National Asset Delivery

Technical Surveys and Testing

570135 M32 Eastville Viaduct – Noise Surveys

CONTENTS AMENDMENT SHEET

Amend. No.	Revision No.	Amendments	Initials	Date
1	1	Original version issued with tender	ET	01/04/21

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LIST OF ANNEXES

1 PURPOSE OF THE *SERVICES*

1.1 Project objectives

1.1.1 The principal objective of this project is to undertake baseline noise monitoring with the production of noise monitoring reports, and to model noise barrier combinations in accordance with the requirements detailed in the specification.

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

1.2 Scope of *services*

1.2.1 The *services* to be provided under this contract are:

(1) Provide twelve (12) months of continuous baseline noise monitoring in line with the specification in Section 6.

(2) Provide noise modelling to determine the optimal noise barrier combination for sensitive residential receptors, in line with the specification in Section 6.

1.3 Deliverables

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

(1) Provide twelve (12) monthly, and one (1) yearly baseline noise summary report(s) in line with the specification in Section 6. The monthly reports are to be provided by the *Consultant* in the week following the end of the specific month for which a report is being produced. This is provided in more detail in 6.3.1.

(2) In accordance with the specification in Section 6, interim (3 months) and final report detailing the optimum noise barrier combination required to reduce noise levels to an acceptable level at sensitive receptors adjacent to the M32 at Eastville Viaduct.

2 EXISTING INFORMATION

2.1.1 Previous information of relevance provided by the *Client* includes the following:

(1) Report reference 70010432/002, entitled Noise Barrier Feasibility Study – Acoustic Appraisal Report, dated July 2015.

(2) Proposed monitoring locations – Specification of the Services, Figure 6.1, and Images 6.1-6.5.

3 CONSTRAINTS ON HOW THE CONSULTANT PROVIDES THE SERVICES

3.1 General

3.1.1 The *Consultant* provides the Services in such manner as to minimise the risk of damage or disturbance to, or destruction of any third-party property.

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

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

3.2 Working hours & site specific constraints

3.2.1 The *Consultant's* working hours for site works shall be confined to between 9:00 and 17:00 or daylight hours during winter months.

3.2.2 The *Consultant* shall have due regard to site specific constraints relevant to the installation and removal of monitoring equipment including:

- Areas liable to be congested with parked cars,
- Restrictions on parking such as disabled bays,
- Constraints to mobile elevated working platforms (MEWPs) such as overhead power, telephone lines and trees/vegetation.
- Interaction with public

3.3 Health, Safety Environment and Risk Management

Health and Safety requirements

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

3.3.2 When implemented, the *Consultant* 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.

3.3.3 Not used.

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

Environmental requirements

3.3.5 In Providing the Services the *Consultant* shall meet the requirements of Annex 2 of the supplementary constraints in relation to environmental duties.

Risk Management

3.3.6 The *Consultant* shall identify, manage and mitigate risks in accordance with the principles of ISO31000.

3.3.7 The *Consultant* submits a risk register, which captures all risks associated with the delivery of the *services* including those identified by the *Client*, with his tender and maintains it for the contract period.
Risks to be managed by the *Consultant* are included in the RIEC form attached.

Additional Health and Safety Requirements

3.3.8 When providing the *Services*, the *Consultant* shall have due regard to the requirements to safely carry out the signing, lighting and guarding of street works and road works in line within Department of Transport published guidance ‘Safety at street works and road works: a code of practice 2013’ or any subsequent revision or superseding guidance. This guidance will allow the *Consultant* to safely close off the pavement, in proximity to lighting columns, to create safe working areas.

3.3.9 The Health and Safety information provided by the *Consultant* and referred to in 3.1.2 will include, but not be limited to, the following health and safety risks during installation, maintenance and removal of the monitoring equipment:

- Confrontation by members of the public (anti-social behaviour is a known issue in proximity to the scheme),
- Electrical hazard when connecting the monitoring equipment to the lighting column,
- Vehicle collision hazard when parking vehicles on the roadside and walking to and from the lighting columns,

- Risk of falling objects from the mobile elevated working platform (MEWP) to staff and/or members of the public.

4 REQUIREMENTS FOR THE PROGRAMME

4.1.1 The *Consultant* submits programme to the *Client* with his tender.

4.1.2 The *Consultant* provides the *Services* taking into account the following programme constraints:

(i) the starting date and completion date and any post site works, reporting and review period;

(ii) the services and other information provided by *Client* (see Section 5 if applicable);

(iii) the requirement for monthly noise reports to be provided by the *Consultant* in accordance with the specification in Section 6; and

(iv) the requirement for an interim noise assessment providing recommendations on the requirement for and alignment of noise barriers

4.1.3 The programme shall 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 shall 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 shall detail the following:

(i) the installation of monitoring equipment;

(ii) providing real-time data access to the *Client* and gathering of data during monitoring period;

(iii) provision of monitoring reports;

(iv) provision of an interim noise assessment following 3 months of monitoring;

(v) removal of the monitoring equipment, noise modelling and provision of results; and

(vi) timing of these activities should be set out including the *starting date*, *completion date*, *Consultant's* planned completion, and any other dates or times that will specifically impact the delivery of the project.

4.1.5 The *Consultant* should provide details of the proposed resources (plant, labour, sub-contractors etc.) necessary 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 *Services.*

4.1.6 The *Consultant* updates the programme every four (4) weeks. The *Consultant* submits an updated programme to the *Client* upon request.

5 SERVICES AND OTHER THINGS PROVIDED BY THE *CLIENT*

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

- Partial closure of the road to allow MEWP access to lighting columns for installation of the equipment specified in Section 6. Locations are set out in Figure 6.1 and shown in Images 6.1 - 6.5.

6 SPECIFICATION FOR THE SERVICES

6.1.1 The *Consultant* shall Provide the Services in accordance with the following methodology:

6.1.2 Noise monitoring (12 months) and noise modelling are required to inform noise barrier design and provide baseline noise levels prior to any construction works associated with the M32 Junction 2 Eastville Viaduct main works.

6.1.3 The *Consultant* shall Provide the *Services* in accordance with the following:

6.2 Noise Monitoring

6.2.1 All monitoring activities will be required to be undertaken in accordance with '*BS7445: 2003 Description and measurement of environmental noise – guide to quantities and procedures'*, utilising live fully UKAS calibrated Leq Class 1 equipment in line with '*BS EN 61672-1:2013 Electroacoustics. Sound level meters. Specifications*'.

6.2.2 The methodologies and deliverables related to the 12-month monitoring programme include:

(1) Undertake continuous on-site noise monitoring using live Leq systems for a period of twelve (12) months prior to any construction works and record wind speed, precipitation and temperature with a meteorological station;

(2) Access, power supply and installation (and dismantling to the satisfaction of the lamppost owner following the surveys) of all required monitoring equipment to be mounted on lampposts, including provision for the installation of metrological logging equipment at one of the five (5) indicative locations specified below, as deemed suitable by the *Consultant* and the *Client*. Pricing should be on the basis of five (5) monitoring locations for the twelve (12) month period; including permissions to mount on lamp posts, secure power supply and stakeholder management,

(3) All equipment maintenance and site visits relating to the monitoring equipment (to enable delivery of the twelve (12) month survey programme) should be priced. The *Consultant* will be required to visit and calibrate the noise equipment every four (4) months using an external calibrator in accordance with '*BS EN 60942.2003 Electroacoustics. Sound calibrators'*.

(4) Provision of remote access viewing to the *Client* to allow real time access to noise meters. All costs associated with remote access and data storage shall be the responsibility of the *Consultant* and should be priced accordingly;

(5) Production of monthly monitoring reports, during the twelve (12) months of monitoring, to be supplied to the *Client* in an agreed report format, including information such as, details about each monitoring location, and processed data collected during that month. A second standalone supplementary report will provide the full raw dataset collected during the month, and will present as a minimum, the $L_{Aeq,F}$ (dB), $L_{A10,F}$ (dB) and $L_{A90,F}$ (dB) averaged as hourly periods. Meteorological data will also be provided in this standalone report.

(6) These monthly monitoring report(s) will be provided in PDF format. The monthly reports are to be provided by the *Consultant* in the week following the end of the specific month for which a report is being produced. For example, the report(s) for data collected in June 2021, shall be provided to the *Client* no later than the end of the week commencing the 05th July 2021.

(7) Production of an interim noise assessment report after 3 months of monitoring to advise on the likely extent and type of required noise barriers. It is expected interim modelling is required.

(8) Production of an annual monitoring report(s) during the completion of the full twelve (12) months of noise monitoring.

6.2.3 Deliverables and the considerations for pricing these deliverables are provided in the below table.

Table 6-1 Deliverables required under the provision of the noise monitoring Services.

Deliverable	**Brief Description**	**Key assumptions of pricing**	**Other options to be priced**
Obtain permissions	Secure any permissions required for the installation and maintenance of noise and meteorological monitoring equipment. Secure permission for the connection to,	Monitoring equipment to be located in the indicative locations specified in this document, and so far as practical, in the same locations as the Stage 2 noise modelling output produced by WSP. All work to gain permission to install the	Additional monitoring locations if deemed necessary by consultees such as the local planning authority.

Deliverable	Brief Description	Key assumptions of pricing	Other options to be priced
	and use of, power supply. Stakeholder management.	equipment and any incurred costs is the responsibility of the *Consultant.*	
Installation, maintenance and dismantling	Installation, maintenance and dismantling of fully calibrated noise monitoring equipment and meteorological station.	Data collection required for twelve (12) months prior to any construction works. Monitoring equipment to be fully calibrated and within the calibration period for the duration of the monitoring period. Monitoring equipment to be calibrated on site locally every four (4) months.	Additional monitoring locations if deemed necessary by consultees such as the local planning authority. Unforeseen issues with equipment as a result of extreme weather events or events outside of the control of the *Consultant* which require visits to site to remediate. Decommissioning of monitoring equipment.
Provision of data	Provide Highways England (and potentially other parties) with the means of accessing data collected.	Data collection required for twelve (12) months of monitoring prior to any construction works.	
Interim noise assessment recommendations	Production of an interim noise assessment following the completion of 3 months of noise monitoring.	Recommendations based on baseline monitoring should be sufficient to confirm the requirement for noise barriers to ameliorate high levels of noise.	

Deliverable	Brief Description	Key assumptions of pricing	Other options to be priced
Noise monitoring reports	Provision of twelve (12) monthly and one (1) annual noise monitoring report.	Reporting will include data processing and graphical representations of the monitored datasets for monthly/12 month survey period.	Monthly reports to include all raw data collected by the monitoring equipment during the month as a stand-alone supplementary report.

6.3 Noise Modelling

6.3.1 Noise modelling will be required to determine the optimal noise barrier combination required to reduce noise levels to an acceptable level at sensitive residential receptors, with due consideration to traffic speed, height and type of noise barrier.

6.4 Deliverables

6.4.1 Deliverables related to the noise modelling include:

(1) The production and provision to the Client of a three-dimensional noise model of the surrounding area encompassing the M32 Junction 2 Eastville Viaduct main works and surrounding residential receptors,

(2) The noise model should be created in a recognised proprietary software, such as SoundPLAN, implementing appropriate UK prediction methodologies for road traffic noise (the *Client* retains the right to approve the specification of the software proposed),

(3) The noise modelling software will comply with the quality requirements and measures outlined within *ISO17534-1: 2015 Acoustics — Software for the calculation of sound outdoors — Part 1: Quality requirements and quality assurance.*

(4) The modelling software will be used to predict road traffic noise at the sensitive receptors in accordance with the Calculation of Road Traffic Noise (CRTN), this will need to be considered and discussed at the time with the *Client* relative to any changes in UK road traffic noise guidance,

(5) The noise model will need consider the following scenarios, utilising the outputs from the traffic modelling (to be provided by the *Client*), converted to the format required for noise modelling:

(i) Scenario at each receptor without noise barriers (the modelled noise output derived from traffic data, should be verified using the measured baseline levels),

(ii) Scenario with noise barrier and varying heights, including;

- absorptive barrier traffic speed at 40mph,
- absorptive barrier traffic speed at 50mph,
- reflective barrier traffic speed at 40mph,
- reflective barrier traffic speed at 50mph,

(6) Provision of a report in PDF format detailing the most optimum noise barrier combination (with due consideration to height, traffic speed, and absorptive/reflective barrier specification) required to reduce noise levels to an acceptable level. A map of locations and heights of proposed barriers as well as materials and type of barrier should be provided in this report. Predicted noise levels should be presented in appropriate tables and as both absolute and change road traffic noise.

(7) Contour plans should be created for the most optimum noise barrier combination (as specified above in (5) of Paragraph 6.5.1), as both absolute and change road traffic noise.

6.4.2 The identified monitoring locations are shown on the following images and figure:

Image 6.1 (Receptor 1 – Gable Road)
Maps Data: ©2021 Google

Image 6.2 (Receptor 2 – Gatton Road)
Maps Data: ©2021 Google

Image 6.3 (Receptor 3 – Stapleton Road)

Maps Data: ©2021 Google

Image 6.4 (Receptor 4 – Cottrell Road/ Stapleton Road)

Maps Data: ©2021 Google

Image 6.5 (Receptor 5 – Bell Hill)

Maps Data: ©2021 Google

Figure 6.1 Location of monitoring locations

Maps Data: ©2021 Google