



Framework: Supplier: Company Number:

Geographical Area: Contract Name: Project Number:

Contract Type: Option:

Contract Number:

Stage:

Collaborative Delivery Framework BAM Nuttall Ltd

North East Spring Gardens Hydro-brake Replacement

Engineering Construction Contract Option C

Construction

Revision	Status	0	riginator	Revi	ewer	Date
1	Draft					29/03/2023
2	Draft					06/04/2023
3	Draft					18/04/2023
4	Draft					18/05/2023
5	Final					

ENGINEERING AND CONSTRUCTION CONTRACT under the Collaborative Delivery Fr rk

Project Name	Spring Gardens Hydro-brake Replacement				
Project Number					
5	This contract is made on between the <i>Client</i> and the <i>Contractor</i>				
	This contract is made pursuant to the Framew <i>Client</i> and the <i>Contractor</i> and incorporating t Framework. The entire agreement and the for	vork Agreement (the "Agreement") dated 10th day of April 2019 between the he Deed of Variation which has effect from 1st day of April 2023 in relation to the Collaborative Delivery Illowing Schedules are incorporated into this Contract by reference			
	Schedules 1 to 21 inclusive of the Framework schedules are relied upon within this contract.				
	The following documents are incorporated int Spring Gardens Hydrobrake Replacement Sco	to this contract by reference pe Rev04			
Part One - Data p Statements given i all Contracts	provided by the <i>Client</i> n				
1 General	The conditions of contract are the core clauses secondary Options of the NEC4 Engineering and	and the clauses for the following main Option, the Option for resolving and avoiding disputes and the Construction Contract June 2017.			
	Main Option C Option	bin for resolving and W2			
	Secondary Options				
	X2: Changes in the law				
	X7: Delay damages				
	X9: Transfer of rights				
	X10: Information modelling X11: Termination by the <i>Client</i> 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 works are				
	The work is to replace the two existing hydrobrakes with two new hydrobrakes within the upstream screen of the Spring Gardens Dam on the River Gaunless. The works will involve modifications to the existing concrete base slab and the concrete headwall to accept the new hydrobrakes. Works also involve the removal and reinstallation of the existing screen structure and all temporary works to facilitate the hydrobrakes' replacement preventing adverse detriment to downstream flood risk.				
	The Client is	Environment Agency			
	Address for communications	Tyneside House Skinnerburn Road Newcastle Business Park Newcastle upon Tyne NE4 7AR			
	Address for electronic communications				
	The Project Manager is	TBC			

Address for communications

Address for electronic communications

The Supervisor is

твс

Address for communications

Address for electronic communications

The Scope is in Spring Gardens Hydrobrake Replacement Scope Rev04

The Site Information is in Spring Gardens Hydrobrake Replacement PCI Rev03

The boundaries of the site are Ecology Scope for Hydrobrake Works v1.3_Final

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 following matters will be included in the Early Warning Register Incomplete design information

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

2 The Contractor's m	ain responsibilities	
	The key dates and conditions to be met are condition to be met	key date
	'none set'	'none set'
	'none set'	'none set'
	'none set'	'none set'
	The <i>Contractor</i> prepares forecasts of the total Defined Cost for the whole of the <i>works</i> at intervals no longer than	4 weeks
3 Time		
	The starting date is	12 June 2023
	The access dates are part of the Site	date
	Access to site	12 June 2023

Access to Environment Agency systems and resources

The Contractor submits revised programmes at intervals no longer than

4 weeks

12 June 2023

2 weeks

The Completion Date for the whole of the works is

30 November 2023

The Client is not willing to take over the works before the Completion Date

The period after the Contract Date within which the Contractor is to submit a first programme for acceptance is

4 Quality man

4 Quality managemen	t				
	The period after the Contract Date within which the <i>Contractor</i> is to submit a quality plan is				
	The period between Completic defects date is		52 weeks		
	The defect correction period is • The defect correction period • The defect correction period	s 1 for 1 for	2 weeks A safety issue	except that is 24 Hours is	
5 Payment					
	The currency of the contract is the £ sterling				
	The assessment interval is Monthly				
	The <i>Client</i> set total of the Prices is				
	The <i>interest rate</i> is Base	2.00% rate of the	per annum (not less tha Bank of Engla	an 2) above the Ind	
	The Contractor's share percen	tages and th	e share ranges are		
	share ra	inge	0/	Contractor's share percentage	
	from 80 ° greater than	% to 120	[%] 120 % %	as set out in Schedule 17 as set out in Schedule 17	
6 Compensation event	S				
	The place where weather is to	be recorded	is Durham		
	The weather measurements to	o be recorder	for each calendar mon	th are	

4 weeks

the cumulative rainfall (mm)

- the number of days with rainfall more than 5mm
- the number of days with minimum air temperature less than 0 degrees Celsius
- hours 00:00 GMT the number of days with snow lying at

and these measurements:

1. 2. 3. 4. 5.

The weather measurements are supplied by The Met Office

The weather data are the records of past weather measurement for each calendar month

which were recorded at	Durham
and which are available from	The Met Office

Assumed values for the ten year weather return weather data for each weather measurement for each calendar month are

Jan	Jul
Feb	Aug
Mar	Sep
Apr	Oct
May	Nov
Jun	Dec

These are additional compensation events

The Site is flooded as a result of the river level exceeding a height of 117.13mAOD at the screen location. The level is measured at a Hydrometry & Telemetry level gauge to be maintained by the Client in close proximity of the screen location. In the event of the gauge not being available, photographic evidence of flooding, date and time stamped, is to be provided by the Contractor. 1.

Z 2B: Water levels: Contractor's risk

Rev 1.9.1a

- 2 Adherence to and compliance with the Carbon Methodology dated 19 April 2023.
- 3 'not used'
- 4. 'not used'
- 5. 'not used'

8 Liabilities and insurance

Resolving and avoiding disputes

These are additional Client's liabilities

- 1 'not used'
- 2 'not used'
- 'not used' 3

The tribunal is litigation in the courts The Senior Representatives of the Client are

Address for electronic communications

Address for electronic communications

Address for electronic communications

Address for communications

Address for communications

The Adjudicator is

Address for communications

Name

The minimum amount of cover for insurance against loss of or damage to property (except the works, Plant and Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the Contractor) arising from or in connection with the Contractor Providing the Works for any one event is

£15,000,000

The minimum amount of cover for insurance against death of or bodily injury to employees of the Contractor arising out of and in the course of their employment in connection with the contract for any one event is

not less than the amount required by law

The insurance against loss of or damage to the works, Plant and Materials is to include cover for Plant and Materials provided by the Client for an amount of

£300,000.00

'to be confirmed'

The Institution of Civil Engineers

Z Clauses

71 Correctness of Site Information and other documents

21.1 Site Information and both the ground, subsoil, ducts, cables, pipes and structures is provided in good faith by the *Client*, but is not warranted correct. Clause 60.3 does not apply to such Site Information and the *Contractor* is responsible for checking the correctness of any such Site Information they rely on for the purpose of pricing for or providing the *works*. Z1.2 Information regarding construction methods or processes referred to in pre contract health and safety plans are provided in good faith by the *Client* but are not warranted correct (except for the purpose of promoting high standards of health and safety) and the *Contractor* is responsible for checking the correctness of any such information they rely on for the purpose of promoting high standards of health and safety) and the *Contractor* is responsible for checking the correctness of any such information they rely on for the purpose of promoting high standards of health and safety) and the *Contractor* is responsible for checking the correctness of any such information they rely on for the purpose of promoting high standards of health and safety) and the *Contractor* is responsible for checking the correctness of any such information they rely on for the purpose of promoting high standards of health and safety) and the *Contractor* is responsible for checking the correctness of any such information they rely on for the purpose of promoting high standards of health and safety). purpose of pricing for, or providing the works

Clause 60.1 (12) second bullet point is amended to: "are not weather conditions or floods and"



The Adjudicator nominating body is

Environment Agency Hafren House Welshpool Road Shelton

Z3 Prevention: No change to prices

Delete first sentence of clause 62.2 and replace with:

"Quotations for compensation events except for the compensation event described in 60.1(19) comprise proposed changes to the Prices and any delay to the Completion Date and Key Dates assessed by the *Contractor*. Quotations for the compensation event described in 60.1(19) comprise any delay to the Completion Date and Key Dates assessed by the *Contractor*. Delete 'The' At start of clause 63.1 and replace with:

"For the compensation event described in 60.1(19) the Prices are not changed. For other compensation events the..."

Z 4 The Schedule of Cost Components

The Schedule of Cost Components is as detailed in the Framework Schedule 9

Z 6 Payment for Work Delete existing clause 11.2 (31) and replace with:

the Field of the f

77 Contractor's share

After cl54.2 and before cl54.3, insert the following additional clause:

54.2A If, prior to Completion of the whole of the works, the Price for Work 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 Contractor.

Z10 Payments to subcontractors, sub consultants and

Subcontractors

The Contractor will use the NEC4 contract on all subcontracts for works unless another alternative and appropriate form is proposed and agreed in accordance with clause 26.3.

Payment to subcontractors will be 28 days from the assessment date. If the Contractor does not achieve payments within these timescales then the Client reserves the right to delay payments to the Contractor in respect of subcontracted work, services or goods.

Failure to pay subcontractors and suppliers within contracted times scales will also adversely affect the Contractor's opportunities to work on framework contracts.

Z16 Disallowed Costs

Add the following bullets to clause 11.2 (26) Disallowed costs

- was incurred due to a breach of safety requirements, or due to 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 result of rectifying a non-compliance with the Framework Agreement and/or any call off contracts following an audit.

719 Linked contracts

Delays and additional cost on this contract resulting from the Contractor's fault or error on a previous contract on this project or programme will be a Disallowable cost under this contract and not be a Compensation event under this contract.

Z21 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 Project Manager's certificate.

Delete existing clause 51.2:

Delete existing classe 31.2.
 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 *Project 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

Z22 Resolving Disputes Delete W2.1

Z23 Risks and insurance

Replace clause 84.1 with the following Insurance certificates are to be submitted to the Client on an annual basis

Z31 ECC – Price Adjustment for Inflation

The Client recognises the ongoing pricing uncertainty with regards to inflation. The Client will mitigate this uncertainty through this clause.

Z31.1 Defined terms

a) The index is Office for National Statistics (ONS) CPI (UK, 2015=100).

b) The Base Date Index (B) is the latest available index published by ONS prior to the Contract Date.c) The Latest Index (L) is the latest available index published by ONS before the date of assessment of an amount due.

- d) The Price Adjustment Factor (PAF) at each date of assessment of an amount due is 0.9((L-B)/B).

Z31.2 Application rules.

The provisions of this clause [Z31] shall apply provided that:

a) The Price for Work Done to Date is less than or equal to the total of the Prices

b) Inflation remains positive i.e. L is greater than B.

Z31.3 Price Adjustment Factor

If an index is changed after it has been used in calculating a PAF, the calculation is not changed. The PAF calculated at the last assessment date before the Completion Date for the whole of the works is used for calculating an amount for price adjustment after that date.

Z31.4 Price adjustment Options A and B. NOT USED

Z31.5 Price adjustment Options C and D.

Each time the amount due is assessed, an amount for price adjustment is added to the total of the Prices which is the change in the Price for Work Done to Date since the last assessment of the amount due multiplied by (PAF/(1+PAF)).

Z31.6 Compensation events. NOT USED

Z111 ECC - Fee adjustment for non compliance with Scope Delete existing 11.2 (10) and replace with the following clause % f(x)=0

The Fee is the amount calculated by applying the *fee percentage* to the Defined Cost excluding the cost of Sub-contractors 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 Sub-contractors that have not complied with procurement by best value processes as defined in the Scope.

Z120 ECC – Carbon reduction

Ref. (Clause No.)	Clause words
11.2 Definitions	Add as Clause 11.2(36) (36) The Performance Table states the targets the <i>Contractor</i> is to achieve in Providing the Works 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 <i>performance table</i> unless later changed in accordance with the contract.
15.1 Early Warnings	In Clause 15.1 add as a new bullet between the second and third bullet: *• result in a target in the Performance Table not being met,"
Performance Measurements	
57	Add as Clause 57:
57.1	From the starting date until the Completion Date, the Contractor reports to the Project 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 <i>Contractor's</i> 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 <i>Project Manager</i> for acceptance its proposals for improving performance. 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, • If the relevant performance does not meet the target stated in the Performance Table, the <i>Contractor</i> pays the amount stated in the Performance Table, • If the relevant performance exceeds or meets the target stated in the Performance Table, the <i>Contractor</i> 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: • low performance damages if the Performance Table applies

The performance table is

the Performance Table for this contract type (ECC, BAM, Construction) as set out in the Carbon Methodology dated 19 April 2023

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 works are per day **OPTION X10: Information modelling** The period after the Contract Date within which the Contractor is to submit a first Information Execution Plan for acceptance is 2 weeks The minimum amount of insurance cover for claims made against the Contractor arising out of its failure to use skill and care normally used by professional providing information similar to the Project Information is, in respect of each claim £5,000,000 The period following Completion of the whole of the works or earlier termination for which the Contractor maintains insurance for claims made against it arising out of its failure to use the skill and care is 6 years OPTION X18: Limitation of liability The Contractor's liability to the Client for indirect or consequential loss is limited to £1,000,000 For any one event, the Contractor's liability to the Client for loss or damage to the Client's property is limited to £1.000.000 The Contractor's liability for Defects due to its design which are not listed on the Defects Certificate is limited to £5.000.000 The Contractor's total liability to the Client for all matters arising under or in connection with the contract, other than excluded matters, is limited to £5,000,000 The end of liability date is after the 6 years Completion of the whole of the works 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(UK2): The Housing Grants, Construction and Regeneration Act 1996

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

Y(UK3): The Contracts (Rights of Third Parties Act) 1999

term	beneficiary
Any	None

term	beneficiary
The provisions of Y(UK)1	

Part Two - Data provided by the Contractor

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

1 General The Contractor is BAM Nuttall Ltd Name Address for communications St James House Knoll Road Camberley Surrey GU15 3XW Address for electronic communications The fee percentage is 9.90% Option C The working areas are The working areas are the Site, the Contractors offices and p The key persons are Name (1) Job Responsibilities Project Management of the scheme Qualifications Experience The key persons are Name (2) Job Project management Responsibilities Qualifications Experience The key persons are Name (3) Job Responsibilities Qualifications Experience The key persons are Name (4) Job Responsibilities Qualifications Experience The following matters will be included in the Early Warning Register

2 The Contractor's main responsibilities

The Scope provided by the Contractor for its design is in

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 Contractor are

Name (1) Address for	communications Mikasa House Asama Court Newcastle upon Tyne NE4 7YD
Address for	electronic communications
Name (2) Address for	communications Mikasa House Asama Court Newcastle upon Tyne NE4 7YD
Address for	electronic communications

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

 09/06/2023

 Signature
 Date

Contractor execution

Signed Underhand by [PRINT NAME]	for and on behalf of	BAM Nuttall Ltd
Date	Role	

Environment Agency NEC4 engineering and construction contract (ECC) Scope

Project / contract information

Project name	Spring Gardens Hydrobrake Replacement
Project SOP reference	
Contract reference	
Date	19/05/2023
Version number	04
Author	

Revision history

Revision date	Summary of changes	Version number
01/03/2023	First issue	00
14/03/2023	Project team comments	01
30/03/2023	Addressing comments	02
21/04/2023	Addressing comments	03
19/05/2023	Updates following Commercial review	04

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:

Document	Document Title	Version No	Issue date
LIT 13258	Minimum Technical Requirements	12	December 2021
LIT 17641	Exchange Information Requirements	2.4	April 2020

incident hotline 0800 80 70 60



Contents List

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- S 800 Management of the works
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- S 1000 Services and other things to be provided
- S 1100 Health and safety
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- S 1400 Acceptance or procurement procedure (Options C and E)
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- S 1700 *Client's* work specifications and drawings
- Appendix 1 BIM Protocol Production and Delivery Table
- Appendix 2 BIM Protocol Clients Information requirements
- Appendix 3 Hydrobrake Replacement Details Rev 01

Appendix 4 21_21_7487-01-101 - hbf - che type Hydrobrake

Appendix 5 21_21_7487 Hydro-Brake Flood Quote Rev D

18.05.23_Redacted

S 100 Description of the *works*

S 101 Description of the works

The work is to replace the two existing hydrobrakes with two new hydrobrakes within the upstream screen of the Spring Gardens Dam on the River Gaunless. The *works* will involve modifications to the existing concrete base slab and the concrete headwall to accept the new hydrobrakes. The *works* also involve the removal and reinstallation of the existing screen structure and all temporary works to facilitate the hydrobrakes' replacement whilst also taking reasonable steps so as not to increase the downstream flood risk whilst the *works* are undertaken.

The hydro-brakes will be provided free of charge by the client to the contractor for installation.

Background

The Gaunless Flood Alleviation scheme was constructed between April 2003 and December 2004. The scheme included the construction of an on-line storage reservoir at Spring Gardens. This reservoir had sufficient storage to accommodate a 1:200 year return period event with a pass forward flow of a 1:2 year event equating to 11 m³/s, under a maximum design head of 10.5m with twin culverts both 2600mm diameter connecting to a 1380mm diameter throttle. The chosen flow control device at the culvert inlet was a Hydrobrake®, manufactured by Hydro International (Hydro), this was chosen due to the advantages offered in having no mechanical moving parts, no power requirements, an adjustable large clear opening and Hydro having a UK track record for manufacture, supply and performance of the units.

One of the hydrobrakes® has sustained damage to the floor plate which has been removed and temporarily patched in places under an emergency works contract which was completed in December 2022. During the repair process further concerns have been highlighted by our CDF Lot 1 Design Partner Ove Arup regarding the presence of a void between the base of the hydrobrake® and the reinforced slab (which is believed to have been the primary cause of the damage) and also longer-term structural performance of the unit(s) under the total design load with some components (particularly the end diaphragm) identified as exceeding their yield stresses.

Hydro have been part of the project team assisting with the investigations, modelling and emergency repair works and they have validated the finite element modelling work and conclusions reached by Arup. The units are almost 20 years old now and Hydro have acknowledged that advancements have been made in materials and technology throughout that period and the design of the units has evolved and changed as a result.

Repairing the units has been considered, however any internal repair, although possible, is challenging and would require thicker components to reduce performance

concerns which would compromise the hydraulic performance. An external repair to thicken up the stiffening plates would also be problematic as the units are part encased in concrete. Due to the removal of the damaged sections of stainless steel, the reinforced slab and benching concrete are directly exposed to flows and are performing as an integral part of the hydrobrake®

As such, it is considered that the best way forward would be to replace the current units with the next generation unit which Hydro have confirmed is much more robust and adaptable with thicker components and an upgraded end diaphragm configuration.

The *Contractor* is responsible for the design of the temporary works / Equipment required for the safe removal of the two assets in this fluvial environment.

The drawings describing the works include:

- ENV0004705C-ARU-00-00-DR-K-B1300_1-S2-1-B1300-EA3-LOD3 Hydrobrake Replacement Details Rev01 (Appendix 3) is a series of sketches describing the works.
- 21_21_7487-01-101 hbf che type Hydrobrake (Appendix 4) This is the Hydro International drawing showing the new left hand Hydrobrake, a mirror version will be provided in due course for the right hand version.
- 21_21_7487 Hydro-Brake Flood Quote Rev D 18.05.23_Redacted (Appendix 5)

Fixing details for the hydrobrakes and concrete works required to facilitate removal of existing hydrobrakes and installation of new hydrobrakes are not yet known and assumptions will be required.

The Hydrometry & Telemetry equipment is to be removed from the works. The Client is responsible for terminating and removal of cables and the Contractor is responsible for the supporting equipment such as the stilling tubes.

S 102 Purpose of the Works/ Outcome required

The River Gaunless Flood Alleviation scheme was constructed between May 2003 and June 2005 in response to the June 2000 flooding. Spring Gardens Dam provides additional benefit to 452 residential and 113 non-residential properties in West Auckland, South Church and Bishop Auckland (2019 figures). This scheme included the construction of linear defences at Ramshaw Mill, West Auckland and South Church working in combination with the Spring Gardens Dam to provide protection across the area. The 315 metre long 12 metre high dam provides 1.1 million cubic metres of storage which extends 1km upstream when at capacity. The dam and two Hydro-Brake flow controls attenuate a 200 year flow to a 2 year flow on the river Gaunless which effectively reduces the risk of flooding downstream. In order for the performance of the dam to continue it is imperative for the hydrobrakes to continue to perform.

The *Client's* objectives of the project are:

- To maintain the effective flood protection currently offered by Spring Gardens dam.
- To minimise future emergency works to carry out repairs
- To avoid a Matter in the Interest of Safety (MIOS) being raised following a Section 10 Inspection.

S 200 General constraints on how the *Contractor* provides the *works*

S 201 General constraints

Use of the Site

- With the exception of security staff, people shall not remain on the Site overnight without the written agreement of the *Client*.
- The *Contractor* does not enter or use the Site for any purpose not connected with the *works*.
- The *Contractor* shall take reasonable steps (including fencing and / or banksman) to prevent public access to the Site and working area.

Access to the Site

- The *Contractor* shall notify the *Client* 14 days in advance of their intention to first enter or occupy each Working Area within the Site.
- The *Contractor* shall maintain close liaison with the *Client* with ensuring all necessary landowner agreements and issued notices are in place prior to entry onto Site and secure Working Areas. To assist the *Client* to prepare each Notice of Entry, the *Contractor* will provide;
 - Marked up plan of the Working Area required
 - Duration of the *works* and entry requirements
 - Access arrangement
 - Site safety requirements
- The *Contractor* is to identify and complete a photographic dilapidation condition surveys prior to taking entry.
- The *Contractor* shall keep occupiers informed of the effect of the *works* on their land through a weekly updated. A record of these updates will be kept and provided to the *Client*.
- The *Contractor* shall maintain safe access and egress routes for pedestrians and vehicles requiring access to areas affected by the works. The access point is a multi-user route and blockage of this route is to be avoided at all times.
- Where access cannot be maintained, a closure or diversion route shall be agreed with the *Client* and landowner. The *Contractor* will be responsible for obtaining any paying for all temporary closures and permanent diversion of footpaths or highways impacted by the works.
- The proposed access routes are to be confirmed by the *Contractor* and designated in the Construction Phase Plan. The *Contractor* is to obtain any additional approvals from relevant landowners, third parties or local council and incorporate any specific requirements as necessary.

- Copies of formal entry notices, details of particular agreements with landowners and/or powers of entry will be made available to the *Contractor*.
- The *Contractor* shall not enter any part of the Site until the access date of that part of the Site shown on the Accepted Programme. The *Contractor* may enter any part of the Site earlier than the access date if given authority to do so by the *Project Manager*, provided that a formal Notice of Entry has been served.
- The *Contractor* shall keep owners and occupiers informed of the effect of the works on their land and property as required by the *Project Manager*. The *Project Manager* shall provide a contact list.
- The *Contractor* shall keep records of the dates of his first entry onto and departure from all property and lands of each owner and occupier (including public highways, footpaths and thoroughfares) together with the dates of the erection and removal of all temporary fencing.
- The *Contractor* must give 7 days' notice to the *Client* to gain access to the Site during the defects correction period.

Deliveries

• The *Contractor* will liaise with the *Client* and the landowner when deciding on suitable times for vehicles accessing the site. The *Contractor* will liaise with the landowner when moving others vehicles for access should this be required.

Noise and vibrations

- The *Contractor* shall liaise with the Local Authority and comply with their requirements for noise control
- The *Contractor* shall take all reasonable precautions to minimise the noise arising from their plant, vehicles and method of construction, and shall adopt the relevant recommendations of BS 5228: 2009.

Working hours

- Normal working hours shall be defined as:
 - Monday to Friday 0800 to 1800
- No work shall be executed outside of these times or on weekends and public holidays without the prior written acceptance of the *Project Manager* and a minimum notice period of two days is required. Such acceptance will be influenced by the time of sunrise/sunset, anticipated noise, odour and artificial light emissions from the works, proximity to property, use of public roads and any other considerations that could cause disturbance to members of the public.
- It is the responsibility of the *Contractor* to liaise with the landowner/occupier to ensure the timings for access to the site is possible during this period.

Parking

• The *Contractor* will provide adequate parking for Site based personnel and visitors within the site compound. No parking is allowed outside of the area unless the *Contractor* enters into a specific agreement with the landowner.

- The *Contractor* shall ensure that a traffic plan is produced and included in the Construction Phase Plan. It is expected that this will include as a minimum;
 - Parking areas within and off-site
 - Access to site
 - Vehicular traffic routes
 - Pedestrian walkways
 - Consideration of parking arrangement in the design of the compound

Use of cranes

- Where the use of cranes are required the *Contractor* shall prepare site specific temporary works designs and RAMS in connection with the lifting operations to ensure adequate stability of the lifting equipment. In planning the lifting operations the *Contractor* shall refer to the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER). Approved Code of Practice and guidance December 2014 (with amendments 2018). Loading and unloading activities should only be carried out by authorised personnel in compliance with LOLER requirements
- The *Contractor* must also consider the safety of lifting operations and stability thereof using excavators, telehandlers and other lifting equipment.

Restrictions on the use of hazardous materials

- The *Contractor* will minimise and control the use of deleterious and hazardous material.
- Explosives are not to be used on Site.
- Refer to the Minimum Technical Requirements.

Storage of fuel and chemicals

- Refer to the Minimum Technical Requirements.
- See Section 4.31 of SHEW Cop Pollution Prevention for further *Client* requirements

Pollution, ecological and environmental impacts.

• Section 4.31 SHEWCOP Pollution Prevention and 4.32 SHEWCOP Biosecurity and Invasive and Non-native species provide for minimum requirements to be complied with.

The environmental context of the Site is outlined in the Pre-Construction Information.

- In addition, the ecological and environmental impact of the following specific must be identified and proposals put forward in method statements and submissions for approval;
 - Siltation
 - Pollution prevention
- The following surveys, assessments and works are required:

Requirements	Location (within Zone of Influence)	
Preliminary Ecological Appraisal (PEA)	Whole scheme	

Environmental Action Plan (EAP)	Whole scheme
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- Fish (inc. salmon and trout), otter and water vole are known on the site or migrate through the site. The *Contractor* will take the implications of these species being present into account in the design and delivery of the works to ensure passage is maintained. The *Client* will accept any necessary, additional programme risks identified by the PEA/EAP requiring any further surveys or investigations.
- Breeding bird checks and fish redd checks will be needed by the ecologist depending on the time of year.
- An ecological clerk of works will be required for supervision of elements of the work.
- The Contractor will clear the site of invasive species prior to the start of and during the main works on site. Known invasive species are American Signal Crayfish and Himalyan Balsam. It can be assumed that the methodology for handling both will be similar to the methodology followed during the emergency works undertaken by BAM in 2022.
- The *Contractor* shall plan and order all his activities to assist the *Client* to achieve legal compliance and achievement of *Client's* corporate goals. In addition to this general requirement, particular areas for action are:
 - Avoidance of pollution of any waters;
 - Avoidance of pollution of any land;
 - Protection and enhancement of flora and fauna;
 - Avoidance of nuisance of sounds, vibrations and dust.
- The *Contractor* shall refer to the relevant CESWI 7 clauses, Control of Pollution Act 1974 and the MTR in association of environmental best practices, imported material, as well as 1.19 Emergency Arrangements and Section 12 for additional supplementary clauses relating to the environment.
- The *Contractor* will provide the works in accordance with environmental best practice including but not limited to the following documents:
 - BRE Green Guide to Specification.
 - BRE Materials Information Exchange
 - CIRIA, SP122 Waste Minimisation and Recycling in Construction
 - CIRIA, C513 The Reclaimed and Recycled construction Materials Handbook.
 - CIRIA, C533 Environmental Management in Construction.
 - DEFRA, Construction Code of Practice for the Sustainable Use of Soils on Construction Sites
- The project does not require an exemption from the Considerate Constructors Scheme (CCS) as it does not fall under the criteria to register under the CCS

given the works are not planned to take more than 12 weeks and are unlikely to have a significant impact on the public given the remote location.

- The *Contractor* will comply with the following Environment Agency Guidance Documents.
- The *Contractor* obtains the latest version of each of these documents from the *Client* prior to commencing the works.
 - PPG1: General Guide to the Prevention of Water Pollution,
 - PPG2: Above Ground Oil Storage Tanks,
 - PPG5: Works in, near or liable to affect Watercourses,
 - PPG6: Working at Construction and Demolition Sites,
 - PPG21: Pollution Incident Response Planning,
 - PPG 23: Maintenance of Structures Over Water
- The *Contractor* will provide monthly environmental tool-box talks to all employees and Subcontractors and will include but not limited to:
 - o Sensitivities of the Site including wildlife features and designated sites.
 - o Pollution prevention
 - o Lighting
 - o Environmental awareness
 - o What to do in the event of finding:
 - Bones
 - □ Archaeological artefacts
 - Protected species and what those might be
- The Contractor shall:

• Reinstatement and make good of all areas affected by the works on a 'like for like' basis as a minimum unless stated otherwise on the drawings;

- Provide tree protection to any trees which are to be retained during the works.
- Treat all invasive species prior to the works commencing on Site.

• Completion of all required protected species surveys prior to the works commencing on Site.

• Supply the *Client* with supporting material, including a method statement, for the Environmental Permitting consents

• Pollution, ecological and environmental impacts shall be managed by the *Contractor* in accordance with the Minimum Technical Requirements.

•The *Contractor* is responsible for a fish rescue(s) when there is a risk of stranded fish during the provision of the works.

Archaeological requirements

• In the event that anything that may be of archaeological interest is uncovered, all work will cease within the vicinity of the find and the *Client* will be notified.

Interfaces between the works and existing things.

• Not used

Occupied premises and users.

• Refer to Minimum Technical Requirements

Client specified policies and procedures

• Refer to Pre-Construction Information

Constraints imposed to meet the requirements of Others (example funders).

Not used

Watercourse Information & Flooding

- In Providing the Works, the Contractor shall ensure the works are phased and managed such that one hydrobrake operates fully without restriction at all times.
- The *Contractor* will register with the Environment Agency's Flood Resilience Team before commencing work on Site, and gives them telephone numbers and /or email addresses where Flood Alerts and Warnings can be sent. Contact details for Floodline and the 24 hour National Incident Communication Service is to be provided via the Environment Agency Representative. The Environment Agency Floodline number is 0345 988 1188.
- The *Contractor* shall register through the *Project Manager*, with the Environment Agency's Flood Warning team before commencing on the Site, and provide them telephone numbers and email addresses where Flood Warnings can be sent.
- The *Contractor* may arrange regular weather forecast information from the Environment Agency's National Incident Communication Service. The information will be provided free of charge.
- The *Client* is not liable for any consequences if it is unable to provide either flood warnings or weather forecasts, or if they prove inaccurate.
- The Site Information provides details of expected water levels during flood events. Also refer Section S 206.

Sustainability targets

- The *Client* has an Environmental Management System (EMS) that is certified to ISO14001:2015 standards. As part of this, the *Client* takes a full lifecycle approach to the identification and management of the significant environmental risks and opportunities in procurement activities. The *Client* requires suppliers to embrace and adopt the same approach and reduce the environmental and social impact of this framework over its full lifecycle in addition to fully realising any benefits or opportunities that may exist.
- The *Contractor* must ensure that any impacts identified are reduced to benefit the environment and society, and that they are not passed on to another lifecycle stage. This includes considering and reducing those impacts that lie outside of the supplier's direct operation and impact on both the *Client* as a customer and on the *Contractor*'s supply chain.

Timber and tropical hardwood requirements

• Refer to the Minimum Technical Requirements

Liaison with third parties

- It is important to the *Client* that the *Contractor* establishes and maintains good public relations throughout the course of the contract. The *Client* and the *Contractor* shall work in close liaison with regard to consultation and partnership working must be adopted.
- The *Contractor* shall notify the *Project Manager* of all third party requests for meetings.
- The *Contractor* is made aware of previous anti-social behaviour in the area of the Spring Gardens site. This has involved the following;
 - The residents of Railway Cottages; and
 - The residents of Norton Fine Farm
- Both properties lie to the northwest of the site, previous incidents have involved the emergency services and are well known to the local community Police Officer. If the anti-social behaviour by local residents results in lost time and additional cost these will be borne by the *Client*.

Environmental Permits

- The *Contractor* obtains all environmental permits for the works which affect watercourses and or flood defences.
- The *Contractor* obtains Flood Risk Activities Environmental Permits for all works from the Environment Agency.
- Flood Risk Activities Environmental Permits apply to in-channel works, but also to work; on or near a main river, on or near a flood defence structure, or in a flood plain. "On or near" refers to works within 8m of any flood defence structure or culvert (16m if tidal). A full list of works which require an environmental permit can be found at: https://www.gov.uk/guidance/flood-riskactivities-environmental-permits
- The *Contractor* submits applications at the earliest opportunity and is aware that more than one consent may be necessary. Applications for temporary works consents should be assumed to take up to 10 weeks.

S 202 Confidentiality

- The *Contractor* does not disclose information in connection with the works except when necessary to carry out their duties under the contract or their obligations under the contract.
- The *Contractor* may publicise the services only with the *Client's* written permission.

S 203 Security and protection on the site

- The *Contractor* must secure the Working Areas. The *Contractor* must make sure the works do not affect the security of Others.
- The *Contractor* provides suitable Site security measures so that no unauthorised persons can gain access to the Site.
- As soon as access to or use of the Site is allowed under the contract the *Contractor* shall erect temporary fencing to secure the Site in accordance with the Minimum Technical Requirements.

- All Site fencing and gates shall be regularly inspected and maintained, and any Defects made good as soon as reasonably possible. Access shall be provided in temporary Site fencing and gates, as necessary, for the use of the occupiers and businesses of adjacent lands.
- Temporary fencing and gates shall remain in position until the works are complete.

S 204 Security and identification of people

- The *Contractor* is responsible for the security of the Site and for vehicles and pedestrians entering and leaving the Site.
- Security measures shall include:
 - Ensuring that the *Contractor's* personnel are easily identifiable.
 - Ensuring that the site gates are closed after the passage of vehicles or personnel on each and every occasion. Gates are not to be left open.
 - Ensuring that the Site is left properly secured at the end of each working day.
- The *Contractor* shall take reasonable steps to ensure that the works do not compromise the security of properties within or adjacent to the Site. The *Contractor* considers the security of neighbouring properties and does not leave unattended scaffolding, ladders, or any condition, which provide or assist access to neighbouring properties. Where permanent security fencing to neighbouring properties is removed as part of the *works*, it is replaced by suitable temporary fencing when the Site is unoccupied.

S 205 Protection of existing structures and services

- All consultation and liaison with Statutory Undertakers are the responsibility of the *Contractor*.
- The *Contractor* shall confirm the location of all the services identified in the Works and Site Information. It is the *Contractor's* responsibility to report any discrepancies to the *Project Manager* prior to commencement of the works.
- Arrange and implement, as necessary, all service diversions and protection measures required during the *works* with the relevant service provider.
- There are a number of existing buildings and structures which may be affected by the *works*. All areas of work have limited space available to manoeuvre machines and Equipment and therefore present a risk.
- Protection works shall be determined and actioned prior to undertaking any activity by the *Contractor*. Suitable method statements must be developed by the *Contractor* and accepted by the *Project Manager* prior to undertaking such activity.
- Underground and overhead services information is included in the Site Information and includes the following:
 - \circ Electric
 - o BT
 - o Water
 - o Sewer
 - o Gas
 - \circ Communications

Spring Gardens Hydrobrake Replacement

- All existing services are to be maintained without interruption during the works.
- The *Contractor* shall undertake detailed in situ service investigations to confirm the locations of the statutory authority services identified in the Site Information, identify any other services that have not been identified by the statutory authorities, and identify any privately owned services within and adjacent to the Working Areas, including the accesses. The *Contractor* must verify that the services shown on the drawings are complete and correct.
- The *Contractor* will keep an updated combined services drawing that is updated with confirmed service locations and unchartered services that are found during the works. This will be accessible to all Parties and be included in the Health & Safety file on handover.
- The *Contractor* shall comply fully with the requirements of the relevant statutory authority when working in the vicinity of their apparatus, both for the permanent and temporary works. In addition, the HSE Guidance Notes HSG47 'Avoiding danger from underground services' and GS6 'Avoiding danger from overhead powerlines' shall be fully complied with when working in the vicinity of their apparatus. Requirements of Environment Agency Safety, Health, Environment and Welfare Code of Practice and Operational Instructions must be followed. The principles of PAS128:2014 will be followed.
- Should any damage occur the *Contractor* shall immediately inform the *Project Manager* and the Statutory Undertaker or owner concerned, as appropriate. The *Contractor* shall repair or replace the affected apparatus in accordance with the relevant Undertaker, Authority or owners requirements to the approval of the *Project Manager*.

S 206 Protection of the *works*

- The *Contractor* will take reasonable steps to protect the works, Material, Plant & Equipment liable to theft or damage by vandalism, the weather, flood or by the method used for carrying out the works.
- The *Contractor* will submit proposals for the safe containment or discharge of the Construction Design Flood during all stages of the construction of the works to the *Project Manager*.

S 207 Cleanliness of the roads

- Throughout the contract, the *Contractor* co-operates with the Highway Authority concerning the works in, or access to, the highway. The *Contractor* informs the *Project Manager* of any requirements or arrangements made with the relevant authorities. The *Contractor* meets the requirements of any relevant planning condition.
- Existing public highways, including footpaths, used by vehicles of the *Contractor*, his Subcontractors and suppliers will be kept clean and clear of all dirt, mud or other Materials.
- The *Contractor* promptly removes mud and debris from the highway and public access routes.

S 208 Traffic Management

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- The *Contractor* shall prepare a Traffic Management Plan (TMP). Section 2.6.10 Parking of the PCI document and Section 4.26 SHEWCOP Traffic Management Plan (TMP) sets out minimum requirements. As a minimum the TMP shall consider
 - Access to site with consideration of HGV deliveries / equipment movements / removal of concrete, steelwork and silt / debris from the bed at the Tidal Barrage
 - Vehicular traffic routes around/through the site, including those required for the emergency services
 - Pedestrian routes and public rights of way and diversionary routes required upon footpath closure
 - Parking areas
 - Storage areas
- Where necessary the *Contractor* agrees traffic management measures to be implemented with the local Highway Authority and complies with their recommendations on access routes, site access points, signage, highway cleaning and making good any damage to the highway.
- Access and egress arrangements for emergency services to be considered and detailed in the TMP.

S 209 Condition survey

- The *Contractor* undertakes similar 'Post-completion' condition surveys when the work is complete and on dates agreed with the *Client*. Copies of the 'Postcompletion condition surveys are distributed in the same format no later than two weeks after Completion. The *Contractor* shall agree the extent of the CCTV with the relevant service provider.
- The photographs from the survey will show defects such as cracks, structural damage and any other visual faults. Defects shall be measured and recorded to provide a schedule of defects for use if necessary
- The survey record should be stored in the BIM archive.

S 2010 Consideration of Others

• Details of all complaints, claims or warnings of intended claims received from third parties shall be notified as soon as reasonably possible to the *Project Manager*.

S 2011 Control of site personnel

- Only authorised people working on the Site or expected/known visitors to the Site can enter the Site and only following the *Contractor's* Site induction. A member of the site management/supervisory team shall escort any persons without a CSCS/CPCS card at all times.
- The *Contractor* is to collect data required from Personnel for the completion of the carbon calculator (e.g. travel start and finish postcodes, vehicle type).

- The *Contractor* will maintain a visitors' book recording the date, the time in, the time out, evidence of a specific Health and Safety induction, CSCS (or equivalent) number, and the name and company of any person visiting as well as other information required for inclusion in the carbon calculator.
- Any data collected and records that are held will follow the requirements of The General Data Protection Regulation 2016/679 (GDPR) or equivalent UK regulation.

S 2012 Site cleanliness

- The *Contractor* shall keep the working areas tidy and remove rubbish, waste and surplus Materials from Site in a timely orderly manner.
- Materials, Plant and Equipment are to be positioned, stored and stacked in a safe and orderly manner. The watercourse is also to be kept free from debris and litter.

S 2013 Waste materials

- Section 2.18 SHEWCOP Waste, details the requirement for a Site Waste Management Plan (SWMP).
- Refer to Client's Minimum Technical Requirements for further Management of Waste requirements

S 2014 Deleterious and hazardous materials

- No hazardous material is expected to be stored on site other than standard construction material that is normally stored within secure containers on site and fuels stored in appropriate storage tanks
- The *Contractor* advises the *Client* in writing of any substances that it proposes to bring on the Site that fall within the 'Control of Substances Hazardous to Health' Regulations, or otherwise require special precautions to be taken. Such advice is to include copies of all relevant COSHH assessment sheets
- If applicable, any Hazardous material to be disposed of in accordance with relevant regulations. The requirements of 4.13 SHEWCOP Control of Substances Hazardous to Health, (COSHH) shall also be followed.

S 2015 Carbon

A completed project must aim to minimise carbon emissions by:

1. Agreeing to a target (forecast) of emissions from construction that is set out in a verified carbon assessment with business case approval.

2. Setting out and delivering improvements for carbon reduction during construction against the agreed forecast.

3. Reporting the outturn of actual emissions against the agreed forecast in a verified 'as built' carbon appendix with supporting assessment and budget.

Projects at completion must provide an 'as built' carbon appendix supported by a carbon assessment with outturn actual emissions reported against a previously verified carbon assessment with business case approval. The **'as built' carbon**

appendix must have been verified by EA appointed specialists before completion of the project is approved.

The Contractor should be looking at how to minimise actual carbon emissions against the agreed forecast throughout the construction stage working with their suppliers on lower carbon products and services that meet the project scope and deliverables.

The verification process will:

- 1. Verify 'updated' construction stage calculations in forecast and budget (with supporting evidence of actuals emissions reported to date) and an 'updated' carbon appendix.
- 2. Confirm that improvements put forward for carbon reductions and their confidence levels result in a reliable adjusted forecast and budget. The verified forecasts and budgets from this process will be those reported as the latest values via the FastDraft carbon form. The improvements and adjusted forecast from this process will be the an input to the EA carbon budget authorisation process managed by EA Project Sponsors.

A completed project must aim to minimise carbon emissions by:

- 1. Agreeing to a target (forecast) of emissions from construction that is set out in a verified carbon assessment with business case approval.
- 2. Exploiting the most likely opportunities for further reductions to the agreed forecast during construction.
- 3. Reporting the outturn of actual emissions against the agreed forecast and further reductions in a verified 'as built' update to the carbon assessment at project completion.
- The project should be looking at how to minimise actual carbon emissions against the agreed forecast throughout the construction stage working with their suppliers on lower carbon products and services that meet the project scope and deliverables. A monthly report must be provided via FastDraft (using the carbon form – see application for payment section) providing:
- 1. actual emissions to date,
- 2. (latest) outturn forecast (based on actuals and remaining emissions to outturn) and
- 3. (Latest) outturn budget / target (set to the verified forecast)
- The FastDraft carbon form may be supported by details of actual emissions to date against an agreed breakdown of asset/service/product lines taken from the verified carbon assessment.
- This will inform the EA of progress in reducing carbon during construction in the form of a variance between a latest outturn forecast (reported on FastDraft) and verified forecast. The EA may require the project to set out actions to mitigate significant variances or where there is a significant change in scope to provide 'updated' versions of the carbon assessment, carbon budget and carbon

appendix that will reset the construction stage outturn forecast and outturn budget.

- Projects at completion must provide via Asite an 'as built' carbon appendix supported by an updated carbon assessment with outturn actual emissions reported against a previously verified forecast. The 'as built' carbon appendix and updated assessment must be verified by an EA appointed carbon specialist before completion of the project is approved. The verification process requires project team engagement with the verifier and may result in actions to:
- 1. update the carbon appendix and supporting carbon assessment and budget (i.e. ERIC).
- 2. set out the reasons for outturn actuals emissions being above/below the verified forecast
- The verified outturn actuals and forecast from this process will be required for the performance measure set out in this contract as well as for an EA process of carbon budget authorisation managed by EA Project Sponsor.

S 300 Contractor's design

S 301 Design responsibility

The Client is responsible for the design of the works.

The Contractor is responsible for the design of the temporary works, to the extent that it does not form part of the *works*.

S 302 Design submission procedures

The *Contractor* is required to submit details of the Equipment design for the temporary working arrangements for the removal of the *works* and lifting operations.

The design submission procedures proposed for the Equipment is to be included in the Construction Phase Plan. SHEWCOP Section 4.24 Temporary Works provides further guidance on temporary works and *Client*'s requirements.

The *Contractor* shall submit the details of the Equipment proposed at least 1 week in advance of the programmed *works* to allow time for consultation and approvals with Others, including the *Client*'s CDM advisor.

S 303 Design approval from Others

The Equipment design shall meet the requirements of the Flood Risk Activity Permit.

S 304 *Client's* requirements

None

S 305 Design co-ordination

In preparing the design of Equipment the *Contractor* shall ensure Co-ordination with the Principal Designer.

A Temporary Works Co-ordinator (TWC) shall be appointed to co-ordinate the TW design, as outlined in SHEWCOP Section 4.24.

S 306 Requirements of Others

The *Contractor* is responsible for obtaining and satisfying any necessary local authority requirements and shall have their approval prior to submission of designs.

S 307 Copyright/licence

Not applicable.

S 308 Access to information following Completion

Not applicable

S 309 Site investigations

None

S 400 Completion

S 401 Completion definition

The following are absolute requirements for Completion to be certified, without these items the *Client* is unable to use the *works*:

- Provide all relevant information to the Principal Designer to allow the Principal Designer to compile the Health and Safety File
- 1 electronic version of Operating and Maintenance Manuals
- Marked-up drawings to be provided to designer to enable As Built drawings in electronic version (pdf) to be produced
- Population of the current version (as at contract date) of the *Client's* Project Cost and Carbon Tool (PCCT)
- Transfer to the *Client* databases of BIM data as detailed in the master Information Delivery Plan
- Delivery of the Final Carbon Appendix, BC Carbon Appendix_Final_V8

S 402 Sectional Completion definition

• Not Used

S 403 Training

Prior to Completion, the *Contractor* arranges through the *Project Manager*, giving at least 14 days' notice, a single handover meeting with the *Client's* operations staff and field team. The handover meeting is presented by the *Contractor* and is held immediately prior to Completion and includes as a minimum the following:

- A familiarisation tour of the works;
- Familiarisation and training in the use of operational elements of the scheme;
- Specific health and safety issues relating to the use, operation and maintenance of the *works*.

S 404 Final Clean

On Completion of the works, the *Contractor* returns the roads and any other affected existing works to a condition not inferior to that at the commencement of the *works* using the pre-condition survey for comparison purposes. All debris, unused materials, Equipment, and temporary works are to be cleared and dismantled from the Site. Details of security arrangements and handover at Completion.

The hydrobrakes will be water jetted prior to an internal photographic/video inspection to confirm cleanliness.

Both hydrobrakes and the full length of culverts are to be CCTV surveyed within the 2 weeks prior to Completion. The surveyed output is to be supplied to the Supervisor prior to Completion.

S 405 Correcting Defects

During the Defects period the *Contractor* will be required to liaise with the *Client* to arrange when work is to be undertaken.

The *Contractor* will be required to prepare Risk Assessments and Method Statements when correcting defects and also liaise with Others as may be required including statutory undertakers.

Non-critical Defects and critical Defects shall be corrected in the timescales specified in Contract Data Pt1.

S 406 Pre-Completion arrangements

Prior to any works being offered for take over or Completion the *Contractor* shall arrange a joint inspection with the *Supervisor, Project Manager, Client* (scheme Project Manager) and Senior User. The initial inspection shall take place in advance of the planned Completion and is to be arranged by the *Contractor*.

S 407 Take over

The *Client* does not require to use the *works* or parts of the works prior to Completion.

S 500 Programme

S 501 Programme requirements

The programme complies with the requirements of Clause 31.2 and includes alignment and submission of the BEP and Master Information Delivery Plan (MIDP).

The programme shall cover the activities to be undertaken by the Contractor and other members of the project team including all design consultants. This shall include all major project milestones.

The Contractor will develop the programme to incorporate these elements

- Appropriate review and consultation periods
- All highway and footpath closures notice periods
- All service diversions if required
- Site access dates

Refer to Client's Work Specification Clause 1.25.3 regarding programme requirements.

S 502 Programme arrangement

The programme is to be produced in an electronic format in current Microsoft Project (*.mpp) and *.pdf formats.

The *Contractor* shall submit their programme for acceptance to the *Client*. It shall clearly identify those activities forming the critical path.

A baseline programme shall be provided by the *Contractor* and will be updated monthly for progress meetings with actual and forecast progress against the baseline in line with Clause 32.

S 503 Methodology statement

Occupational health, safety and welfare are of paramount importance to the *Client*. An overall objective of the *Client*. for the contract is that the works shall be undertaken in a manner that achieves high standards of health, safety and welfare. The *Project Manager, Supervisor* and *Contractor* must take account of this objective in the manner that the respective roles are fulfilled. The *Contractor* must view health, safety and welfare provisions as integral parts of carrying out the works and not as stand-alone considerations.

The works will be subject to the Construction (Design and Management) Regulations 2015. Prior to the start of construction work, the *Contractor* must produce a construction phase health and safety plan that, amongst other things, contains:

- a schedule of activities for which risk assessments and method statements must be prepared;
- the *Contractor's* arrangements for the preparation and approval of risk assessments and method statements.

The schedule of risk assessments and method statements will meet the dual requirements of the Construction Design and Management Regulations and the requirements of paragraph 31.2 of the contract and must be in the form shown in Appendix A.

The Contractor will be free to add to the schedule as the work progresses.

The *Contractor* shall submit the schedule of risk assessments and method statements with each programme submitted for acceptance. A document register shall accompany each risk assessment and method statement that is then submitted.

S 504 Work of the *Client* and Others

The *Contractor* shall provide the *Client* with access to the Site at any time during construction to undertake any activities that do not form part of the works; refer also to section S 900.

The Client will provide programme information detailing the delivery of the hydrobrakes to the site.

S 505 Information required

The Contractor includes the following information in the programme in addition to that stated in ECC clause 31.2:

- Critical Path shown in red;
- Date when Notice of Entry details to be submitted to the *Project Manager* for action;
- Date when the *Contractor* requires occupation of each area of ownership or occupation;
- Application dates for footpath closures;
- Requirements/restrictions of third parties;
- Landscaping and reinstatement *works* clearly identified planting and seeding within suitable seasons;
- Acceptance periods and schedules of items as stated in the Scope;
- Project handover elements, health & safety file documentation;
- Temporary works environmental permit applications;
- *Contractor's* shutdown periods e.g. Christmas, Easter, Statutory Holidays, etc;
- Traffic management plan preparation;
- Material / sample panel acceptances;

Spring Gardens Hydrobrake Replacement

• Long Lead (over 4 weeks) Materials and Plant included as procurement activities.

S 506 Revised programme

Further to the requirements of Clause 32, the *Contractor* shall provide a brief explanation of changes to each programme activity, sufficient to enable the *Project Manager* to understand the cause and impact of the change.

S 507 Monthly reports

In managing the works, the Contractor shall

- Contribute monthly to the updates to the project risk register.
- Provide input to project efficiency CERT Form.
- Produce monthly financial updates and forecasts meeting the *Client's* project reporting timetable together with progress reports. Monthly financial updates and forecasts to meet EA deadlines provided by no later than the 10th day of each month, or otherwise agreed at the project start up meeting.
- Deliver a monthly progress report in the *Client's* standard template giving progress against programme, deliverables received and expected, financial summary against programme and forecast project carbon. <u>Construction</u> <u>Monthly Report</u>
- Commission capital forecast profile to be entered on FastDraft monthly & Project forecast outturn project carbon profile 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

Framework Heads Up 244 Commercial Clarification 54

Framework Heads Up 256 Commercial Clarification 57

- Attend project board meetings as required.
- Ensure quarterly input into framework performance assessment/environmental Performance Measures.
- Maintain and show how accurate and up to date information on the wholelife cost and carbon of options is driving optimum solutions at all stages of design development.
- Capture lessons learnt relevant to scheme delivery for the EA PM.
S 600 Quality management

S 601 Samples

Samples shall be taken in accordance with the specifications referenced in the contract:

- Civil Engineering Specification for the Water Industry 7th Edition
- Minimum Technical Requirements and all relevant referenced Operational Instructions and documents.

Any requirements determined through the planning permission process or to discharge planning conditions.

Submissions and acceptance shall be via the *Project Manager*.

S 602 Quality Statement

The *Contractor* shall submit a Quality Statement clearly setting out quality commitments for the contracting organisation.

S 603 Quality management system

Unless agreed otherwise with the *Client*, the *Contractor* shall operate a Quality Management System complying with BS EN ISO 9001. The *Contractor* shall describe the Quality Management System that it intends to operate for the implementation for this scheme in a site specific Quality Plan.

The *Contractor* shall comply with all quality procedures associated with delivering the works. The *Contractor* shall also provide the following information specific to the works:

- Quality procedure for dealing with non-conformance
- Quality procedure for dealing with defects

Unless agreed otherwise with the *Client*, the *Contractor* shall ensure an Environmental Management System (EMS) is in place for this contract. This EMS is to comply with the spirit of ISO 14001 although accreditation is not mandatory.

The *Contractor* will be required to submit its complete general quality plan (Contractor's Quality Plan) to the *Project Manager* for acceptance within two weeks of the starting date, or at least two weeks before any permanent work commences, whichever is the sooner.

Detailed quality plans for each key item of work as agreed with the *Project Manager*, must be submitted to the *Project Manager* for acceptance at least one week before that work is due to commence.

S 604 BIM requirements

The BIM Information Manager is the Client Project Manager. The *Contractor* will follow the current version (as at contract date) of the Environment Agency's Clients Information Requirements.

S 700 Tests and inspections

S 701 Tests and inspections

Refer to the Civil Engineering Specification for the Water Industry 7th Edition (CESWI 7th) and the Environment Agency's Minimum Technical Requirements (MTR) documents.

The *Contractor*, will produce a schedule of inspections and tests. The schedule of tests and inspections must take reasonable steps to ensure the constructed *works* meet the requirements of the design and specification and the *Client*'s MTR.

The schedule of tests and inspections will include;

- Objective, procedure and standards to be used,
- When they are to be done,
- Where they are to be done,
- Information or instructions required to be provided,
- Materials, facilities and samples to be provided,
- Involvement of specialists,

The *Contractor* produces an inspection and test plan for the *works* two weeks prior to commencement of each respective construction activity, where the *Contractor* requires an inspection or test.

The Inspection and Test Plans will include:

- What is to be tested
- Testing and inspection method,
- Where they are to be done
- Who does the tests, and who is in attendance,
- The Equipment required and who provides it,
- Access arrangements,
- Acceptable results and deviations,
- Test environment,
- Documents to be provided before and after the test,
- Whether or not authorisation to proceed to the next stage of the work depends on the test results.
- Are there any data tests required to ensure data required for BIM archive

S 702 Management of tests and inspections

Within two weeks of the *Contractor* submitting his inspection and test plan, the Project Manager either accepts the inspection and test plan or notifies the Contractor of reasons for not accepting it.

S 703 Covering up completed work

No operation shall be carried out or covered up without full and complete notice being given to the *Supervisor* by the *Contractor* in time to enable the *Supervisor* to make such arrangements as he deems necessary for inspection and checking.

During the execution of the works, the *Contractor* shall submit to the *Supervisor* full and detailed particulars of any proposed amendments to the arrangements and methods submitted

S 704 *Supervisor's* procedures for inspections and watching tests

The *Contractor* is to formally submit an Inspection Request Form to the *Supervisor* providing him with 48 hours' notice to witness a test or inspection as required by the accepted inspection & test plan for each activity. If the *Supervisor* is unable to witness the inspection or test by no fault of the *Contractor* then he will notify the *Contractor* and suitable photographic and/or video evidence will be provided to the *Supervisor* by the *Contractor*.

S 800 Management of the works

S 801 Project team – Others

The *Client*, *Project Manager*, *Supervisor* and *Contractor* are identified in the Contract Data.

The Principal Designer for the Pre-Construction Phase extending into the Construction Phase is CallSafe.

S 802 Communications

Progress Meetings:

- The *Contractor* shall attend monthly progress meetings that are chaired by the *Client* and held virtually, unless communicated otherwise.
- For the meeting, the *Contractor* will produce a progress report in advance.
- The *Contractor* will also provide weekly photographic update reports, to be issued to the *Client*, to provide an update on progress.

Public Relations & Stakeholder Engagement:

• SHEWCOP Section 4.3 Project/Public Interface shall be followed

Contract Administration Forms:

• The Contractor, Project Manager and Supervisor shall use an NEC management software platform for the administration of the contract e.g. FastDraft. The Client shall set up this system and any training in relation thereto as soon as practicable after contract award.

S 900 Working with the *Client* and Others

S 901 Sharing the Working Areas with the *Client* and Others

If the *Client* or Others are to undertake activities on the Site between the access date and Completion, other than that stated elsewhere in this Scope, the *Project Manager* will notify the *Contractor* two weeks before. The *Contractor* will provide access.

The *Contractor* will allow access to the *Client*'s operations team at any time to deal with emergencies or flood risk. All personnel accessing Site will need to have received the *Contractor's* Site induction prior to entering Site and the *Contractor's* Site rules must be followed. A shared locking system will be instigated on all relevant security gates and the Site will be left secure by the *Client* on completion.

S 902 Co-operation

Provide technical support to the *Client* and the *Project Manager*.

Contribute to a project Lessons Learnt Log.

The *Contractor* co-operates with affected residents and businesses as necessary to enable efficient execution of the works with minimal disturbance to the local community.

The *Contractor* shall refer to the land ownership information provided in the Site Information as required.

The *Contractor* shall refer to the local authority as required.

S 903 Co-ordination

The *Contractor* is required to co-operate with Others in obtaining and providing information which they need in connection with the works. Throughout the works, with the prior acceptance of the *Project Manager*, the *Contractor* shall regularly keep all affected stakeholders up to date on progress with the works. This shall include, but not be limited to, the Public Rights of Way, Highways/ Roads Authority, Police, landowners and affected stakeholders.

The *Contractor* will be responsible for monitoring, maintenance and operation of assets from the point when the *Contractor* accesses an area of the Site and secures it by fencing until Completion. This includes:

- Monitoring of river levels and the build-up of debris on debris screens. A camera feed is available and will be supplied by the *Client* for the upstream screen.
- Debris will be cleared by the *Contractor* regularly from screens, working area and the river channel in order to ensure flows are maintained through the flow control structures at all times. Disposal of debris will be managed by the *Contractor*. It should be noted that the debris is likely to contain Himalayan Balsam.
- In the event of a flood incident the *Contractor* will co-ordinate management of the Site with the *Client*.

The *Contractor* will be responsible for notifying the *Project Manager* of works that will affect existing hydrometry and telemetry equipment 2 weeks prior to starting work. State how the *Contractor* is to liaise with the *Client* and Others for the coordination of *works* and access.

S 904 Authorities and utilities providers

The *Contractor* shall be responsible for arranging and managing all of the appropriate Highway Authority consents and closures that may be required.

The *Contractor* shall be responsible for arranging and managing all of the works by utility providers to enable service connections necessary to Provide the Works. Payment for any such service diversions are to be made by the *Client*.

S 905 Diversity and working with the *Client*, Others and the public

The *Contractor* is expected to:

- Use local employment and local training initiatives where appropriate and practicable;
- Look for opportunities to enhance community benefits
- Encourage a diverse supply base that includes local Small and Medium Enterprises, social enterprises and the Voluntary in the Community Sector.
- Develop and integrate modern apprenticeship opportunities and encourage the consideration of diversity and equality in our decisions. Demonstrate compliance with the Equality Act 2010 through the work delivered. Projects and community engagement should be inclusive and accessible for all. The Environment Agency "Access for All Design Guidance" is available to support this approach.
- Adopt a policy of equal opportunities to encourage a diverse workforce;
- Offer training and development to all staff, including the *Client* to meet individual, project and company needs.

S 1000 Services and other things to be provided

S 1001 Services and other things for the use of the *Client, Project Manager* or Others to be provided by the *Contractor*

The *Contractor* shall provide and maintain a supply of protective clothing required for accessing the Site for use by the *Project Manager*'s staff and visitors. Two sets of PPE are required (*Supervisor* and *Client's* Project Manager), visitors will be asked to provide their own PPE.

The Contractor shall provide regular maintenance for the welfare facilities.

The *Contractor* shall be responsible for the removal of foul sewage from the welfare facility

The *Contractor* shall allow access to all design offices, head offices, Site, workshops, manufacturing premises, etc. for the *Project Manager, Supervisor*, and the agents of the *Client* that are connected with the works.

S 1002 Services and other things to be provided by the *Client*

The *Client* issues statutory Notices of Entry for all private land within the Site at least seven days before the possession dates and liaison with landowners.

• No other services or provisions will be provided by the *Client*.

The hydro-brakes will be provided free of charge by the Client to the Contractor for installation.

The *Client* will remove the Hydrometry and Telemetry cables and sensors from the screens prior to works starting. The dates for removal and reinstallation of each item of telemetry is to be shown on the *Contractor*'s programme.

S 1100 Health and safety

S 1101 Health and safety requirements

Additional health and safety requirements for the project, includes the following.

- *Client's* safety requirements generally as detailed in the Pre-Construction Information document and to be developed in the Contractors Construction Phase plan and for the duration of the works
- Compliance with SHEWCOP

S 1102 Method statements

The risk assessments and method statements will meet the dual requirements of the CDM Regulations and the requirements of the provisions of the Contract.

The *Contractor* must ensure that risk assessments and method statements are approved within its own organisation before any submission to the Client.

The *Contractor* must ensure that risk assessments and method statements are prepared, approved and submitted to the *Client*. For activities that represent a significant risk and more complex work, the timing and sequence of construction to be detailed including the use and design of Equipment/temporary works, materials, proposed by the *Contractor*. As a minimum this will include the following key components.

- Access and egress arrangement to the screen area
- Removal and replacement of the existing screen
- Fish rescue operations
- Equipment to be deployed / temporary works in dealing with flows
- Existing Hydrobrake removal
- Removal (breaking out or hydro-demolition) of concrete
- Installing the replacement hydrobrakes

The *Contractor* must allow for a period of reply. As a general principle a period of at least two weeks should be allowed between the issue of the risk assessments and method statements and the proposed start date of the activity on site. This period may be varied by agreement of the *Project Manager*.

S 1103 Legal requirements

The Client duties under the CDM Regulations shall be undertaken by the *Client*.

The Principal Contractor duties under the CDM Regulations shall be undertaken by the *Contractor*.

The Principal Designer for the Pre-Construction Phase extending into the Construction Phase shall be undertaken by CallSafe.

S 1104 Inspections

Refer to the ShewCop for inspection requirem	Refer	requiremen	inspection	for	SHEWCop	the	to	Refer
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S 1200 Subcontracting

S 1201 Restrictions or requirements for subcontracting

No additional requirements under this heading.

S 1202 Acceptance procedures

The basic requirement for submission and acceptance is dealt with in subclause 26.3

S 1210 Procurement of subcontractors

Sub-contractors need to be selected using best value processes.

This requires the *Contractor* 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.

S 1300 Title

S 1301 Marking

No additional requirements under this heading.

S 1302 Materials from Excavation and demolition

The *Contractor* has title to materials from excavation and demolition and the existing hydrobrakes following their removal.

The *Contractor* shall maximise opportunities for the re-use and recycling of the above demolition materials.

The *Contractor* is responsible for the removal and appropriate disposal of all waste from the Working Areas, in accordance with the Site Waste Management Plan and Scope.

S 1400 Acceptance or procurement procedure (Options C and E)

Not Used

S 1500 Accounts and records (Options C and E)

S 1501 Additional Records

These additional records are to be kept by the *Contractor*. This includes the following:

- Timesheets and site allocation sheets,
- Equipment records,

• Forecasts of the total Defined Cost, (Forecasts are to include, but not be limited to costs to date, costs to completion including detailed breakdown of staff, sub-contract and major material items)

• Specific procurement and cost reports

The format and presentation of records to be kept are to be accepted by the *Project Manager.*

S 1502 Application for Payment / Invoice

The *Contractor* is required to provide the backup to their application for payment in the following format:

Worksheet for actual Cost and Carbon CDF Lot 1 Worksheet actual Carbon and Cost CDF Lot 2

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

This update must be provided via the FastDraft carbon form in support of an Application For Payment covering:

- 4. actual emissions to date,
- 5. outturn forecast (based on actuals and remaining emissions to outturn) and
- 6. outturn budget

The form will be supported by details of actual emissions to date against an agreed breakdown of asset/service/product lines taken from the verified carbon assessment.

This will inform the EA of progress in reducing carbon during construction and be an 'early warning' of any variance between agreed forecast and the latest 'actuals based' outturn forecast. Where the variance exceeds construction stage tolerances, projects are required to provide 'updated' versions of carbon assessments (as forecasts) as well as carbon budgets and to submit an 'updated' carbon appendix for re-verification.

S 1600 Parent Company Guarantee (Option X4)

Not Used

S 1700 Client's work specifications and drawings

S 1701 Client's work specification

The technical specification is the 'Civil Engineering Specification for the Water Industry, 7th Edition', (CESWI 7) published by UK Water Industry Research Ltd in 2011.

The *Contractor* is to design and construct the works in accordance with the Clients Minimum Technical Requirements Operational instruction as follows:

Document	Document Title	Version No	Issue date
LIT 13258	Minimum Technical Requirements	12	December 2021

S 1702 Drawings

Drawing No.	Drawing Title	Version No	Issue date
21_21_7487-01- 101	SPRING GARDENS CHE-1380-5600-10498 3x3 GRID HB HYDRO BRAKE FLOOD LEFT HANDED UNIT	-	11/01/2023
	Hydrobrake Replacement Details	01	07/03/2023

S 1703 Standards the *Contractor* will comply with

The Contractor should carry out their work using the following guidance.

Ref	Report Name	Where used
	Project Cost and Carbon Tool	Costs
	Carbon Tools for budget calculation and reporting	
	Sustainability Measures Form	
	Timber Policy Documents	
	300_10 SHE handbook for managing capital projects	

300_10_SD27 SHEW Code of Practice

Appendix 1 – Information Delivery Plan (IDP)

The *Contrator* 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 *Contractor* unless it is referenced elsewhere within the Scope.

The *Contractor* shall register for an Asite Account and request access to the project workspace to view the IDP and update to create the MIDP.

Guidance on the IDP can be found \underline{here}

Create the IDP on Asite and embed a PDF version as Appendix 1.

https://www.asite.com/login-home

Appendix 2 – 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 <u>https://adoddleak.asite.com/lnk/5A95rLxSkL7gEpunXgb</u>. 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 3 – Hydrobrake replacement Details Rev 01

Appendix 4 – 21_21_7487-01-101 - hbf - che type Hydrobrake

Appendix 5 – 21_21_7487 Hydro-Brake Flood Quote Rev D 18.05.23_Redacted

MST-EA-North East Inland FCRM - Theo - All Documents (sharepoint.com)



Commercial Quotation

Hydro-Brake[®] Flood

Project Name Client Hydro Reference Issue Date Spring Gardens Environment Agency 21_21_7487-D 18th May 2023



Stormwater Solutions

Hydro International (UK) Ltd

Kenn Business Park, Unit 2 River Mead, Windmill Rd, Clevedon BS21 6FT

> Tel: 01275 878371 Fax: 01275 874979

www.hydro-int.com

Turning Water Around...®

Commercial Quotation



Hydro International Project Contact List





Introduction

Product Description

The Hydro-Brake Flood[®] accurately controls excess flood waters from, rivers and streams, protecting sensitive areas by holding back excess flows. Hydro-Brake Flood[®] can form an integral part of flood protection, significantly outperforming other conventional solutions.

With no mechanical moving parts and no external power requirements, the Hydro-Brake Flood[®] offers clear openings considerably larger than other devices to deliver the most robust solution for continuous, trouble-free operation.

Initial Client Information for Design

The Hydro-Brake Flood® is designed on the following data provided by the client:

Maximum Design Head	10.498 m
Maximum Design Flow	5.60 m ³ /s

The outlet flow must be supercritical to prevent the downstream head from causing tailwater effects on the device.

Solution Offered

Model	Туре 1246 С
Number of units offered	2 (Two)
Application of use	Flood Alleviation Scheme

Design & manufacture of two (2) standalone Hydro-Brake Flood[®] vortex flow control units, each of the required geometry to meet the technical criteria and hydraulic performance curve (attached).

Technical Criteria

-	Design/Duty Point	Flow = 5600.00 l/s	Head = 10.498m
-	Flush-Flo™ Point	Flow = 3535.00 l/s	Head = 2.367m
-	Kick-Flo [®] Point	Flow = 3297.24 l/s	Head = 3.223m

Outlet Diameter - 1.246m

Note: The structural design parameters for the design to be as per Arup specification V1.0 dated 12th May



Why Hydro-Brake[®] Flood

Benefits / Advantages

- > Proven Performance
- Optimal Flow
- Low maintenance
- Fish Friendly
- Future Proof

Extensive UK track record

Configured to exacting design requirements Designed to deliver robust, dependable operation Comparatively lower velocities assist with fish migration Optional ability to adjust flows post-installation

Proven Performance

The Hydro-Brake[®] Flood system is a tried and proven technology installed on schemes throughout the UK. These range in size and complexity, controlling flows from just a few hundred litres per second through to installations designed to convey flows up to 33,000 l/s.

Optimal Flow

Hydro-Brake[®] Flood devices are designed to suit individual site requirements, considering both hydraulic and construction related aspects. The discharge flow rate can be tailored to any given rate to optimise the carrying capacity of the downstream system whilst reducing upstream storage requirements by up to 30% when compared to conventional throttle-based controls.

Low Maintenance

The Hydro-Brake[®] Flood is completely passive, has no mechanical moving parts and requires no power. This makes it ideal when designing robust solutions to manage flooding, particularly during extreme events when powered and/or mechanical flow control devices may prove unreliable.

The open area of the Hydro-Brake[®] Flood is up to 600% larger than throttle-based controls and remains constant during all stages of operation, significantly reducing the risk of blockage.

Fish Friendly

In comparison to conventional flow control structures, water velocities are lower in a Hydro-Brake® Flood, minimising the impact on fish populations migrating along the watercourse.

Future Proof

The Hydro-Brake[®] Flood can be supplied with an adjustable intake to facilitate +/- 20% adjustment to the pass forward flow rate. This provides the ability to refine flow rates post installation and can be a useful addition to account for future conditions, including climate change and other uncertainty associated with natural events.

Hydro Expertise and Knowledge

Hydro International have over thirty years' experience in the design and optimisation of flow controls. Continually enhanced through theoretical and physical hydraulic testing. Hydro have supplied thousands of vortex flow controls have been sold worldwide. Drawing on this experience enables our engineers to give technical support and advice on all aspects of the vortex flow control design.

Quality Assured

Hydro International is certified to; Quality System ISO 9001, the Environmental System ISO 14001, and Occupational Health and Safety OHSAS 18001, thus ensuring that the highest standards are maintained.



Scope Of Supply

Summary of Scope

Model	Hydro-Brake [®] Flood Type 1246 C		
Quantity	Two (2) Off.		
Outlet Size	1246 mm		
Body	Main body fabricated from 10 mm grade 304 Stainless Steel		
Front Face Bracing	12mm thick 304 Stainless Steel bracing structure		
Transition Pipe	10mm stainless steel transition between flow control and headwall of inlet structure		
Mounting Piece	10mm thick mount plate pre-drilled to accept M16 A4 (316) chemical anchors		
Base Bracing	3 no. Universal Beams IPE 140 running lengthways under cone, with 9 no. fixing points for M16 chemical anchors		
Lateral Support Legs	2 No Universal Beams IPE 140 with fixing points for M16 chemical anchors		
Adjustable Intake	Incremental Grade 304 Stainless Steel beams (stoplogs) affixed to inlet aperture box section structure using M16 A4 (316) stainless steel bolts, to enable future adjustment of flow		
Structural Calculations	Independent Structural Calculations for the Hydro-Brake® Flood		
Other items	 Standard road delivery to UK mainland (Offloading & installation by others) O&M Statement to Hydro standards. 		

• General arrangement drawings.



Unit Images



Spring Gardens 21_21_7487-D



Performance of Type 1246 C



Commercial Quotation



Commercial

Programme (Preliminary)

The following information is based on working weeks with the client approving preliminary designs within two weeks from submission.

General arrangement drawings & Structural Calcs Delivery of equipment O&M Statement 2 weeks from acceptance of order

6 weeks following acceptance of GA's 1 week from delivery to site

o		



Note 1- Delivery

We have included for the delivery of both units to be delivered on one low loader vehicle. Lifting(and the associated lifting equipment) of the units from the low loader on site is by others. If delivery of the units is required separately and on individual vehicles, then an additional cost of £2500 will apply to the quoted price above.

Commercial Quotation



About Hydro

Hydro International is a leading international sustainable water products company providing 21st century solutions based on decades of dedicated R&D.

Hydro's Stormwater Division offers a portfolio of innovative solutions for the control and treatment of surface water run-off, allowing engineers an adaptable toolkit to assist with sustainable design.





Spring Gardens Dam Hydrobrake Replacement 2023 Rev 01

Notes

- This is the new screen arrangement from 2020 further details are shown on drawing series Trash Screen Drawings 2019 - JHT.
- The sections of screen and all associated support steelwork is to be removed to allow the replacement of the hydrobrakes.
- 3. The access ladders are to be removed and re-installed.
- 4. All steelwork is to be stored and replaced following hydrobrakes replacement.
- It is anticipated that only one section of screen for the right or left bank culvert is to be removed at any one time.



Spring Gardens Dam Hydrobrake Replacement 2023 Rev 01

Notes

- 1. The screen shown on this drawing from 2004 was replaced in 2020.
- The existing hydrobrakes highlighted red are to be removed.
- Repairs were carried out to the original Hydrobrakes in 2022. These repairs are shown in 2022 Spring Gardens Hydrobrake Repairs



Spring Gardens Dam Hydrobrake Replacement 2023

Rev 00

- Notes
- 1. The screen shown on this drawing from 2004 was replaced in 2020.
- 2. Modifications were made to the wall and handrails shown on this drawing in 2020, these modifications can be seen on drawing ENV00195C-BMM-XX-00-DR-C-0030-S4-C02-B0800-EA5-LOD5.
- 3. The existing hydrobrakes and fixings highlighted red are to be removed.
- 4. Structural concrete is to be made good following removal.



Spring Gardens Dam Hydrobrake Replacement 2023 Rev 01

Notes

- The benching highlighted blue was amended in 2020, this is shown on drawing ENV001951C-BMM-XX-00-DR-C-0031-S4-C02-B0800-EA5-LOD5
- 2. The original benching shown in red is to be broken out and replaced to suit the new hydrobrakes arrangement.





Spring Gardens Dam Hydrobrake Replacement 2023 Rev 01

Notes

- The screen shown on this drawing from 2004 was replaced in 2020.
- 2. The new hydrobrakes are to be installed in the positions shown highlighted red.
- The new left hand hydrobrake unit is shown on drawing 21_21_7487-01-101, it is to be assumed an identical mirror of this drawing will be supplied for the right-hand hydrobrakes unit.

