COMMERCIAL, SURFACE TRANSPORT

CONTRACT

FOR

Blackwall Southbound and Rotherhithe Tunnels Refurbishment – Stage 2

(Contractor's M&E Investigations)

BETWEEN

TRANSPORT FOR LONDON

AND

VVB ENGINEERING LIMITED

Project Reference Number: tfl_scp_001660

CONTENTS

SECTION ONE

FORM OF AGREEMENT

Engineering and Construction Short Contract

THIS CONTRACT AGREEMENT is made the 09 **day of** OCTOBER **2017**

BETWEEN

1. **TRANSPORT FOR LONDON** whose registered office is at **Windsor House, 42-50 Victoria St, London, SW1H 0TL** (hereinafter called "the *Employer*") which expression shall include its successors in title and permitted assignees; and

2. **VVB ENGINEERING LIMITED,** a company incorporated in and in accordance with the laws of **ENGLAND AND WALES** having as its registered number **02645841** and its registered office at **Debeauvoir Farm, Church Road, Ramsden Heath, Billericay, Essex, CM11 1PW** (hereinafter called "the *Contractor*").

RECITALS

(A) The *Employer* wishes to appoint the *Contractor* to carry out *works* to support the Feasibility Stage of Blackwall Southbound and Rotherhithe Tunnels refurbishment for which the *Employer* has submitted to the *Contractor* his invitation to tender.

(B) The *Contractor* has submitted his tender offer dated **21 August 2017** in response to the *Employer*'s invitation to tender. The *Employer* has examined the *Contractor*'s said tender and subject to the provisions of this contract is willing to engage the *Contractor* to carry out the *works* in accordance with this contract.

OPERATIVE PROVISIONS

1. In this Contract Agreement, unless the context otherwise requires, words and expressions shall have the same meaning as set out in the *conditions of contract*.

2. The *conditions of contract* are the NEC Engineering and Construction Short Contract (Third edition June 2005) together with and as amended by the amendments set out in Schedule 1.

3. This contract shall mean this document and the following documents which are hereby incorporated into and shall comprise this contract:

   3.1 the *conditions of contract* (including, for the avoidance of doubt, the amendments set out in Schedule 1 to this document (which amendments shall prevail over any other *condition of contract*));

   3.2 the Contract Data;

   3.3 the Works Information;

   3.4 the Site Information;

   3.5 the Pre Construction Information; and

   3.6 the Contractor's Quality Submission;

4. The several documents forming this contract are to be taken as mutually explanatory of one another. In the event of any ambiguity they shall be construed in the order set out in clause 3 of this Contract Agreement.

5. The *Contractor* Provides the Works in accordance with this contract.

6. The *Employer* pays the *Contractor* for the Provision of the Works the amount due in accordance with this contract.

This Contract Agreement has been executed as a deed and delivered on the date stated at the start of this Contract Agreement.

EXECUTED AND DELIVERED AS
A DEED by
THE CONTRACTOR
Acting by:

Signature of Director [redacted]

Print Name of Director

Signature of Director/~~Secretary~~

Print Name of Director/~~Secretary~~

The common seal of
Transport for London
was affixed to **this Deed**
In the presence of: [redacted]

Authorised Signatory

6341

CONTRACT DATA – EMPLOYER

	The *Employer* is
Name	**Transport for London**
Address	42-50 Victoria Street, London, SW1H 0TL
Telephone	..... Fax .....
E-mail address	.....
The *works* are:	**Surveys, site investigations and necessary attendance and permits to support the feasibility stage of the Blackwall Southbound and Rotherhithe tunnels as described in the Works Information.**
The *site* is	**The areas identified within the boundaries shown on drawings included in Volume 4 (Site Information) and Volume 5 (Additional Information)**
The *starting date* is	**22 September 2017**
The *completion date* is	**30 March 2018**
The *period for reply* is	**2 weeks**
The *defects date* is	**52 weeks after completion**
The *defect correction period* is	**4 weeks**
The delay damages are	
The assessment day is	**The *starting date* and every four (4) weeks thereafter**
The retention is	

The *Contractor* submits invoices based on certified payment and each invoice issued pursuant to clause 50 is submitted in a format to be agreed with the *Employer*.

Does the United Kingdom Housing Grants, Construction and Regeneration Act (1996) apply?	**Yes**

CONTRACT DATA

The Principal Contractor is:

Name: **London Highways Alliance Contractor**

Address: **Kier Services / Highways, Blackwall Tunnel Offices, Naval Row, Poplar E14 9PS**

Telephone: ……

Email Address: ……..

The Principal Designer is:

Name: **Atkins Ltd**

Address: **Woodcote Grove, Ashley Road,**
Epsom, Surrey, KT18 5BW ("the Consultant").

Telephone: ……

Email Address: ……..

The interest rate on late payment is **2%** (two percent) per annum in excess of the rate set from time to time by the Bank of England's monetary policy committee or any successor of it.

The *Employer* provides this insurance **Public Liability Insurance**
as stated in the insurance table

The Adjudicator: **the President or Vice-President of the**
Chartered Institute of Arbitrators

The tribunal is: **Litigation in the English Courts**

The *conditions of contract* are the NEC3 Engineering and Construction Short Contract (Third Edition June 2005) together with and as amended by the amendments set out in Schedule 1.

CONTRACT DATA – CONTRACTOR

The *Contractor* is

Name	**VVB ENGINEERING LIMITED**
Company Number	02645841
Address	Debeauvoir Farm, Church Road, Ramsden Heath Billericay, Essex, CM11 1PW
Telephone	[redacted] [redacted]
E-mail address	enquiries@vvb-eng.com

The percentage for overheads and profit added to the Defined Cost for people is… [redacted]

The percentage for overheads and profit added to other Defined Cost is [redacted]

The *Contractor* offers to Provide the Works in accordance with the *conditions of contract* for an amount to be determined in accordance with the *conditions of contract.*

The offered total of the Prices is [redacted]

[redacted]

Signed on behalf of the *Contractor*

Name [redacted] .....

Position Tender Manager .....

Signature [redacted] Date 14th August 2017...

CONTRACT DATA – PRICE LIST

Price List Preambles

a. All expenses shall be deemed as included in the rates and prices.

b. With regards to Table 3, a week day shift shall be 8 hours worked between the hours of 08:00 and 18:00 from Monday to Friday inclusive. Any hours in excess of 8 hours shall be deemed included within the week day rate. Where a resource works less than 8 hours on any week day then pro rata reduction is made to the week day rate based on the hours actually worked.

c. With regards to Table 3, a week night shift shall be 8 hours worked between the hours of 18:00 and 08:00 from Monday to Friday inclusive. Any hours in excess of 8 hours shall be deemed included within the week day rate. Where a resource works less than 8 hours on any week day then pro rata reduction is made to the week day rate based on the hours actually worked.

d. With regards to Table 3, a weekend shift shall be 8 hours worked between the hours of 18:00 on Friday and 08:00 on Monday inclusive. Any hours in excess of 8 hours shall be deemed included within the weekend rate. Where a resource works less than 8 hours on any weekend day then a pro rata reduction is made to the weekend rate based on the hours actually worked.

e. Percentage mark-ups for out of hours working shall be entered as additional to the normal day rate. For example, an entry of 50% shall be interpreted as the normal day rate plus an additional 50%. An entry of 0% shall be interpreted as no mark-up on the normal day rate.

f. The *Contractor* shall add extra rows as necessary in Table 3, but no rows shall be removed.

g. All rates quoted shall exclude VAT.

h. Individuals named in Table 3 shall correspond to those included in the organisational chart as requested as part of the Quality Submission (Part B).

i. The items in Tables 1 and 2 of the Price List are indicative only. Rows in Tables 1 and 2 can be added as appropriate to reflect the requirements as set out in the Works Information. Rows shall not be deleted from Tables 1 or 2.

j. The total cost provided against each item in Tables 1 and 2 shall include everything necessary to deliver the item of work in accordance with the Works Information and inclusive of all components listed in the schedule of cost component.

TABLE 1 – PRICE LIST (BLACKWALL SOUTHBOUND)

Item		Annex 4 - Outline testing and scope specification reference	Total Cost
3.1	Ventilation		
		Pre-requisites in accordance with section 3.1.3	[redacted]
		Performance tests in accordance with section 3.1.1 & 3.1.4	[redacted]
3.3	CCTV		
		Pre-requisites in accordance with section 3.3.1	[redacted]
		Performance tests in accordance with section 3.3.2 & 3.3.3	[redacted]
3.4	VAID		
		Pre-requisites in accordance with section 3.4.1	[redacted]
		Performance tests in accordance with section 3.4.2 & 3.4.3	[redacted]
3.5	Variable message signs, lane control signs & wayfinding signs		
		Pre-requisites - Not applicable	
		Performance tests in accordance with section 3.5.2 & 3.5.3	[redacted]
3.6	Flood gates		
		Pre-requisites - Not applicable	
		Performance tests in accordance with section 3.6.2 & 3.6.3	[redacted]
3.7	Cable management including sub-tunnel		
		Pre-requisites - Not applicable	
		Performance tests in accordance with section 3.7.2 & 3.7.3	[redacted]
3.8	Power		
		Pre-requisites in accordance with section 3.8.1	[redacted]
		Performance tests in accordance with section 3.8.2 & 3.8.3	[redacted]
3.9	Linear heat detector		
		Pre-requisites - Not applicable	
		Performance tests in accordance with section 3.9.2 & 3.9.3	[redacted]
3.10	Plant room HVAC, fire and safety systems		
		Pre-requisites in accordance with section 3.10.1	[redacted]
		Performance tests in accordance with section 3.10.2 & 3.10.3	[redacted]
3.11	EDPs and EPs		
		Pre-requisites in accordance with section 3.11.1	[redacted]
		Performance tests in accordance with section 3.11.2 & 3.11.3	[redacted]
3.12	Radio		
		Pre-requisites - Not applicable	
		Performance tests in accordance with section 3.12.2 & 3.12.3	[redacted]
3.13	Loudspeaker public address		
		Pre-requisites in accordance with section 3.13.1	[redacted]

		Performance tests in accordance with section 3.13.2 & 3.13.3	[redacted]
3.14	Maintenance telephones		
		Pre-requisites - Not applicable	
		Performance tests in accordance with section 3.14.2 & 3.14.3	[redacted]
3.15	Tunnel lighting		
		Pre-requisites in accordance with section 3.15.1	[redacted]
		Performance tests in accordance with section 3.15.2 & 3.15.3	[redacted]
3.16	Tunnel lighting structural support		
		Pre-requisites - Not applicable	
		Performance tests in accordance with section 3.16.2 & 3.16.3	[redacted]
3.17	Out of tunnel lighting		
		Pre-requisites in accordance with section 3.17.1	[redacted]
		Performance tests in accordance with section 3.17.2 & 3.17.3	[redacted]
3.18	Fire main		
		Pre-requisites in accordance with section 3.18.1	[redacted]
		Performance tests in accordance with section 3.18.2 & 3.18.3	[redacted]
3.19	Resilient power supply		
		Pre-requisites in accordance with section 3.19.1	[redacted]
		Performance tests in accordance with section 3.19.2 & 3.19.3	[redacted]
3.20	Drainage incl pumps etc		
		Pre-requisites in accordance with section 3.20.1	[redacted]
		Performance tests in accordance with section 3.20.2 & 3.20.3	[redacted]
		TOTAL	[redacted]

TABLE 2 – PRICE LIST (ROTHERHITHE)

Item		Outline testing and scope specification reference	Total Cost
4.1	Ventilation		
		Pre-requisites in accordance with section 4.1.3	[redacted]
		Performance tests in accordance with section 4.1.4	[redacted]
4.3	CCTV		
		Pre-requisites in accordance with section 4.3.1	[redacted]
		Performance tests in accordance with section 4.3.2 & 4.3.3	[redacted]
4.5	Variable message signs, lane control signs & wayfinding signs		
		Pre-requisites - Not applicable	
		Performance tests in accordance with section 4.5.2 & 4.5.3	[redacted]
4.6	Flood gates		
		Pre-requisites - Not applicable	
		Performance tests in accordance with section 4.6.2 & 4.6.3	[redacted]
4.7	Cable management including sub-tunnel		
		Pre-requisites - Not applicable	
		Performance tests in accordance with section 4.7.2 & 4.7.3	[redacted]
4.8	Power		
		Pre-requisites in accordance with section 4.8.1	[redacted]
		Performance tests in accordance with section 4.8.2 & 4.8.3	[redacted]
4.9	Linear heat detector		
		Pre-requisites - Not applicable	
		Performance tests in accordance with section 4.9.2 & 4.9.3	[redacted]
4.10	Plant room HVAC, fire and safety systems		
		Pre-requisites in accordance with section 4.10.1	[redacted]
		Performance tests in accordance with section 4.10.2 & 4.10.3	[redacted]
4.11	EDPs and EPs		
		Pre-requisites in accordance with section 4.11.1	[redacted]
		Performance tests in accordance with section 4.11.2 & 4.11.3	[redacted]
4.12	Radio		
		Pre-requisites in accordance with section 4.12.1	
		Performance tests in accordance with section 4.12.2 & 4.12.3	[redacted]
4.13	Loudspeaker public address		
		Pre-requisites in accordance with section 4.13.1	[redacted]
		Performance tests in accordance with section 4.13.2 & 4.13.3	[redacted]
4.14	Maintenance telephones		

		Pre-requisites in accordance with section 4.14.1	[redacted]
		Performance tests in accordance with section 4.14.2 & 4.14.3	[redacted]
4.15	Tunnel lighting		
		Pre-requisites in accordance with section 4.15.1	[redacted]
		Performance tests in accordance with section 4.15.2 & 4.15.3	[redacted]
4.16	Tunnel lighting structural support		
		Pre-requisites - Not applicable	
		Performance tests in accordance with section 4.16.2 & 4.16.3	[redacted]
4.17	Out of tunnel lighting		
		Pre-requisites in accordance with section 4.17.1	[redacted]
		Performance tests in accordance with section 4.17.2 & 4.17.3	[redacted]
4.18	Fire main		
		Pre-requisites in accordance with section 4.18.1	[redacted]
		Performance tests in accordance with section 4.18.2 & 4.18.3	[redacted]
4.19	Resilient power supply		
		Pre-requisites in accordance with section 4.19.1	[redacted]
		Performance tests in accordance with section 4.19.2 & 4.19.3	[redacted]
4.20	Drainage incl pumps etc		
		Pre-requisites in accordance with section 4.20.1	[redacted]
		Performance tests in accordance with section 4.20.2 & 4.20.3	[redacted]
		TOTAL	[redacted]

TABLE 3 – SCHEDULE OF RATES

Blackwall Southbound & Rotherhithe Tunnels Refurbishment Stage 2
Feasibility Study - Proposed List of Specialist Labour for Testing

				Out of hours working mark-up (%)	
Item	**Name**	**Specialist labour**	**Rate / Day (£)**	**Night Rate Uplift (£)**	**Weekend or Bank Holiday Rate Uplift (£)**
1		Tunnel Ventilation Monitoring Engineer	[redacted]	[redacted]	[redacted]
2		Electrical engineer	[redacted]	[redacted]	[redacted]
3		Mechanical engineer	[redacted]	[redacted]	[redacted]
4		Structural engineer	[redacted]	[redacted]	[redacted]
5		Public health engineer	[redacted]	[redacted]	[redacted]
6		Technology engineer	[redacted]	[redacted]	[redacted]
7		Specialist lighting engineer	[redacted]	[redacted]	[redacted]
8		Specialist radio engineer	[redacted]	[redacted]	[redacted]
9		Specialist audio engineer	[redacted]	[redacted]	[redacted]

SCHEDULE 1 - AMENDMENTS TO CONDITIONS OF CONTRACT

Part 1 - Amendments to Conditions of Contract

The *conditions of contract* are amended as follows:

Clause 11.2(3) After "not in accordance with" insert: "the *Contractor's* obligations under this contract or".

Clause 11.2 Insert the following new definitions:

(14) CDM Regulations are the Construction (Design and Management) Regulations 2015 and any amendment, consolidation, revision and/or replacement thereto and related code of practice together with any requirements issued from time to time by the Health and Safety Executive.

(15) The Contract Agreement is the document executed by the *Employer* and the *Contractor* under which the *Contractor* has agreed to Provide the Works.

(16) Contract Date is the date of the Contract Agreement.

(17) Contract Information means (i) this contract in its entirety (including from time to time agreed changes to this contract) and (ii) data extracted from invoices submitted by the *Contractor* which consists of the *Contractor's* name, the expenditure account code, the expenditure account code description, the SAP document number, the clearing date and the invoice amount.

(18) Holding Company means any company which from time to time directly or indirectly controls the *Contractor* where "control" is as defined by Section 1124 of the Corporation Tax Act 2010.

(19) Indirect Subcontractor means any subcontractor of whatever tier beneath any Subcontractor appointed in relation to the works."

(20) A Statutory Requirement is any statute, statutory instrument, regulation, rule or order made under any statute or directive having the force of law which affects the *works* or performance of any obligations under this contract and any regulation or bye-law of any local authority or statutory undertaker which has any jurisdiction with regard to the *works* or with those systems the *works* are, or are to be, connected, including without limitation any statutory provisions and any decision of a relevant authority under such provisions which control the right to develop the *site*.

(21) Subcontractor means any subcontractor appointed in relation to the works.

(22) The TfL Group is Transport for London and all its subsidiaries (as defined in Section 1159 of the Companies Act 2006) from time to time.

(23) TfL Premises are any premises owned, leased or under the control of any member of the TfL Group.

(24) Transparency Commitment means the transparency commitment stipulated by the UK government in May 2010 (including any subsequent legislation) in accordance with which TfL is committed to publishing its contracts, tender documents and data from invoices received.

(25) The Workplace Policy is the Employer's "Workplace Harassment Policy", as updated from time to time, copies of which are available on request from the Employer."

(26) The Construction Act is the Housing Grants, Construction and Regeneration Act 1996 as amended by the Local Democracy, Economic Development and Construction Act 2009.

(27) Pay Less Notice means the notice referred to in clause 51.6.

Clause 12.1 Delete the current wording in clause 12.1 and replace with "This contract is governed by English law. Without prejudice to clause 93, the courts of England have exclusive jurisdiction to settle any dispute which may arise out of or in connection with this contract provided that the Employer has the right in its absolute discretion to enforce a judgement and/or take proceedings in any other jurisdiction in which the Contractor is incorporated or in which any assets of the Contractor may be situated. The parties irrevocably submit to that jurisdiction."

Clause 12.4 Insert a new clause:

"12.4 Save that any member of the TfL Group has the right to enforce the terms of this contract in accordance with the Contracts (Rights of Third Parties) Act 1999, the *Employer* and the *Contractor* do not intend that any of the terms of this contract are enforceable by virtue of the Contracts (Rights of Third Parties) Act 1999 by any person not a Party. Notwithstanding the terms of this clause, the Parties are entitled to vary or rescind this contract without the consent of any or all members of the TfL Group (other than the *Employer*)"

Clause 12.5 Insert a new clause:

“12.5	“If any clause or part of this contract is found by any court, tribunal, administrative body or authority of competent jurisdiction to be illegal, invalid or unenforceable then that provision will, to the extent required, be severed from this contract and will be ineffective without, as far as is possible, modifying any other clause or part of this contract and this will not affect any other provisions of this contract which will remain in full force and effect.”
Clause 12.6	Insert a new clause:
“12.6	The *Contractor* shall not assign the benefit of and its rights under this contract without the prior written consent of the *Employer*”.
Clause 12.7	Insert a new clause:
"12.7	"Where a period of time stated in days or weeks includes Christmas Day, Good Friday or a day under which the Banking and Financial Dealings Act 1971 is a Bank Holiday in England and Wales, that day is excluded. For the avoidance of doubt, nothing in this sub-clause shall prevent or restrict the *Contractor* from Providing the Works or correcting Defects on any day."
Clause 14.3	Delete the word “does” and replace with: “and the acceptance, approvals, comments, instructions, consents or advice or indication of satisfaction given by or from the *Employer* do*”.*
Clause 20.1	At the end insert: “and the Statutory Requirements, and the *Contractor ensures* that the *works* will, when completed, comply with the Works Information and satisfy any requirement identified in the Works Information. As between the *Contractor* and the *Employer*, the *Contractor* does not rely upon any survey, report or other document prepared by or on behalf of the *Employer* and the *Employer* makes no representation or warranty as to the accuracy or completeness of any such survey, report or document.”
Clause 20.4	Insert new clause:
“20.4	The *Contractor* warrants to the *Employer* that insofar as it is responsible for the design of the *works,* it has exercised and exercises in the design of the *works* all reasonable skill and care as may be expected of a properly qualified designer of the appropriate discipline(s) for such design, experienced in carrying out works of a similar scope, nature, timescale and complexity and on a similar site or at a similar location to the *works*”.

Clause 20.5 Insert new clause:

"20.5 The *Contractor* grants and/or agrees to grant to the *Employer* a perpetual, irrevocable, royalty-free, non-exclusive licence (such licence to remain in full force and effect notwithstanding the termination of this contract) to use the intellectual property in all documents and materials in any medium which have been created and/or developed by the *Contractor* in the course of performing its obligations under this contract ("the Materials") and to reproduce the Materials for any purpose whatsoever relating to the *Employer*'s business. Such licence carries the right to grant sub-licences and is transferable to third parties. The *Contractor* agrees on reasonable request at any time and following reasonable prior written notice to give to the *Employer*, or those authorised by the *Employer*, access to the Materials and to provide copies of the Materials in a format which is compatible with the *Employer's* systems."

Clause 21.4 Insert a new clause:

"21.4 On or before the *starting date* the *Contractor* notifies the *Employer* of the name, contact details and details of the legal representatives of each Subcontractor and Indirect Subcontractor, to the extent that such information has not already been provided by the *Contractor* to the *Employer* under this contract."

Clause 21.5 Insert a new clause:

"21.5 The *Contractor* promptly notifies the *Employer* of any change to the information notified under clause 21.4 and provides the name, contact details and details of the legal representatives of any Subcontractor or Indirect Subcontractor who is engaged after the *starting date*."

Clause 21.6 Insert a new clause

"21.6 The Contractor shall ensure that each subcontract with a Subcontractor or between a Subcontractor and an Indirect Subcontractor complies with regulation 113 of Public Contracts Regulations 2015."

Clause 22.1 Insert at the end:

"The *Contractor* co-operates with others as required to Provide the Works. The *Contractor* shares the *site* with others as stated in the Works Information".

Clause 23 Insert a new clause:

"23 **Additional Responsibilities**

23.1 The *Contractor* takes full responsibility for the adequacy stability and safety of all site operations and methods of construction and complies fully with the requirements of the CDM Regulations including without limitation those as:

- a "principal contractor" (where the *Contractor* is the *Principal Contractor*);
- a "contractor" (where the *Contractor* is not the *Principal Contractor*);
- a "principal designer" (where the *Contractor* is the *Principal Designer*); and
- where the *Contractor* is responsible for design, but is not the *Principal Designer*, a "designer".

For the purpose of this clause 23.1, "principal contractor", "principal designer", "contractor" and "designer" are all as defined in the CDM Regulations.

23.2 The *Contractor* acknowledges that the *Employer* is under a duty under Section 17 of the Crime and Disorder Act, 1998 to

- have due regard to the impact of crime, disorder and community safety in the exercise of the *Employer's* duties,
- where appropriate, identify actions to reduce levels of crime and disorder and
- without prejudice to any other obligation imposed on the *Employer*, exercise its functions with due regard to the likely effect of the exercise of those functions on, and the need to do all that it reasonably can to prevent, crime and disorder in its area

and in the performance of the contract, the *Contractor* assists and co-operates, and uses reasonable endeavours to procure that its Subcontractors and Indirect Subcontractors assist and co-operate, with the *Employer* where possible to enable the *Employer* to satisfy its duty.

23.3 If requested by the *Employer*, the *Contractor* enters into a novation agreement within the *period for reply* in the form of the novation agreement in [*Insert reference*] in order to novate the benefit and burden of this contract to another member of the TfL Group.]

23.4 The *Contractor* gives notice to the *Employer* within 10 days where

- there is any change in ownership of the *Contractor* where such

change relates to fifty percent (50%) or more of the issued share capital of the *Contractor*; and

- there is any change in ownership of the Holding Company where such change relates to fifty percent (50%) or more of the issued share capital of the Holding Company; and
- (in the case of an unincorporated *Contractor*) there is any change in the management personnel of the *Contractor*, which alone or taken with any other change in management personnel not previously notified to the *Employer,* equates to a change in the identity of fifty percent (50%) or more of the management personnel of the *Contractor*."

Clause 30.1 Insert at the end of the clause:

"The *Contractor* proceeds regularly and diligently to provide the *works* in accordance with this contract, and uses all reasonable endeavours to prevent and/or reduce any delay in the progress of the *works*."

Clause 41.5 Insert a new clause:

"41.5 For the avoidance of doubt, the *Contractor* continues to be liable for Defects (including Defects listed in the Defects Certificate and latent or inherent Defects) after

- the issue of the Defects Certificate
- the operation of this section and
- the termination of this contract for any reason (including breach by the *Employer*)

in accordance with the English law."

Clause 50.2 Delete the first sentence of clause 50.2 and substitute:

"The *Contractor* submits an application for payment to the *Employer* addressed as specified in the Contract Data in a form approved by the *Employer* not less than fourteen days prior to each *assessment day*. The application states the sum that the *Contractor* considers to be due to him at the payment due date and the basis on which that sum is calculated."

Clause 50.8 Insert a new clause:

"50.8 If the *Contractor's* employment is terminated under clause 90.2A because the *Contractor* has become insolvent within the meaning of Section 113 of the Construction Act, the *Employer* need not pay any sum due to the *Contractor* other than any amount due to him under clause 92

either:

- where the *Contractor* becomes insolvent prior to the prescribed period before the final date for payment, provided that the *Employer* issues a Pay Less Notice notifying the *Employer's* intention not to pay such sum, or

- in any event, if the *Contractor* becomes insolvent after the prescribed period before the final date for payment."

Clause 51.1 Delete Clause 51.1 and Insert: Not used

Insert the following new clauses 51.3-51.7:

51.3 "The date on which payment becomes due is the later of:

- the *assessment day*; and

- fourteen days after the date of receipt by the *Employer* of the *Contractor's* application for payment in accordance with clause 50.2.

The final date for payment is twenty eight days after the date on which payment becomes due.

51.4 The *Employer* certifies a payment not later than 5 days after each payment due date. The *Employer's* certificate is the *Employer's* notice of payment specifying the amount due at the payment due date (the notified sum) and stating the basis on which the amount was calculated. Not later than 5 days after receipt of the *Employer's* certificate the *Contractor* delivers to the *Employer* a VAT invoice in the amount of the certificate with a copy of the certificate attached. The *Contractor* issues a corrected invoice, where required, within five days of receipt of any Pay Less Notice.

51.5 If a certificate is not issued by the *Employer* in accordance with clause 51.4, the sum to be paid by the *Employer* is, subject to clause 51.6, the sum stated as due in the *Contractor's* application in accordance with clause 50.2.

51.6 If either Party intends to pay less than the notified sum, he notifies the other Party not later than one day (the prescribed period) before the final date for payment by stating the amount considered to be due and the basis on which that sum is calculated. A Party does not withhold payment of an amount due under this contract unless he has notified his intention to pay less than the notified sum as required by this contract.

51.7 The *Contractor* issues invoices in the manner and format required by the Contract Data and/or the Works Information."

Clause 60.1 Amend as set out below:

(9) Delete.

(10) Delete.

(15) Insert new clause:

"A breach of contract by the *Employer* which is not one of the other compensation events in this contract."

Clause 60.2 Delete.

Clause 61.1A Insert new Clause 61.1A

"61.1A If the *Contractor* exercises his right under the Construction Act to suspend performance, it is a compensation event whether or not the event has been notified by the *Contractor* within the period specified in clause 61.1."

Clause 80.1 Delete.

Clause 81 Delete clause 81 and replace with the following new clause:

"81 The *Contractor* is responsible for and indemnifies the *Employer*, his employees and agents against all expenses, liabilities, losses, claims, proceedings, compensation and costs whatsoever ("Losses") incurred in respect of

- death or injury to any person,
- loss or damage to property (including property belonging to the *Employer* or for which he is responsible) and
- any other Losses which may arise out of or in the course of or by reason of the *Contractor*'s performance, non-performance or part performance of this contract

to the extent that such Losses are due to any negligence, breach of contract, breach of statutory duty, error, act, omission, or default by the *Contractor*, his employees, Subcontractors, Indirect Subcontractors or agents or due to matters, circumstances or events which are at the *Contractor*'s risk. The *Contractor*'s indemnity under this clause remains in force for the duration of this contract and continues to survive the expiry or termination of the *Contractor's* appointment under this contract and/or the expiry or termination of this contract. The *Contractor* is not

responsible for and does not indemnify the *Employer* for Losses to the extent that such Losses are caused by the negligence of the *Employer*, his employees or agents."

Clause 82.1 Delete "Insurance Table" and substitute with "Insurance Table set out in **Schedule 2**." Delete the "Insurance Table" in its entirety.

Clause 82.2 Insert a new clause:

"82.2 The *Contractor* maintains with reputable insurers carrying on business in the European Union until twelve years after Completion of the *works*, professional indemnity insurance of no less than the amount set out in **Schedule 2** for any one occurrence or series of occurrences arising out of any one event in relation to the *works* provided that such insurance is generally available in the market to design and build contractors at commercially reasonable rates and terms."

Clause 82.3 Insert a new clause:

"82.3 The *Contractor* provides insurance covering loss or damage to motor vehicles and liability to third parties arising out of the use of motor vehicles used in connection with the *works*. Such insurance shall contain an indemnity to principals clause. The minimum amount of cover/indemnity provided by such insurance shall be the replacement cost in respect of loss or damage and the amount required by the applicable law in respect of third party liability".

Clause 82.4 Insert a new clause:

"82.4 The *Employer* provides the insurances set out in **Schedule 2** to the extent such insurance is available at reasonable commercial rates. Nothing in such insurance changes the allocation of risks to the *Contractor* and the *Employer*. In relation to all claims made under insurances obtained by the *Employer* the following provisions apply

(1) Unless the *Employer* otherwise decides, the *Contractor* authorises the *Employer* to submit all claims and the *Employer* submits and administers all claims.

(2) Without prejudice to any other right, remedy or power of the *Employer*, the *Contractor* must provide such information, documents and records in connection with such claims as the *Employer* requires forthwith on demand, regardless of whether the *Employer* is submitting or administering the claim.

(3) Without prejudice to any other right, remedy or power of the *Employer*, the *Contractor* authorises insurers to pay monies

under the insurances to the *Employer*.

(4) The *Employer*, after receipt of monies paid under the insurances, allocates and pays to each party insured that portion of the monies received for the purpose of rectifying the loss that each party insured has suffered. The *Contractor* bears the cost of all deductibles.

(5) [If the premiums payable by the *Employer* increase due to or as a result of claims caused by the *Contractor* arising from events within the control of the *Contractor* (including claims attributable to its direct or indirect contractors or sub-contractors) then the *Contractor* shall pay to the *Employer* the increase in premium]."

Clause 82.5 Insert a new clause:

"82.5 The *Contractor* effects any insurances which it is required to provide under this contract promptly with a reputable insurer or insurers accepted by the *Employer* and authorised to underwrite such risks in the United Kingdom.

The *Contractor* promptly notifies the *Employer* in writing of any claim, event, fact, matter or circumstance which may give rise to the right to make any claim on any insurance.

The *Contractor* does not compromise, surrender, release, settle or waive any claim or potential claim which the *Contractor* has or may have the right to bring, or has brought, under any insurance without the prior consent of the *Employer*.

The *Contractor* does not by any act or omission exclude, limit, reduce, vitiate, prejudice, lose or forgo any of the *Contractor's* and/or the *Employer's* rights to make or proceed with a claim against any insurer.

If the *Contractor* is informed that any insurer providing insurance required by this contract intends to cancel or change any term of any insurance required by this contract, the *Contractor* promptly notifies the *Employer* of such intention.

The *Contractor* promptly notifies the *Employer* in writing of any anticipated or actual event or circumstance which may lead or has led to any insurance required by this contract lapsing or being terminated or the cover under it being reduced or modified.

To the extent that the *Contractor* is entitled to bring any claim or claims under any insurance relating to this contract then the *Contractor* deals with all such claims promptly and diligently and (subject to the requirements of this contract) in accordance with all insurer requirements

and recommendations.

The *Contractor* acknowledges that the *Employer* has the right to control and to supervise all dealings with the press, television, reporters, and any other media in relation to any incident, event, claim or action arising in connection with this contract."

Clause 90.2A — Insert a new clause:

"90.2A — Either Party may terminate if the other Party has become insolvent as defined in Section 113 of the Act (**Reason 1A**)."

Clause 90.6 — Insert a new clause:

"90.6 — The *Employer* may terminate [if the Contractor is in breach of clause Z27 (Equality and Diversity) or] if any of the events referred to at clause 23.4 occur (regardless of whether or not the notice required by clause 23.4 is given by the *Contractor*) (Reason 9)."

Clause 92.2 — Delete the words "Reasons 1, 2, 3 or 4" and replace with "Reasons 1, 1A, 2, 3, 4 or 9".

Clause 92.3 — Insert ", 1A" after "1" in line one.

Clause 93.3(1) — Delete clause 93.3(1) and substitute:

"A Party may issue to the other Party a notice of his intention to refer a dispute to adjudication at any time. He refers the dispute to the *Adjudicator* within seven days of the notice."

Clause 93.3(1A) — Insert a new clause:

"93.3(1A) — "The *Adjudicator* may on his own initiative or on the application of a Party correct his decision so as to remove a clerical or typographical error arising by accident or omission. Any correction of a decision must be made within five days of the delivery of the decision to the Parties. As soon as possible after correcting a decision in accordance with this paragraph, the *Adjudicator* must deliver a copy of the corrected decision to each of the Parties to the contract. Any correction of a decision forms part of the decision. If the *Adjudicator's* decision changes an amount notified as due, payment of the sum decided by the *Adjudicator* is due not later than seven days from the date of the decision or the final date for payment of the notified amount whichever is the later."

Clause 93.3(1B) — Insert new clause:

"The *Adjudicator* may in his decision allocate his fees and expenses between the Parties."

Part 2 – Additional Conditions of Contract

Z1A Not Used

Z2 Not Used

Z3 Not Used

Z4 Data Protection, Freedom of Information and Data Transparency

Z4.1 The *Contractor* complies with all of its obligations under the Data Protection Act 1998 and if processing personal data (as such terms are defined in section 1(1) of that Act) on behalf of the *Employer* ("TfL Personal Data"), the *Contractor* only carries out such processing for the purpose of Providing the Works and in accordance with instructions from the *Employer*.

Z4.2 When the *Contractor* receives a written request from the *Employer* for information about, or a copy of, TfL Personal Data, the *Contractor* supplies such information or data to the *Employer* within such time and in such form as specified in the request (such time to be reasonable) or if no period of time is specified in the request, then within 14 days from the date of the request.

Z4.3 The *Contractor* acknowledges that the *Employer* is subject to the Freedom of Information Act 2000 and all subordinate legislation made under it, together with the Environmental Information Regulations 2004 (and any provisions that replace these) and any guidance issued by the Information Commissioner, the Ministry of Justice, or the Department for Environment Food and Rural Affairs (including in each case its successors or assigns) in relation to such legislation and agrees to assist and co-operate with the *Employer* to enable the *Employer* to comply with its obligations under such legislation including providing to the Employer such information as the *Employer* may reasonably request concerning this contract within five (5) days of a request from the *Employer*. The *Contractor* further acknowledges that the *Employer* may be obliged under such legislation to disclose information without consulting or obtaining consent from the *Contractor*. Without prejudice to the generality of the foregoing the *Contractor* shall transfer to the Employer any request for information under the Act that it receives as soon as reasonably practicable. The *Contractor* shall not itself respond to any person making such a request save to acknowledge receipt, unless expressly authorised to do so by the *Employer*. This clause shall survive the expiry or termination of this contract.

Z4.4 The *Contractor* acknowledges that the *Employer* is subject to the Transparency Commitment. Notwithstanding clause Z4.3 and clause Z6, the *Contractor* gives its consent for the *Employer* to publish the *Contract* Information to the general public.

Z4.5 The *Employer* may in its absolute discretion redact all or part of the Contract Information prior to its publication. In doing so and in its absolute discretion the *Employer* may take account of the exemptions/exceptions that would be available in relation to information requested under the Freedom of Information Act 2000 and all subordinate legislation made under it, the Environmental Information Regulations 2004 (and any provisions that replace these) and any guidance issued by the Information Commissioner, the Ministry of Justice, or the Department for Environment Food and Rural Affairs (including in each case its successors or assigns) in relation to such legislation. The *Employer* may in its absolute discretion consult with the Contractor regarding any redactions to the Contract Information to be published pursuant to clause Z4.4. The *Employer* makes the final decision regarding publication and/or redaction of the Contract Information.

Z5 Not Used

Z6 Confidentiality and Publicity

Z6.1 Subject to clause 24, each party keeps confidential the terms of this contract and any and all confidential information that it acquires in relation to the other party.

Z6.2 Neither party uses the other party's confidential information for any purpose other than to perform its obligations under this contract. Each party ensures that its officers and employees comply with the provisions of this clause.

Z6.3 The obligations on a party set out in clause Z6.1 do not apply to any confidential information which:

Z6.3(1) either of the parties can demonstrate is in the public domain (other than as a result of a breach of this clause Z6); or

Z6.3(2) a party is required to disclose by order of a court of competent jurisdiction but then only to the extent of such required disclosure.

Z6.4 The provisions of this clause Z6 survive any termination of this contract for a period of 5 years from termination.

Z7 Not Used

Z8 Records, Audit and Inspection

Z8.1 The *Contractor* maintains, and procures that its Subcontractors and Indirect Subcontractors maintain, a complete and correct set of records pertaining to all activities relating to the works and all transactions entered into by the *Contractor* for the purposes of this contract. The *Contractor* retains and procures that its Subcontractors and Indirect Subcontractors retain all such records for a period of no less than 6 years (or such other period as may be required by law) following termination or expiry of this contract.

Z8.2 The *Employer* and any person nominated by the *Employer* has the right to audit any and all such records (including without limitation those of any Subcontractors and Indirect Subcontractors) at any time during the performance of this contract and during the 6 year period (or such other period as may be required by law) following termination or expiry of this contract.

Z8.3 The *Contractor* allows the *Employer* and/or the *Employer's* authorised representatives, at any reasonable time, to undertake any inspection, audit or check of any aspect of the *Contractor's* performance of the works, including, but not limited to, inspection of the *Contractor's* technical and organisational security measures for the protection of personal data. The *Employer* gives the *Contractor* what the *Employer* considers to be reasonable notice, in writing or verbally, of its intention to undertake an inspection, audit or check under this clause.

Z8.4 The *Contractor* provides the *Employer* with all reasonable co-operation in relation to any inspection, audit or check including making available documents and staff for interview.

Z9 Corrupt Gifts, Fraud and the Payment of Commission

The *Contractor* does not, and ensures that its employees, agents and sub-contractors do not, pay any commission, fees or grant any rebates to any employee, officer or agent of the *Employer* or any member of the TfL Group nor favour any employee, officer or agent of the *Employer* or any member of the TfL Group with gifts or entertainment of significant cost or value nor enter into any business arrangement with employees, officers or agents of the *Employer* or any member of the TfL Group other than as a representative of the *Employer*, without the *Employer's* prior written approval.

Z10 Quality Management System

The *Contractor* operates a quality management system complying with BS EN ISO 9002 for his performance of the contract. The management, organisation, responsibilities, procedures, processes, resources and programme for the quality management system from design (where applicable) to procurement, construction, completion, testing and commissioning of the works until the defects date is contained in a quality plan which is submitted to the *Employer* in accordance with the Works Information. Any Subcontractor appointed by the *Contractor* and any Indirect Subcontractor operates a quality system enabling him to comply with the *Contractor's* quality management system.

Z11 Not Used

Z12 Nuisance

Z12.1 The *Contractor* at all times prevents any public or private nuisance (including, without limitation, any such nuisance caused by noxious fumes, noisy working operations or the deposit of any material or

debris on the public highway) or other interference with the rights of any adjoining or neighbouring landowner, tenant or occupier or any statutory undertaker arising out of the carrying out of the works or of any obligation under clause 43 and assists the *Employer* in defending any action or proceedings which may be instituted in relation to the same. The *Contractor* is responsible for and indemnifies the *Employer* from and against any and all expenses, liabilities, losses, claims and proceedings whatsoever resulting from any such nuisance or interference, except only where such nuisance or interference is the consequence of an instruction of the *Employer*.

Z12.2 Without prejudice to the *Contractor's* obligations under clause Z14.1, the *Contractor* ensures that there is no trespass on or over any adjoining or neighbouring property arising out of the works or of any obligation under clause 41. If the carrying out of the works or of any obligation under clause 41 is likely to necessitate any interference (including, without limitation, the oversailing of tower crane jibs) with the rights of adjoining or neighbouring owners or occupiers, then the *Contractor*, at no cost to the *Employer*, obtains the prior written agreement of such owners and/or occupiers to the work, and such agreement will be subject to the approval of the *Employer* before execution. The *Contractor* complies in every respect with any conditions in any such agreement.

Z13 Not Used

Z14 Goods vehicles operator's licence

Each goods vehicle used by the *Contractor* or his Subcontractors and Indirect Subcontractors in connection with this contract displays the vehicle licence disc relevant to the goods operator's licence under which the vehicle is operated or, in the absence of an operator's licence disc, the vehicle carries documentation giving the operator's licence number, name and address.

Z15 Not Used

Z16 London Living Wage

Z16.1 For the purposes of this clause the "London Living Wage" is the basic hourly wage as may be updated from time to time by the GLA Economics Unit or any relevant replacement organisation and as notified to the *Contractor*.

Without prejudice to any other provision of this contract the *Contractor*:

Z16.1.1 ensures that none of its employees, and uses reasonable endeavours to procure that none of the employees of its *Subcontractors* and Indirect *Subcontractors* engaged in the provision of the works is paid an hourly wage (or equivalent hourly wage) less than the London Living Wage;

Z16.1.2 ensures that none of its employees, and uses reasonable endeavours to procure that none of the employees of its Subcontractors and Indirect *Subcontractors*, engaged in the provision of the works is paid less than the amount to which they are entitled in their respective contracts of employment; and

Z16.1.3 disseminates on behalf of the *Employer* to those of its employees who are engaged in the provisions of the works and were paid the London Living Wage and to its Subcontractors and Indirect Subcontractors such perception questionnaires as the *Employer* may reasonably require from time to time and promptly collates and returns to the *Employer* responses to such questionnaires.

Z16.2 Any breach by the *Contractor* of the provisions of clause Z26.1 is treated as a substantial failure by the *Contractor* to comply with an obligation under this contract for the purposes of clause 90.3.

Z17 Work Related Road Risk

Z.17.1 Definitions

Z.17.1.1 Bronze Accreditation means the minimum level of accreditation within the FORS Standard, the requirements of which are more particularly described on the FORS website;

Z.17.1.2 Car-derived Vans means a vehicle based on a car, but with an interior that has been altered for the purpose of carrying larger amounts of goods and/or equipment;

Z.17.1.3 Collision Report means a report detailing all the collisions during the previous 12 months involving injuries to persons or fatalities;

Z.17.1.4 Delivery and Servicing Vehicle means a Lorry, a Van or a Car-derived Van;

Z.17.1.5 Driver means any employee of the *Contractor* and his Subcontractors (including an agency driver), who operates Delivery and Service Vehicles on behalf of the *Contractor* while Providing the Services;

Z.17.1.6 DVLA means the Driver and Vehicle Licensing Agency;

Z.17.1.7 FORS means the Fleet Operator Recognition Scheme, which is an accredited membership scheme for businesses operating van and lorry fleets. It offers impartial, independent advice and guidance to motivate companies to improve their compliance with relevant laws and their environmental, social and economic performance;

Z.17.1.8 FORS Standard means the standard setting out the accreditation requirements for the Fleet Operator Recognition Scheme, a copy of which can be found on the FORS website;

Z.17.1.9 Gold Accreditation means the highest level of accreditation within the FORS Standard, the requirements of which are more particularly described on the FORS website;

Z.17.1.10 Lorry means a vehicle with an MAM exceeding 3,500 kilograms;

Z.17.1.11 Losses means all costs (including legal costs and costs of enforcement), expenses, liabilities (including any tax liability), injuries, direct, indirect or consequential loss (all three of which terms include pure economic loss, loss of profits, loss of business, depletion of goodwill and like loss), damages, claims, demands, proceedings and judgments;

Z.17.1.12 MAM means the maximum authorised mass of a vehicle or trailer including the maximum load that can be carried safely while used on the road;

Z.17.1.13 Side Guards means guards that are fitted between the front and rear axles of a Lorry and that comply with EC Directive 89/297/EEC and the Road Vehicles (Construction and Use) Regulations 1986;

Z.17.1.14 Silver Accreditation means the intermediate level of accreditation within the FORS Standard, the requirements of which are more particularly described on the FORS website; and

Z.17.1.15 Van means a vehicle with a MAM not exceeding 3,500 kilograms.

Z.17.2 Fleet Operator Recognition Scheme Membership

Z.17.2.1 Where the *Contractor* operates Delivery and Servicing Vehicles to Provide the Works, it shall within 90 days of the starting date;

- (unless already registered) register for FORS or a scheme, which in the reasonable opinion of the *Employer* is an acceptable substitute to FORS (the “Alternative Scheme”);

- (unless already accredited) have attained the standard of Bronze Accreditation (or higher) or the equivalent within the Alternative Scheme and shall maintain the standard of Bronze Accreditation (or equivalent standard within the Alternative Scheme) by way of an annual independent assessment in accordance with the FORS Standard or take such steps as may be required to maintain the equivalent standard within the Alternative Scheme. Alternatively, where the *Contractor* has attained

Silver or Gold Accreditation, the maintenance requirements shall be undertaken in accordance with the periods set out in the FORS Standard.

Z.17.3 Safety Equipment on Vehicles

Z.17.3.1 The *Contractor* shall ensure that every Lorry, which he uses to provide the Works shall:

- has Side Guards fitted, unless it can be demonstrated, to the reasonable satisfaction of the *Employer*, that the Lorry will not perform the function for which it was built, if Side Guards are fitted;

- have front, side and rear blind spots completely eliminated or minimised as far as practical and possible, through the use of fully operational direct and indirect vision aids and driver audible alerts;

- have equipment fitted with an audible means of warning other road users of the Lorry's left manoeuvre; and

- have prominent signage on the Lorry to warn cyclists and other road users of the dangers of passing the Lorry on the inside and of getting too close to the Lorry.

Z.17.4 Driver Licence Checks

Z.17.4.1 Where the *Contractor* operates Delivery and Servicing Vehicles to Provide the Services the *Contractor* shall ensure that:

- it has a system in place to ensure all its drivers hold a valid driving licence for the category of vehicle that they are tasked to drive, along with recording any endorsements or restrictions on the driver's licence; and

- each of its drivers, who work on this contract, has a driving licence check with the DVLA or such equivalent before that driver commences to work on this contract and that the driving licence check with the DVLA or equivalent authority is repeated in accordance with either the following risk scale (in the case of the DVLA issued licences only), or the *Contractor's* risk scale, provided that the *Contractor's* risk scale has been approved in writing by the *Employer* within the last 12 months:

  0 – 3 points on the driving licence – annual checks;

  4 – 8 points on the driving licence – six monthly checks;

  9 – 11 points on the driving licence – quarterly checks;

  12 or more points on the driving licence – monthly checks.

Z.17.5 Driver Training

Z.17.5.1 Where the *Contractor* operates Delivery and Servicing Vehicles to Provide the Services the *Contractor* shall ensure that each of its drivers undergo approved progressive training (to include a mix of theoretical, e-learning, practical and on the job training) and continued professional development to include training covering the safety of vulnerable road users and on-cycle hazard awareness, throughout the duration of this contract.

Z.17.6 Collision Investigations, Collision Reports and FORS Reports

Z.17.6.1 Where the *Contractor* operates Delivery and Servicing Vehicles to Provide the Services, the *Contractor* shall:

- ensure that it has a system in place to capture, investigate and analyse road traffic collisions that results in fatalities, injury or damage to vehicles, persons or property and for generating Collision Reports; and

- within 15 days of the starting date, provide to the *Employer* a Collision Report. The *Contractor* shall provide to the *Employer* an updated Collision Report within 7 days of a written request from the *Employer*.

Z.17.7 Self Certification of Compliance

Z.17.7.1 Where the *Contractor* operates Delivery and Servicing Vehicles to provide the Works, within 90 days of the starting date, the *Contractor* shall make a written report to the *Employer* detailing its compliance with paragraphs Z.4.3, Z.4.4 and Z.4.5 above (the "WRRR Self-certification Report"). The *Contractor* shall provide updates of the WRRR Self-certification Report to the *Employer* on each three month anniversary of its submission of the initial WRRR Self-certification Report.

Z.17.8 Obligations of the Contractor Regarding Subcontractors

Z.17.8.1 The *Contractor* shall ensure that those of its Subcontractors who use Delivery and Servicing Vehicles to provide the Works shall:

- comply with paragraph Z.4.2; and

- where its Subcontractors use the following vehicles to provide the Works shall comply with the corresponding provisions of this contract:

- For Lorries – paragraphs Z.4.3, Z.4.4, Z.4.5 and Z.4.6; and

- For Vans – paragraphs Z.4.4, Z.4.5, and Z.4.6,

as if those Subcontractors were a party to this contract.

Z.17.9 Failure to Comply with Work Related Road Risk Requirements

Z.17.9.1 Without limiting the effect of any other clause of this contract relating to termination, if the *Contractor* fails to comply with paragraphs Z.20.2, Z.20.3, Z.20.4, Z.20.5, Z.20.6, Z.20.7 and Z.20.8:

- the *Contractor* has committed a material breach of this contract; and

- the Employer's Agent may refuse the Contractor, its employees, agents and Delivery and Servicing Vehicles entry onto the Site or any property that is owned, occupied or managed by the Employer for any purpose (including but not limited to deliveries). Any Losses arising from such refusal of entry shall not constitute a compensation event.

INSURANCE TABLE

INSURANCE AGAINST	***WHICH PARTY PROVIDES***	***MINIMUM AMOUNT OF COVER OR MINIMUM LEVEL OF INDEMNITY***	***PERIOD/ DURATION***
All risks of loss or damage (not excluded by the terms and conditions of the policy) to the permanent *works* and materials or equipment for incorporation therein, the temporary works (i.e. other works erected or constructed for the purpose of making possible the erection or installation of the permanent *works*) constructional plant and equipment temporary buildings and other property owned by or supplied by the *Employer*.	*Employer*	The total sum of **£5,000,000**	For the duration of the contract
All sums for which the insured shall become legally liable to pay as damages in respect of death of or injury or illness or disease to third parties and/or loss of or damage to third party property obstruction loss of amenities trespass nuisance or any like cause happening during the period of insurance and arising out of or in connection with this contract.	*Employer*	**£10,000,000** any one occurrence and unlimited in the period of insurance	For the duration of the contract
Liability for death of or bodily injury or illness sustained by employees of the *Contractor* arising out of or in the course of their employment in connection with this contract.	*Contractor*	The greater of the amount required by the applicable law and the amount stated in the Contract Data for any one event. **£5,000,000**	For the duration of the contract
Loss or damage to constructional plant, tools, equipment, temporary buildings (including contents therein) belonging to or the responsibility of the *Contractor.*	*Contractor*	The replacement cost	
Professional Indemnity Insurance Negligence omission or default in respect of design of the *works* for which the *Contractor* is responsible.	*Contractor*	**£3,000,000** each and every claim and in the aggregate per annum	12 years

OWNER CONTROLLED INSURANCE COVER

TYPE: CONSTRUCTION ALL RISKS

ORIGINAL INSURED:

All Businesses

1. Transport for London and/or London Underground Limited (LUL) and/or any company associated by shareholding and/or subsidiary company

   as the Principal

2. Architects, third party designers, engineers consultants and suppliers appointed to carry out work on or in connection with the Business for their activities on the Project Site and to the extent required by contract with the Principal

   As the Consultants

Businesses A and B

3. LUL NOMINEE SSL LIMITED a company registered in England and Wales under number 0624508 whose registered office is at Windsor House, 50 Victoria Street, London SW1H OTL

   LUL NOMINEE BCV LIMITED a company registered in England and Wales under number 06221959 whose registered office is at Windsor House, 50 Victoria Street, London SW1H OTL

   as The *Employer*

4. The Shareholders from time to time of the *Employer* in their capacity as shareholders of such companies

   as The Shareholders

5. Any person who is providing or who acts as agent trustee or account bank in respect of the provision of financing hedging or funding (including without limitation provision of a financial guarantee) to the *Employer* (or to an Affiliate of the *Employer* who is then providing financing hedging or funding to the *Employer*)

   as The Finance Parties

6.(i) Trans4m Limited Bombardier Transportation UK Limited Balfour Beatty Rail Projects Limited and any company associated by shareholding of the above

(ii) any other *Contractors* appointed by the *Employer* or by London Underground Limited

(iii) all sub-contractors of any tier engaged in carrying out works on the Project Site

as The *Contractors*

7. Other infrastructure Companies employed by London Underground Limited

8. The assigns employees, directors, officers, employees, servants and agents of the Strategic Rail Authority (SRA)

9. Mr A R Bloom, Mrs M E Millis, Mr R Bailey and Mr S H Harris of Ernst & Young LLP, 1 More London Place, London, SE 1 2AF

as Joint PPP Administrators

each for their respective rights and interests

Business C

10.(i) any Main *Contractor* appointed by The Principal

(ii) any other *Contractors* appointed by The Principal

(iii) all sub-contractors of any tier engaged in carrying out works on the Project Site

to the extent required by contract or agreement with The Principal

as The *Contractors*

Business D

11. Infraco

Infraco JNP Limited and/or Tube Lines Limited and/or their respective Shareholders and/or subsidiary and/or associated companies and/or their respective parent companies (and their subsidiary and/or associated companies)

Shareholders shall mean;

(a) Tube Line (Holdings) Limited ("Holding") in its capacity as a shareholder of Infraco;

(b) JNP Ventures 2 Limited in its capacity as a shareholder of Holdings;

(c) UIC Transport (JNP) Limited in its capacity as a shareholder of Holdings; and

(d) Related entities of JNP Ventures 2 Limited and/or UIC Transport (JNP) limited in their respective capacities as shareholders of any tier

12. The Seconding Parties

(a) Bechtel Limited ("Bechtel")

(b) Halcrow Group Limited ("Halcrow")

(c) Semaly S A ("Semaly")

(d) Amey LUL 2 Limited ("Amey2)

(e) those personnel from time to time seconded to Infraco under the secondment contract between Bechtel and Infraco or the secondment contract between Amey and Infraco;

(f) Amey LUL Limited

(g) Related Entities (see below) of Bechtel, Halcrow, Semaly, Amey, Amey LUL Limited and

(h) the directors, officers, employees and agents of Bechtel, Halcrow, Semaly, Amey, Amey LUL Limited and/or any of their respective Related Entities;

but in each case only in respect of any claim or liability arising out of or in connection with the secondment of personnel to Infraco, or the activities of such seconded personnel, in connection with the PPP.

13 The Borrower Secured Creditors

The Borrower Secured Creditors and their permitted successors, assigns, agents, directors, officers, employees and servants

14 The Building *Contractors*

Contractors employed by the Principal and/or their respective shareholders and/or subsidiary and/or associated companies and/or their respective parent companies (and their subsidiary and/or associated companies)

15 (i) subcontractors of any tier to the Principal, Insured 11 and Insured 14) and all others engaged in the carrying out of the Project

(ii) suppliers (but in respect of site activities only)

16 The Issuer Secured Creditors

The Issuer Secured Creditors and their permitted successors, assigns, agents, directors, officers, employees and servants

17 Olympic Delivery Authority

for their respective rights and interests.

- THE All works awarded by the *Employer* to the *Contractors* for work of construction, demolition, refurbishment, enhancement, modernisation,

PROJECT	replacement, improvement, maintenance and repair, testing and commissioning including offsite testing comprising but not limited to London Underground contract works, Docklands Light Railway works, London Overground works, Surface Transport works and all other alterations and new works to or related to Transport for London assets and associated and ancillary works and activity including any building development. 1. Any other construction or other works as described above undertaken by or on behalf of the *Employer*.
PERIOD:	From 01 April 2014 to 30 June 2017 both days inclusive (Local Standard Time at the Address of the Insured) A defects liability period not exceeding 12 months shall apply in respect of any item of works. Where any part of the permanent works is replaced or renewed during any defects liability period, the defects liability period which would have originally attached shall apply to such replaced or renewed part.
INTEREST:	The Insurers will by payment of the cost of reinstatement replacement or repair indemnify the Insured against physical loss destruction or damage to the Insured Property during the Period from any cause whatsoever whilst within the Situation including whilst in transit (other than by sea or air) or in storage.
INSURED PROPERTY:	Item A the permanent and/or temporary works, materials and supplies (including free issue materials) and any other property for which the Insured is responsible, intended for use in connection with or for incorporation in the Project including temporary buildings and constructional plant and equipment for which Insured (1) (3) and/or (11) is responsible Item B Employees tools and effects in respect of the employees of Insured (1) (3) and/or (11) Item C Any materials, supplies and property the responsibility of Distribution Services a) division of Insured (11) during the course of transit or temporary storage during transit Item D

Assets infrastructure and/or other property owned by Insured 1 or leased hired rented by Insured 1 is responsible or has agreed or is required to insure at the Project Site and not forming part of the works

LIMIT OF INDEMNITY

Item A

GBP 70,000,000 any one Occurrence

Item B

GBP 5,000 any one Employee any one occurrence

Item C

GBP 250,000 any one carriage

Item D

GBP 500,000 any one Occurrence

EXCESSES

Item (A) and (D)

(1) GBP 250,000 in respect of the Civils Works element of the Contract which is in excess of GBP 5,000,000 each Occurrence or damage caused to the Civil Works by defects in design plan specification materials or workmanship (DE5). This Deductible shall only apply in respect of reinstatement making good and the like of that part which is itself defective

(2) GBP 150,000 each Occurrence in respect of loss or damage caused to the works by defects in design plan specification materials or workmanship (DE5). This Excess shall only apply in respect of reinstatement making good and the like of that part which is itself defective

(3) GBP 25,000 each Occurrence in respect of loss or damage caused by storm tempest water damage subsidence or collapse

(4) GBP 25,000 each Occurrence in respect of loss or damage caused by defect in design plan specification materials or workmanship (DE3)

(5) GBP25,000 Damage arising to Civil Works each Occurrence

(6) GBP 5,000 each Occurrence all other losses

(7) GBP 10,000 each Occurrence in respect of loss or damage to temporary buildings and or constructional plant and equipment

Item (B) GBP 100 Occurrence each Employee

Item (C) GBP 250 each Occurrence

Other than in respect of the Excess for Item (B) and Item (C) in the event of a loss whereby more than one Excess applies, the aggregate amount to be deducted shall not exceed the highest applicable Excess.

SITUATION: Anywhere within Great Britain, Northern Ireland, the Channel Islands and the Isle of Man and all other countries comprising Europe including, inter alia, the contract sites and land and other places on, under, in or through which the Project Site is carried out, any other land and places used for the purposes of the Project Site and during the course of any transit (other than transit by air or sea except such transits where the start point, destination and any intermediate stops/ ports are all within Great Britain, Northern Ireland, the Channel Islands and the Isle of Man and all other countries comprising Europe), place of storage and accommodation including all loading and unloading incidental thereto

CONDITIONS: All as per Policy wording including but not limited to:-

a) Professional Fees

b) Automatic Increase – 15%

c) Marine 50/50

d) Debris Removal

e) Expediting Expenses

f) Other Interests

g) Re-writing or Re-drawing plans / documents

h) Insured Supplied Items

i) Loss Minimisation Expenditure

j) Additional Costs of Working

k) Increased Costs of Constructing Incomplete or Unbuilt Works

l) Civil Works

m) Multiple Insureds

n) Professional Consultants

o) Munitions of War

p) 72 Hours Clause

q) Property Hired In

r) Property Hired Out

s) Buildings Due for Demolition

t) Automatic Reinstatement

u) Computer Data

v) Payments on Account

TYPE:	Public Liability
PERIOD:	From 01-Jul-2016 to 30-Jun-2017 both days inclusive
INTEREST:	To indemnify the Insured against all sums which the Insured shall become legally liable to pay as damages or compensation for and arising out of Injury or Damage occurring during the Period of Insurance and arising in connection with the Business. Including liability for and arising out of Financial Loss or Libel & Slander claims which are first made against the Insured during the Period
LIMITS OF INDEMNITY:	£250,000,000 any one Event and in the aggregate for Products Liability & Pollution - costs are in addition The insurer will also indemnify the Insured against the following costs and expenses. In respect of any claim brought against the Insured in the United States of America, Puerto Rico or Canada or territories under the jurisdiction of those countries the costs and expenses shall be included within the Limits of Indemnity. 1. claimants' costs and expenses awarded against the Insured 2. costs of legal representation incurred with the Insurer's written consent for representation at i. any coroner's inquest or fatal accidents inquiry in Scotland in respect of any death ii. public inquiry in respect of any death. Limited to £2,000,000 during the Period of Insurance iii. proceedings in any court (other than the defence of criminal proceedings) in respect of any act or omission causing or relating to any occurrence which may be the subject of indemnity under the policy 3. Other costs and expenses incurred with the Insurer's consent in relation to any matter which may be the subject of indemnity under the policy 4. (Manslaughter) Costs and expenses incurred with the insurer's consent for defence of other criminal proceedings
TERRITORIAL LIMITS:	Anywhere in the world excluding business domiciled in the United States of America its territories and possessions Puerto Rico and

Canada

JURISDICTION: Anywhere in the world

SELF INSURANCE: Deductible £10,000 each and every occurrence

PUBLIC AND PRODUCTS LIABILITY EXTENSIONS:

- Claimants costs and Expenses
- Defence costs and Expenses
- Additional Legal Expenses
- Data Protection Act 1998
- Motor Contingent Liability
- Compensation for Court Attendance
- Any director of the Insured - £500
- Any other Employee - £200
- Overseas personal liability
- Libel and slander – claims made basis
- Publicity & Advertising covering any Infringement of Intellectual Property Rights, piracy or unfair competition or idea misappropriation under an implied contract, any invasion of right of privacy including internet and web-site publications arising out of the Insured's advertising activities.
- Automatic Waiver of Subrogation Rights to the extent required by contract or agreement
- Professional Healthcare Services
- Excess Motor Liability (Overseas)
- Excess Meter Liability

SECTION TWO

WORKS INFORMATION

Contents

Appendices

Annex 1 Stage 2 Feasibility Project High Level Programme and Milestones

Annex 2 Project Team & Employer's organisation chart

Annex 3 TfL Pathway PPMP

Annex 4 Outline Testing & Specifications

Annex 5 Communications Stakeholder Engagement Strategy

Annex 6 Health & Safety Requirements

Annex 7 Feasibility Options Report Content

Annex 8 Standards, specifications and guidance references

Annex 9 TfL Periodic Calendar

Annex 10 Schedule 17

Annex 11 Tunnels Condition Survey Inventory & Condition Assessment Guidance June

TfL Employer's Scope

Section	Scope (*Employer*'s)
WI 100	Description of the works
WI 200	General constraints on how the *Contractor* Provides the Works
WI 300	Not used
WI 400	Completion
WI 500	Programme
WI 600	Quality assurance
WI 700	Tests and inspections
WI 800	Management of the works
WI 900	Working with the *Employer* and others
WI 1000	Works and other things to be provided
WI 1100	Health and safety
WI 1200	Subcontracting
WI 1300	Not used
WI 1400	Acceptance or procurement procedure
WI 1500	Accounts and records
WI 1600	Not used
WI 1700	Not used
WI 1800	Not used
WI 1900	Not used
WI 2000	*Employer*'s work specifications
WI 2100	Not used

0.0 Definitions

3D	Three Dimensional
ALARP	As Low As Reasonably Practicable
ARM	Active Risk Manager
BEP	BIM Execution Plan
BIM	Building Information Modelling
BoQ	Bill of Quantities
BWT SB	Blackwall Tunnel Southbound
CDE	Common Data Environment
CDM	Construction (Design and Management) Regulations
ECI	Early Contractor Involvement
EDMS	Electronic Data Management System
EFC	Estimated Final Cost
EIR	*Employer*'s Information Requirements
HORUS	A supervisory control and data acquisition system (SCADA)
ITT	Invitation to Tender
IMPDT	Information and Model Production and Delivery Table
LoHAC	London Highways Alliance Contract
M&E	Mechanical and Electrical
NDT	Non-destructive Testing
NRSWA	New Roads and Streets Works Act
PCI	Pre-construction Information
PPMP PWDD	Pathway Product Management Plan Percentage of Work Done to Date
QRA	Quantitative Risk Analysis

RAMS	Risk Assessment Method Statement
RHT	Rotherhithe Tunnel
SCADA	Supervisory Control and Data Acquisition
SDR	Scope / Design Review
STIP2	Structures and Tunnels Investment Programme 2
TAA	Technical Approval Authority
TDSCG	Tunnel Design Safety and Consultation Group
TfL	Transport for London
TM	Traffic Management
TMA	Traffic Management Act
TLRN	Transport for London Road Network
VfM	Value for Money
WLC	Whole Life Cost

1.0 WI 100 – Description of the Works

1.1 General Description of the Works

Structures and Tunnels Investment Portfolio 2 (STIP2)

TfL is doubling investment in its roads infrastructure over the next 10 years. The Structures and Tunnels Investment Programme 2 (STIP 2) shall deliver part of this investment to bring the Transport for London Road Network (TLRN) structures and tunnels up to a state of good repair and address risks to safety, functionality and environment.

STIP2 comprises the following six projects:

1. Lambeth Bridge Refurbishment
2. Vauxhall Bridge Refurbishment
3. Rotherhithe Tunnel Refurbishment
4. Blackwall Tunnel Southbound Refurbishment
5. Westway Structures Refurbishment
6. Brent Cross Structures Refurbishment

This document pertains to the refurbishment of two tunnels: Blackwall Tunnel Southbound (BWT-SB) and Rotherhithe Tunnel (RHT).

Blackwall Tunnel Southbound is a two lane road tunnel on the A102 which spans 1174m between portals and connects the Blackwall district of Poplar in the Borough of Tower Hamlets north of the River Thames to the Peninsular district in the Borough of Greenwich south of the River Thames.

Rotherhithe Tunnel is a two-way road tunnel on the A101 which spans 1483m between portals and connects the Ratcliff district of Limehouse in the Borough of Tower Hamlets north of the River Thames to Rotherhithe in the Borough of Southwark south of the River Thames.

Information relating to the existing M&E assets is provided in BridgeStation, including a schedule of the available as-built information.

1.2 Pathway Stages

The *Employer* follows an integrated project management delivery methodology, Pathway. Pathway comprises of seven stages as set out below.

- Stage 1 – Outcome Definition
- Stage 2 – Feasibility
- Stage 3 – Concept Design
- Stage 4 – Detailed Design
- Stage 5 – Delivery
- Stage 6 – Project Close
- Stage 7 – Benefits Realisation

This commission relates to Stage 2 Feasibility (including survey, investigation and testing) only. New commissions may be let for future stages.

1.3 Strategic Project Objectives

- Eliminate or reduce unacceptable safety and functional risks; Upgrade essential safety equipment. (for both tunnels)
- Prevent increase in future lifecycle costs; Preventative maintenance interventions to prevent further degradation. (for both tunnels)
- Minimise reactive maintenance requirements and ongoing costs; Upgrade essential M&E equipment. (for both tunnels)
- Reduce operating costs by installation of energy efficient LED lighting; (for both tunnels)
- Ensure ventilation systems are sufficient for a 100MW fire, which is the minimum acceptance level for TfL, (for Blackwall Tunnel only)
- Upgrade and reconfiguration of ventilation system to meet current standards; (for both tunnels)

The key objectives for this stage of the project are:

1. Carry out site surveys to gain a better understanding of the type, condition, cable routes, installation dates, test performance, residual life and dependencies of the refurbishment items listed in WI100 (1.4) and (1.5).

2. Determine whether the strategic project objectives are achievable, develop options for their delivery and recommend a single option that will deliver the best value.

3. Establish robust cost estimates and programme to deliver the options to fulfil the project objectives for Stage 3 (Concept) to 5 (Delivery).

1.4 Project Scope - Blackwall Tunnel Southbound (BWT-SB)

The scope of the Blackwall Tunnel Southbound project comprises of the following refurbishment items which have been identified through the lifecycle plan as requiring refurbishment / replacement within the next 10 years.

1.4.1 Scope items

Scope Reference	Scope Title
BWT-A	The ventilation system is upgraded to ventilate a 100MW fire
BWT-B	Replacement of the existing lighting arrangement with Light-Emitting Diode (LED) luminaires
BWT-C	The CCTV system is replaced
BWT-D	Video Accident and Incident Detection (VAID) installed
BWT-E	Refurbish/Replace Variable Message Signs (VMS) Tunnel Lane Control Signs (TLCS) and Wayfinding Signs
BWT-F	Decommission Flood Gates

BWT-G	Refurbish/Replace cabling infrastructure
BWT-H	Refurbish/Replace power systems
BWT-I	Refurbish/Replace M&E infrastructure in drainage systems
BWT-J	Refurbish/Replace linear heat detection
BWT-K	Refurbish/Replace fire and safety systems
BWT-L	Refurbish/Replace Heating Ventilation and Air Conditioning (HVAC) in tunnel service buildings
BWT-M	Refurbish/Replace Electricity Distribution Points (EDPs)
BWT-N	3D model creation
BWT-O	Refurbish/Replace Radio System
BWT-P	Refurbish/Replace Loudspeaker Public Address
BWT-Q	Remove Maintenance Telephones

1.5 Project Scope - Rotherhithe Tunnel (RHT)

The scope of the Rotherhithe Tunnel project comprises of the following refurbishment items which have been identified through the lifecycle plan as requiring refurbishment / replacement within the next 10 years.

1.5.1 Scope items

Scope Reference	Scope Title
RHT-A	Upgrade of LED Lighting & Replacement of Structural Support System
RHT-B	Replacement of Fire Main System
RHT-C	Provision of Resilient Power Supply
RHT-D	Upgrade and Reconfiguration of Ventilation System
RHT-E	Replacement of Linear Heat Detector
RHT-F	Replacement of Emergency Wayfinding Signs
RHT-G	Replacement of ”Out of Bore” Lighting with LED Luminaires
RHT-H	Renewal of Drainage System – Pipes, Valves, Pumps and Control Systems within the Pump Room
RHT-I	Replacement of Public Announcement System, Emergency Roadside Telephone and Radio Systems and Removal of Maintenance Telephone System.
RHT-J	Renewal of Plant Room's Heating, Ventilation and Air-Conditioning (HVAC)
RHT-K	Upgrading HV and LV Supply System
RHT-L	Replacement of Communication System Cabling (LTRACS)

RHT-M	Decommissioning of Flood Gates
RHT-N	3D Model Creation
RHT-O	Replacement of CCTV (Traffic) System (inc. in-bore and approach roads)
RHT-P	Installation of Video Accident and Incident Detection (VAID) System
RHT-Q	Installation of Emergency Distribution Panels (EDPs)
RHT-R	Replacement of Fire Detection, Suppression and Monitoring System
RHT-S	Replacement of Cable Rack in Sub-Tunnel
RHT-T	Cable Management in Tunnel / Sub-Tunnel / Vent Shafts

1.6 The Contractor responsibilities

The *Contractor* shall take on the role of Contractor as defined by the CDM2015 requirements. The Project Team & *Employer*'s organisation chart can be found in Annex 2.
The *Contractor* work under this commission shall ensure economic, safe and timely completion of the project. The *Contractor's* major duties shall include the following:

- Carrying out testing, inspections, and surveys as outlined in Annex 4.
- Identifying constraints and dependencies.
- Developing cost estimates and programme for each option.
- Identifying and analysing design risk and opportunities.
- Liaison and collaborative working with consultants procured for Stage 2.

1.7 Detailed description of work to be carried out by the Contractor

The *Contractor* shall be responsible for identifying the extent of any Works planned to be carried out in Stage 2. They shall also utilise this period to familiarise themselves with the established tunnel operating regime to allow this information to be included in their construction proposals. The *Contractor*'s work under this commission shall ensure economic, safe and timely completion of the project, activities shall include:

a. The *Contractor* shall submit a contract execution plan for TfL's acceptance. The Plan shall provide details of any other information that the *Contractor* considers essential for the successful completion of the project, a project programme, a description of the *Contractor*'s proposed method for executing the commission as well as details of the *Contractor's* staff.

b. The *Contractor* shall submit a quality plan that demonstrates that the requirements contained within WI2000 have been fully understood and; i. that appropriate resources shall be deployed on the project and,

ii. that there will be adequate management control throughout the progress of the commission.

c. The *Contractor* shall prepare cost estimates and update their forecast of overall expenditure on the project.

d. The *Contractor* shall attend Progress Meetings with TfL, which will be held at regular intervals during the course of the commission.

e. The *Contractor* shall complete surveys, studies, and assessments in accordance with current good practice, as detailed in the most recent publications of relevant documents for this work including, but not limited to:

i. The Design Manual for Roads and Bridges BD78/99 (DMRB);

ii. The Manual of Contract Documents for Highway Works (MCHW); and

iii. Operation and Maintenance Manuals, where available

iv. Refer to Annex 8 for reference list of standards, specifications and guidance.

f. The *Contractor* shall assist the *Employers* consultant to produce feasibility options following liaison with the TfL Technical Approval Authority (TAA), and TfL Subject Matter Experts. During the development of the investigations and testing, the details of the tunnel structures, communications and mechanical and electrical equipment will become more apparent, and any uncertainties shall be resolved.

g. The *Contractor* shall carry out testing, monitoring or investigation required in Stage 2, as defined in Annex 4: Outline Testing and Specifications.

h. The *Contractor* shall prepare and issue a daily site report within 24 hours / one working day, detailing the start and finish time, labour & supplier, number of staffs and their roles, record of number of plant, detailed tasks / activities including planned and actual completion with comments, H&SE and quality issues, site photos with descriptions and signed by the Contractors.

i. Subject Matter Reports

At the conclusion of the inspections and testing for each discipline, the *Contractor* shall make available within seven calendar days drawings, photographs, indexed by location and subject matter and a written report as the key findings for that discipline. Test results shall be in Excel spreadsheet format.

j. Final Reports

Upon completion of the inspection and test phase, the *Contractor* shall provide a complete written report with 14 calendar days detailing:

• The current condition of each of the equipment items;

• The expected remaining service life of all items inspected or tested;

• Full details of the tests and inspections carried out;

• A list of any test equipment used together with calibration certificates;

• A statement of competence for any staff and subcontractors used.

• A narrative statement of any observations made during the test where principal as constructed details of the tunnel infrastructure are at variance from asset records provided by the *Employer*.

For the purposes of CDM regulations, the designated LoHAC Contractor is Kier, who will be the Principal Contractor for all site works as defined by CDM regulations.

The Contractor shall liaise with the LoHAC Principal Contractor for tunnel access.

1.8 Project Workshops

1.8.1 Mobilisation Workshop

A mobilisation workshop shall be arranged by the *Employer* within 2 weeks of the *Start Date*. Prior to this workshop, the *Contractor* shall complete their review of the available documentation for surveys, investigations and testing to be undertaken as described in Section 20 (WI 2000) of this document. The aim of the workshop is to:

- Discuss and agree the remit of the surveys, investigations and testing, including any necessary consents and approvals required
- Discuss key stakeholder engagement requirements
- Discuss key risks and opportunities
- Discuss significant health, safety and environmental issues
- Discuss and agree the baseline programme schedule

1.8.2 Feasibility Options Workshop

The *Contractor* shall attend a Feasibility Options Workshop with the Project Manager, consultant, and other Key Stakeholders in order to ensure the feasible options are relevant to the *Employer*

The aim of this workshop is to:

- Ensure options are relevant to TfL and acceptable to TAA.
- Evaluate the survey data
- Consider temporary or enabling works requirements at implementation
- Provide justifications, advantages and disadvantages on each options
- Identify risks and opportunities

1.8.3 Feasibility Review Workshop

A Feasibility Review workshop shall be arranged by the *Employer* towards the end of Stage 2 after the feasibility options report has been produced. Prior to this workshop, the *Contractor* shall complete their review of the feasibility options identified in the report. The aim of this workshop is to:

- Assess and evaluate the feasibility options with regards to:
  - Buildability and construction
  - Cost and programme schedule
  - Disruption to traffic, river and other modes of transport
  - Disruption to stakeholders
  - Whole life costings
  - Maintenance requirements
- Recommend preferred options or solutions for each of the refurbishment items identified in WI. 2000.
- Ensure that the proposed options provide value for money.

1.8.4 Lesson Learned Workshop

- Within 28 days of Completion the *Contractor* shall attend a lessons learned workshop, chaired by the Project Manager*,* to identify and record successes and failures during the project to ensure continuous improvement.

1.9 Cost Estimates

The *Contractor* will provide a cost estimate directly linked to the works programme. The costs will be broken down into the suggested headings:

- Mobilisation setup
- Site surveys
- Testing and inspections
- Staff allowance
- Cost & programme
- Subject matter and Final reports.

The price and programme must be accompanied by a commentary to inform the Project Manager *of* the logic behind the build up.

The *Contractor* shall provide a breakdown of costs for each activity / item for each phase in accordance with this contract.

The *Contractor* shall submit all costs (to be substantiated via time sheets, plant and material record sheets as agreed with the Project Manager) and any expenses to be received by the *Employer* on a weekly basis after the cost has incurred.

The *Contractor* shall provide an expenditure profile for the duration of the contract, to be updated at regular intervals as agreed with the Project Manager.

The *Contractor* shall assist the Project Manager with the calculation of Value of Work Done (VOWD) and Earn Value Analysis (EVA) within the period. Any variations against the planned expenditure profile shall require a justification narrative.

The *Contractor* is expected to provide programmes and detailed cost estimates for later stages as part of the stage 2 deliverables. The *Contractor* shall work collaboratively with Employer's *Consultant* to provide Stage 3 to 5 design and implementation requirements, including cost and programme estimates for each feasible option of the refurbishment items and any temporary / enabling works.

1.10 BIM Requirements

Not Used

1.11 3D Model Requirements

Not Used

1.12 Legislation

Include a list of applicable legislation to the contract. This list should comprise at least the following:

- Construction (Design and Management) Regulations 2015 (CDM)
- New Roads and Streetworks Act 1991 and the Traffic Management Act 2004
- Housing Grants Construction and Regeneration Act Part II
- Crime & Disorder Act 1998
- Bribery Act 2010

1.13 Stakeholder Engagement

Not Used

2.0 WI 200 – Constraints on Providing the Works

2.1 Constraints

The *Employer* requires that the *Contractor* take the following constraints into account when managing the Works:

- The TfL Lane Rental Scheme (TfL LRS) and permitted working hours
- Mayor's Roadworks Pledge
- Co-ordination with Statutory Undertakers
- Maintaining traffic flows on carriageways
- Delivery/storage of materials and spoil whilst maintaining traffic/pedestrian flow
- Noise pollution and the permitted hours for noisy works
- Control of noise, vibration, dust and mud
- Maintaining safe access to all public, retail and business properties during opening /business hours
- Maintaining safe access to residential properties
- Access to the tunnels – It is anticipated that the Contractor to commence works during the project specific tunnel closures. • BWT-SB: from 18Sep'17 – 15Oct'17
- RHT: from 16Oct'17 – 12Nov'17
- Night time working hours – final agreement to be confirmed but expected to be five nights per week as shown below. • BWT-SB: Sunday to Thursday between the hours of 23.59 – 05.00
- RHT: Monday to Friday between the hours of 22.00 – 05.00
- Minimum Operational Requirements (MoR)
- Kier Maintenance Closure Programme
- Confined space requirements as detailed below

2.2 Management of Site Hazards

The *Contractor* shall cooperate, liaise and coordinate with the LoHAC Principal Contractor's requirements and be responsible for the *Contractor's* own site works.

The *Contractor* takes appropriate action with regards to the site hazards identified by the Principal Designer, LoHAC Principal Contractor and/or the Project Manager in association with the works contained in the Pre Construction Information. The *Contractor* also considers the hazards identified in the development of their concept/detailed design using the Design Risk Management principles of the Construction Design and Management Regulations 2015 (CDM Regulations). The *Contractor* ensures that they properly communicate

the hazards on drawings or through risk registers and controls the residual risks via risk assessments, method statements and activity plans as part of their safe system of work so that they are understood by the workforce.

The *Contractor* also considers the site hazards that are normally associated with working on a construction site and on the public highway. These include, but are not limited to, confined spaces, working at heights, asbestos containing materials, buried services, overhead utilities, hazardous materials, contaminated land, uneven surfaces, high and low voltage cables, moving machinery, moving vehicles and pedestrians. The *Contractor* undertakes their own site hazard survey prior to starting work on site to verify the site information and identify any other risks that may affect the investigations.

For the avoidance of doubt, the *Contractor* shall comply with the Safe System of Working (SSOW) around all identified asbestos including removal. The *Employer* is responsible for the safe management of asbestos in/on existing Surface Transport structures/premises.

2.1 Visitors

Not Used.

2.2 Security Arrangements with others

The *Contractor* shall cooperate, liaise and coordinate with the LoHAC Principal Contractor's requirements and be responsible for the *Contractor's* own site works. The *Contractor* may be required to:

- Provide up to date contact details to the Principal Contractor;
- Cooperate with the Principal Contractor in provision of records and evidence of checks pursuant to the issue of permanent passes
- Provide up to date site plans to the Principal Contractor;
- Attend regular meetings with the Principal Contractor, and the *Employer*'s security team;
- Liaise with the Principal Contractor to ensure that electronic access control systems are compatible; and
- Develop the procedures required to meet the obligations of this clause and included in the Principal Contractors security manual

2.3 Site Access

The *Contractor* shall cooperate, liaise and coordinate with the LoHAC Principal Contractor's requirements and be responsible for the *Contractor's* own site works.

Access for the *Contractor* to undertake inspections, surveys, testing and investigations in Stage 2 will utilise the existing maintenance closures as much as possible. A limited number of additional closures may be available. Liaison with the LoHAC Principal Contractor and the Tunnels Operations team will be necessary. The *Contractor* is required to liaise with the LoHAC Principal Contractor in order to gain access to the tunnels. The *Contractor* shall ensure that they receive an induction from the LoHAC Principal Contractor and follow their site rules.

The tunnels are routinely closed for maintenance works by the LoHAC Principal Contractor. The closures process is well known and defined and well established diversion routes are in place. The impact of closing these tunnels has been appropriately assessed.

The LoHAC Principal Contractor will hold a pre-closure briefing an hour before each of the tunnel closure commences. This is chaired by the tunnel supervisor for that shift. The *Contractor* shall submit RAMS along with works programme to the LoHAC Principal Contractor at least two weeks in advance for review along with comments and final approval before booking / granting access to any of the tunnel bores / sites.

Additionally, the *Contractor* shall be responsible for obtaining all necessary consents, work permits and approvals from the relevant authorities for access to the site before any site works are undertaken. The *Contractor* shall advise the Project Manager on the access arrangements required to undertake the site works. The Project Manager shall assist the *Contractor* wherever possible in obtaining all necessary consents and approvals.

Due to network capacity issues, only one of the two tunnels can be closed at any one time.

Access to the shafts, switch, communications rooms, and non-operational areas is possible during the daytime without tunnel closures.

BWT SB has 2no. vent shafts:

- North Vent Shaft access is off Prestons Road. The gate / building is locked and the building is alarmed.
- South Vent Shaft access is in the O2 grounds. The gate / building is locked and the building is alarmed.

RHT has 4no shafts located at various points throughout the tunnel at road level:

- Shaft 1 access is off Cannonbeck Road from A101. The gate / building is locked and the building is alarmed.
- Shaft 2 access is off Rotherhithe Street adjacent to the River Thames. The gate / building is locked and the building is alarmed.
- Shaft 3 access is via King Edward VII Memorial Park, adjacent to the River Thames, access via Glamis Road. The gate to the park is locked. The gate / building is locked and the building is alarmed.
- Shaft 4 access is at Heckford Street, off the Highway A1203 near the Limehouse Link Tunnel. The gate/ building is locked and the building is alarmed.

2.4 Access to Road Network

The *Contractor* shall cooperate, liaise and coordinate with the LoHAC Principal Contractor's requirements and be responsible for the *Contractor's* own site works.

The *Contractor* is required to avoid the lane rental charges in the undertaking of the surveys, testing and investigations for Stage 2. Lane Rental charge system will be operational and its impact should be considered at all times. TfL's general approach is to organise works outside of lane rental charging times. Exceptions to this may be required for specific construction activities but these should be minimised. This should be carefully considered during development of construction methodology, staging and programme.

The *Contractor* shall be responsible for liaising with the relevant traffic authorities to obtain works notifications and permits to secure road space on the TLRN or Borough road network:

- TfL Network Impact Management Team
- Southwark Council
- Tower Hamlets Council
- Greenwich Council

The *Employer* requires that members of the public are protected from site activities with adequate hoarding at all times.

When assessing hoarding requirements, the following considerations will need to be taken into account:

• The presence of schools, hospitals, persons with disabilities;

• Other issues specific to each location.

2.5 Control of Site Personnel

Not Used.

2.6 Protection of Existing Structures and Services

2.6.1 Utility Supplies

2.6.2 Damage to Works and Protection to Adjoining Structures

Not Used.

2.7 Protection of the Works

Not Used.

2.8 Cleanliness of Roads

Not Used.

2.9 Highway Safety Inspections

Not Used.

2.10 Condition of existing assets

Not Used.

2.11 Industrial Relations

The *Employer* will promote a consistent approach to labour and industrial relations across the Project. To support this, the *Contractor* shall put in place policies and processes to ensure the effective management of labour and industrial relations on this contract. These policies and processes shall include (but are not necessarily limited to) those required to cover the following *Employer*'s minimum requirements:

• Reduce or eliminate the risks of industrial unrest;

- Provide sound employment practices;
- Minimise accidents and work-related ill health;
- Ensure a ready supply of skilled labour and reward good performance;
- Reduce the turnover of employees; and
- Avoid incentivising the migration of employees between the *Contractor* and other TfL contractors, the *Employer* and the Project Manager.

This Scope covers the *Contractor's* activities that have a potential impact on the industrial relations environment within the contract and the ability of the workforce to safely deliver the Works required in the most effective and efficient manner.

The *Contractor* shall ensure that the *Employer*s and employees use all available working hours as efficiently and productively as possible.

The *Contractor* shall ensure that all requirements and arrangements are applied consistently and transparently to all *Employer*s and employees.

The Contractor shall be responsible for ensuring that all employees working on the contract:

- perform their work safely, with due skill and diligence and within their level of competence;
- participate in work that is effectively planned and organised;
- are supported by properly trained and effective supervisors and team leaders;
- are provided with appropriate plant, tools and equipment; and
- assess, manage and report performance as required.

Employees' competence is to be determined by taking into account all relevant information, including any representations made by a duly appointed safety representative under the Health and Safety at Work Act 1974 and associated regulations.

The Contractor shall implement policies to ensure that all employers do not prevent or discourage employees from joining trade unions.

2.12 Site cleanliness

Not Used.

2.13 Waste materials

Not Used.

3.0 WI 300 – Contractor's design

Not Used

3.1 Contractor's Design

Not Used

3.2 Design for the Works

Not Used

4.0 WI 400 – Completion

4.1 Completion

Completion shall be achieved upon satisfactory submission of all documentation produced in accordance with the *Employer's* requirements set out in WI2000.

Upon Completion, the *Contractor* and the Project Manager shall sign a Completion Certificate which shall be provided by the *Employer*. The Certificate shall state the date on which completion was achieved and the total monies due to the *Contractor* for performing the Works set out in this contract.

5.0 WI 500 – Programme

5.1 Programme Schedule

The *Contractor* shall produce a programme for the duration of the contract, including all Works from parts in WI2000 of this document. The programme logic shall be optimised through identification of critical path and micro critical paths (sub-paths), analysing activities that can be brought forward, overlapped, or worked on concurrently to ensure programme logic is optimised (lean and efficient).

The *Employer* requires programme reviews in the form of Advance Project Thinking (APT). This shall be conducted as a joint effort between the Project Manager and *Contractor's* Planner. The purpose of APT is to monitor in detail the programme and look at progress through a 'buffer chart' which tracks the critical path and shows either positive or negative progress against planned progress (net buffer). APT also allocates actions, responsibility and close out dates which monitors each party input towards the programme.

Critical path, Time Risk Allowance (TRA), Project Constraints, Calendar type, Public Holidays (and any Christmas shut-down) and milestones (which shall be agreed with the Project Manager) shall be identified on the programme. The *Employer* expects programme logic to be optimised for 'lean and efficient' programming.

5.2 Revised Programme

Submissions of revised programmes shall be accompanied by an updated programme narrative, which includes the following:

- details of any significant changes including revisions to critical path since the previous Accepted Programme;
- details of changes to Key Dates, milestones, and associated float and time risk allowances and relative impact on costs;
- any delay mitigation measures incorporated.

The *Contractor* proceeds regularly and diligently to provide the Works in accordance with this contract, and uses all reasonable endeavours to prevent and/or reduce any delay in the progress of the Works.

5.3 Programme Requirements

The accepted Programme shall be used by the *Contractor* to direct his work by providing parameters for the more detailed implementation programmes and tools such as the weekly work plan. It is also used to identify and resolve schedule problems, measure the impact of compensation events and delays, assist in earned value calculations and develop recovery plans.

Programmes shall be developed by the Contractor using network analysis techniques to produce a coherent schedule that covers the entirety of the Contractor's awarded scope.

Information to be included in the programmes submitted for acceptance:

- The dates from the Contractor's Procurement Plan when any key items of Plant and Materials and Equipment are required at Site;
- The dates for any establishment of fabrication facilities and dates for fabrication of materials;
- The dates when any of the design information or other information provided by the Employer or others will be required by the Contractor;
- the cost associated with each activity defined in the programme;

- the cost-loaded programme (including man hours, total of the Prices and quantities using suitable activity breakdown);

- details of any consents, permits and licenses development, submission and approvals allowing sufficient time for each stage of the process and also allowances for resubmission;

- details of any utility supplies development, submission and approvals allowing sufficient time for each stage of the process and also allowances for resubmission;

- details of any 3rd party (e.g. Network Rail, London Underground) interfaces and/or submissions development, submission and approvals allowing sufficient time for each stage of the process and also allowances for resubmission;

- the dates when the Contractor plans to submit design and construction certification as required by the Scope

- Work Breakdown structure (WBS) – The scope is put into a valid WBS consistent with the TFL WBS Strategy to allow for detailed planning in a structured format. The structure is to give a clear reflection of progress against each of the work packages being progressed when rolled up to summary level;

- Clear visibility of all deliverables and key milestones; and

- Quantities and Measurement items (MI's) to be assigned within the relevant work packages showing the key quantities to be installed to deliver the project.

5.4 Methodology Statement

All programmes submitted by the *Contractor* for acceptance by the Project Manager shall be accompanied by a programme narrative and shall contain as a minimum the following requirements, at a level of detail to be agreed by the Project Manager:

- Staffing plan indicating total manpower required per reporting period, inclusive of Sub-contractors;

- Weather windows and other non-work periods;

- Description of the critical path(s); • Listing of key interfaces with the Project Manager or others and the dates those interfaces are planned to occur; and

- Listing of information required by the *Contractor* to meet his stated programme

- Together with the date that information is required.

5.5 Resource and Cost Loading the Programme

The *Contractor* shall ensure that the programme for acceptance is fully loaded with person hours, the total of the Prices and quantities for performance measurement purposes using suitable resource profiles, agreed with the Project Manager, which reflect the work required for each activity.

For the purposes of performance reporting and measurement, the Accepted Programme shall only be revised upon agreement between the *Contractor* and Project Manager, to reflect the effects of implemented compensation events and/or significant changes to planned work sequences. The emphasis is to establish an accurate baseline from which to measure subsequent performance.

5.5.1 Cost Loading

The *Contractor* shall cost load the Programme for Acceptance at a suitable level, to be agreed by the Project Manager, in accordance with the Work Breakdown Structure at the activity level.

Each four weekly reporting period, the *Contractor* shall update, in the revised Programme, for Acceptance by the Project Manager, the cost loading to reflect PWDD and the *Contractor*'s assessment of forecast costs to go, including the impact of implemented compensation events.

Sufficient cost shall be allocated to tail-end and finishing activities including snagging and completion package preparation, in order to avoid overvaluing work in the earlier stages.

5.5.2 Resource Loading

The *Contractor* shall resource load the Programme for Acceptance with resources and quantities, at a suitable level, to be agreed by the Project Manager.

Each four weekly reporting period, the *Contractor* shall update in his revised programme for acceptance the resource loading to reflect actual resources used to date and the *Contractor*'s assessment of forecast to go including the impact of trends and implemented compensation events.

5.6 Budget Maintenance

The *Contractor* shall not change, or move cost or resources between activities on the Accepted Programme without the Project Manager's acceptance.

5.6.1 Planned Expenditure (BCWS: Budgeted Cost of Work Scheduled)

The Accepted Programme will be the basis of the planned expenditure unless the Project Manager instructs otherwise.

Each four weekly reporting period, data shall be exported at a summary level (the appropriate level to be agreed by the Project Manager) and formatted into a Performance Measurement Data Summary (PMDS) which will then translate the data into graphs for comparison with earned value (EVA), PWDD and forecast Defined Cost to completion data. The Earned Value graphs shall show the early start and late start BCWS profile envelope, which shall be generated from data downloaded to the PMDS within Excel.

5.6.2 Actual Cost (PWDD: Price of Work Done to Date)

Actual Cost of work performed, (including monies paid and accruals for Works performed up to the cut-off date of each four weekly reporting period) shall be related to each element of the project highlighted in the programme.

This data shall then be incorporated by the *Contractor* into the CVR, for comparison with Earned Value.

5.6.3 Cost to Completion (FTC: Forecast to Completion)

Each reporting period the *Contractor* will produce a forecast of the remaining expenditure (total Defined Cost less PWDD) phased over the remainder of this Contract, by four weekly reporting periods. This will show separately, the original scope of Works, and any implemented compensation events.

Separately, the *Contractor* will also show his forecast remaining expenditure associated with notified compensation events and early warning notices.

6.0 WI 600 – Quality management

6.1 Quality Requirements

The *Contractor* shall operate a Quality Management System conforming to BS EN ISO 9001:2008. The *Contractor* shall carry out their duties in accordance with the accepted quality procedures forming part of his quality proposal.

When requested by the *Employer*, the *Contractor* shall make available the quality manuals and all other relevant information for inspection. The *Contractor* shall provide copies of any technical reviews, audit reports etc. and related documentation.

The *Contractor* may, from time-to-time, be asked to provide information to enable the *Employer* to develop the business case or obtain other internal or external approvals.

The *Contractor* shall provide details of authorised signatories for the various elements of the review, checking and approval of design, reports and the like.

The *Contractor* shall allow the *Employer*'s authorised representatives to undertake any inspection, audit or check at any time within working hours and within the period of notice of five working days, of any aspect of the *Contractor*'s carrying out of the Works, including, but not limited to, inspection of the *Contractor*'s technical and organisational security measures for the protection of Personal Data.

6.2 Quality Management System

The management, organisation, responsibilities, procedures, processes, resources and programme for the quality management system from design (where applicable) to procurement, construction, completion, testing and commissioning of the Works until the *defects date* is contained in a quality plan which is submitted to the Project Manager in accordance with the Scope. Any *Sub-contractor* appointed by the *Contractor* operates a quality system enabling him to comply with the *Contractors* quality management system.

The Quality Management System is to be capable of demonstrating by *Contractor* self certification that all the requirements of the contract and all relevant standards and regulations are being met. Self certification is the process whereby the *Contractor* can demonstrate that all the requirements of the contract have been fulfilled.

The *Contractor* shall provide details of authorised signatories for the various elements of the review, checking and approval of design, reports and the like.

The *Contractor* shall ensure that Sub-contractors and suppliers of any tier, also supply a quality presence with adequate resources and appropriate authority to ensure the quality of work on this Contract.

The *Employer*, the Project Manager, the *Supervisor* and any third parties authorised by the Project Manager, including LUL, NR, DLR, TfL, statutory authorities and statutory undertakers, shall have the right to conduct audits, inspections and tests of any part of the *Works* that are being executed in connection with their assets by the *Contractor* and to observe the execution of these activities.

The *Contractor* shall contribute to and participate in the identification, discussion and implementation of lessons learned initiatives agreed with the Project Manager.

The *Contractor* shall make available for audit all records necessary to demonstrate that the *Works* have been executed in accordance with the contract. They also provide the Project Manager with documents that demonstrate that the *Works* are progressing in accordance with specified requirements. These documents are to be provided in a timely manner as the work progresses.

Quality issues shall also be identified in the *Contractor's* weekly reports which are provided to the Project Manager.

The *Contractor's* Quality Management System shall provide procedures for undertaking desktop study, site survey and investigation and development of feasible options of the Works. The *Contractor* shall develop, with the Project Manager, quality improvement initiatives.

Within 2 weeks of the *Start Date*, the *Contractor* shall produce a Contract Quality Plan (CQP) and submit it to the Project Manager for acceptance. In the case of the first submission of the Contract Quality Plan the Project Manager replies within 2 weeks of the date of submission. The *Contractor* shall agree with the Project Manager the submittal timings of the CQP to interface with the requirements of the Accepted Programme. Any further revisions, submissions and responses shall be made within the *period for reply*.

The *Contractor* shall not start any activity on any part of the *Works* for which the Contract Quality Plan, applicable QSPs or ITPs, are not accepted by the Project Manager. Where these documents together adequately address ongoing and imminent works but not the entire scope of the *Works*, the Project Manager may give limited acceptance to the *Contractor's* submission in order to allow limited activities to proceed.

6.3 Quality Assurance

The *Contractor* shall engage the allocated TfL Tunnels Technical Approvals Authority (TAA) via the Project Manager and consult on all aspects of the surveys and investigations in Stage 2 (Feasibility) including agreeing and endorsing documents.

Time shall be included in the programme for review and preparation of comments by the Technical Approval Authority, and for further iterations of deliverables. The period of time required for reviews shall be agreed in advance with the technical approval manager. The standard practice review period is 25 working days, however, collaborative working and issue of documents of the expected standard shall allow this to be reduced towards a minimum of 10 days. At the beginning of Stage 2 (Feasibility), the technical approval team shall be engaged by *Contractor* to agree method of working. As a minimum the following requirements should be considered:

The only documents that the TfL TAA is expected to sign off at Stage 2 will be related to the feasibility studies.

- The TAA shall be consulted sufficiently in advance about all technical matter / submissions, departures from engineering standards or specification, before they are submitted formally for acceptance into the feasibility study.
- The *Contractor*'s representative shall attend all technical meetings in person with the TAA.
- A meeting schedule / table matrix for the entire length of the feasibility study should be prepared and agreed at the beginning of the contract – stating location, timings, attendees, agenda.
- Some elements may need technical assurance by other teams such as TAA highways and TAA structures. The *Contractor* shall notify and highlight any potential technical approvals to the Project Manager and he shall co-ordinate such reviews for approval. The same level of review periods that are required by the TAA for structures will apply to the other disciplines.

The guidance set out in the following documents shall be complied with:

- Design Manual for Roads and Bridges
- Specification for Highway Works
- Eurocodes
- The Road Tunnel Safety (Amendment) Regulations 2009 (SI No.64)
- EU Directive 2004/54/EC
- TfL guidance notes:

- SMT/GN/03/14 – Technical Approval
- SMT/GN/02/14 – Requirements for the acceptance of proposals for structures and tunnels capital schemes
- TfL Streetscape guidance
- Other good practice guidance as agreed with the Sponsor and/or technical approvals manager.
- Asset Management - Condition Assessment Guidance

More information can be found in Annex 8.

Industry good practice guidance for design, maintenance and management of tunnels shall be followed and complied with where possible. If there are good reasons for deviating from good practice or standards, justification should be submitted to the technical approval manager for agreement before proceeding.

With regards to the site works, unless otherwise accepted by the Project Manager, Plant and Materials forming part of the Works or temporary works incorporated into the Works shall be procured from sources that hold appropriate certification from a United Kingdom Accreditation Service (UKAS) accredited certification body (or one that has mutual recognition with UKAS). The existence of UKAS or similar acceptable accreditation does not relieve the Contractor from ensuring the quality of the products.

The Contractor shall make available certification to demonstrate that Plant and Materials used comply with the relevant legal requirements and standards. For Contractor designed parts of the Works the material quality and traceability requirements shall be indicated on applicable drawings or materials and workmanship specifications or by reference to appropriate codes of practice.

Verification of the quality and material traceability of each element of the Works shall be the responsibility of the Contractor and shall be achieved through checks, tests, inspections, audits and reviews, planned and implemented in accordance with the contract quality plan developed by the Contractor.

1. Subject to the Scope and any changes to it the Contractor warrants that to the extent the Contractor either is obliged to specify or approve products or materials for use in the Works or does so specify or approve, the Contractor does not specify, approve or use any products or materials which are generally known within the construction industry to be deleterious at the time of use in the particular circumstances in which they are used, or those identified as potentially hazardous in or not in conformity with:

a. the report entitled “Good Practice in the Selection of Construction Materials” (1997, by Tony Sheehan, Ove Arup & Partners, published by the British Council for Offices and the British Property Federation) other than the recommendations for good practice contained in Section 2 of that report,

b. relevant British or European Standards or Codes of Practice, or

c. any publications of the Building Research Establishment related to the specification of products or materials.

2. If in the performance of its duties under this contract, the Contractor becomes aware that he or any other person has specified or used, or authorised or approved the specification or use by others of, any such products or materials, the Contractor notifies the Project Manager in writing immediately. This clause does not create any additional duty for the Contractor to inspect or check the work of others which is not required by this contract.

The Contractor obtains from and/or gives to others all licences, consents, notices and approvals necessary or appropriate to enable him to provide the Works other than those which the Scope states will be obtained or given by the Employer or others. The Contractor ensures that, prior to Completion and wherever necessary during the course of the Works, the conditions and requirements of the licences, consents, notices and approvals, whether

obtained by the Contractor or the Employer, are complied with and that the same are renewed whenever necessary or appropriate.

7.0 WI 700 – Tests and inspections

Please see Annex 4: Atkins Outline testing Scope and Specification

8.0 WI 800 – Management of the Works

8.1 Project Governance – Pathway Products

The *Contractor* shall assist the *Employer* during the preparation and / or updating of the following Stage 2 (Feasibility) Pathway products (but not limiting to):

- Lessons Learned
- Operational Concept
- Maintenance Concept
- SDR – Scope / Design Review (Buildability)
- Project Estimate / Cost Plan
- Stakeholder Engagement Plan
- Communications Plan
- Project Schedule
- Risk Register
- Progress Report

The above list covers documents / products taken from the TfL Pathway Project Management Plan (PPMP) which can be found in Annex 3.

8.2 Management and Staff

The *Employer* shall have the following directly employed staff on site (either full or part time):

- Programme Manager
- Project Manager
- Assistant Project Manager (s)
- Commercial team

The *Contractor* is expected to have, as a minimum, the following supervision and management staff:

- Contracts Director

- Project Manager
- Designer / Engineer / Specialist team
- Commercial Manager
- Planning Manager/Project Controls Manager*

(* means that these roles may form part of the duties of others)

The *Contractor* shall be required to attend a number of regular meetings with the Project Manager throughout the duration of this commission as described below. These meetings shall be held either at the designated co-location office or at the Employer's offices.

8.3 Allocation of Contractor Staff

The *Contractor* shall obtain acceptance from the Project Manager before any staff resources are allocated to work on the project. The *Contractor* shall issue a request setting out:

- the name, role and rate of staff (proposed for mobilisation);
- proposed mobilisation date;
- planned demobilisation date.

The *Contractor* shall not be entitled to payment for staff time for any person who has not been approved by the Project Manager in line with the above requirements.

8.4 Communications

The *Contractor* does not remove any key person from the contract for more than twenty one (21) consecutive days without the prior written consent of the Project Manager, except where such key person is absent on sick leave, or other statutory leave (such as jury service/maternity/paternity or adoption leave) or has left the *Contractor's* employment.

Any formal claims need to be raised as a hard copy document as well as on the contract administration management system.

8.5 Risk Management

The *Contractor* submits, within 2 weeks of the *Starting Date*, for acceptance by the Project Manager, a Risk Management Plan. The *Contractor* liaises with the Project Manager during this time to identify and agree the parameters to be used in the identification and evaluation of risk.

The focus of the Risk Management Plan should be reduction of risk exposure. It should be results-oriented and not place undue weighting on analysis at the expense of action. The *Employer* and the *Contractor* shall share relevant risk information and work collaboratively to prevent the realisation of risks where possible. The Risk Management Plan should identify the impact of occurrence at project activity level and link their manifestation to the project schedules and the Earned Value Analysis monitoring templates.

In conjunction with clause 16 of the conditions of contract the *Contractor* identifies any changes or newly identified risks to the Project Manager.

The *Contractor* identifies to the Project Manager any risks which have been realised and become issues.

The *Contractor* reports risks and provides risk related information in accordance with the requirements of this contract.

8.6 Project Meetings

The *Contractor* will be required to attend a number of regular meetings with the Project Manager throughout the duration of this commission as described below. These meetings shall be held either at the designated co-location office or at the *Employer*'s offices.

8.6.1 Risk Review Meetings

The *Contractor* shall meet with the Project Manager not less than once in each four week period to review the Risk Register. The *Contractor* provides the appropriate level of representation at the meetings to review and action the identified risks and notified early warnings.

The purpose of this meeting is to review and update the risks and opportunities identified in the Risk Register. Risks and opportunities will be reported and managed effectively by proactively identifying mitigation measures, clearly assign actions owner and address these actions in a timely manner.

This meeting will be chaired by the Project Manager and will be held once every four weeks. The Project Manager shall be responsible for recording and maintaining the Risk Register in collaboration with the *Contractor*. The *Contractor* shall contribute and participate in the review and analysis of the risks and opportunities.

8.6.2 Progress Meetings and Reports

Progress meetings will be held fortnightly (or more frequently if required). These progress meetings will review the progress to date and the work expected to commence in the following 4 weeks. The schedule shall be reviewed and amended in line with the progress, expected progress, mitigations of delay and compensation events.

The *Contractor* shall produce a progress report every fortnight. This will be staggered with the progress meetings (i.e. weekly communication between all parties). The *Contractor* is responsible for the submission of the report to the Project Manager. The sections of the progress report shall comprise of the following:

1. Health, Safety and Environment
2. Summary of Progress
3. Upcoming activities and decisions required (APT led)
4. Stakeholder Engagement
5. Risks and Opportunities
6. Programme Schedule
7. Commercial
8. Performance
9. Any Other Business

The *Contractor's* Project Manager, relevant design team members and appropriate commercial staff shall attend the fortnightly progress meeting.

The purpose of this meeting is to review overall progress and performance of the project. The focus will be to reflect on progress made since the last meeting and on the key activities and decisions required for the upcoming weeks ahead including any matters which require resolution. The meeting will also provide an update on health, safety and environmental issues, risks and opportunities, and stakeholder engagement. This meeting will be chaired by the Project Manager and will be held once every two weeks. The *Contractor* shall be responsible for recording and maintaining agenda and minutes of all progress meetings.

TfL undertake a programme review which is in the form of Advance Project Thinking (APT). This will be conducted as a joint effort between the *Employer's* Planner and *Contractor's* Planner. More information on APT can be found in Section 5.1.

8.6.3 Commercial Meetings and Commercial Register

The purpose of this meeting will be to review all applications for payments, financial and contractual matters including Early Warning Notifications (EWNs), Compensation Events (CEs) and Project Managers Instructions (PMIs) to enable ongoing management and control of the project costs. This meeting will be

chaired by the Project Manager and shall be held fortnightly. The Project Manager shall be responsible for recording and maintaining the commercial register of all EWNs, CEs and PMIs.

Weekly activity sheets/reports and time sheet reports must be submitted to the Project Manager within 14 days of the Works being provided. Time sheet reports submitted after this point will not be assessed.

8.6.4 Performance Meetings and Key Performance Indicators

The purpose of this meeting will be to review and assess the performance of the *Contractor* through an agreed set of Key Performance Indicators (KPIs). The KPIs will be set jointly with the *Employer* in the first meeting. This meeting is intended to facilitate the smooth running of the project and to ensure that there is a forum to quickly resolve issues above the Project Team if they are taking too long to resolve and hindering progress. KPIs will be on the following strategic themes:

- Health, Safety & Environment
- Quality
- Value
- Delivery
- Collaboration

This meeting will be chaired by the Project Manager and shall be held once every four weeks. The Project Manager shall be responsible for recording and maintaining the KPI register.

8.7 Periodic Progress Report

A full periodic summary report of project progress shall be submitted to the Project Manager every 4 weeks. The periodic report contents shall cover progress to match the TfL periods as shown in Annex 9. The report must include:

- A progress statement by reference to the accepted programme for the Works;
- Details of any matters materially affecting the regular progress of the Works;
- Key activities planned for next month;
- Earned Value Management (EVM) report (including all elements described Section 5.6);

8.8 Cost Management and Estimating

The *Contractor* shall undertake cost management.

The *Contractor* shall provide cost estimates for design and construction at the end of each TfL Pathway stage for internal management and budgetary purposes. An estimating template shall be agreed with Project Manager. This must be aligned to the *Employer's* estimating principles, which are as follows:

- The Project Manager *shall* work with the *Contractor* and agree the cost estimates as it is being compiled. All estimates shall account for any specific work methodologies and contain a quantified risk allowance. The accuracy of the cost estimates and the detailed data within them shall be commensurate with the stage of design;
- The estimate is to be confidently compared/benchmarked with other similar completed schemes that demonstrate their assessments are robust;

- The *Contractor* shall agree the estimate base date with Project Manager prior to commencing any other estimating activities;

- The *Contractor* shall prepare estimates in accordance with the TfL Cost Feedback Structure (CFS), Estimating Guidance notes and Cost & Estimating System Coverage & Inclusion Rules as defined in the cost capture template within schedule 17 which can be found in Annex 10;

- The Estimate shall be compiled, with indirect costs populated separately and assumptions logged;

- The *Contractor* shall not include any design, preliminary, testing and commissioning and overheads and profit costs within unit. The estimates for these costs (with the exception of overheads and profit) are required to be fully resourced, based on programme;

- The *Contractor* is not required to populate the agreed "Free Issue" and "Internal costs: Those values will be added by TfL at a later stage;

- The *Contractor* shall form a view on estimating uncertainty. A reference to this value and a justification for its selection shall be included in the Assumptions. Estimating uncertainty is not to be treated as risk but as a means to inform the *Employer* of the quality of design and price information available to the *Contractor* at the time of preparation of this estimate;

- The *Contractor* should note that all estimates require approval from the Project Manager who may ask to review/ revise certain elements within the estimate (quantities and/or rates) as part of the *Employer's* approval process;

- All documents used in the preparation of the estimate shall be listed within the estimate;

- All assumptions and exclusions applicable to the estimate must be described;

- The *Contractor* shall ensure that the estimate has been subject to an internal review by an experienced staff member who must satisfy himself that it is free from errors, that the scope of work has been accurately measured and that the level of pricing is appropriate;

- The *Contractor* shall provide details of the basis for establishing the level of any provisional sums and/or lump sum allowances where requested;

- The TfL CFS structure only defines works up to Repeatable Work Item (RWI) level. Beyond that level, the *Contractor* shall use industry recognised Highways works methods of measurement such as MCHW where possible and if applicable;

- The *Contractor* shall provide a measurement for each high level RWI in accordance with the unit of measurement suggested in the CFS as defined in the cost capture template within Annex 10. This is to enable the cost benchmarking of estimates against TfL's historical costs;

- The *Contractor* shall include for any "Temporary and Enabling" works as a subcategory within each of the direct works categories;

- The *Contractor* shall provide a reconciliation between estimates at each stage along with a commentary of the key changes;

- Risk shall be defined in accordance with the *Employer's* procedures and processes. The *Contractor* shall demonstrate how the risk value was obtained and to list out all risk considerations.

The *Contractor* shall provide cost feedback in the format specified by the *Employer* within the Scope, as indicated in the cost capture template within Schedule 17 (Annex 10). As a minimum, the *Contractor* must ensure this template is provided at the start and end of the commission for final accounting.

The Project Manager shall manage and administer the booking of the *Contractor*'s costs to WBS codes which align to the work undertaken in the schedule. The Project Manager shall issue WBS codes to the *Contractor* for allocation of his cost and invoices.

The *Contractor* shall submit all costs of staff (via time sheets) and any expenses to be received by the Project Manager on a weekly basis after the cost has incurred.

8.9 Applications for Payment

8.9.1 Template and categorisation

The *Contractor* shall submit a proposed template for their applications for payment to the *Employer* within 2 weeks of the Contract *Start Date*. Periodic assessments shall be based upon this format thereafter unless agreed by the Project Manager.

Each application for payment should contain detail of the Works provided by each of their personnel in respect to the project. The *Contractor* should submit with their proposed format a clear allocation system whereby their people can allocate time against agreed codes. New codes should be raised and agreed for any compensation events.

The following table is an example of how the *Contractor* may choose to categorise work streams and allocate costs. There may be sub categories within each of these work streams:

Scope Reference	Scope Title
BWT-A	The ventilation system is upgraded to ventilate a 100MW fire
BWT-B	Replacement of the existing lighting arrangement with Light-Emitting Diode (LED) luminaires
BWT-C	The CCTV system is replaced
BWT-D	Video Accident and Incident Detection (VAID) installed
BWT-E	Refurbish/Replace Variable Message Signs (VMS) Tunnel Lane Control Signs and Wayfinding Signs
BWT-F	Decommission Flood Gates
BWT-G	Refurbish/Replace cabling infrastructure
BWT-H	Refurbish/Replace power systems
BWT-I	Refurbish/Replace M&E infrastructure in drainage systems
BWT-J	Refurbish/Replace linear heat detection
BWT-K	Refurbish/Replace fire and safety systems
BWT-L	Refurbish/Replace Heating Ventilation and Air Conditioning (HVAC) in tunnel service buildings
BWT-M	Refurbish/Replace Electricity Distribution Points (EDPs)
BWT-N	3D model creation
BWT-O	Refurbish/Replace Radio System
BWT-P	Refurbish/Replace Loudspeaker Public Address System
BWT-Q	Remove Maintenance Telephones
RHT-A	Upgrade of LED Lighting & Replacement of Structural Support System
RHT-B	Replacement of Fire Main System
RHT-C	Provision of Resilient Power Supply
RHT-D	Upgrade and Reconfiguration of Ventilation System
RHT-E	Replacement of Linear Heat Detector
RHT-F	Replacement of Emergency Wayfinding Signs
RHT-G	Replacement of “Out of Bore” Lighting with LED Luminaires
RHT-H	Renewal of Drainage System - pipes, valves, pumps and control systems
RHT-I	Replacement of Public Announcement System, Emergency Roadside Telephone and Radio Systems and Removal of Maintenance Telephone System.
RHT-J	Renewal of Plant Room's Heating, Ventilation and Air-conditioning (HVAC)
RHT-K	Upgrading HV and LV Supply System
RHT-L	Replacement of Communication System Cabling (LTRACS)
RHT-M	Decommissioning of Flood Gates
RHT-N	3D Model Creation

RHT-O	Replacement and upgrade of CCTV (Traffic) System (inc. in-bore and approaching roads)
RHT-P	Introduction of Video Accident and Incident Detection (VAID) System
RHT-Q	Installation of Emergency Distribution Panels (EDPs)
RHT-R	Replacement of Fire Detection, Suppression and Monitoring System
RHT-S	Replacement of Cable Rack in Sub-Tunnel
RHT-T	Cable Management in Tunnel / Sub-Tunnel / Vent Shafts

Application for payment submissions to the *Employer* shall be made in the form of 2 No. hard copies and 1 No. electronic copy every 4 weeks.

In respect of all other matters referred to in the Conditions of Contract the *Contractor* shall separately show in the statement the amount which he considers himself entitled. For the avoidance of doubt, the following activities shall be deemed to be included in the *Contractor's* fee:

- Production and Compilation of timesheets
- Providing additional detail or substantiation for timesheets as may sometimes be requested by the Project Manager
- The *Contractor's* internal reporting and governance

Timesheets must be submitted to the Project Manager in a timely manner. The *Contractor* shall note that any timesheets submitted to the Project Manager later than 28 days after the Works have been provided shall not be chargeable to the *Employer*.

8.10 Lessons Learned from Previous Projects

At the time of writing this document the STIP2 River Bridges project had held a lessons learned session following the completion of the Stage 2 investigation works. Some of the key lessons are summarised below. The *Contractor* shall review these lessons to establish, where relevant, appropriate measures which ensure continuous improvement.

- Collaborative working – the first few weeks after contract award is key to planning the survey works between the *Contractor* and their Sub-contractors.
- Scope – this should relate the testing / surveys / investigations to the final project outcomes.
- Scope change / additional works – It is necessary to have someone with delegated authority to make decisions when changes occur on site. Ideally works should not be stopped.
- Single point of contact – this shall be the Project Manager.
- Workshops – to be held at key points in the programme where key decisions need to be made.
- Testing results – these should be provided to the *Contractor* as soon at they are available.
- Method statements – if there are unique methods of carrying out a particular element of work then this should be highlighted in the method statements so that it can easily be picked up by the user / reviewer.
- Commenting on reports – to avoid several iterations of comments, comments should be collated before issuing back to the Contractor.

- Commercial management – compensation events shall be dealt with in a timely manner. It is important that this project benefits from lessons learned from other projects at the same stage so that these can be embedded from the start.

9.0 WI 900 – Working with the Employer and others

9.1 Sharing the Working Areas with the Employer and others

The systems and equipment identified in Scope have a significant interface with other systems in a variety of locations. These interfaces will require the *Contractor* to co-ordinate his works with others.

The *Contractor* shall liaise and co-operate with others in obtaining and providing, via the Project Manager, information required in connection with the Works and the works of others.

The *Contractor* shall hold and attend co-ordination meetings with others who share the Working Areas. The Project Manager shall be invited to these meetings.

The *Contractor* is responsible for all co-ordination and co-operation within the Working Areas.

Certain operations not forming part of the Works may be carried out within or adjacent to the Site by others under separate arrangements with the Project Manager.

In addition, certain parts of the project will also be carried out by others under separate arrangements with the Project Manager.

The *Contractor* is responsible for the co-ordination of the Works with the activities of others on the Site in respect of programme and technical interfaces. Failure to demonstrate this within accepted programme may give grounds for non-acceptance by the Project Manager.

9.2 Collaboration

The Project Team shall work collaboratively together as an integrated team to complete Stage 2 of the project effectively and efficiently within the agreed budget, programme schedule and quality. The following shall be applied throughout the project by all parties:

- building a collaborative project environment
- ensuring clear understanding of roles and responsibilities
- ensuring integration by undertaking specific and measurable methods of working
- promoting collaborative behaviours
- seeking continuous improvement through effective communication and engagement with all stakeholders

9.3 Authorities

9.3.1 Environmental – Section 61

The *Contractor* shall adhere to all requirements set out in the Principal Contractor's Section 61 approval.

9.3.2 London Underground

There are London Underground (LU) services that run through the sub-tunnels of both Blackwall Southbound and Rotherhithe tunnels. LU will need to be informed prior to any planned works taking place within the vicinity of these sub-tunnels. If there are any damaged LU cables discovered during the Stage 2 investigation works then the *Contractor* shall inform LU will in order for an assessment to be undertaken.

9.4 Statutory Undertakers

Not Used.

9.5 The Contractor's Responsibilities

9.5.1 General

In providing the Stage 1 works the Contractor shall:

- request records from the relevant statutory undertakers;
- undertake non-intrusive surveys (for example ground penetrating radar surveys);
- undertake trial pit and trial trench excavations to determine the actual location and extent of services;
- identify the required Utility Works and agree them with the relevant statutory undertakers;
- develop with the statutory undertakers details of the Utility Works for each utility apparatus (including drawings and specifications);
- develop co-ordinated Utility Works plans with the statutory undertakers;
- plan the implementation of the Utility Works;
- agree with the statutory undertakers who will implement the Utility Works on a case by case basis;
- engage contractors to implement Utility Works;
- commence and/or complete specific Utility Works as part of advance and enabling works packages; and
- instruct statutory undertakings to commence and/or complete specific works packages.

In providing the Stage 2 works the Contractor shall:

- satisfy itself of the accuracy of the information provided and in particular the location of existing or diverted utility apparatus [if applicable];
- survey, locate and confirm the details of all utility apparatus in the vicinity of the works or affected by the works, whether within the Site, the Working Areas or on the public highway;
- obtain original (C2) drawings of Statutory Undertakers not older than 28 days prior to any excavation works being undertaken The original drawings supplied by the utility companies indicating the location(s) of

their apparatus are held by the Employer and are available for inspection by the Contractor;

- produce records and drawings indicating the location and details of all utility apparatus within the Site and/or the Working Areas or affected by the works;
- immediately notify the Project Manager in the event that uncharted utility apparatus is found and record the location and details on a drawing;
- implement and operate a Permit to Dig process;
- where stated in the Works Information, identify and adequately protect all utility apparatus liable to be exposed or to remain exposed or be affected during delivery of the works;
- not interfere with the operation of utility apparatus without prior consent from the apparatus owner;
- afford clear and uninhibited access to the utility apparatus owner for any of their apparatus located within the Site and/or the Working Areas or affected by the works;
- comply with the specific procedures/processes prescribed by the Statutory Undertakers when working on or close to their assets;
- identify any other Utility Works, temporary or permanent, required as a result of Providing the Works including those resulting from occupation of additional Working Areas it proposes to use;
- report any damage to services immediately to the Project Manager through the agreed reporting procedure;
- arrange the temporary site utility supplies other than those identified to be provided by the Employer;
- be responsible for making good any temporary repairs to the road surface, the footways and kerbing following service and supplies alterations;

- confirm with statutory undertakers the lowering/raising of chamber covers and type of construction to be included in the Contractor's *works*;
- be responsible for reseating, replacing and the relocation of service and supply covers where necessary including lowering/raising of chamber walls;
- be required to excavate redundant ducts and demolish redundant chambers as identified;
- communicate and co-ordinate with others undertaking Utility works on behalf of a Statutory Undertaker; and
- obtain all required consents, liaises with the Statutory Undertaker, communicates and co-ordinates with others where the works include the execution of Utility Works.

As part of the Contract works or works carried out on behalf of Statutory Undertakers or other relevant parties, temporary reinstatements may be required in order to permit normal use of areas by the public. Temporary reinstatements shall consist of a minimum standard of 100mm thick sand protection layer (with duct ends or other equipment protected/wrapped with heavy gauge polythene), granular sub-base and a retarded bitumen (also referred to as cut-back) surface course material. All layers shall be thoroughly compacted to provide a smooth and durable surface. The Contractor shall maintain all temporary works until such time that the permanent diversions are completed.

Notwithstanding the above, if damage is sustained to services and supplies during the works that require repair or if unforeseen services and supplies affecting the works are discovered and require alteration, the Contractor shall make arrangements with the Statutory Undertakers and others concerned, for the co-ordination of his work with all work that needs to be done by them or their contractors, to implement the repairs and/or alterations within the Accepted Programme of works.

9.5.2 Health and Safety

This section shall be read in conjunction with Section 11, Heath and Safety of this Works Information.

Damage to underground and overhead utility apparatus can cause fatal or severe injury and is a particular hazard for construction activities. The Contractor shall ensure that all reasonable precautions are taken in providing the Works to eliminate this hazard. This shall include but not be limited to:

- complying with the requirements of 9.5.1 above;
- developing a safe system of work including the implementation and operation of a Permit to Dig process;
- providing specific training for all employees to highlight the hazards and danger from utilities apparatus and explain the safe system of work;
- compliance with the requirements of HSG47 – Avoiding Danger from Underground Services; and
- using personnel protective equipment which address the specific hazards posed by utility apparatus, e.g. flame retardant clothing.

9.5.3 Utilities Personnel

The Contractor shall appoint a Utilities Co-ordinator. The Contractor shall submit a staffing plan for all utilities personnel as part of the Utilities Plan for the works.

9.5.4 Utilities Coordinator

The Utilities Coordinator shall:

- be the principal logistics point of contact for utilities related activities;
- produce and implement the Utilities Plan;
- develop and provide utilities training for all personnel to include induction, tool box talks and specific training for personnel with logistics responsibilities,
- manage all utilities personnel;
- co-ordinate between utilities personnel and the construction teams;

- approve the utilities related elements of the Contractor's method statements;
- ensure compliance with utilities legal and contractual requirements;
- liaise with the Contractor's procurement personnel to ensure that procurement activities take due cognisance of utility requirements and risks;
- analyse individual utility related incidents and complaints to identify root causes, corrective and preventative actions needed, trends and strategic actions;
- manage logistics monitoring included in the Works Information or as required by consents, including analysis and interpretation of monitoring results and actions; and
- produce report information for the utilities part of the progress report and attend the progress meeting to ensure that the Utilities Plan remains suitable, adequate and effective;

The Utilities Coordinator shall have the following competencies:

- appropriate experience of utilities management, including site experience on construction projects;
- experience of the NRSWA;
- experience of liaising with and co-ordinating statutory undertakers;
- good knowledge and practical experience of legal requirements and how to comply with them; and
- experience of liaison with stakeholders including local authorities, the police and Highways Agency.

9.5.5 Utilities Plan

The *Contractor* will develop a plan for managing the Utility works or as otherwise agreed with the Project Manager. This should include resource requirements, co-ordination of works and other relevant information relating to the works.

The *Contractor* shall not commence work on site until the Project Manager has accepted the Utilities Plan.

The Utilities Plan shall include:

- the management processes and procedures for complying with the legal and contractual requirements and other requirements of the Works Information;
- a staffing plan containing: • the roles and responsibilities including the job title of the
- nominated person responsible for each task;
- the role fulfilled by the key person; and
- a schedule identifying personnel employed directly, Subcontractors, full and part time personnel and the duration of their activity on the contract;
- the process for liaison and communication with others, including other Project contractors and statutory bodies, where required by the Works Information;
- the processes for liaison and communication with subcontractors and suppliers or any tier and ensuring compliance with the minimum requirements of the Works Information;
- the Contractor's programme for training, site inspections, audits and consents submissions;
- the process for identifying, planning and implementing Utility Works;
- details of temporary works which may affect utilities, mitigation measures and details of how this will be communicated to the Statutory Undertakers in order to seek their acceptance;
- details of personnel protective equipment specific to Utility Works and other Health and Safety measures;
- a Permit to Dig procedure;
- details to ensure compliance with NRSWA and the Crossrail Act 2008;
- details of and process for complying with the requirements of Contractor Identified Utility Works; and
- details and process for complying with the requirements of Utility Works Implemented by the Project Manager or Statutory Undertaker.

Contact details for the Statutory Undertakers responsible for each utility apparatus will be provided by the Project Manager. The Contractor shall ensure the plan is appropriate to all activities included in the works. The Contractor shall train all employees, including subcontractors and suppliers of any tier, with direct or indirect responsibilities under the plan, on the contents of the plan that apply to its work.

The Contractor shall review and update the plan to ensure it remains suitable, adequate and effective as the works progress, ensure that it reflects the current status of the works and:

- following any material change to the status of the works or site that has an impact on logistics requirements;
- as instructed by the Project Manager; and
- at least every 6 months, the revised plan shall be submitted to the Project Manager for acceptance.

9.5.6 Utility Works Using the New Roads & Street Works Act 1991

Utility Works in the public highway will be undertaken using the powers contained in the NRSWA and in particular Highway Authorities & Utilities Committee (HAUC) Code of Practice – Measures Necessary Where Apparatus is Affected by Major Works (Diversionary Works). Appendix C of this HAUC Code of Practice details the process to be followed from identifying utility works to completion of those works. The Contractor shall take due cognisance of the time taken to serve notices and implement the Utility Works and/or obtain such consents when planning the works.

9.5.7 Utility Works Implemented by the Employer or Statutory Undertaker

If the Employer or statutory undertaker implements the Utility Works then the Contractor shall:
- provide site and welfare facilities as required by the Project Manager;
- act as Principal Contractor under the CDM Regulations for Utility Works within the worksite or Working Areas for which it is identified as Principal Contractor;
- incorporate sufficient time for the Utility Works into the Accepted Programme;
- not alter the programme for the Utility Works without prior approval from the Project Manager; and
- afford clear and uninhibited access to the statutory undertaker or other Project contractors to allow them to complete the Utility Works in a timely and efficient manner.

Where appropriate, co-ordinate these works with other works within their remit and liaise with the Statutory Undertaker accordingly.

10.0 WI 1000 – Works and other things to be provided

10.1 Facilities/Works Provided by the `Contractor (ECSC 25.2)

The *Contractor* shall provide (as provision) options and estimate costs to provide a co-located office space for the purposes of co-location of the Project Team & Employers Consultant for the duration of the contract with suitable welfare facilities.

The co-located office location shall be within TfL Zone 1 or 2, Central London, preferably Central / East London, with good transport links to Palestra (i.e. Southwark Station / Jubilee Line) and to the Rotherhithe & Blackwall Tunnels (i.e. Blackwall Station / DLR) with short walking distance for tube or bus.

The co-located office shall be large enough to accommodate at least 15 people (expected to have 3-5 person each from TfL, Employers Consultant & *Contractor*) with a dedicated room where meetings can be held.

The co-located office is so that the *Employer*'s project team and the suppliers' teams can work together as an integrated team. Both the *Contractor* and the Project Manager shall promote the ethos of collaborative working and support the integrated team.

Office furniture shall be provided by the *Contractor*.

10.2 Welfare Arrangements

It is expected that the Contractor will be utilising existing welfare facilities provided by the LoHAC Principal Contractor for site investigation.

The *Contractor* shall adhere to all site safety requirements set out by the LoHAC Principal Contractor.

10.3 Facilities/Works Provided by the Employer

10.3.1 Access to Premises

Any Premises made available by the *Employer* to the *Contractor* in connection with this contract shall be free of charge and shall be used by the *Contractor* solely so the *Contractor* can provide the Works. For the avoidance of doubt, the *Contractor* is responsible for its own costs for travel including any congestion charging and/or low emission charging. The *Contractor* shall:

- Have the use of such TfL Premises as licensee and shall not have or purport to claim any sole or exclusive right to possession or to possession of any particular part of such TfL Premises;
- Vacate such TfL Premises upon the termination or expiry of the contract or at such earlier date as the Employer may determine;
- Not exercise or purport to exercise any rights in respect of any TfL Premises;
- Ensure that the Contractor's employees, Sub-contractors and Indirect Sub-contractors and persons connected to them carry any identity passes issued to them by the Employer at all relevant times and comply with the Employer's security procedures as may be notified by the Employer from time to time; and
- Not damage the TfL Premises or any assets on the TfL Premises.

Nothing in this clause shall create or be deemed to create the relationship of landlord and tenant in respect of any TfL Premises between the *Contractor* and any member of the TfL Group.

The *Employer* shall be under no obligation to provide office or other accommodation facilities or services (including telephony and IT services) to the *Contractor* except as may be specified in the Scope.

The *Employer* is responsible for maintaining the security of TfL Premises in accordance with its standard security requirements. The *Contractor* shall comply with all of the *Employer's* security requirements while on TfL Premises, and shall ensure that all of the *Contractor*'s employees, Sub-contractors, Indirect Sub-contractors and persons related to them comply with such requirements. Upon request, the *Employer* shall provide the *Contractor* with details of the *Employer's* security procedures.

The *Employer* reserves the right under this contract to refuse to admit to any TfL Premises any of the *Contractor's* employees, Sub-contractors, Indirect Sub-contractors and persons related to them who fail to comply with any of the *Employer's* policies and standards referred to in this contract.

The *Employer* reserves the right under this contract to instruct any of the *Contractor's* employees, Sub-contractors, Indirect Sub-contractors and persons related to them personnel to leave any TfL Premises at any time for any reason and such personnel shall comply with such instructions immediately.

Where the *Contractor* is required to access (with appropriate permission and approval from the *Employer*) any areas under the control of any of the *Employer's* PPP or PFI Contractors, the *Contractor* must comply (and ensure that any Sub-contractors and Indirect Sub-contractors comply) with all of their rules, regulations and standards as appropriate.

10.4 Contract Management System

The parties agree to utilise a web-based contract administration management system ("CAMS") for the project, which shall be ASITE.

11.0 WI 1100 – Health and safety and Environmental

11.1 General Health and Safety Requirements

11.2 Requirements

The *Contractor* shall refer to Annex 6 – Health & Safety requirements for detailed information.

The *Contractor* complies with all of the requirements listed in the Surface Transport Contract Conditions when working on the highway and its structures.

The Employer is responsible for delivering the programme in accordance with the Surface Transport Health Safety and Environment Policy. The Employer's Health Safety and Environment Policy Statement sets the leadership framework for the delivery of the programme in line with this policy and the additional objectives set by the Employer.

The Employer's vision for health and safety is of a world class project delivery with zero harm. The Employer's strategy for delivering this is to implement effective health and safety management systems and behaviours.

The Contractor complies with the spirit and intent of the Employer's Health Safety and Environment Policy Statement and health and safety strategy.

The Contractor and their supply chain implements measures to mitigate and manage the key risks to as low as reasonably practicable (ALARP) through:

- Robust design risk management
- Effective processes for assessing risk and developing safe systems of work
- The submission of suitable and sufficient RAMS for surveying stages as well as construction activities must be submitted to the Project Manager for review two weeks before commencement on site
- Pre Construction Information will be provided by the Employer
- The Contractor must ensure that the Project Manager has submitted an F10 for the surveying/ construction stages of the scheme
- The Contractor and Sub-contractors must be able to demonstrate a continuous improvement plan throughout the duration of the project
- The Contractor and Sub-contractors must be able to demonstrate experience of working on Network Rail assets and be aware of the process required to obtain permits and track possessions
- Construction phase plan and emergency preparedness plan
- World class behavioural safety programme with full participation by all
- The Contractor and Sub-contractors must be able to demonstrate high levels of leadership commitment and supervision and engagement in monitoring and managing the Works, rectifying deficiencies and continuously improving
- The Contractor and Sub-contractors must provide adequate competent staff, suitably trained and qualified. The Contractor must provide the Employer with evidence of CV's and qualifications supported by a training matrix showing competence and identifying training needs

- Personal competency, development and innovation
- Exemplary standards of health and safety performance and management whether in design, construction or procurement to ensure that the Employer's vision is delivered on the worksite and compliance with health and safety legislation
- Comprehensive occupational health management scheme
- Pre start meetings
- The Contractor and Sub-contractors work force must be fully inducted on the site before works through site inductions, toolbox talks and daily pre work briefings it may also be a requirement to hold CSCS cards or similar.
- Contractor's workers are ready for work through site inductions, toolbox talks and daily pre work briefings, which must be recorded and available for inspection by the Employer
- "One Team" culture, honesty, openness and engagement
- Rewarding good performance and challenging poor performance
- The Contractor submits on a 4 weekly basis an incidents summary report of which the Employer will provide the template of

The Contractor responds promptly if the Project Manager requests a meeting with a senior representative from the Contractor (typically a Director identified as responsible for the Works) to discuss any reportable event, adverse trends or other evidence of a serious non-conformity with the legislation or health and safety requirements stated in this part of the scope.

The Contractor ensures that all employees and Sub-contractors and suppliers of any tier are made aware of their responsibility for their own safety and the safety of others and for ensuring that the activities they undertake are safe and do not place others at risk. A banksman/signaller is used for all loading, unloading and lifting operations, for all vehicle movements across the public footway notwithstanding the presence of a dropped kerb and for all vehicle movements where the vehicle is reversing or the driver's review is restricted. All vehicle entry and exit movements to each worksite are managed using a banksman. The Contractor ensures that employees do not enter any areas where they are putting themselves or others at risk in doing so.

The Contractor ensures that his employees participate in the health and safety initiatives that the Contractor and Employer use to review and improve health and safety performance collectively with their supply chains. This includes the requirement to attend routine health and safety meetings, briefings and Sub-contractor forums.

The Contractor produces, cascades, communicates and circulates health and safety alerts and communications to all levels of the workforce. Records of these being briefed are retained by the Contractor.

11.3 Contractor's Health and Safety Management Systems

The *Contractor* and Sub-contractors must provide a description of their Health and Safety management system (e.g. OHSAS18001 or similar) and demonstrate how the system is maintained to ensure that it is fit for purpose.

11.4 Health and Safety Advice

The *Contractor* provides CV's for all members of the health and safety Team in their proposal and ensures that these people once accepted are made available to provide the Works. The *Contractor* informs the Project Manager of any changes in personnel and provides CV's for new members of the Team.

11.5 Procurement and Supply Chain Management

During the procurement process and after the appointment of Sub-contractors, the *Contractor* is responsible for ensuring that Sub-contractors are aware of and understand the health and safety requirements stated within this part of the Scope. The *Contractor* coordinates and manages the interface between his Sub-contractors to ensure compliance with the health and safety requirements set out in this part of the Scope and monitors and reports health and safety performance periodically to the Project Manager.

11.6 Health and Safety Training

The *Contractor* ensures the delivery of health and safety training at all stages of the project for all of his personnel (including Sub-contractors and suppliers of any tier) engaged on the Works. In particular, training is provided early in the programme to raise awareness of how health and safety initiatives can be incorporated into the design and construction phases to maximise performance in these areas and assist with mitigating any associated impacts. The *Contractor* meets all training, assessment and associated costs. The *Contractor* should be able to demonstrate staff competencies via a training matrix or similar which the Employer will review.

The Contractor puts in place systems that ensure all inductions/training are implemented effectively and that the persons providing inductions have received adequate training to do so. The Contractor ensures that these are carried out in a suitable place with appropriate visual aids.

The Contractor has a procedure in place that assists those personnel with learning, reading and language difficulties.

The Contractor maintains a written record of attendance for inductions and safety briefings. This record is available to the Project Manager on request.

11.7 Construction Skills Certification Scheme (CSCS)

The *Contractor* ensures that all employees, Sub-contractors and suppliers of any tier and other *Contractor*s entering the site are in possession of a valid CSCS card. The *Contractor* ensures that the CSCS card held by any individual is appropriate to their specific job task(s).

An exception to this requirement is granted where the individual holds a valid card from a CSCS affiliated or amalgamated scheme or other accepted scheme which has been assessed as meeting similar standards. Special dispensation may be given by the *Contractor* to provide access to visitors when on an accompanied site visit.

11.8 Management of Site Hazards

The *Contractor* takes appropriate action with regards to the site hazards identified by himself or the Project Manager in association with the works contained in the Pre Construction Information. The *Contractor* also considers the hazards identified in the development of their detailed design using the Design Risk Management process of the Construction (Design and Management) Regulations 2015 (CDM Regulations) and Control of Asbestos Regulations 2012. The *Contractor* ensures that they properly communicate the hazards on drawings or through risk registers and controls the residual risks via risk assessments, method statements and activity plans as part of their safe system of work so that they are understood by the workforce.

The *Contractor* also considers the site hazards that are normally associated with working on a construction site and on the public highway. These include, but are not limited to, confined spaces, working at heights, asbestos containing materials, buried services, overhead utilities, hazardous materials, contaminated land, uneven surfaces, high and low voltage cables, moving machinery, moving vehicles and pedestrians. The *Contractor* undertakes his own site hazard survey prior to starting works on site to verify the site information and identify any other risks that may affect their work.

In addition to the hazards and risks normally associated with the types of work detailed in this document, the *Contractor* and their Sub-contractors shall consider the following significant residual risks whilst planning and undertaking the Works;

- •Working at height
- •Confined spaces
- • Interface with electrical equipment
- • Interface with services
- • Known Asbestos presents

The above list is not exhaustive and care should be taken to maintain the safety of the public, including road users and non-motorised users, workforce, environment, security and infrastructure.

All identified hazards shall be recorded within the 3D Graphical Model and also logged in the Designers Hazard Log.

11.9 Compliance with Policies

The *Contractor* notifies its personnel Sub-contractors and Indirect Sub-contractors and the *Employer* of any health and safety hazards that exist or that may arise in connection with the provision of the Works of which the *Contractor* is aware or ought reasonably to be aware.

The *Contractor* undertakes that all its personnel and those of its Sub-contractors and Indirect Sub-contractors comply with all of the *Employer*'s policies and standards that are relevant to the provision of the Works, including those relating to safety, security, business ethics, responsible procurement, work place harassment, drugs and alcohol and illegal substances and any other on site regulations specified by the *Employer* for personnel working at TfL Premises or accessing the *Employer*'s computer systems. The *Employer* provides the *Contractor* with copies of such policies on request.

The *Contractor*:

- • undertakes to procure that all the *Contractor*'s Personnel comply with each *Employer*'s policies and standards that are relevant to the performance of the Works, including those relating to safety, security, business ethics, drugs and alcohol and any other on site regulations specified by each *Employer* for personnel working at *Employer* Premises or accessing an *Employer*'s computer systems. The Framework *Employer* or the relevant *Employer* provides the *Contractor* with copies of such policies and standards on request;

- • provides the Works in compliance and ensures that the *Contractor*'s Personnel comply with all requirements of all Acts of Parliament, statutory instruments, court orders, regulations, directives, European Community decisions (insofar as legally binding), bye-laws, treaties and other regulatory requirements relevant to either or both of the *Contractor*'s business or each *Employer*'s business, from time to time in force which are or may become applicable to the Works. The *Contractor* promptly notifies the Framework *Employer* and/or any relevant *Employer* if the Contractor is required to make any change to the Works for the purposes of complying with its obligations under this Section 11.1.2;

- • Without limiting the generality of this Section 11.1.2, complies with all relevant enactments in force from time to time relating to discrimination in employment and the promotion of equal opportunities;

- • Without prejudice to any other provision of this Section 11.1 or the Schedules, complies with any provisions set out in the Schedules that relate to traffic management and complies with the reasonable instructions of each Employer's Traffic Manager as may be made available to the Contractor from time to time. For the purposes of this Section 11.1.6, "Traffic Manager" means

an Employer's traffic manager appointed in accordance with section 17 of the Traffic Management Act 2004; and

- Promptly notifies the Contractor's Personnel and any relevant Employer of any health and safety hazards that exist or may arise in connection with the performance of the Works.

In all cases, the costs of compliance with this Section 11.1 shall be borne by the Contractor.

In providing the Works, the Contractor (taking into account best available techniques not entailing excessive cost and the best practicable means of preventing, or counteracting the effects of any noise or vibration) has appropriate regard (insofar as the Contractor's activities may impact on the environment) to the need to:

- preserve and protect the environment and to the need to avoid, remedy and mitigate any adverse effects on the environment;

- enhance the environment and have regard to the desirability of achieving sustainable development;

- conserve and safeguard flora, fauna and geological or physiological features of special interest; and

- sustain the potential of natural and physical resources and the need to safeguard the life-supporting capacity of air, water, soil and ecosystems.

11.10 The Construction (Design and Management Regulations 2015)

The Contractor is the Contractor as defined in the CDM Regulations as named in the Contract Data.

The *Contractor* is not appointed as Principal Designer and complies with its duties, as Contractor in accordance with the CDM Regulations 2015. In such case, the Project Manager notifies the *Contractor* of the identity of the person appointed as *Principal Designer*.

The *Contractor* must liaise with the Principal Designer from the starting date until the Defects Certificate has been issued and share relevant information with the Principal Designer in accordance with the CDM Regulations 2015.
The *Contractor* ensures that his designers are suitably qualified and competent to carry out the work.

Where the *Contractor* is responsible for design, the Contractor is, and complies with, its duties as Designer as defined in the CDM Regulations 2015. The *Contractor* appoints a lead designer who is responsible for the coordination of the designs and all systems engineering.

The *Contractor* appoints a design manager (the "*Contractor's* Design Manager") who is responsible for the management, coordination, quality control and Assurance of the design work. The *Contractor's* Design Manager is the primary interface with the Project Manager on design matters.

The Project Manager appoints a design liaison manager (the "Design Liaison Manager") who will be responsible for liaising with the *Contractor* at all stages during the preparation of the *Contractor's* design.

The project shall be notifiable if there are 20 people or more working on site and last longer than 30 days.

11.11 Incident Reporting, Investigation, Performance Monitoring

The Contractor shall report all HSE incidents, accidents and near miss events which occur during the contract immediately via the agreed electronic reporting mechanism.

The Contractor shall, within fourteen (14) days submit an initial written report and after twenty-eight (28) days a full report detailing as a minimum the following:

- description of the incident;
- immediate actions taken;
- immediate causes;
- root causes;
- actions taken to prevent a recurrence;
- skills, knowledge and experience of those involved – supervisors and operatives; and
- details of plant/equipment used including calibration and maintenance

With the agreement of the Project Manager a longer timescale to complete the final report may be agreed.

All investigation reports will be completed to establish root causes and to a level of detail acceptable at the time to the *Employer*. Any comments provided by the *Employer* shall be addressed by the *Contractor* and an updated report submitted if required.

Where serious accidents occur – Major injuries and Dangerous Occurrence (as defined in RIDDOR) - these shall be reported to the Project Manager immediately (by phone) and be subject to a thorough formal investigation.

Nothing in this document supersedes the *Contractor*'s responsibility for statutory reporting of incidents/accidents.

To support the analysis of health and safety performance, the *Contractor* provides the Project Manager with the details of the number of hours worked (including for the avoidance of doubt, by Sub-contractors and other suppliers) for the work carried out and the number of personnel involved, in each four week period to be stipulated by the Project Manager. This data is to be submitted no later than Wednesday of Week 1 of the following period, and includes for all the *Contractor*'s staff and personnel employed on the Works since last report. The cumulative report is broken down by management, site level supervision and operatives.

11.12 Non English Speaking Workers

Not Used.

11.13 Personal Protective Equipment (PPE)

The *Contractor* shall assess and provide appropriate PPE for use of his employees and Sub-contractors as follows:

- PPE provided shall be free of charge to all personnel, as required and appropriate, for the job task; and
- PPE fits the individual and is laundered, maintained and/or replaced to ensure that it remains effective at all time

The *Employer'*s minimum requirements are:

- hard hat with company branding;
- eye protection (safety glasses or other suitable eye protection);
- hand protection (gloves) (subject to a task specific risk assessment agreed by the *Contractor*, gloves may be omitted);

- safety boots with ankle protection/support; and
- high visibility jacket (Class 3 – EN 471) and trousers with reflective strips for all works undertaken on the highway with company branding.

Dependant on the job task function and site conditions, personnel are also to be provided with:

- respiratory protection equipment (RPE);
- hearing protection; and
- hot, wet or inclement weather protection.

The *Contractor* ensures that all personnel wear PPE / RPE appropriate to the risks of each task and demonstrate that risk control systems are in place. Personnel must be properly fitted and tested for equipment i.e face fit test certificates, and copies of certificates recorded for inspection by the *Employer*.

The *Contractor*s PPE and clothing requirements are to be provided for use on site of the Project Manager, his staff, visitors and other agents involved in the contract.

11.14 First Aid, Occupational Health, Drugs and Alcohol

The *Contractor* shall make suitable and sufficient arrangements for first aid based on the:

- nature and size of the works;
- size and distribution of the workforce;
- needs of traveling, remote and lone workers;
- hours of work; and
- multi-occupied worksites.

The *Contractor* shall ensure access to an occupational health services provider. The occupational health service will be active at all times when work is being undertaken.

The *Contractor* uses and consults specialist providers, where necessary, to promote health surveillance, health awareness and general occupational health arrangements.

The *Contractor* shall operate a drugs and alcohol policy and implements suitable arrangements to verify compliance with that policy including undertaking the necessary alcohol and drug testing. In addition the *Contractor* shall co-operate with the *Employer* who may require the execution of random and/or for cause alcohol and drug tests. The *Contractor* shall provide records of testing if requested by the *Employer*.

The following reactive occupational health services are provided for each individual engaged by the *Contractor* (including the employees of site-based Sub-contractors and suppliers of any tier including labour only supply):

- testing for drugs and alcohol in individuals in accordance with the *Contractor*'s policy;
- providing pre-employment medicals;
- providing health questionnaires on commencement for all individuals including site and office-based staff;
- providing specific health appraisals for those referred following evaluation of questionnaires;

- providing specific health surveillance for those requiring it where identified under regulations and/or risk assessment;

- providing occupational hygiene services to support and assess ill health prevention management;

- contributing to the effectiveness of attendance management, rehabilitation and return-to-work programmes and support for ill health incidence investigation where necessary; and

- providing health promotion programmes applicable to construction operatives' workplace, lifestyle and wellbeing.

The *Contractor* has agreed occupational health protocols for the following health surveillance:

- Hand Arm Vibration syndrome surveillance

- Fatigue management

- Stress management

- Respiratory health

These documents must be submitted to the Project Manager as part of the risk assessment demonstrating exposure rates.

11.15 Equipment, Materials or Substances Hazardous to Health

The *Contractor* gives the Project Manager such written notice as the Project Manager requires prior to the use under the contract of any equipment, materials or substances that may be hazardous and a risk to the safety, health or welfare of persons or property. The *Contractor* identifies the hazards and provides full details of any precautions to be taken on the use of such equipment or materials.

The *Contractor* only specifies substances and materials for incorporation in the Works and incorporate substances and materials;

- which are in accordance with the relevant standards and general good building and engineering practice, and

- substances and materials which are not in accordance with the guidelines contained in any publication of the Building Council of Offices' Good Practice in the selection of Construction Materials current at the time of incorporation of such substances or materials into the Works provided that this sub-bullet does not apply where an experienced *Contractor* would have judged at the time of the substances or materials being specified that there was no reasonable prospect of them being declared 0 by the scheduled date for their incorporation into the Works.

The *Employer* will supply all information in his possession in respect of the presence of asbestos containing materials within the site/structure. The information will be included in the Pre-Construction Information. Based on this information, the *Contractor* shall liaise with the Project Manager to determine where additional surveys will be required and the type of survey to be undertaken.

Where no surveys exist the *Contractor* will consult with the Project Manager on the requirement for, number and type of any asbestos survey before the commencement of Works.

Where the *Contractor* believes that they have disturbed asbestos as a consequence of their works, they shall stop works immediately, inform the Project Manager and report the incident as a Near Miss via the agreed reporting process. The *Contractor* will prepare a report of the incident and provide it to the Project Manager in accordance with the requirements described under Incident Reporting, Performance Monitoring and Meetings.

11.16 Emergency Plan and Fire Safety

The *Contractor* shall comply with the Principal Contractor's emergency and fire safety requirements.

11.17 Behavioural Safety

The *Contractor* implements a behavioural based safety programme with the aims of:

- lead by example;
- increase awareness of behaviours;
- develop a no name/no blame culture with the workforce;
- recognise safe behaviour, challenge and manage unsafe behaviour;
- identify and remove hazards;
- provide positive observations and feedback;
- reduce at risk behaviours/conditions; and
- increase immediate corrective action.
- The Contractor appoints behavioural safety leaders from within their workforce. The behavioural safety leaders are required to:
- attend behavioural safety briefings;
- manage behavioural safety logs;
- lead by example on site and embody the values of behavioural safety;
- walk the site and raise all safety concerns;
- raise awareness and brief Site Team on behavioural safety and encourage all on site to raise safety concerns, remove hazards as they find them and record and report them as required;
- liaise with the Project Manager and escalate any issues that may need resolving; and
- attend behavioural safety leader meetings.

The Contractor recognises and rewards safe behaviours.

11.18 Health and Safety Innovation, Best Practice and Campaigns

The Contractor identifies, trials and implements health and safety innovations in consultation with the Employer or Project Manager.

During the lifecycle of the project it is anticipated that a number of industry best practices will be developed and rolled out across the project. Where identified the Contractor adopts such industry best practice to improve health and safety performance. Such industry best practice may comprise of health and safety standards and behavioural techniques and processes along with general site safety 'best practices' adopted from specific Contractors.

The Contractor engages with Employer or Project Manager to identify and deliver health and safety campaigns.

11.19 Site Mobilisation and Start of Works

The Contractor shall work collaboratively with the Principal Designer and LoHAC Principal Contractor.

11.20 Information

The Contractor ensures that:

- health and safety records relevant to the Works, including induction, training and equipment inspection and testing records, are kept on site and are available for inspection on request;
- copies of all relevant health and safety information to particular worksite activities is held by the team carrying out the work including method statements, risk assessments, written briefings, permits to work and safety alerts/bulletins;
- site safety briefings are provided to all persons carrying out work tasks subject to method statement, risk assessments and permit controls and written records maintained of briefings signed by all persons carrying out the tasks (these briefings are completed daily and when the task or condition changes);
- the Works are suitably supervised at all times and that operatives are aware of the person supervising their work activities and their whereabouts at all times;
- supervisors receive induction on the health and safety requirements and of their specific responsibilities for health and safety aspects; and
- good use is made of visualisation boards at each site/work area where daily group briefings take place with the task specific briefing carried out at the workface with the individual task team.

11.21 Site Supervision

The Contractor shall ensure that competent persons supervise and manage such works and that there are arrangements in place to specifically address the supervision of new personnel to site and any others at particular risk. The arrangements also include those for addressing foreseeable emergencies. The supervisory arrangements are reviewed for adequacy and suitability in connection with any lone or isolated work.

Persons appointed to supervisory and management positions have the necessary skills, knowledge and experience for the role and are regularly assessed throughout the works. Training and induction includes demonstration by example of good practice and the impact of poor practice.

All persons employed by the Contractor who have supervisory responsibilities for others (including those from Sub-contractors and suppliers of any tier) hold a current CITB Site Supervisors Safety Training Scheme certificate (SSSTS) (or equivalent agreed by the Project Manager).

11.22 Confined Spaces

The Contractor evaluates the workplace to determine which spaces (if any) are confined spaces and develops a written risk assessment and method statement identify the controls required for the safe operation of a safe system of work in accordance with The Confined Space Regulations and INDG258: Safe Work in Confined Spaces. The risk assessment and method statement shall include the confined space entry permit and the control systems required for working in confined spaces including communication, evacuation and rescue.

The Contractor eliminates the need to enter confined spaces wherever possible. Where entry to a confined space is necessary the Contractor ensures that a safe system of work is identified that documents all hazards, safety precautions and safe working practices associated with all confined space activities performed by employees.

Note: The LoHAC Principal Contractor has stipulated that a City and Guilds qualification for high risk confined spaced access is required, which is normally a two day course. Also a medical certificate stating that the holder is fit enough to work in confined spaces and perform the necessary escape procedures is required.

The Contractor ensures their safe system of work includes:

- checks that employees have the necessary skills, knowledge and experience to enter a confined space, are appropriately healthy (e.g. lung function for BA use) and have received adequate training;

- an adequate communication system to enable clear communication between those inside and outside of the confined space;

- testing and monitoring of the atmosphere within a confined space for hazardous gas, fume or vapour and checks on the concentration of oxygen prior to entry; and

- a requirement for emergency arrangements to be in place before any person enters or works in a confined space and contingency plans appropriate to the nature of the confined space, the risks identified and consequently the likely nature of an emergency rescue.

11.23 Working at Height

The Contractor complies with the Working at Height Regulations and eliminates the need to work at height wherever possible. Where working at height is necessary the Contractor ensures that a safe system of work is identified that documents all hazards, safety precautions and safe working practices associated with all working at height activities performed by employees.

The Contractor ensures that the work is properly planned, appropriately supervised and that employees have the skills, knowledge and experience to work at height. The Contractor ensures that collective measures take precedence over personal protective measures i.e. fall prevention equipment.

The Contractor implements an inspection and testing regime for all equipment identified as assisting in any working at height operation to ensure that is compliant with statutory regulations, maintaining records of all inspections and test.

11.24 Lifting Operations

The Contractor complies with the Lifting Operations and Lifting Equipment Regulations, producing a risk assessment and lifting plan identifying the nature and level of risks associated with a proposed lifting operation. The Contractor briefs the content of the risk assessment and lifting plan to all employees involved in lifting operations.

The Contractor ensures that all employees involved in lifting operations have the required skills, knowledge and experience and hold an appropriate valid construction plant competence scheme card.

The Contractor implements or sources adequate training for employees who operate or test/examine lifting equipment. Training records are kept and where lifting operations are planned, copies of these records are submitted to the Project Manager.

The Contractor ensures that any persons who operate lifting equipment or conduct inspections, examinations or tests have the required skills, knowledge and experience and hold an appropriate valid construction plant competence scheme card to ensure that the safe system of work is compliant with statutory regulations and the approved code of practice for safe use of lifting equipment published by the Health and Safety Executive.

The Contractor ensures that there are adequate competent persons to approve all lift plans on the worksite in accordance with The Lifting Operations and Lifting Equipment Regulations (LOLER). No lifts are carried out without this prior approval.

11.25 Excavation

The Contractor ensures that all excavations are planned before works commence taking reasonable steps to obtain and review survey drawings, utility records and ground penetrating radar and other appropriate survey information when planning the works.

In conjunction with suitable detection methods to be agreed with the Project Manager, sufficient trial holes will be undertaken to confirm the location of all buried utilities The Contractor will employ a permit to dig process and ensure that all employees undertaking excavations have the necessary skills, knowledge and experience.

The Contractor ensures that reference is made to the Health and Safety Executives Guidance Note HSG 47 Avoiding Danger from Underground Services.

11.26 Construction Plant and Equipment

The Contractor ensures that all plant and equipment operators have the skills, knowledge and experience and hold a valid construction plant competence scheme card for the plant/equipment they are required to operate and that they have been assessed as competent.

The Contractor ensures that all plant and equipment, including hired plant/equipment, is maintained, inspected and tested in accordance with manufactures instruction and/or requirements within legislation. The Contractor ensures that all plant/equipment is only maintained (including changing cutting blades) by personnel qualified to do so and that the results from all maintenance, inspection and tests are recorded.

11.27 Traffic Management and Pedestrian Segregation

The Contractor shall ensure that adequate provision is made for traffic management to either the Safety at Street Works and Road Works Code of Practice or Chapter 8 of the Traffic Signs Manual, which ever is the most appropriate for the risks and type of works. All Traffic Management shall only be installed and maintained by employees with the necessary skills, knowledge and experience and hold an appropriate valid competence scheme card.

The Contractor shall provide all traffic management plans to the Employer for agreement prior to commencement of works as part of the Traffic Management Act Notification (TMAN).

The Contractor ensures that adequate pedestrian management/segregation is included within traffic management arrangements and consults with the Project Manager before implementation.

Subject to the degree of risk and location, the Contractor shall implement such arrangements as are necessary up to and including permanent Traffic Management employees to inspect and maintain traffic management and pedestrian segregation arrangements. As a minimum, inspections of traffic management will be undertaken once every two (2) hours 24/7 with records maintained for the Project Managers review.

11.28 Site Inspections and Assurance

The *Contractor* shall agree with the Project Manager a programme of active assurance activities including site inspection and audits, the frequency of which to be at least weekly and take account of the nature of the work, previous results and any other relevant factors. The *Contractor* shall provide for information a copy of the completed audit/inspection report to the Project Manager no later than five (5) business days after the audit inspection.

Inspections and audits will be undertaken by the *Contractor's* health and safety support, supervisors and other management staff, including Project and Construction Managers. Subcontractors should carry out regular health and safety inspections of their own workforce and provide information to the *Contractor*.

The inspections are performed in coordination with the Project Manager's own inspection schedule to avoid duplication and to maximise the use of resources and effectiveness of the inspection system.

The *Contractor* addresses all actions and recommendations arising from inspections within the agreed timescales, regardless of who has undertaken the inspection.

The *Contractor* holds a Health and Safety Supplier Meeting every four (4) weeks. The *Contractor*, subcontractors and members

11.29 Senior Management Safety Tours

Senior managers from the Contractor and the Employer complete safety tours in accordance with the programme expectations. The frequency of safety tours is agreed with the Project Manager but is at least quarterly. The Contractor's senior managers and those of their subcontractors contribute actively in these safety tours as part of the joint commitment to deliver health and safety excellence across the project.

Representatives from the workforce are engaged in safety tours to build relationships between management and the workforce in the drive to world class safety performance.

The basis of any safety tour is to engage with the workforce, address the criteria listed below, provide an opportunity for employees and the Contractor to raise any health or safety concerns and to seek assurance that health and safety systems across the project are understood and followed.

Senior management safety tours will focus on:

- acknowledgement/engagement of all persons involved in an activity;
- management of any particular issues, problems or risks;
- identification and addressing of the health and safety concerns found on site during the tour;
- seeking assurance that health and safety systems are understood and being followed by ensuring that standards and expectations for best practice are realised in all work areas and practices;
- culture (safety culture and behaviours);
- safety performance data;
- changes: organisational or activity;
- project activity;
- incident or accident data; and
- review of methods of work, quality of briefings, site documentation.

11.30 Work Related Road Risk (WRRR)/ Fleet Operator Recognition Scheme (FORS)

Unless already accredited, where the *Contractor* operates delivery and/or servicing vehicles to provide the works, it shall within 90 days of the contract date register for FORS and attain and maintain a minimum of Bronze Accreditation.

Within 90 days of the Contract Date, the *Contractor* shall make a written report to the *Employer* detailing its compliance with WRRR and FORS (the WRRR Self-certification Report). The *Contractor* shall provide updates of the self-certification to the *Employer* on each three month anniversary of its submission of the initial self-certification report.

The Contractor shall ensure that every lorry, which it uses to provide the works, shall have:

- side guards;
- front, side and rear blind spots completely eliminated or minimised as far as practical and possible, through the use of fully operational direct and indirect vision aids and driver audible alerts;
- equipment fitted with an audible means of warning other road users of the vehicle left manoeuvre; and
- prominent signage on the lorry to warn cyclists and other road users of the dangers of passing the lorry on the inside and of getting too close to the lorry.

The *Contractor* shall ensure that it has a system in place to ensure all its drivers hold a valid driving licence for the category of vehicle that they are tasked to drive, along with recording any endorsements, or restrictions on the Drivers licence. The *Contractor's* arrangements shall include a means of checking and confirming with the DVLA, the driving licence of all employees undertaking driving operations.

The *Contractor* shall ensure that all employees undertaking driving operations undergo approved progressive training (to include a mix of theoretical, e-learning, practical and on the job training) and continued professional development to include training covering the safety of vulnerable road users and on-cycle hazard awareness, throughout the duration of the contract.

The *Contractor* shall ensure that it has a system in place to capture, investigate and analyse road traffic collisions that results in fatalities, injury or damage to vehicles, persons or property and for generating collision reports and within 15 days of the contract date, provide to the *Employer* a collision report. The *Contractor* shall provide to the *Employer* an updated collision report within five working days of a written request from the *Employer*.

11.31 Method Statements

Detail the operations for which the *Contractor* is required to submit method statements and risk assessments to the *Principal Contractor* for acceptance.

All Risk Assessments and Method Statements need to be issued for comments at least 14 days in advance of the related activities commencing.

WI 1200 – Subcontracting

11.32 Requirements for all Subcontracts

The *Contractor* ensures that each subcontract he lets in relation to this contract contain provisions:

- requiring the proposed Sub-contractor (and sub-Sub-contractors of any tier) to meet the Conditions stated for a Key Date on or before such Key Date and to achieve Completion on or before the Completion Date and to minimise the level of Defined Cost;
- requiring the proposed Sub-contractor (and sub-Sub-contractors of any tier) to maintain accounts and records and grant audit rights to the Employer and its authorised representatives of an equivalent extent and nature to those required by this contract;
- requiring the proposed Sub-contractor (and sub-Sub-contractors of any tier) to assign to the Employer the IPR in all documents, drawings, materials, computer software and any other material or works prepared or developed by or on behalf of the proposed Sub-contractor in the performance of the subcontract;

- requiring the proposed Sub-contractor (and sub-Sub-contractors of any tier) to grant a non-exclusive, perpetual, irrevocable, royalty-free licence to the Employer to use Background IPR (including the right to grant sub-licences) of an equivalent extent and nature to those required by this contract;

- imposing equivalent obligations of confidentiality on the proposed Sub-contractor (and sub-Sub-contractors of any tier) to those required by this contract; and

- imposing equivalent obligations regarding Prohibited Acts and health and safety (including Safety Breaches) as required by this contract on Sub-contractors (and sub-Sub-contractors of any tier).

11.33 The Subcontract Procurement Plan

Not Used.

11.34 Updating the Subcontract Procurement Plan

Not Used.

11.35 Critical Subcontract Packages

Not Used.

11.36 CompeteFor

Not Used.

12.0 WI 1300 – Not used

13.0 WI 1400 – Acceptance or procurement procedure

13.1 Acceptance or Procurement Procedures

When procuring his workforce, sub-contractors and suppliers, the Contractor shall adhere (as far as is practical given the nature of the Works/supplies required) to the Mayor of London's Responsible Procurement Policy. Evidence of the Contractor's efforts to meet this policy will need to be supplied to TfL as necessary.

Where the Contractor is obtaining quotes for the evaluation of a Compensation Event, a minimum of 3 quotes will be obtained.

Where, after receiving written acceptance from the TfL Project Manager, the Contractor enters into a sub-contract for the delivery of any part of the Works/ or the supply of any materials or pre-fabrication of components, the sub-contract shall use the NEC Conditions of Sub-Contract which shall include all the constraints contained in this contract.

Payment terms for both this contract and any sub-contract shall be the stated TfL standard terms of payment.

Where the Contractor has proposed a Sub-contractor for part of the Works, acceptance by the Employer without qualification of such proposal is deemed to be consent on the same legal basis as consent by the Project Manager. Any such Sub-contractor is not removed by the Contractor from the part of the Works for which he has been proposed without the prior written consent of the Project Manager.

14.0 WI 1500 – Accounts and records

14.1 Accounts and Records

The *Contractor* shall provide, submit and keep all Quality records as described in the Specifications for any part of the Works.

14.2 Payment

The payment applications submitted to the overseeing organisation in accordance with the Conditions of Contract by the *Contractor* shall, whenever dealing with matters covered by the Cost Plan, be set out under Part and Section headings similar to those in the Cost Plan and shall separately identify each item and specify quantity, unit, rate and value. Items not described in the Cost Plan but appropriate for inclusion as measured work shall be shown at the end of the relevant section or under section headings as appropriate indicating quantity, unit rate and value. In respect of all other matters referred to in the Conditions of Contract the *Contractor* shall separately show in the statement quantities, units and rates of goods and/or materials and also details of any other matters to which he considers himself entitled.

The *Contractor* shall allow the Project Manager to inspect invoices for Works, goods or materials included in the statement as may be required.

The *Contractor* shall deliver weekly to the Project Manager a return showing in detail the number of the several classes of labour from time to time employed by the *Contractor* and their Sub-*Contractor*s on the site and full details of all Construction Plant located on Site and available for use by the *Contractor* or their Sub-*Contractor*s.

14.3 Invoicing for payment

The *Contractor* shall attach the TfL Certified Payment Approval Form (CPAF to each invoice. When invoicing for payment, the *Contractor* shall send the application to:

TfL Surface Transport

Accounts Payable

PO Box 45276

14 Pier Walk

London, SE10 1AJ

When invoicing for payment, the *Contractor* shall include the following information:

- Back up information to substantiate any claim for payment i.e. invoices, plant/labour/materials returns, test results. Failure to provide full substantiation could delay payment.

14.4 Records, Audit and Inspection

“Records” means

- all necessary information for the evaluation of claims or compensation events, whether or not relating to Sub-contractors and/or Indirect Sub-contractors;

- management accounts, information from management information systems and any other management records;
- accounting records (in hard copy as well as computer readable data);
- sub-contract files (including proposals of successful and unsuccessful bidders, bids, rebids.);
- original estimates;
- estimating worksheets;
- correspondence;
- compensation event files (including documentation covering negotiated settlements);
- schedules including capital works costs, timetable and progress towards Completion;
- general ledger entries detailing cash and trade discounts and rebates;
- commitments (agreements and leases) greater than £5,000 (five thousand pounds);
- detailed inspection records;
- such materials prepared in relation to the invitation to tender and subsequent tendering process relating to cost breakdowns, in each case which have not already been provided to the *Employer*;
- accounts and records of the Price for Works Done to Date and all other amounts to be paid to the *Contractor* under this contract;
- risk mitigation plans and QRA; and
- Earned Value Management reports.

The *Contractor* maintains and procures in each subcontract that each of his Sub-contractors, maintains and retains the Records for a minimum of twelve (12) years from Completion with respect to all matters for which the *Contractor* and his Sub-contractors and Indirect Sub-contractors are responsible under this contract. The *Contractor* procures that each subcontract contains open-book audit rights in favour of the *Employer* and any novated *Employer* and their authorised representatives.

The *Contractor* undertakes and procures that his Sub-contractors and Indirect Sub-contractors undertake their obligations and exercise any rights which relate to the performance of this contract on an open-book basis. The *Employer* and/or any novated *Employer* and their authorised representatives may from time to time audit on an open-book basis and check any and all information regarding any matter relating to the performance of or compliance with this contract, including without limitation, inspection of the *Contractor*'s technical and organisational security measures for the protection of personal data, any aspect of the *Contractor*'s operations, costs and expenses, sub-contracts, claims related to compensation events, and financial arrangements or any document referred to therein or relating thereto. The *Employer*'s and any novated *Employer*'s rights pursuant to this sub-clause include the right to audit and check and to take extracts from any document or record of the *Contractor* and/or his Sub-contractors and Indirect Sub-contractors including, without limitation, the Records.

The *Contractor* promptly provides (and procures that his Sub-contractors and Indirect Sub-contractors promptly provide) all reasonable co-operation in relation to any audit or check including, to the extent reasonably possible in each particular circumstance by;

- granting or procuring the grant of access to any premises used in the Contractor's performance of this contract, whether the Contractor's own premises or otherwise;

- granting or procuring the grant of access to any equipment or system (including all computer hardware and software and databases) used (whether exclusively or non-exclusively) in the performance of this contract, wherever situated and whether the Contractor's own equipment or otherwise;

- making any contracts and other documents and records required to be maintained under this contract (whether exclusively or non-exclusively) available for audit and inspection;

- providing a reasonable number of copies of any subcontracts and other documents or records reasonably required by the Employer's and/or any novated Employer's auditor and/or granting copying facilities to the Employer's and/or any novated Employer's auditor for the purposes of making such copies; and

- complying with the Employer's and/or any novated Employer's reasonable requests for access to senior personnel engaged by the Contractor in the performance of this contract and/or the Works.

14.5 Documentation on termination

The Contractor shall provide all documentation produced in accordance with the Works Information until the date of termination including items which have not yet been submitted to the Project Manager. This includes all documentation produced to provide the Works by the Contractor and their Sub-contractors.

The documents shall be ordered and categorised according to their corresponding section within WI 2000.

15.0 WI 1600 – Not used

16.0 WI 1700 – Not used

17.0 WI 1800 – Not used

18.0 WI 1900 – Not used

19.0 WI 2000 – Employer's requirements

19.1 Summary

The main purpose of this Stage 2 (Feasibility) project is to a gain better understanding of the condition, expected life, test performance, residual life and dependencies of the refurbishment items identified in the WI 2000. If refurbishment and/or replacement is required, then the feasibility study should be carried out to develop feasible options with estimated cost and programme. The *Contractor* shall assist with buildability assessments, value engineering, optioneering and whole life costing in order to provide sufficient evidence to support and recommend a single option for each item.

The *Contractor* shall assess cost and programme implications of undertaking Works for all refurbishment items identified in WI 2000. A detailed break down of cost and programme shall be developed by the *Contractor* through the completion of a Desktop Study, Site Surveys & Investigations and a Feasibility Study.

The *Contractor,* Consultant and *Employer* shall work collaboratively to ensure information is shared between all parties in a timely manner, create a positive working environment to promote constructive discussions and working together as one team to deliver the STIP2 – Stage2 (Feasibility) successfully.

Please refer to the following documents for further information:

• STIP2 Tunnels – Stage2 (Feasibility) TfL High Level Stage 2 Programme

• STIP2 Rotherhithe Tunnel Refurbishment – Project Requirements

• STIP2 Blackwall Tunnel Southbound Refurbishment – Project Requirements

19.2 Existing Records and Archives

The *Contractor* shall have access to all available records and archived documents on the project including any previous surveys, investigations and testing undertaken. The most significant documents are listed in Site Information Pack but further information in the form of inspection records, construction drawings reports and other information stored on the BridgeStation, and Tunnel Station databases are also available. The *Employer* will provide the *Contractor* read-only access to the system for three email addresses.

The *Contractor* shall ensure that all required record information is transferred and stored within the CDE (Asite), and BridgeStation records are updated.

Once all the inspections, surveys and studies are complete, the information will be entered onto BridgeStation by the *Contractor*, in accordance with TfL's file-naming convention and guidelines.

19.3 Project Scope

All identified refurbishment items are listed below. Please refer to the STIP2 RHT & BWT - Project Requirements for further background and detailed information. The *Contractor* shall review the documents thoroughly and inform the *Employer* should there be any discrepancy or if further clarifications are required.

19.4 Project Scope for Blackwall Tunnel Southbound (BWT-SB)

The *Contractor* shall carryout associated site surveys and investigations as detailed in Annex 4 – Outline Testing & Specifications, and compile survey data to produce subject matter reports and factual final reports. They shall also work collaboratively with the Employer's Contractor to provide support on buildability, temporary works requirements, implementation cost, works programme and risks & opportunities of the developed feasible options.

19.4.1 (BWT-A) Upgrade the Ventilation System to Ventilate a 100MW Fire

At the present time there is no design information available for the existing ventilation system though it is estimated to be capable of controlling fire loads in excess of 20MW. The existing fans are thought to be capable of withstanding temperatures of 150°C for a minimum of 2 hours. Current Highways Agency and European Standards recommend that this should be improved to 250°C.

The *Contractor* shall undertake computer modelling and airflow tests to determine the adequacy of the existing ventilation system in controlling heat and smoke from various fire scenarios, including where vehicles are trapped on both sides of a fire. The nature of the scenarios to be considered and the appropriate response and control provisions shall be established through dialogue with the emergency services and other relevant bodies at the TDSCG meetings. Any assumptions made of the existing ventilation system should be clearly stated in the *Contractor*'s Feasibility Report.

For the purpose of investigating the current and future ventilation system performance the *Contractor* shall propose a 'design fire load' of 100MW which will take into consideration traffic usage, response times, safety provisions and available accident statistics. A risk assessment of the likelihood, balanced against the consequences, such as potential loss of life and risk of loss of tunnel structure shall also be taken into account. The minimum 'design fire load' shall be agreed with the *Employer* prior to the commencement of any substantial modelling work.

Because the fans in the southbound bore shafts are located remotely from the tunnel interior, the *Contractor* shall assess whether the temperatures at the fans during a 'design fire load' would be expected to be lower. The findings of this analysis are likely to assist in the decision as to whether the fans should be replaced as part of the refurbishment works. If it is found that the fans should be replaced then the *Contractor* shall detail a specification for a replacement ventilation system in the Feasibility Report.

19.4.2 (BWT-B) Replacement of Tunnel Lighting into LED Lighting

The Blackwall Tunnel southbound bore is illuminated in three sections with luminaires suspended from the tunnel ceiling. 400W High-pressure sodium light fittings control the entry (threshold and transition) and exit zones where higher intensity light is required. 50W Fluorescent type lamps illuminate the interior of the tunnel bore. The Portals additionally have lighting at the side of the tunnel consisting of 400W high-pressure sodium and 58W fluorescent fittings. Much of this equipment has now reached the end of its useful life and will need replacing.

The Lighting B Scout controllers are obsolete and as well as the B Scout luminaire switches, these are currently being changed out and a shorting plug is installed on the Base Lighting to hold it in stage 1 to give enough spare BScout switches to manage Stages 3-6 Boost repairs as a temporary fix. A Single BScout is having its Hard & Software updated by Philips and will cover the whole tunnel (there were 2 no B Scouts 1 at each end - There is currently no resilience in the System until STIP 2, as the asset continues to be sweated).

19.4.3 (BWT-C) Replacement of CCTV System

The CCTV system consists of 22No. CCTV cameras (201-222) installed in 2006. The equipment includes; cameras, housings, lens, control boards, PSU/terminations and enclosures. These items are now approximately 10 years old, and are obsolete, currently being repaired using existing spares, and new spares are no longer available off the shelf.

Currently the cameras are connected on the 36c fibre that runs through the tunnel via the EDPs. The condition of the copper/fibre cable from EDPs to the CCTV is unknown and is likely to need replacement; however legacy fibre will become redundant with the migration to IP during early 2017. The general condition of the EDP enclosures is unknown.

The system is unreliable and will need to be replaced with new CCTV cameras to provide 100% coverage of the tunnel and its approach roads. The *Contractor* shall assist with the development plans for new cameras to be provided with pan, tilt and zoom, screen wipers, washer bottles and IP66 housings. The system shall be linked to the HORUS system via existing CCTV IP network, and designed in such a way that the operation of emergency equipment or changes in traffic flow will cause a pre-selected camera (or cameras) to focus on the location where the incident is occurring. The CCTV system with be compatible with the proposed new Vehicle Accident Incident Detection System (VAID).

The new system shall achieve the following:

- 100% coverage inside bores, no blind spots.
- Ensure clearance of traffic envelope.
- Cameras deployed on both walls of the bore to minimise risk of obscuration if high sided vehicles are stationary inside the underpass.
- Overlapping views so that cameras can cover each other in the event of an incident or an individual camera failure.
- Good coverage around the bore entrance as this is where the majority of traffic accidents occur.
- Cameras able to view both directions of traffic flow in case of contra flow or during an emergency
- Coverage of areas outside of the bore which are a security risk

19.4.4 (BWT-D) Installation of Video Accident and Incident Detection (VAID) System

The existing CITILOG VAID system has been none operational for the past 6 years plus, the UK suppliers Smart CCTV have been in and advised that the whole system is obsolete and would need to be replaced.

There currently a preferred Solution provided by FLIR within the Data files for further review.

This uses the existing FLIR Flux servers for Northbound to minimise costs.

Costs and a detailed specification for Stage 4 have been obtained by the TfL Tunnel *Employer* and are available for incorporation into cost estimates. In Stage 2 there is no feasibility required although costs and programme for the activity shall be incorporated into the single preferred option. These will be provided by the Tunnels *Employer*.

The Vehicle Incident Detection System should be capable of detecting:

- slow moving vehicles, over speed flow of vehicles, wrong direction vehicles;
- pedestrians in the road or on the walkway; and
- debris in the road.
- Mask multiple alarms from the same incident

The system shall activate an alarm based on changes detected by the video image processing software. An alarm from the detector shall implement the following actions:

a. CCTV alert via the HORUS system;

b. Video recording to DVR/hard disc before and after the incident;

c. Switch video monitors from blank to real time image with banner; and

d. Switch the alarm camera plus the up stream and down stream cameras

Costs and a detailed specification for Stage 4 have been obtained by the TfL Tunnel Employer and are available for incorporation into cost estimates. Costs and programme for the activity shall be incorporated into the single preferred option. These will be provided by the Tunnels Employer.

19.4.1 (BWT-E) Refurbishment/Replacement of Variable Message Signs (VMS)

VMS Signs

There are 70 off VMS and 96 off Tunnel Lane Control Signs (TLSC) fixed to the soffit of the tunnel. There are separate signs facing southbound and northbound traffic flows. The signs are in poor condition especially from the north portal heading south. A number of the VMS signs within the tunnel are regularly hit by high vehicles or their loads causing damage. There is damage both to the signs and support bracketry, 21no of the VMS have been hit.

It is the considered view that all the VMS and TLCS signs throughout the bore will need to be replaced due to their age.

The current signs are not IP signs, but they are driven by the Horus system with an NMCS2 interface via MOXAs (IP to RS485 convertors).

Way Finding Signs

There were also 92 way finding signs were installed in 2013/14, they are situated at either end of the EDPs, as they were a direct replacement for the old sign indications. The wayfinding signs are LED secret signs (Go black when switched to OFF by the LHD system). The current positioning of these signs does not meet current requirements in relation to the carriageway height. In the event of total power loss they will continue to be illuminated and point motorists to the closest exit. The Way Finder signs are on average spaced evenly at intervals of approximately 46m for the entire tunnel length.

19.4.2 (BWT-F) Decommission Flood Gates

Flood defence gates are located at each portal and are used to protect the surrounding area from flooding if there is a tunnel breach. A paper is currently in production and advising decommissioning. It has not been formally issued and a clear plan of action for what measures will replace the gate is to be agreed. The scope of this item is to provide a cost for decommissioning and one for removal of the flood gate. This information will feed into the study. If the paper is agreed then its outcome will feed into the Stage 2 final option selection, if a policy decision is not agreed then there may be no activity carried forward under this scheme.

It is currently envisaged that decommissioning shall involve ensuring there is secondary block against the gate dropping if the hydraulics are decommissioned, decommissioning the control mechanism (HORUS and local SCADA) and electrical isolation.

Removal would involve extracting all parts of the gate which can be reasonably removed. Some parts of the gate built into the structure may be left in situ if they do not pose an issue to future use of the tunnel and would be very expensive to remove.

19.4.3 (BWT-G) Refurbishment/Replacement of Cabling Infrastructure

A longitudinal 36 core fibre cable has recently been installed within the bore, with connections to each EDP cabinet. TfL are currently installing new IP switches in the EDPs.

Any new assets such as CCTV and VAID to be connected to the HORUS system would need to be cabled back and terminated on the new EDP switches.

The condition of any cables between EDPs, vent shafts and assets located within the tunnel is unknown at present. TfL estimates that no work has been carried out on the cabling since the previous refurbishment c2006.

The design of the network would have to consider the likely increase of data traffic on the IP network, as well as resilience of the system.

19.4.4 (BWT-H) Refurbishment/Replacement of Power Systems

Each substation LV supply installation is ‘backed up’ by a UPS system providing continued power to certain essential services in the event of mains failure. The systems principally provide power for the emergency tunnel and substation lighting, computers and communications equipment.

The latest P.I which was carried out in November 2015 has details of current status of the UPS and components and notes that some parts are approaching the end of their serviceable life.

'UK Wiring Regulations, BS 7671 (ref 14), in the recent update, now includes particular requirements for non-combustible methods of support for cables / wiring in escape routes (Regulation 521.201). Plastic clips, supports, conduit and trunking must not be for cables along escape routes.

19.4.5 (BWT-I) Refurbishment/Replacement of M&E Infrastructure in Drainage System

Renewal of Drainage System - pipes, valves, pumps and control systems.

Note areas of the some of the equipment locations are designate confined spaces.

19.4.6 (BWT-J) Refurbishment/Replacement of Linear Heat Detection

System installed in 2000 (15 years designed life) Verify this statement?

The New Linear Heat Detection system shall be capable of being easily being extended to cover the Ventilation Shafts.

Note:-The LHD in the Sub Tunnel has recently been completed (2016) and commissioned as part of the Sub Tunnel Relighting Scheme.

As the Linear Heat Detector is mounted with the Tunnel Lighting, this item should be linked with the replacement of tunnel lighting works.

Please note that some M&E systems are dependent from other scope items and may need to be packaged together when developing feasible options.

19.4.7 (BWT-K) Refurbishment/Replacement of Fire Safety Systems

For clarity, the fire main and hydrants within the tunnel have been excluded from project scope due to the most recent inspection detailing them in good condition and the next anticipated works on the lifecycle plan being 2032.

19.4.8 (BWT-L) Refurbishment/Replacement of Heating Ventilation and Air Conditioning (HVAC) in Tunnel Service Buildings

- The HVAC Systems are approaching the end of their design life, which will lead to increased future maintenance costs and reliability.
- In extreme weather, failure could result in overheating of electrical systems and possible closure of the tunnel.

Please note that some M&E systems are dependent from other scope items and may need to be packaged together when developing feasible options.

19.4.9 (BWT-M) Refurbishment/Replacement of Electricity Distribution Points (EDPs)

There are 23 pairs Electrical/Emergency distribution points (EDPs) located above the walkway at approximately 50m intervals housing fire fighting equipment and emergency telephones.

Facilities provided at the EPs will need to comply with the relevant guidance and standards relating to telephones, information signs and fire fighting equipment. The requirements of the fire extinguishers, hose reels, fire mains and hydrants shall be agreed with the local Fire Service.

19.4.10 (BWT-O) Replace/Refurbish Radio System

The leaky feeder is approximately 10 years old of a 20 year design life. It does not run into the vent shafts. A current TfL scheme is investigating installing a leaky feeder in the sub tunnel, so this area is out of scope of the project. A replacement feeder extending into the vent shafts should be investigated. Removal of decommissioned services to improve its functionality should also be reviewed. Scope also includes cabling, transmitters, amplifiers and HORUS functionality.
The reserve leaky feeder is approximately 2 years old and in good condition.

Fire ground radio should be investigated with cost for replacement established.

The DAB is more than 10 years old with no voice break in. It is not EBU (European Broadcasting Union) compliant and replacement should be investigated.

19.4.11 (BWT-P) Replace/Refurbish Loud Speaker Public Address System

Bosch amps were recently replaced and the remaining Duran amps are not compatible with the rest of the network. They have a 7-8 year life and will be life expired by the end of STIP. Review what items require replacement along with condition, life expectancy, performance and residual life.

Items include Public Address, PC controller, speakers, feeder cables, amplifiers, fibres between amplifiers, recorders and microphones. The speakers are 10 years old and in poor condition with regular failures due to water and dirt in the asset. All pre recorded messages are out of date.

19.4.12 (BWT-Q) Remove Maintenance Telephone

Maintenance phones are no longer used in the tunnel

19.5 Project Scope for Rotherhithe Tunnel (RHT)

The *Contractor* shall carryout associated site surveys and investigations as detailed in Annex 4 – Outline Testing & Specifications, and compile survey data to produce subject matter reports and factual final reports. They shall also work collaboratively with the *Employer's* Contractor to provide support on buildability, temporary works requirements, implementation cost, works programme and risks & opportunities of the developed feasible options.

19.5.1 (RHT-A) Upgrade of LED Lighting & Replacement of Structural Support System

The outcome of Stage 2 (Feasibility) is to provide options on how the tunnel lighting can be upgraded with LED lighting and provide options to replace the structural support for the cabling system.

Existing main tunnel lighting and the support infrastructure which is suggested to be a galvanised uni-strut were installed in 1990 (updated in 1999) and is therefore at least 16 years old and subject to replacement.

The main tunnel lighting consists of a single row of 2x 58W fluorescent fittings at the tunnel crown, running along the centre of the tunnel. At the north and south portals there is boost lighting provided by 1x 400W and 2x 400W high pressure sodium fittings mounted either side of the main light fittings. As traffic flows in both directions within the tunnel the boost lighting arrangement at each portal is therefore the same. The lighting stages (1-6) are controlled via SCADA with input from photometers located at the north and south portals. Stages 1 and 2 are provided by the main tunnel lighting whilst stages 3 to 6 provide varying amounts of boost lighting. There is also a PLC based dimmable control system with Mod bus plus / TCPIP interface with HORUS control system.

The lighting support system is severely corroded throughout the tunnel. The original support system is coming away from the tunnel crown in some places, especially where the tiles that originally lined the tunnel are being removed. At the northern end of the tunnel, safety chains have been installed around the existing support system because the boost lighting arrangement interferes with the steel support bar arrangement used elsewhere. (See Principal Inspection November 2015.)

Hybrid Principal Inspection report and Mouchel General Inspection report both advice of end of life of strapping and chains. These were installed 5-6 years ago to sweat the asset as the holding bolts were failing and the support system is unsuitable for another 15-20 years.

19.5.2 (RHT-B) Replacement of Fire Main System

The existing cast iron fire main is buried in concrete and is unmaintainable. The flow rate at mid river tunnel section is well below the 2000 l/min minimum standard for effective firefighting from a hydrant.

Further investigation into the problems with water pressure should be undertaken, which are particularly problematic when multiple hydrant valves are open. Determine whether this will cause a problem for the emergency services, and if so propose solutions. Standard BS 9990:2015 (ref 18) recommends that either the hydrants are fed from a public water main capable of delivering 1500 l/min at all times, the adequacy of which is validated, or that this is supplemented by duty/standby pumps capable of maintaining 1500 l/m in the fire main whilst serving two separate valves open simultaneously at a pressure of 8 ± 0.5 bar when fully opened. (Refer to Principal Inspection November 2015.)

The fire main serving the hydrants and hose reels is located under the walkway and is fed directly off the Thames Water main from connections on both sides of the river. The system is not pressurised by a dedicated booster pump and is subject to fluctuation in mains pressure.

The outcome of Stage 2 (Feasibility) is to provide the *Employer'*s with options on how the fire main can be replaced, determine where the fire main, hydrants and meter bypass valves (where fitted) should be situated and review condition of isolation valves, supply points and fire control measures. It is also expected the condition of the single return valves (2x no.) which stop backflow are to be checked and advise how these valves can be maintained.

19.5.3 (RHT-C) Provision of Resilient Power Supply

The outcome of Stage 2 (Feasibility) is to provide an assessment of capacity, residual life and a preferred option for upgrading / replacement of Resilient Power Supply. HORUS updates shall be included within this item.

The emergency power supply is nearing the end of its design life and is in poor condition and difficult to maintain. UPS and Power Loading is at capacity and is life expiring. There are also systems, including lighting, that are not currently supported.

19.5.4 (RHT-D) Upgrade and Reconfiguration of Ventilation System

The outcome of Stage 2 (Feasibility) is to review all available reports and assess the nature and performance of the ventilation system and provide the *Employer'*s with options to upgrade and reconfigure the ventilation system to meet the current standard.

The Rotherhithe Tunnel ventilation system is a semi-transverse system used to minimise pollution levels during normal operations and to control smoke during an incident. It comprises four ventilation shafts, Shaft 1 and 2 to the south of the River Thames and Shaft 3 and 4 to the north.

For Shaft 1 and 4, they each contain three axial supply fans and each fan with a duty flow rate of 30m3/s at 1,100Pa (total pressure). For Shaft 2 and 3, they each contain four fully reversible axial fans and each fan with a duty flow rate of 59m3/s at 350Pa. These fans are arranged in a 2x2 layout. Fans at all four shafts are driven through variable speed drivers to enable control of the fan flow rate. Each of the fans is fitted with an isolation damper and noise attenuators.

At the present time there is no design information available for the existing ventilation system though it is estimated to be capable of controlling fire loads in excess of 20MW.

The existing fans are thought to be capable of withstanding temperatures of 150oC for a minimum of 2 hours. Current Highways Agency and European Standards recommend that this should be improved to 250oC.

Further Background Information

The ventilation system is of a semi-transverse form. Ventilation fans in 4 shafts working in different supply and extract modes to distribute fresh air via the invert void (sub-tunnel) and removing vitiated (polluted) air and/or hot fire smoke from extraction point at the base of the shafts. Under this configuration there are 9 fire zones (Thames Tunnels Fire Plan Engagement v2.6d indicates 8 fire plan zones plus and invert fire plan) and corresponding ventilation modes.

There are steel 'spouts' that emerge through the walkways either end of the central section (fire zone) of the tunnel. These direct fresh air from the invert void into the traffic bores. There are no records of why these spouts were installed, what they were specifically designed to do and whether they were commissioned. They appear to be unique to Rotherhithe Tunnel.

Ventilation studies have been undertaken that indicate that the ventilation system is able to control the smoke with a 15MW fire in all but the central section / fire zone. However with two-way traffic operations causing turbulence and churning of the air in the bore the air quality is difficult to control effectively, especially in the central section. Moreover the air quality recommendations of PIARC Tunnel Air Emissions Standard do not consider the level of exposure to exhaust fumes of cyclists and pedestrians, especially pedestrians who take the longest time to traverse the bore.

It is judged, on the bases of the age and condition of the components and the systems limited capacity, that the existing ventilation system is nearing the end of its useful life and should be renewed and upgraded. Studies have been undertaken to evaluate the upgrade options, which includes the introduction of jet fans in the central section.

There has also been some work undertaken to assess the effectiveness of portcullis gates at the base of the shaft to prevent recirculation via the spiral staircase arrangements in the ventilation shafts. The gates close

the entry to the spiral staircases from the tunnel bore and are principally used for maintenance. If the spiral staircases were used for emergency services access or as an escape route in the event of fire, smoke being extracted would expose the users to hot gases being expelled from the shaft. In addition the membrane that the portcullis door passes through is inadequately sealed to adequately prevent recirculation, thereby affecting the extraction efficiency of the relevant shafts.

The 4 tunnel shafts are listed structures which limit the available solutions to both pneumatically segregate the staircases from the potentially hot fire smoke being ventilated via the shaft and, possibly, avoid the need to the portcullis doors.

19.5.5 (RHT-E) Replacement of Linear Heat Detector (LHD)

The outcome of Stage 2 (Feasibility) is to provide option to replace the Liner Heat Detector with considerations to extending coverage into the vent shafts and highlight implications of tying this in with the wayfinding system.

The linear heat detection cable is located in the lighting cable trays and may need to be relocated during the replacement of the lighting system. It is expected the installation date, expected life, current condition, test performance and residual life will be established.

System was installed in 2000 (15 years designed life) old Sensor Fibre optic system. The LoHAC maintainers are currently having problems with the Sensor controllers (age and obsolesce - the manufacturer has recently been bought out by management). TfL are currently installing LISTEC solutions in other tunnels. As cable runs on lighting containment replacement will be required. TfL would consider an update of whole system. As the Linear heat Detector is mounted with the tunnel lighting, this item should be linked with the replacement of tunnel lighting works.

19.5.6 (RHT-F) Replacement of Emergency Wayfinding Signs

The outcome of Stage 2 (Feasibility) is to bring the Emergency Wayfinding Signs System up to current operational standards and to meet current regulations using an ALARP assessment.

There are also 33No way finder signs within the tunnel, mostly on the east wall. These are also fitted with battery backup so that in the event of total power loss they will continue to be illuminated and point motorists to the closest exit. The wayfinder signs are on average spaced evenly at intervals of approximately 46m for the entire tunnel length. The Emergency Wayfinding Signs System was installed in circa 2012/2013 and is currently switched on for 24/7/365. The LED panels (with a life expectancy of 7-10 years) are due for replacement in all emergency wayfinding signs. It was suggested that the cable containment is in a poor condition. The zonal connectivity to SCADA will have to be updated. These signs are believed to be daisy chained for power supplies and should be interleaved for resilience to CCT failure from the UPS. Clarifications are needed to confirm the status and condition of the internal battery due to the limited UPS availability when installed back in 2012/13. These batteries should be removed and upgraded from centralised UPS.

19.5.7 (RHT-G) Replacement of “Out of Bore” Lighting with LED Luminaires

The outcome of Stage 2 (Feasibility) is to provide options to replace out of bore lighting with LED luminaires – including service building, vent shafts, plant rooms, portal staircase and approach roads.

The lighting in the sub-tunnel, ventilation shafts, portal staircases and the tunnel service buildings is beyond its expected design life, and in a poor condition. The lighting and emergency lighting need to be upgraded.

Condition of the lighting especially on the approaches outside the portals is not known. It is expected the condition, life expectancy, performance of the out of bore lighting are investigated. Provision of escape lighting shall be included in all options and HORUS updates shall be included in this scope item.

The north approach lighting is fed from the switch room located at the north portal. The south approach lighting is fed from the switch room / out building located by the south portal. The lights come on individually via photo cells. (RHT-H) Renewal of Drainage System– Pipes, Values, Pumps and Control Systems

The outcome of Stage 2 (Feasibility) is to provide the Employer's with options for replacement of the pumps and control system. Please note that this scope item does not include replacement of the drainage pipes and road side gullies as this is part of the structural assets. However it does include any pipes from the sump to outfall.

Pumps and the control systems are at or approaching the end of their design life.

It is expected that the assessment to include condition review of the ventilation, gas detection and suppression within the pump rooms and sumps.

19.5.8 (RHT-I) Replacement of Public Announcement (PA), Emergency Telephones (ERT) and Radio Systems and Removal of Maintenance Telephone System

The outcome of Stage 2 (Feasibility) is to provide options for upgrading and replacing the PA, ERT and Radio Systems and to provide options for removing the maintenance telephone system in the tunnel, vent shafts and service buildings.

This scope item includes Radio and PA system (including HORUS interfaces). Radio includes replacing the leaky feeder and associated infrastructure. Maintenance radio upgrade shall cover all areas including sub-tunnel and vent shafts.

The Emergency Telephones are known to be recently installed and in good condition. However a replacement / relocation exercise could be needed and reviewed if an EP / EDP is introduced (RHT-Q). There have not been any issues with the cabling and control system and these are currently out of scope for this reason (apart from reviewing in RHT-Q).

The maintenance telephones are not used and a cost for removing them is required.

The communications and radio systems are currently life expired, and ongoing maintenance costs are likely to increase with time. The existing maintenance radio communications do not work effectively and increase the risks to personnel working in the sub-tunnel confined space.

There is also an opportunity to make provision for a new Communications System during installation of the new (lighting & cabling) supporting system. Systems shall ensure Long Term Evolution (LTE) compatibility.

Part of the PA system was upgraded in 2014 but a full review to the PA system is needed to ensure installation date, expected life, current condition and performance are understood.

Live emergency exercise reports going back to Goldtop 2009 have identified major issues with Radio systems in this Tunnel. TfL are currently running at Risk.

Airwave and the Fire ground cover is poor in a major incident, and cannot handle the capacity for communications required. The Airwave system is due to be replaced by either LTE or similar mobile technology. Radiating infrastructure needs to be able to meet 800mg - 2.6Ghz to meet current and future requirements. It should be noted that in the existing infrastructure that Vodafone are using the current antennae systems, these are due to be expanded to include O2 and EE (possibly 3) via future commercial agreements under way.

Maintenance radio is poor, especially around and in the ventilation shafts and sub tunnel which are required for safety of maintenance personnel. .By bringing in MNO it will allow maintainers to use broadband via 4G to assist with Drawings / O&M / system interaction during closures.

It is not anticipated that TFL will be replacing DAB or DAB+ retransmission at this point but the leaky feeder systems will still need to be able to carry the capacity in due course.

The Health and Monitoring system needs to be updated to give us greater visibility of Faults especially on the Leaky feeder antennae. Auto Fault Monitoring System is required to cover the interface between ourselves and HORUS.

19.5.9 (RHT-J) Renewal of Plant Room's Heating Ventilation and Air-Conditioning (HVAC)

The outcome of Stage 2 (Feasibility) is to provide options for replacement of the HVAC system. Please note that this scope item includes HV and AC units and associated ventilation ducting works.

The HVAC system is limited to Shaft 4, Heckford Street plant rooms, and Shaft 2 communication rooms. These HVAC systems are approaching the end of their design life. There have been noted a number of problems with the communication room at Shaft 2, with ductwork not shuttered off or terminated.

Air Conditioning / Cooling units are situated in both the communication room at Shaft 2 and the electrical switch room. Also in the communications room and MNO room at Heckford Street. A number of the AC units are coming to the end of their life expectancy and need replacing.

19.5.10 (RHT-K) Upgrading of HV and LV Supply System

The outcome of Stage 2 (Feasibility) is to provide an upgrade to an automated system with appropriate back-up supply to maintain minimum operating requirements on the HV and LV supply system.

The power supply to the critical systems system is estimated to be 35-40 years old and reliant upon manual switching operations. Failure of the supply could result in closure of the tunnel until power is restored. TfL are looking to upgrade to an automated system with appropriate back-up supply to maintain minimum operating requirements.

Moreover, due to the possibility of future operation of the tunnel with non skilled staff managing the tunnel, it is anticipated that specialist electrical contractors will only be brought in for maintenance and repair. In the event of a power failure, no AP1 staff will be on site to manually switch the power supply in order to keep the tunnel in operational.

Apart from the changes brought about by the ventilation fan upgrades required, there is likely to be a reduction in lighting loads as LEDs are introduced in the bore and sub-tunnel lighting.

The LV switch rooms at the bore level will need to have all switch gear replaced due to age, obsolescence, or containing re-wireable fuses and asbestos. Also if the tunnel continue to subject the catastrophic flooding risks, positioning of the LV switch gear may needs to be carefully thought about to minimise loss of supplies.

19.5.11 (RHT-L) Replacement of Communication System Cabling (LTRACS)

The outcome of Stage 2 (Feasibility) is to provide options to replace the 36No core fibre cable and their enclosures and install a new fibre ring with a new cabinet in the shaft.

The IP fibre backbone feeds the cameras, PA and HORUS interface. There is a high risk of breakage if any works are carried out to assets feeding into it. It is currently understood the whole ring would require replacement, linking into the shafts with new cabinets upgraded and old kit removed.

This scope item refers to the cabling of the OP network and Communication backbone. There are 36Nno core fibre cable running through the tunnel and 16No core fibre cable running through the shafts. The 36No core fibre cable runs from the North Portal Equipment Room through the tunnel to the Jamaica Road cabinet. Termination cabinets are situated at the base of each of the 4 shafts and 16No core fibre cable has been spurred from the termination cabinets up to the switches which are in the shaft buildings.

It is suggested that the termination cabinets have been poorly installed with the 36No core fibre cable exposed at the fibre cartridge and in danger of fibre break when the cartridge is opened.

A new fibre ring shall be considered and brought up into the ventilation shafts for termination in a cleaner environment and it is expected the new cabinets should be located in the ventilation shafts and not at the base within the bore.

Please note that other Communication System Cabling (i.e. copper cables) is not part of the project scope.

19.5.12 (RHT-M) Decommissioning of Flood Gate

The outcome of Stage 2 (Feasibility) is to carry out a risk assessment of the current safety implications of the floodgate and recommend suitable actions. Also to revisit the lifting, locking and safety mechanism and provide options to remove / decommission the flood gate. The flood defence gate is located at Shaft 1 and is used to protect the East London Line from flooding. The flood gate lifting mechanisms are in need of replacement, the winch is a 1939 hand winch motorised and the PLC controllers are now obsolete.

A report was written in 2008 by Butterworth (a specialist now out of business) looking at replacing the lifting mechanism and the costs were prohibitive at the time valued at £1.2m. TfL / Kier are currently writing a report on the possible area flooding implications and risks of keeping / removing the flood gate.

Should the decision be to keep the gate following ALARP assessment, then the project will need to consider the safety implications to the travelling public trapped by the gate and the flood water. Along with the potential safety implications of all in bore electrics failing during an incident as the tunnel floods.

There are also concerns on how to manage the gate during lowering (currently freefall and counter balanced) should a vehicle or person be seen to be in the critical drop area and there is currently no method to stop the gate once initiated.

It is currently envisaged decommissioning shall involve ensuring there is secondary block against the gate dropping, amending HORUS and electrical isolation. Components left in situ would include the gate itself, counterweight, connecting chains, mechanical winch and lifting gear.

Removal would involve extracting all parts of the gate which can be reasonably removed. Some parts of the gate built into the structure may be lift in situ if they do not pose an issue to future use of the tunnel and would be very expensive to remove.

19.5.13 (RHT-O) Replacement of CCTV (Traffic) System (inc. in-bore and approaching roads)

The outcome of Stage 2 (Feasibility) is to provide a Digital CCTV (Traffic) solution to integrate with HORUS and the TfL CCTV systems and to extend the coverage in bore to allow for adjacent camera failure and resilience improvements.

Existing CCTV (Traffic) system was installed prior to 2000. Cameras and control board are approximately 10 years old, and are now obsolete. These cameras are currently being repaired or replaced using spares stock and there are no off the shelf replacements available.

There are a total of 14no (421-434) cameras, 6No (425-430) are within the tunnel bore and 8No are outside the tunnel. Equipment consists of analogue camera, housing, lens, control board, PSU/termination enclosure and 16 core fibre used for cameras outside the tunnel. Within the tunnel the cameras are connected via composite cable to the media convertor/encoder in the termination enclosure. There are some legacy fibre redundant cables due to migration to IP and their general condition is unknown.

The current CCTV system is unreliable and will need to be replaced with new CCTV cameras to provide 100% coverage of the tunnel and its approach roads. A new Digital CCTV (Traffic) system needs to be installed compatible with TfL's HORUS system. The CCTV coverage needs to allow for an adjacent camera failure cover, and be able to read a number plate at its farthest focal position. The cameras need to have high speed Iris at the portals to allow for considerable light changes as they pan and tilt from internal / external views.

19.5.14 (RHT-P) Introduction of Video Accident and Incident Detection (VAIDSystem)

The outcome of Stage 2 (Feasibility) is to provide a suitable Video Accident and Incident Detection System to monitor for slow moving vehicles, debris, and fire scenarios and to link either via the FLIR Flux server and / or directly to the LSTOC HORUS system.

There is currently no Vehicle Accident and Incident Detection System (VAID) in the tunnel.

The VAID system shall be capable of dealing with 2-way traffic in a single bore made up of two narrow lanes and activate an alarm based on changes detected by the video image processing software.

An alarm from the detector shall implement the following actions:

a. CCTV alert via the HORUS system;

b. Video recording to DVR/hard disc before and after the incident;

c. Switch video monitors from blank to real time image with banner; and

d. Switch the alarm camera plus the up stream and down stream cameras

19.5.15 (RHT-Q) Installation of Emergency Distribution Panels (EDPs)

The outcome of Stage 2 (Feasibility) is to provide options for installing combined EDPs and separate EPs / EDPs to meet the current regulations.

Review the feasibility of installing Emergency Distribution Panels (EDPs) in the bore to bring together the emergency points and electrical distribution panels. Items to be included (but not limited to) - ERT's, Fire Extinguishers, Fire Hydrants, Wayfinding and SOS "Toblerone" points.

Asset items included and accounted for in another scope items should be highlighted and only additional works / activities required for bringing these assets into an EDP be included in the cost of this scope item.

19.5.16 (RHT-R) Replacement of Fire Detection, Suppression and Monitoring System

The outcome of Stage 2 (Feasibility) is to provide options for replacing the fire detection, suppression and monitoring systems in the plant rooms at vent shafts, services building and within the tunnel.

Fire suppression and alarm systems are required at Shaft 2 in the LV switch room and comms room. At Shaft 4 they are required for the two switch rooms and comms room. Any installed UPS would also require suppression and alarm systems.

Fire alarms in the vent shafts and plant rooms are need to be investigated. Establish installation date, expected life, current condition, test performance and advise on residual life / replacement. Also investigate the condition, test performance and advise on residual life of fire suppression measures where they exist in the switch rooms / plant rooms

Please note that liner heat detection in the main bore and vent shafts is covered by item RHT-E and detection, suppression and monitoring in sumps and pump rooms are covered by item RHT-H.

19.5.17 (RHT-S) Replacement of Cable Rack in Sub-Tunnel

The outcome of Stage 2 (Feasibility) is to provide options for replacing the cable containment system in the sub-tunnel in order to ensure ventilation flow through the sub-tunnel is improved.

The existing cable rack is in very poor condition. Replacement will ensure ventilation flow through the sub-tunnel is increased, new cables / ducts are adequately supported and existing ones removed / diverted / replaced / slew into the new rack.

19.5.18 (RHT-T) Cable Management in Tunnel / Sub-Tunnel / Vent Shafts

The outcome of Stage 2 (Feasibility) is to review the current cable management infrastructure and provide options for effective cable management.

There are cable trays / ducting throughout the tunnel / sub-tunnel / vents in poor condition. Investigations and option study shall be carried out to effectively manage cable infrastructure. Proposed options for asset

replacement in the tunnel will take into account how they interact with each other and how they will fit. Future proofing is to be incorporated in the design of any assets / cabling to allow for additional mechanical, electrical and communications equipment.

19.6 Survey & Site Investigation

The *Contractor* is to work collaboratively with the Principal Contractor & *Employer'*s Contractor to agree the tunnel access arrangement. The *Contractor* is to work collaboratively with the *Employer'*s Contractor to undertake site investigation work on the refurbishment items as agreed at Desktop Study stage.

The *Contractor* will be working collaboratively with *Principal Contractor* & *Employer'*s Contractor during the Stage 2 (Feasibility) and should comply with all their H&S requirements and site rules. All method statement, risk assessment and safe system of working should be submitted to Principal Contractor at least 2 weeks in advance of the works for approval.

The *Contractor* is to provide a site presence during the site investigation works to ensure the survey, investigation and testing collected are relevant and to specifications. The *Contractor* shall verify the accuracy of the survey data and ensure the survey data cover any information gap needed for feasibility study.

On completion of the site investigation works the Contractor is to compile the survey data and provide the Contractor and Employer with a Factual Reports within two weeks of obtaining the survey data. (Please refer to Factual Report requirements below.)

The Contractor is to provide the Employer with an Interpretive Report based on the Factual Report to summarise key findings within two weeks of receiving the Factual Report. (Please refer to Interpretive Report requirements below.)

19.7 Feasibility Study

The *Contractor* is to take a leading role in delivering the Feasibility Study on cost and programme estimate.

<u>Develop Feasible Options</u>

The *Contractor* is work collaboratively with the *Employer'*s Contractor to develop feasible options for each of the refurbishment item with a holistic view of the tunnel as a whole based on the information collected from the site investigation.

The *Contractor* is to work collaboratively with the *Employer* and other Key Stakeholders in order to ensure the feasible options are relevant to the *Employer* and acceptable to our Technical Assurance Approval (TAA) team.

<u>Provide Cost and Programme Estimate</u>

The *Contractor* is to work collaboratively with the *Employer'*s Contractor and provide an implementation cost and programme estimate for all feasible options of the refurbishment items and include any high level estimate on temporary and enabling works.

The *Contractor* is to work collaboratively with the *Employer'*s Contractor in developing implementation cost and programme estimate and highlight any specific installation or maintenance requirements. The *Contractor* shall provide constructive feedback and expert input to ensure the cost and programme estimate are robust.

The *Contractor* is to work collaboratively with the *Employer* and other Key Stakeholders in order to ensure the feasible options are value for money, relevant to the *Employer* and acceptable to our Technical Assurance Approval (TAA) team.

<u>Value Engineering / Optioneering / Recommended Option</u>

The *Contractor* is to work collaboratively with the *Employer's* Contractor and incorporate all comments and suggestions, reassess the proposed feasible options with specific considerations on the project budget, cost

& programme and whole life costing and provide the *Employer* with single recommended option for each refurbishment item in the Feasibility Study Report.

The *Contractor* shall work collaboratively with the *Employer'*s Contractor to provide the *Employer* with the risks and opportunities (i.e. Risk Register) and update any drawings, cost and programme accordingly based on the outcome of various Workshops.

Project Deliverables 19.8

19.8.1 Better Information Modelling & Management (BIM)

Not Used

19.8.2 BIM – 3D Model Requirements

Not Used

19.8.3 Asbestos Survey

Desktop surveys should be carried out by the *Contractor* and identify / specify if further Asbestos Demolition Surveys are required. It is expected the Asbestos Demolition Surveys will be carried out by others.

The *Contractor* shall investigate the presence of asbestos in areas where it will impact on the prescribed Works in Stage 2's site survey, investigations and testing and take appropriate precautions.

The *Contractor* shall also investigate the presence of asbestos where it will impact on the works in future stages and advice what control measures will be needed.

Existing information, asbestos survey reports, asbestos management plans are available on Bridgestation and CDM Datastore.

19.8.4 Environment & Ecology Survey

It is not anticipated that environment & ecology surveys of the tunnels will be required, however the *Contractor* shall inform the Project Manager if they believe this not to the case.
The purpose of the survey is to:

- Identify the habitat types present on the site and the presence or potential presence for protected and / or species on the site.
- Highlight any known or potential legal or planning policy constraints to the works in relation to ecology and recommend avoidance, mitigation and enhancement measures to satisfy legal requirements where appropriate.
- Identify, where necessary, the requirement for further ecology surveys

The survey is to be supplemented by an ecological desktop study to collate existing biological records relevant to the site.

19.8.5 Factual Reports

Factal reports shall be produced regarding the surveys, investigations and testing. The draft factual reports shall be submitted within four weeks of completion of site work, and the final report shall be submitted within one week of receipt of comments from the *Employer*.

19.8.6 Interpretive Reports

Interpretive reports shall be produced based on the contents of the factual reports. The draft interpretative reports shall be submitted within two weeks of completion of the factual report, and the final report shall be submitted within one week of receipt of comments from the *Employer*.

19.8.7 Feasibility Report

On completion of the Feasibility Study the *Contractor* shall present a report, or a selection of reports if appropriate, detailing their initial recommendations and proposals for all of the tunnel systems and features they have considered. The report(s) shall include the following:

a. A review of the conclusions of existing reports, studies and assessments made available to the *Contractor* at the start of the commission.

b. A review of the conclusions of additional reports, studies and assessments undertaken by the *Contractor*.

c. An assessment of the existing tunnel structures and equipment.

d. The requirements of the Tunnel Design and Safety Consultation Group (TDSCG) and the risk analysis and management plan.

e. A detailed list of the necessary refurbishment works highlighted in previous studies and those revealed by further consultation or considerations.

f. Preliminary proposals, specifications and cost estimates for each item of works in e).

g. A first draft of the AIPs to BD 2/02 (DMRB 1.1.1) for the M&E works.

h. An assessment of any Departures from Standard or Specification proposed by the *Contractor* with recommendations and advice to the *Employer* on aspects not covered by the current standards.

i. An overview of the Health & Safety issues of the tunnel operations.

j. Any conditions or restrictions on the refurbishment works.

k. An assessment of the environmental issues related to the tunnel operation and refurbishment works;

l. Recommendations for maintenance and operation of the Blackwall Tunnels (Northbound and Southbound) during the construction period of the southbound bore.

m. An assessment of the working hours e.g. nights, weekends and the effect of maintenance operations in the tunnels.

n. An estimated spend profile for the cost of the works and all associated fees and maintenance costs.

In the Feasibility Report there shall be an identification of the tunnel ventilation requirements through the preparation of a computer generated mathematical model to accurately demonstrate the existing and proposed ventilation system performances during all operating conditions including:

- normal operation under free flow traffic conditions;
- normal operation with slow moving/stationary traffic, giving worst case pollution conditions; and
- fire, smoke, emergency and evacuation scenarios.

The *Contractor*'s solutions must consider the buildability, operations, maintenance, maintenance access, spares, whole life costing, emergency repairs, the control of any incidents and the tunnel minimum operating requirements (MoR) for a 25-year life.

19.8.8 Programme Schedule

The *Contractor* shall produce an updated programme schedule for Stage 3 (Concept), Stage 4 (Detailed) and Stage 5 (Implementation) following the outcomes and recommendations of Stage 2 (Feasibility). The updated programme schedule shall be reviewed and agreed in collaboration with the *Employer* and the *Contractor*.

19.8.9 Cost Estimate

The *Contractor* shall produce an updated cost estimate for Stage 3 (Concept), Stage 4 (Detailed) and Stage 5 (Implementation) following the outcomes and recommendations of Stage 2 (Feasibility). The updated cost estimate shall be reviewed and agreed in collaboration with the *Employer* and the *Contractor*.

20.0 WI 2100 – Employer’s Information Requirements (EIR)

20.1 BIM Requirements

Not Used

20.2 3D Model Requirements

Not Used

SITE INFORMATION

CONTENTS

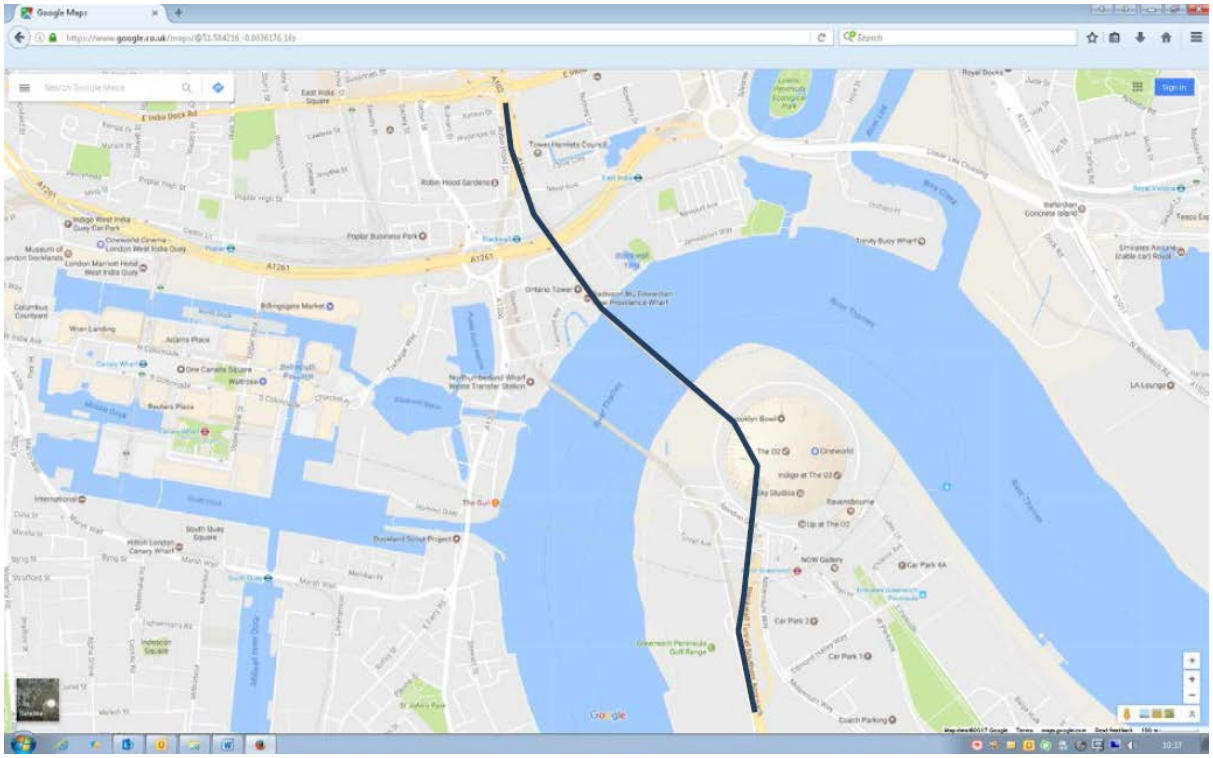
1.0 Site Information

Please note that changes to this document and the Additional Information will not be considered a compensation event.

1.1 Background Information

Blackwall Tunnel Southbound (BWT-SB)

The 2 lane carriageway Blackwall Tunnel Southbound road tunnel on the A102 was opened in 1967 and has a length of 1174m between portals. The structure connects the Blackwall district of Poplar in the Borough of Tower Hamlets north of the river to the Penisular district in the Borough of Greenwich south of the river. The speed limit in the tunnel and approaches is 30mph.

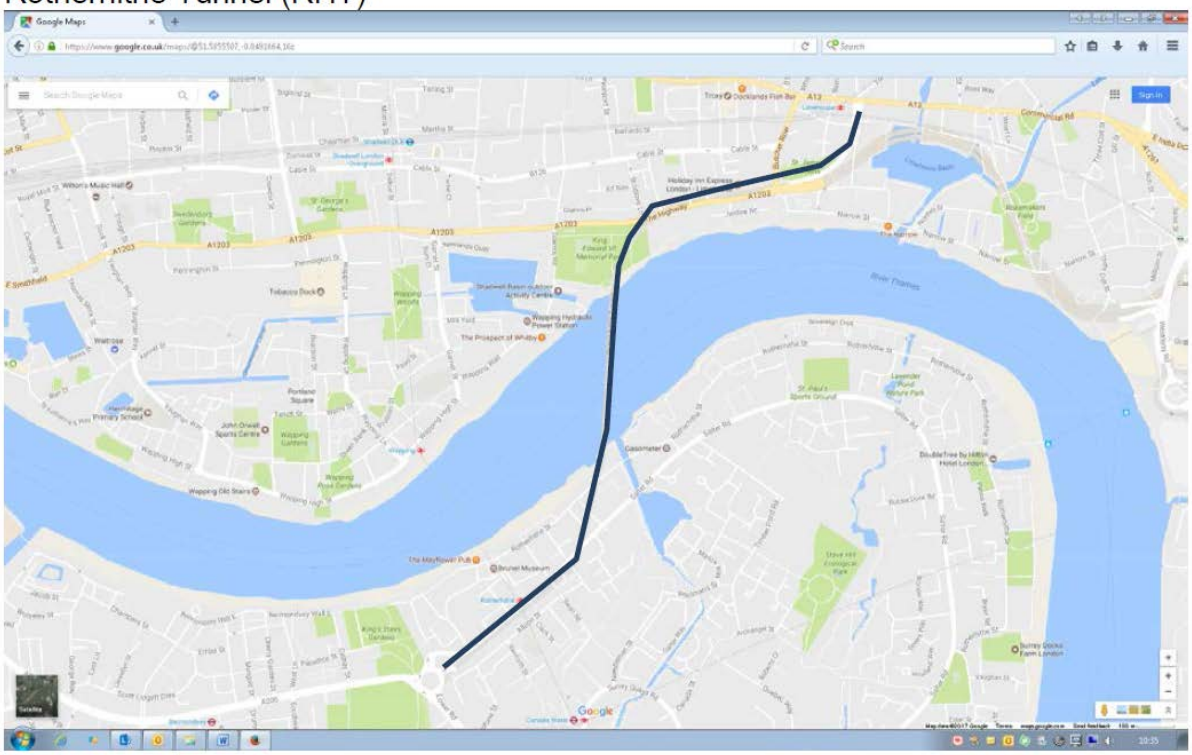


It comprises a primary cast iron segmental lining, 8.585m in diameter and 875m in length with cut and cover circular reinforced concrete sections of 118m. The vertical surface of the raised walkways is decorated with mosaic tiles and the walkways are separated from the carriageway by coated steel handrails.

There are two ventilation shafts situated at approximately quarter points, 780m apart, between which the road forms a structural roof to a sub-tunnel below. The sub-tunnel acts as an air duct through which fresh air is blown and ducted to openings into the vertical face of the walkway adjacent to the roadway above. Foul air is extracted through roof vents.

Blackwall Tunnel Southbound (A102)

Rotherhithe Tunnel (RHT)



The Rotherhithe Tunnel is a road tunnel (A101) crossing beneath the River Thames in East London, opened in 1908. The tunnel bore also provides access for non-motorised vehicles and pedestrians. The structure connects the Ratcliff district of Limehouse in the Borough of Tower Hamlets north of the river to Rotherhithe in the Borough of Southwark south of the river. The tunnel carries a two-lane carriageway with a speed limit of 20mph.

The structure comprises single bore tunnel made of cast iron segments and faced with mass concrete and white glazed tiles or paint. Four shafts are interspersed between the five tunnel barrels (sections) and were sunk alongside the tunnel in order to aid construction and to serve later as ventilation and entrance shafts. The total length of the tunnel is 1500m including the length of 10m diameter of each one of the four vent shafts and excluding the approaches.

The two riverside shafts, built in red brick with stone dressing, were fitted with iron spiral staircases to serve as pedestrian entrances, now closed to the public.

Rotherhithe Tunnel (A101)

1.2 Extent of Works

Please see above marked up locality plans for further details.

Blackwall Tunnel Southbound

Blackwall Tunnel Southbound approach roads (extent as indicated in plans), main tunnel, sub-tunnel, 2x ventilation shafts & surface structures, all service buildings (inc plant rooms and site boundary) and the Tunnel Office Naval Row (Operational building located at the North Portal).

Rotherhithe Tunnel

Rotherhithe Tunnel approach roads (extent as indicated in plans), main tunnel, sub-tunnel, 4x ventilation shafts & surface structures, all service buildings (inc plant rooms and site boundary).

Please also note that the sub-tunnel in both tunnels has been classified as a confined space and asbestos is present in both tunnels. Desktop surveys must be undertaken before any works commence where there is a risk of disturbing asbestos.

Management Surveys and Action Plans can be found within the Vol5 Additional Information & Bridge Station.

1.3 General Arrangement Drawings & Schematics

Please note that tunnel specific documentation and drawings are available within Vol5 Additional Information and Bridge Station.

1.4 Routine Maintenance Tunnel Closures

Blackwall Tunnel Southbound is closed once a month on Sunday night between 01.00 – 08.00.

Rotherhithe Tunnel is closed once a week on Monday night between 22.00 – 05.00.
Please note that no additional tunnel closures can be put in place for BWT-SB or RHT during Limehouse Link Tunnel closures.

Vol5 Additional Information contains the following information for BWT-SB & RHT:
- Routine Maintenance Tunnel Closure Dates for 2017/18,
- Minimum Operation Requirements (MoR),
- Traffic Management Plan
- Local Diversion Route (where applicable).

1.5 Maintenance of the Tunnels

Both BWT-SB & RHT are maintained by Kier (TfL LoHAC Contractor) and will be designated Principal Contractor for the tunnels during the Stage 2 feasibility works.

PRE CONTRUCTION INFORMATION

CONTENTS

1 Description of Projects

There are two projects Blackwall Tunnel Southbound and Rotherhithe Tunnel Refurbishments. Although separate projects with separate project end benefits they are being procured together and have a single Pre Construction Information Document.

Please note that changes to the Pre-Construction Information will not be considered a compensation event.

Project Scopes

The projects will investigate the following items which have been identified through the lifecycle plans as requiring refurbishment/ replacement in the next 10 years.

Blackwall Tunnel Southbound

Scope Reference	Scope Title
BWT-A	The ventilation system is upgraded to ventilate a 100MW fire
BWT-B	Replacement of the existing lighting arrangement with Light-Emitting Diode (LED) luminaires
BWT-C	The CCTV system is replaced
BWT-D	Video Accident and Incident Detection (VAID) installed
BWT-E	Refurbish/Replace Variable Message Signs (VMS) Tunnel Lane Control Signs (TLCS) and Wayfinding Signs
BWT-F	Decommission Flood Gates
BWT-G	Refurbish/Replace cabling infrastructure
BWT-H	Refurbish/Replace power systems
BWT-I	Refurbish/Replace M&E infrastructure in drainage systems
BWT-J	Refurbish/Replace linear heat detection
BWT-K	Refurbish/Replace fire and safety systems
BWT-L	Refurbish/Replace Heating Ventilation and Air Conditioning (HVAC) in tunnel service buildings
BWT-M	Refurbish/Replace Electricity Distribution Points (EDPs)
BWT-N	3D model creation
BWT-O	Refurbish/Replace Radio System
BWT-P	Refurbish/Replace Loudspeaker Public Addess
BWT-Q	Remove Maintenance Telephones

Rotherhithe Tunnel

Scope Reference	Scope Title
RHT-A	Upgrade of LED Lighting & Replacement of Structural Support System
RHT-B	Replacement of Fire Main System
RHT-C	Provision of Resilient Power Supply
RHT-D	Upgrade and Reconfiguration of Ventilation System

RHT-E	Replacement of Linear Heat Detector
RHT-F	Replacement of Emergency Wayfinding Signs
RHT-G	Replacement of ”Out of Bore” Lighting with LED Luminaires
RHT-H	Renewal of Drainage System – Pipes, Valves, Pumps and Control Systems within the Pump Room
RHT-I	Replacement of Public Announcement System, Emergency Roadside Telephone and Radio Systems and Removal of Maintenance Telephone System.
RHT-J	Renewal of Plant Room's Heating, Ventilation and Air-Conditioning (HVAC)
RHT-K	Upgrading HV and LV Supply System
RHT-L	Replacement of Communication System Cabling (LTRACS)
RHT-M	Decommissioning of Flood Gates
RHT-N	3D Model Creation
RHT-O	Replacement of CCTV (Traffic) System (inc. in-bore and approach roads)
RHT-P	Installation of Video Accident and Incident Detection (VAID) System
RHT-Q	Installation of Emergency Distribution Panels (EDPs)
RHT-R	Replacement of Fire Detection, Suppression and Monitoring System
RHT-S	Replacement of Cable Rack in Sub-Tunnel
RHT-T	Cable Management in Tunnel / Sub-Tunnel / Vent Shafts

Stage 2 investigations and feasibility options studies which will determine a preferred option for each project in line with the business outcomes and benefits identified in Stage 1.

Site Locations

Blackwall Tunnel Southbound

The Blackwall Tunnel Southbound is a two lane tunnel that carries A12 traffic southbound under the River Thames in East London. It was constructed adjacent to the existing Victorian tunnel, which is now only used for northbound traffic. The structure is aligned approximately north south and located between the Royal Borough of Greenwich and the Borough of Tower Hamlets. It was constructed in 1966.

Rotherhithe Tunnel

The Rotherhithe Tunnel is a two lane bidirectional tunnel that carries A101 traffic under the River Thames in East London. The tunnel bore also provides access for non-motorised vehicles and pedestrians. The structure connects the Ratcliff district of Limehouse in the Borough of Tower Hamlets north of the river to Rotherhithe in the Borough of Southwark south of the river.

Minimum Time for site set up and commencement of works

The minimum of 2 weeks will be allowed from the Contract Award to the commencement on site for mobilisation. The time allowed post Contract Award is to ensure the appointed Contractor has sufficient time to carry out their duties for the project.

Duty holders and key individuals

Contact details for all duty holders and any other key individuals can be found via the Employer.

2 Employers Safety Goals for Projects

As a minimum, the Employer requires:

- The Contractor has a 'Zero Target' injury/incident approach to the management of all works under the contract.
- All site personnel and the general public should not be placed at risk as a result of any works.
- To establish safe working arrangements and improve Contractor supply chain awareness of safe working practices.
- To establish working arrangements that improve Contractor supply chain awareness of health issues associated with working practices.
- All accidents and incidents are to be reported to the Employer in a timely manner.
- All accidents, incidents and near misses are to be detailed within the periodic report submission.
- Site specific risk assessments and method statements to be developed for all works relating to the delivery of the project, and all staff to fully understand and implement the safe systems of work.

The following Employer standards are included in the site rules:

- Safety inductions for all staff and visitors to be completed before entering the site.
- Regular toolbox talks to be carried out during the project covering health and safety issues associated with the works.
- Smoking on site is to be prohibited at all times.
- All site personnel to hold appropriate site safety certification (such as CSCS).
- Competent site supervision to be on each site whilst works are in progress.
- Traffic management/pedestrian barriers/signs to be maintained at all times and inspected at appropriate frequencies when sites are not occupied.
- No persons shall be permitted on site whilst under the influence of alcohol or any other substances liable to impair judgement.
- The bringing of, or being under the influence of alcohol and illegal substances on to the site is prohibited and a disciplinary offence that could result in summary dismissal.
- No persons shall use abusive language, behaviour or carry out threats or acts of violence.

Liaison and information flow through the projects

The Contractor must effectively liaise with the Client, and all other parties on the project. This will in part be through Progress meetings, programme meetings, design meetings, stakeholder meetings and pre-start meetings. A Common Data Environment (CDE) will assist in organising and tracking information flow.

Relevant H&S information such as risk registers, PCI, Construction Phase Plans (CPP) and H&S File information must be uploaded to the CDE, and updated where necessary. Handover of information shall be uploaded onto CDM Datastore and BridgeStation (both TFL systems) as agreed with the TfL Sponsor and H&S Manager.

Site Segregation and Security Arrangements

LoHAC (Kier) is the Principal Contractor of the Tunnels. It is anticipated that the Contractor will liaise with Kier to agree on the site access arrangements in their own accord.

Risk Assessments and Method Statements (RAMS) are to be provided to them according to their submission requirements. After assessment of RAMS by the PC, if required a permit to work will be issued which will define areas of work and any special requirements or constraints, which must be adhered to.

Welfare Provisions

During Stage 2 the Contractor should consider factors such as, but not limited to:

- The type and number of facilities that will be provided on site (e.g. agreed LoHAC facilities, groundhog unit, welfare van)
- The location of the facilities on site
- Temporary utilities required, such as water and electricity and drainage

When making these considerations reference should be made to the requirements under Schedule 2 of the CDM 2015 Regulations, and HSE information sheet CIS59, 'Provision of Welfare Facilities during Construction Work'.

3 Requirements Relating to Health & Safety

Permissions

Works on the TLRN require a permit from the Works Coordination and Permitting (WCaP) department of TfL. Any such permits must be applied for by the TfL Project Manager who may require supporting information from the Contractor, for which traffic management plans may be required.
Permit to Dig shall be in place before undertaking trial holes in footpaths and carriageways. Permit to Dig / Permit to Work / Permit to Access / Permit to Works on a System – is an arrangement between Principal Contractor of the tunnels and the Contractor.

Parking and Vehicular restrictions within the site

Where required, notices and applications must be submitted for any parking suspensions and/or dispensations by the Contractor. These requirements should be discussed at the pre-construction phase and suitable notice given for applications.

Fire Precautions

LoHAC induction is required for all operatives and RAMS accepted prior to entering site.

Unloading & Storage Areas

Storage of materials, equipment and plant on site must be secure and fully segregated from the public. The locations are to be agreed with TfL/LoHAC and some permits may be required.

The Contractor must take the delivery, unloading/loading and storage of all materials on site into consideration throughout the surveying pre-construction phase.

Surrounding Land Uses and Related Restrictions

A stakeholder management plan has been produced by the TfL project team but particular concerns are as below:

Blackwall Tunnel Southbound

- The O2

Rotherhithe Tunnel

- N/A

Existing utility services information

PAS128 standard must be referred to when confirming the position of any/all buried services. The Quality Level and Detection Method (PAS 128 Tables 1 &2) are to be agreed with the Employer before commissioning. The designers risk register should capture any identified hazards that need to be assessed by the Contractor.

Hazards imposed by existing plant, equipment and infrastructure

- o In-situ Mechanical, Electrical and Communications equipment
- o LoHAC contractor activities
- o Vehicle movements generally
- o Confined spaces (sub tunnel, pump chambers)
- o Asbestos
- o Traffic

Employer designated confined spaces

Some investigations need to be carried out in areas that have been identified as confined spaces, or they be deemed a confined space by the LoHAC Principal Contractor.

Health Hazards

Asbestos

Asbestos is present in both tunnels. Desktop surveys must be undertaken before any works commence where there is a risk of disturbing asbestos.

Management Surveys and Management Plans shall be reviewed with the Contractor detailing any further survey or precautions which are required by the project.

Existing structures containing hazardous materials and health hazards

The Contractor should ensure any necessary surveys are carried out to identify any potential hazardous materials and health hazards prior to works commencing and develop safe systems of working in the form of method statements.

4 Requirements Relating to the Environment

The TfL Arboriculture and Landscape Route Manager and the TfL Environmental Manager should be contacted if Protected Species are found during the works. It should be noted that only Defra licensed ecologists are to handle protected species.

Works should be carried out in accordance with the Greater London Authority and London Councils ‘The Control of Dust and Emissions from Construction and Demolition; Best Practice Guidance (2006)’. In addition the Consultant’s /supply chain should be encouraged to fit emission controls to all vehicles, plant and

equipment where possible. Vehicles, plant and equipment should be turned off when not in use and should be inspected and maintained regularly.

BS5228 Parts 1 and 2 – Noise and vibration control on construction and open sites should be adhered to. Vehicles, plant and equipment should be turned off when not in use. Consider alternative 'quiet' running plant and equipment. Noisiest activities should be planned during 'normal working hours'. If works are to be carried out at night or 'outside of working hours' then a Section 61 should be obtained from the Local Authority.

5 Design Risk Registers

The Contractor must develop and maintain design risk registers throughout the design stage jointly with the Client & Consultant. These should detail how the risks have been eliminated or reduced through design, and further information on controlling risks.

All design risk registers must be uploaded to, and kept up to date, on A site and if requested by the TfL Health and Safety Advisor, on CDM Datastore.

6 The Health & Safety File

The Health and Safety File for each structure is on BridgeStation.

The Employer and the Contractor must provide relevant information for compiling and updating of the H&S File. See TfL Guidance Document below.

"Requirements for Tunnels and Structures Health and Safety Files, Records and Maintenance Manuals – Guidance for Clients, Project Managers, CDM Co-Ordinators and Principal Contractors Document reference: SQA-2026 - issue: 1.0"

H&S file information is also to be submitted and uploaded to CDM Datastore as required by the TfL Health and Safety Advisor

7 Pre-Construction Information to be provided to the Employer

The Contractor is required to develop a programme of works and agree this with the Employer prior to the start of works.

Specific H&S goals for the project as required by the Employer. Specific Employer site rules are also specified for incorporation into the CPP and implementation on site.

Relevant H&S information such as designs, risk registers, PCI, Construction Phase Plans (CPP) RAMS and H&S File information must be uploaded to the CDE and updated where necessary, on CDM Datastore.

Records of inspection of the security and segregation arrangements must be developed and maintained by the Contractor.

The minimum standards of compliance for welfare provisions must be in accordance with Schedule 2 of the CDM Regulations, and HSE information sheet CIS59, 'Provision of Welfare Facilities during Construction Work'

If the works are of a transient nature and public or third party facilities will be used, the Contractor must take reasonable steps to ensure the facilities are adequate and regularly maintained to a suitable standard. The

use of such facilities must be agreed, in writing, with the owner/management and the permitted hours of use detailed.

Full details of the above arrangements must be detailed in the CPP.

Specified Permit to Work (PTW) systems detailed in Section 3(a) must be implemented by the Contractor.

Works on the TLRN require a permit from the Works Coordination and Permitting (WCaP) department of TfL. The Contractor is required to supply the TfL Project Manager with any information required to obtain any such permits with suitable advanced notice, for which traffic management plans may be required.

In addition to any Employer specified PTW requirements, the CPP must define any PTW system that may be necessary for work. E.g. permit to dig.

Specific arrangements regarding parking and vehicular restrictions on site must be detailed within the CPP, including any parking suspensions, dispensations etc. required/obtained etc.

The Contractor is responsible for the establishment and implementation of all necessary emergency procedures in relation to the worksite and any work activity that may be undertaken within it. The arrangements for this must be defined within the CPP.

The following emergency contact number may also be required: London Streets Tunnels Operation Control Centre (LSTOC)	020 7515 1282

The closest Hospital with an A&E department can be identified using the A&E Finder

A method of raising the alarm in the event of an emergency must be present on site. A fire risk assessment must be provided by the Contractor, incorporating all risks associated with the site location and activities to be undertaken. Control measures must be communicated to staff and visitors at induction.

Smoking on site is not permitted at any time.

All fire safety arrangements must be detailed within the CPP, including what fire fighting equipment will be provided on site, and what training staff has had.

The Contractor is fully responsible for the assessment and provision of suitable and sufficient first aid and other emergency arrangements to comply with the Health and Safety (First-Aid) Regulations, L74, details of which must be detailed in the CPP.

A suitable number of named first aiders for the worksite/s must be identified within the CPP.

Any Employer specified standards of segregation/barriers for use around storage areas etc will be specified in section 4(a).

The Contractor must detail the specific arrangements to be in place on site.

The Contractor must ensure that they have received relevant survey information prior to commencing work. Further on-site surveys must be carried out prior to excavation, e.g. CAT & Genny, in accordance with HSG47 ‘Avoiding Danger from Buried Services’? Precautionary measures must then be implemented to ensure safe working practices around services.

The Contractor must submit a Designer Risk Register, updating it as the project develops and subsequently develop Risk Assessments and Method Statements (RAMS) to be provided with the CPP to detail how any remaining risks will be managed.

Any information regarding asbestos such as surveys etc must be reviewed by the Contractor for the CPP and RAMS to be developed accordingly.

If any Asbestos Containing Materials (ACM) are found or suspected, the Contractor should stop works, make the site area safe and secure and report this to the Employer.

The Contractor must ensure that their workforce are competent to identify the presence of contaminated material if encountered, and be expected to stop works, and make the area safe before seeking advice from a competent person.

The Contractor must ensure that their operatives are competent to identify the presence of any hazards that they may encounter during the works, and be expected to stop works, and make the area safe before seeking advice from a competent person.

SECTION THREE


20
NARROW
TUNNEL
SHARP
BENDS
L693 TDY

Approvals		
Author	[redacted]	Bid Writer
Checked	[redacted]	Bid Manager
Authorised	[redacted]	Engineering Director

Amendments and Revisions		
Revision	**Description**	**Date**
1.0	Issued for Tender	21/08/2017

CONTENTS

PROJECT ORGANISATIONAL STRUCTURE