillway design on the preferred option or reflecting latest knowledge associated with other aspects of the scheme such as GI results, ecology or landowner. Any additional modelling required is limited to 50 person-hours not including unattended simulation runs.

The *Consultant* shall produce the hydrological inputs required for the Probably Maximum Flow assessment of the reservoir design.

## 2.2 Economic Appraisal

a) The *Consultant* shall provide an economic appraisal as described below:

An economic appraisal is required to be undertaken in line with FCERM – AG, Supplementary guidance and the HM Treasury ‘Green Book’. This will include a valuation of all the key benefits, both economic and environmental, and whole life costs in order to produce a cost benefit analysis that will be used to determine the selection of a preferred option.

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 however ESE supplier input is required. The *Client* will provide support and costs where possible to complete this estimate.

Selection of the preferred option will be undertaken using a benefit-cost analysis and a multi-criteria analysis to reflect the non-economic elements such as carbon, environment, other sustainability measures, affordability and other project constraints as determined by the *Consultant*. Subject to these project constraints, the FCERM – AG decision rule will be applied whereby the option with the highest benefit cost ratio and subsequent incremental benefit cost ratio is selected. The assessment must ensure that the preferred option is economically justifiable with comparison to both the do minimum and do nothing option.

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. This includes sensitivity testing on construction costs and benefits (e.g. +/-10% on total) and report back on findings of assessment.

Reference shall be made to the baseline economic information throughout the project life-cycle to provide information on the likely affordability and scale of options that will be achievable at this location. The *Consultant* shall undertake a calculation of the resilience partnership funding score of the preferred option.

The *Consultant* shall confirm damages assessment from the most recent hydraulic model available.

The *Consultant* shall re-baseline financial data with inflation to current year to enable the update of previous economics appraisal and preferred option appraisal to current year including benefits and all financial outputs.

The *Consultant* shall assist (led by the ESE Supplier) to cost environmental mitigation and enhancements. The *Consultant* shall allow for one workshop for this with the whole project team.

The *Consultant* shall lead with wider benefits quantification and assessment in identification of wider OM's that could be claimed with respect to the recent revision in partnership funding rules such as OM4s, mental health etc. and non-cost related benefits e.g. strategic ambitions of the Environment Agency such as increased use of natural flood management measures.

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

Economic appraisal deliverables

a) 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
- Assumptions made
- How the decision rule has been applied
- What sensitivity tests have been applied and why
- Treatment of climate change
- FCERM-AG spreadsheets
- Partnership Funding Calculators

## 2.3 Business Case

The *Consultant* will be responsible for the submission of an Outline Business Case as described below:

The study will conclude with a rounding up and input into a business case document: Outline Business Case (OBC). The format of this document and guidance on the contents is detailed in the guidance 'completing a project appraisal report' and the OBC templates (672\_15). The study will conclude when submission through the assurance process is completed.

OBC delivery to be in accordance with the *Client's* submission programme for either the NPAS, PAB or LPRG assurance board dependent on project value. The *Consultant* shall be responsible for and respond to any queries that NPAS PAB or LPRG have regarding the OBC submission.. 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.

Any Business Case Update Report required by the scheme will be prepared and submitted by the *Client*. This scope makes no allowance for the *Consultant* to review this document, its appendices or attend any assurance meetings.

## 2.4 Site Investigation & Surveys

a) The *Consultant* shall provide all "Consultant Led" surveys listed below which are indicated as included in this scope as per the key below:

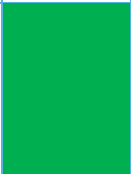
KEY:

\* Item included in this initial scope under Consultant scope

\*\* Current procurement requirements undecided, these items are specifically excluded from scope

Green – Consultant Led

Yellow – Contractor Led

		Consultant Involvement			Comment
		Survey Sector	Survey Type	<i>Delivery</i> <i>Procurement</i>	
SI	Environmental Surveys	Outline Survey	Tree	 **	An Outline Tree Survey should be carried out by a qualified arboriculturalist, and aims to identify all significant trees, groups of trees, shrubs and hedges. These should be noted on a topographical survey base plan. The Outline Tree Survey does not have to be a full tree survey as described in BS 5837:

	Survey Sector	Consultant Involvement			
		Survey Type	Delivery	Procurement	Comment
					2012, but should note all trees above a given stem diameter (i.e. 150mm) at 1.5m above ground level and should note all groups of trees, shrubs and hedges. The arboriculturalist should specify the stem diameter for any additional trees to be surveyed at this stage that are less than the threshold specified above. The Outline Tree Survey should include a summary report which details the arboricultural constraints of the site, and recommendations on ways to avoid or reduce arboricultural impacts. As part of the option appraisal an evaluation of the value of trees lost and the compensation required should be supplied as part of the comparison of costs and benefits. Information to be fed into design process to determine alignments & techniques of construction that incur minimal tree loss.
		Extended Phase 1 Habitat Survey (if required)		**	An Extended Phase 1 Habitat Survey for the preferred option (if boundary differs from the May 2020 survey undertaken by Arup during Phase 1) in accordance with standards set out in the JNCC – Handbook for Phase 1 Habitat Survey 2010 Edition and the CIEEM Guidelines for Preliminary Ecological Appraisal (2017). The extent of the Extended Phase 1 Habitat Survey will need to be determined by a suitably qualified ecologist based on the known features and species on site.
		Protected Species Surveys		**	A programme of protected species surveys for delivery during Phase 2 will be agreed with the <i>Client</i> . To note – some protected species surveys have already been instructed to the <i>Consultant</i> under a separate commission.
		Archaeological Surveys for DBA (Preferred Op)		*	Desk based assessment for the preferred option
		Other environmental surveys		**	If following consultation with the LPA further environmental surveys are required to support an EIA these would be agreed with the <i>Client</i> and costed separately. These may include surveys such as landscape photography to support any photomontages required as part of planning.
		Lowdham Cultural Heritage Desk Based Assessment		*	To be produced for the preferred option. To utilise existing information from previous reporting where appropriate.
		EIA screening request		*	EIA screening opinion request for the preferred option. This should be suitable for submission to the relevant LPA(s). The <i>Client</i> will lead on consultation with the LPA(s) on EIA requirements. EIA scoping request, and subsequent EIA, is specifically excluded from this initial scope.
		Environmental Action Plan (EAP)		*	Environmental Action Plan (EAP) for the preferred option.

Consultant Involvement				
Survey Sector	Survey Type	Delivery	Procurement	Comment
	Preliminary Ecological Appraisal (PEA)		*	To be produced for the preferred option. To utilise existing information from previous reporting where appropriate. PEA should follow CIEEM best practice guidelines.
	Indicative landscape Plan (ILP)		*	To be produced for the preferred option. To utilise existing information from previous reporting where appropriate. This must include landscape cost estimates for outline design.
	Landscape & Visual Appraisal report		*	To be produced for the preferred option. To utilise existing information from previous reporting where appropriate.
	Environmental Site Appraisal Plans (ESAP)		*	To utilise existing information from previous reporting where appropriate.
	Lowdham geo-environmental desk study		**	Geo-tech for potential new areas or village areas - dependent on what final option is.
	Utilities search and Buried Services Survey Desk Study		*	Undertake utilities search and produce utilities map.
	Lowdham Preliminary WFD assessment		*	To be produced for the preferred option. To utilise existing information from previous reporting where appropriate.

### 3 Deliverables

The *Consultant* shall produce a list of deliverables associated with the requirements detailed in section 2. This is uploaded to the *Client's* Information Delivery Plan for agreement within 6 weeks of contract start.

### 4 Health and Safety

Any Ground Investigation that may be deemed to be required under this commission will be subject to notification to the HSE. Appraisal work to outline design shall be treated as if it was notifiable.

a) The *Consultant* will provide the Principal Designer for this phase of work. The Principal Designer duties will include for a review of any site based services at appraisal stage and notifying the HSE of these, as well as a review of the outline design. The *Consultant* shall supply designer risk assessments, drawings and any other data for Principal Designer comment and include for any work required following review.

### 5 The services specifically exclude the following:

1. Input to Business Case Update Report(s).

2. Update of flood modelling hydrology (other than PMF hydrology noted above).
3. Update of flood modelling (other than that specified in section 2) e.g. for investigation of solutions other than the single storage area solution (Lowdham Grange) investigated in phase 1.
4. Any works for the *Consultant* included within the Lowdham Recovery Works scope.
5. An EIA scoping request, and subsequent EIA, is specifically excluded from this initial scope.

## 6 Drawings, site information or reports already available:

a) All existing information referenced within this document is available as an appendix, on Adoddle workspace - ENVIMMI001615 - LOWDHAM (COCKER BECK) \_BIM2 and linked to the Lowdham IDP. This includes but is not limited to:

- NFM designs for upper catchment
- Preliminary Environmental Information Report (PEIR)
- Preliminary Ecological Appraisal (PEA) (Feb 2018)
- Lowdham Water Vole FRMS Options Assessment (Dec 2018)
- Indicative landscape Plan (ILP)
- Landscape & Visual Appraisal report (April 2019)
- Environmental Site Appraisal Plans (ESAP)
- Lowdham Cultural Heritage DBA
- Lowdham geo-environmental desk study
- Lowdham Preliminary WFD assessment
- EIA Screening Letter
- EIA screening decision
- EIA scoping response
- Stakeholder engagement plan
- GI results will be made available when complete
- Environmental and ecology surveys and reports completed under Phase 1 commission (June 2020)
- Modelling reports completed under Phase 1 commission (June 2020)

## 7 Specifications of standards to be used

- a) UK Law;
- b) published Eurocodes;
- c) UK National Annexes to Eurocodes;
- d) the *Client's* minimum technical requirements;
- e) the *Client's* safety, health environment and welfare handbook;
- f) the *Client's* designer's health and safety Red Amber Green list;
- g) the *Client's* fluvial design guide;
- h) the *Client's* passive design guidance.

If there is a conflict or inconsistency between the above documents the *Consultant* notifies the *Client* for instruction.

## 8 Constraints on how the *Consultant* provides the services

- a) The *Consultant* shall provide monthly financial updates and forecasts to meet EA deadlines and inform the production of (by the *Client*) checkpoint reports, end stage reports, exception reports (as required), end project report, daily log and other management products in accordance with PRINCE2;
- b) The *Consultant* shall lead on cost and carbon assessment with the *Client's* Cost and Carbon lead to review and approve relevant deliverables. CAC assessment should only be done on the

preferred option, not for previous options;

- c) The *Consultant* follows the relevant framework instruction to manage and mitigate the impact of Covid 19 and work in accordance with Public Health England (or its successors) guidance, as may vary from time to time, initially from 1st July to 31st October 2020. Any changes to work practices during this period are subject to appropriate contractual instruction. Any change in Covid 19 work practices outside of this period will be subject to further contractual instruction.

## 9 Activity Schedule

- a) The *Consultant* shall provide an activity schedule. The activity schedule is required to be detailed as per the activities described above and to the *Clients* agreed level of detail. Should any works not be required as a result of the *Client* not requiring the contract to continue then the amounts detailed in the agreed activity schedule will be used as the basis of any changes to the total of the prices;
- b) The programme shall cover all the activities to be undertaken by the *Consultant* and other members of the project team. Include all major project milestones from commencement to the completion of OBC including: reporting, consultation and assurance approval stage;

## 10 Requirements of the programme

- a) The *Consultant* shall provide a monthly programme that complies with the requirement of Clause 31 and also includes alignment and submission of the BEP and Master Information Delivery Plan (MIDP);
- b) The *Consultant* shall ensure the programme complies with the requirement of Clause 32 each month accompanied with a monthly expenditure forecast. The *Consultant* shall update and issue the programme on a monthly basis for the *Client's* approval;
- c) The *Consultant* shall prepare an outline design construction programme (with ESE Supplier) of the preferred option suitable for inclusion in the OBC;
- d) The following are absolute requirement 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 in compliance with the latest *Client* EIR
  - Clause 11.2(2) work to be done by the Completion Date
- e) The *Consultant* shall attend no.1 start-up meeting, no.6 monthly progress meetings held via Microsoft Teams or face to face at Nottingham (EA Trentside offices) when/if Covid-19 restrictions allow and dial into no.15 fortnightly progress telecons with the project team. This is to facilitate a 7 month programme to OBC delivery;
- f) The *Consultant* shall attend no. 30 weekly project team meetings held via Microsoft Teams. The minimum attendees from the *Consultant* shall be the *Consultant's* project manager (or their delegate). This is to facilitate a 7 month programme to OBC delivery;
- h) The *Consultant* shall provide quarterly input into framework performance assessment and environmental performance measures;

## 11 Services and other things provided by the *Client*;

- a) Asite access; Appendices accessible on the Asite workspace 'ENVIMMI001615 - Lowdham (Cocker Beck) Flood Alleviation Scheme\_BIM2' accessible via <https://adoddleak.asite.com/adoddlepublic/dpd/RE7qakFk8yGELuMFj66>
- b) Contact details for other relevant appointed suppliers will be provided by the *Client*.

Appendices:

**Appendix A - Initial Assessment (IA) 2016**

**Appendix B – Strategic Outline Case (SOC) 2017**

**Appendix C – Lowdham Proof of Concept technical Note**

**Appendix D – Lowdham Shortlist Screening Determination**

**Appendix E – Modelling**

**Appendix F – Lowdham PAR**

**Appendix G – Lowdham Channel and Topographic Surveys**

**Appendix H – Channel Surveys from Notts Trent TRibs Scheme (Lowdham relevant)**

**Appendix I - NFM Design Drawings (Aug 2019)**

**Appendix J – Phase 1 Deliverables (June 2020)**

**Appendix K – GI and Environmental and ecology surveys and reports from Phase 1 commission (June 2020)**

**Appendix L - BIM Protocol – Production and Delivery Table**

**All *Client* issued information referenced within the Information Delivery Plan available on Adoddle requires verifying by the *Consultant* unless it is referenced elsewhere within the *Scope*.**