

# **National Asset Delivery Technical Surveys and Testing**

## **Works Information**

### **570129 M5 J31 Pavement Coring, Trial Pits and Soil Testing**

**CONTENTS AMENDMENT SHEET**

<b>Amend. No.</b>	<b>Revision No.</b>	<b>Amendments</b>	<b>Initials</b>	<b>Date</b>
0	0	Original version issued with tender	ET	28/09/20

**TABLE OF CONTENTS**

<b>1</b>	<b>Description of the works .....</b>	<b>4</b>
1.1	Project objectives.....	4
1.2	Scope of works .....	4
1.3	Deliverables .....	4
<b>2</b>	<b>Existing INFORMATION.....</b>	<b>5</b>
<b>3</b>	<b>Constraints on how the Contractor Provides the Works .....</b>	<b>6</b>
3.1	General .....	6
3.2	Working hours & site specific constraints .....	6
3.3	Health, Safety and Environment & Risk Management.....	6
<b>4</b>	<b>Requirements for the programme .....</b>	<b>8</b>
<b>5</b>	<b>Services and other things provided by the <i>Employer</i>.....</b>	<b>9</b>
<b>6</b>	<b>Specification for the works .....</b>	<b>10</b>

**LIST OF ANNEXES**

**Appendix 1 HE570129B-KIER-VGN-M5\_J31\_ML\_Z-SP-EO-0003 Soil Sampling Specification**

## **1 DESCRIPTION OF THE WORKS**

### **1.1 Project objectives**

1.1.1 The principle objective of this project is to undertake Core Survey with Test Pit investigations across the area shown on drawing(s):

- (i) HE570129B-KIER-VGN-M5\_J31\_ML\_Z-DE-EO-0100\_13

Also, providing a subsequent report in accordance with the requirements detailed in the specification.

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

### **1.2 Scope of works**

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

- (i) 150mm diameter cores to be taken at locations specified on drawings in section 2 and in accordance with the specification in section 6.
- (ii) Undertake PAK and PAH testing on cores to establish if tar bound materials may be present
- (iii) Undertake a Test Pit, Sampling and Analysis Investigation comprising:
  - Test pits at the locations specified on drawing in section 2 and in accordance with the specification in section 6
  - In-situ CBR values at the locations specified on drawing in section 2 and in accordance with the specification in section 6
  - Sample collection for soil classification testing in accordance with the specification in section 6
  - Sample collection for Environmental laboratory testing

### **1.3 Deliverables**

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

- (i) Provide a report showing the depths of pavement construction layers through-out the cores taken as part of the *works*.
- (ii) Provide a report on the likely presence of tar bound material indicated by the PAK test.
- (iii) Provide a Report following completion of the Test Pits and in accordance with the requirements in section 6.

## 2 EXISTING INFORMATION

2.1.1 The following existing information, provided by HE from previous Skanska design will be supplied:

- 527167 – M5 J30-31 Exminster CR VRS & 527157- M5 J22-23 CR VRS Core logs
- M5 J31 Geotechnical Assessment

2.1.2 The Drawings listed below apply to this contract. Refer to the site information for details of existing site conditions including ground conditions, limitation on access, position of existing structures etc.

### M5 J31

Drawing Number	Title
HE570129B-KIER-HLG-M5_J31_ML_Z-DE-EO-0100_01	Location Plan
HE570129B-KIER-HLG-M5_J31_ML_Z-DE-EO-0100_02	Statutory Undertakers Apparatus
HE570129B-KIER-VGN-M5_J31_ML_Z-DE-EO-0100_13	Trail Pit and Core Location Plan – M5 J31
HE570129B-KIER-VGN-M5_J31_ML_Z-DE-EO-0100_14	Trail Pit and Core Location Plan – M5 J31 – NO STATS
HE570129B-KIER-VGN-M5_J31_ML_Z-DE-EO-0100_03	M5 J31 Existing Asset Arrangement

### **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 Access to the site for undertaking works will not be possible without the provision of traffic management – This will be provided by the Employer.
- 3.2.2 Due to the requirement for Traffic Management I and specialist access, it is envisaged that works will be restricted to night-time shifts. Temporary Traffic Management (TTM) shall not be implemented prior to the hour of 20:00 hrs nor removed later than 06:00 hrs. Late installation / early removal of Traffic Management or alteration to the length of closure may occur subject to the recorded on-site traffic flow. It is anticipated that in most cases, Traffic Management removal will commence at 04:00 hrs to allow sufficient time for removal. There may be an option for daytime working but this will be discussed on mobilisation and should not be part of any tender proposal
- 3.2.3 Traffic Management layout to be confirmed by Employer. Layout provided to be in accordance with Traffic Signs Manual (TSM) Chapter 8.
- 3.2.4 Any site and task-specific lighting shall be directed away from dense vegetation and shall be positioned such that it does not cause a hazard to on-coming road users.

#### **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 in relation to health and safety duties.
- 3.3.2 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 for each specific site in documents HE570129B-KIER-VGN-M5\_J31\_ML\_Z-CDM-CH-0001 & HE570129B-KIER-VGN-M5\_J31\_ML\_Z-CDM-CH-0003.

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

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

#### Risk Management

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

## 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) the *starting date* and *completion date* and any post site works, reporting and review period
  - (ii) The services and other things provided by *Employer* (see Section 5)
  - (iii) Other surveys are being commissioned for this scheme so the option to minimise traffic management requirements and disruption to public must be considered by sharing road space bookings. This will be discussed at mobilisation and the programme updated to take this into account.
- 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) the *starting date*, *completion date* & *Contractor's* planned completion
  - (ii) for each activity, the proposed resources (plant & labour) expected to deliver each activity should be shown on the programme
  - (iii) review periods for any reporting requirements
  - (iv) key dates for the *Employer* to provide 'services and other things'
  - (v) key dates for co-ordination with Others
- (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* updates the programme every week. 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:
- (i) Lane closures on slip roads.
  - (ii) Lane closures to be moved as necessary
- 5.1.2 Access arrangements & licences for works on third party land to be provided by the *Employer*

FOR INFORMATION ONLY

## 6 SPECIFICATION FOR THE WORKS

### 6.1 General

- 6.1.1 The Contractor shall undertake the works in accordance with: HD 29/08 Data for Pavement Assessment, PAS128:2014, Specification for underground utility detection, BS EN 1997 Eurocode 7 Geotechnical Design, BS5930:1999 +A2 2010 Code of Practice for Site Investigation, BS10175: 2011 Investigation of Potentially Contaminated Sites & GG 184 Specification for the use of Computer Aided Design.

### 6.2 Pavement Cores Requirements

- 6.2.1. 150mm diameter cores are to be taken at the locations specified on drawings HE570129B-KIER-VGN-M5\_J31\_ML\_Z-DE-EO-0100\_13 and table below in table 6.2A,

Location Reference	Easting	Northing
C01	293020	87820
C02	293010	87916
C03	292851	87897

Table 6.2A Core locations schedule

- 6.2.2. Core locations are to be referenced against network sections to an accuracy of  $\pm 1\text{m}$  longitudinally and  $\pm 0.1\text{m}$  transversely from the nearest lane edge.
- 6.2.3. Services to be located using cable location devices by a trained and competent operator prior to coring taking place.
- 6.2.4. For each core, a full record of the core details must be made in the form of a core log. The log must include a good quality colour photograph with a scale strip and the core reference clearly visible.
- 6.2.5. The following reference information must be stated on the log sheet for each core:
- (a) Core reference
  - (b) Section reference and chainage
  - (c) Traffic direction
  - (d) Lane and offset
  - (e) OS grid reference
  - (f) Coring date
- 6.2.6. Pavement condition at core location including presence of cracks and their orientation
- The following details must be stated on the log sheet for each core
- (a) Thickness of each bound layer
  - (b) Any missing layers
  - (c) For each layer as appropriate:
    - i. Type of material present
    - ii. Condition of the material
    - iii. Stripping of binder from aggregate (if present)

- iv. Condition of bonding layers
  - v. Presence of detritus where there is a lack of bond between layers
  - vi. Voiding and segregation (if present)
  - vii. Crack depth and severity, soft or otherwise, deleterious aggregate bleeding and any other peculiarities
- 6.2.7. Cores to be cleaned and then tested with PAK marker spray to determine if there are any Polycyclic Aromatic Hydrocarbons present within each construction layer. Results of PAK testing to be included on the core log sheet.

### 6.3 Test Pits Requirements

- 6.3.1 The test pits are being undertaken as part of the Test Pit Investigation
- 6.3.2 Test pits are to be undertaken at the locations specified on drawings and tables below;  
HE570129B-KIER-VGN-M5\_J31\_ML\_Z-DE-EO-0100\_13 in table 6.3A,

Location Reference	Easting	Northing
TP01	293426	88194
TP02	293347	88181
TP03	293264	88039
TP04	293227	88078
TP05	293046	87855
TP06	293037	87897
TP07	292653	87624
TP08	292645	87662
TP09	293129	87777
TP10	292946	87728
TP11	292920	87841
TP12	292890	87904
TP13	292864	87995
TP14	292809	87768
TP15	292843	87910

Table 6.3A Core locations schedule

Test pit locations may be adjusted locally on site if evidence suggests a difference in location of service ducts to those shown above

- 6.3.3 The test pits are to be 2.0m long extending into the verge from kerb line, by 0.5m, or wide enough to accommodate CBR testing rig. Excavation to be of

suitable depth to expose service ducts. Competent person to inspect the excavation to ensure it is not at risk of collapse.

- 6.3.4 Test pits are to be hand dug with insulated tools to minimise risk of striking any utilities
- 6.3.5 In addition to the programme of works required under section 4 of this document, the Contractor is to provide method statements, risk assessments and safety plans for the survey to the Employer before commencing works on site
- 6.3.6 Test pits are to be undertaken in the soft estate. Excavated material is to be retained adjacent to the test pit. This material is to be used to reinstate the test pit following the Works.

#### 6.4 In-situ CBR testing

- 6.4.1 In-situ CBR testing to BS 1377-9: 1990 is to be carried out at the test pit locations specified in table 6.2
- 6.4.2 In-situ CBR testing to be undertaken at a depth of 750mm

#### 6.5 Sampling for Testing

- 6.5.1 Geotechnical sampling to comprise:
- (i) Small Disturbed – small (>500ml) sealable tub; and
  - (ii) Bulk – strong bag holding >10kg of sample
- 6.5.2 All samples will be labelled and stored appropriately on site and delivered to the testing laboratory on completion of the Test Pit Investigation
- 6.5.3 Small disturbed and bulk sample to be completed at a minimum of 0.5m intervals and at every change in stratum

#### 6.6 Laboratory Testing

- 6.6.1 The required laboratory testing is shown below

Test Type	Sample Type Needed	Reason for Testing
<b>Classification Testing</b>		
Moisture Content	Small Disturbed	To find the in-situ moisture content and better predict the ground behaviour in wet/dry conditions e.g. increased seasonal rainfall
Atterberg (Plasticity) Limits	Small Disturbed	To find the plasticity index and understand the likelihood of shrink and swell of the ground conditions

Test Type	Sample Type Needed	Reason for Testing
Particle Size Distribution and Sedimentation by hydrometer	Bulk/Large Bulk	To find the grain size of the stratum to better understand & predict the ground behaviour. Sedimentation to be used where > 40% of the sample is likely to pass the 425µm sieve
<b>Aggressivity of Ground to Concrete (Chemical) Testing: Soil Sample</b>		
BRE SD1 Suite	Small Disturbed	Taking soil sample at varying depths to find the Aggressive Chemical Environment for Concrete (ACEC) classification used to determine the design sulphate class for concrete specification using BRE SD1 C5. 1.4
<b>Aggressivity of Ground to Concrete (Chemical) Testing: Groundwater Sample</b>		
BRE SD1 Suite	Groundwater sample	Taking ground water samples at varying depths to find the Aggressive Chemical Environment for Concrete (ACEC) classification used to determine the design sulphate class for concrete specification using BRE SD1 C5. 1.4

## 6.7 Reporting

- 6.7.1 Logging of exploratory holes, sample description and in situ laboratory testing shall be carried out in accordance with:
- BS EN 1997 Eurocode 7 Geotechnical Design
  - BS5930 :1999 +A2 2010 Code of Practice for Site Investigation
  - BS10175: 2011 Investigation of Potentially Contaminated Sites
- 6.7.2 Information gathered from the trail pits survey is to be recorded in the form of a test pit log and is to include:
- Relative measurements to a local detail for the location of the excavation
  - A description and location plan of the excavation
  - A description of each stratum together with its thickness
  - The depth of change in each stratum
  - Groundwater conditions
  - Digital photographs taken of the location, open excavation as exposed, and including a time stamp
  - Weather conditions
  - The dates of excavations and logging
- 6.7.3 Where utility(s) have been located within the test pits, the following additional information shall be recorded:
- Utility type
  - Depth to top of utility
  - Geospatial location of the utility

- Utility diameter (if possible)
- Utility material (if possible)
- Digital photographs taken of utility(s) as exposed within excavation
- Notes of any adjacent utility markers, warning tapes and protection tiles or shields
- Any accompanying utility apparatus such as pilot cables

6.7.4 Results of the in-situ CBR testing

6.7.5 Results of the laboratory testing

FOR INFORMATION ONLY