National Asset Delivery
Technical Surveys and Testing

Works Information for M5 J19-20 Portbury to Clevedon: Drainage Surveys

CONTENTS AMENDMENT SHEET

Amend. No.	Revision No.	Amendments	Initials	Date
0	0	Original version issued with tender	ET	11/1/21

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1 DESCRIPTION OF THE WORKS

1.1 Project objectives

1.1.1 The principal objective of the overall project is to undertake the Value Management process on 9 structures. The following specification provides a drainage works scope specification for the relevant M5 Portbury to Clevedon structures, which sets out the investigation requirements needed to assess the effectiveness of the current drainage associated with the relevant structures.

1.1.2 The specification that applies to the *works* is included in Section 6.

1.1.3 The Sites shall comprise:

(1) Clapton Court Culvert (15553)

(2) Wynhol Viaduct Northbound (11071)

(3) Wynhol Viaduct Southbound (1770)

(4) Crossover Locations - Further to the site locations, a drainage survey is required to the full extent of the motorway and embankments for a distance of 500m centred at markerpost locations:

(a) M5 146.10

(b) M5 149.25

(c) M5 157.05 (total extent 3x500m=1.5km).

(5) The north and southbound hard shoulders between marker post M5 146.10 and 157.05 are to be surveyed.

1.2 Scope of works

1.2.1 The *works* to be provided under this contract are to undertake drainage surveying as detailed below, the Specification in Section 6 and Appendices. To determine the appropriate level of information, the *Contractor* shall perform the following investigations:

(1) Desk Study of available drainage information of all sites.

(2) General survey of all sites.

(3) Pipework Defects Survey by CCTV, for all sites (1-4) specified in Section 1.1.3.

(4) A Special Inspection of Clapton Court Culvert to CS450.

Desk Study

1.2.2 The Desk Study shall be undertaken for each structure to review drainage information held in the public domain and to obtain information held by Highways England and relevant third parties.

1.2.3 The scope of these investigation is as follows:

(1) The *Contractor* shall identify the drainage inventory information available on the *Employer's* Drainage Data Management System (DDMS).

(2) The *Contractor* shall identify the conditions in the surrounding area of each structure that may affect the drainage.

(3) The *Contractor* shall identify any drainage defects noted previously in any of the Principal Inspection of General Inspection reports, or any other information sources on the IAMIS.

General Survey

1.2.4 The scope of these investigations is as follows:

(1) Confirm the location of all drainage features.

(a) Update records where there are discrepancies with existing records.

(b) Provide new records for any features that do not have records.

(2) Confirm any drainage hazards by visual inspection. These should include, but are not limited to:

(a) Drain covers or features that are unsuitable for traffic (even if they aren't currently trafficked)

(b) Safety defects including but not restricted to loose / broken / missing drainage elements.

(c) Any protruding drainage elements such as gully / manhole frames or covers that are deemed to be hazardous.

(d) Evidence of blocked drainage, such as detritus / vegetation growth, and areas of standing water on trafficked surfaces of the highway that reduce the safety of the road user.

(3) Confirm the load classification of each component.

Pipework Defects Survey by CCTV

1.2.5 The survey shall be carried out to determine the inventory, condition and detailed defects of pipework, the associated gullies and interconnections. When selecting suitable equipment for the survey, the *Contractor* shall consider the variance in elevation, profile and diameter of the structure.

1.2.6 The *Contractor* shall provide evidence that the surveyor undertaking the CCTV survey holds an appropriate qualification in the interpretation of CCTV images of pipework and in defect coding and classification.

1.2.7 The *Contractor* shall maintain a quality control system which is approved by the *Employer*, to control the accuracy of the CCTV interpretation.

1.2.8 The *Contractor* shall provide and have approved a method statement before the commencement of the survey on site, including a statement of full

compliance with the specification, the type and version of CCTV survey software and any sub-contractors that are to be used.

1.2.9 The scope of these investigations is as follows:

(1) The *Contractor* shall perform pre-cleansing and removal of blockages, root cutting or other associated works to all pipes in order to carry out the requirements of the survey.

(2) The *Contractor* shall identify the asset type of all surveyed assets in accordance with the classification system detailed in CD 535 (Drainage asset data and risk management).

(3) The *Contractor* shall record the overall asset level structural and service condition grade as detailed in CS 551 (Drainage surveys).

(4) The *Contractor* shall record an in-pipe video showing the nature of the pipework and defects recorded.

(5) The *Contractor* shall record the location and depths of any silt removed by pre-cleansing.

(6) The *Contractor* shall take photographs of the gullies surveyed including location photographs, vertical photographs down the gully before and after any cleaning and additional photographs as needed to show defects.

(7) The survey shall be captured using WinCan Version VX or later, with links to all MPEGS and JPEGs.

Special Inspection to CS450

1.2.10 A Special Inspection of the full extent of Clapton Court Culvert. The Special Inspection shall be a touching distance survey as required by a Principal Inspection with the following additional specific requirements:

(1) Mark each Armco panel with a unique identifier.

(2) Use a chainage to identify the position in Clapton Court Culvert.

(3) Displacement between all panels is to be recorded.

(4) The condition of the bitumen coating around the full extent of the pipe is to be recorded.

(5) The condition of the invert is to be recorded.

1.2.11 Record all defects, the panel number (if applicable) and chainage it corresponds to. The chainage is to start from zero from the outlet end to the inlet, with a clear demarcation for every 0.5m of the structure.

1.3 Deliverables

1.3.1 The *Contractor* is required to produce the following deliverables:

(1) To present the findings of the desk study, general survey and pipework CCTV survey in a Drainage Report. The report is to be issued in Portable Document Format (.pdf) and Microsoft Word (.docx) format. All deliverables shall be provided in timely manner as per Section 4. There are to be 1 No. separate appraisals per structure, hard shoulder or crossover location.

(2) For the general survey, the geographical extents of every drainage item surveyed shall be collected in a shape file format, i.e. point as well as linear eastings and northings (to Ordinance Survey National Grid), alongside the attribution relevant to that drainage item. Each drainage item is to have a linked JPEG.

(3) To present the extents of each survey in a CAD drawing. The drawing is to be issued in Portable Document Format (.pdf) and AutoCAD DXF (.dxf) format. There is to be a minimum of 1 No. drawing per structure, hard shoulder or crossover location.

(4) To present the coded survey data in digital format defined by the *Employer* in the NAAs to CD 535 (Drainage asset data and risk management). Survey format shall be WinCan VX, with data provided in the form of, shape files and CSV files (to Ordnance Survey National Grid).

(5) To produce a video recording showing the pipework and defects recorded.

(6) Provide a Special Inspection Report of Clapton Court Culvert.

(7) To replace the previous version of the drainage inventory and condition data on the DDMS where identified in the Drainage Report and ensure one-version-of-the-truth.

1.3.2 The Drainage Report shall:

(1) Document the still photographs from the in-pipe video showing the natural of typical pipework and specific defects recorded.

(2) Document any photographs taken of gullies surveyed.

(3) Document any pre-cleansing, removal of blockages, root cutting or other associated works that were done on site.

(4) Record the location and depths of any silt removed by pre-cleansing.

(5) Identify the need to update or add to the drainage inventory and condition data on the DDMS.

(6) Show a schematic drawing of each section of pipework or culvert surveyed showing the reference number, diameter and material of the pipe, the location and nature of each structural and service

defect, the position of connections, the flow direction and the overall structural and service grade.

(7) Document details of the coded defects for each asset surveyed in tabular format.

(8) Document in a summary table the asset references, levels, sizes, materials, structural and service grades and all other relevant information as detailed in CS 551 (Drainage surveys) for all parts surveyed and works done on site.

1.3.3 The Drainage Report shall contain the following:

(1) The location of all structures;

(2) Date, temperature, weather conditions, inspection and survey locations;

(3) Methodology for the surveys;

(4) Details of the quality control procedures;

(5) The type of CCTV camera used;

(6) The ventilation system used; and

(7) Hazard information pre-assessed and assessed on site.

(8) A table with unique identifiers of each drainage component, if there are any particular hazards and what load classification they are suitable for.

1.3.4 The CAD drawings shall:

(1) Document the extent of the completed survey.

(2) Document the location and reference number of each drainage asset surveyed.

(3) Show the overall service and structural condition grade of each asset.

(4) Document any errors in provided arrangement drawings noted during the survey.

(5) Show the highway, highway boundary and other reference features of the surveyed area.

(6) Show all drainage hazards with a description of each hazard and highlight major defects or blockages within the drainage networks as defined by CS 551.

(7) Show all pipe and chamber diameters.

(8) Show invert and cover levels for all catchpits/manholes/inspection chambers.

1.3.5 The Special Inspection Report shall:

(1) Comprise a Principal Inspection report.

(2) Report on all additional requirements stated in Section 1.2.10.

(3) Include a full condition assessment of the structure.

(4) Report on all defects, the panel number (if applicable) and chainage it corresponds to.

1.3.6 The Desk Study used to inform the general survey and Pipework Defects Survey by CCTV, the survey raw results and any other relevant information shall be appended to the Drainage Report.

1.3.7 All deliverables are to be submitted to the *Employer* by email.

2 EXISTING INFORMATION

2.1.1 The reports listed below are relevant to this contract:

(1) Clapton Court Culvert Principal Inspection Report 2014

(2) Clapton Court Culvert Forms for Scour Inspections and Assessment BD 97/12 2014

(3) Wynhol Viaduct Lower Northbound Principal Inspection 2016

(4) Wynhol Viaduct Lower Northbound Asbestos Monitoring Inspections 2013

(5) Wynhol Viaduct Lower Northbound Asbestos Action Plan 2008

(6) Wynhol Viaduct Upper Southbound Principal Inspection 2016

(7) Wynhol Viaduct Upper Southbound Management Asbestos Survey 2014

2.1.2 The Record Drawings listed below apply to this contract. Refer to the site information for details of existing site conditions including but not limited to: limitation on access and position of existing structures.

Drawing Number	Title	Revision / Date
530/AC9/3.26	Clapton Court Outfall Plan & Profile	Jan 1973
530/AC9/3.44	Clapton Court Outfall Drainage on South Side of Motorway	Jan 1973
530/AC5/10.1	Wynhol Viaduct General Arrangement (1)	Jan 1973
530/AC5/10.2	Wynhol Viaduct General Arrangement (2)	Jan 1973
530/AC5/10.3	Wynhol Viaduct Abutment No. 1 General Arrangement	Jan 1973
530/AC5/10.4	Wynhol Viaduct Abutment No. 2 General Arrangement	Jan 1973
530/AC5/10.5	Wynhol Viaduct Abutment No. 3 General Arrangement	Jan 1973
530/AC5/10.6	Wynhol Viaduct Abutment No. 4 General Arrangement	Jan 1973
530/AC5/10.57	Wynhol Viaduct Drainage Details	Aug 1974

2.1.3 Topographical Survey information is available for Wynhol Viaduct, in the Site Information.

2.1.4 Further to this information, Statutory Undertakers information has been provided for the full extent of the works.

2.1.5 IAMIS data has been provided, in the Site Information, for each structure.

3 CONSTRAINTS ON HOW THE *CONTRACTOR* PROVIDES THE WORKS

3.1 General

3.1.1 The *Contractor* provides the Works in such manner as to minimise the risk of damage or disturbance to or destruction of third-party property.

3.1.2 The *Contractor* complies with the constraints and meets with the requirements outlined in Appendix 1.

3.1.3 The *Contractor* submits information detailing how the *Contractor* will provide the Works to the *Employer* prior to the *works* commencing. This information will include any lifting plans, risk assessments, method statements, the *Contractor's* staff training information and any other relevant Health and Safety requirements.

3.2 Working hours & site specific constraints

3.2.1 The *Contractor's* working hours for site works shall be confirmed by the *Employer* during mobilisation. Any required lane closures shall be deemed as taking place during night-time hours. Other works shall be deemed to take place during daylight hours.

3.2.2 The Traffic Management for the survey is to be finalised and confirmed by the *Employer*. However, it is proposed that off peak lane closures will be utilised Monday to Friday 22:00 hrs to 05:00 hrs.

3.2.3 Bat have been recorded roosting in the viaduct boxes. These include the Lesser Horseshoe Bat (Rhinolophus Hipposideros). This is a major colony with upwards of 300 bats observed.

3.2.4 The *Contractor* shall be aware of the site constraints for each structure, which include but are not limited to:

(1) Clapton Court Culvert – confined space, accessed from outside site boundary, dense vegetation growth, falling from height;

(2) Wynhol Viaduct Northbound – major colony of bats, locked access, asbestos cement pipes, confined space; and

(3) Wynhol Viaduct Southbound - major colony of bats, locked access, asbestos cement pipes, confined space.

3.2.5 It is recommended that works requiring traffic management are programmed concurrently to effectively utilise road-space and access.

3.2.6 It is also recommended that works undertaken from ground level are programmed concurrently to best utilise access to third party land.

3.3 Health, Safety and Environment & Risk Management

Health and Safety requirements

3.3.1 In Providing the Works the *Contractor* meets the requirements of Annex 2 of the supplementary constraints relation to health and safety duties.

3.3.2 When implemented, the *Contractor* shall comply with the requirements of Highways England's safety passport scheme and ensure that all of his employees, and any of his subcontractor's, are registered in accordance with the implementation of the scheme. Details on the scheme can be found here: http://www.highwayssafetyhub.com/safety-passport.html

3.3.3 For details of the CDM duty holders, refer to the pre-construction information which can be found in the CDM1 Pre-construction Stage Information TST04.

3.3.4 Before commencing the construction phase of the *works*, the *Contractor* confirms to the *Employer* that adequate welfare facilities are in place. Where the facilities detailed in section 5 are not deemed adequate, the *Contractor* provides all necessary facilities to Provide the Works and to comply with the minimum requirements set out in HSE guidance document L153.

Environmental requirements

3.3.5 In Providing the Works the *Contractor* meets the requirements of Annex 2 of the supplementary constraints in relation to environmental duties.

Risk Management

3.3.6 The *Contractor* identifies, manages and mitigates risks in accordance with the principles of ISO31000.

3.3.7 The *Contractor* submits a risk register, which captures all risks associated with the delivery of the *works* including those identified by the *Employer*, with his tender and maintains it for the contract period. The *Contractor* updates the risk register with risks identified from the works and shall propose appropriate controls. This shall be provided to the *Employer* in a Microsoft Excel format.

4 REQUIREMENTS FOR THE PROGRAMME

4.1.1 The *Contractor* submits programme to the *Employer* with his tender.

4.1.2 The *Contractor* provides the *Works* taking into account the following programme constraints:

(i) Commission date

(ii) Mobilisation – commission date plus 2 weeks

(iii) Site visits – following mobilisation, before Draft report submission date.

(iv) Draft report submission date – commission date plus 6 weeks

(v) Review period for the *Employer* – 2 weeks

(vi) Final report submission date – commission date plus 9 weeks

4.1.3 The programme should be in the form of an activity and time related bar chart, produced as a result of a critical path analysis.

4.1.4 The programme should preferably be provided in either a PDF or MS Excel format and cover the full contract period including post site activities. Activities should be clearly defined and named and the programme should detail the following:

(i) dates and times associated with the project, including the *starting date*, *completion date* & *Contractor's* planned completion, and any other dates or times that will specifically impact the delivery of the project

(ii) activities associated with delivering the project

4.1.5 The *Contractor* should provide details of the proposed resources (plant, labour, subcontractors etc.) expected to deliver each activity. This information can either be shown on the programme itself or provided in an associated resource statement included in the proposal for providing the Works.

4.1.6 The *Contractor* updates the programme every 3 weeks. The *Contractor* submits an updated programme to the *Employer* upon request.

5 SERVICES AND OTHER THINGS PROVIDED BY THE *EMPLOYER*

5.1.1 The following temporary traffic management will be provided by the *Employer* to allow the *Contractor* to Provide the Works:

(1) The Traffic Management for the survey is to be finalised and confirmed by the Employer. However, it is proposed that off peak lane closures will be utilised Monday to Friday 22:00 hrs to 05:00 hrs.

5.1.2 The other things that will be provided by the *Employer* are as follows:

(1) Not used.

6 SPECIFICATION FOR THE *WORKS*

6.1.1 The *Contractor* shall Provide the Works in accordance with:

6.1.2 All works shall be undertaken in accordance with CS 551 Drainage Surveys.

6.1.3 All works shall be undertaken in accordance with CD 535 Drainage asset data and risk management.

6.1.4 Inspections are to be carried out in accordance with CS 450.